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DELAWARE WEED CONTROL RESULTS - 2015

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WEED CONTROL RESULTS

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The purpose of this report is to present results and details of many of the 2015 weed control field trials conducted by Cooperative Extension at the University of Delaware. Results are summarized from data obtained at the Georgetown Research and Education Center and other test locations throughout the state. These results, as well as results from previous years back to 2002, are available at the UD Weed Science web site; http://extension.udel.edu/ag/weed-science/.

The results obtained and any conclusions stated are not published herein as recommended practices. The data in this report are especially intended for use by cooperators, commercial field workers, county agents, agricultural teachers, and researchers. They will also be of value to growers who are interested in following closely the development of new herbicides and weed control systems.

Treatments are listed by trade names to facilitate reading by non-technical people. No discrimination is intended and no endorsement is implied by the University of Delaware. Chemical index is cross-referenced by common and trade names.

Many of the chemicals listed are actually a combination of two or more herbicides. Where this is the case, the name of the combination is usually followed by the word "Premix". The common names of the herbicides in that premix are listed in the Index of Chemicals at the front of this document. In addition, the name of the combination is often followed by the herbicides that make up that combination. For example, Bicep II Magnum is a combination of s-metolachlor and atrazine, so Bicep II Magnum will be listed as such:

Bicep II Magnum Premix	5.5 L	2.2 lb ai/A
----s-metolachlor	2.4	0.96
----atrazine	3.1	1.24

This quickly illustrates that Bicep II Magnum (5.5 L lb a.i./gal) contains 2.4 lb a.i./gal of s-metolachlor and 3.1 lb a.i./gal of atrazine, and that Bicep II Magnum applied at a rate of 2.2 lb a.i./A is equivalent to an application of s-metolachlor at 0.96 lb a.i./A and atrazine at 1.24 lb a.i./A.

When analyzing the information in this report, we strongly urge you to read carefully the site description section of each study. We trust you will find the information in this report useful and accurate.

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WEED INDEX

Common Name	WSSA Code	Scientific Name	Trial
Amaranth, Palmer	AMAPA	Amaranthus palmeri S.Wats.	Corn1, 3, 5, 6, 7, 10a, 10b, 11, 13; SCRN1; MiloIPOSS; Milo2, 3; DSB2, 3, 4, 4dem, 7, 8, 9; Soy1, 4, 5, 6, 7, 10, 11, 12, 13, 14, 15, 17, 19, 22, 22dem; Bean2, 3; Lima2; Meln2, 2dem; Pmkn3; SwPot
Anoda, Spurred	ANVCR	Anoda cristata (L.) Schlecht	DSB3, 4; Soy10
Bluegrass, Annual	POAAN	Poa annua L.	SG21
Broadleaves, Annual	ANNBR		DSB2, 3
Carpetweed	MOLVE	Mollugo verticillata L.	Soy6; Lima2
Chickweed, Common	STEME	Stellaria media (L.) Vill./cyr.	SG9, 14, 25
Chickweed, Jagged	HLOUM	Holosteum umbellatum L.	Cover6; SG1, 2, 7, 8a, 8b, 15, 17
Chickweed, Mousear	CERVU	Cerastium vulgatum L.	SG21; For1
Clover, Crimson	TRFIE	Trifolium incarnatum L.	Cover7
Crabgrass, Large	DIGSA	Digitaria sanguinalis (L.) Scop.	Corn1, 10a, 13; SCRN1; Milo2; DSB2, 3, 4, 7; Soy10, 11, 22; Bean3; Lima2; Meln2
E.primrose, Cutleaf	OEOLA	Oenothera laciniata Hill	For1
Foxtail, Giant	SETFA	Setaria faberi Herm.	Corn3, 5, 7, 11
Galinsoga, Hairy	GASCI	Galinsoga ciliata (Raf.) Blake	Pmkn3
Grass, Annual	GGGAN		Corn2, 7, 11, 12; DSB2, 3, 9; Soy6, 7, 22dem; Meln2, 2dem
Henbit	LAMAM	Lamium amplexicaule L.	Cover6; SG1, 2, 4, 5, 7, 8a, 8b, 15, 17; For1
Horseweed	ERICA	Erigeron canadensis L.	DSB9; Soy22, 22b, 22dem

Common Name	WSSA Code	Scientific Name	Trial
Knawel	SCRAN	Scleranthus annuus L.	SG8a, 8b
Lambsquarters, Cmn.	CHEAL	Chenopodium album L.	Corn2, 3, 5, 7, 9a, 11, 12; DSB9; Bean3; Lima1, 2; Meln2, 2dem
Morningglory Pitted	IPOLA	Ipomoea lacunose L.	Milo2
Morningglory Species	IPOSS	Ipomoea ssp.	Corn2, 3, 4, 5, 7, 9a, 9b, 10a, 10b, 11, 12, 13; SCRN1; MiloIPOSS; Milo3; DSB3, 4, 4dem, 8, 9; Soy1, 4, 5, 6, 7, 9, 10, 11, 12, 13, 14, 15, 19, 22, 22dem; Lima1, 2; SwPot
Mouseearcress	ARBTH	Arabidopsis thaliana (L.) Heynh.	SG17; For1
Nutsedge, Yellow	CYPES	Cyperus esculentus L.	Bean2, 3; Meln2dem
Panicum, Fall	PANDI	Panicum dichotomiflorum (L.) Michx.	Corn5, 7, 9a, 9b, 10b
Pansy, Field	VIORA	Viola rafinesquii Greene	For1
Pigweed, Redroot	AMARE	Amaranthus retroflexus L.	Corn9b
Purselane, Common	POROL	Portulaca oleracea L.	Soy6; Meln2dem; Pmkn3
Ragweed, Common	AMBEL	Ambrosia elatior L.	Corn2, 3, 5, 7, 9a, 10a, 10b, 11, 12, 13; DSB3, 9; Soy11; Bean2, 3; Lima1, 2; SwPot
Ryegrass, Annual	LOLMU	Lolium multiflorum Lam.	Cover5; SG4, 5, 13

INDEX OF CHEMICALS

Trade Name	Common Name	Trial
A16003	“experimental”	Corn4, 6; SwPot
A20540	“experimental”	Corn2
Abundit Extra	glyphosate	Milo2
Acuron Premix	atrazine + bicyclopyrone + mesotrione + s-metolachlor	Corn2, 3, 9b; Milo3
Aim	carfentrazone	Cover6; DSB9; Soy17; For1
Ally	metsulfuron	Milo2
Anthem Flexx Premix	pyroxasulfone + carfentrazone	SG1, 4, 5, 17
Anthem Premix	pyroxasulfone + fluthiacet	SCRN2, SG4, 8a, 8b, 9, 17; DSB9; Bean2, 3; Lima2
Atrazine	atrazine	Corn3, 4, 5, 6, 7, 9a, 9b, 10a, 10b, 11, 12, 13; SCRN1; MiloIPOSS; Milo1, 2, 3; Cover5
Authority First Premix	sulfentrazone + cloransulam	Soy5, 5b, 10
Authority Maxx	sulfentrazone + chlorimuron	Soy11, 12
Authority MTZ Premix	sulfentrazone + metribuzin	Cover6, SG1, 5; Soy5, 5b, 7, 10, 11
Authority XL Premix	sulfentrazone + chlorimuron	DSB7; Soy5, 5b, 7, 13, 22
Axial XL	pinoxaden	SG4, 11, 13, 16, 17
Axiom Premix	flufenacet + metribuzin	SG1, 2, 4, 8a, 8b, 9, 13, 21, 24, 25
Balance Flexx	isoxaflutole	Corn7
Banvel	dicamba	Milo1; For1
BAS 67703H	“experimental”	Corn11, 12
Basagran	bentazon	SCRN1; Bean3; Lima1
Basis Blend Premix	rimsulfuron + thifensulfuron	Soy4
Bicep II Magnum Premix	s-metolachlor + atrazine	Corn7, 9a, 9b, 10a, 10b, 13; SCRN2; Milo2, 3
Boundary Premix	s-metolachlor + metribuzin	Soy5, 5b, 6, 7, 12

Trade Name	Common Name	Trial
BroadAxe Premix	sulfentrazone + s-metolachlor	Soy12
Buctril	bromoxynil	Milo1
Cadet	fluthiacet	Corn4; SCRN1
Callisto	mesotrione	Corn4, 6, 13; DSB7
Canopy EX Premix	chlorimuron + tribenuron	DSB2
Canopy Premix	chlorimuron + metribuzin	DSB2, 7, 9; Soy4, 5, 5b, 6, 7, 10, 11, 12, 22dem
Capreno Premix	tembotrione + thiencarbazone + Isoxadifen	Corn7, 12
Chateau	flumioxazin	Meln2, 2dem
Cinch ATZ Premix	s-metolachlor + atrazine	Milo2
Clarity	dicamba	SG2, 12, 16, 24; Soy7
Classic	chlorimuron	Soy4, 9
Command	clomazone	Lima2; Pmkn2
Corvus Premix	thiencarbazone + isoxaflutole	Corn2, 7, 9a, 9b, 11
Curbit	ethalfluralin	Meln2, 2dem; Pmkn2, 3
DiFlexx	dicamba	Corn7; Milo1
Diligent Premix	flumioxazin + rimsulfuron + chlorimuron	Soy4
Dual II Magnum	s-metolachlor	Corn10b; SCRN1; Milo3; Soy6, 14
Dual Magnum	s-metolachlor	DSB4, 4dem; Soy3, 5b; Bean2, 3; Lima2; Meln1, 2, 2dem; SwPot
Durango DMA	glyphosate	Corn3; Soy1
Envive Premix	chlorimuron + flumioxazin + thifensulfuron	DSB3; Soy4, 13
ET	pyraflufen	Corn1
Facet L	quinclorac	Milo1
Fierce Premix	flumioxazin + pyroxasulfone	Milo3; SG17; Soy5, 5b, 7, 10, 12

Trade Name	Common Name	Trial
Fierce XLT Premix	flumioxazin + pyroxasulfone + chlorimuron	Soy5, 5b, 13
Finesse Premix	chlorsulfuron + metsulfuron	SG6
Flexstar GT Premix	fomesafen + glyphosate	Soy12, 15, 19
GF-3313 Premix	florasulam + halauxifen	SG6, 7
GF-3471	“experimental”	Corn3
Glory	metribuzin	SG1, 2, 4, 5, 9, 10, 11, 14, 16, 21, 24, 25
Gramoxone SL	paraquat	Corn13; Cover7; DSB2, 7, 9; Soy17, 22, 22b, 22dem; Meln2
Halex GT Premix	s-metolachlor + glyphosate + mesotrione	Corn2, 5, 10a, 10b, 11, 12, 13
Harmony Extra SG Premix	thifensulfuron + tribenuron	SG2, 7, 8a, 8b, 9, 13, 14, 16, 17, 24, 25
Harmony XP	thifensulfuron	Soy4
Harness Xtra Premix	acetochlor + atrazine	Corn5, 9a, 9b, 10a, 10b
Harness	acetochlor	Bean2
Huskie Premix	pyrasulfotole + bromoxynil	MiloIPOSS; Milo1, 2; SG2, 9, 14, 16, 24, 25
Impact	topramezone	Corn5, 10b; SCRN1
Instigate Premix	rimsulfuron + mesotrione	Corn2
Interline	glufosinate	Soy14
Keystone LA NXT Premix	acetochlor + atrazine	Corn3
Keystone NXT Premix	acetochlor + atrazine	Corn3
Laudis	tembotrione	Corn11
Leadoff Premix	rimsulfuron + thifensulfuron	Milo2
Lexar EZ Premix	s-metolachlor + mesotrione + atrazine	Corn3, 9a, 9b, 13; Cover7
Liberty 280	glufosinate	SCRN1; DSB4, 4dem, 7, 8, 9; Soy10, 11, 16, 19
Linex / Lorox	linuron	Soy5b, 6, 22b; SwPot

Trade Name	Common Name	Trial
Lumax EZ Premix	s-metolachlor + mesotrione + atrazine	Corn 9a, 9b, 10a, 10b, 11, 13 ; Milo3
Maverick	sulfosulfuron	SG21
MCPA ester 4	MCPA	For1
Metribuzin	metribuzin	Soy1, 4, 5, 5b, 9, 10, 12, 15, 16
NAI1492	“experimental”	Corn1
Olympus Flex Premix	mesosulfuron + propoxycarbazone	SG21
Olympus	propoxycarbazone	SG21
Osprey	mesosulfuron	SG2, 4, 9, 13, 16, 21
Outlook	dimethenamid-p	DSB4, 4dem; Soy5b, 16
Peak	prosulfuron	MiloIPOSS
PowerFlex HL	pyroxsulam	SG2, 4, 5, 7, 13, 16, 21
Prefar	bensulide	Meln1
Prefix Premix	s-metolachlor + fomesafen	Soy5, 5b, 6, 10, 12
Prequel Premix	rimsulfuron + isoxaflutole	Corn9a, 9b
Princep	simazine	Corn7, 9a, 9b
Prowl H_20	pendimethalin	Corn3, 9a, 9b, 10a, 10b, 11, 13; SCRN1; DSB4, 4dem
Raptor	imazamox	DSB8; Soy16; Bean3; Lima1
Realm Q Premix	rimsulfuron + mesotrione	Corn10a, 10b
Reflex	fomesafen	DSB4, 4dem; Soy4, 12, 16, 19; Bean3; Lima1; Meln1, 2, 2dem; Pmkn3; SwPot; Veg5, 5b
Resolve SG	rimsulfuron	Corn9a, 9b, 10a, 10b
Resource	flumiclorac	Corn4
Roundup PowerMax	glyphosate	Corn4, 5, 6, 11, 12; Cover5, 7; DSB3, 7, 8, 9; Soy4, 12, 14, 19
Roundup WeatherMax	glyphosate	Corn7, 10a, 10b, 13; SG1; DSB2
Sandea	halosulfuron	Bean2, 3; Lima2; Meln1, 2, 2dem

Trade Name	Common Name	Trial
Satellite Hydro	pendimethalin	Soy14
Select Max	clethodim	DSB4; SwPot
Sharpen	saflufenacil	Corn11; SCRN1; Milo3; SG1, 4, 8a, 8b, 15, 24, 25; DSB9; Soy3; Meln2, 2dem
Simazine	simazine	Corn13
Sinbar	terbacil	Meln1
Sonic Premix	sulfentrazone + cloransulam	Soy1, 7
Spartan	sulfentrazone	Soy9
Spartan Charge Premix	carfentrazone + sulfentrazone	Soy3; Meln2
Starane Ultra	fluroxypyr	SCRN1; MiloIPOSS; Milo1; SG2, 9, 12, 14, 16, 25
Status Premix	diflufenzopyr + dicamba + safener	Corn4, 5, 6, 11
Steadfast Q Premix	nicosulfuron + rimsulfuron + safener	Milo2
Stinger	clopyralid	Cover7
Storm Premix	bentazon + acifluorfen	DSB8; Soy14
Strategy Premix	ethalfluralin + clomazone	Meln2, 2dem
SureStart Premix	acetochlor + clopryalid + flumetsulam	Corn2, 3
Surveil FR	cloransulam	Soy1, 5, 5b, 6
Surveil V	flumioxazin	Soy1, 5, 5b, 6
Synchrony XP Premix	chlorimuron + thifensulfuron	DSB8
Tenacity	mesotrione	For1
Touchdown Total	glyphosate	Corn2; Soy12
Tricor DF	metribuzin	Cover7; DSB7, 9; Soy5, 5b, 6, 14, 22b, 22dem
Trivence	chlorimuron + metribuzin + flumioxazin	Soy5, 5b
Ultra Blazer	acifluorfen	DSB8; Lima1

Trade Name	Common Name	Trial
Valor SX	flumioxazin	Cover5; SG1, 13, 15, 17, 24, 25; DSB2, 7, 9; Soy1, 3, 4, 5, 5b, 6, 9, 10, 12, 14, 15, 22b, 22dem; SwPot
Valor XLT Premix	flumioxazin + chlorimuron	DSB7; Soy5, 5b, 6, 7, 10, 11, 22
Verdict Premix	saflufenacil + dimethenamid-p	Corn2, 11
Warrant	acetochlor	DSB4, 4dem; Bean2
Weedmaster Premix	2,4-D + dicamba	For1
Zest	nicosulfuron	Milo2
Zidua	pyroxasulfone	Corn7, 9a, 9b, 11; SCRN1; Milo3; SG1, 2, 4, 8a, 8b, 13, 21; DSB4, 4dem; Soy5, 5b, 15; Bean2, 3
2,4-D amine	2,4-D amine	Milo2; SG2, 12, 16, 24; Soy7
2,4-D ester	2,4-D ester	Cover6, 7; SG6, 7; DSB2; Soy14

Daily Temperature Record

October 2014 - September 2015

University of Delaware, Research and Education Center

Georgetown, Delaware

	2014																							
	Oct		Nov		Dec		Jan		Feb		Mar		Apr		May		Jun		Jul		Aug		Sept	
	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
1	69	55	49	44	67	42	42	20	42	16	33	13	55	34	53	42	89	69	85	68	90	66	91	65
2	66	52	49	38	42	36	46	27	56	25	42	30	65	30	71	40	70	56	73	65	88	66	90	67
3	70	48	58	34	50	38	48	29	32	20	35	26	73	59	79	45	58	55	81	61	89	65	93	68
4	70	47	70	41	43	27	68	46	48	23	50	35	67	42	83	51	60	57	80	69	91	71	88	68
5	61	36	65	51	45	36	52	28	41	20	42	20	61	32	85	63	66	58	84	66	88	67	80	62
6	71	41	62	50	53	41	31	19	33	14	29	6	71	43	78	55	76	58	88	71	82	67	84	60
7	75	55	55	37	43	33	27	15	48	20	41	4	67	46	76	52	74	54	88	74	75	69	89	61
8	75	54	50	27	44	32	21	11	61	35	53	34	46	41	80	55	83	57	88	75	77	63	91	65
9	71	44	57	35	45	38	38	20	39	31	60	34	44	40	81	64	85	69	89	73	83	60	93	73
10	65	54	62	31	45	37	26	9	35	29	60	33	74	42	85	65	83	61	84	70	76	63	82	70
11	59	52	68	38	40	32	43	8	38	27	61	47	64	41	78	66	91	65	81	66	85	69	80	65
12	62	46	67	43	41	34	50	34	36	22	52	33	67	35	89	65	92	73	85	62	83	65	77	64
13	64	52	44	35	43	28	37	27	25	13	49	28	74	41	76	55	89	75	84	66	82	61	71	58
14	76	59	42	29	46	29	33	27	41	12	57	41	66	48	69	49	88	72	84	72	85	58	76	53
15	74	66	43	23	47	34	36	29	20	9	53	40	64	48	74	48	88	73	79	71	86	60	83	51
16	68	50	49	24	56	32	43	27	18	6	58	32	70	41	84	59	93	73	78	63	88	62	85	53
17	70	47	61	41	53	36	36	21	24	11	68	42	75	54	84	68	80	66	82	59	89	62	84	57
18	70	51	42	24	40	30	52	33	36	5	45	28	77	55	87	67	86	69	88	68	87	66	83	56
19	55	36	37	17	38	28	45	27	23	8	48	25	61	52	83	66	86	70	93	72	86	71	86	59
20	64	32	51	32	38	21	52	25	16	-4	39	33	76	55	72	54	87	72	94	76	85	73	74	62
21	71	49	35	19	42	24	36	28	35	-5	56	33	70	50	56	49	88	71	90	75	85	70	72	62
22	57	50	45	16	45	27	41	29	45	31	51	36	72	43	72	48	89	72	84	68	83	62	73	64
23	56	48	58	36	55	45	42	24	34	18	44	31	56	42	70	48	93	70	83	63	84	56	75	56
24	67	49	70	58	67	47	39	35	29	11	44	28	56	38	78	48	82	66	84	58	87	60	76	53
25	68	39	64	45	66	34	48	35	38	18	56	24	51	34	81	59	85	61	86	59	85	66	75	63
26	67	45	45	35	51	28	41	31	33	14	69	49	62	41	85	63	76	65	88	66	82	58	72	66
27	67	37	41	29	61	31	35	27	35	12	60	38	60	36	86	68	76	63	84	69	81	57	75	66
28	79	51	39	23	58	43	35	21	30	14	40	29	67	46	85	68	80	68	91	69	83	56	83	66
29	72	52	46	21	48	39	38	18			43	25	74	42	84	66	81	61	88	70	85	56	85	68
30	60	42	59	37	39	23	42	23			59	32	71	50	85	66	86	65	89	74	86	60	82	67
31	54	36			35	20	30	17			65	35			88	67			88	69	86	71		

Data Collected Midnight- Midnight

Daily Rainfall Record

October 2014 - September 2015

University of Delaware, Reserch and Education Center

Georgetown, Delaware

	2014											
	Oct	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sept**
1	0.00	0.24	0.14	0.00	0.10	0.61	0.00	0.25	0.27	0.00	0.15	0.23
2	0.00	0.00	0.25	0.00	0.72	0.00	0.00	0.00	0.65	0.89	0.00	0.00
3	0.03	0.00	0.01	0.12	0.00	0.20	0.17	0.00	1.10	0.00	0.00	0.00
4	0.12	0.00	0.00	0.22	0.00	0.26	0.00	0.00	0.14	0.04	0.79	0.00
5	0.00	0.00	0.03	0.00	0.00	0.48	0.00	0.00	0.01	0.00	0.64	0.00
6	0.00	0.33	0.64	0.00	0.00	0.14	0.00	0.00	0.04	0.10	0.00	0.00
7	0.00	0.03	0.08	0.00	0.00	0.00	0.19	0.00	0.00	0.00	0.04	0.00
8	0.02	0.00	0.30	0.00	0.00	0.00	0.02	0.00	0.00	0.06	0.00	0.00
9	0.00	0.00	0.33	0.00	0.00	0.00	0.02	0.00	0.02	0.00	0.00	0.00
10	0.38	0.00	0.00	0.00	0.20	0.14	0.25	0.01	0.00	0.00	0.02	0.65
11	0.61	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.02	1.17	0.00
12	0.00	0.00	0.00	1.28	0.02	0.00	0.00	0.00	0.00	0.00	0.06	1.11
13	0.16	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.07	0.00	0.00
14	0.01	0.02	0.00	0.16	0.04	0.88	1.11	0.00	0.14	0.13	0.00	0.00
15	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00
16	0.38	0.06	0.29	0.01	0.00	0.00	0.00	0.09	0.01	0.00	0.00	0.00
17	0.00	1.02	0.00	0.00	0.13	0.00	0.12	0.02	0.00	0.00	0.00	0.00
18	0.00	0.01	0.00	1.51	0.02	0.00	0.05	0.83	0.59	0.00	0.00	0.00
19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.48	0.10	0.00	0.00	0.00
20	0.00	0.00	0.00	0.00	0.00	0.89	1.27	0.00	0.14	0.00	0.31	0.00
21	0.58	0.00	0.00	0.03	0.44	0.00	0.00	0.79	0.97	0.39	0.07	0.00
22	0.14	0.00	0.04	0.12	0.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23	0.01	0.00	0.02	0.33	0.00	0.00	0.00	0.00	0.41	0.00	0.00	0.00
24	0.00	0.29	1.17	1.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25	0.00	0.00	0.13	0.00	0.00	0.01	0.27	0.00	0.18	0.00	0.00	0.00
26	0.00	1.60	0.00	0.34	0.15	0.25	0.02	0.00	0.65	0.00	0.00	0.00
27	0.00	0.00	0.00	0.00	0.00	0.20	0.00	0.00	0.35	1.17	0.00	0.00
28	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.11	0.03	0.00	0.00
29	0.01	0.00	0.09	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.83
30	0.00	0.00	0.00	0.01		0.06	0.00	0.00	0.02	0.01	0.00	0.55
31	0.00		0.00	0.00		0.18		0.00		0.01	0.00	
Total	**2.64**	**3.61**	**3.56**	**5.27**	**2.26**	**4.31**	**3.49**	**2.47**	**5.90**	**2.95**	**3.25**	**3.37**

Total for Period = 43.08 Inches

Data Collected Midnight- Midnight

Measurements shown in Inches

University of Delaware

ET and NAI-1492 for Weed Control in Field Corn

Trial ID: Corn1-15 Location: Field #7 Trial Year:
Protocol ID: Corn1-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact: Nichino

Investigator: Mark VanGessel Title: Extension Weed Specialist
Organization: University of Delaware
Address: 16483 County Seat Hwy
City+State/Prov: Georgetown, Delaware
Postal Code: 19947 E-mail: mjv@udel.edu
Country: USA United States

Crop Description

Crop 1: ZEAMX Zea mays Corn
Variety: N68B3111 BBCH Scale: BCOR
Planting Date: 05/05/15
Planting Rate, Unit: 20000 S/A Planting Method: PLANTD planted
Depth, Unit: 2 in Planting Equipment: FE Field Equipment
Row Spacing, Unit: 30 in Emergence Date: 05/12/15
Soil Temperature, Unit: 89 F
Soil Moisture: NORMAL normal, adequate
Seed Bed: MEDTRA medium/trashy

Site and Design

Treated Plot Width: 10 FT Site Type: FIELD field
Treated Plot Length: 25 FT
Treated Plot Area: 250 FT2 Treatments: 12 Tillage Type: NOTILL no-till
Replications: 3 Study Design: FACTOR Factorial

Soil Description

% Sand: 78 % OM: 2.5 Texture: SL sandy loam
% Silt: 13 pH: 4.8
% Clay: 9 CEC: 7.0 Fert. Level: G good
Soil Drainage: G good

Moisture and Weather Conditions

Overall Moisture Conditions: NORMAL normal
Closest Weather Station: UD REC Distance, Unit: 0.1 mi

Application Description

	A
Application Date:	05/06/15
Appl. Stop Time:	08:15 AM
Application Method:	SPRAY
Application Timing:	PRE
Application Placement:	BROADC
Applied By:	Johnson
Air Temperature, Unit:	65 F
% Relative Humidity:	84
Wind Velocity, Unit:	0 mph
Wind Direction:	N/A
Dew Presence (Y/N):	N no
Soil Temperature, Unit:	65 F
Soil Moisture:	NORMAL
% Cloud Cover:	30

University of Delaware

Crop Stage At Each Application

	A
Crop 1 Code, BBCH Scale:	ZEAMX BCOR

Application Equipment

	A
Appl. Equipment:	Tractor
Equipment Type:	TRMOSP
Operation Pressure, Unit:	40 psi
Nozzle Type:	AIRMIX
Nozzle Size:	11002
Nozzle Spacing, Unit:	20 in
Boom Length, Unit:	10 ft
Boom Height, Unit:	18 in
Ground Speed, Unit:	3 mph
Carrier:	WATER
Spray Volume, Unit:	20 gal/ac
Mix Size, Unit:	0.7 Gallons
Propellant:	COMAIR

Trial Comments

University of Delaware

ET and NAI-1492 for Weed Control in Field Corn

Trial ID: Corn1-15 Location: Field #7 Trial Year:
Protocol ID: Corn1-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact: Nichino

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	ZEAMX Corn Stunting % 05/22/15	ZEAMX Corn Stunting % 06/01/15	AMAPA PalmerAm Control % 06/01/15	DIGSA L.crbgrs Control % 06/01/15
1	NAI-1492	4	L	0	lb ai/a	PRE		0.0 b	0.0 a	0.0 e	0.0 b
	ET.....pyraflufen	0.208	EC	0	lb ai/a	PRE					
2	NAI-1492	4	L	0	lb ai/a	PRE	A	0.0 b	2.3 a	0.0 e	0.0 b
	ET.....pyraflufen	0.208	EC	0.00447	lb ai/a	PRE	A				
3	NAI-1492	4	L	0.125	lb ai/a	PRE	A	0.0 b	0.0 a	0.0 e	0.0 b
	ET.....pyraflufen	0.208	EC	0	lb ai/a	PRE	A				
4	NAI-1492	4	L	0.125	lb ai/a	PRE	A	1.7 b	0.0 a	6.7 de	0.0 b
	ET.....pyraflufen	0.208	EC	0.00447	lb ai/a	PRE	A				
5	NAI-1492	4	L	0.25	lb ai/a	PRE	A	0.0 b	3.3 a	16.4 cd	0.0 b
	ET.....pyraflufen	0.208	EC	0	lb ai/a	PRE	A				
6	NAI-1492	4	L	0.25	lb ai/a	PRE	A	1.0 b	2.3 a	26.7 c	0.0 b
	ET.....pyraflufen	0.208	EC	0.00447	lb ai/a	PRE	A				
7	NAI-1492	4	L	0.5	lb ai/a	PRE	A	0.0 b	3.3 a	46.5 b	8.7 b
	ET.....pyraflufen	0.208	EC	0	lb ai/a	PRE	A				
8	NAI-1492	4	L	0.5	lb ai/a	PRE	A	7.0 a	5.7 a	50.0 b	0.0 b
	ET.....pyraflufen	0.208	EC	0.00447	lb ai/a	PRE	A				
9	NAI-1492	4	L	0.75	lb ai/a	PRE	A	0.0 b	7.0 a	86.7 a	53.8 a
	ET.....pyraflufen	0.208	EC	0	lb ai/a	PRE	A				
10	NAI-1492	4	L	0.75	lb ai/a	PRE	A	7.0 a	5.7 a	85.0 a	43.9 a
	ET.....pyraflufen	0.208	EC	0.00447	lb ai/a	PRE	A				
11	NAI-1492	4	L	1.0	lb ai/a	PRE	A	4.7 a	0.0 a	93.3 a	61.5 a
	ET.....pyraflufen	0.208	EC	0	lb ai/a	PRE	A				
12	NAI-1492	4	L	1.0	lb ai/a	PRE	A	0.0 b	5.7 a	89.7 a	56.5 a
	ET.....pyraflufen	0.208	EC	0.00447	lb ai/a	PRE	A				
LSD P=.05								2.45	6.56	11.60	22.32
Standard Deviation								1.45	3.88	6.81	12.65
CV								81.29	131.66	16.32	67.66
Replicate F								2.248	0.867	5.031	0.882
Replicate Prob(F)								0.1293	0.4341	0.0170	0.4373
Treatment F								11.183	1.350	95.608	13.084
Treatment Prob(F)								0.0001	0.2633	0.0001	0.0001

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.
Missing data estimates are included in columns:Yates=3,4

University of Delaware

ET and NAI-1492 for Weed Control in Field Corn

Trial ID: Corn1-15 Location: Field #7 Trial Year:
Protocol ID: Corn1-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact: Nichino

| Pest Code | | |

University of Delaware

Pest Code										AMAPA	DIGSA
Pest Name										PalmerAm	L.crbgrs
Crop Code								ZEAMX	ZEAMX		
Crop Name								Corn	Corn		
Rating Type								Stunting	Stunting	Control	Control
Rating Unit								%	%	%	%
Rating Date								05/22/15	06/01/15	06/01/15	06/01/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code				
4	NAI-1492	4	L	0.5	lb ai/a	PRE	A	7.0 a	5.7 a	50.0 a	0.0 a
2	ET.....pyraflufen	0.208	EC	0.00447	lb ai/a	PRE	A				
5	NAI-1492	4	L	0.75	lb ai/a	PRE	A	7.0 a	5.7 a	85.0 a	43.9 a
2	ET.....pyraflufen	0.208	EC	0.00447	lb ai/a	PRE	A				
6	NAI-1492	4	L	1.0	lb ai/a	PRE	A	0.0 b	5.7 a	89.7 a	56.5 a
2	ET.....pyraflufen	0.208	EC	0.00447	lb ai/a	PRE	A				
LSD P=.05								2.45	6.56	11.60	22.32
Standard Deviation								1.45	3.88	6.81	12.65
CV								81.29	131.66	16.32	67.66

FACTORIAL/POOLED ERROR AOV For ZEAMX Corn Stunting % 05/22/15

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	35	312.222222				
R	2	9.388889	4.694444	2.248	0.1293	
A	5	71.555556	14.311111	6.853	0.0005	1.7
B	1	36.000000	36.000000	17.238	0.0004	1.0
AB	5	149.333333	29.866667	14.301	0.0001	2.4
ERROR	22	45.944444	2.088384			

FACTORIAL/POOLED ERROR AOV For ZEAMX Corn Stunting % 06/01/15

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	35	579.888889				
R	2	26.055556	13.027778	0.867	0.4341	
A	5	154.555556	30.911111	2.057	0.1098	4.6
B	1	16.000000	16.000000	1.065	0.3134	2.7
AB	5	52.666667	10.533333	0.701	0.6286	6.6
ERROR	22	330.611111	15.027778			

FACTORIAL/POOLED ERROR AOV For AMAPA PalmerAm Control % 06/01/15 Missing values in column 3 results in unbalanced data, Least Squares Analysis is preferred

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	33	50182.644015				
R	2	466.754779	233.377390	5.031	0.0170	
A	5	48521.606368	9704.321274	209.188	0.0001	8.2
B	1	57.002596	57.002596	1.229	0.2808	4.7
AB	5	209.471939	41.894388	0.903	0.4984	11.6
ERROR	20	927.808333	46.390417			

FACTORIAL/POOLED ERROR AOV For DIGSA L.crbgrs Control % 06/01/15 Missing values in column 4 results in unbalanced data, Least Squares Analysis is preferred

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	26	25401.150816				
R	2	282.369356	141.184678	0.882	0.4373	
A	5	22741.383071	4548.276614	28.415	0.0001	15.8
B	1	138.180646	138.180646	0.863	0.3698	9.1
AB	5	158.365295	31.673059	0.198	0.9577	22.3
ERROR	13	2080.852449	160.065573			

University of Delaware

Weed Control and Crop Response with SYN-A205 and Acuron in Field Corn

Trial ID: Corn2-15 Location: Field #16 Trial Year:
Protocol ID: Corn2-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact: Syngenta

Crop Description

Crop 1: ZEAMX Zea mays Corn
Variety: H5410RC3P BBCH Scale: BCOR
Planting Date: 04/28/15
Planting Rate, Unit: 30000 S/A Planting Method: PLANTD planted
Depth, Unit: 2 in Planting Equipment: FE Field Equipment
Row Spacing, Unit: 30 in Emergence Date: 05/07/15
Harvest Date: 09/15/15
Harvested Width, Unit: 5 ft
Soil Temperature, Unit: 67 F Harvested Length, Unit: 25 ft
Soil Moisture: NORMAL normal, adequate Harvest Equipment: Plot combine
Seed Bed: MEDIUM medium % Standard Moisture: 15.5

Site and Design

Treated Plot Width: 10 FT Site Type: FIELD field
Treated Plot Length: 25 FT
Treated Plot Area: 250 FT2 Treatments: 10 Tillage Type: CONTIL conventional-till
Replications: 3 Study Design: RACOBL Randomized Complete Block (RCB)

Soil Description

% Sand: 77 % OM: 0.9 Texture: SL sandy loam
% Silt: 12 pH: 5.9
% Clay: 11 CEC: 5.6 Fert. Level: G good
Soil Drainage: F fair

Moisture and Weather Conditions

Overall Moisture Conditions: NORMAL normal
Closest Weather Station: UD REC Distance, Unit: 0.5 mi

Application Description

	A	B	C
Application Date:	04/29/15	05/12/15	05/22/15
Appl. Stop Time:	08:30 AM	08:30 AM	08:20 AM
Interval to Prev. Appl., Unit:		13 DAYS	10 DAYS
Application Method:	SPRAY	SPRAY	SPRAY
Application Timing:	PRE	EaPost	Post
Application Placement:	BROADC	BROADC	BROADC
Applied By:	Johnson	Johnson	Johnson
Air Temperature, Unit:	58 F	75 F	54 F
% Relative Humidity:	56	78	80
Wind Velocity, Unit:	0 mph	7 mph	3 mph
Wind Direction:	N/A	SW	NW
Dew Presence (Y/N):	N no	N no	Y yes
Soil Temperature, Unit:	57 F	75 F	54 F
Soil Moisture:	NORMAL	NORMAL	WET
% Cloud Cover:	5	20	0

University of Delaware

Crop Stage At Each Application

	A	B	C
Crop 1 Code, BBCH Scale:	ZEAMX BCOR	ZEAMX BCOR	ZEAMX BCOR
Stage Scale Used:		DESC	DESC
Stage Majority, Percent:		V2 80	V4 100
Stage Minimum, Percent:		V1 20	
Stage Maximum, Percent:		V2 80	
Height, Unit:		3 in	7 in
Height Minimum, Maximum:		2.5 4	6 8

Application Equipment

	A	B	C
Appl. Equipment:	Tractor	Tractor	Tractor
Equipment Type:	TRMOSP	TRMOSP	TRMOSP
Operation Pressure, Unit:	40 psi	40 psi	40 psi
Nozzle Type:	AIRMIX	AIRMIX	AIRMIX
Nozzle Size:	11002	11002	11002
Nozzle Spacing, Unit:	20 in	20 in	20 in
Boom Length, Unit:	10 ft	10 ft	10 ft
Boom Height, Unit:	18 in	20 in	24 in
Ground Speed, Unit:	3 mph	3 mph	3 mph
Carrier:	WATER	WATER	WATER
Spray Volume, Unit:	20 gal/ac	20 gal/ac	20 gal/ac
Mix Size, Unit:	0.7 Gallons	0.7 Gallons	0.7 Gallons
Propellant:	COMAIR	COMAIR	COMAIR

Trial Comments

05/22/15: V1-2 5/12. Giant foxtail and large crabgrass density was inconsistent over the trial area.
Treatments 8, 7 poor control of large crabgrass. Treatments 5, 9 poor control of giant foxtail.
Treatments 5, 4 weak/poor control of common cocklebur.

05/30/15: Little to no control of common cocklebur in treatments 4, 5, and 7. Crabgrass emergence since last rating.
Palmer amaranth density was light and inconstant in experimental site.
Common lambsquarters in all of the untreated check plots, but not observed in the treatments.
All treatments provided good to excellent control of common lambsquarters.

06/25/15: Poor grass control in treatments 4, 5, 6, and 7.

University of Delaware

Weed Control and Crop Response with SYN-A205 and Acuron in Field Corn

Trial ID: Corn2-15 Location: Field #16 Trial Year:
Protocol ID: Corn2-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact: Syngenta

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	ZEAMX Corn Stunting	ZEAMX Corn Stunting	AMBEL C.ragwd Control	CHEAL C.lmsqtr Control
	Crop Code							ZEAMX	ZEAMX		
	Crop Name							Corn	Corn		
	Rating Type							Stunting	Stunting	Control	Control
	Rating Unit							%	%	%	%
	Rating Date							05/14/15	05/22/15	05/22/15	05/22/15
1	Untreated Check							0.0 c	0.0 a	0.0 d	0.0 b
2	A20540	3.25	ZC	1.62	lb ai/a	PRE	A	0.0 c	0.0 a	80.0 ab	100.0 a
3	Acuron Premix	3.44	ZC	2.15	lb ai/a	PRE	A	0.0 c	5.7 a	90.0 a	100.0 a
	----atrazine	1		0.625							
	----bicyclopyrone	0.06		0.0375							
	----mesotrione	0.24		0.15							
	----s-metolachlor	2.14		1.34							
4	SureStart Premix	4.25	SE	1.06	lb ai/a	PRE	A	5.7 b	2.3 a	66.7 bc	100.0 a
	----acetochlor	3.75		0.935							
	----clopyralid	0.38		0.095							
	----flumetsulam	0.12		0.03							
5	Corvus Premix	2.63	SC	0.115	lb ai/a	PRE	A	6.3 b	1.7 a	51.7 c	100.0 a
	----thiencarbazone	0.75		0.0328							
	----isoxaflutole	1.88		0.082							
6	Instigate Premix	45.8	WG	0.172	lb ai/a	PRE	A	10.7 a	8.0 a	66.7 bc	100.0 a
	----rimsulfuron	4.15		0.0156							
	----mesotrione	41.65		0.156							
7	Verdict Premix	5.57	EC	0.435	lb ai/a	PRE	A	2.3 c	4.0 a	81.7 ab	100.0 a
	----saflufenacil	0.57		0.0445							
	----dimethenamid	5		0.39							
8	Acuron Premix	3.44	ZC	1.08	lb ai/a	PRE	A	0.0 c	7.3 a	66.7 bc	100.0 a
	----atrazine	1		0.314							
	----bicyclopyrone	0.06		0.0188							
	----mesotrione	0.24		0.075							
	----s-metolachlor	2.14		0.67							
	Acuron Premix	3.44	ZC	1.08	lb ai/a	Post	C				
	----atrazine	1		0.314							
	----bicyclopyrone	0.06		0.0188							
	----mesotrione	0.24		0.075							
	----s-metolachlor	2.14		0.67							
	Dry Ammonium Sulfate	100	D	1.02	% w/v	Post	C				
	Nonionic Surfactant	100	L	0.25	% v/v	Post	C				

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.
Missing data estimates are included in columns:Yates=5,9,11,13,16; Average=12
Could not calculate LSD (% mean diff) for columns 4 because error mean square = 0.

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code				
	Pest Code									AMBEL	CHEAL
	Pest Name									C.ragwd	C.lmsqtr
	Crop Code							ZEAMX	ZEAMX		
	Crop Name							Corn	Corn		
	Rating Type							Stunting	Stunting	Control	Control
	Rating Unit							%	%	%	%
	Rating Date							05/14/15	05/22/15	05/22/15	05/22/15
9	Acuron Premix	3.44	ZC	1.08	lb ai/a	PRE	A	0.0 c	1.7 a	56.7 c	100.0 a
	----atrazine	1		0.314							
	----bicyclopyrone	0.06		0.0188							
	----mesotrione	0.24		0.075							
	----s-metolachlor	2.14		0.67							
	Halex GT Premix	4.376	SC	1.97	lb ai/a	Post	C				
	----s-metolachlor	2.084		0.94							
	----glyphosate	2.084		0.94							
	----mesotrione	0.208		0.094							
	Dry Ammonium Sulfate	100	D	1.02	% w/v	Post	C				
	Nonionic Surfactant	100	L	0.25	% v/v	Post	C				
10	Acuron Premix	3.44	ZC	2.58	lb ai/a	EaPost	B		7.3 a	100.0 a	100.0 a
	----atrazine	1		0.75							
	----bicyclopyrone	0.06		0.045							
	----mesotrione	0.24		0.18							
	----s-metolachlor	2.14		1.6							
	Touchdown Total...glyphosate	4.17	SL	1.04	lb ae/a	Post	C				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	Post	C				
	LSD P=.05							2.51	6.05	22.00	.
	Standard Deviation							1.45	3.52	12.82	0.00
	CV							52.31	92.75	19.43	0.0
	Replicate F							1.632	0.902	5.899	0.000
	Replicate Prob(F)							0.2265	0.4235	0.0107	1.0000
	Treatment F							21.671	2.315	13.831	0.000
	Treatment Prob(F)							0.0001	0.0619	0.0001	1.0000

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	IPOSS mornglry Control % 05/22/15	ZEAMX Corn Stunting % 05/30/15	ZEAMX Corn LeafBurn % 05/30/15	AMAPA PalmerAm Control % 05/30/15
1	Untreated Check							0.0 e	0.0 c	0.0 c	0.0 b
2	A20540	3.25	ZC	1.62	lb ai/a	PRE	A	80.0 abc	0.0 c	0.0 c	90.0 a
3	Acuron Premix	3.44	ZC	2.15	lb ai/a	PRE	A	86.0 ab	6.3 ab	0.0 c	100.0 a
	----atrazine	1		0.625							
	----bicyclopyrone	0.06		0.0375							
	----mesotrione	0.24		0.15							
	----s-metolachlor	2.14		1.34							
4	SureStart Premix	4.25	SE	1.06	lb ai/a	PRE	A	70.0 bcd	2.3 bc	0.0 c	95.0 a
	----acetochlor	3.75		0.935							
	----clopyralid	0.38		0.095							
	----flumetsulam	0.12		0.03							
5	Corvus Premix	2.63	SC	0.115	lb ai/a	PRE	A	58.3 d	8.0 a	0.0 c	100.0 a
	----thiencarbazone	0.75		0.0328							
	----isoxaflutole	1.88		0.082							
6	Instigate Premix	45.8	WG	0.172	lb ai/a	PRE	A	73.3 bcd	7.0 a	0.0 c	90.0 a
	----rimsulfuron	4.15		0.0156							
	----mesotrione	41.65		0.156							
7	Verdict Premix	5.57	EC	0.435	lb ai/a	PRE	A	71.0 bcd	0.0 c	0.0 c	100.0 a
	----saflufenacil	0.57		0.0445							
	----dimethenamid	5		0.39							
8	Acuron Premix	3.44	ZC	1.08	lb ai/a	PRE	A	68.3 cd	4.0 abc	14.0 a	100.0 a
	----atrazine	1		0.314							
	----bicyclopyrone	0.06		0.0188							
	----mesotrione	0.24		0.075							
	----s-metolachlor	2.14		0.67							
	Acuron Premix	3.44	ZC	1.08	lb ai/a	Post	C				
	----atrazine	1		0.314							
	----bicyclopyrone	0.06		0.0188							
	----mesotrione	0.24		0.075							
	----s-metolachlor	2.14		0.67							
	Dry Ammonium Sulfate	100	D	1.02	% w/v	Post	C				
	Nonionic Surfactant	100	L	0.25	% v/v	Post	C				

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code				
	Pest Code							IPOSS			AMAPA
	Pest Name							mornglry			PalmerAm
	Crop Code								ZEAMX	ZEAMX	
	Crop Name								Corn	Corn	
	Rating Type							Control	Stunting	LeafBurn	Control
	Rating Unit							%	%	%	%
	Rating Date							05/22/15	05/30/15	05/30/15	05/30/15
9	Acuron Premix	3.44	ZC	1.08	lb ai/a	PRE	A	64.6 cd	2.3 bc	0.0 c	100.0 a
	----atrazine	1		0.314							
	----bicyclopyrone	0.06		0.0188							
	----mesotrione	0.24		0.075							
	----s-metolachlor	2.14		0.67							
	Halex GT Premix	4.376	SC	1.97	lb ai/a	Post	C				
	----s-metolachlor	2.084		0.94							
	----glyphosate	2.084		0.94							
	----mesotrione	0.208		0.094							
	Dry Ammonium Sulfate	100	D	1.02	% w/v	Post	C				
	Nonionic Surfactant	100	L	0.25	% v/v	Post	C				
10	Acuron Premix	3.44	ZC	2.58	lb ai/a	EaPost	B	92.7 a	7.3 a	4.7 b	100.0 a
	----atrazine	1		0.75							
	----bicyclopyrone	0.06		0.045							
	----mesotrione	0.24		0.18							
	----s-metolachlor	2.14		1.6							
	Touchdown Total...glyphosate	4.17	SL	1.04	lb ae/a	Post	C				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	Post	C				
	LSD P=.05							16.95	4.19	2.43	13.74
	Standard Deviation							9.84	2.44	1.42	8.01
	CV							14.81	65.43	75.97	9.15
	Replicate F							0.146	0.441	0.613	1.519
	Replicate Prob(F)							0.8654	0.6499	0.5525	0.2456
	Treatment F							20.053	5.274	30.320	45.000
	Treatment Prob(F)							0.0001	0.0014	0.0001	0.0001

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	AMBEL C.ragwd	IPOSS nornglry	GGGAN AnnGrass	AMBEL C.ragwd
	Pest Code							AMBEL	IPOSS	GGGAN	AMBEL
	Pest Name							C.ragwd	nornglry	AnnGrass	C.ragwd
	Crop Code										
	Crop Name										
	Rating Type							Control	Control	Control	Control
	Rating Unit							%	%	%	%
	Rating Date							05/30/15	05/30/15	05/30/15	06/25/15
1	Untreated Check							0.0 f	0.0 d	0.0 d	0.0 d
2	A20540	3.25	ZC	1.62	lb ai/a	PRE	A	76.4 c	73.3 bc	91.7 ab	96.7 a
3	Acuron Premix	3.44	ZC	2.15	lb ai/a	PRE	A	87.9 b	86.3 ab	93.0 ab	99.0 a
	----atrazine	1		0.625							
	----bicyclopyrone	0.06		0.0375							
	----mesotrione	0.24		0.15							
	----s-metolachlor	2.14		1.34							
4	SureStart Premix	4.25	SE	1.06	lb ai/a	PRE	A	66.7 cd	65.0 c	75.4 c	65.0 b
	----acetochlor	3.75		0.935							
	----clopyralid	0.38		0.095							
	----flumetsulam	0.12		0.03							
5	Corvus Premix	2.63	SC	0.115	lb ai/a	PRE	A	61.7 de	60.0 c	75.0 c	60.0 c
	----thiencarbazone	0.75		0.0328							
	----isoxaflutole	1.88		0.082							
6	Instigate Premix	45.8	WG	0.172	lb ai/a	PRE	A	66.7 cd	59.3 c	83.3 bc	60.0 c
	----rimsulfuron	4.15		0.0156							
	----mesotrione	41.65		0.156							
7	Verdict Premix	5.57	EC	0.435	lb ai/a	PRE	A	51.7 e	56.7 c	86.0 abc	60.0 c
	----saflufenacil	0.57		0.0445							
	----dimethenamid	5		0.39							
8	Acuron Premix	3.44	ZC	1.08	lb ai/a	PRE	A	100.0 a	95.7 a	96.7 ab	100.0 a
	----atrazine	1		0.314							
	----bicyclopyrone	0.06		0.0188							
	----mesotrione	0.24		0.075							
	----s-metolachlor	2.14		0.67							
	Acuron Premix	3.44	ZC	1.08	lb ai/a	Post	C				
	----atrazine	1		0.314							
	----bicyclopyrone	0.06		0.0188							
	----mesotrione	0.24		0.075							
	----s-metolachlor	2.14		0.67							
	Dry Ammonium Sulfate	100	D	1.02	% w/v	Post	C				
	Nonionic Surfactant	100	L	0.25	% v/v	Post	C				

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	AMBEL C.ragwd	IPOSS nornglry	GGGAN AnnGrass	AMBEL C.ragwd
	Pest Code							AMBEL	IPOSS	GGGAN	AMBEL
	Pest Name							C.ragwd	nornglry	AnnGrass	C.ragwd
	Crop Code										
	Crop Name										
	Rating Type							Control	Control	Control	Control
	Rating Unit							%	%	%	%
	Rating Date							05/30/15	05/30/15	05/30/15	06/25/15
9	Acuron Premix	3.44	ZC	1.08	lb ai/a	PRE	A	96.7 ab	96.3 a	99.7 a	100.0 a
	----atrazine	1		0.314							
	----bicyclopyrone	0.06		0.0188							
	----mesotrione	0.24		0.075							
	----s-metolachlor	2.14		0.67							
	Halex GT Premix	4.376	SC	1.97	lb ai/a	Post	C				
	----s-metolachlor	2.084		0.94							
	----glyphosate	2.084		0.94							
	----mesotrione	0.208		0.094							
	Dry Ammonium Sulfate	100	D	1.02	% w/v	Post	C				
	Nonionic Surfactant	100	L	0.25	% v/v	Post	C				
10	Acuron Premix	3.44	ZC	2.58	lb ai/a	EaPost	B	100.0 a	94.0 a	100.0 a	100.0 a
	----atrazine	1		0.75							
	----bicyclopyrone	0.06		0.045							
	----mesotrione	0.24		0.18							
	----s-metolachlor	2.14		1.6							
	Touchdown Total...glyphosate	4.17	SL	1.04	lb ae/a	Post	C				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	Post	C				
	LSD P=.05							10.18	19.79	14.63	4.73
	Standard Deviation							5.85	11.53	8.49	2.68
	CV							8.26	16.8	10.6	3.62
	Replicate F							4.502	0.675	0.791	2.037
	Replicate Prob(F)							0.0294	0.5218	0.4694	0.1700
	Treatment F							79.847	18.805	36.360	432.022
	Treatment Prob(F)							0.0001	0.0001	0.0001	0.0001

Pest Code							IPOSS	
Pest Name							morngIry	
Crop Code								ZEAMX
Crop Name								Corn
Rating Type							Control	Yield
Rating Unit							%	Bu/A
Rating Date							06/25/15	09/15/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code		
1	Untreated Check							0.0 c	86.1 a
2	A20540	3.25	ZC	1.62	lb ai/a	PRE	A	80.0 a	111.5 a
3	Acuron Premix	3.44	ZC	2.15	lb ai/a	PRE	A	87.0 a	86.0 a
	----atrazine	1		0.625					
	----bicyclopyrone	0.06		0.0375					
	----mesotrione	0.24		0.15					
	----s-metolachlor	2.14		1.34					
4	SureStart Premix	4.25	SE	1.06	lb ai/a	PRE	A	53.3 b	83.5 a
	----acetochlor	3.75		0.935					
	----clopyralid	0.38		0.095					
	----flumetsulam	0.12		0.03					
5	Corvus Premix	2.63	SC	0.115	lb ai/a	PRE	A	60.0 b	83.4 a
	----thiencarbazone	0.75		0.0328					
	----isoxaflutole	1.88		0.082					
6	Instigate Premix	45.8	WG	0.172	lb ai/a	PRE	A	61.7 b	83.1 a
	----rimsulfuron	4.15		0.0156					
	----mesotrione	41.65		0.156					
7	Verdict Premix	5.57	EC	0.435	lb ai/a	PRE	A	50.0 b	82.4 a
	----saflufenacil	0.57		0.0445					
	----dimethenamid	5		0.39					
8	Acuron Premix	3.44	ZC	1.08	lb ai/a	PRE	A	87.7 a	112.2 a
	----atrazine	1		0.314					
	----bicyclopyrone	0.06		0.0188					
	----mesotrione	0.24		0.075					
	----s-metolachlor	2.14		0.67					
	Acuron Premix	3.44	ZC	1.08	lb ai/a	Post	C		
	----atrazine	1		0.314					
	----bicyclopyrone	0.06		0.0188					
	----mesotrione	0.24		0.075					
	----s-metolachlor	2.14		0.67					
	Dry Ammonium Sulfate	100	D	1.02	% w/v	Post	C		
	Nonionic Surfactant	100	L	0.25	% v/v	Post	C		

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Pest Code							IPOSS	
Pest Name							mornglry	
Crop Code								ZEAMX
Crop Name								Corn
Rating Type							Control	Yield
Rating Unit							%	Bu/A
Rating Date							06/25/15	09/15/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	
9	Acuron Premix	3.44	ZC	1.08	lb ai/a	PRE	A	82.3 a	105.5 a
	----atrazine	1		0.314				
	----bicyclopyrone	0.06		0.0188				
	----mesotrione	0.24		0.075				
	----s-metolachlor	2.14		0.67				
	Halex GT Premix	4.376	SC	1.97	lb ai/a	Post	C	
	----s-metolachlor	2.084		0.94				
	----glyphosate	2.084		0.94				
	----mesotrione	0.208		0.094				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	Post	C	
	Nonionic Surfactant	100	L	0.25	% v/v	Post	C	
10	Acuron Premix	3.44	ZC	2.58	lb ai/a	EaPost	B	86.0 a	111.2 a
	----atrazine	1		0.75				
	----bicyclopyrone	0.06		0.045				
	----mesotrione	0.24		0.18				
	----s-metolachlor	2.14		1.6				
	Touchdown Total...glyphosate	4.17	SL	1.04	lb ae/a	Post	C	
	Dry Ammonium Sulfate	100	D	1.02	% w/v	Post	C	
LSD P=.05								12.74	39.08
Standard Deviation								7.40	22.69
CV								11.41	24.01
Replicate F								0.007	0.609
Replicate Prob(F)								0.9927	0.5554
Treatment F								40.136	1.080
Treatment Prob(F)								0.0001	0.4248

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PRE and POST Weed Control in Field Corn

Trial ID: Corn3-15 Location: Field #16 Trial Year:
Protocol ID: Corn3-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact: Dow

Investigator: Mark VanGessel Title: Extension Weed Specialist
Organization: University of Delaware
Address: 16483 County Seat Hwy
City+State/Prov: Georgetown, Delaware
Postal Code: 19947 E-mail: mjv@udel.edu
Country: USA United States

Crop Description

Crop 1: ZEAMX Zea mays Corn
Variety: H5410RC3P BBCH Scale: BCOR
Planting Date: 04/28/15
Planting Rate, Unit: 30000 S/A Planting Method: PLANTD planted
Depth, Unit: 2 in Planting Equipment: FE Field Equipment
Row Spacing, Unit: 30 in Emergence Date: 05/07/15
Harvest Date: 09/15/15
Harvested Width, Unit: 5 ft
Soil Temperature, Unit: 67 F Harvested Length, Unit: 25 ft
Soil Moisture: NORMAL normal, adequate Harvest Equipment: Plot combine
Seed Bed: MEDIUM medium % Standard Moisture: 15.5

Pest Description

Pest 1 Type: W Code: AMBEL Ambrosia artemisiifolia
Common Name: Common ragweed

Pest 2 Type: W Code: GGGAN Annual grasses
Common Name: Annual grasses

Pest 3 Type: W Code: IPOSS Ipomoea sp.
Common Name: Morning glory

Pest 4 Type: W Code: AMAPA Amaranthus palmeri
Common Name: Palmer amaranth

Site and Design

Treated Plot Width: 10 FT Site Type: FIELD field
Treated Plot Length: 25 FT
Treated Plot Area: 250 FT2 Treatments: 8 Tillage Type: CONTIL conventional-till
Replications: 3 Study Design: RACOBL Randomized Complete Block (RCB)

Soil Description

% Sand: 77 % OM: 0.9 Texture: SL sandy loam
% Silt: 12 pH: 5.9
% Clay: 11 CEC: 5.6 Fert. Level: G good
Soil Drainage: F fair

Moisture and Weather Conditions

Overall Moisture Conditions: NORMAL normal
Closest Weather Station: UD REC Distance, Unit: 0.5 mi

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Application Description

	A	B	C
Application Date:	04/29/15	05/22/15	05/27/15
Appl. Stop Time:	09:00 AM	08:30 AM	11:00 AM
Interval to Prev. Appl., Unit:		23 DAYS	5 DAYS
Application Method:	SPRAY	SPRAY	SPRAY
Application Timing:	PRE	EaPost	POST
Application Placement:	BROADC	BROADC	BROADC
Applied By:	Johnson	Johnson	VanGessl
Air Temperature, Unit:	65 F	54 F	73 F
% Relative Humidity:	47	80	68
Wind Velocity, Unit:	0 mph	3 mph	7 mph
Wind Direction:	N/A	NW	NE
Dew Presence (Y/N):	N no	Y yes	N no
Soil Temperature, Unit:	64 F	54 F	73 F
Soil Moisture:	NORMAL	WET	NORMAL
% Cloud Cover:	5	0	80

Crop Stage At Each Application

	A	B	C
Crop 1 Code, BBCH Scale:	ZEAMX BCOR	ZEAMX BCOR	ZEAMX BCOR
Stage Scale Used:		DESC	DESC
Stage Majority, Percent:		V4 100	V6 100
Height, Unit:		7 in	12 in
Height Minimum, Maximum:		6 8	10 13

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Pest Stage At Each Application

	A	B	C
Pest 1 Code, Type, Scale:	AMBEL W	AMBEL W	AMBEL W
Stage Majority, Percent:		4-leaf 70	veg 100
Stage Minimum, Percent:		2-leaf 10	
Stage Maximum, Percent:		6-leaf 20	
Height, Unit:		3 in	3 in
Height Minimum, Maximum:		2 4	2 4
Density, Unit:		50 m2	50 m2
Pest 2 Code, Type, Scale:	GGGAN W	GGGAN W	GGGAN W
Stage Majority, Percent:		3-leaf 60	3-leaf 70
Stage Minimum, Percent:		3-leaf 60	3-leaf 70
Stage Maximum, Percent:		4-leaf 40	2-tilr 30
Height, Unit:		3 in	4 in
Height Minimum, Maximum:		2.5 3.5	2 6
Density, Unit:		30 m2	30 m2
Pest 3 Code, Type, Scale:	IPOSS W	IPOSS W	IPOSS W
Stage Majority, Percent:		2-leaf 70	veg 100
Stage Minimum, Percent:		cotyl 30	
Stage Maximum, Percent:		2-leaf 70	
Height, Unit:		2 in	2 in
Height Minimum, Maximum:		1 2	1 3
Density, Unit:		6 m2	4 m2
Pest 4 Code, Type, Scale:	AMAPA W	AMAPA W	AMAPA W
Stage Majority, Percent:		veg 100	veg 100
Height, Unit:		1.5 in	3 in
Height Minimum, Maximum:		1 2	3 4
Density, Unit:		2 m2	2 m2

Application Equipment

	A	B	C
Appl. Equipment:	Tractor	Tractor	Backpack
Equipment Type:	TRMOSP	TRMOSP	SPRBAC
Operation Pressure, Unit:	40 psi	40 psi	31 psi
Nozzle Type:	AIRMIX	AIRMIX	AIRMIX
Nozzle Size:	11002	11002	11002
Nozzle Spacing, Unit:	20 in	20 in	18 in
Boom Length, Unit:	10 ft	10 ft	9 ft
Boom Height, Unit:	18 in	24 in	28 in
Ground Speed, Unit:	3 mph	3 mph	3 mph
Carrier:	WATER	WATER	WATER
Spray Volume, Unit:	20 gal/ac	20 gal/ac	20 gal/ac
Mix Size, Unit:	0.7 Gallons	0.7 Gallons	2 Liters
Propellant:	COMAIR	COMAIR	COMCO2

Trial Comments

05/20/15: No injury observed.

05/30/15: Large crabgrass emerging in plots since last rating. Common lambsquarters in all untreated checks but excellent control with all treatments. Poor control of common cocklebur in treatment 2.

06/25/15: Poor grass (large crabgrass and fall panicum) control in treatments 3, 7, and 8.

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PRE and POST Weed Control in Field Corn

Trial ID: Corn3-15 Location: Field #16 Trial Year:
Protocol ID: Corn3-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact: Dow

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code		AMAPA PalmerAm	AMBEL C.ragwd	CHEAL C.lmsqtr
	Pest Code										
	Pest Name										
	Crop Code							ZEAMX			
	Crop Name							Corn			
	Rating Type							Stunting	Control	Control	Control
	Rating Unit							%	%	%	%
	Rating Date							05/14/15	05/20/15	05/20/15	05/20/15
1	Untreated Check							0.0 a	0.0 b	0.0 b	0.0 d
2	Keystone LA NXT Premix	6	SE	3.45	lb ai/a	PRE	A	0.0 a	100.0 a	60.0 a	100.0 a
	----acetochlor	4.3		2.47							
	----atrazine	1.7		0.98							
	Prowl H2O.....pendimethalin	3.8	CS	0.95	lb ai/a	PRE	A				
3	Keystone NXT Premix	5.6	SE	3.36	lb ai/a	PRE	A	0.0 a	100.0 a	60.0 a	100.0 a
	----acetochlor	3.1		1.86							
	----atrazine	2.5		1.5							
	Prowl H2O.....pendimethalin	3.8	CS	0.95	lb ai/a	PRE	A				
4	SureStart Premix	4.25	SE	1.06	lb ai/a	EaPost	B	4.7 a	0.0 b	0.0 b	0.0 d
	----acetochlor	3.75		0.935							
	----clopyralid	0.38		0.095							
	----flumetsulam	0.12		0.03							
	Atrazine 4L	4	L	1	lb ai/a	EaPost	B				
	Durango DMA.....glyphosate	4	SL	1	lb ae/a	EaPost	B				
5	GF-3471	3.28	SE	1.85	lb ai/a	PRE	A	4.0 a	100.0 a	71.0 a	100.0 a
	Atrazine 4L	4	L	1.5	lb ai/a	PRE	A				
	Durango DMA.....glyphosate	4	SL	1	lb ae/a	Post	C				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	Post	C				
6	GF-3471	3.28	SE	1.23	lb ai/a	PRE	A	4.7 a	100.0 a	67.7 a	100.0 c
	Atrazine 4L	4	L	1	lb ai/a	PRE	A				
	GF-3471	3.28	SE	1.03	lb ai/a	Post	C				
	Atrazine 4L	4	L	0.5	lb ai/a	Post	C				
	Durango DMA.....glyphosate	4	SL	1	lb ae/a	Post	C				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	Post	C				
7	Lexar EZ Premix	3.71	SC	2.78	lb ai/a	PRE	A	0.0 a	100.0 a	68.3 a	100.0 a
	----s-metolachlor	1.742819		1.3							
	----mesotrione	0.2243629		0.168							
	----atrazine	1.742819		1.3							

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.
Missing data estimates are included in columns:Yates=3,4,6; Average=12
Could not calculate LSD (% mean diff) for columns 2,4 because error mean square = 0.

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code				
	Pest Code								AMAPA	AMBEL	CHEAL
	Pest Name								PalmerAm	C.ragwd	C.lmsqtr
	Crop Code							ZEAMX			
	Crop Name							Corn			
	Rating Type							Stunting	Control	Control	Control
	Rating Unit							%	%	%	%
	Rating Date							05/14/15	05/20/15	05/20/15	05/20/15
8	Acuron Premix	3.44	ZC	2.15	lb ai/a	PRE	A	2.3 a	100.0 a	65.0 a	100.0 b
	----atrazine	1		0.625							
	----bicyclopyrone	0.06		0.0375							
	----mesotrione	0.24		0.15							
	----s-metolachlor	2.14		1.34							
	Atrazine 4L	4	L	0.75	lb ai/a	PRE	A				
	LSD P=.05							4.45	.	15.06	.
	Standard Deviation							2.54	0.00	8.54	0.00
	CV							129.77	0.0	17.42	0.0
	Replicate F							2.600	0.000	0.949	0.000
	Replicate Prob(F)							0.1096	1.0000	0.4124	1.0000
	Treatment F							2.277	0.000	38.274	0.000
	Treatment Prob(F)							0.0900	1.0000	0.0001	1.0000

Pest Code								IPOSS	SETFA		
Pest Name								mornglry	G.foxtl		
Crop Code										ZEAMX	ZEAMX
Crop Name										Corn	Corn
Rating Type								Control	Control	Stunting	LeafBurn
Rating Unit								%	%	%	%
Rating Date								05/20/15	05/20/15	05/30/15	05/30/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code				
1	Untreated Check							0.0 c	0.0 c	0.0 a	0.0 d
2	Keystone LA NXT Premix	6	SE	3.45	lb ai/a	PRE	A	53.3 b	89.1 a	0.0 a	0.0 d
	----acetochlor	4.3		2.47							
	----atrazine	1.7		0.98							
	Prowl H2O.....pendimethalin	3.8	CS	0.95	lb ai/a	PRE	A				
3	Keystone NXT Premix	5.6	SE	3.36	lb ai/a	PRE	A	56.7 ab	74.2 b	0.0 a	0.0 d
	----acetochlor	3.1		1.86							
	----atrazine	2.5		1.5							
	Prowl H2O.....pendimethalin	3.8	CS	0.95	lb ai/a	PRE	A				
4	SureStart Premix	4.25	SE	1.06	lb ai/a	EaPost	B	0.0 c	0.0 c	8.3 a	14.7 b
	----acetochlor	3.75		0.935							
	----clopyralid	0.38		0.095							
	----flumetsulam	0.12		0.03							
	Atrazine 4L	4	L	1	lb ai/a	EaPost	B				
	Durango DMA.....glyphosate	4	SL	1	lb ae/a	EaPost	B				
5	GF-3471	3.28	SE	1.85	lb ai/a	PRE	A	63.3 ab	86.7 a	6.7 a	4.3 c
	Atrazine 4L	4	L	1.5	lb ai/a	PRE	A				
	Durango DMA.....glyphosate	4	SL	1	lb ae/a	Post	C				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	Post	C				
6	GF-3471	3.28	SE	1.23	lb ai/a	PRE	A	60.0 ab	81.7 ab	5.7 a	17.0 a
	Atrazine 4L	4	L	1	lb ai/a	PRE	A				
	GF-3471	3.28	SE	1.03	lb ai/a	Post	C				
	Atrazine 4L	4	L	0.5	lb ai/a	Post	C				
	Durango DMA.....glyphosate	4	SL	1	lb ae/a	Post	C				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	Post	C				
7	Lexar EZ Premix	3.71	SC	2.78	lb ai/a	PRE	A	60.0 ab	80.0 ab	5.0 a	0.0 d
	----s-metolachlor	1.742819		1.3							
	----mesotrione	0.2243629		0.168							
	----atrazine	1.742819		1.3							

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Pest Code								IPOSS	SETFA		
Pest Name								mornglry	G.foxtl		
Crop Code										ZEAMX	ZEAMX
Crop Name										Corn	Corn
Rating Type								Control	Control	Stunting	LeafBurn
Rating Unit								%	%	%	%
Rating Date								05/20/15	05/20/15	05/30/15	05/30/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code				
8	Acuron Premix	3.44	ZC	2.15	lb ai/a	PRE	A	65.0 a	81.7 ab	5.7 a	0.0 d
	----atrazine	1		0.625							
	----bicyclopyrone	0.06		0.0375							
	----mesotrione	0.24		0.15							
	----s-metolachlor	2.14		1.34							
	Atrazine 4L	4	L	0.75	lb ai/a	PRE	A				
LSD P=.05								10.96	12.34	8.53	1.99
Standard Deviation								6.26	6.87	4.87	1.14
CV								13.97	11.14	124.35	25.26
Replicate F								0.027	0.954	0.139	2.032
Replicate Prob(F)								0.9738	0.4150	0.8716	0.1679
Treatment F								59.586	93.400	1.452	119.742
Treatment Prob(F)								0.0001	0.0001	0.2611	0.0001

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	AMAPA PalmerAm	AMBEL C.ragwd	IPOSS mornglry	SETFA G.foxtl
	Pest Code							AMAPA	AMBEL	IPOSS	SETFA
	Pest Name							PalmerAm	C.ragwd	mornglry	G.foxtl
	Crop Code										
	Crop Name										
	Rating Type							Control	Control	Control	Control
	Rating Unit							%	%	%	%
	Rating Date							05/30/15	05/30/15	05/30/15	05/30/15
1	Untreated Check							0.0 b	0.0 d	0.0 e	0.0 e
2	Keystone LA NXT Premix	6	SE	3.45	lb ai/a	PRE	A	100.0 a	53.3 c	50.0 d	70.0 d
	----acetochlor	4.3		2.47							
	----atrazine	1.7		0.98							
	Prowl H2O.....pendimethalin	3.8	CS	0.95	lb ai/a	PRE	A				
3	Keystone NXT Premix	5.6	SE	3.36	lb ai/a	PRE	A	100.0 a	62.7 c	66.7 c	80.0 c
	----acetochlor	3.1		1.86							
	----atrazine	2.5		1.5							
	Prowl H2O.....pendimethalin	3.8	CS	0.95	lb ai/a	PRE	A				
4	SureStart Premix	4.25	SE	1.06	lb ai/a	EaPost	B	100.0 a	100.0 a	92.7 a	95.3 a
	----acetochlor	3.75		0.935							
	----clopyralid	0.38		0.095							
	----flumetsulam	0.12		0.03							
	Atrazine 4L	4	L	1	lb ai/a	EaPost	B				
	Durango DMA.....glyphosate	4	SL	1	lb ae/a	EaPost	B				
5	GF-3471	3.28	SE	1.85	lb ai/a	PRE	A	100.0 a	92.7 ab	85.3 ab	96.0 a
	Atrazine 4L	4	L	1.5	lb ai/a	PRE	A				
	Durango DMA.....glyphosate	4	SL	1	lb ae/a	Post	C				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	Post	C				
6	GF-3471	3.28	SE	1.23	lb ai/a	PRE	A	100.0 a	95.0 ab	91.7 a	93.3 a
	Atrazine 4L	4	L	1	lb ai/a	PRE	A				
	GF-3471	3.28	SE	1.03	lb ai/a	Post	C				
	Atrazine 4L	4	L	0.5	lb ai/a	Post	C				
	Durango DMA.....glyphosate	4	SL	1	lb ae/a	Post	C				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	Post	C				
7	Lexar EZ Premix	3.71	SC	2.78	lb ai/a	PRE	A	96.0 a	84.0 ab	82.0 ab	91.7 ab
	----s-metolachlor	1.742819		1.3							
	----mesotrione	0.2243629		0.168							
	----atrazine	1.742819		1.3							

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	AMAPA	AMBEL	IPOSS	SETFA
	Pest Code							AMAPA	AMBEL	IPOSS	SETFA
	Pest Name							PalmerAm	C.ragwd	mornglry	G.foxtl
	Crop Code										
	Crop Name										
	Rating Type							Control	Control	Control	Control
	Rating Unit							%	%	%	%
	Rating Date							05/30/15	05/30/15	05/30/15	05/30/15
8	Acuron Premix	3.44	ZC	2.15	lb ai/a	PRE	A	93.3 a	81.7 b	78.3 b	82.7 bc
	----atrazine	1		0.625							
	----bicyclopyrone	0.06		0.0375							
	----mesotrione	0.24		0.15							
	----s-metolachlor	2.14		1.34							
	Atrazine 4L	4	L	0.75	lb ai/a	PRE	A				
	LSD P=.05							8.60	16.34	10.89	9.70
	Standard Deviation							4.91	9.33	6.22	5.40
	CV							5.7	13.11	9.1	7.09
	Replicate F							0.526	1.062	0.079	2.373
	Replicate Prob(F)							0.6024	0.3719	0.9247	0.1391
	Treatment F							151.711	37.348	74.502	105.816
	Treatment Prob(F)							0.0001	0.0001	0.0001	0.0001

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	AMBEL C.ragwd Control % 06/25/15	IPOSS mornglry Control % 06/25/15	ZEAMX Corn Yield Bu/A 09/15/15
1	Untreated Check							0.0 c	0.0 f	121.6 b
2	Keystone LA NXT Premix	6	SE	3.45	lb ai/a	PRE	A	60.0 b	53.3 e	198.0 a
	----acetochlor	4.3		2.47						
	----atrazine	1.7		0.98						
	Prowl H2O.....pendimethalin	3.8	CS	0.95	lb ai/a	PRE	A			
3	Keystone NXT Premix	5.6	SE	3.36	lb ai/a	PRE	A	60.0 b	53.3 e	215.7 a
	----acetochlor	3.1		1.86						
	----atrazine	2.5		1.5						
	Prowl H2O.....pendimethalin	3.8	CS	0.95	lb ai/a	PRE	A			
4	SureStart Premix	4.25	SE	1.06	lb ai/a	EaPost	B	100.0 a	87.7 ab	228.6 a
	----acetochlor	3.75		0.935						
	----clopyralid	0.38		0.095						
	----flumetsulam	0.12		0.03						
	Atrazine 4L	4	L	1	lb ai/a	EaPost	B			
	Durango DMA.....glyphosate	4	SL	1	lb ae/a	EaPost	B			
5	GF-3471	3.28	SE	1.85	lb ai/a	PRE	A	100.0 a	81.7 bc	219.6 a
	Atrazine 4L	4	L	1.5	lb ai/a	PRE	A			
	Durango DMA.....glyphosate	4	SL	1	lb ae/a	Post	C			
	Dry Ammonium Sulfate	100	D	1.02	% w/v	Post	C			
6	GF-3471	3.28	SE	1.23	lb ai/a	PRE	A	100.0 a	92.3 a	219.5 a
	Atrazine 4L	4	L	1	lb ai/a	PRE	A			
	GF-3471	3.28	SE	1.03	lb ai/a	Post	C			
	Atrazine 4L	4	L	0.5	lb ai/a	Post	C			
	Durango DMA.....glyphosate	4	SL	1	lb ae/a	Post	C			
	Dry Ammonium Sulfate	100	D	1.02	% w/v	Post	C			
7	Lexar EZ Premix	3.71	SC	2.78	lb ai/a	PRE	A	91.7 a	77.7 cd	215.4 a
	----s-metolachlor	1.742819		1.3						
	----mesotrione	0.2243629		0.168						
	----atrazine	1.742819		1.3						

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	AMBEL C.ragwd	IPOSS mornglry	ZEAMX Corn Yield
	Pest Code							AMBEL	IPOSS	
	Pest Name							C.ragwd	mornglry	
	Crop Code									ZEAMX
	Crop Name									Corn
	Rating Type							Control	Control	Yield
	Rating Unit							%	%	Bu/A
	Rating Date							06/25/15	06/25/15	09/15/15
8	Acuron Premix	3.44	ZC	2.15	lb ai/a	PRE	A	90.0 a	71.7 d	223.8 a
	----atrazine	1		0.625						
	----bicyclopyrone	0.06		0.0375						
	----mesotrione	0.24		0.15						
	----s-metolachlor	2.14		1.34						
	Atrazine 4L	4	L	0.75	lb ai/a	PRE	A			
	LSD P=.05							14.44	9.70	43.13
	Standard Deviation							8.25	5.54	24.63
	CV							10.96	8.56	12.0
	Replicate F							0.475	3.603	4.884
	Replicate Prob(F)							0.6316	0.0547	0.0246
	Treatment F							53.267	87.156	6.051
	Treatment Prob(F)							0.0001	0.0001	0.0021

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Morningglory Control in Field Corn

Trial ID: Corn4-15 Location: Field #14 Trial Year:
Protocol ID: Corn4-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Investigator: Mark VanGessel Title: Extension Weed Specialist
Organization: University of Delaware
Address: 16483 County Seat Hwy
City+State/Prov: Georgetown, Delaware
Postal Code: 19947 E-mail: mjv@udel.edu
Country: USA United States

Crop Description

Crop 1: ZEAMX Zea mays Corn
Variety: DKC50-84RIB BBCH Scale: BCOR
Planting Date: 05/13/15
Planting Rate, Unit: 30000 S/A Planting Method: PLANTD planted
Depth, Unit: 2 in Planting Equipment: FE Field Equipment
Row Spacing, Unit: 30 in Emergence Date: 05/18/15
Harvest Date: 09/04/15
Harvested Width, Unit: 5 FT
Soil Temperature, Unit: 76 F Harvested Length, Unit: 25 FT
Soil Moisture: NORMAL normal, adequate Harvest Equipment: Plot combine
Seed Bed: MEDIUM medium % Standard Moisture: 15.5

Pest Description

Pest 1 Type: W Code: IPOSS Ipomoea sp.
Common Name: Morning glory

Pest 2 Type: W Code: XANOR Xanthium orientale
Common Name: Common cocklebur

Pest 3 Type: W Code: AMBEL Ambrosia artemisiifolia
Common Name: Common ragweed

Site and Design

Treated Plot Width: 10 FT Site Type: FIELD field
Treated Plot Length: 25 FT
Treated Plot Area: 250 FT2 Treatments: 15 Tillage Type: CONTIL conventional-till
Replications: 3 Study Design: RACOBL Randomized Complete Block (RCB)

Soil Description

% Sand: 79 % OM: 1.0 Texture: LS loamy sand
% Silt: 14 pH: 6.0
% Clay: 7 CEC: 4.6 Fert. Level: G good
Soil Drainage: G good

Moisture and Weather Conditions

Overall Moisture Conditions: NORMAL normal
Closest Weather Station: UDREC Distance, Unit: 0.4 mi

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Application Description

	A	B
Application Date:	06/05/15	06/18/15
Appl. Stop Time:	04:00 PM	01:00 PM
Interval to Prev. Appl., Unit:		13 DAYS
Application Method:	SPRAY	SPRAY
Application Timing:	V4-5	V8
Application Placement:	BROADC	BROADC
Applied By:	VanGessl	VanGessl
Air Temperature, Unit:	65 F	79 F
% Relative Humidity:	87	74
Wind Velocity, Unit:	5 mph	2 mph
Wind Direction:	NE	W
Dew Presence (Y/N):	N no	Y yes
Soil Temperature, Unit:	64 F	79 F
Soil Moisture:	NORMAL	WET

Crop Stage At Each Application

	A	B
Crop 1 Code, BBCH Scale:	ZEAMX BCOR	ZEAMX BCOR
Stage Scale Used:	DESC	DESC
Stage Majority, Percent:	V5 90	V8 80
Stage Minimum, Percent:	V4 10	V7 20
Stage Maximum, Percent:	V5 90	V8 80
Height, Unit:	15 in	28 in
Height Minimum, Maximum:	13 17	26 30

Pest Stage At Each Application

	A	B
Pest 1 Code, Type, Scale:	IPOSS W	IPOSS W
Stage Majority, Percent:	veg 100	vine 55
Stage Minimum, Percent:		veg 45
Stage Maximum, Percent:		vine 55
Height, Unit:	3 in	7 in
Height Minimum, Maximum:	2 4	6 8
Density, Unit:	6 m2	6 m2
Pest 2 Code, Type, Scale:	XANOR W	XANOR W
Stage Majority, Percent:	4-leaf 70	veg 100
Stage Minimum, Percent:	2-leaf 30	
Stage Maximum, Percent:	4-leaf 70	
Height, Unit:	3.5 in	6 in
Height Minimum, Maximum:	3 4	
Density, Unit:	1 m2	1 m2
Pest 3 Code, Type, Scale:	AMBEL W	AMBEL W
Stage Majority, Percent:	veg 100	veg 100
Height, Unit:	3 in	6 in
Height Minimum, Maximum:	2 4	5 7
Density, Unit:	2 m2	2 m2

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Application Equipment

	A	B
Appl. Equipment:	Backpack	Backpack
Equipment Type:	SPRBAC	SPRBAC
Operation Pressure, Unit:	31 psi	31 psi
Nozzle Type:	AIRMIX	AIRMIX
Nozzle Size:	11002	11002
Nozzle Spacing, Unit:	18 in	18 in
Boom Length, Unit:	9 ft	9 ft
Boom Height, Unit:	30 in	44 in
Ground Speed, Unit:	3 mph	3 mph
Carrier:	WATER	WATER
Spray Volume, Unit:	20 gal/ac	20 gal/ac
Mix Size, Unit:	2 Liters	2 Liters
Propellant:	COMCO2	COMCO2

Trial Comments

6/11/15: Treatments at V4-5 sprayed after 3 days of cloudy/overcast skies (no sunshine) and rain/mist during the 3 day period.

6/22/15: No leaf injury observed, leaf burn or discoloration.

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Morningglory Control in Field Corn

Trial ID: Corn4-15 Location: Field #14 Trial Year:
Protocol ID: Corn4-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	ZEAMX Corn Stunting	ZEAMX Corn Bleaching	ZEAMX Corn Injury	IPOSS mornglry Control
	Rating Unit							%	%	%	%
	Rating Date							06/11/15	06/11/15	06/22/15	06/28/15
1	Untreated Check									0.0 a	0.0 i
2	Roundup PowerMax..glyphosate	4.5	AS	0.77	lb ae/a	V8	B			0.0 a	60.0 h
3	Roundup PowerMax..glyphosate	4.5	AS	1.02	lb ae/a	V8	B			0.0 a	73.3 fg
4	Roundup PowerMax..glyphosate	4.5	AS	1.02	lb ae/a	V4-5	A	0.0 b	0.0 b	0.0 a	93.7 a
	Roundup PowerMax..glyphosate	4.5	AS	1.02	lb ae/a	V8	B				
5	Roundup PowerMax..glyphosate	4.5	AS	1.02	lb ae/a	V4-5	A	0.0 b	0.0 b	0.0 a	96.3 a
	Atrazine 4L	4	L	1.25	lb ai/a	V4-5	A				
6	Roundup PowerMax..glyphosate	4.5	AS	1.02	lb ae/a	V4-5	A	11.3 a	13.0 a	0.0 a	96.3 a
	Atrazine 4L	4	L	0.75	lb ai/a	V4-5	A				
	A16003	1.67	SL	0.0446	lb ai/a	V4-5	A				
	Callisto.....mesotrione	4	SC	0.094	lb ai/a	V4-5	A				
7	Callisto.....mesotrione	4	SC	0.094	lb ai/a	V4-5	A	15.7 a	20.7 a	0.0 a	93.7 a
	Atrazine 4L	4	L	0.75	lb ai/a	V4-5	A				
	Crop Oil Concentrate	100	L	1.25	% v/v	V4-5	A				
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	V4-5	A				
8	Roundup PowerMax..glyphosate	4.5	AS	0.77	lb ae/a	V8	B			0.0 a	79.3 de
	Cadet.....fluthiacet	0.91	EC	0.0064	lb ai/a	V8	B				
9	Roundup PowerMax..glyphosate	4.5	AS	1.02	lb ae/a	V8	B			0.0 a	81.7 cde
	Resource.....flumiclorac	0.86	EC	0.0403	lb ai/a	V8	B				
10	Roundup PowerMax..glyphosate	4.5	AS	1.02	lb ae/a	V8	B			0.0 a	83.7 cd
	Status Premix	56	WG	0.28	lb ai/a	V8	B				
	----diflufenzopyr	16		0.08							
	----dicamba	40		0.2							
11	Roundup PowerMax..glyphosate	4.5	AS	1.02	lb ae/a	V8	B			0.0 a	68.3 g
	Callisto.....mesotrione	4	SC	0.094	lb ai/a	V8	B				
12	Roundup PowerMax..glyphosate	4.5	AS	1.02	lb ae/a	V8	B			0.0 a	85.3 c
	Status Premix	56	WG	0.28	lb ai/a	V8	B				
	----diflufenzopyr	16		0.08							
	----dicamba	40		0.2							
	Callisto.....mesotrione	4	SC	0.094	lb ai/a	V8	B				
13	Roundup PowerMax..glyphosate	4.5	AS	1.02	lb ae/a	V8	B			0.0 a	86.7 bc
	Status Premix	56	WG	0.28	lb ai/a	V8	B				
	----diflufenzopyr	16		0.08							
	----dicamba	40		0.2							
	Callisto.....mesotrione	4	SC	0.094	lb ai/a	V8	B				
	Crop Oil Concentrate	100	L	1.25	% v/v	V8	B				
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	V8	B				

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.
Could not calculate LSD (% mean diff) for columns 3 because error mean square = 0.

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	ZEAMX Corn Stunting	ZEAMX Corn Bleaching	ZEAMX Corn Injury	IPOSS mornglry Control
	Pest Code										
	Pest Name										
	Crop Code										
	Crop Name										
	Rating Type										
	Rating Unit							%	%	%	%
	Rating Date							06/11/15	06/11/15	06/22/15	06/28/15
14	Callisto.....mesotrione	4	SC	0.094	lb ai/a	V8	B			0.0 a	91.0 ab
	Atrazine 4L	4	L	0.75	lb ai/a	V8	B				
	Crop Oil Concentrate	100	L	1.25	% v/v	V8	B				
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	V8	B				
15	A16003	1.67	SL	0.0446	lb ai/a	V8	B			0.0 a	76.7 ef
	Callisto.....mesotrione	4	SC	0.094	lb ai/a	V8	B				
	Crop Oil Concentrate	100	L	1.25	% v/v	V8	B				
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	V8	B				
	LSD P=.05							4.71	8.54	.	5.42
	Standard Deviation							2.36	4.27	0.00	3.24
	CV							34.92	50.76	0.0	4.17
	Replicate F							2.880	2.169	0.000	2.880
	Replicate Prob(F)							0.1328	0.1955	1.0000	0.0729
	Treatment F							34.495	17.137	0.000	164.147
	Treatment Prob(F)							0.0004	0.0024	1.0000	0.0001

Pest Code	
Pest Name	
Crop Code	ZEAMX
Crop Name	Corn
Rating Type	Yield
Rating Unit	Bu/A
Rating Date	09/09/15

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	
1	Untreated Check							102.5 c
2	Roundup PowerMax..glyphosate	4.5	AS	0.77	lb ae/a	V8	B	134.6 b
3	Roundup PowerMax..glyphosate	4.5	AS	1.02	lb ae/a	V8	B	147.5 ab
4	Roundup PowerMax..glyphosate	4.5	AS	1.02	lb ae/a	V4-5	A	161.3 ab
	Roundup PowerMax..glyphosate	4.5	AS	1.02	lb ae/a	V8	B	
5	Roundup PowerMax..glyphosate	4.5	AS	1.02	lb ae/a	V4-5	A	155.6 ab
	Atrazine 4L	4	L	1.25	lb ai/a	V4-5	A	
6	Roundup PowerMax..glyphosate	4.5	AS	1.02	lb ae/a	V4-5	A	158.8 ab
	Atrazine 4L	4	L	0.75	lb ai/a	V4-5	A	
	A16003	1.67	SL	0.0446	lb ai/a	V4-5	A	
	Callisto.....mesotrione	4	SC	0.094	lb ai/a	V4-5	A	
7	Callisto.....mesotrione	4	SC	0.094	lb ai/a	V4-5	A	161.6 ab
	Atrazine 4L	4	L	0.75	lb ai/a	V4-5	A	
	Crop Oil Concentrate	100	L	1.25	% v/v	V4-5	A	
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	V4-5	A	
8	Roundup PowerMax..glyphosate	4.5	AS	0.77	lb ae/a	V8	B	152.6 ab
	Cadet.....fluthiacet	0.91	EC	0.0064	lb ai/a	V8	B	
9	Roundup PowerMax..glyphosate	4.5	AS	1.02	lb ae/a	V8	B	159.9 ab
	Resource.....flumiclorac	0.86	EC	0.0403	lb ai/a	V8	B	
10	Roundup PowerMax..glyphosate	4.5	AS	1.02	lb ae/a	V8	B	166.8 a
	Status Premix	56	WG	0.28	lb ai/a	V8	B	
	----diflufenzopyr	16		0.08				
	----dicamba	40		0.2				
11	Roundup PowerMax..glyphosate	4.5	AS	1.02	lb ae/a	V8	B	148.5 ab
	Callisto.....mesotrione	4	SC	0.094	lb ai/a	V8	B	
12	Roundup PowerMax..glyphosate	4.5	AS	1.02	lb ae/a	V8	B	152.5 ab
	Status Premix	56	WG	0.28	lb ai/a	V8	B	
	----diflufenzopyr	16		0.08				
	----dicamba	40		0.2				
	Callisto.....mesotrione	4	SC	0.094	lb ai/a	V8	B	
13	Roundup PowerMax..glyphosate	4.5	AS	1.02	lb ae/a	V8	B	148.7 ab
	Status Premix	56	WG	0.28	lb ai/a	V8	B	
	----diflufenzopyr	16		0.08				
	----dicamba	40		0.2				
	Callisto.....mesotrione	4	SC	0.094	lb ai/a	V8	B	
	Crop Oil Concentrate	100	L	1.25	% v/v	V8	B	
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	V8	B	

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Pest Code	
Pest Name	
Crop Code	ZEAMX
Crop Name	Corn
Rating Type	Yield
Rating Unit	Bu/A
Rating Date	09/09/15

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	
14	Callisto.....mesotrione	4	SC	0.094	lb ai/a	V8	B	134.9 b
	Atrazine 4L	4	L	0.75	lb ai/a	V8	B	
	Crop Oil Concentrate	100	L	1.25	% v/v	V8	B	
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	V8	B	
15	A16003	1.67	SL	0.0446	lb ai/a	V8	B	151.4 ab
	Callisto.....mesotrione	4	SC	0.094	lb ai/a	V8	B	
	Crop Oil Concentrate	100	L	1.25	% v/v	V8	B	
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	V8	B	

LSD P=.05	27.81
Standard Deviation	16.63
CV	11.15
Replicate F	0.271
Replicate Prob(F)	0.7649
Treatment F	2.704
Treatment Prob(F)	0.0121

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Impact Programs For Field Corn

Trial ID: Corn5-15 Location: Field #16 Trial Year:
Protocol ID: Corn5-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact: AMVAC

Investigator: Mark VanGessel Title: Extension Weed Specialist
Organization: University of Delaware
Address: 16483 County Seat Hwy
City+State/Prov: Georgetown, Delaware
Postal Code: 19947 E-mail: mjv@udel.edu
Country: USA United States

Crop Description

Crop 1: ZEAMX Zea mays Corn
Variety: H5410RC3P BBCH Scale: BCOR
Planting Date: 04/28/15
Planting Rate, Unit: 30000 S/A Planting Method: PLANTD planted
Depth, Unit: 2 in Planting Equipment: FE Field Equipment
Row Spacing, Unit: 30 in Emergence Date: 05/07/15
Harvest Date: 09/16/15
Harvested Width, Unit: 5 FT
Soil Temperature, Unit: 67 F Harvested Length, Unit: 25 FT
Soil Moisture: NORMAL normal, adequate Harvest Equipment: Plot combine
Seed Bed: MEDIUM medium % Standard Moisture: 15.5

Pest Description

Pest 1 Type: W Code: AMBEL Ambrosia artemisiifolia
Common Name: Common ragweed

Pest 2 Type: W Code: GGGAN Annual grasses
Common Name: Annual grasses

Pest 3 Type: W Code: IPOSS Ipomoea sp.
Common Name: Morning glory

Site and Design

Treated Plot Width: 10 FT Site Type: FIELD field
Treated Plot Length: 25 FT
Treated Plot Area: 250 FT2 Treatments: 6 Tillage Type: CONTIL conventional-till
Replications: 3 Study Design: RACOBL Randomized Complete Block (RCB)

Soil Description

% Sand: 77 % OM: 0.9 Texture: SL sandy loam
% Silt: 12 pH: 5.9
% Clay: 11 CEC: 5.6 Fert. Level: G good
Soil Drainage: F fair

Moisture and Weather Conditions

Overall Moisture Conditions: NORMAL normal
Closest Weather Station: UD REC Distance, Unit: 0.5 mi

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Application Description

	A	B	C
Application Date:	04/29/15	05/14/15	05/22/15
Appl. Stop Time:	09:15 AM	09:30 AM	09:00 AM
Interval to Prev. Appl., Unit:		15 DAYS	8 DAYS
Application Method:	SPRAY	SPRAY	SPRAY
Application Timing:	PRE	V2	8" corn
Application Placement:	BROADC	BROADC	BROADC
Applied By:	Johnson	Johnson	Johnson
Air Temperature, Unit:	65 F	62 F	54 F
% Relative Humidity:	47	44	80
Wind Velocity, Unit:	0 mph	4 mph	3 mph
Wind Direction:	N/A	NE	NW
Dew Presence (Y/N):	N no	N no	Y yes
Soil Temperature, Unit:	64 F	61 F	54 F
Soil Moisture:	NORMAL	NORMAL	WET
% Cloud Cover:	5	5	0

Crop Stage At Each Application

	A	B	C
Crop 1 Code, BBCH Scale:	ZEAMX BCOR	ZEAMX BCOR	ZEAMX BCOR
Stage Scale Used:		DESC	DESC
Stage Majority, Percent:		V2 100	V4 100
Height, Unit:		4 in	7 in
Height Minimum, Maximum:		3.5 4.5	6 8

Pest Stage At Each Application

	A	B	C
Pest 1 Code, Type, Scale:	AMBEL W	AMBEL W	AMBEL W
Stage Majority, Percent:		4-leaf 80	6-leaf 75
Stage Minimum, Percent:		2-leaf 20	4-leaf 25
Stage Maximum, Percent:		4-leaf 80	6-leaf 75
Height, Unit:		1 in	2.5 in
Height Minimum, Maximum:			2 3
Density, Unit:		150 m2	60 m2
Pest 2 Code, Type, Scale:	GGGAN W	GGGAN W	GGGAN W
Stage Majority, Percent:		2-leaf 100	4-leaf 65
Stage Minimum, Percent:			3-leaf 35
Stage Maximum, Percent:			4-leaf 65
Height, Unit:		1 in	3 in
Density, Unit:		50 m2	20 m2
Pest 3 Code, Type, Scale:	IPOSS W	IPOSS W	IPOSS W
Stage Majority, Percent:		cotlyd 100	2-leaf 60
Stage Minimum, Percent:			cotyld 10
Stage Maximum, Percent:			3-leaf 30
Height, Unit:		1 in	1.5 in
Height Minimum, Maximum:			1 2
Density, Unit:		4 m2	6 m2

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Application Equipment

	A	B	C
Appl. Equipment:	Tractor	Tractor	Tractor
Equipment Type:	TRMOSP	TRMOSP	TRMOSP
Operation Pressure, Unit:	40 psi	40 psi	40 psi
Nozzle Type:	AIRMIX	AIRMIX	AIRMIX
Nozzle Size:	11002	11002	11002
Nozzle Spacing, Unit:	20 in	20 in	20 in
Boom Length, Unit:	10 ft	10 ft	10 ft
Boom Height, Unit:	18 in	20 in	24 in
Ground Speed, Unit:	3 mph	3 mph	3 mph
Carrier:	WATER	WATER	WATER
Spray Volume, Unit:	20 gal/ac	20 gal/ac	20 gal/ac
Mix Size, Unit:	0.7 Gallons	0.7 Gallons	0.7 Gallons
Propellant:	COMAIR	COMAIR	COMAIR

Trial Comments

05/14/15: No stunting observed.

05/30/15: In treatments at V2 stage some leaf burn observed, but with later applications chlorotic patches are observed with very little necrosis.

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Impact Programs For Field Corn

Trial ID: Corn5-15 Location: Field #16 Trial Year:
Protocol ID: Corn5-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact: AMVAC

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	ZEAMX Corn Lf Burn % 05/22/15	ZEAMX Corn Stunting % 05/22/15	AMAPA PalmerAm Control % 05/22/15	AMBEL C.ragwd Control % 05/22/15
1	Untreated Check							0.000 a	0.0 a	0.0 b	0.0 c
2	Harness Xtra 5.6L Premix	5.6	L	2.24	lb ai/a	PRE	A	0.000 a	0.0 a	100.0 a	53.3 b
	----acetochlor	3.1		1.24							
	----atrazine	2.5		1							
	Impact.....topramezone	2.81	SC	0.0165	lb ai/a	2-4"wds	C				
	Atrazine 4L	4	L	0.5	lb ai/a	2-4"wds	C				
	Methylated Seed Oil	100	L	1	% v/v	2-4"wds	C				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	2-4"wds	C				
3	Harness Xtra 5.6L Premix	5.6	L	2.24	lb ai/a	PRE	A	0.000 a			
	----acetochlor	3.1		1.24							
	----atrazine	2.5		1							
	Impact.....topramezone	2.81	SC	0.0165	lb ai/a	2-4"wds	C				
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a	2-4"wds	C				
	Atrazine 4L	4	L	0.5	lb ai/a	2-4"wds	C				
	Methylated Seed Oil	100	L	0.5	% v/v	2-4"wds	C				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	2-4"wds	C				
4	Harness Xtra 5.6L Premix	5.6	L	2.24	lb ai/a	PRE	A	0.000 a			
	----acetochlor	3.1		1.24							
	----atrazine	2.5		1							
	Impact.....topramezone	2.81	SC	0.0165	lb ai/a	2-4"wds	C				
	Status Premix	56	WG	0.105	lb ai/a	2-4"wds	C				
	----diflufenzopyr	16		0.03							
	----dicamba	40		0.075							
	Atrazine 4L	4	L	0.5	lb ai/a	2-4"wds	C				
	Methylated Seed Oil	100	L	0.5	% v/v	2-4"wds	C				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	2-4"wds	C				
5	Harness Xtra 5.6L Premix	5.6	L	2.24	lb ai/a	V2	B	7.383 a	0.0 a	100.0 a	100.0 a
	----acetochlor	3.1		1.24							
	----atrazine	2.5		1							
	Impact.....topramezone	2.81	SC	0.022	lb ai/a	V2	B				
	Methylated Seed Oil	100	L	0.5	% v/v	V2	B				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	V2	B				

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.
Missing data estimates are included in columns:Average=1
Could not calculate LSD (% mean diff) for columns 2,3,10,11,12 because error mean square = 0.

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code				
	Pest Code									AMAPA	AMBEL
	Pest Name									PalmerAm	C.ragwd
	Crop Code							ZEAMX	ZEAMX		
	Crop Name							Corn	Corn		
	Rating Type							Lf Burn	Stunting	Control	Control
	Rating Unit							%	%	%	%
	Rating Date							05/22/15	05/22/15	05/22/15	05/22/15
6	Halex GT Premix	4.376	SC	1.97	lb ai/a	V2	B	1.667 a	0.0 a	100.0 a	100.0 a
	----s-metolachlor	2.084		0.94							
	----glyphosate	2.084		0.94							
	----mesotrione	0.208		0.094							
	Atrazine 4L	4	L	0.5	lb ai/a	V2	B				
	Nonionic Surfactant	100	L	0.25	% v/v	V2	B				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	V2	B				
	LSD P=.05							6.7034	.	.	5.77
	Standard Deviation							3.3552	0.00	0.00	2.89
	CV							222.45	0.0	0.0	4.56
	Replicate F							0.693	0.000	0.000	1.000
	Replicate Prob(F)							0.5361	1.0000	1.0000	0.4219
	Treatment F							2.326	0.000	0.000	816.000
	Treatment Prob(F)							0.1667	1.0000	1.0000	0.0001

Pest Code							CHEAL	IPOSS	SETFA	
Pest Name							C.lmsqtr	mornglry	G.foxtl	
Crop Code										ZEAMX
Crop Name										Corn
Rating Type							Control	Control	Control	Stunting
Rating Unit							%	%	%	%
Rating Date							05/22/15	05/22/15	05/22/15	05/30/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code			
1	Untreated Check							0.0 c	0.0 c	0.0 c	0.0 a
2	Harness Xtra 5.6L Premix	5.6	L	2.24	lb ai/a	PRE	A	76.7 b	60.0 b	85.0 b	0.0 a
	----acetochlor	3.1		1.24							
	----atrazine	2.5		1							
	Impact.....topramezone	2.81	SC	0.0165	lb ai/a	2-4"wds	C				
	Atrazine 4L	4	L	0.5	lb ai/a	2-4"wds	C				
	Methylated Seed Oil	100	L	1	% v/v	2-4"wds	C				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	2-4"wds	C				
3	Harness Xtra 5.6L Premix	5.6	L	2.24	lb ai/a	PRE	A				2.7 a
	----acetochlor	3.1		1.24							
	----atrazine	2.5		1							
	Impact.....topramezone	2.81	SC	0.0165	lb ai/a	2-4"wds	C				
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a	2-4"wds	C				
	Atrazine 4L	4	L	0.5	lb ai/a	2-4"wds	C				
	Methylated Seed Oil	100	L	0.5	% v/v	2-4"wds	C				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	2-4"wds	C				
4	Harness Xtra 5.6L Premix	5.6	L	2.24	lb ai/a	PRE	A				4.7 a
	----acetochlor	3.1		1.24							
	----atrazine	2.5		1							
	Impact.....topramezone	2.81	SC	0.0165	lb ai/a	2-4"wds	C				
	Status Premix	56	WG	0.105	lb ai/a	2-4"wds	C				
	----diflufenzopyr	16		0.03							
	----dicamba	40		0.075							
	Atrazine 4L	4	L	0.5	lb ai/a	2-4"wds	C				
	Methylated Seed Oil	100	L	0.5	% v/v	2-4"wds	C				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	2-4"wds	C				
5	Harness Xtra 5.6L Premix	5.6	L	2.24	lb ai/a	V2	B	100.0 a	91.7 a	100.0 a	4.0 a
	----acetochlor	3.1		1.24							
	----atrazine	2.5		1							
	Impact.....topramezone	2.81	SC	0.022	lb ai/a	V2	B				
	Methylated Seed Oil	100	L	0.5	% v/v	V2	B				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	V2	B				

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	CHEAL C.lmsqtr	IPOSS mornglry	SETFA G.foxtl	ZEAMX Corn Stunting
	Pest Code							CHEAL	IPOSS	SETFA	
	Pest Name							C.lmsqtr	mornglry	G.foxtl	
	Crop Code										ZEAMX
	Crop Name										Corn
	Rating Type							Control	Control	Control	Stunting
	Rating Unit							%	%	%	%
	Rating Date							05/22/15	05/22/15	05/22/15	05/30/15
6	Halex GT Premix	4.376	SC	1.97	lb ai/a	V2	B	100.0 a	91.7 a	100.0 a	3.3 a
	----s-metolachlor	2.084		0.94							
	----glyphosate	2.084		0.94							
	----mesotrione	0.208		0.094							
	Atrazine 4L	4	L	0.5	lb ai/a	V2	B				
	Nonionic Surfactant	100	L	0.25	% v/v	V2	B				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	V2	B				
	LSD P=.05							14.42	3.66	4.99	6.12
	Standard Deviation							7.22	1.83	2.50	3.36
	CV							10.43	3.01	3.51	137.65
	Replicate F							1.000	0.174	1.000	0.211
	Replicate Prob(F)							0.4219	0.8447	0.4219	0.8133
	Treatment F							129.440	1666.942	1107.000	1.068
	Treatment Prob(F)							0.0001	0.0001	0.0001	0.4327

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code				
	Pest Code								AMAPA	AMBEL	CHEAL
	Pest Name								PalmerAm	C.ragwd	C.lmsqtr
	Crop Code							ZEAMX			
	Crop Name							Corn			
	Rating Type							LeafBurn	Control	Control	Control
	Rating Unit							%	%	%	%
	Rating Date							05/30/15	05/30/15	05/30/15	05/30/15
1	Untreated Check							0.0 b	0.0 b	0.0 b	0.0 b
2	Harness Xtra 5.6L Premix	5.6	L	2.24	lb ai/a	PRE	A	16.3 a	100.0 a	100.0 a	100.0 a
	----acetochlor	3.1		1.24							
	----atrazine	2.5		1							
	Impact.....topramezone	2.81	SC	0.0165	lb ai/a	2-4"wds	C				
	Atrazine 4L	4	L	0.5	lb ai/a	2-4"wds	C				
	Methylated Seed Oil	100	L	1	% v/v	2-4"wds	C				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	2-4"wds	C				
3	Harness Xtra 5.6L Premix	5.6	L	2.24	lb ai/a	PRE	A	14.7 a	100.0 a	100.0 a	100.0 a
	----acetochlor	3.1		1.24							
	----atrazine	2.5		1							
	Impact.....topramezone	2.81	SC	0.0165	lb ai/a	2-4"wds	C				
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a	2-4"wds	C				
	Atrazine 4L	4	L	0.5	lb ai/a	2-4"wds	C				
	Methylated Seed Oil	100	L	0.5	% v/v	2-4"wds	C				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	2-4"wds	C				
4	Harness Xtra 5.6L Premix	5.6	L	2.24	lb ai/a	PRE	A	2.3 b	100.0 a	100.0 a	100.0 a
	----acetochlor	3.1		1.24							
	----atrazine	2.5		1							
	Impact.....topramezone	2.81	SC	0.0165	lb ai/a	2-4"wds	C				
	Status Premix	56	WG	0.105	lb ai/a	2-4"wds	C				
	----diflufenzopyr	16		0.03							
	----dicamba	40		0.075							
	Atrazine 4L	4	L	0.5	lb ai/a	2-4"wds	C				
	Methylated Seed Oil	100	L	0.5	% v/v	2-4"wds	C				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	2-4"wds	C				
5	Harness Xtra 5.6L Premix	5.6	L	2.24	lb ai/a	V2	B	2.3 b	100.0 a	100.0 a	100.0 a
	----acetochlor	3.1		1.24							
	----atrazine	2.5		1							
	Impact.....topramezone	2.81	SC	0.022	lb ai/a	V2	B				
	Methylated Seed Oil	100	L	0.5	% v/v	V2	B				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	V2	B				

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code		AMAPA PalmerAm	AMBEL C.ragwd	CHEAL C.lmsqtr
	Pest Code								AMAPA	AMBEL	CHEAL
	Pest Name								PalmerAm	C.ragwd	C.lmsqtr
	Crop Code							ZEAMX			
	Crop Name							Corn			
	Rating Type							LeafBurn	Control	Control	Control
	Rating Unit							%	%	%	%
	Rating Date							05/30/15	05/30/15	05/30/15	05/30/15
6	Halex GT Premix	4.376	SC	1.97	lb ai/a	V2	B	1.0 b	100.0 a	100.0 a	100.0 a
	----s-metolachlor	2.084		0.94							
	----glyphosate	2.084		0.94							
	----mesotrione	0.208		0.094							
	Atrazine 4L	4	L	0.5	lb ai/a	V2	B				
	Nonionic Surfactant	100	L	0.25	% v/v	V2	B				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	V2	B				
	LSD P=.05							4.50	.	.	.
	Standard Deviation							2.47	0.00	0.00	0.00
	CV							40.49	0.0	0.0	0.0
	Replicate F							0.445	0.000	0.000	0.000
	Replicate Prob(F)							0.6531	1.0000	1.0000	1.0000
	Treatment F							26.432	0.000	0.000	0.000
	Treatment Prob(F)							0.0001	1.0000	1.0000	1.0000

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	IPOSS mornglry	PANDI F.panicm	AMBEL C.ragwd	IPOSS mornglry
	Pest Code							IPOSS	PANDI	AMBEL	IPOSS
	Pest Name							mornglry	F.panicm	C.ragwd	mornglry
	Crop Code										
	Crop Name										
	Rating Type							Control	Control	Control	Control
	Rating Unit							%	%	%	%
	Rating Date							05/30/15	05/30/15	06/25/15	06/25/15
1	Untreated Check							0.0 c	0.0 c	0.0 c	0.0 c
2	Harness Xtra 5.6L Premix	5.6	L	2.24	lb ai/a	PRE	A	92.3 ab	98.3 ab	91.7 ab	75.0 ab
	----acetochlor	3.1		1.24							
	----atrazine	2.5		1							
	Impact.....topramezone	2.81	SC	0.0165	lb ai/a	2-4"wds	C				
	Atrazine 4L	4	L	0.5	lb ai/a	2-4"wds	C				
	Methylated Seed Oil	100	L	1	% v/v	2-4"wds	C				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	2-4"wds	C				
3	Harness Xtra 5.6L Premix	5.6	L	2.24	lb ai/a	PRE	A	93.3 a	99.0 a	91.7 ab	72.0 ab
	----acetochlor	3.1		1.24							
	----atrazine	2.5		1							
	Impact.....topramezone	2.81	SC	0.0165	lb ai/a	2-4"wds	C				
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a	2-4"wds	C				
	Atrazine 4L	4	L	0.5	lb ai/a	2-4"wds	C				
	Methylated Seed Oil	100	L	0.5	% v/v	2-4"wds	C				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	2-4"wds	C				
4	Harness Xtra 5.6L Premix	5.6	L	2.24	lb ai/a	PRE	A	91.7 ab	97.0 b	95.0 a	78.3 a
	----acetochlor	3.1		1.24							
	----atrazine	2.5		1							
	Impact.....topramezone	2.81	SC	0.0165	lb ai/a	2-4"wds	C				
	Status Premix	56	WG	0.105	lb ai/a	2-4"wds	C				
	----diflufenzopyr	16		0.03							
	----dicamba	40		0.075							
	Atrazine 4L	4	L	0.5	lb ai/a	2-4"wds	C				
	Methylated Seed Oil	100	L	0.5	% v/v	2-4"wds	C				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	2-4"wds	C				
5	Harness Xtra 5.6L Premix	5.6	L	2.24	lb ai/a	V2	B	87.7 b	99.0 a	85.0 b	58.3 b
	----acetochlor	3.1		1.24							
	----atrazine	2.5		1							
	Impact.....topramezone	2.81	SC	0.022	lb ai/a	V2	B				
	Methylated Seed Oil	100	L	0.5	% v/v	V2	B				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	V2	B				

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Pest Code							IPOSS	PANDI	AMBEL	IPOSS
Pest Name							mornglry	F.panicm	C.ragwd	mornglry
Crop Code										
Crop Name										
Rating Type							Control	Control	Control	Control
Rating Unit							%	%	%	%
Rating Date							05/30/15	05/30/15	06/25/15	06/25/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code			
6	Halex GT Premix	4.376	SC	1.97	lb ai/a	V2	B	89.3 ab	99.0 a	90.0 ab	65.0 ab
	----s-metolachlor	2.084		0.94							
	----glyphosate	2.084		0.94							
	----mesotrione	0.208		0.094							
	Atrazine 4L	4	L	0.5	lb ai/a	V2	B				
	Nonionic Surfactant	100	L	0.25	% v/v	V2	B				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	V2	B				
LSD P=.05								4.92	1.58	9.05	19.24
Standard Deviation								2.71	0.87	4.97	10.58
CV								3.57	1.06	6.58	18.2
Replicate F								0.281	2.059	5.787	0.075
Replicate Prob(F)								0.7610	0.1783	0.0214	0.9283
Treatment F								565.574	6418.662	167.551	23.127
Treatment Prob(F)								0.0001	0.0001	0.0001	0.0001

Pest Code	
Pest Name	
Crop Code	ZEAMX
Crop Name	Corn
Rating Type	Yield
Rating Unit	Bu/A
Rating Date	09/16/15

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	
1	Untreated Check							175.8
2	Harness Xtra 5.6L Premix	5.6	L	2.24	lb ai/a	PRE	A	225.3 a
	----acetochlor	3.1		1.24				
	----atrazine	2.5		1				
	Impact.....topramezone	2.81	SC	0.0165	lb ai/a	2-4"wds	C	
	Atrazine 4L	4	L	0.5	lb ai/a	2-4"wds	C	
	Methylated Seed Oil	100	L	1	% v/v	2-4"wds	C	
	Dry Ammonium Sulfate	100	D	1.02	% w/v	2-4"wds	C	
3	Harness Xtra 5.6L Premix	5.6	L	2.24	lb ai/a	PRE	A	238.0 a
	----acetochlor	3.1		1.24				
	----atrazine	2.5		1				
	Impact.....topramezone	2.81	SC	0.0165	lb ai/a	2-4"wds	C	
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a	2-4"wds	C	
	Atrazine 4L	4	L	0.5	lb ai/a	2-4"wds	C	
	Methylated Seed Oil	100	L	0.5	% v/v	2-4"wds	C	
	Dry Ammonium Sulfate	100	D	1.02	% w/v	2-4"wds	C	
4	Harness Xtra 5.6L Premix	5.6	L	2.24	lb ai/a	PRE	A	238.0 a
	----acetochlor	3.1		1.24				
	----atrazine	2.5		1				
	Impact.....topramezone	2.81	SC	0.0165	lb ai/a	2-4"wds	C	
	Status Premix	56	WG	0.105	lb ai/a	2-4"wds	C	
	----diflufenzopyr	16		0.03				
	----dicamba	40		0.075				
	Atrazine 4L	4	L	0.5	lb ai/a	2-4"wds	C	
	Methylated Seed Oil	100	L	0.5	% v/v	2-4"wds	C	
	Dry Ammonium Sulfate	100	D	1.02	% w/v	2-4"wds	C	
5	Harness Xtra 5.6L Premix	5.6	L	2.24	lb ai/a	V2	B	231.9 a
	----acetochlor	3.1		1.24				
	----atrazine	2.5		1				
	Impact.....topramezone	2.81	SC	0.022	lb ai/a	V2	B	
	Methylated Seed Oil	100	L	0.5	% v/v	V2	B	
	Dry Ammonium Sulfate	100	D	1.02	% w/v	V2	B	

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Pest Code	
Pest Name	
Crop Code	ZEAMX
Crop Name	Corn
Rating Type	Yield
Rating Unit	Bu/A
Rating Date	09/16/15

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	
6	Halex GT Premix	4.376	SC	1.97	lb ai/a	V2	B	235.5 a
	----s-metolachlor	2.084		0.94				
	----glyphosate	2.084		0.94				
	----mesotrione	0.208		0.094				
	Atrazine 4L	4	L	0.5	lb ai/a	V2	B	
	Nonionic Surfactant	100	L	0.25	% v/v	V2	B	
	Dry Ammonium Sulfate	100	D	1.02	% w/v	V2	B	

LSD P=.05	17.93
Standard Deviation	9.52
CV	4.07
Replicate F	4.732
Replicate Prob(F)	0.0440
Treatment F	0.939
Treatment Prob(F)	0.4883

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Palmer Amaranth Control in Field Corn

Trial ID: Corn6-15 Location: Field #7 Trial Year:
Protocol ID: Corn6-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Investigator: Mark VanGessel Title: Extension Weed Specialist
Organization: University of Delaware
Address: 16483 County Seat Hwy
City+State/Prov: Georgetown, Delaware
Postal Code: 19947 E-mail: mjv@udel.edu
Country: USA United States

Crop Description

Crop 1: ZEAMX Zea mays Corn
Variety: N68B3111 BBCH Scale: BCOR
Planting Date: 05/05/15
Planting Rate, Unit: 20000 S/A Planting Method: PLANTD planted
Depth, Unit: 2 in Planting Equipment: FE Field Equipment
Row Spacing, Unit: 30 in Emergence Date: 05/12/15
Soil Temperature, Unit: 89 F
Soil Moisture: NORMAL normal, adequate
Seed Bed: MEDTRA medium/trashy

Site and Design

Treated Plot Width: 10 FT Site Type: FIELD field
Treated Plot Length: 120 FT
Treated Plot Area: 1200 FT2 Treatments: 4 Tillage Type: NOTILL no-till
Replications: 4 Study Design: RACOBL Randomized Complete Block (RCB)

Soil Description

% Sand: 78 % OM: 2.5 Texture: SL sandy loam
% Silt: 13 pH: 4.8
% Clay: 9 CEC: 7.0 Fert. Level: G good
Soil Drainage: G good

Moisture and Weather Conditions

Overall Moisture Conditions: NORMAL normal
Closest Weather Station: UD REC Distance, Unit: 0.1 mi

Application Description

	A
Application Date:	06/05/15
Appl. Stop Time:	03:00 PM
Application Method:	SPRAY
Application Timing:	POST
Application Placement:	BROADC
Applied By:	VanGessl
Air Temperature, Unit:	65 F
% Relative Humidity:	87
Wind Velocity, Unit:	5 mph
Wind Direction:	N
Dew Presence (Y/N):	N no
Soil Temperature, Unit:	64 F
Soil Moisture:	NORMAL
% Cloud Cover:	100

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Crop Stage At Each Application

	A
Crop 1 Code, BBCH Scale:	ZEAMX BCOR
Stage Scale Used:	DESC
Stage Majority, Percent:	V6 100
Height, Unit:	24 in

Application Equipment

	A
Appl. Equipment:	Backpack
Equipment Type:	SPRBAC
Operation Pressure, Unit:	31 psi
Nozzle Type:	AIRMIX
Nozzle Size:	11002
Nozzle Spacing, Unit:	18 in
Boom Length, Unit:	9 ft
Boom Height, Unit:	40 in
Ground Speed, Unit:	3 mph
Carrier:	WATER
Spray Volume, Unit:	20 gal/ac
Mix Size, Unit:	2 Liters
Propellant:	COMCO2

Trial Comments

06/29/2015

In large plots all three treatments provided excellent Palmer amaranth control;
in small plots; Callisto+atrazine averaged 90% and other two treatments averaged 95%.

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Palmer Amaranth Control in Field Corn

Trial ID: Corn6-15 Location: Field #7 Trial Year:
Protocol ID: Corn6-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Pest Code								AMAPA
Pest Name								PalmerAm
Rating Type								Control
Rating Unit								%
Rating Date								06/29/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	
1	Untreated Check							0.0 b
2	Roundup PowerMax..glyphosate	4.5	AS	1.02	lb ae/a	POST	A	95.0 a
	Callisto.....mesotrione	4	SC	0.094	lb ai/a	POST	A	
	Atrazine 4L	4	L	0.75	lb ai/a	POST	A	
	Crop Oil Concentrate	100	L	1.25	% v/v	POST	A	
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	POST	A	
3	Roundup PowerMax..glyphosate	4.5	AS	1.02	lb ae/a	POST	A	97.0 a
	Status Premix	56	WG	0.28	lb ai/a	POST	A	
	----diflufenzopyr	16		0.08				
	----dicamba	40		0.2				
	Callisto.....mesotrione	4	SC	0.094	lb ai/a	POST	A	
	Atrazine 4L	4	L	0.75	lb ai/a	POST	A	
	Crop Oil Concentrate	100	L	1.25	% v/v	POST	A	
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	POST	A	
4	Roundup PowerMax..glyphosate	4.5	AS	1.02	lb ae/a	POST	A	97.3 a
	A16003	1.67	SL	0.0446	lb ai/a	POST	A	
	Callisto.....mesotrione	4	SC	0.094	lb ai/a	POST	A	
	Atrazine 4L	4	L	0.75	lb ai/a	POST	A	
	Crop Oil Concentrate	100	L	1.25	% v/v	POST	A	
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	POST	A	
LSD P=.05								4.96
Standard Deviation								3.10
CV								4.29
Replicate F								6.938
Replicate Prob(F)								0.0102
Treatment F								966.955
Treatment Prob(F)								0.0001

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

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Isoxaflutole in Field Corn

Trial ID: Corn7-15 Location: Field #16 Trial Year:
Protocol ID: Corn7-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact: Bayer

Investigator: Mark VanGessel Title: Extension Weed Specialist
Organization: University of Delaware
Address: 16483 County Seat Hwy
City+State/Prov: Georgetown, Delaware
Postal Code: 19947 E-mail: mjv@udel.edu
Country: USA United States

Crop Description

Crop 1: ZEAMX Zea mays Corn
Variety: H5410RC3P BBCH Scale: BCOR
Planting Date: 04/28/15
Planting Rate, Unit: 30000 S/A Planting Method: PLANTD planted
Depth, Unit: 2 in Planting Equipment: FE Field Equipment
Row Spacing, Unit: 30 in Emergence Date: 05/07/15
Harvested Width, Unit: 5 FT
Soil Temperature, Unit: 67 F Harvested Length, Unit: 25 FT
Soil Moisture: NORMAL normal, adequate Harvest Equipment: Plot combine
Seed Bed: MEDIUM medium % Standard Moisture: 15.5

Pest Description

Pest 1 Type: W Code: AMBEL Ambrosia artemisiifolia
Common Name: Common ragweed

Pest 2 Type: W Code: IPOSS Ipomoea sp.
Common Name: Morning glory

Pest 3 Type: W Code: GGGAN Annual grasses
Common Name: Annual grasses

Pest 4 Type: W Code: CHEAL Chenopodium album
Common Name: Common lambsquarters

Site and Design

Treated Plot Width: 10 FT Site Type: FIELD field
Treated Plot Length: 25 FT
Treated Plot Area: 250 FT2 Treatments: 12 Tillage Type: CONTIL conventional-till
Replications: 3 Study Design: RACOBL Randomized Complete Block (RCB)

Soil Description

% Sand: 77 % OM: 0.9 Texture: SL sandy loam
% Silt: 12 pH: 5.9
% Clay: 11 CEC: 5.6 Fert. Level: G good
Soil Drainage: F fair

Moisture and Weather Conditions

Overall Moisture Conditions: NORMAL normal
Closest Weather Station: UD REC Distance, Unit: 0.5 mi

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Application Description

	A	B	C
Application Date:	04/29/15	05/18/15	05/27/15
Appl. Stop Time:	09:40 AM	11:00 AM	11:00 AM
Interval to Prev. Appl., Unit:		19 DAYS	9 DAYS
Application Method:	SPRAY	SPRAY	SPRAY
Application Timing:	PRE	V3	V6
Application Placement:	BROADC	BROADC	BROADC
Applied By:	Johnson	Johnson	VanGessl
Air Temperature, Unit:	58 F	85 F	73 F
% Relative Humidity:	56	55	68
Wind Velocity, Unit:	0 mph	2 mph	7 mph
Wind Direction:	N/A	N	NE
Dew Presence (Y/N):	N no	N no	N no
Soil Temperature, Unit:	57 F	85 F	73 F
Soil Moisture:	NORMAL	NORMAL	NORMAL
% Cloud Cover:	5	40	80

Crop Stage At Each Application

	A	B	C
Crop 1 Code, BBCH Scale:	ZEAMX BCOR	ZEAMX BCOR	ZEAMX BCOR
Stage Scale Used:		DESC	DESC
Stage Majority, Percent:		V3 100	V6 100
Height, Unit:		5.5 in	15 in
Height Minimum, Maximum:		5 6	13 16

Pest Stage At Each Application

	A	B	C
Pest 1 Code, Type, Scale:	AMBEL W	AMBEL W	AMBEL W
Stage Majority, Percent:		4-leaf 70	veg 100
Stage Minimum, Percent:		2-leaf 20	
Stage Maximum, Percent:		6-leaf 10	
Height, Unit:		1.5 in	3 in
Height Minimum, Maximum:		1 2	2 4
Density, Unit:		150 m2	80 m2
Pest 2 Code, Type, Scale:	IPOSS W	IPOSS W	IPOSS W
Stage Majority, Percent:		cotyld 100	veg 100
Height, Unit:		1 in	2 in
Height Minimum, Maximum:			1 3
Density, Unit:		4 m2	3 m2
Pest 3 Code, Type, Scale:	GGGAN W	GGGAN W	GGGAN W
Stage Majority, Percent:		3-leaf 60	3-leaf 70
Stage Minimum, Percent:		3-leaf 60	3-leaf 70
Stage Maximum, Percent:		4-leaf 40	2-tilr 30
Height, Unit:		2 in	4 in
Height Minimum, Maximum:		1 2.5	2 6
Density, Unit:		50 m2	30 m2
Pest 4 Code, Type, Scale:	CHEAL W	CHEAL W	CHEAL W
Stage Majority, Percent:		veg 100	veg 100
Height, Unit:		1.5 in	2 in
Height Minimum, Maximum:		1 2	2 3
Density, Unit:		3 m2	2 m2

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Application Equipment

	A	B	C
Appl. Equipment:	Tractor	Tractor	Tractor
Equipment Type:	TRMOSP	TRMOSP	TRMOSP
Operation Pressure, Unit:	40 psi	40 psi	40 psi
Nozzle Type:	AIRMIX	AIRMIX	AIRMIX
Nozzle Size:	11002	11002	11002
Nozzle Spacing, Unit:	20 in	20 in	20 in
Boom Length, Unit:	10 ft	10 ft	10 ft
Boom Height, Unit:	18 in	22 in	30 in
Ground Speed, Unit:	3 mph	3 mph	3 mph
Carrier:	WATER	WATER	WATER
Spray Volume, Unit:	20 gal/ac	20 gal/ac	20 gal/ac
Mix Size, Unit:	0.7 Gallons	0.7 Gallons	0.7 Gallons
Propellant:	COMAIR	COMAIR	COMAIR

Trial Comments

05/18/15: Corn at V3.

05/30/15: Looks like some of the isoxaflutole is being absorbed through the roots of some of the broadleaf weeds.
Poor common cocklebur control in treatments 5, 6, and 7. Treatment 11 had lots of leaf burn in weeds - difficult to rate % control.
AMAPA 2-4" tall, AMBEL 4-5" tall, CHEAL 2-3" tall, IPOSS 1-2" tall, PANDI 3-4" tall.

06/28/15: Annual grasses are large crabgrass and giant foxtail.

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Isoxaflutole in Field Corn

Trial ID: Corn7-15 Location: Field #16 Trial Year:
Protocol ID: Corn7-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact: Bayer

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	ZEAMX Corn Stunting % 05/14/15	ZEAMX Corn Stunting % 05/22/15	AMAPA PalmerAm Control % 05/22/15	AMBEL C.ragwd Control % 05/22/15
	Pest Code										
	Pest Name									AMAPA PalmerAm	AMBEL C.ragwd
	Crop Code							ZEAMX	ZEAMX		
	Crop Name							Corn	Corn		
	Rating Type							Stunting	Stunting	Control	Control
	Rating Unit							%	%	%	%
	Rating Date							05/14/15	05/22/15	05/22/15	05/22/15
1	Untreated Check							0.0 a	0.0 c	0.0 c	0.0 d
2	Corvus Premix	2.63	SC	0.068	lb ai/a	PRE	A	8.0 a	6.3 ab	100.0 a	71.7 b
	----thiencarbazone	0.75		0.0194							
	----isoxaflutole	1.88		0.0486							
	Atrazine 4L	4	L	1	lb ai/a	PRE	A				
3	Corvus Premix	2.63	SC	0.068	lb ai/a	PRE	A	5.0 a	0.0 c	100.0 a	75.0 b
	----thiencarbazone	0.75		0.0194							
	----isoxaflutole	1.88		0.0486							
	Atrazine 4L	4	L	1	lb ai/a	PRE	A				
	Princep.....simazine	4	L	1	lb ai/a	PRE	A				
4	Balance Flexx...isoxaflutole	2	L	0.047	lb ai/a	PRE	A	2.3 a	3.3 bc	100.0 a	70.0 bc
	Atrazine 4L	4	L	1	lb ai/a	PRE	A				
	Princep.....simazine	4	L	1	lb ai/a	PRE	A				
5	Balance Flexx...isoxaflutole	2	L	0.0625	lb ai/a	PRE	A	4.7 a	4.0 bc	100.0 a	67.1 bc
	Atrazine 4L	4	L	1	lb ai/a	PRE	A				
	Princep.....simazine	4	L	1	lb ai/a	PRE	A				
6	Balance Flexx...isoxaflutole	2	L	0.047	lb ai/a	PRE	A	1.7 a	1.7 c	100.0 a	72.7 b
	Bicep II Magnum Premix	5.5	L	2.9	lb ai/a	PRE	A				
	----s-metolachlor	2.4		1.27							
	----atrazine	3.1		1.63							
7	Balance Flexx...isoxaflutole	2	L	0.047	lb ai/a	PRE	A	4.7 a	0.0 c	100.0 a	67.1 bc
	Zidua.....pyroxasulfone	85	WG	0.106	lb ai/a	PRE	A				
8	Balance Flexx...isoxaflutole	2	L	0.047	lb ai/a	PRE	A	5.7 a	0.0 c	100.0 a	69.3 bc
	Zidua.....pyroxasulfone	85	WG	0.106	lb ai/a	PRE	A				
	Atrazine 4L	4	L	0.5	lb ai/a	PRE	A				
9	Balance Flexx...isoxaflutole	2	L	0.047	lb ai/a	PRE	A	2.3 a	10.0 a	100.0 a	87.0 a
	Atrazine 4L	4	L	0.5	lb ai/a	PRE	A				
	Capreno Premix	3.45	SC	0.081	lb ai/a	V3	B				
	----thiencarbazone	0.57		0.0134							
	----tembotrione	2.88		0.0676							
	Roundup WeatherMax..glyphosate	4.5	AS	1.13	lb ae/a	V3	B				
	Atrazine 4L	4	L	0.5	lb ai/a	V3	B				
10	Bicep II Magnum Premix	5.5	L	1.38	lb ai/a	PRE	A	0.0 a	9.0 a	100.0 a	86.7 a
	----s-metolachlor	2.4		0.6							
	----atrazine	3.1		0.78							
	Capreno Premix	3.45	SC	0.081	lb ai/a	V3	B				
	----thiencarbazone	0.57		0.0134							
	----tembotrione	2.88		0.0676							
	Roundup WeatherMax..glyphosate	4.5	AS	1.13	lb ae/a	V3	B				
	Atrazine 4L	4	L	0.5	lb ai/a	V3	B				

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.
Missing data estimates are included in columns:Yates=4,13,14,16; Average=7

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code				
	Pest Code									AMAPA	AMBEL
	Pest Name									PalmerAm	C.ragwd
	Crop Code							ZEAMX	ZEAMX		
	Crop Name							Corn	Corn		
	Rating Type							Stunting	Stunting	Control	Control
	Rating Unit							%	%	%	%
	Rating Date							05/14/15	05/22/15	05/22/15	05/22/15
11	Bicep II Magnum Premix	5.5	L	1.38	lb ai/a	PRE	A	1.7 a	2.3 bc	100.0 a	61.7 c
	----s-metolachlor	2.4		0.6							
	----atrazine	3.1		0.78							
	Capreno Premix	3.45	SC	0.081	lb ai/a	V6	C				
	----thiencarbazone	0.57		0.0134							
	----tembotrione	2.88		0.0676							
	Roundup WeatherMax..glyphosate	4.5	AS	1.13	lb ae/a	V6	C				
	Atrazine 4L	4	L	0.5	lb ai/a	V6	C				
12	Bicep II Magnum Premix	5.5	L	1.38	lb ai/a	PRE	A	4.0 a	2.3 bc	96.7 b	86.3 a
	----s-metolachlor	2.4		0.6							
	----atrazine	3.1		0.78							
	DiFlexx.....dicamba	4	L	0.25	lb ai/a	V3	B				
	LSD P=.05							5.74	4.12	2.82	9.79
	Standard Deviation							3.39	2.43	1.67	5.75
	CV							101.77	74.84	1.82	8.47
	Replicate F							1.977	0.268	1.000	5.595
	Replicate Prob(F)							0.1623	0.7677	0.3840	0.0118
	Treatment F							1.512	6.229	895.546	47.904
	Treatment Prob(F)							0.1969	0.0001	0.0001	0.0001

Pest Code							CHEAL	IPOSS	SETFA	
Pest Name							C.lmsqtr	mornglry	G.foxtl	
Crop Code										ZEAMX
Crop Name										Corn
Rating Type							Control	Control	Control	Stunting
Rating Unit							%	%	%	%
Rating Date							05/22/15	05/22/15	05/22/15	05/30/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code				
1	Untreated Check							0.0 c	0.0 e	0.0 e	0.0 d
2	Corvus Premix	2.63	SC	0.068	lb ai/a	PRE	A	100.0 a	77.0 bc	69.3 c	4.7 bc
	----thiencarbazone	0.75		0.0194							
	----isoxaflutole	1.88		0.0486							
	Atrazine 4L	4	L	1	lb ai/a	PRE	A				
3	Corvus Premix	2.63	SC	0.068	lb ai/a	PRE	A	100.0 a	75.0 bc	70.0 bc	2.3 cd
	----thiencarbazone	0.75		0.0194							
	----isoxaflutole	1.88		0.0486							
	Atrazine 4L	4	L	1	lb ai/a	PRE	A				
	Princep.....simazine	4	L	1	lb ai/a	PRE	A				
4	Balance Flexx...isoxaflutole	2	L	0.047	lb ai/a	PRE	A	100.0 a	71.7 cd	66.7 c	0.0 d
	Atrazine 4L	4	L	1	lb ai/a	PRE	A				
	Princep.....simazine	4	L	1	lb ai/a	PRE	A				
5	Balance Flexx...isoxaflutole	2	L	0.0625	lb ai/a	PRE	A	100.0 a	71.7 cd	50.0 d	0.0 d
	Atrazine 4L	4	L	1	lb ai/a	PRE	A				
	Princep.....simazine	4	L	1	lb ai/a	PRE	A				
6	Balance Flexx...isoxaflutole	2	L	0.047	lb ai/a	PRE	A	100.0 a	74.3 bc	76.0 abc	0.0 d
	Bicep II Magnum Premix	5.5	L	2.9	lb ai/a	PRE	A				
	----s-metolachlor	2.4		1.27							
	----atrazine	3.1		1.63							
7	Balance Flexx...isoxaflutole	2	L	0.047	lb ai/a	PRE	A	95.0 a	71.7 cd	78.3 abc	0.0 d
	Zidua.....pyroxasulfone	85	WG	0.106	lb ai/a	PRE	A				
8	Balance Flexx...isoxaflutole	2	L	0.047	lb ai/a	PRE	A	96.7 a	74.3 bc	70.0 bc	0.0 d
	Zidua.....pyroxasulfone	85	WG	0.106	lb ai/a	PRE	A				
	Atrazine 4L	4	L	0.5	lb ai/a	PRE	A				
9	Balance Flexx...isoxaflutole	2	L	0.047	lb ai/a	PRE	A	100.0 a	87.0 a	86.0 a	8.0 b
	Atrazine 4L	4	L	0.5	lb ai/a	PRE	A				
	Capreno Premix	3.45	SC	0.081	lb ai/a	V3	B				
	----thiencarbazone	0.57		0.0134							
	----tembotrione	2.88		0.0676							
	Roundup WeatherMax..glyphosate	4.5	AS	1.13	lb ae/a	V3	B				
	Atrazine 4L	4	L	0.5	lb ai/a	V3	B				
10	Bicep II Magnum Premix	5.5	L	1.38	lb ai/a	PRE	A	100.0 a	84.7 a	83.7 ab	8.0 b
	----s-metolachlor	2.4		0.6							
	----atrazine	3.1		0.78							
	Capreno Premix	3.45	SC	0.081	lb ai/a	V3	B				
	----thiencarbazone	0.57		0.0134							
	----tembotrione	2.88		0.0676							
	Roundup WeatherMax..glyphosate	4.5	AS	1.13	lb ae/a	V3	B				
	Atrazine 4L	4	L	0.5	lb ai/a	V3	B				

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	CHEAL C.lmsqtr	IPOSS mornglry	SETFA G.foxtl	ZEAMX Corn Stunting
	Pest Code							CHEAL	IPOSS	SETFA	
	Pest Name							C.lmsqtr	mornglry	G.foxtl	
	Crop Code										ZEAMX
	Crop Name										Corn
	Rating Type							Control	Control	Control	Stunting
	Rating Unit							%	%	%	%
	Rating Date							05/22/15	05/22/15	05/22/15	05/30/15
11	Bicep II Magnum Premix	5.5	L	1.38	lb ai/a	PRE	A	70.0 b	65.0 d	75.0 abc	13.3 a
	----s-metolachlor	2.4		0.6							
	----atrazine	3.1		0.78							
	Capreno Premix	3.45	SC	0.081	lb ai/a	V6	C				
	----thiencarbazone	0.57		0.0134							
	----tembotrione	2.88		0.0676							
	Roundup WeatherMax..glyphosate	4.5	AS	1.13	lb ae/a	V6	C				
	Atrazine 4L	4	L	0.5	lb ai/a	V6	C				
12	Bicep II Magnum Premix	5.5	L	1.38	lb ai/a	PRE	A	96.0 a	81.7 ab	70.0 bc	4.7 bc
	----s-metolachlor	2.4		0.6							
	----atrazine	3.1		0.78							
	DiFlexx.....dicamba	4	L	0.25	lb ai/a	V3	B				
	LSD P=.05							7.92	7.48	14.16	4.05
	Standard Deviation							4.68	4.42	8.18	2.39
	CV							5.31	6.36	12.35	70.04
	Replicate F							0.709	0.807	0.300	0.058
	Replicate Prob(F)							0.5029	0.4588	0.7448	0.9436
	Treatment F							115.411	79.439	23.300	10.224
	Treatment Prob(F)							0.0001	0.0001	0.0001	0.0001

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	AMAPA PalmerAm	AMBEL C.ragwd	CHEAL C.lmsqtr	IPOSS mornglry
	Pest Code							AMAPA	AMBEL	CHEAL	IPOSS
	Pest Name							PalmerAm	C.ragwd	C.lmsqtr	mornglry
	Crop Code										
	Crop Name										
	Rating Type							Control	Control	Control	Control
	Rating Unit							%	%	%	%
	Rating Date							05/30/15	05/30/15	05/30/15	05/30/15
1	Untreated Check							0.0 c	0.0 d	0.0 c	0.0 e
2	Corvus Premix	2.63	SC	0.068	lb ai/a	PRE	A	96.7 a	73.3 c	100.0 a	74.3 bc
	----thiencarbazone	0.75		0.0194							
	----isoxaflutole	1.88		0.0486							
	Atrazine 4L	4	L	1	lb ai/a	PRE	A				
3	Corvus Premix	2.63	SC	0.068	lb ai/a	PRE	A	100.0 a	76.7 bc	100.0 a	75.0 bc
	----thiencarbazone	0.75		0.0194							
	----isoxaflutole	1.88		0.0486							
	Atrazine 4L	4	L	1	lb ai/a	PRE	A				
	Princep.....simazine	4	L	1	lb ai/a	PRE	A				
4	Balance Flexx...isoxaflutole	2	L	0.047	lb ai/a	PRE	A	95.0 ab	76.7 bc	100.0 a	70.0 bcd
	Atrazine 4L	4	L	1	lb ai/a	PRE	A				
	Princep.....simazine	4	L	1	lb ai/a	PRE	A				
5	Balance Flexx...isoxaflutole	2	L	0.0625	lb ai/a	PRE	A	86.7 ab	71.7 c	97.7 ab	71.7 bcd
	Atrazine 4L	4	L	1	lb ai/a	PRE	A				
	Princep.....simazine	4	L	1	lb ai/a	PRE	A				
6	Balance Flexx...isoxaflutole	2	L	0.047	lb ai/a	PRE	A	95.0 ab	76.0 bc	100.0 a	76.7 bc
	Bicep II Magnum Premix	5.5	L	2.9	lb ai/a	PRE	A				
	----s-metolachlor	2.4		1.27							
	----atrazine	3.1		1.63							
7	Balance Flexx...isoxaflutole	2	L	0.047	lb ai/a	PRE	A	90.0 ab	65.0 c	96.7 ab	60.0 d
	Zidua.....pyroxasulfone	85	WG	0.106	lb ai/a	PRE	A				
8	Balance Flexx...isoxaflutole	2	L	0.047	lb ai/a	PRE	A	81.7 b	73.3 c	100.0 a	66.7 cd
	Zidua.....pyroxasulfone	85	WG	0.106	lb ai/a	PRE	A				
	Atrazine 4L	4	L	0.5	lb ai/a	PRE	A				
9	Balance Flexx...isoxaflutole	2	L	0.047	lb ai/a	PRE	A	100.0 a	100.0 a	100.0 a	97.0 a
	Atrazine 4L	4	L	0.5	lb ai/a	PRE	A				
	Capreno Premix	3.45	SC	0.081	lb ai/a	V3	B				
	----thiencarbazone	0.57		0.0134							
	----tembotrione	2.88		0.0676							
	Roundup WeatherMax..glyphosate	4.5	AS	1.13	lb ae/a	V3	B				
	Atrazine 4L	4	L	0.5	lb ai/a	V3	B				
10	Bicep II Magnum Premix	5.5	L	1.38	lb ai/a	PRE	A	100.0 a	100.0 a	100.0 a	96.3 a
	----s-metolachlor	2.4		0.6							
	----atrazine	3.1		0.78							
	Capreno Premix	3.45	SC	0.081	lb ai/a	V3	B				
	----thiencarbazone	0.57		0.0134							
	----tembotrione	2.88		0.0676							
	Roundup WeatherMax..glyphosate	4.5	AS	1.13	lb ae/a	V3	B				
	Atrazine 4L	4	L	0.5	lb ai/a	V3	B				

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	AMAPA	AMBEL	CHEAL	IPOSS
	Pest Code							AMAPA	AMBEL	CHEAL	IPOSS
	Pest Name							PalmerAm	C.ragwd	C.lmsqtr	mornglry
	Crop Code										
	Crop Name										
	Rating Type							Control	Control	Control	Control
	Rating Unit							%	%	%	%
	Rating Date							05/30/15	05/30/15	05/30/15	05/30/15
11	Bicep II Magnum Premix	5.5	L	1.38	lb ai/a	PRE	A				
	----s-metolachlor	2.4		0.6							
	----atrazine	3.1		0.78							
	Capreno Premix	3.45	SC	0.081	lb ai/a	V6	C				
	----thiencarbazone	0.57		0.0134							
	----tembotrione	2.88		0.0676							
	Roundup WeatherMax..glyphosate	4.5	AS	1.13	lb ae/a	V6	C				
	Atrazine 4L	4	L	0.5	lb ai/a	V6	C				
12	Bicep II Magnum Premix	5.5	L	1.38	lb ai/a	PRE	A	93.3 ab	86.7 b	94.7 b	81.0 b
	----s-metolachlor	2.4		0.6							
	----atrazine	3.1		0.78							
	DiFlexx.....dicamba	4	L	0.25	lb ai/a	V3	B				
	LSD P=.05							14.90	12.79	3.51	13.64
	Standard Deviation							8.75	7.51	2.06	8.01
	CV							10.25	10.34	2.29	11.46
	Replicate F							3.889	2.282	3.162	0.234
	Replicate Prob(F)							0.0374	0.1280	0.0641	0.7933
	Treatment F							32.726	37.614	629.321	31.071
	Treatment Prob(F)							0.0001	0.0001	0.0001	0.0001

Pest Code							PANDI	AMBEL	IPOSS	GGGAN
Pest Name							F.panicm	C.ragwd	mornglry	AnnGrass
Crop Code										
Crop Name										
Rating Type							Control	Control	Control	Control
Rating Unit							%	%	%	%
Rating Date							05/30/15	06/28/15	06/28/15	06/28/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code				
1	Untreated Check							0.0 e	0.0 e	0.0 f	0.0 g
2	Corvus Premix	2.63	SC	0.068	lb ai/a	PRE	A	53.3 d	58.7 d	50.0 e	56.7 ef
	----thiencarbazone	0.75		0.0194							
	----isoxaflutole	1.88		0.0486							
	Atrazine 4L	4	L	1	lb ai/a	PRE	A				
3	Corvus Premix	2.63	SC	0.068	lb ai/a	PRE	A	75.0 bc	78.3 bcd	65.0 cd	67.6 cde
	----thiencarbazone	0.75		0.0194							
	----isoxaflutole	1.88		0.0486							
	Atrazine 4L	4	L	1	lb ai/a	PRE	A				
	Princep.....simazine	4	L	1	lb ai/a	PRE	A				
4	Balance Flexx...isoxaflutole	2	L	0.047	lb ai/a	PRE	A	66.7 cd	71.1 cd	60.0 cd	65.0 def
	Atrazine 4L	4	L	1	lb ai/a	PRE	A				
	Princep.....simazine	4	L	1	lb ai/a	PRE	A				
5	Balance Flexx...isoxaflutole	2	L	0.0625	lb ai/a	PRE	A	59.7 d	76.7 bcd	58.3 de	66.7 def
	Atrazine 4L	4	L	1	lb ai/a	PRE	A				
	Princep.....simazine	4	L	1	lb ai/a	PRE	A				
6	Balance Flexx...isoxaflutole	2	L	0.047	lb ai/a	PRE	A	78.3 bc	81.7 abc	63.3 cd	77.7 bcd
	Bicep II Magnum Premix	5.5	L	2.9	lb ai/a	PRE	A				
	----s-metolachlor	2.4		1.27							
	----atrazine	3.1		1.63							
7	Balance Flexx...isoxaflutole	2	L	0.047	lb ai/a	PRE	A	84.7 b	73.7 bcd	50.0 e	81.7 b
	Zidua.....pyroxasulfone	85	WG	0.106	lb ai/a	PRE	A				
8	Balance Flexx...isoxaflutole	2	L	0.047	lb ai/a	PRE	A	74.7 bc	79.0 bc	68.3 c	80.7 bc
	Zidua.....pyroxasulfone	85	WG	0.106	lb ai/a	PRE	A				
	Atrazine 4L	4	L	0.5	lb ai/a	PRE	A				
9	Balance Flexx...isoxaflutole	2	L	0.047	lb ai/a	PRE	A	100.0 a	100.0 a	86.0 b	100.0 a
	Atrazine 4L	4	L	0.5	lb ai/a	PRE	A				
	Capreno Premix	3.45	SC	0.081	lb ai/a	V3	B				
	----thiencarbazone	0.57		0.0134							
	----tembotrione	2.88		0.0676							
	Roundup WeatherMax..glyphosate	4.5	AS	1.13	lb ae/a	V3	B				
	Atrazine 4L	4	L	0.5	lb ai/a	V3	B				
10	Bicep II Magnum Premix	5.5	L	1.38	lb ai/a	PRE	A	99.7 a	100.0 a	83.3 b	100.0 a
	----s-metolachlor	2.4		0.6							
	----atrazine	3.1		0.78							
	Capreno Premix	3.45	SC	0.081	lb ai/a	V3	B				
	----thiencarbazone	0.57		0.0134							
	----tembotrione	2.88		0.0676							
	Roundup WeatherMax..glyphosate	4.5	AS	1.13	lb ae/a	V3	B				
	Atrazine 4L	4	L	0.5	lb ai/a	V3	B				

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	PANDI F.panicm	AMBEL C.ragwd	IPOSS mornglry	GGGAN AnnGrass
	Pest Code							PANDI	AMBEL	IPOSS	GGGAN
	Pest Name							F.panicm	C.ragwd	mornglry	AnnGrass
	Crop Code										
	Crop Name										
	Rating Type							Control	Control	Control	Control
	Rating Unit							%	%	%	%
	Rating Date							05/30/15	06/28/15	06/28/15	06/28/15
11	Bicep II Magnum Premix	5.5	L	1.38	lb ai/a	PRE	A		100.0 a	95.7 a	100.0 a
	----s-metolachlor	2.4		0.6							
	----atrazine	3.1		0.78							
	Capreno Premix	3.45	SC	0.081	lb ai/a	V6	C				
	----thiencarbazone	0.57		0.0134							
	----tembotrione	2.88		0.0676							
	Roundup WeatherMax..glyphosate	4.5	AS	1.13	lb ae/a	V6	C				
	Atrazine 4L	4	L	0.5	lb ai/a	V6	C				
12	Bicep II Magnum Premix	5.5	L	1.38	lb ai/a	PRE	A	56.7 d	93.3 ab	60.0 cd	53.3 f
	----s-metolachlor	2.4		0.6							
	----atrazine	3.1		0.78							
	DiFlexx.....dicamba	4	L	0.25	lb ai/a	V3	B				
	LSD P=.05							13.45	19.86	9.56	13.59
	Standard Deviation							7.81	11.62	5.65	7.98
	CV							11.47	15.28	9.15	11.28
	Replicate F							0.261	3.494	3.203	0.005
	Replicate Prob(F)							0.7735	0.0510	0.0601	0.9949
	Treatment F							37.103	16.512	54.488	35.962
	Treatment Prob(F)							0.0001	0.0001	0.0001	0.0001

Pest Code	
Pest Name	
Crop Code	ZEAMX
Crop Name	Corn
Rating Type	Yield
Rating Unit	Bu/A
Rating Date	09/15/15

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	
1	Untreated Check							150.5 b
2	Corvus Premix	2.63	SC	0.068	lb ai/a	PRE	A	208.2 a
	----thiencarbazone	0.75		0.0194				
	----isoxaflutole	1.88		0.0486				
	Atrazine 4L	4	L	1	lb ai/a	PRE	A	
3	Corvus Premix	2.63	SC	0.068	lb ai/a	PRE	A	217.5 a
	----thiencarbazone	0.75		0.0194				
	----isoxaflutole	1.88		0.0486				
	Atrazine 4L	4	L	1	lb ai/a	PRE	A	
	Princep.....simazine	4	L	1	lb ai/a	PRE	A	
4	Balance Flexx...isoxaflutole	2	L	0.047	lb ai/a	PRE	A	216.4 a
	Atrazine 4L	4	L	1	lb ai/a	PRE	A	
	Princep.....simazine	4	L	1	lb ai/a	PRE	A	
5	Balance Flexx...isoxaflutole	2	L	0.0625	lb ai/a	PRE	A	207.2 a
	Atrazine 4L	4	L	1	lb ai/a	PRE	A	
	Princep.....simazine	4	L	1	lb ai/a	PRE	A	
6	Balance Flexx...isoxaflutole	2	L	0.047	lb ai/a	PRE	A	213.6 a
	Bicep II Magnum Premix	5.5	L	2.9	lb ai/a	PRE	A	
	----s-metolachlor	2.4		1.27				
	----atrazine	3.1		1.63				
7	Balance Flexx...isoxaflutole	2	L	0.047	lb ai/a	PRE	A	209.9 a
	Zidua.....pyroxasulfone	85	WG	0.106	lb ai/a	PRE	A	
8	Balance Flexx...isoxaflutole	2	L	0.047	lb ai/a	PRE	A	208.4 a
	Zidua.....pyroxasulfone	85	WG	0.106	lb ai/a	PRE	A	
	Atrazine 4L	4	L	0.5	lb ai/a	PRE	A	
9	Balance Flexx...isoxaflutole	2	L	0.047	lb ai/a	PRE	A	219.1 a
	Atrazine 4L	4	L	0.5	lb ai/a	PRE	A	
	Capreno Premix	3.45	SC	0.081	lb ai/a	V3	B	
	----thiencarbazone	0.57		0.0134				
	----tembotrione	2.88		0.0676				
	Roundup WeatherMax..glyphosate	4.5	AS	1.13	lb ae/a	V3	B	
	Atrazine 4L	4	L	0.5	lb ai/a	V3	B	
10	Bicep II Magnum Premix	5.5	L	1.38	lb ai/a	PRE	A	207.6 a
	----s-metolachlor	2.4		0.6				
	----atrazine	3.1		0.78				
	Capreno Premix	3.45	SC	0.081	lb ai/a	V3	B	
	----thiencarbazone	0.57		0.0134				
	----tembotrione	2.88		0.0676				
	Roundup WeatherMax..glyphosate	4.5	AS	1.13	lb ae/a	V3	B	
	Atrazine 4L	4	L	0.5	lb ai/a	V3	B	

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Pest Code	
Pest Name	
Crop Code	ZEAMX
Crop Name	Corn
Rating Type	Yield
Rating Unit	Bu/A
Rating Date	09/15/15

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	
11	Bicep II Magnum Premix	5.5	L	1.38	lb ai/a	PRE	A	217.8 a
	----s-metolachlor	2.4		0.6				
	----atrazine	3.1		0.78				
	Capreno Premix	3.45	SC	0.081	lb ai/a	V6	C	
	----thiencarbazone	0.57		0.0134				
	----tembotrione	2.88		0.0676				
	Roundup WeatherMax..glyphosate	4.5	AS	1.13	lb ae/a	V6	C	
	Atrazine 4L	4	L	0.5	lb ai/a	V6	C	
12	Bicep II Magnum Premix	5.5	L	1.38	lb ai/a	PRE	A	210.7 a
	----s-metolachlor	2.4		0.6				
	----atrazine	3.1		0.78				
	DiFlexx.....dicamba	4	L	0.25	lb ai/a	V3	B	

LSD P=.05	31.03
Standard Deviation	18.32
CV	8.84
Replicate F	0.361
Replicate Prob(F)	0.7012
Treatment F	3.021
Treatment Prob(F)	0.0131

University of Delaware

Soil-Applied Herbicide Evaluation in Field Corn

Trial ID: Corn9a-15 Location: REC Field #16 Trial Year:
Protocol ID: Corn9a-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Investigator: Mark VanGessel Title: Extension Weed Specialist
Organization: University of Delaware
Address: 16483 County Seat Hwy
City+State/Prov: Georgetown, Delaware
Postal Code: 19947 E-mail: mjv@udel.edu
Country: USA United States

Crop Description

Crop 1: ZEAMX Zea mays Corn
Variety: H5410RC3P BBCH Scale: BCOR
Planting Date: 04/28/15
Planting Rate, Unit: 30000 S/A Planting Method: PLANTD planted
Depth, Unit: 2 in Planting Equipment: FE Field Equipment
Row Spacing, Unit: 30 in Emergence Date: 05/07/15
Harvest Date: 09/16/15
Harvested Width, Unit: 5 FT
Soil Temperature, Unit: 67 F Harvested Length, Unit: 25 FT
Soil Moisture: NORMAL normal, adequate Harvest Equipment: Plot combine
Seed Bed: MEDIUM medium % Standard Moisture: 15.5

Site and Design

Treated Plot Width: 10 FT Site Type: FIELD field
Treated Plot Length: 25 FT
Treated Plot Area: 250 FT2 Treatments: 14 Tillage Type: CONTIL conventional-till
Replications: 3 Study Design: RACOBL Randomized Complete Block (RCB)

Soil Description

% Sand: 77 % OM: 0.9 Texture: SL sandy loam
% Silt: 12 pH: 5.9
% Clay: 11 CEC: 5.6 Fert. Level: G good
Soil Drainage: F fair

Moisture and Weather Conditions

Overall Moisture Conditions: NORMAL normal
Closest Weather Station: UD REC Distance, Unit: 0.5 mi

Application Description

	A
Application Date:	04/29/15
Appl. Stop Time:	11:00 AM
Application Method:	SPRAY
Application Timing:	PRE
Application Placement:	BROADC
Applied By:	Johnson
Air Temperature, Unit:	68 F
% Relative Humidity:	36
Wind Velocity, Unit:	2 mph
Wind Direction:	SW
Dew Presence (Y/N):	N no
Soil Temperature, Unit:	67 F
Soil Moisture:	NORMAL
% Cloud Cover:	5

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Crop Stage At Each Application

	A
Crop 1 Code, BBCH Scale:	ZEAMX BCOR

Application Equipment

	A
Appl. Equipment:	Tractor
Equipment Type:	TRMOSP
Operation Pressure, Unit:	40 psi
Nozzle Type:	AIRMIX
Nozzle Size:	11002
Nozzle Spacing, Unit:	20 in
Boom Length, Unit:	10 ft
Boom Height, Unit:	18 in
Ground Speed, Unit:	3 mph
Carrier:	WATER
Spray Volume, Unit:	20 gal/ac
Mix Size, Unit:	0.7 Gallons
Propellant:	COMAIR

Trial Comments

University of Delaware

Soil-Applied Herbicide Evaluation in Field Corn

Trial ID: Corn9a-15 Location: REC Field #16 Trial Year:
Protocol ID: Corn9a-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	ZEAMX Corn Stunting % 05/14/15	ZEAMX Corn Stunting % 05/22/15	AMBEL C.ragwd Control % 06/07/15	CHEAL C.lmsqtr Control % 06/07/15
1	Untreated Check							0.0 a	0.0 c	0.0 c	0.0 c
2	Lumax EZ Premix	3.67	SC	2.48	lb ai/a	PRE	A	0.0 a	0.0 c	65.5 b	100.0 a
	----s-metolachlor	2.49		1.68							
	----mesotrione	0.25		0.169							
	----atrazine	0.93		0.63							
3	Lexar EZ Premix	3.71	SC	2.78	lb ai/a	PRE	A	0.0 a	0.0 c	66.6 b	100.0 a
	----s-metolachlor	1.742819		1.3							
	----mesotrione	0.2243629		0.168							
	----atrazine	1.742819		1.3							
4	Lumax EZ Premix	3.67	SC	2.48	lb ai/a	PRE	A	0.0 a	0.0 c	90.0 a	100.0 a
	----s-metolachlor	2.49		1.68							
	----mesotrione	0.25		0.169							
	----atrazine	0.93		0.63							
	Atrazine 4L	4	L	1.5	lb ai/a	PRE	A				
5	Lexar EZ Premix	3.71	SC	2.78	lb ai/a	PRE	A	0.0 a	1.0 c	100.0 a	100.0 a
	----s-metolachlor	1.742819		1.3							
	----mesotrione	0.2243629		0.168							
	----atrazine	1.742819		1.3							
	Princep.....simazine	4	L	1.5	lb ai/a	PRE	A				
6	Bicep II Magnum Premix	5.5	L	2.9	lb ai/a	PRE	A	0.0 a	0.0 c	56.7 b	56.7 b
	----s-metolachlor	2.4		1.27							
	----atrazine	3.1		1.63							
7	Bicep II Magnum Premix	5.5	L	2.2	lb ai/a	PRE	A	0.0 a	0.0 c	63.3 b	50.0 b
	----s-metolachlor	2.4		0.96							
	----atrazine	3.1		1.24							
8	Bicep II Magnum Premix	5.5	L	2.2	lb ai/a	PRE	A	1.7 a	7.0 a	63.3 b	66.7 b
	----s-metolachlor	2.4		0.96							
	----atrazine	3.1		1.24							
	Resolve SG.....rimsulfuron	25	SG	0.0156	lb ai/a	PRE	A				
9	Bicep II Magnum Premix	5.5	L	2.2	lb ai/a	PRE	A	3.3 a	3.3 b	61.7 b	
	----s-metolachlor	2.4		0.96							
	----atrazine	3.1		1.24							
	Prowl H2O.....pendimethalin	3.8	CS	1.43	lb ai/a	PRE	A				
10	Harness Xtra 5.6L Premix	5.6	L	2.38	lb ai/a	PRE	A	0.0 a	0.0 c	60.0 b	60.0 b
	----acetochlor	3.1		1.32							
	----atrazine	2.5		1.06							
11	Harness Xtra 5.6L Premix	5.6	L	4.2	lb ai/a	PRE	A	1.7 a	0.0 c	88.3 a	
	----acetochlor	3.1		2.32							
	----atrazine	2.5		1.88							
12	Zidua.....pyroxasulfone	85	WG	0.08	lb ai/a	PRE	A	0.0 a	0.0 c	69.3 b	55.0 b
	Atrazine 4L	4	L	1.25	lb ai/a	PRE	A				

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.
Missing data estimates are included in columns:Yates=3,6,9; Average=4,5

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code				
	Pest Code									AMBEL	CHEAL
	Pest Name									C.ragwd	C.lmsqtr
	Crop Code							ZEAMX	ZEAMX		
	Crop Name							Corn	Corn		
	Rating Type							Stunting	Stunting	Control	Control
	Rating Unit							%	%	%	%
	Rating Date							05/14/15	05/22/15	06/07/15	06/07/15
13	Prequel Premix	45	DF	0.045	lb ai/a	PRE	A	4.7 a	6.3 a	95.0 a	100.0 a
	----rimsulfuron	15		0.015							
	----isoxaflutole	30		0.03							
	Atrazine 4L	4	L	1.5	lb ai/a	PRE	A				
14	Corvus Premix	2.63	SC	0.068	lb ai/a	PRE	A	1.7 a	6.3 a	100.0 a	100.0 a
	----thiencarbazone	0.75		0.0194							
	----isoxaflutole	1.88		0.0486							
	Atrazine 4L	4	L	1.5	lb ai/a	PRE	A				
	LSD P=.05							3.13	1.63	14.38	18.12
	Standard Deviation							1.86	0.97	8.53	10.52
	CV							200.73	56.54	12.19	14.21
	Replicate F							1.295	1.901	2.856	0.458
	Replicate Prob(F)							0.2909	0.1697	0.0772	0.6402
	Treatment F							1.936	24.608	27.034	27.147
	Treatment Prob(F)							0.0735	0.0001	0.0001	0.0001

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	IPOSS mornglry	PANDI F.panicm	ZEAMX Corn
	Crop Code									ZEAMX
	Crop Name									Corn
	Rating Type							Control	Control	Yield
	Rating Unit							%	%	Bu/A
	Rating Date							06/07/15	06/07/15	09/16/15
1	Untreated Check							0.0 f	0.0 f	242.8 a
2	Lumax EZ Premix	3.67	SC	2.48	lb ai/a	PRE	A	77.5 ab	76.0 a-d	227.9 a
	----s-metolachlor	2.49		1.68						
	----mesotrione	0.25		0.169						
	----atrazine	0.93		0.63						
3	Lexar EZ Premix	3.71	SC	2.78	lb ai/a	PRE	A	84.0 a	57.7 e	227.7 a
	----s-metolachlor	1.742819		1.3						
	----mesotrione	0.2243629		0.168						
	----atrazine	1.742819		1.3						
4	Lumax EZ Premix	3.67	SC	2.48	lb ai/a	PRE	A	85.0 a	66.7 cde	229.5 a
	----s-metolachlor	2.49		1.68						
	----mesotrione	0.25		0.169						
	----atrazine	0.93		0.63						
	Atrazine 4L	4	L	1.5	lb ai/a	PRE	A			
5	Lexar EZ Premix	3.71	SC	2.78	lb ai/a	PRE	A	85.0 a	73.3 b-e	202.1 a
	----s-metolachlor	1.742819		1.3						
	----mesotrione	0.2243629		0.168						
	----atrazine	1.742819		1.3						
	Princep.....simazine	4	L	1.5	lb ai/a	PRE	A			
6	Bicep II Magnum Premix	5.5	L	2.9	lb ai/a	PRE	A	51.7 cde	56.7 e	239.6 a
	----s-metolachlor	2.4		1.27						
	----atrazine	3.1		1.63						
7	Bicep II Magnum Premix	5.5	L	2.2	lb ai/a	PRE	A	68.3 abc	63.3 de	209.4 a
	----s-metolachlor	2.4		0.96						
	----atrazine	3.1		1.24						
8	Bicep II Magnum Premix	5.5	L	2.2	lb ai/a	PRE	A	50.0 de	67.6 b-e	212.9 a
	----s-metolachlor	2.4		0.96						
	----atrazine	3.1		1.24						
	Resolve SG.....rimsulfuron	25	SG	0.0156	lb ai/a	PRE	A			
9	Bicep II Magnum Premix	5.5	L	2.2	lb ai/a	PRE	A	65.0 bcd	77.5 a-d	243.6 a
	----s-metolachlor	2.4		0.96						
	----atrazine	3.1		1.24						
	Prowl H2O.....pendimethalin	3.8	CS	1.43	lb ai/a	PRE	A			
10	Harness Xtra 5.6L Premix	5.6	L	2.38	lb ai/a	PRE	A	40.0 e	81.7 abc	222.5 a
	----acetochlor	3.1		1.32						
	----atrazine	2.5		1.06						
11	Harness Xtra 5.6L Premix	5.6	L	4.2	lb ai/a	PRE	A	76.5 ab	91.7 a	194.5 a
	----acetochlor	3.1		2.32						
	----atrazine	2.5		1.88						
12	Zidua.....pyroxasulfone	85	WG	0.08	lb ai/a	PRE	A	53.3 cde	84.0 ab	213.2 a
	Atrazine 4L	4	L	1.25	lb ai/a	PRE	A			

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Pest Code								IPOSS	PANDI	
Pest Name								mornglry	F.panicm	
Crop Code										ZEAMX
Crop Name										Corn
Rating Type								Control	Control	Yield
Rating Unit								%	%	Bu/A
Rating Date								06/07/15	06/07/15	09/16/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code			
13	Prequel Premix	45	DF	0.045	lb ai/a	PRE	A	57.5 cde	66.7 cde	235.5 a
	----rimsulfuron	15		0.015						
	----isoxaflutole	30		0.03						
	Atrazine 4L	4	L	1.5	lb ai/a	PRE	A			
14	Corvus Premix	2.63	SC	0.068	lb ai/a	PRE	A	76.7 ab	71.0 b-e	223.4 a
	----thiencarbazone	0.75		0.0194						
	----isoxaflutole	1.88		0.0486						
	Atrazine 4L	4	L	1.5	lb ai/a	PRE	A			
LSD P=.05								17.87	16.71	52.18
Standard Deviation								10.46	9.92	30.97
CV								16.82	14.87	13.88
Replicate F								1.833	0.005	0.084
Replicate Prob(F)								0.1872	0.9947	0.9193
Treatment F								14.627	14.212	0.714
Treatment Prob(F)								0.0001	0.0001	0.7326

University of Delaware

Soil-Applied Herbicide Evaluation in Field Corn

Trial ID: Corn9b-15 Location: Greenwood Trial Year:
Protocol ID: Corn9b-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Investigator: Mark VanGessel Title: Extension Weed Specialist
Organization: University of Delaware
Address: 16483 County Seat Hwy
City+State/Prov: Georgetown, Delaware
Postal Code: 19947 E-mail: mjv@udel.edu
Country: USA United States

Crop Description

Crop 1: ZEAMX Zea mays Corn
Variety: N59B BBCH Scale: BCOR
Planting Date: 05/05/15
Planting Method: PLANTD planted
Depth, Unit: 2 in Planting Equipment: FE Field Equipment
Row Spacing, Unit: 30 in Emergence Date: 05/12/15
Soil Temperature, Unit: 89 F
Soil Moisture: NORMAL normal, adequate
Seed Bed: MEDIUM medium

Site and Design

Treated Plot Width: 10 FT Site Type: FIELD field
Treated Plot Length: 25 FT
Treated Plot Area: 250 FT2 Treatments: 15 Tillage Type: CONTIL conventional-till
Replications: 3 Study Design: RACOBL Randomized Complete Block (RCB)

Moisture and Weather Conditions

Overall Moisture Conditions: NORMAL normal
Closest Weather Station: UD REC Distance, Unit: 10 mi

Application Description

	A
Application Date:	05/08/15
Appl. Stop Time:	06:00 PM
Application Method:	SPRAY
Application Timing:	PRE
Application Placement:	BROADC
Applied By:	VanGessl
Air Temperature, Unit:	73 F
% Relative Humidity:	53
Wind Velocity, Unit:	4 mph
Wind Direction:	SE
Dew Presence (Y/N):	N no
Soil Temperature, Unit:	74 F
Soil Moisture:	NORMAL
% Cloud Cover:	0

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Application Equipment

	A
Appl. Equipment:	Backpack
Equipment Type:	SPRBAC
Operation Pressure, Unit:	31 psi
Nozzle Type:	AIRMIX
Nozzle Size:	11002
Nozzle Spacing, Unit:	18 in
Boom Length, Unit:	9 ft
Boom Height, Unit:	18 in
Ground Speed, Unit:	3 mph
Carrier:	WATER
Spray Volume, Unit:	20 gal/ac
Mix Size, Unit:	2 Liters
Propellant:	COMCO2

Trial Comments

05/29/15: No corn injury observed.

University of Delaware

Soil-Applied Herbicide Evaluation in Field Corn

Trial ID: Corn9b-15 Location: Greenwood Trial Year:
Protocol ID: Corn9b-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	ZEAMX Corn Stunting % 05/20/15	AMARE RrtPigwd Control % 05/29/15	IPOSS mornglry Control % 05/29/15	PANDI F.panicm Control % 05/29/15
1	Untreated Check							0.0 c	0.0 d	0.0 h	0.0 d
2	Lumax EZ Premix	3.67	SC	2.98	lb ai/a	PRE	A	2.3 bc	100.0 a	89.0 abc	96.7 a
	----s-metolachlor	2.49		2.02							
	----mesotrione	0.25		0.203							
	----atrazine	0.93		0.755							
3	Lexar EZ Premix	3.71	SC	3.25	lb ai/a	PRE	A	0.0 c	100.0 a	90.0 ab	96.7 a
	----s-metolachlor	1.742819		1.53							
	----mesotrione	0.2243629		0.197							
	----atrazine	1.742819		1.53							
4	Lumax EZ Premix	3.67	SC	2.98	lb ai/a	PRE	A	1.7 bc	100.0 a	91.3 a	100.0 a
	----s-metolachlor	2.49		2.02							
	----mesotrione	0.25		0.203							
	----atrazine	0.93		0.755							
	Atrazine 4L	4	L	1.5	lb ai/a	PRE	A				
5	Lexar EZ Premix	3.71	SC	3.25	lb ai/a	PRE	A	1.7 bc	96.7 a	90.7 ab	99.0 a
	----s-metolachlor	1.742819		1.53							
	----mesotrione	0.2243629		0.197							
	----atrazine	1.742819		1.53							
	Princep.....simazine	4	L	1.5	lb ai/a	PRE	A				
6	Bicep II Magnum Premix	5.5	L	2.9	lb ai/a	PRE	A	0.0 c	71.7 bc	82.3 cde	93.3 ab
	----s-metolachlor	2.4		1.27							
	----atrazine	3.1		1.63							
7	Bicep II Magnum Premix	5.5	L	2.2	lb ai/a	PRE	A	1.7 bc	66.7 c	72.7 f	80.0 c
	----s-metolachlor	2.4		0.96							
	----atrazine	3.1		1.24							
8	Bicep II Magnum Premix	5.5	L	2.2	lb ai/a	PRE	A	7.3 a	78.3 bc	81.3 e	86.0 bc
	----s-metolachlor	2.4		0.96							
	----atrazine	3.1		1.24							
	Resolve SG.....rimsulfuron	25	SG	0.0156	lb ai/a	PRE	A				
9	Bicep II Magnum Premix	5.5	L	2.2	lb ai/a	PRE	A	4.0 abc	86.7 ab	84.3 b-e	92.3 ab
	----s-metolachlor	2.4		0.96							
	----atrazine	3.1		1.24							
	Prowl H2O.....pendimethalin	3.8	CS	1.43	lb ai/a	PRE	A				
10	Harness Xtra 5.6L Premix	5.6	L	2.38	lb ai/a	PRE	A	0.0 c	100.0 a	81.0 e	97.3 a
	----acetochlor	3.1		1.32							
	----atrazine	2.5		1.06							
11	Harness Xtra 5.6L Premix	5.6	L	4.2	lb ai/a	PRE	A	1.7 bc	100.0 a	88.3 a-d	100.0 a
	----acetochlor	3.1		2.32							
	----atrazine	2.5		1.88							
12	Zidua.....pyroxasulfone	85	WG	0.106	lb ai/a	PRE	A	3.3 abc	76.7 bc	56.7 g	80.0 c
	Atrazine 4L	4	L	1.25	lb ai/a	PRE	A				

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code				
	Pest Code								AMARE	IPOSS	PANDI
	Pest Name								RrtPigwd	mornglry	F.panicm
	Crop Code							ZEAMX			
	Crop Name							Corn			
	Rating Type							Stunting	Control	Control	Control
	Rating Unit							%	%	%	%
	Rating Date							05/20/15	05/29/15	05/29/15	05/29/15
13	Acuron Premix	3.44	ZC	2.15	lb ai/a	PRE	A	3.3 abc	100.0 a	90.7 ab	98.3 a
	----atrazine	1		0.625							
	----bicyclopyrone	0.06		0.0375							
	----mesotrione	0.24		0.15							
	----s-metolachlor	2.14		1.34							
	Atrazine 4L	4	L	1.5	lb ai/a	PRE	A				
14	Corvus Premix	2.63	SC	0.115	lb ai/a	PRE	A	4.7 ab	100.0 a	87.3 a-e	100.0 a
	----thiencarbazone	0.75		0.0328							
	----isoxaflutole	1.88		0.082							
	Atrazine 4L	4	L	1.5	lb ai/a	PRE	A				
15	Prequel Premix	45	DF	0.056	lb ai/a	PRE		7.0 a	79.3 bc	82.0 de	79.0 c
	----rimsulfuron	15		0.0187							
	----isoxaflutole	30		0.0373							
	_Resolve SG.....rimsulfuron	25	SG	0.0188	lb ai/a	PRE	A				
	_Balance.....isoxaflutole	75	WG	0.0375	lb ai/a	PRE	A				
	Atrazine 4L	4	L	1.5	lb ai/a	PRE	A				
	LSD P=.05							4.46	15.68	6.95	10.09
	Standard Deviation							2.67	9.37	4.16	6.03
	CV							103.53	11.2	5.34	6.97
	Replicate F							0.321	0.806	0.719	3.723
	Replicate Prob(F)							0.7278	0.4566	0.4961	0.0368
	Treatment F							2.397	23.344	94.494	52.232
	Treatment Prob(F)							0.0238	0.0001	0.0001	0.0001

University of Delaware

Comparison of Approaches to Weed Control in Field Corn

Trial ID: Crn10a-15 Location: REC Field #14 Trial Year:
Protocol ID: Crn10a-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Crop Description

Crop 1: ZEAMX Zea mays Corn
Variety: DKC50-84RIB BBCH Scale: BCOR
Planting Date: 05/13/15
Planting Rate, Unit: 30000 S/A Planting Method: PLANTD planted
Depth, Unit: 2 in Planting Equipment: FE Field Equipment
Row Spacing, Unit: 30 in Emergence Date: 05/18/15
Harvest Date: 09/05/15
Harvested Width, Unit: 5 FT
Soil Temperature, Unit: 76 F Harvested Length, Unit: 25 FT
Soil Moisture: NORMAL normal, adequate Harvest Equipment: Plot combine
Seed Bed: MEDIUM medium % Standard Moisture: 15.5

Pest Description

Pest 1 Type: W Code: IPOSS Ipomoea sp.
Common Name: Morning glory

Pest 2 Type: W Code: AMAPA Amaranthus palmeri
Common Name: Palmer amaranth

Site and Design

Treated Plot Width: 10 FT Site Type: FIELD field
Treated Plot Length: 25 FT
Treated Plot Area: 250 FT2 Treatments: 12 Tillage Type: CONTIL conventional-till
Replications: 3 Study Design: RACOBL Randomized Complete Block (RCB)

Soil Description

% Sand: 79 % OM: 1.0 Texture: LS loamy sand
% Silt: 14 pH: 6.0
% Clay: 7 CEC: 4.6 Fert. Level: G good
Soil Drainage: G good

Moisture and Weather Conditions

Overall Moisture Conditions: NORMAL normal
Closest Weather Station: UDREC Distance, Unit: 0.4 mi

Application Description

	A	B	C	D
Application Date:	05/14/15	05/27/15	06/01/15	06/05/15
Appl. Stop Time:	09:10 AM	11:00 AM	10:30 AM	04:00 PM
Interval to Prev. Appl., Unit:		13 DAYS	5 DAYS	4 DAYS
Application Method:	SPRAY	SPRAY	SPRAY	SPRAY
Application Timing:	PRE	V1-2	V3	V5
Application Placement:	BROADC	BROADC	BROADC	BROADC
Applied By:	Johnson	VanGessl	VanGessl	VanGessl
Air Temperature, Unit:	56 F	73 F	84 F	65 F
% Relative Humidity:	59	68	61	87
Wind Velocity, Unit:	3 mph	7 mph	3 mph	5 mph
Wind Direction:	N	NE	SW	NE
Dew Presence (Y/N):	N no	N no	N no	N no
Soil Temperature, Unit:	55 F	73 F	84 F	64 F
Soil Moisture:	NORMAL	NORMAL	NORMAL	NORMAL
% Cloud Cover:	30	80	20	100

Crop Stage At Each Application

	A	B	C	D
Crop 1 Code, BBCH Scale:	ZEAMX BCOR	ZEAMX BCOR	ZEAMX BCOR	ZEAMX BCOR
Stage Scale Used:		DESC	DESC	DESC
Stage Majority, Percent:		V3 100	V4 100	V5 100
Height, Unit:		6 in	8 in	14 in
Height Minimum, Maximum:		5 7	7 9	12 15

Pest Stage At Each Application

	A	B	C	D
Pest 1 Code, Type, Scale:	IPOSS W	IPOSS W	IPOSS W	IPOSS W
Stage Majority, Percent:		cotyld 75	2-leaf 70	veg 100
Stage Minimum, Percent:		cotyld 75	2-leaf 70	
Stage Maximum, Percent:		1-leaf 25	3-leaf 30	
Height, Unit:		1 in	2 in	3 in
Height Minimum, Maximum:			2 3	2 4
Density, Unit:		20 m2	20 m2	20 m2
Pest 2 Code, Type, Scale:	AMAPA W	AMAPA W	AMAPA W	AMAPA W
Stage Majority, Percent:		cotyld 60	2-leaf 60	veg 100
Stage Minimum, Percent:		1-leaf 40	cotyl 10	
Stage Maximum, Percent:		1-leaf 40	4-leaf 30	
Height, Unit:		0.5 in	1 in	4 in
Height Minimum, Maximum:		0.2 0.8	0.5 1.5	3 5
Density, Unit:		50 m2	50 m2	50 m2

Application Equipment

	A	B	C	D
Appl. Equipment:	Tractor	Backpack	Backpack	Backpack
Equipment Type:	TRMOSP	SPRBAC	SPRBAC	SPRBAC
Operation Pressure, Unit:	40 psi	31 psi	31 psi	31 psi
Nozzle Type:	AIRMIX	AIRMIX	AIRMIX	AIRMIX
Nozzle Size:	11002	11002	11002	11002
Nozzle Spacing, Unit:	20 in	18 in	18 in	18 in
Boom Length, Unit:	10 ft	9 ft	9 ft	9 ft
Boom Height, Unit:	18 in	22 in	24 in	26 in
Ground Speed, Unit:	3 mph	3 mph	3 mph	3 mph
Carrier:	WATER	WATER	WATER	WATER
Spray Volume, Unit:	20 gal/ac	20 gal/ac	20 gal/ac	20 gal/ac
Mix Size, Unit:	0.7 Gallons	2 Liters	2 Liters	2 Liters
Propellant:	COMAIR	COMCO2	COMCO2	COMCO2

Trial Comments

5/28/15: 108, 206. 307 plot damage from nitrogen application.

6/12/15: Large crabgrass, common ragweed, palmer amaranth control was excellent >92% for all treatments.
Good but not 100% control of morningglory with POST applications. Common cocklebur emerging in treatments 2,8,10,11,12.

University of Delaware

Comparison of Approaches to Weed Control in Field Corn

Trial ID: Crn10a-15 Location: REC Field #14 Trial Year:
Protocol ID: Crn10a-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	AMAPA PalmerAm	AMBEL C.ragwd	IPOSS mornglry	DIGSA L.crbgrs
	Pest Code							AMAPA	AMBEL	IPOSS	DIGSA
	Pest Name							PalmerAm	C.ragwd	mornglry	L.crbgrs
	Crop Code										
	Crop Name										
	Rating Type							Control	Control	Control	Control
	Rating Unit							%	%	%	%
	Rating Date							05/28/15	05/28/15	05/28/15	05/28/15
1	Untreated Check							0.0 b	0.0 b	0.0 f	0.0 c
2	Lumax EZ Premix	3.67	SC	2.48	lb ai/a	PRE	A	100.0 a	100.0 a	76.0 de	89.0 b
	----s-metolachlor	2.49		1.68							
	----mesotrione	0.25		0.169							
	----atrazine	0.93		0.63							
	Atrazine 4L	4	L	0.75	lb ai/a	PRE	A				
3	Bicep II Magnum Premix	5.5	L	2.9	lb ai/a	PRE	A	100.0 a	100.0 a	78.3 cde	96.3 ab
	----s-metolachlor	2.4		1.27							
	----atrazine	3.1		1.63							
	Resolve SG.....rimsulfuron	25	SG	0.0156	lb ai/a	PRE	A				
4	Bicep II Magnum Premix	5.5	L	2.9	lb ai/a	PRE	A	100.0 a	100.0 a	75.0 de	99.0 a
	----s-metolachlor	2.4		1.27							
	----atrazine	3.1		1.63							
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	V5	D				
5	Harness Xtra 5.6L Premix	5.6	L	3.36	lb ai/a	PRE	A	100.0 a	100.0 a	79.7 cde	100.0 a
	----acetochlor	3.1		1.86							
	----atrazine	2.5		1.5							
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	V5	D				
6	Bicep II Magnum Premix	5.5	L	1.79	lb ai/a	PRE	A	100.0 a	100.0 a	90.0 ab	99.0 a
	----s-metolachlor	2.4		0.78							
	----atrazine	3.1		1.01							
	Halex GT Premix	4.376	SC	1.97	lb ai/a	V3	C				
	----s-metolachlor	2.084		0.94							
	----glyphosate	2.084		0.94							
	----mesotrione	0.208		0.094							
	Atrazine 4L	4	L	0.5	lb ai/a	V3	C				
	Nonionic Surfactant	100	L	0.25	% v/v	V3	C				
7	Bicep II Magnum Premix	5.5	L	1.79	lb ai/a	PRE	A	100.0 a	100.0 a	96.3 a	98.3 a
	----s-metolachlor	2.4		0.78							
	----atrazine	3.1		1.01							
	Realm Q Premix	38.7	WG	0.097	lb ai/a	V3	A				
	----rimsulfuron	7.5		0.0188							
	----mesotrione	31.2		0.078							
	Atrazine 4L	4	L	0.5	lb ai/a	V3	C				
	Nonionic Surfactant	100	L	0.25	% v/v	V3	C				
8	Bicep II Magnum Premix	5.5	L	1.79	lb ai/a	PRE	A	100.0 a	100.0 a	76.0 de	97.3 a
	----s-metolachlor	2.4		0.78							
	----atrazine	3.1		1.01							
	Atrazine 4L	4	L	1.25	lb ai/a	V3	C				
	Prowl H2O.....pendimethalin	3.8	CS	1.43	lb ai/a	V3	C				
	Nonionic Surfactant	100	L	0.25	% v/v	V3	C				

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.
Could not calculate LSD (% mean diff) for columns 1,2 because error mean square = 0.

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	AMAPA PalmerAm	AMBEL C.ragwd	IPOSS mornglry	DIGSA L.crbgrs
	Pest Code							AMAPA	AMBEL	IPOSS	DIGSA
	Pest Name							PalmerAm	C.ragwd	mornglry	L.crbgrs
	Crop Code										
	Crop Name										
	Rating Type							Control	Control	Control	Control
	Rating Unit							%	%	%	%
	Rating Date							05/28/15	05/28/15	05/28/15	05/28/15
9	Bicep II Magnum Premix	5.5	L	1.79	lb ai/a	PRE	A	100.0 a	100.0 a	71.0 e	99.0 a
	----s-metolachlor	2.4		0.78							
	----atrazine	3.1		1.01							
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	V3	C				
10	Atrazine 4L	4	L	1.25	lb ai/a	PRE	A	100.0 a	100.0 a	76.0 de	95.7 ab
	Prowl H2O.....pendimethalin	3.8	CS	1.43	lb ai/a	PRE	A				
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	V3	C				
11	Halex GT Premix	4.376	SC	1.97	lb ai/a	V1-2	B	100.0 a	100.0 a	87.3 abc	98.7 a
	----s-metolachlor	2.084		0.94							
	----glyphosate	2.084		0.94							
	----mesotrione	0.208		0.094							
	Atrazine 4L	4	L	0.5	lb ai/a	V1-2	B				
	Nonionic Surfactant	100	L	0.25	% v/v	V1-2	B				
12	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	V1-2	B	100.0 a	100.0 a	82.7 bcd	100.0 a
	Bicep II Magnum Premix	5.5	L	2.2	lb ai/a	V1-2	B				
	----s-metolachlor	2.4		0.96							
	----atrazine	3.1		1.24							
	Prowl H2O.....pendimethalin	3.8	CS	1.43	lb ai/a	V1-2	B				
	LSD P=.05							.	.	9.39	7.46
	Standard Deviation							0.00	0.00	5.55	4.41
	CV							0.0	0.0	7.49	4.93
	Replicate F							0.000	0.000	2.483	0.160
	Replicate Prob(F)							1.0000	1.0000	0.1066	0.8529
	Treatment F							0.000	0.000	58.142	123.757
	Treatment Prob(F)							1.0000	1.0000	0.0001	0.0001

Pest Code Pest Name Crop Code Crop Name Rating Type Rating Unit Rating Date							ZEAMX Corn Stunting % 06/12/15	IPOSS mornglry Control % 06/12/15	ZEAMX Corn Stunting % 06/17/15	ZEAMX Corn Yield Bu/A 06/17/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code			
1	Untreated Check							0.0 c	0.0 e	0.0 c	102.8 b
2	Lumax EZ Premix	3.67	SC	2.48	lb ai/a	PRE	A	0.0 c	84.3 d	0.0 c	163.0 a
	----s-metolachlor	2.49		1.68							
	----mesotrione	0.25		0.169							
	----atrazine	0.93		0.63							
	Atrazine 4L	4	L	0.75	lb ai/a	PRE	A				
3	Bicep II Magnum Premix	5.5	L	2.9	lb ai/a	PRE	A	14.7 a	87.7 cd	13.3 a	159.5 a
	----s-metolachlor	2.4		1.27							
	----atrazine	3.1		1.63							
	Resolve SG.....rimsulfuron	25	SG	0.0156	lb ai/a	PRE	A				
4	Bicep II Magnum Premix	5.5	L	2.9	lb ai/a	PRE	A	2.3 c	97.0 a	0.0 c	152.3 a
	----s-metolachlor	2.4		1.27							
	----atrazine	3.1		1.63							
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	V5	D				
5	Harness Xtra 5.6L Premix	5.6	L	3.36	lb ai/a	PRE	A	3.3 c	97.0 a	0.0 c	161.9 a
	----acetochlor	3.1		1.86							
	----atrazine	2.5		1.5							
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	V5	D				
6	Bicep II Magnum Premix	5.5	L	1.79	lb ai/a	PRE	A	0.0 c	97.0 a	0.0 c	156.1 a
	----s-metolachlor	2.4		0.78							
	----atrazine	3.1		1.01							
	Halex GT Premix	4.376	SC	1.97	lb ai/a	V3	C				
	----s-metolachlor	2.084		0.94							
	----glyphosate	2.084		0.94							
	----mesotrione	0.208		0.094							
	Atrazine 4L	4	L	0.5	lb ai/a	V3	C				
	Nonionic Surfactant	100	L	0.25	% v/v	V3	C				
7	Bicep II Magnum Premix	5.5	L	1.79	lb ai/a	PRE	A	9.0 b	97.3 a	10.7 a	157.4 a
	----s-metolachlor	2.4		0.78							
	----atrazine	3.1		1.01							
	Realm Q Premix	38.7	WG	0.097	lb ai/a	V3	A				
	----rimsulfuron	7.5		0.0188							
	----mesotrione	31.2		0.078							
	Atrazine 4L	4	L	0.5	lb ai/a	V3	C				
	Nonionic Surfactant	100	L	0.25	% v/v	V3	C				
8	Bicep II Magnum Premix	5.5	L	1.79	lb ai/a	PRE	A	0.0 c	95.3 ab	1.7 bc	148.7 a
	----s-metolachlor	2.4		0.78							
	----atrazine	3.1		1.01							
	Atrazine 4L	4	L	1.25	lb ai/a	V3	C				
	Prowl H2O.....pendimethalin	3.8	CS	1.43	lb ai/a	V3	C				
	Nonionic Surfactant	100	L	0.25	% v/v	V3	C				

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	ZEAMX Corn Stunting % 06/12/15	IPOSS mornglry Control % 06/12/15	ZEAMX Corn Stunting % 06/17/15	ZEAMX Corn Yield Bu/A 06/17/15
9	Bicep II Magnum Premix	5.5	L	1.79	lb ai/a	PRE	A	0.0 c	91.7 bc	4.7 b	161.2 a
	----s-metolachlor	2.4		0.78							
	----atrazine	3.1		1.01							
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	V3	C				
10	Atrazine 4L	4	L	1.25	lb ai/a	PRE	A	4.0 bc	86.7 d	0.0 c	153.9 a
	Prowl H2O.....pendimethalin	3.8	CS	1.43	lb ai/a	PRE	A				
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	V3	C				
11	Halex GT Premix	4.376	SC	1.97	lb ai/a	V1-2	B	2.3 c	94.7 ab	2.3 bc	167.1 a
	----s-metolachlor	2.084		0.94							
	----glyphosate	2.084		0.94							
	----mesotrione	0.208		0.094							
	Atrazine 4L	4	L	0.5	lb ai/a	V1-2	B				
	Nonionic Surfactant	100	L	0.25	% v/v	V1-2	B				
12	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	V1-2	B	2.3 c	92.3 b	2.3 bc	150.8 a
	Bicep II Magnum Premix	5.5	L	2.2	lb ai/a	V1-2	B				
	----s-metolachlor	2.4		0.96							
	----atrazine	3.1		1.24							
	Prowl H2O.....pendimethalin	3.8	CS	1.43	lb ai/a	V1-2	B				
LSD P=.05								5.09	4.33	3.98	25.06
Standard Deviation								3.01	2.56	2.35	14.80
CV								94.94	3.01	80.68	9.68
Replicate F								0.581	12.504	1.098	0.082
Replicate Prob(F)								0.5678	0.0002	0.3510	0.9219
Treatment F								6.615	338.634	11.077	3.812
Treatment Prob(F)								0.0001	0.0001	0.0001	0.0037

University of Delaware

Comparison of Approaches to Weed Control in Field Corn

Trial ID: Crn10b-15 Location: Greenwood Trial Year:
Protocol ID: Crn10b-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Investigator: Mark VanGessel Title: Extension Weed Specialist
Organization: University of Delaware
Address: 16483 County Seat Hwy
City+State/Prov: Georgetown, Delaware
Postal Code: 19947 E-mail: mjv@udel.edu
Country: USA United States

Crop Description

Crop 1: ZEAMX Zea mays Corn
Variety: N59B BBCH Scale: BCOR
Planting Date: 05/05/15
Planting Method: PLANTD planted
Depth, Unit: 2 in Planting Equipment: FE Field Equipment
Row Spacing, Unit: 30 in Emergence Date: 05/12/15
Soil Temperature, Unit: 89 F
Soil Moisture: NORMAL normal, adequate
Seed Bed: MEDIUM medium

Site and Design

Treated Plot Width: 10 FT Site Type: FIELD field
Treated Plot Length: 25 FT
Treated Plot Area: 250 FT2 Treatments: 15 Tillage Type: CONTIL conventional-till
Replications: 3 Study Design: RACOBL Randomized Complete Block (RCB)

Moisture and Weather Conditions

Overall Moisture Conditions: NORMAL normal
Closest Weather Station: UD REC Distance, Unit: 10 mi

Application Description

	A	B	C	D
Application Date:	05/08/15	05/20/15	05/29/15	05/29/15
Appl. Stop Time:	06:00 PM	10:00 AM	03:00 PM	03:00 PM
Interval to Prev. Appl., Unit:		12 DAYS	9 DAYS	9 DAYS
Application Method:	SPRAY	SPRAY	SPRAY	SPRAY
Application Timing:	PRE	V1-2	V3	V5
Application Placement:	BROADC	BROADC	BROADC	BROADC
Applied By:	VanGessl	VanGessl	VanGessl	VanGessl
Air Temperature, Unit:	73 F	65 F	81 F	81 F
% Relative Humidity:	53	48	60	60
Wind Velocity, Unit:	4 mph	6 mph	4 mph	4 mph
Wind Direction:	SE	NW	E	E
Dew Presence (Y/N):	N no	N no	N no	N no
Soil Temperature, Unit:	74 F	81 F	81 F	81 F
Soil Moisture:	NORMAL	NORMAL	NORMAL	NORMAL
% Cloud Cover:	0	20	10	10

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Crop Stage At Each Application

	A	B	C	D
Crop 1 Code, BBCH Scale:	ZEAMX BCOR	ZEAMX BCOR	ZEAMX BCOR	ZEAMX BCOR
Stage Scale Used:		DESC	DESC	DESC
Stage Majority, Percent:		V3 100	V5 100	
Height, Unit:		7 in	11 in	11 in
Height Minimum, Maximum:		5 8	10 13	10 13

Application Equipment

	A	B	C	D
Appl. Equipment:	Backpack	Backpack	Backpack	Backpack
Equipment Type:	SPRBAC	SPRBAC	SPRBAC	SPRBAC
Operation Pressure, Unit:	31 psi	31 psi	31 psi	31 psi
Nozzle Type:	AIRMIX	AIRMIX	AIRMIX	AIRMIX
Nozzle Size:	11002	11002	11002	11002
Nozzle Spacing, Unit:	18 in	18 in	18 in	18 in
Boom Length, Unit:	9 ft	9 ft	9 ft	9 ft
Boom Height, Unit:	18 in	24 in	30 in	30 in
Ground Speed, Unit:	3 mph	3 mph	3 mph	3 mph
Carrier:	WATER	WATER	WATER	WATER
Spray Volume, Unit:	20 gal/ac	20 gal/ac	20 gal/ac	20 gal/ac
Mix Size, Unit:	2 Liters	2 Liters	2 Liters	2 Liters
Propellant:	COMCO2	COMCO2	COMCO2	COMCO2

Trial Comments

05/20/15: No stunting or injury was observed except treatment 10 which had 5 to 7% stunting.

05/29/15: Leafburn 7-12% in treatment 12. No other leafburn injury from V1-2 applications.

06/11/15: Corn at V8 stage. Morninglory density is light and probably not competitive with the corn. Plots 104, 105, 109, 110, 112, 115, 201, 202. 205, 209, 210, 215, 301, 306, 308. 310, 312, 315 morninglory at cotyledon stage. Plots 113, 203, 204, 207, 214, 307 morninglory at one true leaf stage.

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Comparison of Approaches to Weed Control in Field Corn

Trial ID: Crn10b-15 Location: Greenwood Trial Year:
Protocol ID: Crn10b-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Pest Code									AMAPA	IPOSS	PANDI
Pest Name									PalmerAm	mornglry	F.panicm
Crop Code								ZEAMX			
Crop Name								Corn			
Rating Type								Stunting	Control	Control	Control
Rating Unit								%	%	%	%
Rating Date								05/20/15	05/29/15	05/29/15	05/29/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code				
1	Untreated Check							0.0 b	0.0 e	0.0 f	0.0 g
2	Lumax EZ Premix	3.67	SC	2.48	lb ai/a	PRE	A	0.0 b	100.0 a	100.0 a	77.7 cd
	----s-metolachlor	2.49		1.68							
	----mesotrione	0.25		0.169							
	----atrazine	0.93		0.63							
	Atrazine 4L	4	L	0.75	lb ai/a	PRE	A				
3	Bicep II Magnum Premix	5.5	L	2.9	lb ai/a	PRE	A	0.0 b	87.3 ab	90.0 ab	96.7 a
	----s-metolachlor	2.4		1.27							
	----atrazine	3.1		1.63							
	Resolve SG.....rimsulfuron	25	SG	0.0156	lb ai/a	PRE	A				
4	Bicep II Magnum Premix	5.5	L	2.9	lb ai/a	PRE	A	0.0 b	73.3 bc		86.7 abc
	----s-metolachlor	2.4		1.27							
	----atrazine	3.1		1.63							
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	V5	D				
5	Harness Xtra 5.6L Premix	5.6	L	3.36	lb ai/a	PRE	A	0.0 b	100.0 a	80.0 bcd	95.0 a
	----acetochlor	3.1		1.86							
	----atrazine	2.5		1.5							
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	V5	D				
6	Bicep II Magnum Premix	5.5	L	1.79	lb ai/a	PRE	A	0.0 b	70.0 c	75.0 cde	71.7 de
	----s-metolachlor	2.4		0.78							
	----atrazine	3.1		1.01							
	Halex GT Premix	4.376	SC	1.97	lb ai/a	V3	C				
	----s-metolachlor	2.084		0.94							
	----glyphosate	2.084		0.94							
	----mesotrione	0.208		0.094							
	Atrazine 4L	4	L	0.5	lb ai/a	V3	C				
	Nonionic Surfactant	100	L	0.25	% v/v	V3	C				
7	Bicep II Magnum Premix	5.5	L	1.79	lb ai/a	PRE	A	0.0 b	71.7 c	80.0 bcd	68.3 de
	----s-metolachlor	2.4		0.78							
	----atrazine	3.1		1.01							
	Realm Q Premix	38.7	WG	0.097	lb ai/a	V3					
	----rimsulfuron	7.5		0.0188							
	----mesotrione	31.2		0.078							
	Atrazine 4L	4	L	0.5	lb ai/a	V3	C				
	Nonionic Surfactant	100	L	0.25	% v/v	V3	C				
8	Bicep II Magnum Premix	5.5	L	1.79	lb ai/a	PRE	A	0.0 b	63.3 cd	70.0 de	68.3 de
	----s-metolachlor	2.4		0.78							
	----atrazine	3.1		1.01							
	Atrazine 4L	4	L	1.25	lb ai/a	V3	C				
	Prowl H2O.....pendimethalin	3.8	CS	1.43	lb ai/a	V3	C				
	Nonionic Surfactant	100	L	0.25	% v/v	V3	C				

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.
Missing data estimates are included in columns:Average=3

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	ZEAMX	AMAPA PalmerAm	IPOSS mornglry	PANDI F.panicm
	Pest Code								AMAPA	IPOSS	PANDI
	Pest Name								PalmerAm	mornglry	F.panicm
	Crop Code							ZEAMX			
	Crop Name							Corn			
	Rating Type							Stunting	Control	Control	Control
	Rating Unit							%	%	%	%
	Rating Date							05/20/15	05/29/15	05/29/15	05/29/15
9	Bicep II Magnum Premix	5.5	L	1.79	lb ai/a	PRE	A	0.0 b	76.7 bc	81.0 bcd	70.0 de
	----s-metolachlor	2.4		0.78							
	----atrazine	3.1		1.01							
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	V3	C				
10	Atrazine 4L	4	L	1.25	lb ai/a	PRE	A	4.0 a	75.0 bc	83.3 bc	60.0 e
	Prowl H2O.....pendimethalin	3.8	CS	1.43	lb ai/a	PRE	A				
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	V3	C				
11	Halex GT Premix	4.376	SC	1.97	lb ai/a	V1-2	B	0.0 b	100.0 a	98.3 a	100.0 a
	----s-metolachlor	2.084		0.94							
	----glyphosate	2.084		0.94							
	----mesotrione	0.208		0.094							
	Atrazine 4L	4	L	1	lb ai/a	V1-2	B				
	Nonionic Surfactant	100	L	0.25	% v/v	V1-2	B				
12	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	V1-2	B	0.0 b	100.0 a	96.7 a	94.0 ab
	Bicep II Magnum Premix	5.5	L	2.2	lb ai/a	V1-2	B				
	----s-metolachlor	2.4		0.96							
	----atrazine	3.1		1.24							
	Prowl H2O.....pendimethalin	3.8	CS	1.43	lb ai/a	V1-2	B				
13	Realm Q Premix	38.7	WG	0.097	lb ai/a	V1-2		0.0 b	100.0 a	96.7 a	80.0 bcd
	----rimsulfuron	7.5		0.0188							
	----mesotrione	31.2		0.078							
	Atrazine 4L	4	L	0.5	lb ai/a	V1-2	B				
	Nonionic Surfactant	100	L	0.25	% v/v	V1-2	B				
14	Atrazine 4L	4	L	1.25	lb ai/a	PRE	A	0.0 b	53.3 d	82.7 bc	40.0 f
	Realm Q Premix	38.7	WG	0.097	lb ai/a	V5					
	----rimsulfuron	7.5		0.0188							
	----mesotrione	31.2		0.078							
	Atrazine 4L	4	L	0.5	lb ai/a	V5	D				
	Nonionic Surfactant	100	L	0.25	% v/v	V5	D				
15	Dual II Magnum..s-metolachlor	7.64	E	1.43	lb ai/a	PRE	A	0.0 b	70.0 c	66.7 e	73.3 cde
	Impact.....topramezone	2.81	SC	0.0165	lb ai/a	V3	C				
	Atrazine 4L	4	L	0.25	lb ai/a	V3	C				
	Crop Oil Concentrate	100	L	1.25	% v/v	V3	C				
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	V3	C				
	LSD P=.05							1.56	14.33	12.29	14.36
	Standard Deviation							0.93	8.57	7.10	8.59
	CV							349.11	11.27	9.03	11.91
	Replicate F							1.000	0.478	0.807	1.391
	Replicate Prob(F)							0.3806	0.6250	0.4637	0.2656
	Treatment F							3.692	27.895	37.012	26.461
	Treatment Prob(F)							0.0016	0.0001	0.0001	0.0001

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	AMBEL C.ragwd	PANDI F.panicm
	Pest Code							AMBEL	PANDI
	Pest Name							C.ragwd	F.panicm
	Crop Code								
	Crop Name								
	Rating Type							Control	Control
	Rating Unit							%	%
	Rating Date							06/11/15	06/11/15
1	Untreated Check							0.0 d	0.0 g
2	Lumax EZ Premix	3.67	SC	2.48	lb ai/a	PRE	A	100.0 a	72.7 de
	----s-metolachlor	2.49		1.68					
	----mesotrione	0.25		0.169					
	----atrazine	0.93		0.63					
	Atrazine 4L	4	L	0.75	lb ai/a	PRE	A		
3	Bicep II Magnum Premix	5.5	L	2.9	lb ai/a	PRE	A	85.0 b	87.7 bc
	----s-metolachlor	2.4		1.27					
	----atrazine	3.1		1.63					
	Resolve SG.....rimsulfuron	25	SG	0.0156	lb ai/a	PRE	A		
4	Bicep II Magnum Premix	5.5	L	2.9	lb ai/a	PRE	A	100.0 a	100.0 a
	----s-metolachlor	2.4		1.27					
	----atrazine	3.1		1.63					
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	V5	D		
5	Harness Xtra 5.6L Premix	5.6	L	3.36	lb ai/a	PRE	A	100.0 a	93.3 ab
	----acetochlor	3.1		1.86					
	----atrazine	2.5		1.5					
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	V5	D		
6	Bicep II Magnum Premix	5.5	L	1.79	lb ai/a	PRE	A	100.0 a	100.0 a
	----s-metolachlor	2.4		0.78					
	----atrazine	3.1		1.01					
	Halex GT Premix	4.376	SC	1.97	lb ai/a	V3	C		
	----s-metolachlor	2.084		0.94					
	----glyphosate	2.084		0.94					
	----mesotrione	0.208		0.094					
	Atrazine 4L	4	L	0.5	lb ai/a	V3	C		
	Nonionic Surfactant	100	L	0.25	% v/v	V3	C		
7	Bicep II Magnum Premix	5.5	L	1.79	lb ai/a	PRE	A	100.0 a	81.0 cd
	----s-metolachlor	2.4		0.78					
	----atrazine	3.1		1.01					
	Realm Q Premix	38.7	WG	0.097	lb ai/a	V3			
	----rimsulfuron	7.5		0.0188					
	----mesotrione	31.2		0.078					
	Atrazine 4L	4	L	0.5	lb ai/a	V3	C		
	Nonionic Surfactant	100	L	0.25	% v/v	V3	C		
8	Bicep II Magnum Premix	5.5	L	1.79	lb ai/a	PRE	A	63.3 c	55.0 f
	----s-metolachlor	2.4		0.78					
	----atrazine	3.1		1.01					
	Atrazine 4L	4	L	1.25	lb ai/a	V3	C		
	Prowl H2O.....pendimethalin	3.8	CS	1.43	lb ai/a	V3	C		
	Nonionic Surfactant	100	L	0.25	% v/v	V3	C		

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	AMBEL C.ragwd	PANDI F.panicm
	Pest Code							AMBEL	PANDI
	Pest Name							C.ragwd	F.panicm
	Crop Code								
	Crop Name								
	Rating Type							Control	Control
	Rating Unit							%	%
	Rating Date							06/11/15	06/11/15
9	Bicep II Magnum Premix	5.5	L	1.79	lb ai/a	PRE	A	100.0 a	100.0 a
	----s-metolachlor	2.4		0.78					
	----atrazine	3.1		1.01					
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	V3	C		
10	Atrazine 4L	4	L	1.25	lb ai/a	PRE	A	100.0 a	96.0 ab
	Prowl H2O.....pendimethalin	3.8	CS	1.43	lb ai/a	PRE	A		
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	V3	C		
11	Halex GT Premix	4.376	SC	1.97	lb ai/a	V1-2	B	100.0 a	94.3 ab
	----s-metolachlor	2.084		0.94					
	----glyphosate	2.084		0.94					
	----mesotrione	0.208		0.094					
	Atrazine 4L	4	L	1	lb ai/a	V1-2	B		
	Nonionic Surfactant	100	L	0.25	% v/v	V1-2	B		
12	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	V1-2	B	87.3 b	71.7 de
	Bicep II Magnum Premix	5.5	L	2.2	lb ai/a	V1-2	B		
	----s-metolachlor	2.4		0.96					
	----atrazine	3.1		1.24					
	Prowl H2O.....pendimethalin	3.8	CS	1.43	lb ai/a	V1-2	B		
13	Realm Q Premix	38.7	WG	0.097	lb ai/a	V1-2		100.0 a	68.3 e
	----rimsulfuron	7.5		0.0188					
	----mesotrione	31.2		0.078					
	Atrazine 4L	4	L	0.5	lb ai/a	V1-2	B		
	Nonionic Surfactant	100	L	0.25	% v/v	V1-2	B		
14	Atrazine 4L	4	L	1.25	lb ai/a	PRE	A	100.0 a	71.7 de
	Realm Q Premix	38.7	WG	0.097	lb ai/a	V5			
	----rimsulfuron	7.5		0.0188					
	----mesotrione	31.2		0.078					
	Atrazine 4L	4	L	0.5	lb ai/a	V5	D		
	Nonionic Surfactant	100	L	0.25	% v/v	V5	D		
15	Dual II Magnum..s-metolachlor	7.64	E	1.43	lb ai/a	PRE	A	100.0 a	92.3 ab
	Impact.....topramezone	2.81	SC	0.0165	lb ai/a	V3	C		
	Atrazine 4L	4	L	0.25	lb ai/a	V3	C		
	Crop Oil Concentrate	100	L	1.25	% v/v	V3	C		
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	V3	C		
	LSD P=.05							8.30	11.01
	Standard Deviation							4.96	6.59
	CV							5.57	8.34
	Replicate F							0.163	2.132
	Replicate Prob(F)							0.8501	0.1375
	Treatment F							86.433	46.383
	Treatment Prob(F)							0.0001	0.0001

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Overlapping Residual Herbicides in Corn

Trial ID: Crn11-15 Location: Field #16 Trial Year:
Protocol ID: Crn11-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact: BASF

Investigator: Mark VanGessel Title: Extension Weed Specialist
Organization: University of Delaware
Address: 16483 County Seat Hwy
City+State/Prov: Georgetown, Delaware
Postal Code: 19947 E-mail: mjv@udel.edu
Country: USA United States

Crop Description

Crop 1: ZEAMX Zea mays Corn
Variety: H5410RC3P BBCH Scale: BCOR
Planting Date: 04/28/15
Planting Rate, Unit: 30000 S/A Planting Method: PLANTD planted
Depth, Unit: 2 in Planting Equipment: FE Field Equipment
Row Spacing, Unit: 30 in Emergence Date: 05/07/15
Harvested Width, Unit: 5 FT
Soil Temperature, Unit: 67 F Harvested Length, Unit: 25 FT
Soil Moisture: NORMAL normal, adequate Harvest Equipment: Plot combine
Seed Bed: MEDIUM medium % Standard Moisture: 15.5

Pest Description

Pest 1 Type: W Code: AMBEL Ambrosia artemisiifolia
Common Name: Common ragweed

Pest 2 Type: W Code: GGGAN Annual grasses
Common Name: Annual grasses

Pest 3 Type: W Code: IPOSS Ipomoea sp.
Common Name: Morning glory

Site and Design

Treated Plot Width: 10 FT Site Type: FIELD field
Treated Plot Length: 25 FT
Treated Plot Area: 250 FT2 Treatments: 8 Tillage Type: CONTIL conventional-till
Replications: 3 Study Design: RACOBL Randomized Complete Block (RCB)

Soil Description

% Sand: 77 % OM: 0.9 Texture: SL sandy loam
% Silt: 12 pH: 5.9
% Clay: 11 CEC: 5.6 Fert. Level: G good
Soil Drainage: F fair

Moisture and Weather Conditions

Overall Moisture Conditions: NORMAL normal
Closest Weather Station: UD REC Distance, Unit: 0.5 mi

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Application Description

	A	B
Application Date:	04/29/15	05/22/15
Appl. Stop Time:	10:00 AM	08:50 AM
Interval to Prev. Appl., Unit:		23 DAYS
Application Method:	SPRAY	SPRAY
Application Timing:	PRE	8" corn
Application Placement:	BROADC	BROADC
Applied By:	Johnson	Johnson
Air Temperature, Unit:	65 F	54 F
% Relative Humidity:	47	80
Wind Velocity, Unit:	0 mph	3 mph
Wind Direction:	N/A	NW
Dew Presence (Y/N):	N no	Y yes
Soil Temperature, Unit:	64 F	54 F
Soil Moisture:	NORMAL	WET
% Cloud Cover:	5	0

Crop Stage At Each Application

	A	B
Crop 1 Code, BBCH Scale:	ZEAMX BCOR	ZEAMX BCOR
Stage Scale Used:		DESC
Stage Majority, Percent:		V4 100
Height, Unit:		7 in
Height Minimum, Maximum:		6 8

Pest Stage At Each Application

	A	B
Pest 1 Code, Type, Scale:	AMBEL W	AMBEL W
Stage Majority, Percent:		4-leaf 70
Stage Minimum, Percent:		2-leaf 10
Stage Maximum, Percent:		6-leaf 20
Height, Unit:		3 in
Height Minimum, Maximum:		2 4
Density, Unit:		100 m2
Pest 2 Code, Type, Scale:	GGGAN W	GGGAN W
Stage Majority, Percent:		3-leaf 60
Stage Minimum, Percent:		3-leaf 60
Stage Maximum, Percent:		4-leaf 40
Height, Unit:		3 in
Height Minimum, Maximum:		2.5 3.5
Density, Unit:		100 m2
Pest 3 Code, Type, Scale:	IPOSS W	IPOSS W
Stage Majority, Percent:		2-leaf 70
Stage Minimum, Percent:		cotyl 30
Stage Maximum, Percent:		2-leaf 70
Height, Unit:		2 in
Height Minimum, Maximum:		1 2
Density, Unit:		8 m2

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Application Equipment

	A	B
Appl. Equipment:	Tractor	Tractor
Equipment Type:	TRMOSP	TRMOSP
Operation Pressure, Unit:	40 psi	40 psi
Nozzle Type:	AIRMIX	AIRMIX
Nozzle Size:	11002	11002
Nozzle Spacing, Unit:	20 in	20 in
Boom Length, Unit:	10 ft	10 ft
Boom Height, Unit:	18 in	24 in
Ground Speed, Unit:	3 mph	3 mph
Carrier:	WATER	WATER
Spray Volume, Unit:	20 gal/ac	20 gal/ac
Mix Size, Unit:	0.7 Gallons	0.7 Gallons
Propellant:	COMAIR	COMAIR

Trial Comments

05/22/15: No stunting observed in any treatments.

05/31/15: No corn stunting was observed. Morninglory ratings due to newly emerged seedlings.
Annual grasses rated are fall panicum in rep 1 and 3, and giant foxtail in rep 2.

06/25/15: Excellent control of annual grasses (large crabgrass and fall panicum) and palmer amaranth, all treatments >95%.

University of Delaware

Overlapping Residual Herbicides in Corn

Trial ID: Crn11-15 Location: Field #16 Trial Year:
Protocol ID: Crn11-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact: BASF

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	ZEAMX Corn Stunting % 05/14/15	AMAPA PalmerAm Control % 05/22/15	AMBEL C.ragwd Control % 05/22/15	CHEAL C.lmsqtr Control % 05/22/15
1	Untreated Check							0.0 a	0.0 b	0.0 b	0.0 c
2	Zidua.....pyroxasulfone	4.17	SC	0.106	lb ai/a	PRE	A	0.0 a	100.0 a	60.0 a	60.7 b
	Sharpen.....saflufenacil	2.85	SC	0.0445	lb ai/a	PRE	A				
	Roundup PowerMax..glyphosate	4.5	AS	0.77	lb ae/a	8" corn	B				
	BAS 67703H	5.36	EC	0.67	lb ai/a	8" corn	B				
	Atrazine 4L	4	L	0.5	lb ai/a	8" corn	B				
	Nonionic Surfactant	100	L	0.25	% v/v	8" corn	B				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	8" corn	B				
3	Verdict Premix	5.57	EC	0.61	lb ai/a	PRE	A	0.0 a	100.0 a	56.7 a	68.2 ab
	----saflufenacil	0.57		0.0624							
	----dimethenamid	5		0.55							
	Roundup PowerMax..glyphosate	4.5	AS	0.77	lb ae/a	8" corn	B				
	BAS 67703H	5.36	EC	0.67	lb ai/a	8" corn	B				
	Atrazine 4L	4	L	0.5	lb ai/a	8" corn	B				
	Nonionic Surfactant	100	L	0.25	% v/v	8" corn	B				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	8" corn	B				
4	Verdict Premix	5.57	EC	0.52	lb ai/a	PRE	A	0.0 a	95.0 a	50.0 a	65.7 ab
	----saflufenacil	0.57		0.053							
	----dimethenamid	5		0.467							
	Roundup PowerMax..glyphosate	4.5	AS	0.77	lb ae/a	8" corn	B				
	Status Premix	56	WG	0.175	lb ai/a	8" corn	B				
	----diflufenzopyr	16		0.05							
	----dicamba	40		0.125							
	Zidua.....pyroxasulfone	4.17	SC	0.106	lb ai/a	8" corn	B				
	Nonionic Surfactant	100	L	0.25	% v/v	8" corn	B				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	8" corn	B				
5	Verdict Premix	5.57	EC	0.52	lb ai/a	PRE	A	3.3 a	100.0 a	58.3 a	71.7 ab
	----saflufenacil	0.57		0.053							
	----dimethenamid	5		0.467							
	Roundup PowerMax..glyphosate	4.5	AS	0.77	lb ae/a	8" corn	B				
	Status Premix	56	WG	0.175	lb ai/a	8" corn	B				
	----diflufenzopyr	16		0.05							
	----dicamba	40		0.125							
	Prowl H2O.....pendimethalin	3.8	CS	0.95	lb ai/a	8" corn	B				
	Nonionic Surfactant	100	L	0.25	% v/v	8" corn	B				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	8" corn	B				

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.
Missing data estimates are included in columns:Yates=4,5
Could not calculate LSD (% mean diff) for columns 8,10 because error mean square = 0.

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code				
	Pest Code								AMAPA	AMBEL	CHEAL
	Pest Name								PalmerAm	C.ragwd	C.lmsqtr
	Crop Code							ZEAMX			
	Crop Name							Corn			
	Rating Type							Stunting	Control	Control	Control
	Rating Unit							%	%	%	%
	Rating Date							05/14/15	05/22/15	05/22/15	05/22/15
6	Zidua.....pyroxasulfone	4.17	SC	0.106	lb ai/a	PRE	A	0.0 a	86.7 a	58.3 a	68.3 ab
	Sharpen.....saflufenacil	2.85	SC	0.0445	lb ai/a	PRE	A				
	Roundup PowerMax..glyphosate	4.5	AS	0.77	lb ae/a	8" corn	B				
	Status Premix	56	WG	0.175	lb ai/a	8" corn	B				
	----diflufenzopyr	16		0.05							
	----dicamba	40		0.125							
	Atrazine 4L	4	L	1	lb ai/a	8" corn	B				
	Nonionic Surfactant	100	L	0.25	% v/v	8" corn	B				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	8" corn	B				
7	Lumax EZ Premix	3.67	SC	0.69	lb ai/a	PRE	A	0.0 a	95.0 a	50.0 a	63.3 b
	----s-metolachlor	2.49		0.47							
	----mesotrione	0.25		0.047							
	----atrazine	0.93		0.175							
	Halex GT Premix	4.376	SC	1.98	lb ai/a	8" corn	B				
	----s-metolachlor	2.084		0.94							
	----glyphosate	2.084		0.94							
	----mesotrione	0.208		0.094							
	Dry Ammonium Sulfate	100	D	1.02	% w/v	8" corn	B				
8	Corvus Premix	2.63	SC	0.068	lb ai/a	PRE	A	2.3 a	96.7 a	53.3 a	90.0 a
	----thiencarbazone	0.75		0.0194							
	----isoxaflutole	1.88		0.0486							
	Atrazine 4L	4	L	1	lb ai/a	PRE	A				
	Roundup PowerMax..glyphosate	4.5	AS	0.77	lb ae/a	8" corn	B				
	Laudis.....tembotrione	3.5	SC	0.082	lb ai/a	8" corn	B				
	Atrazine 4L	4	L	1	lb ai/a	8" corn	B				
	Crop Oil Concentrate	100	L	1	% v/v	8" corn	B				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	8" corn	B				
	LSD P=.05							3.28	16.88	16.06	24.44
	Standard Deviation							1.87	9.64	9.17	13.60
	CV							264.12	11.45	18.97	22.31
	Replicate F							0.048	0.718	5.290	0.543
	Replicate Prob(F)							0.9537	0.5049	0.0194	0.5961
	Treatment F							1.536	38.000	14.131	11.138
	Treatment Prob(F)							0.2339	0.0001	0.0001	0.0003

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	IPOSS morngIry	SETFA G.foxtl	ZEAMX Corn LeafBurn	AMAPA PalmerAm
	Pest Code							IPOSS	SETFA		AMAPA
	Pest Name							morngIry	G.foxtl		PalmerAm
	Crop Code									ZEAMX	
	Crop Name									Corn	
	Rating Type							Control	Control	LeafBurn	Control
	Rating Unit							%	%	%	%
	Rating Date							05/22/15	05/22/15	05/31/15	05/31/15
1	Untreated Check							0.0 d	0.0 c	0.0 b	0.0 b
2	Zidua.....pyroxasulfone	4.17	SC	0.106	lb ai/a	PRE	A	65.0 abc	58.3 ab	1.0 b	100.0 a
	Sharpen.....saflufenacil	2.85	SC	0.0445	lb ai/a	PRE	A				
	Roundup PowerMax..glyphosate	4.5	AS	0.77	lb ae/a	8" corn	B				
	BAS 67703H	5.36	EC	0.67	lb ai/a	8" corn	B				
	Atrazine 4L	4	L	0.5	lb ai/a	8" corn	B				
	Nonionic Surfactant	100	L	0.25	% v/v	8" corn	B				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	8" corn	B				
3	Verdict Premix	5.57	EC	0.61	lb ai/a	PRE	A	71.7 a	63.3 ab	1.3 b	100.0 a
	----saflufenacil	0.57		0.0624							
	----dimethenamid	5		0.55							
	Roundup PowerMax..glyphosate	4.5	AS	0.77	lb ae/a	8" corn	B				
	BAS 67703H	5.36	EC	0.67	lb ai/a	8" corn	B				
	Atrazine 4L	4	L	0.5	lb ai/a	8" corn	B				
	Nonionic Surfactant	100	L	0.25	% v/v	8" corn	B				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	8" corn	B				
4	Verdict Premix	5.57	EC	0.52	lb ai/a	PRE	A	68.5 ab	65.0 ab	2.0 b	100.0 a
	----saflufenacil	0.57		0.053							
	----dimethenamid	5		0.467							
	Roundup PowerMax..glyphosate	4.5	AS	0.77	lb ae/a	8" corn	B				
	Status Premix	56	WG	0.175	lb ai/a	8" corn	B				
	----diflufenzopyr	16		0.05							
	----dicamba	40		0.125							
	Zidua.....pyroxasulfone	4.17	SC	0.106	lb ai/a	8" corn	B				
	Nonionic Surfactant	100	L	0.25	% v/v	8" corn	B				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	8" corn	B				
5	Verdict Premix	5.57	EC	0.52	lb ai/a	PRE	A	66.7 ab	63.3 ab	6.3 a	100.0 a
	----saflufenacil	0.57		0.053							
	----dimethenamid	5		0.467							
	Roundup PowerMax..glyphosate	4.5	AS	0.77	lb ae/a	8" corn	B				
	Status Premix	56	WG	0.175	lb ai/a	8" corn	B				
	----diflufenzopyr	16		0.05							
	----dicamba	40		0.125							
	Prowl H2O.....pendimethalin	3.8	CS	0.95	lb ai/a	8" corn	B				
	Nonionic Surfactant	100	L	0.25	% v/v	8" corn	B				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	8" corn	B				

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	IPOSS morngIry	SETFA G.foxtl	ZEAMX Corn LeafBurn	AMAPA PalmerAm
	Pest Code							IPOSS	SETFA		AMAPA
	Pest Name							morngIry	G.foxtl		PalmerAm
	Crop Code									ZEAMX	
	Crop Name									Corn	
	Rating Type							Control	Control	LeafBurn	Control
	Rating Unit							%	%	%	%
	Rating Date							05/22/15	05/22/15	05/31/15	05/31/15
6	Zidua.....pyroxasulfone	4.17	SC	0.106	lb ai/a	PRE	A	51.1 c	73.3 a	0.7 b	100.0 a
	Sharpen.....saflufenacil	2.85	SC	0.0445	lb ai/a	PRE	A				
	Roundup PowerMax..glyphosate	4.5	AS	0.77	lb ae/a	8" corn	B				
	Status Premix	56	WG	0.175	lb ai/a	8" corn	B				
	----diflufenzopyr	16		0.05							
	----dicamba	40		0.125							
	Atrazine 4L	4	L	1	lb ai/a	8" corn	B				
	Nonionic Surfactant	100	L	0.25	% v/v	8" corn	B				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	8" corn	B				
7	Lumax EZ Premix	3.67	SC	0.69	lb ai/a	PRE	A	56.1 bc	53.3 b	2.0 b	100.0 a
	----s-metolachlor	2.49		0.47							
	----mesotrione	0.25		0.047							
	----atrazine	0.93		0.175							
	Halex GT Premix	4.376	SC	1.98	lb ai/a	8" corn	B				
	----s-metolachlor	2.084		0.94							
	----glyphosate	2.084		0.94							
	----mesotrione	0.208		0.094							
	Dry Ammonium Sulfate	100	D	1.02	% w/v	8" corn	B				
8	Corvus Premix	2.63	SC	0.068	lb ai/a	PRE	A	71.0 a	56.7 ab	8.0 a	100.0 a
	----thiencarbazone	0.75		0.0194							
	----isoxaflutole	1.88		0.0486							
	Atrazine 4L	4	L	1	lb ai/a	PRE	A				
	Roundup PowerMax..glyphosate	4.5	AS	0.77	lb ae/a	8" corn	B				
	Laudis.....tembotrione	3.5	SC	0.082	lb ai/a	8" corn	B				
	Atrazine 4L	4	L	1	lb ai/a	8" corn	B				
	Crop Oil Concentrate	100	L	1	% v/v	8" corn	B				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	8" corn	B				
	LSD P=.05							14.44	18.85	2.58	.
	Standard Deviation							7.93	10.77	1.47	0.00
	CV							14.11	19.88	55.27	0.0
	Replicate F							0.574	0.117	0.364	0.000
	Replicate Prob(F)							0.5808	0.8906	0.7010	1.0000
	Treatment F							27.110	13.350	11.529	0.000
	Treatment Prob(F)							0.0001	0.0001	0.0001	1.0000

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	AMBEL C.ragwd	CHEAL C.lmsqtr	IPOSS mornglry	GGGAN AnnGrass
	Pest Code							AMBEL	CHEAL	IPOSS	GGGAN
	Pest Name							C.ragwd	C.lmsqtr	mornglry	AnnGrass
	Crop Code										
	Crop Name										
	Rating Type							Control	Control	Control	Control
	Rating Unit							%	%	%	%
	Rating Date							05/31/15	05/31/15	05/31/15	05/31/15
1	Untreated Check							0.0 b	0.0 b	0.0 d	0.0 b
2	Zidua.....pyroxasulfone	4.17	SC	0.106	lb ai/a	PRE	A	99.7 a	100.0 a	100.0 a	96.3 a
	Sharpen.....saflufenacil	2.85	SC	0.0445	lb ai/a	PRE	A				
	Roundup PowerMax..glyphosate	4.5	AS	0.77	lb ae/a	8" corn	B				
	BAS 67703H	5.36	EC	0.67	lb ai/a	8" corn	B				
	Atrazine 4L	4	L	0.5	lb ai/a	8" corn	B				
	Nonionic Surfactant	100	L	0.25	% v/v	8" corn	B				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	8" corn	B				
3	Verdict Premix	5.57	EC	0.61	lb ai/a	PRE	A	100.0 a	100.0 a	99.3 ab	98.0 a
	----saflufenacil	0.57		0.0624							
	----dimethenamid	5		0.55							
	Roundup PowerMax..glyphosate	4.5	AS	0.77	lb ae/a	8" corn	B				
	BAS 67703H	5.36	EC	0.67	lb ai/a	8" corn	B				
	Atrazine 4L	4	L	0.5	lb ai/a	8" corn	B				
	Nonionic Surfactant	100	L	0.25	% v/v	8" corn	B				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	8" corn	B				
4	Verdict Premix	5.57	EC	0.52	lb ai/a	PRE	A	100.0 a	100.0 a	99.7 a	100.0 a
	----saflufenacil	0.57		0.053							
	----dimethenamid	5		0.467							
	Roundup PowerMax..glyphosate	4.5	AS	0.77	lb ae/a	8" corn	B				
	Status Premix	56	WG	0.175	lb ai/a	8" corn	B				
	----diflufenzopyr	16		0.05							
	----dicamba	40		0.125							
	Zidua.....pyroxasulfone	4.17	SC	0.106	lb ai/a	8" corn	B				
	Nonionic Surfactant	100	L	0.25	% v/v	8" corn	B				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	8" corn	B				
5	Verdict Premix	5.57	EC	0.52	lb ai/a	PRE	A	100.0 a	100.0 a	98.3 abc	99.0 a
	----saflufenacil	0.57		0.053							
	----dimethenamid	5		0.467							
	Roundup PowerMax..glyphosate	4.5	AS	0.77	lb ae/a	8" corn	B				
	Status Premix	56	WG	0.175	lb ai/a	8" corn	B				
	----diflufenzopyr	16		0.05							
	----dicamba	40		0.125							
	Prowl H2O.....pendimethalin	3.8	CS	0.95	lb ai/a	8" corn	B				
	Nonionic Surfactant	100	L	0.25	% v/v	8" corn	B				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	8" corn	B				

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	AMBEL	CHEAL	IPOSS	GGGAN
	Pest Code							AMBEL	CHEAL	IPOSS	GGGAN
	Pest Name							C.ragwd	C.lmsqtr	mornglry	AnnGrass
	Crop Code										
	Crop Name										
	Rating Type							Control	Control	Control	Control
	Rating Unit							%	%	%	%
	Rating Date							05/31/15	05/31/15	05/31/15	05/31/15
6	Zidua.....pyroxasulfone	4.17	SC	0.106	lb ai/a	PRE	A	100.0 a	100.0 a	99.0 abc	100.0 a
	Sharpen.....saflufenacil	2.85	SC	0.0445	lb ai/a	PRE	A				
	Roundup PowerMax..glyphosate	4.5	AS	0.77	lb ae/a	8" corn	B				
	Status Premix	56	WG	0.175	lb ai/a	8" corn	B				
	----diflufenzopyr	16		0.05							
	----dicamba	40		0.125							
	Atrazine 4L	4	L	1	lb ai/a	8" corn	B				
	Nonionic Surfactant	100	L	0.25	% v/v	8" corn	B				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	8" corn	B				
7	Lumax EZ Premix	3.67	SC	0.69	lb ai/a	PRE	A	99.0 a	100.0 a	97.3 c	99.0 a
	----s-metolachlor	2.49		0.47							
	----mesotrione	0.25		0.047							
	----atrazine	0.93		0.175							
	Halex GT Premix	4.376	SC	1.98	lb ai/a	8" corn	B				
	----s-metolachlor	2.084		0.94							
	----glyphosate	2.084		0.94							
	----mesotrione	0.208		0.094							
	Dry Ammonium Sulfate	100	D	1.02	% w/v	8" corn	B				
8	Corvus Premix	2.63	SC	0.068	lb ai/a	PRE	A	100.0 a	100.0 a	97.7 bc	100.0 a
	----thiencarbazone	0.75		0.0194							
	----isoxaflutole	1.88		0.0486							
	Atrazine 4L	4	L	1	lb ai/a	PRE	A				
	Roundup PowerMax..glyphosate	4.5	AS	0.77	lb ae/a	8" corn	B				
	Laudis.....tembotrione	3.5	SC	0.082	lb ai/a	8" corn	B				
	Atrazine 4L	4	L	1	lb ai/a	8" corn	B				
	Crop Oil Concentrate	100	L	1	% v/v	8" corn	B				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	8" corn	B				
	LSD P=.05							1.15	.	1.92	3.70
	Standard Deviation							0.66	0.00	1.09	2.11
	CV							0.75	0.0	1.27	2.44
	Replicate F							0.671	0.000	3.587	1.799
	Replicate Prob(F)							0.5268	1.0000	0.0552	0.2017
	Treatment F							8598.138	0.000	3059.403	821.666
	Treatment Prob(F)							0.0001	1.0000	0.0001	0.0001

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	AMBEL C.ragwd Control % 06/25/15	IPOSS mornglry Control % 06/25/15	ZEAMX Corn Yield Bu/A 09/16/15
1	Untreated Check							0.0 c	0.0 c	109.0 b
2	Zidua.....pyroxasulfone	4.17	SC	0.106	lb ai/a	PRE	A	100.0 a	85.0 ab	230.0 a
	Sharpen.....saflufenacil	2.85	SC	0.0445	lb ai/a	PRE	A			
	Roundup PowerMax..glyphosate	4.5	AS	0.77	lb ae/a	8" corn	B			
	BAS 67703H	5.36	EC	0.67	lb ai/a	8" corn	B			
	Atrazine 4L	4	L	0.5	lb ai/a	8" corn	B			
	Nonionic Surfactant	100	L	0.25	% v/v	8" corn	B			
	Dry Ammonium Sulfate	100	D	1.02	% w/v	8" corn	B			
3	Verdict Premix	5.57	EC	0.61	lb ai/a	PRE	A	98.3 a	86.0 ab	244.6 a
	----saflufenacil	0.57		0.0624						
	----dimethenamid	5		0.55						
	Roundup PowerMax..glyphosate	4.5	AS	0.77	lb ae/a	8" corn	B			
	BAS 67703H	5.36	EC	0.67	lb ai/a	8" corn	B			
	Atrazine 4L	4	L	0.5	lb ai/a	8" corn	B			
	Nonionic Surfactant	100	L	0.25	% v/v	8" corn	B			
	Dry Ammonium Sulfate	100	D	1.02	% w/v	8" corn	B			
4	Verdict Premix	5.57	EC	0.52	lb ai/a	PRE	A	100.0 a	94.0 ab	231.7 a
	----saflufenacil	0.57		0.053						
	----dimethenamid	5		0.467						
	Roundup PowerMax..glyphosate	4.5	AS	0.77	lb ae/a	8" corn	B			
	Status Premix	56	WG	0.175	lb ai/a	8" corn	B			
	----diflufenzopyr	16		0.05						
	----dicamba	40		0.125						
	Zidua.....pyroxasulfone	4.17	SC	0.106	lb ai/a	8" corn	B			
	Nonionic Surfactant	100	L	0.25	% v/v	8" corn	B			
	Dry Ammonium Sulfate	100	D	1.02	% w/v	8" corn	B			
5	Verdict Premix	5.57	EC	0.52	lb ai/a	PRE	A	100.0 a	89.3 ab	237.5 a
	----saflufenacil	0.57		0.053						
	----dimethenamid	5		0.467						
	Roundup PowerMax..glyphosate	4.5	AS	0.77	lb ae/a	8" corn	B			
	Status Premix	56	WG	0.175	lb ai/a	8" corn	B			
	----diflufenzopyr	16		0.05						
	----dicamba	40		0.125						
	Prowl H2O.....pendimethalin	3.8	CS	0.95	lb ai/a	8" corn	B			
	Nonionic Surfactant	100	L	0.25	% v/v	8" corn	B			
	Dry Ammonium Sulfate	100	D	1.02	% w/v	8" corn	B			

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	AMBEL C.ragwd	IPOSS mornglry	ZEAMX Corn
	Rating Type							Control	Control	Yield
	Rating Unit							%	%	Bu/A
	Rating Date							06/25/15	06/25/15	09/16/15
6	Zidua.....pyroxasulfone	4.17	SC	0.106	lb ai/a	PRE	A	100.0 a	95.7 a	235.6 a
	Sharpen.....saflufenacil	2.85	SC	0.0445	lb ai/a	PRE	A			
	Roundup PowerMax..glyphosate	4.5	AS	0.77	lb ae/a	8" corn	B			
	Status Premix	56	WG	0.175	lb ai/a	8" corn	B			
	----diflufenzopyr	16		0.05						
	----dicamba	40		0.125						
	Atrazine 4L	4	L	1	lb ai/a	8" corn	B			
	Nonionic Surfactant	100	L	0.25	% v/v	8" corn	B			
	Dry Ammonium Sulfate	100	D	1.02	% w/v	8" corn	B			
7	Lumax EZ Premix	3.67	SC	0.69	lb ai/a	PRE	A	93.3 b	85.7 ab	248.3 a
	----s-metolachlor	2.49		0.47						
	----mesotrione	0.25		0.047						
	----atrazine	0.93		0.175						
	Halex GT Premix	4.376	SC	1.98	lb ai/a	8" corn	B			
	----s-metolachlor	2.084		0.94						
	----glyphosate	2.084		0.94						
	----mesotrione	0.208		0.094						
	Dry Ammonium Sulfate	100	D	1.02	% w/v	8" corn	B			
8	Corvus Premix	2.63	SC	0.068	lb ai/a	PRE	A	100.0 a	82.7 b	227.4 a
	----thiencarbazone	0.75		0.0194						
	----isoxaflutole	1.88		0.0486						
	Atrazine 4L	4	L	1	lb ai/a	PRE	A			
	Roundup PowerMax..glyphosate	4.5	AS	0.77	lb ae/a	8" corn	B			
	Laudis.....tembotrione	3.5	SC	0.082	lb ai/a	8" corn	B			
	Atrazine 4L	4	L	1	lb ai/a	8" corn	B			
	Crop Oil Concentrate	100	L	1	% v/v	8" corn	B			
	Dry Ammonium Sulfate	100	D	1.02	% w/v	8" corn	B			
	LSD P=.05							4.01	12.20	64.42
	Standard Deviation							2.29	6.97	36.78
	CV							2.65	9.01	16.68
	Replicate F							1.728	1.333	1.778
	Replicate Prob(F)							0.2134	0.2953	0.2051
	Treatment F							702.816	61.561	4.615
	Treatment Prob(F)							0.0001	0.0001	0.0073

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Armezon Pro Performance in Field Corn

Trial ID: Crn12-15 Location: Field #16 Trial Year:
Protocol ID: Crn12-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact: BASF

Investigator: Mark VanGessel Title: Extension Weed Specialist
Organization: University of Delaware
Address: 16483 County Seat Hwy
City+State/Prov: Georgetown, Delaware
Postal Code: 19947 E-mail: mjv@udel.edu
Country: USA United States

Crop Description

Crop 1: ZEAMX Zea mays Corn
Variety: H5410RC3P BBCH Scale: BCOR
Planting Date: 04/28/15
Planting Rate, Unit: 30000 S/A Planting Method: PLANTD planted
Depth, Unit: 2 in Planting Equipment: FE Field Equipment
Row Spacing, Unit: 30 in Emergence Date: 05/07/15
Harvested Width, Unit: 5 FT
Soil Temperature, Unit: 67 F Harvested Length, Unit: 25 FT
Soil Moisture: NORMAL normal, adequate Harvest Equipment: Plot combine
Seed Bed: MEDIUM medium % Standard Moisture: 15.5

Pest Description

Pest 1 Type: W Code: AMBEL Ambrosia artemisiifolia
Common Name: Common ragweed

Pest 2 Type: W Code: GGGAN Annual grasses
Common Name: Annual grasses

Pest 3 Type: W Code: IPOSS Ipomoea sp.
Common Name: Morning glory

Pest 4 Type: W Code: CHEAL Chenopodium album
Common Name: Common lambsquarters

Site and Design

Treated Plot Width: 10 FT Site Type: FIELD field
Treated Plot Length: 25 FT
Treated Plot Area: 250 FT2 Treatments: 12 Tillage Type: CONTIL conventional-till
Replications: 3 Study Design: RACOBL Randomized Complete Block (RCB)

Soil Description

% Sand: 77 % OM: 0.9 Texture: SL sandy loam
% Silt: 12 pH: 5.9
% Clay: 11 CEC: 5.6 Fert. Level: G good
Soil Drainage: F fair

Moisture and Weather Conditions

Overall Moisture Conditions: NORMAL normal
Closest Weather Station: UD REC Distance, Unit: 0.5 mi

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Application Description

	A
Application Date:	05/18/15
Appl. Stop Time:	11:00 AM
Application Method:	SPRAY
Application Timing:	V3
Application Placement:	BROADC
Applied By:	Johnson
Air Temperature, Unit:	85 F
% Relative Humidity:	55
Wind Velocity, Unit:	2 mph
Wind Direction:	N
Dew Presence (Y/N):	N no
Soil Temperature, Unit:	85 F
Soil Moisture:	NORMAL
% Cloud Cover:	40

Crop Stage At Each Application

	A
Crop 1 Code, BBCH Scale:	ZEAMX BCOR
Stage Scale Used:	DESC
Stage Majority, Percent:	V3 100
Height, Unit:	5.5 in
Height Minimum, Maximum:	5 6

Pest Stage At Each Application

	A
Pest 1 Code, Type, Scale:	AMBEL W
Stage Majority, Percent:	4-leaf 70
Stage Minimum, Percent:	2-leaf 20
Stage Maximum, Percent:	6-leaf 10
Height, Unit:	1.5 in
Height Minimum, Maximum:	1 2
Density, Unit:	150 m2
Pest 2 Code, Type, Scale:	GGGAN W
Stage Majority, Percent:	3-leaf 70
Stage Minimum, Percent:	3-leaf 70
Stage Maximum, Percent:	4-leaf 30
Height, Unit:	2 in
Height Minimum, Maximum:	1 2.5
Density, Unit:	50 m2
Pest 3 Code, Type, Scale:	IPOSS W
Stage Majority, Percent:	cotyl 100
Height, Unit:	1 in
Density, Unit:	5 m2
Pest 4 Code, Type, Scale:	CHEAL W
Stage Majority, Percent:	veg 100
Height, Unit:	1.5 in
Height Minimum, Maximum:	1 2
Density, Unit:	3 m2

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Application Equipment

	A
Appl. Equipment:	Tractor
Equipment Type:	TRMOSP
Operation Pressure, Unit:	40 psi
Nozzle Type:	AIRMIX
Nozzle Size:	11002
Nozzle Spacing, Unit:	20 in
Boom Length, Unit:	10 ft
Boom Height, Unit:	22 in
Ground Speed, Unit:	3 mph
Carrier:	WATER
Spray Volume, Unit:	20 gal/ac
Mix Size, Unit:	0.7 Gallons
Propellant:	COMAIR

Trial Comments

05/22/15: V3 on 5/18.

06/28/15: Annual grasses rated are large crabgrass and giant foxtail. Weed density was quite variable throughout the trial and resulted in variable ratings.

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Armezon Pro Performance in Field Corn

Trial ID: Crn12-15 Location: Field #16 Trial Year:
Protocol ID: Crn12-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact: BASF

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	ZEAMX Corn Lf burn % 05/22/15	ZEAMX Corn Stunting % 05/22/15	ZEAMX Corn LeafBurn % 05/30/15	ZEAMX Corn Stunting % 05/30/15
1	Untreated Check							0.0 c	0.0 c	0.0 c	0.0 c
2	BAS 67703H	5.36	EC	0.67	lb ai/a	V3	A	1.3 c	0.0 c	0.7 c	9.7 ab
	Methylated Seed Oil	100	L	1	% v/v	V3	A				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	V3	A				
3	BAS 67703H	5.36	EC	0.84	lb ai/a	V3	A	1.0 c	0.0 c	0.7 c	11.3 a
	Methylated Seed Oil	100	L	1	% v/v	V3	A				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	V3	A				
4	Capreno Premix	3.45	SC	0.081	lb ai/a	V3	A	0.3 c	2.3 bc	1.0 c	11.3 a
	----thiencarbazone	0.57		0.0134							
	----tembotrione	2.88		0.0676							
	Crop Oil Concentrate	100	L	1	% v/v	V3	A				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	V3	A				
5	BAS 67703H	5.36	EC	0.67	lb ai/a	V3	A	13.0 a	9.0 a	9.0 a	12.3 a
	Roundup PowerMax..glyphosate	4.5	AS	0.56	lb ae/a	V3	A				
	Crop Oil Concentrate	100	L	1	% v/v	V3	A				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	V3	A				
6	BAS 67703H	5.36	EC	0.84	lb ai/a	V3	A	6.3 b	4.0 abc	0.7 c	10.7 a
	Roundup PowerMax..glyphosate	4.5	AS	0.56	lb ae/a	V3	A				
	Crop Oil Concentrate	100	L	1	% v/v	V3	A				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	V3	A				
7	Halex GT Premix	4.376	SC	1.97	lb ai/a	V3	A	4.0 bc	3.3 bc	1.3 c	4.7 bc
	----s-metolachlor	2.084		0.94							
	----glyphosate	2.084		0.94							
	----mesotrione	0.208		0.094							
	Nonionic Surfactant	100	L	0.25	% v/v	V3	A				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	V3	A				
8	Halex GT Premix	4.376	SC	2.19	lb ai/a	V3	A	0.0 c	2.3 bc	0.3 c	2.3 c
	----s-metolachlor	2.084		1.04							
	----glyphosate	2.084		1.04							
	----mesotrione	0.208		0.104							
	Nonionic Surfactant	100	L	0.25	% v/v	V3	A				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	V3	A				
9	BAS 67703H	5.36	EC	0.67	lb ai/a	V3	A	0.3 c	2.3 bc	0.7 c	12.3 a
	Roundup PowerMax..glyphosate	4.5	AS	0.56	lb ae/a	V3	A				
	Atrazine 4L	4	L	0.5	lb ai/a	V3	A				
	Crop Oil Concentrate	100	L	1	% v/v	V3	A				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	V3	A				
10	BAS 67703H	5.36	EC	0.84	lb ai/a	V3	A	0.3 c	0.0 c	1.3 c	10.7 a
	Roundup PowerMax..glyphosate	4.5	AS	0.56	lb ae/a	V3	A				
	Atrazine 4L	4	L	0.5	lb ai/a	V3	A				
	Crop Oil Concentrate	100	L	1	% v/v	V3	A				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	V3	A				

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.
Missing data estimates are included in columns:Yates=8
Could not calculate LSD (% mean diff) for columns 6 because error mean square = 0.

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code				
	Pest Code										
	Pest Name										
	Crop Code							ZEAMX	ZEAMX	ZEAMX	ZEAMX
	Crop Name							Corn	Corn	Corn	Corn
	Rating Type							Lf burn	Stunting	LeafBurn	Stunting
	Rating Unit							%	%	%	%
	Rating Date							05/22/15	05/22/15	05/30/15	05/30/15
11	Halex GT Premix	4.376	SC	1.97	lb ai/a	V3	A	6.7 b	4.7 abc	4.3 b	0.0 c
	----s-metolachlor	2.084		0.94							
	----glyphosate	2.084		0.94							
	----mesotrione	0.208		0.094							
	Atrazine 4L	4	L	0.5	lb ai/a	V3	A				
	Nonionic Surfactant	100	L	0.25	% v/v	V3	A				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	V3	A				
12	Halex GT Premix	4.376	SC	2.19	lb ai/a	V3	A	11.3 a	5.7 ab	7.3 a	0.0 c
	----s-metolachlor	2.084		1.04							
	----glyphosate	2.084		1.04							
	----mesotrione	0.208		0.104							
	Atrazine 4L	4	L	0.5	lb ai/a	V3	A				
	Nonionic Surfactant	100	L	0.25	% v/v	V3	A				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	V3	A				
	LSD P=.05							4.22	5.34	2.84	5.22
	Standard Deviation							2.49	3.16	1.68	3.08
	CV							66.91	112.49	73.57	43.36
	Replicate F							1.953	3.157	1.108	2.887
	Replicate Prob(F)							0.1657	0.0623	0.3480	0.0770
	Treatment F							10.327	2.297	9.493	8.680
	Treatment Prob(F)							0.0001	0.0466	0.0001	0.0001

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	AMBEL C.ragwd	CHEAL C.lmsqtr	IPOSS mornglry	AMBEL C.ragwd
	Pest Code							AMBEL	CHEAL	IPOSS	AMBEL
	Pest Name							C.ragwd	C.lmsqtr	mornglry	C.ragwd
	Crop Code										
	Crop Name										
	Rating Type							Control	Control	Control	Control
	Rating Unit							%	%	%	%
	Rating Date							05/30/15	05/30/15	05/30/15	06/28/15
1	Untreated Check							0.0 c	0.0 b	0.0 c	0.0 c
2	BAS 67703H	5.36	EC	0.67	lb ai/a	V3	A	99.0 a	99.0 a	87.0 b	84.0 b
	Methylated Seed Oil	100	L	1	% v/v	V3	A				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	V3	A				
3	BAS 67703H	5.36	EC	0.84	lb ai/a	V3	A	98.3 b	99.0 a	88.3 ab	97.3 a
	Methylated Seed Oil	100	L	1	% v/v	V3	A				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	V3	A				
4	Capreno Premix	3.45	SC	0.081	lb ai/a	V3	A	99.0 a	99.0 a	94.0 ab	95.3 a
	----thiencarbazone	0.57		0.0134							
	----tembotrione	2.88		0.0676							
	Crop Oil Concentrate	100	L	1	% v/v	V3	A				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	V3	A				
5	BAS 67703H	5.36	EC	0.67	lb ai/a	V3	A	99.0 a	99.0 a	90.0 ab	87.0 ab
	Roundup PowerMax..glyphosate	4.5	AS	0.56	lb ae/a	V3	A				
	Crop Oil Concentrate	100	L	1	% v/v	V3	A				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	V3	A				
6	BAS 67703H	5.36	EC	0.84	lb ai/a	V3	A	99.0 a	99.0 a	90.7 ab	87.3 ab
	Roundup PowerMax..glyphosate	4.5	AS	0.56	lb ae/a	V3	A				
	Crop Oil Concentrate	100	L	1	% v/v	V3	A				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	V3	A				
7	Halex GT Premix	4.376	SC	1.97	lb ai/a	V3	A	99.0 a	99.0 a	93.7 ab	91.7 ab
	----s-metolachlor	2.084		0.94							
	----glyphosate	2.084		0.94							
	----mesotrione	0.208		0.094							
	Nonionic Surfactant	100	L	0.25	% v/v	V3	A				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	V3	A				
8	Halex GT Premix	4.376	SC	2.19	lb ai/a	V3	A	99.0 a	99.0 a	89.3 ab	91.7 ab
	----s-metolachlor	2.084		1.04							
	----glyphosate	2.084		1.04							
	----mesotrione	0.208		0.104							
	Nonionic Surfactant	100	L	0.25	% v/v	V3	A				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	V3	A				
9	BAS 67703H	5.36	EC	0.67	lb ai/a	V3	A	99.0 a	99.0 a	93.3 ab	94.0 ab
	Roundup PowerMax..glyphosate	4.5	AS	0.56	lb ae/a	V3	A				
	Atrazine 4L	4	L	0.5	lb ai/a	V3	A				
	Crop Oil Concentrate	100	L	1	% v/v	V3	A				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	V3	A				
10	BAS 67703H	5.36	EC	0.84	lb ai/a	V3	A	99.0 a	99.0 a	89.3 ab	94.0 ab
	Roundup PowerMax..glyphosate	4.5	AS	0.56	lb ae/a	V3	A				
	Atrazine 4L	4	L	0.5	lb ai/a	V3	A				
	Crop Oil Concentrate	100	L	1	% v/v	V3	A				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	V3	A				

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Pest Code							AMBEL	CHEAL	IPOSS	AMBEL
Pest Name							C.ragwd	C.lmsqtr	mornglry	C.ragwd
Crop Code										
Crop Name										
Rating Type							Control	Control	Control	Control
Rating Unit							%	%	%	%
Rating Date							05/30/15	05/30/15	05/30/15	06/28/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code			
11	Halex GT Premix	4.376	SC	1.97	lb ai/a	V3	A	99.0 a	99.0 a	93.0 ab	95.7 a
	----s-metolachlor	2.084		0.94							
	----glyphosate	2.084		0.94							
	----mesotrione	0.208		0.094							
	Atrazine 4L	4	L	0.5	lb ai/a	V3	A				
	Nonionic Surfactant	100	L	0.25	% v/v	V3	A				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	V3	A				
12	Halex GT Premix	4.376	SC	2.19	lb ai/a	V3	A	99.0 a	99.0 a	95.3 a	96.0 a
	----s-metolachlor	2.084		1.04							
	----glyphosate	2.084		1.04							
	----mesotrione	0.208		0.104							
	Atrazine 4L	4	L	0.5	lb ai/a	V3	A				
	Nonionic Surfactant	100	L	0.25	% v/v	V3	A				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	V3	A				
LSD P=.05								0.56	.	7.31	11.32
Standard Deviation								0.33	0.00	4.32	6.67
CV								0.37	0.0	5.16	7.89
Replicate F								1.000	0.000	0.058	4.634
Replicate Prob(F)								0.3840	1.0000	0.9437	0.0215
Treatment F								22026.252	0.000	112.689	48.924
Treatment Prob(F)								0.0001	1.0000	0.0001	0.0001

Pest Code							IPOSS	GGGAN	
Pest Name							mornglry	AnnGrass	
Crop Code									ZEAMX
Crop Name									Corn
Rating Type							Control	Control	Yield
Rating Unit							%	%	Bu/A
Rating Date							06/28/15	06/28/15	09/16/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code			
1	Untreated Check							0.0 d	0.0 c	156.7 b
2	BAS 67703H	5.36	EC	0.67	lb ai/a	V3	A	74.3 abc	92.3 a	251.9 a
	Methylated Seed Oil	100	L	1	% v/v	V3	A			
	Dry Ammonium Sulfate	100	D	1.02	% w/v	V3	A			
3	BAS 67703H	5.36	EC	0.84	lb ai/a	V3	A	63.3 bc	94.7 a	243.3 a
	Methylated Seed Oil	100	L	1	% v/v	V3	A			
	Dry Ammonium Sulfate	100	D	1.02	% w/v	V3	A			
4	Capreno Premix	3.45	SC	0.081	lb ai/a	V3	A	80.0 ab	77.3 b	246.1 a
	----thiencarbazone	0.57		0.0134						
	----tembotrione	2.88		0.0676						
	Crop Oil Concentrate	100	L	1	% v/v	V3	A			
	Dry Ammonium Sulfate	100	D	1.02	% w/v	V3	A			
5	BAS 67703H	5.36	EC	0.67	lb ai/a	V3	A	60.0 c	84.7 ab	255.1 a
	Roundup PowerMax..glyphosate	4.5	AS	0.56	lb ae/a	V3	A			
	Crop Oil Concentrate	100	L	1	% v/v	V3	A			
	Dry Ammonium Sulfate	100	D	1.02	% w/v	V3	A			
6	BAS 67703H	5.36	EC	0.84	lb ai/a	V3	A	70.0 abc	94.7 a	239.0 a
	Roundup PowerMax..glyphosate	4.5	AS	0.56	lb ae/a	V3	A			
	Crop Oil Concentrate	100	L	1	% v/v	V3	A			
	Dry Ammonium Sulfate	100	D	1.02	% w/v	V3	A			
7	Halex GT Premix	4.376	SC	1.97	lb ai/a	V3	A	70.0 abc	85.7 ab	252.3 a
	----s-metolachlor	2.084		0.94						
	----glyphosate	2.084		0.94						
	----mesotrione	0.208		0.094						
	Nonionic Surfactant	100	L	0.25	% v/v	V3	A			
	Dry Ammonium Sulfate	100	D	1.02	% w/v	V3	A			
8	Halex GT Premix	4.376	SC	2.19	lb ai/a	V3	A	70.0 abc	95.7 a	251.9 a
	----s-metolachlor	2.084		1.04						
	----glyphosate	2.084		1.04						
	----mesotrione	0.208		0.104						
	Nonionic Surfactant	100	L	0.25	% v/v	V3	A			
	Dry Ammonium Sulfate	100	D	1.02	% w/v	V3	A			
9	BAS 67703H	5.36	EC	0.67	lb ai/a	V3	A	68.3 abc	93.0 a	248.3 a
	Roundup PowerMax..glyphosate	4.5	AS	0.56	lb ae/a	V3	A			
	Atrazine 4L	4	L	0.5	lb ai/a	V3	A			
	Crop Oil Concentrate	100	L	1	% v/v	V3	A			
	Dry Ammonium Sulfate	100	D	1.02	% w/v	V3	A			
10	BAS 67703H	5.36	EC	0.84	lb ai/a	V3	A	76.7 abc	96.7 a	245.5 a
	Roundup PowerMax..glyphosate	4.5	AS	0.56	lb ae/a	V3	A			
	Atrazine 4L	4	L	0.5	lb ai/a	V3	A			
	Crop Oil Concentrate	100	L	1	% v/v	V3	A			
	Dry Ammonium Sulfate	100	D	1.02	% w/v	V3	A			

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	IPOSS morngIry	GGGAN AnnGrass	ZEAMX Corn Yield Bu/A
	Pest Code							IPOSS	GGGAN	
	Pest Name							morngIry	AnnGrass	
	Crop Code									ZEAMX
	Crop Name									Corn
	Rating Type							Control	Control	Yield
	Rating Unit							%	%	Bu/A
	Rating Date							06/28/15	06/28/15	09/16/15
11	Halex GT Premix	4.376	SC	1.97	lb ai/a	V3	A	68.3 abc	85.7 ab	253.1 a
	----s-metolachlor	2.084		0.94						
	----glyphosate	2.084		0.94						
	----mesotrione	0.208		0.094						
	Atrazine 4L	4	L	0.5	lb ai/a	V3	A			
	Nonionic Surfactant	100	L	0.25	% v/v	V3	A			
	Dry Ammonium Sulfate	100	D	1.02	% w/v	V3	A			
12	Halex GT Premix	4.376	SC	2.19	lb ai/a	V3	A	84.3 a	96.3 a	261.1 a
	----s-metolachlor	2.084		1.04						
	----glyphosate	2.084		1.04						
	----mesotrione	0.208		0.104						
	Atrazine 4L	4	L	0.5	lb ai/a	V3	A			
	Nonionic Surfactant	100	L	0.25	% v/v	V3	A			
	Dry Ammonium Sulfate	100	D	1.02	% w/v	V3	A			
	LSD P=.05							16.75	14.26	46.01
	Standard Deviation							9.89	8.42	27.17
	CV							15.12	10.14	11.23
	Replicate F							0.593	1.294	0.924
	Replicate Prob(F)							0.5614	0.2943	0.4120
	Treatment F							14.400	30.485	3.075
	Treatment Prob(F)							0.0001	0.0001	0.0120

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Comparison of Approaches for Weed Control in No-Tillage Field Corn

Trial ID: Crn13-15 Location: Field #7 Trial Year:
Protocol ID: Crn13-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Investigator: Mark VanGessel Title: Extension Weed Specialist
Organization: University of Delaware
Address: 16483 County Seat Hwy
City+State/Prov: Georgetown, Delaware
Postal Code: 19947 E-mail: mjv@udel.edu
Country: USA United States

Crop Description

Crop 1: ZEAMX Zea mays Corn
Variety: N68B3111 BBCH Scale: BCOR
Planting Date: 05/05/15
Planting Rate, Unit: 20000 S/A Planting Method: PLANTD planted
Depth, Unit: 2 in Planting Equipment: FE Field Equipment
Row Spacing, Unit: 30 in Emergence Date: 05/12/15
Harvest Date: 09/08/15
Harvested Width, Unit: 10 FT
Soil Temperature, Unit: 89 F Harvested Length, Unit: 25 FT
Soil Moisture: NORMAL normal, adequate Harvest Equipment: Plot combine
Seed Bed: MEDTRA medium/trashy % Standard Moisture: 15.5

Pest Description

Pest 1 Type: W Code: ARBTH Arabidopsis thaliana
Common Name: Mouse-ear cress

Pest 2 Type: W Code: VIORA Viola bicolor
Common Name: Johnny-jump-up violet

Pest 3 Type: W Code: OEOLA Oenothera laciniata
Common Name: Cutleaf eveningprimrose

Pest 4 Type: W Code: LAMAM Lamium amplexicaule
Common Name: Henbit

Pest 5 Type: W Code: EROCI Erodium cicutarium
Common Name: Redstem filaree

Pest 6 Type: W Code: AMAPA Amaranthus palmeri
Common Name: Palmer amaranth

Pest 7 Type: W Code: IPOSS Ipomoea sp.
Common Name: Morning glory

Site and Design

Treated Plot Width: 10 FT Site Type: FIELD field
Treated Plot Length: 25 FT
Treated Plot Area: 250 FT2 Treatments: 14 Tillage Type: NOTILL no-till
Replications: 3 Study Design: RACOBL Randomized Complete Block (RCB)

Soil Description

% Sand: 78 % OM: 2.5 Texture: SL sandy loam
% Silt: 13 pH: 4.8
% Clay: 9 CEC: 7.0 Fert. Level: G good
Soil Drainage: G good

Moisture and Weather Conditions

Overall Moisture Conditions: NORMAL normal
Closest Weather Station: UD REC Distance, Unit: 0.1 mi

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Application Description

	A	B	C	D	E
Application Date:	04/13/15	04/29/15	05/06/15	05/22/15	05/30/15
Appl. Stop Time:	10:50 AM	02:00 PM	08:45 AM	09:20 AM	10:00 AM
Interval to Prev. Appl., Unit:		16 DAYS	7 DAYS	16 DAYS	8 DAYS
Application Method:	SPRAY	SPRAY	SPRAY	SPRAY	SPRAY
Application Timing:	21 DPP	7 DPP	PRE	V3	V5
Application Placement:	BROADC	BROADC	BROADC	BROADC	BROADC
Applied By:	Johnson	Johnson	Johnson	Johnson	VanGessl
Air Temperature, Unit:	64 F	70 F	65 F	54 F	78 F
% Relative Humidity:	50	31	84	80	68
Wind Velocity, Unit:	2 mph	5 mph	0 mph	3 mph	5 mph
Wind Direction:	S	SW	N/A	NW	S
Dew Presence (Y/N):	Y yes	N no	N no	Y yes	N no
Soil Temperature, Unit:	63 F	70 F	65 F	54 F	78 F
Soil Moisture:	NORMAL	NORMAL	NORMAL	WET	NORMAL
% Cloud Cover:	70	15	30	0	75

Crop Stage At Each Application

	A	B	C	D	E
Crop 1 Code, BBCH Scale:	ZEAMX BCOR	ZEAMX BCOR	ZEAMX BCOR	ZEAMX BCOR	ZEAMX BCOR
Stage Scale Used:				DESC	BBCH
Stage Majority, Percent:				V3 100	V5 100
Height, Unit:				6 in	10 in
Height Minimum, Maximum:				5 7	8 11

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Pest Stage At Each Application

	A	B	C	D	E
Pest 1 Code, Type, Scale:	ARBTH W	ARBTH W	ARBTH W	ARBTH W	ARBTH W
Stage Majority, Percent:	seed 100				
Height, Unit:	7 in				
Height Minimum, Maximum:	6 8				
Density, Unit:	25 m2				
Pest 2 Code, Type, Scale:	VIORA W	VIORA W	VIORA W	VIORA W	VIORA W
Stage Majority, Percent:	flower 60	flower 100			
Stage Minimum, Percent:	veg 40				
Stage Maximum, Percent:	flower 60				
Height, Unit:	4 in	7 in			
Height Minimum, Maximum:	3 5	5 8			
Density, Unit:	18 m2	8 m2			
Pest 3 Code, Type, Scale:	OEOLA W	OEOLA W	OEOLA W	OEOLA W	OEOLA W
Stage Majority, Percent:	veg 100	veg 100			
Diameter, Unit:	4 in	6 in			
Height Minimum, Maximum:	3 5	4 7			
Density, Unit:	4 m2	2 m2			
Pest 4 Code, Type, Scale:	LAMAM W	LAMAM W	LAMAM W	LAMAM W	LAMAM W
Stage Majority, Percent:	flower 70	flower 65			
Stage Minimum, Percent:	veg 30	flower 65			
Stage Maximum, Percent:	flower 70	seed 35			
Height, Unit:	4 in	7 in			
Height Minimum, Maximum:	3 5	6 9			
Density, Unit:	5 m2	4 m2			
Pest 5 Code, Type, Scale:	EROCI W	EROCI W	EROCI W	EROCI W	EROCI W
Stage Majority, Percent:	veg 100	veg 100			
Diameter, Unit:	3 in	7 in			
Height Minimum, Maximum:	2 5	5 8			
Density, Unit:	3 m2	3 m2			
Pest 6 Code, Type, Scale:	AMAPA W	AMAPA W	AMAPA W	AMAPA W	AMAPA W
Stage Majority, Percent:				veg 100	
Height, Unit:				1.5 in	8 in
Height Minimum, Maximum:				1 2.5	5 10
Density, Unit:				8 m2	5 m2
Pest 7 Code, Type, Scale:	IPOSS W	IPOSS W	IPOSS W	IPOSS W	IPOSS W
Stage Majority, Percent:				cotyld 100	veg
Height, Unit:				1 in	3 in
Density, Unit:				1 m2	1 m2

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Application Equipment

	A	B	C	D	E
Appl. Equipment:	Backpack	Tractor	Tractor	Tractor	Backpack
Equipment Type:	SPRBAC	TRMOSP	TRMOSP	TRMOSP	SPRBAC
Operation Pressure, Unit:	31 psi	40 psi	40 psi	40 psi	31 psi
Nozzle Type:	AIRMIX	AIRMIX	AIRMIX	AIRMIX	AIRMIX
Nozzle Size:	11002	11002	11002	11002	11002
Nozzle Spacing, Unit:	18 in	20 in	20 in	20 in	18 in
Boom Length, Unit:	9 ft	10 ft	10 ft	10 ft	9 ft
Boom Height, Unit:	22 in	24 in	20 in	22 in	26 in
Ground Speed, Unit:	3 mph	3 mph	3 mph	3 mph	3 mph
Carrier:	WATER	WATER	WATER	WATER	WATER
Spray Volume, Unit:	20 gal/ac	20 gal/ac	20 gal/ac	20 gal/ac	20 gal/ac
Mix Size, Unit:	2 Liters	0.7 Gallons	0.7 Gallons	0.7 Gallons	2 Liters
Propellant:	COMCO2	COMAIR	COMAIR	COMAIR	COMCO2

Trial Comments

05/13/15: Winter annuals that are not 100% dead are severely injured. Treatment 1 had Carolina geranium, field pansy, henbit, and primrose. Treatments 4, 6, 8, 11, 13 had wild garlic. Treatments 7, 8, 9, 10, 11, 13 had cereal rye. Treatments 9, 10, 13 had primrose.

05/22/15: Good to excellent burndown with all treatments. Treatment 1 a few primrose and carolina geranium are present. No strunting of corn observed with any treatment.

06/12/15: Winter annuals present only in a few untreated checks, but at very low density.

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Comparison of Approaches for Weed Control in No-Tillage Field Corn

Trial ID: Crn13-15 Location: Field #7 Trial Year:
Protocol ID: Crn13-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code		AMAPA PalmerAm	IPOSS mornglry
	Pest Code									
	Pest Name									
	Crop Code							ZEAMX		
	Crop Name							Corn		
	Rating Type							Groundcover	Control	Control
	Rating Unit							%	%	%
	Rating Date							05/13/15	06/12/15	06/12/15
1	Untreated Check							5.7 a	0.0 d	0.0 d
	Roundup WeatherMax..glyphosate	4.5	AS	1.13	lb ae/a	7 DPP	B			
2	Gramoxone SL....paraquat	2	SL	0.5	lb ai/a	21 DPP	A	0.0 e	94.7 a	79.0 bc
	Simazine	4	L	1.5	lb ai/a	21 DPP	A			
	Nonionic Surfactant	100	L	0.25	% v/v	21 DPP	A			
	Lumax EZ Premix	3.67	SC	2.48	lb ai/a	PRE	C			
	----s-metolachlor	2.49		1.68						
	----mesotrione	0.25		0.169						
	----atrazine	0.93		0.63						
	Atrazine 4L	4	L	0.75	lb ai/a	PRE	C			
	Crop Oil Concentrate	100	L	1.25	% v/v	PRE	C			
3	Gramoxone SL....paraquat	2	SL	0.5	lb ai/a	21 DPP	A	0.0 e	68.3 c	73.3 c
	Bicep II Magnum Premix	5.5	L	1.72	lb ai/a	21 DPP	A			
	----s-metolachlor	2.4		0.75						
	----atrazine	3.1		0.97						
	Nonionic Surfactant	100	L	0.25	% v/v	21 DPP	A			
	Bicep II Magnum Premix	5.5	L	1.38	lb ai/a	PRE	C			
	----s-metolachlor	2.4		0.6						
	----atrazine	3.1		0.78						
	Prowl H2O.....pendimethalin	3.8	CS	1.43	lb ai/a	PRE	C			
	Crop Oil Concentrate	100	L	1.25	% v/v	PRE	C			
4	Gramoxone SL....paraquat	2	SL	0.5	lb ai/a	21 DPP	A	0.3 de	66.7 c	86.7 abc
	Bicep II Magnum Premix	5.5	L	2.9	lb ai/a	21 DPP	A			
	----s-metolachlor	2.4		1.27						
	----atrazine	3.1		1.63						
	Simazine	4	L	1.5	lb ai/a	21 DPP	A			
	Nonionic Surfactant	100	L	0.25	% v/v	21 DPP	A			
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	V5	E			
5	Gramoxone SL....paraquat	2	SL	0.5	lb ai/a	21 DPP	A	0.0 e	100.0 a	93.7 a
	Bicep II Magnum Premix	5.5	L	1.72	lb ai/a	21 DPP	A			
	----s-metolachlor	2.4		0.75						
	----atrazine	3.1		0.97						
	Nonionic Surfactant	100	L	0.25	% v/v	21 DPP	A			
	Lexar EZ Premix	3.71	SC	1.58	lb ai/a	PRE	C			
	----s-metolachlor	1.742819		0.74						
	----mesotrione	0.2243629		0.096						
	----atrazine	1.742819		0.74						
	Crop Oil Concentrate	100	L	1.25	% v/v	PRE	C			
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	V5	E			

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

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Pest Code								AMAPA	IPOSS
Pest Name								PalmerAm	mornglry
Crop Code								ZEAMX	
Crop Name								Corn	
Rating Type								Groundcover	Control	Control
Rating Unit								%	%	%
Rating Date								05/13/15	06/12/15	06/12/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code			
6	Gramoxone SL....paraquat	2	SL	0.5	lb ai/a	21 DPP	A	0.3 de	99.0 a	88.3 ab
	Simazine	4	L	1.5	lb ai/a	21 DPP	A			
	Nonionic Surfactant	100	L	0.25	% v/v	21 DPP	A			
	Halex GT Premix	4.376	SC	1.97	lb ai/a	V3	D			
	----s-metolachlor	2.084		0.94						
	----glyphosate	2.084		0.94						
	----mesotrione	0.208		0.094						
	Atrazine 4L	4	L	0.5	lb ai/a	V3	D			
	Nonionic Surfactant	100	L	0.25	% v/v	V3	D			
	Dry Ammonium Sulfate	100	D	1.02	% w/v	V3	D			
7	Gramoxone SL....paraquat	2	SL	0.5	lb ai/a	7 DPP	B	1.0 cd	97.3 a	88.3 ab
	Lexar EZ Premix	3.71	SC	3.25	lb ai/a	7 DPP	B			
	----s-metolachlor	1.742819		1.53						
	----mesotrione	0.2243629		0.197						
	----atrazine	1.742819		1.53						
	Simazine	4	L	1.5	lb ai/a	7 DPP	B			
	Nonionic Surfactant	100	L	0.25	% v/v	7 DPP	B			
8	Gramoxone SL....paraquat	2	SL	0.5	lb ai/a	7 DPP	B	1.3 bc	99.0 a	86.7 abc
	Simazine	4	L	1.5	lb ai/a	7 DPP	B			
	Nonionic Surfactant	100	L	0.25	% v/v	7 DPP	B			
	Lumax EZ Premix	3.67	SC	2.48	lb ai/a	PRE	C			
	----s-metolachlor	2.49		1.68						
	----mesotrione	0.25		0.169						
	----atrazine	0.93		0.63						
	Atrazine 4L	4	L	0.75	lb ai/a	PRE	C			
	Crop Oil Concentrate	100	L	1.25	% v/v	PRE	C			
9	Gramoxone SL....paraquat	2	SL	0.5	lb ai/a	7 DPP	B	0.7 cde	99.7 a	94.0 a
	Lumax EZ Premix	3.67	SC	2.48	lb ai/a	7 DPP	B			
	----s-metolachlor	2.49		1.68						
	----mesotrione	0.25		0.169						
	----atrazine	0.93		0.63						
	Atrazine 4L	4	L	0.75	lb ai/a	7 DPP	B			
	Nonionic Surfactant	100	L	0.25	% v/v	7 DPP	B			
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	V5	E			
10	Gramoxone SL....paraquat	2	SL	0.5	lb ai/a	7 DPP	B	2.0 b	100.0 a	93.0 ab
	Simazine	4	L	1	lb ai/a	7 DPP	B			
	Nonionic Surfactant	100	L	0.25	% v/v	7 DPP	B			
	Halex GT Premix	4.376	SC	1.97	lb ai/a	V3	D			
	----s-metolachlor	2.084		0.94						
	----glyphosate	2.084		0.94						
	----mesotrione	0.208		0.094						
	Atrazine 4L	4	L	0.5	lb ai/a	V3	D			
	Nonionic Surfactant	100	L	0.25	% v/v	V3	D			
	Dry Ammonium Sulfate	100	D	1.02	% w/v	V3	D			
11	Gramoxone SL....paraquat	2	SL	0.5	lb ai/a	7 DPP	B	0.7 cde	87.3 ab	84.3 abc
	Bicep II Magnum Premix	5.5	L	2.2	lb ai/a	7 DPP	B			
	----s-metolachlor	2.4		0.96						
	----atrazine	3.1		1.24						
	Nonionic Surfactant	100	L	0.25	% v/v	7 DPP	B			
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	V3	D			
	Callisto.....mesotrione	4	SC	0.094	lb ai/a	V3	D			

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Pest Code									AMAPA	IPOSS
Pest Name									PalmerAm	mornglry
Crop Code								ZEAMX		
Crop Name								Corn		
Rating Type								Groundcover	Control	Control
Rating Unit								%	%	%
Rating Date								05/13/15	06/12/15	06/12/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code			
12	Gramoxone SL....paraquat	2	SL	0.5	lb ai/a	7 DPP	B	0.0 e	78.7 bc	94.7 a
	Atrazine 4L	4	L	1.5	lb ai/a	7 DPP	B			
	Simazine	4	L	1.5	lb ai/a	7 DPP	B			
	Nonionic Surfactant	100	L	0.25	% v/v	7 DPP	B			
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	V5	E			
13	Gramoxone SL....paraquat	2	SL	0.5	lb ai/a	7 DPP	B	1.0 cd	99.7 a	94.7 a
	Atrazine 4L	4	L	1.5	lb ai/a	7 DPP	B			
	Simazine	4	L	1.5	lb ai/a	7 DPP	B			
	Nonionic Surfactant	100	L	0.25	% v/v	7 DPP	B			
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	V5	E			
	Callisto.....mesotrione	4	SC	0.094	lb ai/a	V5	E			
14	Gramoxone SL....paraquat	2	SL	0.5	lb ai/a	21 DPP	A	0.0 e	90.0 ab	92.7 ab
	Bicep II Magnum Premix	5.5	L	2.9	lb ai/a	21 DPP	A			
	----s-metolachlor	2.4		1.27						
	----atrazine	3.1		1.63						
	Simazine	4	L	1.5	lb ai/a	21 DPP	A			
	Nonionic Surfactant	100	L	0.25	% v/v	21 DPP	A			
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	V5	E			
	Callisto.....mesotrione	4	SC	0.094	lb ai/a	V5	E			
LSD P=.05								0.89	14.60	14.32
Standard Deviation								0.53	8.70	8.53
CV								57.01	10.32	10.39
Replicate F								4.843	0.563	3.094
Replicate Prob(F)								0.0163	0.5765	0.0623
Treatment F								23.824	28.719	24.646
Treatment Prob(F)								0.0001	0.0001	0.0001

Pest Code									DIGSA	AMAPA	AMBEL
Pest Name									L.crbgrs	PalmerAm	C.ragwd
Crop Code											
Crop Name											
Rating Type									Control	Control	Control
Rating Unit									%	%	%
Rating Date									06/12/15	06/24/15	06/24/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code				
1	Untreated Check								0.0 e	0.0 c	0.0 c
	Roundup WeatherMax..glyphosate	4.5	AS	1.13	lb ae/a	7 DPP	B				
2	Gramoxone SL....paraquat	2	SL	0.5	lb ai/a	21 DPP	A		95.0 abc	98.3 a	100.0 a
	Simazine	4	L	1.5	lb ai/a	21 DPP	A				
	Nonionic Surfactant	100	L	0.25	% v/v	21 DPP	A				
	Lumax EZ Premix	3.67	SC	2.48	lb ai/a	PRE	C				
	----s-metolachlor	2.49		1.68							
	----mesotrione	0.25		0.169							
	----atrazine	0.93		0.63							
	Atrazine 4L	4	L	0.75	lb ai/a	PRE	C				
	Crop Oil Concentrate	100	L	1.25	% v/v	PRE	C				
3	Gramoxone SL....paraquat	2	SL	0.5	lb ai/a	21 DPP	A		85.0 d	65.0 b	86.0 b
	Bicep II Magnum Premix	5.5	L	1.72	lb ai/a	21 DPP	A				
	----s-metolachlor	2.4		0.75							
	----atrazine	3.1		0.97							
	Nonionic Surfactant	100	L	0.25	% v/v	21 DPP	A				
	Bicep II Magnum Premix	5.5	L	1.38	lb ai/a	PRE	C				
	----s-metolachlor	2.4		0.6							
	----atrazine	3.1		0.78							
	Prowl H2O.....pendimethalin	3.8	CS	1.43	lb ai/a	PRE	C				
	Crop Oil Concentrate	100	L	1.25	% v/v	PRE	C				
4	Gramoxone SL....paraquat	2	SL	0.5	lb ai/a	21 DPP	A		100.0 a	62.7 b	100.0 a
	Bicep II Magnum Premix	5.5	L	2.9	lb ai/a	21 DPP	A				
	----s-metolachlor	2.4		1.27							
	----atrazine	3.1		1.63							
	Simazine	4	L	1.5	lb ai/a	21 DPP	A				
	Nonionic Surfactant	100	L	0.25	% v/v	21 DPP	A				
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	V5	E				
5	Gramoxone SL....paraquat	2	SL	0.5	lb ai/a	21 DPP	A		100.0 a	93.0 a	100.0 a
	Bicep II Magnum Premix	5.5	L	1.72	lb ai/a	21 DPP	A				
	----s-metolachlor	2.4		0.75							
	----atrazine	3.1		0.97							
	Nonionic Surfactant	100	L	0.25	% v/v	21 DPP	A				
	Lexar EZ Premix	3.71	SC	1.58	lb ai/a	PRE	C				
	----s-metolachlor	1.742819		0.74							
	----mesotrione	0.2243629		0.096							
	----atrazine	1.742819		0.74							
	Crop Oil Concentrate	100	L	1.25	% v/v	PRE	C				
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	V5	E				

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Pest Code							DIGSA	AMAPA	AMBEL
Pest Name							L.crbgrs	PalmerAm	C.ragwd
Crop Code									
Crop Name									
Rating Type							Control	Control	Control
Rating Unit							%	%	%
Rating Date							06/12/15	06/24/15	06/24/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code			
6	Gramoxone SL....paraquat	2	SL	0.5	lb ai/a	21 DPP	A	97.3 abc	97.3 a	100.0 a
	Simazine	4	L	1.5	lb ai/a	21 DPP	A			
	Nonionic Surfactant	100	L	0.25	% v/v	21 DPP	A			
	Halex GT Premix	4.376	SC	1.97	lb ai/a	V3	D			
	----s-metolachlor	2.084		0.94						
	----glyphosate	2.084		0.94						
	----mesotrione	0.208		0.094						
	Atrazine 4L	4	L	0.5	lb ai/a	V3	D			
	Nonionic Surfactant	100	L	0.25	% v/v	V3	D			
	Dry Ammonium Sulfate	100	D	1.02	% w/v	V3	D			
7	Gramoxone SL....paraquat	2	SL	0.5	lb ai/a	7 DPP	B	91.3 cd	88.3 a	100.0 a
	Lexar EZ Premix	3.71	SC	3.25	lb ai/a	7 DPP	B			
	----s-metolachlor	1.742819		1.53						
	----mesotrione	0.2243629		0.197						
	----atrazine	1.742819		1.53						
	Simazine	4	L	1.5	lb ai/a	7 DPP	B			
	Nonionic Surfactant	100	L	0.25	% v/v	7 DPP	B			
8	Gramoxone SL....paraquat	2	SL	0.5	lb ai/a	7 DPP	B	98.3 abc	98.3 a	96.7 a
	Simazine	4	L	1.5	lb ai/a	7 DPP	B			
	Nonionic Surfactant	100	L	0.25	% v/v	7 DPP	B			
	Lumax EZ Premix	3.67	SC	2.48	lb ai/a	PRE	C			
	----s-metolachlor	2.49		1.68						
	----mesotrione	0.25		0.169						
	----atrazine	0.93		0.63						
	Atrazine 4L	4	L	0.75	lb ai/a	PRE	C			
	Crop Oil Concentrate	100	L	1.25	% v/v	PRE	C			
9	Gramoxone SL....paraquat	2	SL	0.5	lb ai/a	7 DPP	B	99.7 a	88.0 a	100.0 a
	Lumax EZ Premix	3.67	SC	2.48	lb ai/a	7 DPP	B			
	----s-metolachlor	2.49		1.68						
	----mesotrione	0.25		0.169						
	----atrazine	0.93		0.63						
	Atrazine 4L	4	L	0.75	lb ai/a	7 DPP	B			
	Nonionic Surfactant	100	L	0.25	% v/v	7 DPP	B			
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	V5	E			
10	Gramoxone SL....paraquat	2	SL	0.5	lb ai/a	7 DPP	B	92.3 bc	98.3 a	100.0 a
	Simazine	4	L	1	lb ai/a	7 DPP	B			
	Nonionic Surfactant	100	L	0.25	% v/v	7 DPP	B			
	Halex GT Premix	4.376	SC	1.97	lb ai/a	V3	D			
	----s-metolachlor	2.084		0.94						
	----glyphosate	2.084		0.94						
	----mesotrione	0.208		0.094						
	Atrazine 4L	4	L	0.5	lb ai/a	V3	D			
	Nonionic Surfactant	100	L	0.25	% v/v	V3	D			
	Dry Ammonium Sulfate	100	D	1.02	% w/v	V3	D			
11	Gramoxone SL....paraquat	2	SL	0.5	lb ai/a	7 DPP	B	96.0 abc	87.7 a	100.0 a
	Bicep II Magnum Premix	5.5	L	2.2	lb ai/a	7 DPP	B			
	----s-metolachlor	2.4		0.96						
	----atrazine	3.1		1.24						
	Nonionic Surfactant	100	L	0.25	% v/v	7 DPP	B			
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	V3	D			
	Callisto.....mesotrione	4	SC	0.094	lb ai/a	V3	D			

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	DIGSA L.crbgrs	AMAPA PalmerAm	AMBEL C.ragwd
	Pest Code							DIGSA	AMAPA	AMBEL
	Pest Name							L.crbgrs	PalmerAm	C.ragwd
	Crop Code									
	Crop Name									
	Rating Type							Control	Control	Control
	Rating Unit							%	%	%
	Rating Date							06/12/15	06/24/15	06/24/15
12	Gramoxone SL....paraquat	2	SL	0.5	lb ai/a	7 DPP	B	99.0 ab	72.7 b	100.0 a
	Atrazine 4L	4	L	1.5	lb ai/a	7 DPP	B			
	Simazine	4	L	1.5	lb ai/a	7 DPP	B			
	Nonionic Surfactant	100	L	0.25	% v/v	7 DPP	B			
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	V5	E			
13	Gramoxone SL....paraquat	2	SL	0.5	lb ai/a	7 DPP	B	100.0 a	96.7 a	100.0 a
	Atrazine 4L	4	L	1.5	lb ai/a	7 DPP	B			
	Simazine	4	L	1.5	lb ai/a	7 DPP	B			
	Nonionic Surfactant	100	L	0.25	% v/v	7 DPP	B			
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	V5	E			
	Callisto.....mesotrione	4	SC	0.094	lb ai/a	V5	E			
14	Gramoxone SL....paraquat	2	SL	0.5	lb ai/a	21 DPP	A	99.0 ab	93.3 a	100.0 a
	Bicep II Magnum Premix	5.5	L	2.9	lb ai/a	21 DPP	A			
	----s-metolachlor	2.4		1.27						
	----atrazine	3.1		1.63						
	Simazine	4	L	1.5	lb ai/a	21 DPP	A			
	Nonionic Surfactant	100	L	0.25	% v/v	21 DPP	A			
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	V5	E			
	Callisto.....mesotrione	4	SC	0.094	lb ai/a	V5	E			
	LSD P=.05							7.02	13.35	6.59
	Standard Deviation							4.18	7.95	3.92
	CV							4.67	9.77	4.28
	Replicate F							1.555	0.092	1.050
	Replicate Prob(F)							0.2301	0.9126	0.3643
	Treatment F							116.970	33.107	138.241
	Treatment Prob(F)							0.0001	0.0001	0.0001

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	IPOSS mornglry	DIGSA L.crbgrs	AMAPA PalmerAm
	Pest Code							IPOSS	DIGSA	AMAPA
	Pest Name							mornglry	L.crbgrs	PalmerAm
	Crop Code									
	Crop Name									
	Rating Type							Control	Control	Control
	Rating Unit							%	%	%
	Rating Date							06/24/15	06/24/15	07/28/15
1	Untreated Check							0.0 e	0.0 e	0.0 f
	Roundup WeatherMax..glyphosate	4.5	AS	1.13	lb ae/a	7 DPP	B			
2	Gramoxone SL....paraquat	2	SL	0.5	lb ai/a	21 DPP	A	76.7 bc	91.7 ab	93.0 ab
	Simazine	4	L	1.5	lb ai/a	21 DPP	A			
	Nonionic Surfactant	100	L	0.25	% v/v	21 DPP	A			
	Lumax EZ Premix	3.67	SC	2.48	lb ai/a	PRE	C			
	----s-metolachlor	2.49		1.68						
	----mesotrione	0.25		0.169						
	----atrazine	0.93		0.63						
	Atrazine 4L	4	L	0.75	lb ai/a	PRE	C			
	Crop Oil Concentrate	100	L	1.25	% v/v	PRE	C			
3	Gramoxone SL....paraquat	2	SL	0.5	lb ai/a	21 DPP	A	60.0 d	78.3 d	63.3 e
	Bicep II Magnum Premix	5.5	L	1.72	lb ai/a	21 DPP	A			
	----s-metolachlor	2.4		0.75						
	----atrazine	3.1		0.97						
	Nonionic Surfactant	100	L	0.25	% v/v	21 DPP	A			
	Bicep II Magnum Premix	5.5	L	1.38	lb ai/a	PRE	C			
	----s-metolachlor	2.4		0.6						
	----atrazine	3.1		0.78						
	Prowl H2O.....pendimethalin	3.8	CS	1.43	lb ai/a	PRE	C			
	Crop Oil Concentrate	100	L	1.25	% v/v	PRE	C			
4	Gramoxone SL....paraquat	2	SL	0.5	lb ai/a	21 DPP	A	81.7 abc	97.3 ab	60.7 e
	Bicep II Magnum Premix	5.5	L	2.9	lb ai/a	21 DPP	A			
	----s-metolachlor	2.4		1.27						
	----atrazine	3.1		1.63						
	Simazine	4	L	1.5	lb ai/a	21 DPP	A			
	Nonionic Surfactant	100	L	0.25	% v/v	21 DPP	A			
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	V5	E			
5	Gramoxone SL....paraquat	2	SL	0.5	lb ai/a	21 DPP	A	80.3 abc	98.0 a	81.0 bcd
	Bicep II Magnum Premix	5.5	L	1.72	lb ai/a	21 DPP	A			
	----s-metolachlor	2.4		0.75						
	----atrazine	3.1		0.97						
	Nonionic Surfactant	100	L	0.25	% v/v	21 DPP	A			
	Lexar EZ Premix	3.71	SC	1.58	lb ai/a	PRE	C			
	----s-metolachlor	1.742819		0.74						
	----mesotrione	0.2243629		0.096						
	----atrazine	1.742819		0.74						
	Crop Oil Concentrate	100	L	1.25	% v/v	PRE	C			
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	V5	E			

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Pest Code							IPOSS	DIGSA	AMAPA
Pest Name							mornglry	L.crbgrs	PalmerAm
Crop Code									
Crop Name									
Rating Type							Control	Control	Control
Rating Unit							%	%	%
Rating Date							06/24/15	06/24/15	07/28/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code			
6	Gramoxone SL....paraquat	2	SL	0.5	lb ai/a	21 DPP	A	84.0 abc	93.3 ab	92.7 abc
	Simazine	4	L	1.5	lb ai/a	21 DPP	A			
	Nonionic Surfactant	100	L	0.25	% v/v	21 DPP	A			
	Halex GT Premix	4.376	SC	1.97	lb ai/a	V3	D			
	----s-metolachlor	2.084		0.94						
	----glyphosate	2.084		0.94						
	----mesotrione	0.208		0.094						
	Atrazine 4L	4	L	0.5	lb ai/a	V3	D			
	Nonionic Surfactant	100	L	0.25	% v/v	V3	D			
	Dry Ammonium Sulfate	100	D	1.02	% w/v	V3	D			
7	Gramoxone SL....paraquat	2	SL	0.5	lb ai/a	7 DPP	B	78.3 abc	83.3 cd	82.7 a-d
	Lexar EZ Premix	3.71	SC	3.25	lb ai/a	7 DPP	B			
	----s-metolachlor	1.742819		1.53						
	----mesotrione	0.2243629		0.197						
	----atrazine	1.742819		1.53						
	Simazine	4	L	1.5	lb ai/a	7 DPP	B			
	Nonionic Surfactant	100	L	0.25	% v/v	7 DPP	B			
8	Gramoxone SL....paraquat	2	SL	0.5	lb ai/a	7 DPP	B	81.0 abc	98.0 a	91.3 abc
	Simazine	4	L	1.5	lb ai/a	7 DPP	B			
	Nonionic Surfactant	100	L	0.25	% v/v	7 DPP	B			
	Lumax EZ Premix	3.67	SC	2.48	lb ai/a	PRE	C			
	----s-metolachlor	2.49		1.68						
	----mesotrione	0.25		0.169						
	----atrazine	0.93		0.63						
	Atrazine 4L	4	L	0.75	lb ai/a	PRE	C			
	Crop Oil Concentrate	100	L	1.25	% v/v	PRE	C			
9	Gramoxone SL....paraquat	2	SL	0.5	lb ai/a	7 DPP	B	77.0 bc	95.0 ab	85.0 abc
	Lumax EZ Premix	3.67	SC	2.48	lb ai/a	7 DPP	B			
	----s-metolachlor	2.49		1.68						
	----mesotrione	0.25		0.169						
	----atrazine	0.93		0.63						
	Atrazine 4L	4	L	0.75	lb ai/a	7 DPP	B			
	Nonionic Surfactant	100	L	0.25	% v/v	7 DPP	B			
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	V5	E			
10	Gramoxone SL....paraquat	2	SL	0.5	lb ai/a	7 DPP	B	85.3 abc	91.0 abc	96.0 a
	Simazine	4	L	1	lb ai/a	7 DPP	B			
	Nonionic Surfactant	100	L	0.25	% v/v	7 DPP	B			
	Halex GT Premix	4.376	SC	1.97	lb ai/a	V3	D			
	----s-metolachlor	2.084		0.94						
	----glyphosate	2.084		0.94						
	----mesotrione	0.208		0.094						
	Atrazine 4L	4	L	0.5	lb ai/a	V3	D			
	Nonionic Surfactant	100	L	0.25	% v/v	V3	D			
	Dry Ammonium Sulfate	100	D	1.02	% w/v	V3	D			
11	Gramoxone SL....paraquat	2	SL	0.5	lb ai/a	7 DPP	B	79.3 abc	89.3 bc	91.7 abc
	Bicep II Magnum Premix	5.5	L	2.2	lb ai/a	7 DPP	B			
	----s-metolachlor	2.4		0.96						
	----atrazine	3.1		1.24						
	Nonionic Surfactant	100	L	0.25	% v/v	7 DPP	B			
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	V3	D			
	Callisto.....mesotrione	4	SC	0.094	lb ai/a	V3	D			

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	IPOSS	DIGSA	AMAPA
	Pest Code							IPOSS	DIGSA	AMAPA
	Pest Name							mornglry	L.crbgrs	PalmerAm
	Crop Code									
	Crop Name									
	Rating Type							Control	Control	Control
	Rating Unit							%	%	%
	Rating Date							06/24/15	06/24/15	07/28/15
12	Gramoxone SL....paraquat	2	SL	0.5	lb ai/a	7 DPP	B	75.3 cd	94.0 ab	69.3 de
	Atrazine 4L	4	L	1.5	lb ai/a	7 DPP	B			
	Simazine	4	L	1.5	lb ai/a	7 DPP	B			
	Nonionic Surfactant	100	L	0.25	% v/v	7 DPP	B			
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	V5	E			
13	Gramoxone SL....paraquat	2	SL	0.5	lb ai/a	7 DPP	B	92.3 ab	93.7 ab	93.3 ab
	Atrazine 4L	4	L	1.5	lb ai/a	7 DPP	B			
	Simazine	4	L	1.5	lb ai/a	7 DPP	B			
	Nonionic Surfactant	100	L	0.25	% v/v	7 DPP	B			
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	V5	E			
	Callisto.....mesotrione	4	SC	0.094	lb ai/a	V5	E			
14	Gramoxone SL....paraquat	2	SL	0.5	lb ai/a	21 DPP	A	94.0 a	99.0 a	79.3 cd
	Bicep II Magnum Premix	5.5	L	2.9	lb ai/a	21 DPP	A			
	----s-metolachlor	2.4		1.27						
	----atrazine	3.1		1.63						
	Simazine	4	L	1.5	lb ai/a	21 DPP	A			
	Nonionic Surfactant	100	L	0.25	% v/v	21 DPP	A			
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	V5	E			
	Callisto.....mesotrione	4	SC	0.094	lb ai/a	V5	E			
	LSD P=.05							16.13	8.32	13.64
	Standard Deviation							9.61	4.96	8.13
	CV							12.87	5.77	10.55
	Replicate F							4.786	0.282	0.253
	Replicate Prob(F)							0.0170	0.7566	0.7782
	Treatment F							17.089	78.642	28.310
	Treatment Prob(F)							0.0001	0.0001	0.0001

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	IPOSS mornglry Control % 07/28/15	DIGSA L.crbgrs Control % 07/28/15	ZEAMX Corn Yield Bu/A 09/08/15
1	Untreated Check							0.0 e	0.0 e	35.1 b
	Roundup WeatherMax..glyphosate	4.5	AS	1.13	lb ae/a	7 DPP	B			
2	Gramoxone SL....paraquat	2	SL	0.5	lb ai/a	21 DPP	A	65.0 cd	73.3 d	64.8 a
	Simazine	4	L	1.5	lb ai/a	21 DPP	A			
	Nonionic Surfactant	100	L	0.25	% v/v	21 DPP	A			
	Lumax EZ Premix	3.67	SC	2.48	lb ai/a	PRE	C			
	----s-metolachlor	2.49		1.68						
	----mesotrione	0.25		0.169						
	----atrazine	0.93		0.63						
	Atrazine 4L	4	L	0.75	lb ai/a	PRE	C			
	Crop Oil Concentrate	100	L	1.25	% v/v	PRE	C			
3	Gramoxone SL....paraquat	2	SL	0.5	lb ai/a	21 DPP	A	60.0 d	76.0 cd	55.8 a
	Bicep II Magnum Premix	5.5	L	1.72	lb ai/a	21 DPP	A			
	----s-metolachlor	2.4		0.75						
	----atrazine	3.1		0.97						
	Nonionic Surfactant	100	L	0.25	% v/v	21 DPP	A			
	Bicep II Magnum Premix	5.5	L	1.38	lb ai/a	PRE	C			
	----s-metolachlor	2.4		0.6						
	----atrazine	3.1		0.78						
	Prowl H2O.....pendimethalin	3.8	CS	1.43	lb ai/a	PRE	C			
	Crop Oil Concentrate	100	L	1.25	% v/v	PRE	C			
4	Gramoxone SL....paraquat	2	SL	0.5	lb ai/a	21 DPP	A	65.0 cd	91.7 a	56.8 a
	Bicep II Magnum Premix	5.5	L	2.9	lb ai/a	21 DPP	A			
	----s-metolachlor	2.4		1.27						
	----atrazine	3.1		1.63						
	Simazine	4	L	1.5	lb ai/a	21 DPP	A			
	Nonionic Surfactant	100	L	0.25	% v/v	21 DPP	A			
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	V5	E			
5	Gramoxone SL....paraquat	2	SL	0.5	lb ai/a	21 DPP	A	68.3 bcd	91.0 ab	64.5 a
	Bicep II Magnum Premix	5.5	L	1.72	lb ai/a	21 DPP	A			
	----s-metolachlor	2.4		0.75						
	----atrazine	3.1		0.97						
	Nonionic Surfactant	100	L	0.25	% v/v	21 DPP	A			
	Lexar EZ Premix	3.71	SC	1.58	lb ai/a	PRE	C			
	----s-metolachlor	1.742819		0.74						
	----mesotrione	0.2243629		0.096						
	----atrazine	1.742819		0.74						
	Crop Oil Concentrate	100	L	1.25	% v/v	PRE	C			
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	V5	E			

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Pest Code							IPOSS	DIGSA	
Pest Name							mornglry	L.crbgrs	
Crop Code									ZEAMX
Crop Name									Corn
Rating Type							Control	Control	Yield
Rating Unit							%	%	Bu/A
Rating Date							07/28/15	07/28/15	09/08/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code			
6	Gramoxone SL....paraquat	2	SL	0.5	lb ai/a	21 DPP	A	76.0 a-d	91.7 a	61.1 a
	Simazine	4	L	1.5	lb ai/a	21 DPP	A			
	Nonionic Surfactant	100	L	0.25	% v/v	21 DPP	A			
	Halex GT Premix	4.376	SC	1.97	lb ai/a	V3	D			
	----s-metolachlor	2.084		0.94						
	----glyphosate	2.084		0.94						
	----mesotrione	0.208		0.094						
	Atrazine 4L	4	L	0.5	lb ai/a	V3	D			
	Nonionic Surfactant	100	L	0.25	% v/v	V3	D			
	Dry Ammonium Sulfate	100	D	1.02	% w/v	V3	D			
7	Gramoxone SL....paraquat	2	SL	0.5	lb ai/a	7 DPP	B	60.0 d	76.7 bcd	64.7 a
	Lexar EZ Premix	3.71	SC	3.25	lb ai/a	7 DPP	B			
	----s-metolachlor	1.742819		1.53						
	----mesotrione	0.2243629		0.197						
	----atrazine	1.742819		1.53						
	Simazine	4	L	1.5	lb ai/a	7 DPP	B			
	Nonionic Surfactant	100	L	0.25	% v/v	7 DPP	B			
8	Gramoxone SL....paraquat	2	SL	0.5	lb ai/a	7 DPP	B	77.7 a-d	95.3 a	62.6 a
	Simazine	4	L	1.5	lb ai/a	7 DPP	B			
	Nonionic Surfactant	100	L	0.25	% v/v	7 DPP	B			
	Lumax EZ Premix	3.67	SC	2.48	lb ai/a	PRE	C			
	----s-metolachlor	2.49		1.68						
	----mesotrione	0.25		0.169						
	----atrazine	0.93		0.63						
	Atrazine 4L	4	L	0.75	lb ai/a	PRE	C			
	Crop Oil Concentrate	100	L	1.25	% v/v	PRE	C			
9	Gramoxone SL....paraquat	2	SL	0.5	lb ai/a	7 DPP	B	76.7 a-d	93.7 a	61.5 a
	Lumax EZ Premix	3.67	SC	2.48	lb ai/a	7 DPP	B			
	----s-metolachlor	2.49		1.68						
	----mesotrione	0.25		0.169						
	----atrazine	0.93		0.63						
	Atrazine 4L	4	L	0.75	lb ai/a	7 DPP	B			
	Nonionic Surfactant	100	L	0.25	% v/v	7 DPP	B			
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	V5	E			
10	Gramoxone SL....paraquat	2	SL	0.5	lb ai/a	7 DPP	B	84.0 ab	87.3 a-d	60.5 a
	Simazine	4	L	1	lb ai/a	7 DPP	B			
	Nonionic Surfactant	100	L	0.25	% v/v	7 DPP	B			
	Halex GT Premix	4.376	SC	1.97	lb ai/a	V3	D			
	----s-metolachlor	2.084		0.94						
	----glyphosate	2.084		0.94						
	----mesotrione	0.208		0.094						
	Atrazine 4L	4	L	0.5	lb ai/a	V3	D			
	Nonionic Surfactant	100	L	0.25	% v/v	V3	D			
	Dry Ammonium Sulfate	100	D	1.02	% w/v	V3	D			
11	Gramoxone SL....paraquat	2	SL	0.5	lb ai/a	7 DPP	B	73.0 a-d	81.0 a-d	66.1 a
	Bicep II Magnum Premix	5.5	L	2.2	lb ai/a	7 DPP	B			
	----s-metolachlor	2.4		0.96						
	----atrazine	3.1		1.24						
	Nonionic Surfactant	100	L	0.25	% v/v	7 DPP	B			
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	V3	D			
	Callisto.....mesotrione	4	SC	0.094	lb ai/a	V3	D			

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Pest Code								IPOSS	DIGSA	
Pest Name								mornglry	L.crbgrs	
Crop Code										ZEAMX
Crop Name										Corn
Rating Type								Control	Control	Yield
Rating Unit								%	%	Bu/A
Rating Date								07/28/15	07/28/15	09/08/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code			
12	Gramoxone SL....paraquat	2	SL	0.5	lb ai/a	7 DPP	B	66.7 bcd	83.3 a-d	56.9 a
	Atrazine 4L	4	L	1.5	lb ai/a	7 DPP	B			
	Simazine	4	L	1.5	lb ai/a	7 DPP	B			
	Nonionic Surfactant	100	L	0.25	% v/v	7 DPP	B			
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	V5	E			
13	Gramoxone SL....paraquat	2	SL	0.5	lb ai/a	7 DPP	B	87.3 a	86.7 a-d	60.6 a
	Atrazine 4L	4	L	1.5	lb ai/a	7 DPP	B			
	Simazine	4	L	1.5	lb ai/a	7 DPP	B			
	Nonionic Surfactant	100	L	0.25	% v/v	7 DPP	B			
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	V5	E			
	Callisto.....mesotrione	4	SC	0.094	lb ai/a	V5	E			
14	Gramoxone SL....paraquat	2	SL	0.5	lb ai/a	21 DPP	A	78.3 abc	88.3 abc	65.3 a
	Bicep II Magnum Premix	5.5	L	2.9	lb ai/a	21 DPP	A			
	----s-metolachlor	2.4		1.27						
	----atrazine	3.1		1.63						
	Simazine	4	L	1.5	lb ai/a	21 DPP	A			
	Nonionic Surfactant	100	L	0.25	% v/v	21 DPP	A			
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	V5	E			
	Callisto.....mesotrione	4	SC	0.094	lb ai/a	V5	E			
LSD P=.05								17.69	14.36	12.59
Standard Deviation								10.54	8.56	7.50
CV								15.73	10.73	12.56
Replicate F								5.115	2.383	0.853
Replicate Prob(F)								0.0134	0.1121	0.4375
Treatment F								11.945	23.529	3.258
Treatment Prob(F)								0.0001	0.0001	0.0050

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Sweet Corn Weed Control to Allow Rotational Flexibility

Trial ID: SCRN1-15 Location: Field #14 Trial Year:
Protocol ID: SCRN1-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Investigator: Mark VanGessel Title: Extension Weed Specialist
Organization: University of Delaware
Address: 16483 County Seat Hwy
City+State/Prov: Georgetown, Delaware
Postal Code: 19947 E-mail: mjv@udel.edu
Country: USA United States

Crop Description

Crop 1: ZEAMS Zea mays saccharata Sweet corn
Variety: BC0805 BBCH Scale: BCOR
Planting Date: 05/13/15
Planting Rate, Unit: 24000 S/A Planting Method: PLANTD planted
Depth, Unit: 0.75 in Planting Equipment: FE Field Equipment
Row Spacing, Unit: 30 in Emergence Date: 05/19/15
Harvest Date: 07/29/15
Harvested Width, Unit: 5 FT
Soil Temperature, Unit: 76 F Harvested Length, Unit: 25 FT
Soil Moisture: NORMAL normal, adequate Harvest Equipment: hand-harvested
Seed Bed: MEDIUM medium

Pest Description

Pest 1 Type: W Code: AMAPA Amaranthus palmeri
Common Name: Palmer amaranth

Pest 2 Type: W Code: IPOSS Ipomoea sp.
Common Name: Morning glory

Site and Design

Treated Plot Width: 10 FT Site Type: FIELD field
Treated Plot Length: 25 FT
Treated Plot Area: 250 FT2 Treatments: 10 Tillage Type: CONTIL conventional-till
Replications: 3 Study Design: RACOBL Randomized Complete Block (RCB)

Soil Description

% Sand: 79 % OM: 1.0 Texture: LS loamy sand
% Silt: 14 pH: 6.0
% Clay: 7 CEC: 4.6 Fert. Level: G good
Soil Drainage: G good

Moisture and Weather Conditions

Overall Moisture Conditions: NORMAL normal
Closest Weather Station: UDREC Distance, Unit: 0.4 mi

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Application Description

	A	B
Application Date:	05/14/15	06/10/15
Appl. Stop Time:	08:45 AM	11:30 AM
Interval to Prev. Appl., Unit:		27 DAYS
Application Method:	SPRAY	SPRAY
Application Timing:	PRE	28DAP
Application Placement:	BROADC	BROADC
Applied By:	Johnson	Johnson
Air Temperature, Unit:	56 F	79 F
% Relative Humidity:	59	47
Wind Velocity, Unit:	3 mph	1 mph
Wind Direction:	N	E
Dew Presence (Y/N):	N no	N no
Soil Temperature, Unit:	55 F	79 F
Soil Moisture:	NORMAL	NORMAL
% Cloud Cover:	30	35

Crop Stage At Each Application

	A	B
Crop 1 Code, BBCH Scale:	ZEAMS BCOR	ZEAMS BCOR
Stage Scale Used:		DESC
Stage Majority, Percent:		V5 70
Stage Minimum, Percent:		V5 70
Stage Maximum, Percent:		V6 30
Height, Unit:		10 in
Height Minimum, Maximum:		9 11

Pest Stage At Each Application

	A	B
Pest 1 Code, Type, Scale:	AMAPA W	AMAPA W
Stage Majority, Percent:		veg 100
Height, Unit:		3 in
Height Minimum, Maximum:		2 4
Density, Unit:		10 m2
Pest 2 Code, Type, Scale:	IPOSS W	IPOSS W
Stage Majority, Percent:		veg 100
Height, Unit:		4 in
Height Minimum, Maximum:		3 5
Density, Unit:		12 m2

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Application Equipment

	A	B
Appl. Equipment:	Tractor	Tractor
Equipment Type:	TRMOSP	TRMOSP
Operation Pressure, Unit:	40 psi	40 psi
Nozzle Type:	AIRMIX	AIRMIX
Nozzle Size:	11002	11002
Nozzle Spacing, Unit:	20 in	20 in
Boom Length, Unit:	10 ft	10 ft
Boom Height, Unit:	18 in	26 in
Ground Speed, Unit:	3 mph	3 mph
Carrier:	WATER	WATER
Spray Volume, Unit:	20 gal/ac	20 gal/ac
Mix Size, Unit:	0.7 Gallons	0.7 Gallons
Propellant:	COMAIR	COMAIR

Trial Comments

06/02/15: No injury observed. See little improvement in weed control with Prowl added. Grass and Palmer amaranth control was improved with 1.5 pt of Dual compared to 0.67 pt. Dual at 1.5 pt providing very little morninglory suppression.

06/12/15: All treatments provided excellent (>90%) control of Palmer amaranth, carpetweed, large crabgrass, and fall panicum. Common ragweed density is low in the study area. Poor (<40%) control of common ragweed with Dual alone or Dual plus Prowl.

06/17/15: Treatment 5 still showing leafburn from post application on leaves present at application timing.

06/28/15: Treatment 4 poor common raqgweed control.

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Sweet Corn Weed Control to Allow Rotational Flexibility

Trial ID: SCRN1-15 Location: Field #14 Trial Year:
Protocol ID: SCRN1-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Pest Code									IPOSS		AMAPA
Pest Name									mornglry		PalmerAm
Crop Code								ZEAMS		ZEAMS	
Crop Name								Swt corn		Swt corn	
Rating Type								Stunting	Control	Stunting	Control
Rating Unit								%	%	%	%
Rating Date								06/12/15	06/12/15	06/17/15	06/28/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code				
1	Untreated Check							0.0 d	0.0 d	0.0 c	0.0 c
2	Dual II Magnum..s-metolachlor	7.64	E	0.64	lb ai/a	PRE	A	0.0 d	18.3 cd	3.3 c	91.0 ab
	Cadet.....fluthiacet	0.91	EC	0.0064	lb ai/a	28DAP	B				
	Basagran.....bentazon	4	L	0.75	lb ai/a	28DAP	B				
	Nonionic Surfactant	100	L	0.5	% v/v	28DAP	B				
3	Dual II Magnum..s-metolachlor	7.64	E	1.43	lb ai/a	PRE	A	0.0 d	30.0 c	0.0 c	96.7 ab
	Cadet.....fluthiacet	0.91	EC	0.0064	lb ai/a	28DAP	B				
	Basagran.....bentazon	4	L	0.75	lb ai/a	28DAP	B				
	Nonionic Surfactant	100	L	0.5	% v/v	28DAP	B				
4	Dual II Magnum..s-metolachlor	7.64	E	1.43	lb ai/a	PRE	A	2.3 cd	20.0 cd	4.7 bc	94.0 ab
	Prowl H2O.....pendimethalin	3.8	CS	1.43	lb ai/a	PRE	A				
	Basagran.....bentazon	4	L	0.75	lb ai/a	28DAP	B				
	Nonionic Surfactant	100	L	0.5	% v/v	28DAP	B				
5	Dual II Magnum..s-metolachlor	7.64	E	1.43	lb ai/a	PRE	A	2.3 cd	20.0 cd	12.0 a	87.3 b
	Cadet.....fluthiacet	0.91	EC	0.0064	lb ai/a	28DAP	B				
	Starane Ultra...fluroxypyr	2.8	EC	0.14	lb ae/a	28DAP	B				
	Nonionic Surfactant	100	L	0.5	% v/v	28DAP	B				
6	Dual II Magnum..s-metolachlor	7.64	E	1.43	lb ai/a	PRE	A	0.0 d	10.0 cd	0.0 c	99.7 a
	Impact.....topramezone	2.81	SC	0.0165	lb ai/a	28DAP	B				
	Crop Oil Concentrate	100	L	1.25	% v/v	28DAP	B				
	30% Urea Ammonium Nitrate	100	L	2	% v/v	28DAP	B				
7	Dual II Magnum..s-metolachlor	7.64	E	1.43	lb ai/a	PRE	A	0.0 d	26.7 c	9.0 ab	100.0 a
	Impact.....topramezone	2.81	SC	0.0165	lb ai/a	28DAP	B				
	Atrazine 4L	4	L	0.5	lb ai/a	28DAP	B				
	Crop Oil Concentrate	100	L	1.25	% v/v	28DAP	B				
	30% Urea Ammonium Nitrate	100	L	2	% v/v	28DAP	B				
8	Zidua.....pyroxasulfone	85	WG	0.106	lb ai/a	PRE	A	11.3 a	53.3 b	9.0 ab	100.0 a
	Liberty 280.....glufosinate	2.34	SL	0.366	lb ai/a	28DAP	B				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	28DAP	B				
9	Dual II Magnum..s-metolachlor	7.64	E	1.43	lb ai/a	PRE	A	4.7 bc	80.3 a	9.0 ab	100.0 a
	Sharpen.....saflufenacil	2.85	SC	0.0223	lb ai/a	PRE	A				
	Liberty 280.....glufosinate	2.34	SL	0.366	lb ai/a	28DAP	B				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	28DAP	B				

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

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Pest Code								IPOSS		AMAPA
Pest Name								mornglry		PalmerAm
Crop Code								ZEAMS		ZEAMS
Crop Name								Swt corn		Swt corn
Rating Type								Stunting	Control	Stunting	Control
Rating Unit								%	%	%	%
Rating Date								06/12/15	06/12/15	06/17/15	06/28/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code				
10	Dual II Magnum..s-metolachlor	7.64	E	1.43	lb ai/a	PRE	A	8.7 ab	87.3 a	2.3 c	100.0 a
	Sharpen.....saflufenacil	2.85	SC	0.0445	lb ai/a	PRE	A				
	Liberty 280.....glufosinate	2.34	SL	0.366	lb ai/a	28DAP	B				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	28DAP	B				
LSD P=.05								4.16	20.49	4.84	12.07
Standard Deviation								2.43	11.94	2.82	7.04
CV								82.68	34.52	57.2	8.1
Replicate F								0.975	0.447	0.419	1.822
Replicate Prob(F)								0.3963	0.6468	0.6642	0.1903
Treatment F								8.511	18.226	7.617	57.634
Treatment Prob(F)								0.0001	0.0001	0.0001	0.0001

Pest Code Pest Name Crop Code Crop Name Rating Type Rating Unit Rating Date							IPOSS mornglry Control % 06/28/15	DIGSA L.crbgrs Control % 06/28/15	ZEAMS Swt corn Yield lb/A 07/29/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code		
1	Untreated Check							0.0 d	0.0 d	19283 a
2	Dual II Magnum..s-metolachlor	7.64	E	0.64	lb ai/a	PRE	A	58.3 c	83.3 c	20676 a
	Cadet.....fluthiacet	0.91	EC	0.0064	lb ai/a	28DAP	B			
	Basagran.....bentazon	4	L	0.75	lb ai/a	28DAP	B			
	Nonionic Surfactant	100	L	0.5	% v/v	28DAP	B			
3	Dual II Magnum..s-metolachlor	7.64	E	1.43	lb ai/a	PRE	A	56.7 c	94.3 b	19399 a
	Cadet.....fluthiacet	0.91	EC	0.0064	lb ai/a	28DAP	B			
	Basagran.....bentazon	4	L	0.75	lb ai/a	28DAP	B			
	Nonionic Surfactant	100	L	0.5	% v/v	28DAP	B			
4	Dual II Magnum..s-metolachlor	7.64	E	1.43	lb ai/a	PRE	A	58.3 c	96.3 ab	21025 a
	Prowl H2O.....pendimethalin	3.8	CS	1.43	lb ai/a	PRE	A			
	Basagran.....bentazon	4	L	0.75	lb ai/a	28DAP	B			
	Nonionic Surfactant	100	L	0.5	% v/v	28DAP	B			
5	Dual II Magnum..s-metolachlor	7.64	E	1.43	lb ai/a	PRE	A	91.0 a	96.3 ab	21490 a
	Cadet.....fluthiacet	0.91	EC	0.0064	lb ai/a	28DAP	B			
	Starane Ultra...fluroxypyr	2.8	EC	0.14	lb ae/a	28DAP	B			
	Nonionic Surfactant	100	L	0.5	% v/v	28DAP	B			
6	Dual II Magnum..s-metolachlor	7.64	E	1.43	lb ai/a	PRE	A	46.7 c	97.3 a	20328 a
	Impact.....topramezone	2.81	SC	0.0165	lb ai/a	28DAP	B			
	Crop Oil Concentrate	100	L	1.25	% v/v	28DAP	B			
	30% Urea Ammonium Nitrate	100	L	2	% v/v	28DAP	B			
7	Dual II Magnum..s-metolachlor	7.64	E	1.43	lb ai/a	PRE	A	76.7 b	98.0 a	17308 a
	Impact.....topramezone	2.81	SC	0.0165	lb ai/a	28DAP	B			
	Atrazine 4L	4	L	0.5	lb ai/a	28DAP	B			
	Crop Oil Concentrate	100	L	1.25	% v/v	28DAP	B			
	30% Urea Ammonium Nitrate	100	L	2	% v/v	28DAP	B			
8	Zidua.....pyroxasulfone	85	WG	0.106	lb ai/a	PRE	A	92.0 a	99.0 a	18353 a
	Liberty 280.....glufosinate	2.34	SL	0.366	lb ai/a	28DAP	B			
	Dry Ammonium Sulfate	100	D	1.02	% w/v	28DAP	B			
9	Dual II Magnum..s-metolachlor	7.64	E	1.43	lb ai/a	PRE	A	96.3 a	99.0 a	21838 a
	Sharpen.....saflufenacil	2.85	SC	0.0223	lb ai/a	PRE	A			
	Liberty 280.....glufosinate	2.34	SL	0.366	lb ai/a	28DAP	B			
	Dry Ammonium Sulfate	100	D	1.02	% w/v	28DAP	B			

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Pest Code							IPOSS	DIGSA	
Pest Name							mornglry	L.crbgrs	
Crop Code									ZEAMS
Crop Name									Swt corn
Rating Type							Control	Control	Yield
Rating Unit							%	%	lb/A
Rating Date							06/28/15	06/28/15	07/29/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code		
10	Dual II Magnum..s-metolachlor	7.64	E	1.43	lb ai/a	PRE	A	94.3 a	98.0 a	18934 a
	Sharpen.....saflufenacil	2.85	SC	0.0445	lb ai/a	PRE	A			
	Liberty 280.....glufosinate	2.34	SL	0.366	lb ai/a	28DAP	B			
	Dry Ammonium Sulfate	100	D	1.02	% w/v	28DAP	B			
LSD P=.05								14.08	2.97	4741.5
Standard Deviation								8.21	1.73	2764.1
CV								12.25	2.01	13.92
Replicate F								2.264	1.248	1.384
Replicate Prob(F)								0.1327	0.3109	0.2759
Treatment F								39.862	940.130	0.829
Treatment Prob(F)								0.0001	0.0001	0.5989

University of Delaware

Sweet Corn Tolerance to Anthem

Trial ID: SCRN2-15 Location: Field #16 Trial Year:
Protocol ID: SCRN2-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact: FMC

Investigator: Mark VanGessel Title: Extension Weed Specialist
Organization: University of Delaware
Address: 16483 County Seat Hwy
City+State/Prov: Georgetown, Delaware
Postal Code: 19947 E-mail: mjv@udel.edu
Country: USA United States

Crop Description

Crop 1: ZEAMS Zea mays saccharata Sweet corn
Variety: see treatment list BBCH Scale: BCOR
Planting Date: 04/30/15
Planting Rate, Unit: 24000 S/A Planting Method: PLANTD planted
Depth, Unit: 0.75 in Planting Equipment: PP Plot Planter
Row Spacing, Unit: 30 in Emergence Date: 05/08/15
Soil Temperature, Unit: 71 F
Soil Moisture: NORMAL normal, adequate
Seed Bed: MEDIUM medium

Site and Design

Treated Plot Width: 2.5 FT Site Type: FIELD field
Treated Plot Length: 25 FT
Treated Plot Area: 62.5 FT2 Treatments: 16 Tillage Type: CONTIL conventional-till
Replications: 3 Study Design: SPLPLO Split-Plot

Maintenance

No.	Date	Maintenance Product Name	Form Conc	Form Type	Rate	Rate Unit
1.	06/05/15	Impact	2.8	SC	0.75	FL OZ/A
2.	06/05/15	Atrazine	4	L	1	PT/A
3.	06/05/15	COC	100	L	1	% V/V
4.	06/05/15	30%UAN	100	L	2	% V/V

Soil Description

% Sand: 77 % OM: 0.9 Texture: SL sandy loam
% Silt: 12 pH: 5.9
% Clay: 11 CEC: 5.6 Fert. Level: G good
Soil Drainage: F fair

Moisture and Weather Conditions

Overall Moisture Conditions: NORMAL normal
Closest Weather Station: UD REC Distance, Unit: 0.5 mi

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Application Description

	A
Application Date:	04/30/15
Appl. Stop Time:	03:30 PM
Application Method:	SPRAY
Application Timing:	PRE
Application Placement:	BROADC
Applied By:	Johnson
Air Temperature, Unit:	64 F
% Relative Humidity:	60
Wind Velocity, Unit:	8 mph
Wind Direction:	SE
Dew Presence (Y/N):	N no
Soil Temperature, Unit:	64 F
Soil Moisture:	NORMAL
% Cloud Cover:	50

Crop Stage At Each Application

	A
Crop 1 Code, BBCH Scale:	ZEAMS BCOR

Application Equipment

	A
Appl. Equipment:	Tractor
Equipment Type:	TRMOSP
Operation Pressure, Unit:	40 psi
Nozzle Type:	AIRMIX
Nozzle Size:	11002
Nozzle Spacing, Unit:	20 in
Boom Length, Unit:	10 ft
Boom Height, Unit:	18 in
Ground Speed, Unit:	3 mph
Carrier:	WATER
Spray Volume, Unit:	20 gal/ac
Mix Size, Unit:	0.7 Gallons
Propellant:	COMAIR

Trial Comments

University of Delaware

Sweet Corn Tolerance to Anthem

Trial ID: SCRN2-15 Location: Field #16 Trial Year:
Protocol ID: SCRN2-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact: FMC

Crop Code Crop Name Rating Type Rating Unit Rating Date								ZEAMS Swt corn Stunting % 05/14/15	ZEAMS Swt corn Stunting % 05/22/15	ZEAMS Swt corn Stunting % 05/30/15	ZEAMS Swt corn Stunting % 06/07/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code				
1	Anthem Premix	2.153	SE	0	lb ai/a	PRE		0.0 c	0.0 c	0.0 d	0.0 d
	----pyroxasulfone	2.09									
	----fluthiacet	0.06300001									
	Bicep II Magnum Premix	5.5	L	1.79	lb ai/a	PRE	A				
	----s-metolachlor	2.4		0.78							
	----atrazine	3.1		1.01							
	Munition										
2	Anthem Premix	2.153	SE	0	lb ai/a	PRE		0.0 c	0.0 c	0.0 d	0.0 d
	----pyroxasulfone	2.09									
	----fluthiacet	0.06300001									
	Bicep II Magnum Premix	5.5	L	1.79	lb ai/a	PRE	A				
	----s-metolachlor	2.4		0.78							
	----atrazine	3.1		1.01							
	Temptation										
3	Anthem Premix	2.153	SE	0	lb ai/a	PRE		0.0 c	0.0 c	0.0 d	0.0 d
	----pyroxasulfone	2.09									
	----fluthiacet	0.06300001									
	Bicep II Magnum Premix	5.5	L	1.79	lb ai/a	PRE	A				
	----s-metolachlor	2.4		0.78							
	----atrazine	3.1		1.01							
	EX08767143										
4	Anthem Premix	2.153	SE	0	lb ai/a	PRE		0.0 c	0.0 c	0.0 d	0.0 d
	----pyroxasulfone	2.09									
	----fluthiacet	0.06300001									
	Bicep II Magnum Premix	5.5	L	1.79	lb ai/a	PRE	A				
	----s-metolachlor	2.4		0.78							
	----atrazine	3.1		1.01							
	Iochief										
5	Anthem Premix	2.153	SE	0	lb ai/a	PRE		0.0 c	0.0 c	0.0 d	0.0 d
	----pyroxasulfone	2.09									
	----fluthiacet	0.06300001									
	Bicep II Magnum Premix	5.5	L	1.79	lb ai/a	PRE	A				
	----s-metolachlor	2.4		0.78							
	----atrazine	3.1		1.01							
	NK-199										
6	Anthem Premix	2.153	SE	0	lb ai/a	PRE		0.0 c	0.0 c	0.0 d	0.0 d
	----pyroxasulfone	2.09									
	----fluthiacet	0.06300001									
	Bicep II Magnum Premix	5.5	L	1.79	lb ai/a	PRE	A				
	----s-metolachlor	2.4		0.78							
	----atrazine	3.1		1.01							
	Robust Yellow										

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
Mean separations are based on the complete error term.
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

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Crop Code Crop Name Rating Type Rating Unit Rating Date								ZEAMS Swt corn Stunting % 05/14/15	ZEAMS Swt corn Stunting % 05/22/15	ZEAMS Swt corn Stunting % 05/30/15	ZEAMS Swt corn Stunting % 06/07/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code				
7	Anthem Premix	2.153	SE	0	lb ai/a	PRE		0.0 c	0.0 c	0.0 d	0.0 d
	----pyroxasulfone	2.09									
	----fluthiacet	0.06300001									
	Bicep II Magnum Premix	5.5	L	1.79	lb ai/a	PRE	A				
	----s-metolachlor	2.4		0.78							
	----atrazine	3.1		1.01							
	Robust White										
8	Anthem Premix	2.153	SE	0	lb ai/a	PRE		0.0 c	0.0 c	0.0 d	0.0 d
	----pyroxasulfone	2.09									
	----fluthiacet	0.06300001									
	Bicep II Magnum Premix	5.5	L	1.79	lb ai/a	PRE	A				
	----s-metolachlor	2.4		0.78							
	----atrazine	3.1		1.01							
	Yellow Purdue 410										
9	Anthem Premix	2.153	SE	0.135	lb ai/a	PRE	A	15.0 a	3.3 bc	7.3 abc	5.7 bc
	----pyroxasulfone	2.09		0.131							
	----fluthiacet	0.06300001		0.00395							
	Munition										
10	Anthem Premix	2.153	SE	0.135	lb ai/a	PRE	A	6.3 b	10.7 a	8.0 ab	7.3 ab
	----pyroxasulfone	2.09		0.131							
	----fluthiacet	0.06300001		0.00395							
	Temptation										
11	Anthem Premix	2.153	SE	0.135	lb ai/a	PRE	A	0.0 c	7.3 ab	10.7 a	11.3 a
	----pyroxasulfone	2.09		0.131							
	----fluthiacet	0.06300001		0.00395							
	EX08767143										
12	Anthem Premix	2.153	SE	0.135	lb ai/a	PRE	A	6.7 b	9.0 a	3.3 bcd	10.7 a
	----pyroxasulfone	2.09		0.131							
	----fluthiacet	0.06300001		0.00395							
	Iochief										
13	Anthem Premix	2.153	SE	0.135	lb ai/a	PRE	A	0.0 c	0.0 c	0.0 d	0.0 d
	----pyroxasulfone	2.09		0.131							
	----fluthiacet	0.06300001		0.00395							
	NK-199										
14	Anthem Premix	2.153	SE	0.135	lb ai/a	PRE	A	2.3 bc	0.0 c	2.3 cd	2.3 cd
	----pyroxasulfone	2.09		0.131							
	----fluthiacet	0.06300001		0.00395							
	Robust Yellow										
15	Anthem Premix	2.153	SE	0.135	lb ai/a	PRE	A	0.0 c	2.3 c	6.3 abc	2.3 cd
	----pyroxasulfone	2.09		0.131							
	----fluthiacet	0.06300001		0.00395							
	Robust White										
16	Anthem Premix	2.153	SE	0.135	lb ai/a	PRE	A	5.7 b	2.3 c	0.0 d	0.0 d
	----pyroxasulfone	2.09		0.131							
	----fluthiacet	0.06300001		0.00395							
	Yellow Purdue 410										
LSD P=.05								4.62	4.09	5.35	4.66
Standard Deviation								2.76	2.45	3.20	2.78
CV								122.85	111.84	134.65	112.27
Replicate F								0.352	4.835	0.171	1.584
Replicate Prob(F)								0.7065	0.0157	0.8436	0.2230
Treatment F								6.966	6.483	3.872	6.213
Treatment Prob(F)								0.0001	0.0001	0.0010	0.0001

University of Delaware

Sweet Corn Tolerance to Anthem

Trial ID: SCRN2-15 Location: Field #16 Trial Year:
Protocol ID: SCRN2-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact: FMC

Crop Code Crop Name Rating Type Rating Unit Rating Date							ZEAMS Swt corn Stunting % 05/14/15	ZEAMS Swt corn Stunting % 05/22/15	ZEAMS Swt corn Stunting % 05/30/15	ZEAMS Swt corn Stunting % 06/07/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code			
TABLE OF R MEANS										
Replicate 1								2.6	3.6	2.8	3.2
Replicate 2								1.8	2.1	2.3	1.5
Replicate 3								2.3	0.9	2.1	2.8
TABLE OF A (Herbicide) MEANS											
1	Anthem Premix	2.153	SE	0	lb ai/a	PRE		0.0 b	0.0 b	0.0 b	0.0 b
1	----pyroxasulfone	2.09									
1	----fluthiacet	0.06300001									
1	Bicep II Magnum Premix	5.5	L	1.79	lb ai/a	PRE	A				
1	----s-metolachlor	2.4		0.78							
1	----atrazine	3.1		1.01							
2	Anthem Premix	2.153	SE	0.135	lb ai/a	PRE	A	4.5 a	4.4 a	4.8 a	5.0 a
2	----pyroxasulfone	2.09		0.131							
2	----fluthiacet	0.06300001		0.00395							
LSD P=.05								1.59	1.62	1.83	1.67
Standard Deviation								2.70	2.74	3.11	2.84
CV								120.16	125.32	130.87	114.43
TABLE OF B (Variety) MEANS											
1	Munition							7.5 a	1.7 bcd	3.7 ab	2.8 abc
2	Temptation							3.2 bc	5.3 a	4.0 ab	3.7 ab
3	EX08767143							0.0 c	3.7 abc	5.3 a	5.7 a
4	Iochief							3.3 b	4.5 ab	1.7 bc	5.3 a
5	NK-199							0.0 c	0.0 d	0.0 c	0.0 c
6	Robust Yellow							1.2 bc	0.0 d	1.2 bc	1.2 bc
7	Robust White							0.0 c	1.2 cd	3.2 abc	1.2 bc
8	Yellow Purdue 410							2.8 bc	1.2 cd	0.0 c	0.0 c
LSD P=.05								3.19	3.23	3.66	3.35
Standard Deviation								2.70	2.74	3.11	2.84
CV								120.16	125.32	130.87	114.43
TABLE OF A (Herbicide) B (Variety) MEANS											
1	Anthem Premix	2.153	SE	0	lb ai/a	PRE		0.0 c	0.0 c	0.0 d	0.0 d
1	----pyroxasulfone	2.09									
1	----fluthiacet	0.06300001									
1	Bicep II Magnum Premix	5.5	L	1.79	lb ai/a	PRE	A				
1	----s-metolachlor	2.4		0.78							
1	----atrazine	3.1		1.01							
1	Munition										
2	Anthem Premix	2.153	SE	0.135	lb ai/a	PRE	A	15.0 a	3.3 bc	7.3 abc	5.7 bc
2	----pyroxasulfone	2.09		0.131							
2	----fluthiacet	0.06300001		0.00395							
1	Munition										

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

University of Delaware

Crop Code Crop Name Rating Type Rating Unit Rating Date							ZEAMS Swt corn Stunting % 05/14/15	ZEAMS Swt corn Stunting % 05/22/15	ZEAMS Swt corn Stunting % 05/30/15	ZEAMS Swt corn Stunting % 06/07/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code			
1	Anthem Premix	2.153	SE	0	lb ai/a	PRE		0.0 c	0.0 c	0.0 d	0.0 d
1	----pyroxasulfone	2.09								
1	----fluthiacet	0.06300001								
1	Bicep II Magnum Premix	5.5	L	1.79	lb ai/a	PRE	A			
1	----s-metolachlor	2.4		0.78						
1	----atrazine	3.1		1.01						
2	Temptation									
2	Anthem Premix	2.153	SE	0.135	lb ai/a	PRE	A	6.3 b	10.7 a	8.0 ab	7.3 ab
2	----pyroxasulfone	2.09		0.131						
2	----fluthiacet	0.06300001		0.00395						
2	Temptation									
1	Anthem Premix	2.153	SE	0	lb ai/a	PRE		0.0 c	0.0 c	0.0 d	0.0 d
1	----pyroxasulfone	2.09								
1	----fluthiacet	0.06300001								
1	Bicep II Magnum Premix	5.5	L	1.79	lb ai/a	PRE	A			
1	----s-metolachlor	2.4		0.78						
1	----atrazine	3.1		1.01						
3	EX08767143									
2	Anthem Premix	2.153	SE	0.135	lb ai/a	PRE	A	0.0 c	7.3 ab	10.7 a	11.3 a
2	----pyroxasulfone	2.09		0.131						
2	----fluthiacet	0.06300001		0.00395						
3	EX08767143									
1	Anthem Premix	2.153	SE	0	lb ai/a	PRE		0.0 c	0.0 c	0.0 d	0.0 d
1	----pyroxasulfone	2.09								
1	----fluthiacet	0.06300001								
1	Bicep II Magnum Premix	5.5	L	1.79	lb ai/a	PRE	A			
1	----s-metolachlor	2.4		0.78						
1	----atrazine	3.1		1.01						
4	Iochief									
2	Anthem Premix	2.153	SE	0.135	lb ai/a	PRE	A	6.7 b	9.0 a	3.3 bcd	10.7 a
2	----pyroxasulfone	2.09		0.131						
2	----fluthiacet	0.06300001		0.00395						
4	Iochief									
1	Anthem Premix	2.153	SE	0	lb ai/a	PRE		0.0 c	0.0 c	0.0 d	0.0 d
1	----pyroxasulfone	2.09								
1	----fluthiacet	0.06300001								
1	Bicep II Magnum Premix	5.5	L	1.79	lb ai/a	PRE	A			
1	----s-metolachlor	2.4		0.78						
1	----atrazine	3.1		1.01						
5	NK-199									
2	Anthem Premix	2.153	SE	0.135	lb ai/a	PRE	A	0.0 c	0.0 c	0.0 d	0.0 d
2	----pyroxasulfone	2.09		0.131						
2	----fluthiacet	0.06300001		0.00395						
5	NK-199									
1	Anthem Premix	2.153	SE	0	lb ai/a	PRE		0.0 c	0.0 c	0.0 d	0.0 d
1	----pyroxasulfone	2.09								
1	----fluthiacet	0.06300001								
1	Bicep II Magnum Premix	5.5	L	1.79	lb ai/a	PRE	A			
1	----s-metolachlor	2.4		0.78						
1	----atrazine	3.1		1.01						
6	Robust Yellow									
2	Anthem Premix	2.153	SE	0.135	lb ai/a	PRE	A	2.3 bc	0.0 c	2.3 cd	2.3 cd
2	----pyroxasulfone	2.09		0.131						
2	----fluthiacet	0.06300001		0.00395						
6	Robust Yellow									

University of Delaware

Crop Code Crop Name Rating Type Rating Unit Rating Date								ZEAMS Swt corn Stunting % 05/14/15	ZEAMS Swt corn Stunting % 05/22/15	ZEAMS Swt corn Stunting % 05/30/15	ZEAMS Swt corn Stunting % 06/07/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code				
1	Anthem Premix	2.153	SE	0	lb ai/a	PRE		0.0 c	0.0 c	0.0 d	0.0 d
1	----pyroxasulfone	2.09									
1	----fluthiacet	0.06300001									
1	Bicep II Magnum Premix	5.5	L	1.79	lb ai/a	PRE	A				
1	----s-metolachlor	2.4		0.78							
1	----atrazine	3.1		1.01							
7	Robust White										
2	Anthem Premix	2.153	SE	0.135	lb ai/a	PRE	A	0.0 c	2.3 c	6.3 abc	2.3 cd
2	----pyroxasulfone	2.09		0.131							
2	----fluthiacet	0.06300001		0.00395							
7	Robust White										
1	Anthem Premix	2.153	SE	0	lb ai/a	PRE		0.0 c	0.0 c	0.0 d	0.0 d
1	----pyroxasulfone	2.09									
1	----fluthiacet	0.06300001									
1	Bicep II Magnum Premix	5.5	L	1.79	lb ai/a	PRE	A				
1	----s-metolachlor	2.4		0.78							
1	----atrazine	3.1		1.01							
8	Yellow Purdue 410										
2	Anthem Premix	2.153	SE	0.135	lb ai/a	PRE	A	5.7 b	2.3 c	0.0 d	0.0 d
2	----pyroxasulfone	2.09		0.131							
2	----fluthiacet	0.06300001		0.00395							
8	Yellow Purdue 410										
LSD P=.05								4.51	4.57	5.18	4.73
Standard Deviation								2.70	2.74	3.11	2.84
CV								120.16	125.32	130.87	114.43

FACTORIAL/POOLED ERROR AOV For ZEAMS Swt corn Stunting % 05/14/15

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	47	1023.000000				
R	2	5.375000	2.687500	0.368	0.6954	
A	1	243.000000	243.000000	33.243	0.0001	1.6
B	7	277.666667	39.666667	5.427	0.0004	3.2
AB	7	277.666667	39.666667	5.427	0.0004	4.5
ERROR	30	219.291667	7.309722			

FACTORIAL/POOLED ERROR AOV For ZEAMS Swt corn Stunting % 05/22/15

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	47	865.312500				
R	2	57.875000	28.937500	3.850	0.0325	
A	1	229.687500	229.687500	30.563	0.0001	1.6
B	7	176.145833	25.163690	3.348	0.0093	3.2
AB	7	176.145833	25.163690	3.348	0.0093	4.6
ERROR	30	225.458333	7.515278			

FACTORIAL/POOLED ERROR AOV For ZEAMS Swt corn Stunting % 05/30/15

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	47	887.250000				
R	2	3.500000	1.750000	0.181	0.8352	
A	1	270.750000	270.750000	28.025	0.0001	1.8
B	7	161.583333	23.083333	2.389	0.0456	3.7
AB	7	161.583333	23.083333	2.389	0.0456	5.2
ERROR	30	289.833333	9.661111			

FACTORIAL/POOLED ERROR AOV For ZEAMS Swt corn Stunting % 06/07/15

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	47	987.979167				
R	2	24.541667	12.270833	1.525	0.2341	
A	1	295.020833	295.020833	36.655	0.0001	1.7
B	7	213.479167	30.497024	3.789	0.0046	3.3
AB	7	213.479167	30.497024	3.789	0.0046	4.7
ERROR	30	241.458333	8.048611			

University of Delaware

Evaluation of POST Control of Morningglory in Grain Sorghum

Trial ID: Milo_IPOSS-15 Location: Field #34 & #36 Trial Year:
Protocol ID: Milo_IPOSS-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Investigator: Mark VanGessel Title: Extension Weed Specialist
Organization: University of Delaware
Address: 16483 County Seat Hwy
City+State/Prov: Georgetown, Delaware
Postal Code: 19947 E-mail: mjv@udel.edu
Country: USA United States

Crop Description

Crop 1: SORVU Sorghum bicolor Grain sorghum
Variety: DKS28-05 BBCH Scale: BGRM
Planting Date: 06/22/15
Planting Rate, Unit: 4 S/ROWFT Planting Method: PLANTD planted
Depth, Unit: 1 in Planting Equipment: FE Field Equipment
Row Spacing, Unit: 15 in Emergence Date: 06/28/15
Harvested Width, Unit: 6.25 ft
Soil Temperature, Unit: 89 F Harvested Length, Unit: 25 ft
Soil Moisture: NORMAL normal, adequate Harvest Equipment: Plot combine
Seed Bed: MEDIUM medium % Standard Moisture: 14.0

Pest Description

Pest 1 Type: W Code: AMAPA Amaranthus palmeri
Common Name: Palmer amaranth

Pest 2 Type: W Code: IPOSS Ipomoea sp.
Common Name: Morning glory

Site and Design

Treated Plot Width: 10 FT Site Type: FIELD field
Treated Plot Length: 25 FT
Treated Plot Area: 250 FT2 Treatments: 5 Tillage Type: CONTIL conventional-till
Replications: 3 Study Design: RACOBL Randomized Complete Block (RCB)

Maintenance

No.	Date	Maintenance Product Name	Form Conc	Form Type	Rate	Rate Unit
1.	06/22/15	Dual II Mag	7.64	E	1.25	PT/A

Comment: Total PRE on 6-22-15.

Soil Description

% Sand: 77 % OM: 2.1 Texture: SL sandy loam
% Silt: 12 pH: 5.7
% Clay: 11 CEC: 7.6 Fert. Level: E excellent
Soil Drainage: F fair

Moisture and Weather Conditions

Overall Moisture Conditions: NORMAL normal
Closest Weather Station: UDREC Distance, Unit: 0.5 mi

University of Delaware

Application Description

	A
Application Date:	07/14/15
Appl. Stop Time:	11:00 AM
Application Method:	SPRAY
Application Timing:	POST
Application Placement:	BROADC
Applied By:	VanGessl
Air Temperature, Unit:	69 F
% Relative Humidity:	47
Wind Velocity, Unit:	3 mph
Wind Direction:	SW
Dew Presence (Y/N):	N no
Soil Temperature, Unit:	69 F
Soil Moisture:	NORMAL
% Cloud Cover:	10

Crop Stage At Each Application

	A
Crop 1 Code, BBCH Scale:	SORVU BGRM
Stage Scale Used:	DESC
Stage Majority, Percent:	V6 100
Height, Unit:	11 in
Height Minimum, Maximum:	6 13

Pest Stage At Each Application

	A
Pest 1 Code, Type, Scale:	AMAPA W
Stage Majority, Percent:	veg 100
Height, Unit:	11 in
Height Minimum, Maximum:	10 12
Density, Unit:	7 m2
Pest 2 Code, Type, Scale:	IPOSS W
Stage Majority, Percent:	run 80
Stage Minimum, Percent:	veg 20
Stage Maximum, Percent:	run 80
Height, Unit:	7 in
Height Minimum, Maximum:	5 8
Density, Unit:	15 m2

University of Delaware

Application Equipment

	A
Appl. Equipment:	Backpack
Equipment Type:	SPRBAC
Operation Pressure, Unit:	31 psi
Nozzle Type:	AIRMIX
Nozzle Size:	11002
Nozzle Spacing, Unit:	18 in
Boom Length, Unit:	9 ft
Boom Height, Unit:	28 in
Ground Speed, Unit:	3 mph
Carrier:	WATER
Spray Volume, Unit:	20 gal/ac
Mix Size, Unit:	2 Liters
Propellant:	COMCO2

Trial Comments

07/28/15: Field 9 - Peak was poor on Palmer amaranth and fair on morningglory. All other treatments provided good to excellent control of Palmer and morningglory present at time of application. No treatment provided control or suppression of annual grasses which were very dense in the plot area. Field 36 - Palmer in Rep. 1. Morningglory mostly in Reps 2 & 3 - which were very large at application timing.

Crop and other information is for Field 36.

University of Delaware

Evaluation of POST Control of Morningglory in Grain Sorghum

Trial ID: Milo_IPOSS-15 Location: Field #34 & #36 Trial Year:
Protocol ID: Milo_IPOSS-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	AMAPA PalmerAm Control % Field 36 07/28/15	IPOSS mornglry Control % Field 36 07/28/15
1	Huskie Premix	2.05	EC	0.208	lb ai/a	POST	A	70.0 a	65.0 a
	----pyrasulfotole	0.3		0.0304					
	----bromoxynil	1.75		0.178					
	Atrazine 4L	4	L	0.5	lb ai/a	POST	A		
	Nonionic Surfactant	100	L	0.25	% v/v	POST	A		
	Dry Ammonium Sulfate	100	D	0.6	% w/v	POST	A		
2	Huskie Premix	2.05	EC	0.256	lb ai/a	POST	A	92.5 a	70.0 a
	----pyrasulfotole	0.3		0.0375					
	----bromoxynil	1.75		0.219					
	Atrazine 4L	4	L	0.5	lb ai/a	POST	A		
	Nonionic Surfactant	100	L	0.25	% v/v	POST	A		
	Dry Ammonium Sulfate	100	D	0.6	% w/v	POST	A		
3	Atrazine 4L	4	L	1.25	lb ai/a	POST	A	75.0 a	70.0 a
	Crop Oil Concentrate	100	L	1.25	% v/v	POST	A		
4	Peak.....prosulfuron	57	WG	0.0267	lb ai/a	POST	A	70.0 a	65.0 a
	Crop Oil Concentrate	100	L	1.25	% v/v	POST	A		
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	POST	A		
5	Starane Ultra...fluroxypyr	2.8	EC	0.14	lb ae/a	POST	A	65.0 a	75.0 a
	Atrazine 4L	4	L	0.5	lb ai/a	POST	A		
	Nonionic Surfactant	100	L	0.25	% v/v	POST	A		
	Dry Ammonium Sulfate	100	D	0.6	% w/v	POST	A		
LSD P=.05								182.66	29.63
Standard Deviation								17.61	9.31
CV								23.63	13.49
Replicate F								0.085	0.462
Replicate Prob(F)								0.9248	0.5456
Treatment F								1.101	0.404
Treatment Prob(F)								0.6055	0.7992

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.
Missing data estimates are included in columns:Average=1,2

University of Delaware

Evaluation of Grain Sorghum Weed Control Programs

Trial ID: Milo1-15 Location: Field #36 Trial Year:
Protocol ID: Milo1-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact: Bayer

Investigator: Mark VanGessel Title: Extension Weed Specialist
Organization: University of Delaware
Address: 16483 County Seat Hwy
City+State/Prov: Georgetown, Delaware
Postal Code: 19947 E-mail: mjv@udel.edu
Country: USA United States

Crop Description

Crop 1: SORVU Sorghum bicolor Grain sorghum
Variety: DKS28-05 BBCH Scale: BGRM
Planting Date: 06/22/15
Planting Rate, Unit: 4 S/ROWFT Planting Method: PLANTD planted
Depth, Unit: 1 in Planting Equipment: FE Field Equipment
Row Spacing, Unit: 15 in Emergence Date: 06/28/15
Harvested Width, Unit: 7.5 FT
Soil Temperature, Unit: 89 F Harvested Length, Unit: 25 FT
Soil Moisture: NORMAL normal, adequate Harvest Equipment: Plot combine
Seed Bed: MEDIUM medium % Standard Moisture: 14.0

Site and Design

Treated Plot Width: 10 FT Site Type: FIELD field
Treated Plot Length: 25 FT
Treated Plot Area: 250 FT2 Treatments: 8 Tillage Type: CONTIL conventional-till
Replications: 3 Study Design: RACOBL Randomized Complete Block (RCB)

Maintenance

No.	Date	Maintenance Product Name	Form Conc	Form Type	Rate	Rate Unit
1.	06/22/15	Dual II Mag	7.64	E	1.25	PT/A

Comment: Total PRE on 6-22-15.

Soil Description

% Sand: 77 % OM: 2.1 Texture: SL sandy loam
% Silt: 12 pH: 5.7
% Clay: 11 CEC: 7.6 Fert. Level: E excellent
Soil Drainage: F fair

Moisture and Weather Conditions

Overall Moisture Conditions: NORMAL normal
Closest Weather Station: UDREC Distance, Unit: 0.5 mi

University of Delaware

Application Description

	A
Application Date:	07/15/15
Appl. Stop Time:	09:50 AM
Application Method:	SPRAY
Application Timing:	POST
Application Placement:	BROADC
Applied By:	Johnson
Air Temperature, Unit:	76 F
% Relative Humidity:	79
Wind Velocity, Unit:	3 mph
Wind Direction:	NW
Dew Presence (Y/N):	Y yes
Soil Temperature, Unit:	76 F
Soil Moisture:	NORMAL
% Cloud Cover:	90

Crop Stage At Each Application

	A
Crop 1 Code, BBCH Scale:	SORVU BGRM
Stage Scale Used:	DESC
Stage Majority, Percent:	V6 100
Height, Unit:	11 in
Height Minimum, Maximum:	6 13

Application Equipment

	A
Appl. Equipment:	Tractor
Equipment Type:	TRMOSP
Operation Pressure, Unit:	40 psi
Nozzle Type:	AIRMIX
Nozzle Size:	11002
Nozzle Spacing, Unit:	20 in
Boom Length, Unit:	10 ft
Boom Height, Unit:	28 in
Ground Speed, Unit:	3 mph
Carrier:	WATER
Spray Volume, Unit:	20 gal/ac
Mix Size, Unit:	0.7 Gallons
Propellant:	COMAIR

Trial Comments

07/15/15: Essentially no weeds present at application timing. Will be able to rate injury only

07/15/15: Plots that had stunting before application 1 = yes, 0 = none observed. Will not be able to rate those plots with 1.

University of Delaware

Evaluation of Grain Sorghum Weed Control Programs

Trial ID: Milo1-15 Location: Field #36 Trial Year:
Protocol ID: Milo1-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact: Bayer

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	SORVU GrnSrghm Stunting presence BefreApp 07/21/15	SORVU GrnSrghm Leafbrn % 07/21/15	SORVU GrnSrghm Stunting % 07/29/15	SORVU GrnSrghm Stunting % 08/06/15
1	Untreated Check						0.0 a	0.0 c	0.0 c	0.0 c
2	Huskie Premix	2.05	EC	0.208	lb ai/a	POST	0.7 a	5.0 b	4.0 bc	3.0 b
	----pyrasulfotole	0.3		0.0304						
	----bromoxynil	1.75		0.178						
	Atrazine 4L	4	L	0.5	lb ai/a	POST				
	Nonionic Surfactant	100	L	0.25	% v/v	POST				
	Dry Ammonium Sulfate	100	D	0.6	% w/v	POST				
3	Huskie Premix	2.05	EC	0.256	lb ai/a	POST	0.0 a	6.7 a	6.7 b	2.7 b
	----pyrasulfotole	0.3		0.0375						
	----bromoxynil	1.75		0.219						
	Atrazine 4L	4	L	0.5	lb ai/a	POST				
	Nonionic Surfactant	100	L	0.25	% v/v	POST				
	Dry Ammonium Sulfate	100	D	0.6	% w/v	POST				
4	Huskie Premix	2.05	EC	0.208	lb ai/a	POST	0.3 a	5.0 b	7.5 b	3.0 b
	----pyrasulfotole	0.3		0.0304						
	----bromoxynil	1.75		0.178						
	Atrazine 4L	4	L	0.5	lb ai/a	POST				
	Starane Ultra...fluroxypyr	2.8	EC	0.0656	lb ae/a	POST				
	Nonionic Surfactant	100	L	0.25	% v/v	POST				
	Dry Ammonium Sulfate	100	D	0.6	% w/v	POST				
5	Atrazine 4L	4	L	0.5	lb ai/a	POST	0.7 a	0.0 c	18.0 a	10.0 a
	Buctril 2EC.....bromoxynil	2	EC	0.25	lb ai/a	POST				
6	Banvel.....dicamba	4	L	0.28	lb ai/a	POST	0.7 a	0.0 c	8.0 b	3.0 b
	Atrazine 4L	4	L	0.5	lb ai/a	POST				
	Nonionic Surfactant	100	L	0.25	% v/v	POST				
7	Facet L.....quinclorac	1.5	L	0.375	lb ae/a	POST	0.3 a	0.0 c	5.0 b	4.0 b
	Atrazine 4L	4	L	1	lb ai/a	POST				
	Crop Oil Concentrate	100	L	1	% v/v	POST				
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	POST				
8	DiFlexx.....dicamba	4	L	0.28	lb ai/a	POST	0.3 a	0.0 c	6.0 b	8.5 a
	Atrazine 4L	4	L	0.5	lb ai/a	POST				
	Nonionic Surfactant	100	L	0.25	% v/v	POST				
LSD P=.05							0.91	0.95	4.85	1.63
Standard Deviation							0.52	0.54	2.31	0.78
CV							138.01	25.92	33.48	18.2
Replicate F							0.467	1.000	0.424	0.121
Replicate Prob(F)							0.6365	0.3927	0.6758	0.8888
Treatment F							0.867	87.755	14.900	54.224
Treatment Prob(F)							0.5548	0.0001	0.0045	0.0002

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.
Missing data estimates are included in columns:Average=3,4,5,7

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	SORVU GrnSrghm Stunting % 08/17/15	SORVU GrnSrghm Yield Bu/A 11/03/15
1	Untreated Check						0.0 c	99.3 a
2	Huskie Premix	2.05	EC	0.208	lb ai/a	POST	0.0 c	106.0 a
	----pyrasulfotole	0.3		0.0304				
	----bromoxynil	1.75		0.178				
	Atrazine 4L	4	L	0.5	lb ai/a	POST		
	Nonionic Surfactant	100	L	0.25	% v/v	POST		
	Dry Ammonium Sulfate	100	D	0.6	% w/v	POST		
3	Huskie Premix	2.05	EC	0.256	lb ai/a	POST	0.0 c	93.0 a
	----pyrasulfotole	0.3		0.0375				
	----bromoxynil	1.75		0.219				
	Atrazine 4L	4	L	0.5	lb ai/a	POST		
	Nonionic Surfactant	100	L	0.25	% v/v	POST		
	Dry Ammonium Sulfate	100	D	0.6	% w/v	POST		
4	Huskie Premix	2.05	EC	0.208	lb ai/a	POST	0.0 c	118.8 a
	----pyrasulfotole	0.3		0.0304				
	----bromoxynil	1.75		0.178				
	Atrazine 4L	4	L	0.5	lb ai/a	POST		
	Starane Ultra...fluroxypyr	2.8	EC	0.0656	lb ae/a	POST		
	Nonionic Surfactant	100	L	0.25	% v/v	POST		
	Dry Ammonium Sulfate	100	D	0.6	% w/v	POST		
5	Atrazine 4L	4	L	0.5	lb ai/a	POST	4.0 b	92.5 a
	Buctril 2EC.....bromoxynil	2	EC	0.25	lb ai/a	POST		
6	Banvel.....dicamba	4	L	0.28	lb ai/a	POST	0.0 c	101.9 a
	Atrazine 4L	4	L	0.5	lb ai/a	POST		
	Nonionic Surfactant	100	L	0.25	% v/v	POST		
7	Facet L.....quinclorac	1.5	L	0.375	lb ae/a	POST	6.0 a	118.4 a
	Atrazine 4L	4	L	1	lb ai/a	POST		
	Crop Oil Concentrate	100	L	1	% v/v	POST		
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	POST		
8	DiFlexx.....dicamba	4	L	0.28	lb ai/a	POST	3.0 b	112.3 a
	Atrazine 4L	4	L	0.5	lb ai/a	POST		
	Nonionic Surfactant	100	L	0.25	% v/v	POST		
LSD P=.05							1.24	23.15
Standard Deviation							0.59	11.03
CV							36.41	10.48
Replicate F							0.357	0.000
Replicate Prob(F)							0.7162	0.9998
Treatment F							48.827	2.690
Treatment Prob(F)							0.0003	0.1467

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Weed Control and Crop Tolerance on Inzen Grain Sorghum

Trial ID: Milo2-15 Location: Field #9 Trial Year:
Protocol ID: Milo2-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact: DuPont

Investigator: Mark VanGessel Title: Extension Weed Specialist
Organization: University of Delaware
Address: 16483 County Seat Hwy
City+State/Prov: Georgetown, Delaware
Postal Code: 19947 E-mail: mjv@udel.edu
Country: USA United States

Crop Description

Crop 1: SORVU Sorghum bicolor Grain sorghum
Variety: YSA4520 BBCH Scale: BGRM
Description: Inzen

Planting Date: 07/06/15
Planting Rate, Unit: 80000 S/A Planting Method: PLANTD planted
Depth, Unit: 0.75 in Planting Equipment: PP Plot Planter
Row Spacing, Unit: 15 in Emergence Date: 07/11/15
Soil Temperature, Unit: 87 F
Soil Moisture: NORMAL normal, adequate
Seed Bed: MEDTRA medium/trashy

Pest Description

Pest 1 Type: W Code: IPOSS Ipomoea sp.
Common Name: Morning glory

Pest 2 Type: W Code: DIGSA Digitaria sanguinalis
Common Name: large crabgrass

Pest 3 Type: W Code: AMAPA Amaranthus palmeri
Common Name: Palmer amaranth

Site and Design

Treated Plot Width: 10 FT Site Type: FIELD field
Treated Plot Length: 25 FT
Treated Plot Area: 250 FT2 Treatments: 14 Tillage Type: NOTILL no-till
Replications: 3 Study Design: RACOBL Randomized Complete Block (RCB)

Soil Description

% Sand: 83 % OM: 1.4 Texture: LS loamy sand
% Silt: 8 pH: 5.4
% Clay: 9 CEC: 4.8 Fert. Level: G good
Soil Drainage: G good

Moisture and Weather Conditions

Overall Moisture Conditions: NORMAL normal
Closest Weather Station: UDREC Distance, Unit: 0.1 mi

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Application Description

	A	B	C	D
Application Date:	06/22/15	07/06/15	07/17/15	07/30/15
Appl. Stop Time:	04:00 PM	01:45 PM	10:00 AM	11:15 AM
Interval to Prev. Appl., Unit:		14 DAYS	11 DAYS	13 DAYS
Application Method:	SPRAY	SPRAY	SPRAY	SPRAY
Application Timing:	15EPP	PRE	EaPost	MPost
Application Placement:	BROADC	BROADC	BROADC	BROADC
Applied By:	Johnson	Johnson	Johnson	Johnson
Air Temperature, Unit:	88 F	86 F	76 F	85 F
% Relative Humidity:	43	61	62	72
Wind Velocity, Unit:	4 mph	2 mph	2 mph	2 mph
Wind Direction:	W	S	SE	SW
Dew Presence (Y/N):	N no	N no	Y yes	N no
Soil Temperature, Unit:	88 F	86 F	75 F	85 F
Soil Moisture:	NORMAL	NORMAL	NORMAL	NORMAL
% Cloud Cover:	40	30	5	55

Crop Stage At Each Application

	A	B	C	D
Crop 1 Code, BBCH Scale:	SORVU BGRM	SORVU BGRM	SORVU BGRM	SORVU BGRM
Stage Scale Used:			DESC	DESC
Stage Majority, Percent:			V3 100	V7 100
Height, Unit:			4 in	15 in
Height Minimum, Maximum:				14 17

Pest Stage At Each Application

	A	B	C	D
Pest 1 Code, Type, Scale:	IPOSS W	IPOSS W	IPOSS W	IPOSS W
Stage Majority, Percent:			veg 80	run 75
Stage Minimum, Percent:			1-leaf 10	veg 25
Stage Maximum, Percent:			run 20	run 75
Height, Unit:			4 in	12 in
Height Minimum, Maximum:			1 6	5 18
Density, Unit:			15 m2	6 m2
Pest 2 Code, Type, Scale:	DIGSA W	DIGSA W	DIGSA W	DIGSA W
Stage Majority, Percent:			3-tilr 60	4-tilr 80
Stage Minimum, Percent:			1-tilr 10	3-tilr 20
Stage Maximum, Percent:			4-tilr 20	4-tilr 80
Height, Unit:			4 in	7 in
Height Minimum, Maximum:			3 5	5 8
Density, Unit:			15 m2	10 m2
Pest 3 Code, Type, Scale:	AMAPA W	AMAPA W	AMAPA W	AMAPA W
Stage Majority, Percent:			veg 100	
Height, Unit:			12 in	
Height Minimum, Maximum:			8 14	
Density, Unit:			7 m2	

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Application Equipment

	A	B	C	D
Appl. Equipment:	Tractor	Tractor	Tractor	Tractor
Equipment Type:	TRMOSP	TRMOSP	TRMOSP	TRMOSP
Operation Pressure, Unit:	40 psi	40 psi	40 psi	40 psi
Nozzle Type:	AIRMIX	AIRMIX	AIRMIX	AIRMIX
Nozzle Size:	11002	11002	11002	11002
Nozzle Spacing, Unit:	20 in	20 in	20 in	20 in
Boom Length, Unit:	10 ft	10 ft	10 ft	10 ft
Boom Height, Unit:	18 in	18 in	30 in	34 in
Ground Speed, Unit:	3 mph	3 mph	3 mph	3 mph
Carrier:	WATER	WATER	WATER	WATER
Spray Volume, Unit:	20 gal/ac	20 gal/ac	20 gal/ac	20 gal/ac
Mix Size, Unit:	0.7 Gallons	0.7 Gallons	0.7 Gallons	0.7 Gallons
Propellant:	COMAIR	COMAIR	COMAIR	COMAIR

Trt No	Treatment Application Comment
2	Plot 203 was misapplied.

Trial Comments

08/06/15: Due to heavy weed density in the untreated check, there was alot of stunting and could not be used as a standard for stunting. Treatments with 2,4-D also are exhibiting epinasty at ~50%.

08/17/15: Treatments with 2,4-D still are exhibiting epinasty at ~30%.

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Weed Control and Crop Tolerance on Inzen Grain Sorghum

Trial ID: Milo2-15 Location: Field #9 Trial Year:
Protocol ID: Milo2-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact: DuPont

Pest Code									AMAPA	IPOLA	DIGSA
Pest Name									PalmerAm	PitdMgly	L.crbgrs
Crop Code									SORVU		
Crop Name									GrnSrghm		
Crop Variety									Inzen		
Rating Type									Chloros	Control	Control
Rating Unit									%	%	%
Rating Date									07/21/15	07/21/15	07/21/15	07/21/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code				
1	Leadoff Premix	33.4	WG	0.0564	lb ai/a	15EPP	A	30.7 a	100.0 a	84.3 a	97.3 a
	----rimsulfuron	16.7		0.0282							
	----thifensulfuron	16.7		0.0282							
	Abundit Extra...glyphosate	3	SC	0.75	lb ae/a	15EPP	A				
	Zest.....nicosulfuron	0.33	SC	0.031	lb ai/a	EaPost	C				
	Atrazine 4L	4	L	0.75	lb ai/a	EaPost	C				
	Crop Oil Concentrate	100	L	1	% v/v	EaPost	C				
	Dry Ammonium Sulfate	100	D	1.2	% w/v	EaPost	C				
2	Leadoff Premix	33.4	WG	0.0313	lb ai/a	PRE	B	0.0 b	99.9 a	78.4 ab	97.4 a
	----rimsulfuron	16.7		0.0157							
	----thifensulfuron	16.7		0.0157							
	Cinch ATZ Premix	5.5	L	2.2	lb ai/a	PRE	B				
	----s-metolachlor	2.4		0.96							
	----atrazine	3.1		1.24							
	Abundit Extra...glyphosate	3	SC	0.75	lb ae/a	PRE	B				
	Zest.....nicosulfuron	0.33	SC	0.031	lb ai/a	MPost	D				
	Atrazine 4L	4	L	0.75	lb ai/a	MPost	D				
	Crop Oil Concentrate	100	L	1	% v/v	MPost	D				
	Dry Ammonium Sulfate	100	D	1.2	% w/v	MPost	D				
3	Cinch ATZ Premix	5.5	L	2.2	lb ai/a	PRE	B	0.0 b	99.7 ab	63.3 ab	94.0 ab
	----s-metolachlor	2.4		0.96							
	----atrazine	3.1		1.24							
	Abundit Extra...glyphosate	3	SC	0.75	lb ae/a	PRE	B				
	Zest.....nicosulfuron	0.33	SC	0.031	lb ai/a	MPost	D				
	Atrazine 4L	4	L	0.75	lb ai/a	MPost	D				
	Crop Oil Concentrate	100	L	1	% v/v	MPost	D				
	Dry Ammonium Sulfate	100	D	1.2	% w/v	MPost	D				
4	Leadoff Premix	33.4	WG	0.0313	lb ai/a	PRE	B	0.0 b	100.0 a	53.3 b	93.0 ab
	----rimsulfuron	16.7		0.0157							
	----thifensulfuron	16.7		0.0157							
	Cinch ATZ Premix	5.5	L	2.2	lb ai/a	PRE	B				
	----s-metolachlor	2.4		0.96							
	----atrazine	3.1		1.24							
	Abundit Extra...glyphosate	3	SC	0.75	lb ae/a	PRE	B				
5	Abundit Extra...glyphosate	3	SC	0.75	lb ae/a	PRE	B	30.7 a	99.0 b	24.9 c	89.3 b
	Zest.....nicosulfuron	0.33	SC	0.031	lb ai/a	EaPost	C				
	Atrazine 4L	4	L	0.75	lb ai/a	EaPost	C				
	Crop Oil Concentrate	100	L	1	% v/v	EaPost	C				
	Dry Ammonium Sulfate	100	D	1.2	% w/v	EaPost	C				

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.
Missing data estimates are included in columns:Yates=1,2,3,4,5,6,7,8,11,12,13
Could not calculate LSD (% mean diff) for columns 8 because error mean square = 0.

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Pest Code								AMAPA	IPOLA	DIGSA
Pest Name								PalmerAm	PitdMgly	L.crbgrs
Crop Code							SORVU			
Crop Name							GrnSrghm			
Crop Variety							Inzen			
Rating Type							Chloros	Control	Control	Control
Rating Unit							%	%	%	%
Rating Date							07/21/15	07/21/15	07/21/15	07/21/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code			
6	Cinch ATZ Premix	5.5	L	2.2	lb ai/a	PRE	B	0.0 b	100.0 a	71.7 ab	96.3 a
	----s-metolachlor	2.4		0.96							
	----atrazine	3.1		1.24							
	Abundit Extra...glyphosate	3	SC	0.75	lb ae/a	PRE	B				
7	Untreated Check							0.0 b	0.0 c	0.0 c	0.0 c
8	Bicep II Magnum Premix	5.5	L	1.79	lb ai/a	15EPP	A	0.0 b	99.7 ab	72.7 ab	97.7 a
	----s-metolachlor	2.4		0.78							
	----atrazine	3.1		1.01							
	Ally.....metsulfuron	60	DF	0.00188	lb ai/a	MPost	D				
	2,4-D amine	3.8	L	0.475	lb ae/a	MPost	D				
	Atrazine 4L	4	L	0.75	lb ai/a	MPost	D				
	Crop Oil Concentrate	100	L	1	% v/v	MPost	D				
	Dry Ammonium Sulfate	100	D	1.2	% w/v	MPost	D				
9	Bicep II Magnum Premix	5.5	L	1.79	lb ai/a	15EPP	A				
	----s-metolachlor	2.4		0.78							
	----atrazine	3.1		1.01							
	Ally.....metsulfuron	60	DF	0.00188	lb ai/a	MPost	D				
	Atrazine 4L	4	L	0.75	lb ai/a	MPost	D				
	Crop Oil Concentrate	100	L	1	% v/v	MPost	D				
	Dry Ammonium Sulfate	100	D	1.2	% w/v	MPost	D				
10	Bicep II Magnum Premix	5.5	L	1.79	lb ai/a	15EPP	A				
	----s-metolachlor	2.4		0.78							
	----atrazine	3.1		1.01							
	Steadfast Q Premix	75	WG	0.035	lb ai/a	MPost	D				
	----nicosulfuron	50		0.0233							
	----rimsulfuron	25		0.0117							
	2,4-D amine	3.8	L	0.475	lb ae/a	MPost	D				
	Atrazine 4L	4	L	0.75	lb ai/a	MPost	D				
	Crop Oil Concentrate	100	L	1	% v/v	MPost	D				
	Dry Ammonium Sulfate	100	D	1.2	% w/v	MPost	D				
11	Bicep II Magnum Premix	5.5	L	1.79	lb ai/a	15EPP	A				
	----s-metolachlor	2.4		0.78							
	----atrazine	3.1		1.01							
	Steadfast Q Premix	75	WG	0.035	lb ai/a	MPost	D				
	----nicosulfuron	50		0.0233							
	----rimsulfuron	25		0.0117							
	Atrazine 4L	4	L	0.75	lb ai/a	MPost	D				
	Crop Oil Concentrate	100	L	1	% v/v	MPost	D				
	Dry Ammonium Sulfate	100	D	1.2	% w/v	MPost	D				
12	Bicep II Magnum Premix	5.5	L	1.79	lb ai/a	15EPP	A				
	----s-metolachlor	2.4		0.78							
	----atrazine	3.1		1.01							
	Ally.....metsulfuron	60	DF	0.00188	lb ai/a	MPost	D				
	Steadfast Q Premix	75	WG	0.035	lb ai/a	MPost	D				
	----nicosulfuron	50		0.0233							
	----rimsulfuron	25		0.0117							
	2,4-D amine	3.8	L	0.475	lb ae/a	MPost	D				
	Atrazine 4L	4	L	0.75	lb ai/a	MPost	D				
	Crop Oil Concentrate	100	L	1	% v/v	MPost	D				
	Dry Ammonium Sulfate	100	D	1.2	% w/v	MPost	D				

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Pest Code									AMAPA	IPOLA	DIGSA
Pest Name									PalmerAm	PitdMgly	L.crbgrs
Crop Code								SORVU			
Crop Name								GrnSrghm			
Crop Variety								Inzen			
Rating Type								Chloros	Control	Control	Control
Rating Unit								%	%	%	%
Rating Date								07/21/15	07/21/15	07/21/15	07/21/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code				
13	Bicep II Magnum Premix	5.5	L	1.79	lb ai/a	15EPP	A				
	----s-metolachlor	2.4		0.78							
	----atrazine	3.1		1.01							
	Huskie Premix	2.05	EC	0.208	lb ai/a	MPost	D				
	----pyrasulfotole	0.3		0.0304							
	----bromoxynil	1.75		0.178							
	Atrazine 4L	4	L	0.5	lb ai/a	MPost	D				
	Nonionic Surfactant	100	L	0.25	% v/v	MPost	D				
	Dry Ammonium Sulfate	100	D	0.6	% w/v	MPost	D				
14	Bicep II Magnum Premix	5.5	L	1.79	lb ai/a	15EPP	A				
	----s-metolachlor	2.4		0.78							
	----atrazine	3.1		1.01							
	Huskie Premix	2.05	EC	0.256	lb ai/a	MPost	D				
	----pyrasulfotole	0.3		0.0375							
	----bromoxynil	1.75		0.219							
	Atrazine 4L	4	L	0.5	lb ai/a	MPost	D				
	Nonionic Surfactant	100	L	0.25	% v/v	MPost	D				
	Dry Ammonium Sulfate	100	D	0.6	% w/v	MPost	D				
LSD P=.05								0.98	0.84	26.30	6.75
Standard Deviation								0.55	0.47	14.78	3.83
CV								7.24	0.54	26.36	4.6
Replicate F								2.167	1.527	0.384	1.320
Replicate Prob(F)								0.1541	0.2566	0.6895	0.3007
Treatment F								1964.857	16578.422	11.744	232.876
Treatment Prob(F)								0.0001	0.0001	0.0002	0.0001

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code				
	Pest Code										AMAPA
	Pest Name										PalmerAm
	Crop Code							SORVU	SORVU	SORVU	
	Crop Name							GrnSrghm	GrnSrghm	GrnSrghm	
	Crop Variety							Inzen	Inzen	Inzen	
	Rating Type							Stunting	Chloros	Stunting	Control
	Rating Unit							%	%	%	%
	Rating Date							07/29/15	08/06/15	08/06/15	08/06/15
1	Leadoff Premix	33.4	WG	0.0564	lb ai/a	15EPP	A	25.3 a	0.0 f	3.3 d	100.0 a
	----rimsulfuron	16.7		0.0282							
	----thifensulfuron	16.7		0.0282							
	Abundit Extra...glyphosate	3	SC	0.75	lb ae/a	15EPP	A				
	Zest.....nicosulfuron	0.33	SC	0.031	lb ai/a	EaPost	C				
	Atrazine 4L	4	L	0.75	lb ai/a	EaPost	C				
	Crop Oil Concentrate	100	L	1	% v/v	EaPost	C				
	Dry Ammonium Sulfate	100	D	1.2	% w/v	EaPost	C				
2	Leadoff Premix	33.4	WG	0.0313	lb ai/a	PRE	B	0.1 b	10.1 de	5.1 d	100.0 a
	----rimsulfuron	16.7		0.0157							
	----thifensulfuron	16.7		0.0157							
	Cinch ATZ Premix	5.5	L	2.2	lb ai/a	PRE	B				
	----s-metolachlor	2.4		0.96							
	----atrazine	3.1		1.24							
	Abundit Extra...glyphosate	3	SC	0.75	lb ae/a	PRE	B				
	Zest.....nicosulfuron	0.33	SC	0.031	lb ai/a	MPost	D				
	Atrazine 4L	4	L	0.75	lb ai/a	MPost	D				
	Crop Oil Concentrate	100	L	1	% v/v	MPost	D				
	Dry Ammonium Sulfate	100	D	1.2	% w/v	MPost	D				
3	Cinch ATZ Premix	5.5	L	2.2	lb ai/a	PRE	B	0.0 b	9.3 e	5.0 d	100.0 a
	----s-metolachlor	2.4		0.96							
	----atrazine	3.1		1.24							
	Abundit Extra...glyphosate	3	SC	0.75	lb ae/a	PRE	B				
	Zest.....nicosulfuron	0.33	SC	0.031	lb ai/a	MPost	D				
	Atrazine 4L	4	L	0.75	lb ai/a	MPost	D				
	Crop Oil Concentrate	100	L	1	% v/v	MPost	D				
	Dry Ammonium Sulfate	100	D	1.2	% w/v	MPost	D				
4	Leadoff Premix	33.4	WG	0.0313	lb ai/a	PRE	B	0.0 b	0.0 f	0.0 e	100.0 a
	----rimsulfuron	16.7		0.0157							
	----thifensulfuron	16.7		0.0157							
	Cinch ATZ Premix	5.5	L	2.2	lb ai/a	PRE	B				
	----s-metolachlor	2.4		0.96							
	----atrazine	3.1		1.24							
	Abundit Extra...glyphosate	3	SC	0.75	lb ae/a	PRE	B				
5	Abundit Extra...glyphosate	3	SC	0.75	lb ae/a	PRE	B	25.3 a	0.0 f	8.7 c	100.0 a
	Zest.....nicosulfuron	0.33	SC	0.031	lb ai/a	EaPost	C				
	Atrazine 4L	4	L	0.75	lb ai/a	EaPost	C				
	Crop Oil Concentrate	100	L	1	% v/v	EaPost	C				
	Dry Ammonium Sulfate	100	D	1.2	% w/v	EaPost	C				

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	SORVU GrnSrghm Inzen Stunting % 07/29/15	SORVU GrnSrghm Inzen Chloros % 08/06/15	SORVU GrnSrghm Inzen Stunting % 08/06/15	AMAPA PalmerAm Control % 08/06/15
	Pest Code										AMAPA
	Pest Name										PalmerAm
	Crop Code							SORVU	SORVU	SORVU	
	Crop Name							GrnSrghm	GrnSrghm	GrnSrghm	
	Crop Variety							Inzen	Inzen	Inzen	
	Rating Type							Stunting	Chloros	Stunting	Control
	Rating Unit							%	%	%	%
	Rating Date							07/29/15	08/06/15	08/06/15	08/06/15
6	Cinch ATZ Premix	5.5	L	2.2	lb ai/a	PRE	B	0.0 b	0.0 f	0.0 e	100.0 a
	----s-metolachlor	2.4		0.96							
	----atrazine	3.1		1.24							
	Abundit Extra...glyphosate	3	SC	0.75	lb ae/a	PRE	B				
7	Untreated Check							0.0 b	0.0 f		0.0 b
8	Bicep II Magnum Premix	5.5	L	1.79	lb ai/a	15EPP	A	0.0 b	14.0 c	26.7 a	100.0 a
	----s-metolachlor	2.4		0.78							
	----atrazine	3.1		1.01							
	Ally.....metsulfuron	60	DF	0.00188	lb ai/a	MPost	D				
	2,4-D amine	3.8	L	0.475	lb ae/a	MPost	D				
	Atrazine 4L	4	L	0.75	lb ai/a	MPost	D				
	Crop Oil Concentrate	100	L	1	% v/v	MPost	D				
	Dry Ammonium Sulfate	100	D	1.2	% w/v	MPost	D				
9	Bicep II Magnum Premix	5.5	L	1.79	lb ai/a	15EPP	A		0.7 f	5.0 d	100.0 a
	----s-metolachlor	2.4		0.78							
	----atrazine	3.1		1.01							
	Ally.....metsulfuron	60	DF	0.00188	lb ai/a	MPost	D				
	Atrazine 4L	4	L	0.75	lb ai/a	MPost	D				
	Crop Oil Concentrate	100	L	1	% v/v	MPost	D				
	Dry Ammonium Sulfate	100	D	1.2	% w/v	MPost	D				
10	Bicep II Magnum Premix	5.5	L	1.79	lb ai/a	15EPP	A		17.3 b	26.0 a	100.0 a
	----s-metolachlor	2.4		0.78							
	----atrazine	3.1		1.01							
	Steadfast Q Premix	75	WG	0.035	lb ai/a	MPost	D				
	----nicosulfuron	50		0.0233							
	----rimsulfuron	25		0.0117							
	2,4-D amine	3.8	L	0.475	lb ae/a	MPost	D				
	Atrazine 4L	4	L	0.75	lb ai/a	MPost	D				
	Crop Oil Concentrate	100	L	1	% v/v	MPost	D				
	Dry Ammonium Sulfate	100	D	1.2	% w/v	MPost	D				
11	Bicep II Magnum Premix	5.5	L	1.79	lb ai/a	15EPP	A		24.3 a	18.3 b	100.0 a
	----s-metolachlor	2.4		0.78							
	----atrazine	3.1		1.01							
	Steadfast Q Premix	75	WG	0.035	lb ai/a	MPost	D				
	----nicosulfuron	50		0.0233							
	----rimsulfuron	25		0.0117							
	Atrazine 4L	4	L	0.75	lb ai/a	MPost	D				
	Crop Oil Concentrate	100	L	1	% v/v	MPost	D				
	Dry Ammonium Sulfate	100	D	1.2	% w/v	MPost	D				
12	Bicep II Magnum Premix	5.5	L	1.79	lb ai/a	15EPP	A		15.0 c	28.3 a	100.0 a
	----s-metolachlor	2.4		0.78							
	----atrazine	3.1		1.01							
	Ally.....metsulfuron	60	DF	0.00188	lb ai/a	MPost	D				
	Steadfast Q Premix	75	WG	0.035	lb ai/a	MPost	D				
	----nicosulfuron	50		0.0233							
	----rimsulfuron	25		0.0117							
	2,4-D amine	3.8	L	0.475	lb ae/a	MPost	D				
	Atrazine 4L	4	L	0.75	lb ai/a	MPost	D				
	Crop Oil Concentrate	100	L	1	% v/v	MPost	D				
	Dry Ammonium Sulfate	100	D	1.2	% w/v	MPost	D				

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Pest Code											AMAPA
Pest Name											PalmerAm
Crop Code								SORVU	SORVU	SORVU	
Crop Name								GrnSrghm	GrnSrghm	GrnSrghm	
Crop Variety								Inzen	Inzen	Inzen	
Rating Type								Stunting	Chloros	Stunting	Control
Rating Unit								%	%	%	%
Rating Date								07/29/15	08/06/15	08/06/15	08/06/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code				
13	Bicep II Magnum Premix	5.5	L	1.79	lb ai/a	15EPP	A		10.0 de	8.3 c	100.0 a
	----s-metolachlor	2.4		0.78							
	----atrazine	3.1		1.01							
	Huskie Premix	2.05	EC	0.208	lb ai/a	MPost	D				
	----pyrasulfotole	0.3		0.0304							
	----bromoxynil	1.75		0.178							
	Atrazine 4L	4	L	0.5	lb ai/a	MPost	D				
	Nonionic Surfactant	100	L	0.25	% v/v	MPost	D				
	Dry Ammonium Sulfate	100	D	0.6	% w/v	MPost	D				
14	Bicep II Magnum Premix	5.5	L	1.79	lb ai/a	15EPP	A		11.7 d	10.0 c	100.0 a
	----s-metolachlor	2.4		0.78							
	----atrazine	3.1		1.01							
	Huskie Premix	2.05	EC	0.256	lb ai/a	MPost	D				
	----pyrasulfotole	0.3		0.0375							
	----bromoxynil	1.75		0.219							
	Atrazine 4L	4	L	0.5	lb ai/a	MPost	D				
	Nonionic Surfactant	100	L	0.25	% v/v	MPost	D				
	Dry Ammonium Sulfate	100	D	0.6	% w/v	MPost	D				
LSD P=.05								0.48	1.91	3.10	.
Standard Deviation								0.27	1.13	1.83	0.00
CV								4.27	14.12	16.47	0.0
Replicate F								2.971	1.260	0.402	0.000
Replicate Prob(F)								0.0865	0.3010	0.6736	1.0000
Treatment F								5624.590	150.183	92.673	0.000
Treatment Prob(F)								0.0001	0.0001	0.0001	1.0000

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	IPOSS mornglry Control % 08/06/15	DIGSA L.crbgrs Control % 08/06/15	SORVU GrnSrghm Inzen Stunting % 08/17/15	IPOSS mornglry Control % 08/17/15	DIGSA L.crbgrs Control % 08/17/15
1	Leadoff Premix	33.4	WG	0.0564	lb ai/a	15EPP	A	90.0 a	99.0 a	1.0 f	94.3 ab	98.7 a
	----rimsulfuron	16.7		0.0282								
	----thifensulfuron	16.7		0.0282								
	Abundit Extra...glyphosate	3	SC	0.75	lb ae/a	15EPP	A					
	Zest.....nicosulfuron	0.33	SC	0.031	lb ai/a	EaPost	C					
	Atrazine 4L	4	L	0.75	lb ai/a	EaPost	C					
	Crop Oil Concentrate	100	L	1	% v/v	EaPost	C					
	Dry Ammonium Sulfate	100	D	1.2	% w/v	EaPost	C					
2	Leadoff Premix	33.4	WG	0.0313	lb ai/a	PRE	B			4.4 e	99.7 a	98.5 a
	----rimsulfuron	16.7		0.0157								
	----thifensulfuron	16.7		0.0157								
	Cinch ATZ Premix	5.5	L	2.2	lb ai/a	PRE	B					
	----s-metolachlor	2.4		0.96								
	----atrazine	3.1		1.24								
	Abundit Extra...glyphosate	3	SC	0.75	lb ae/a	PRE	B					
	Zest.....nicosulfuron	0.33	SC	0.031	lb ai/a	MPost	D					
	Atrazine 4L	4	L	0.75	lb ai/a	MPost	D					
	Crop Oil Concentrate	100	L	1	% v/v	MPost	D					
	Dry Ammonium Sulfate	100	D	1.2	% w/v	MPost	D					
3	Cinch ATZ Premix	5.5	L	2.2	lb ai/a	PRE	B			4.3 e	97.7 a	98.7 a
	----s-metolachlor	2.4		0.96								
	----atrazine	3.1		1.24								
	Abundit Extra...glyphosate	3	SC	0.75	lb ae/a	PRE	B					
	Zest.....nicosulfuron	0.33	SC	0.031	lb ai/a	MPost	D					
	Atrazine 4L	4	L	0.75	lb ai/a	MPost	D					
	Crop Oil Concentrate	100	L	1	% v/v	MPost	D					
	Dry Ammonium Sulfate	100	D	1.2	% w/v	MPost	D					
4	Leadoff Premix	33.4	WG	0.0313	lb ai/a	PRE	B	55.0 b	86.7 a	0.0 f	50.0 c	89.0 c
	----rimsulfuron	16.7		0.0157								
	----thifensulfuron	16.7		0.0157								
	Cinch ATZ Premix	5.5	L	2.2	lb ai/a	PRE	B					
	----s-metolachlor	2.4		0.96								
	----atrazine	3.1		1.24								
	Abundit Extra...glyphosate	3	SC	0.75	lb ae/a	PRE	B					
5	Abundit Extra...glyphosate	3	SC	0.75	lb ae/a	PRE	B	68.3 ab	91.7 a	6.0 e	88.0 b	96.3 ab
	Zest.....nicosulfuron	0.33	SC	0.031	lb ai/a	EaPost	C					
	Atrazine 4L	4	L	0.75	lb ai/a	EaPost	C					
	Crop Oil Concentrate	100	L	1	% v/v	EaPost	C					
	Dry Ammonium Sulfate	100	D	1.2	% w/v	EaPost	C					

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Pest Code							IPOSS	DIGSA		IPOSS	DIGSA
Pest Name							mornglry	L.crbgrs		mornglry	L.crbgrs
Crop Code									SORVU		
Crop Name									GrnSrghm		
Crop Variety									Inzen		
Rating Type							Control	Control	Stunting	Control	Control
Rating Unit							%	%	%	%	%
Rating Date							08/06/15	08/06/15	08/17/15	08/17/15	08/17/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code					
6	Cinch ATZ Premix	5.5	L	2.2	lb ai/a	PRE	B	43.3 b	89.3 a	0.0 f	53.3 c	90.0 bc
	----s-metolachlor	2.4		0.96								
	----atrazine	3.1		1.24								
	Abundit Extra...glyphosate	3	SC	0.75	lb ae/a	PRE	B					
7	Untreated Check							0.0 c	0.0 b		0.0 d	0.0 d
8	Bicep II Magnum Premix	5.5	L	1.79	lb ai/a	15EPP	A			21.0 ab	99.0 a	94.7 abc
	----s-metolachlor	2.4		0.78								
	----atrazine	3.1		1.01								
	Ally.....metsulfuron	60	DF	0.00188	lb ai/a	MPost	D					
	2,4-D amine	3.8	L	0.475	lb ae/a	MPost	D					
	Atrazine 4L	4	L	0.75	lb ai/a	MPost	D					
	Crop Oil Concentrate	100	L	1	% v/v	MPost	D					
	Dry Ammonium Sulfate	100	D	1.2	% w/v	MPost	D					
9	Bicep II Magnum Premix	5.5	L	1.79	lb ai/a	15EPP	A			4.0 e	96.7 a	96.0 ab
	----s-metolachlor	2.4		0.78								
	----atrazine	3.1		1.01								
	Ally.....metsulfuron	60	DF	0.00188	lb ai/a	MPost	D					
	Atrazine 4L	4	L	0.75	lb ai/a	MPost	D					
	Crop Oil Concentrate	100	L	1	% v/v	MPost	D					
	Dry Ammonium Sulfate	100	D	1.2	% w/v	MPost	D					
10	Bicep II Magnum Premix	5.5	L	1.79	lb ai/a	15EPP	A			19.0 b	99.0 a	98.0 a
	----s-metolachlor	2.4		0.78								
	----atrazine	3.1		1.01								
	Steadfast Q Premix	75	WG	0.035	lb ai/a	MPost	D					
	----nicosulfuron	50		0.0233								
	----rimsulfuron	25		0.0117								
	2,4-D amine	3.8	L	0.475	lb ae/a	MPost	D					
	Atrazine 4L	4	L	0.75	lb ai/a	MPost	D					
	Crop Oil Concentrate	100	L	1	% v/v	MPost	D					
	Dry Ammonium Sulfate	100	D	1.2	% w/v	MPost	D					
11	Bicep II Magnum Premix	5.5	L	1.79	lb ai/a	15EPP	A			12.7 c	98.7 a	98.0 a
	----s-metolachlor	2.4		0.78								
	----atrazine	3.1		1.01								
	Steadfast Q Premix	75	WG	0.035	lb ai/a	MPost	D					
	----nicosulfuron	50		0.0233								
	----rimsulfuron	25		0.0117								
	Atrazine 4L	4	L	0.75	lb ai/a	MPost	D					
	Crop Oil Concentrate	100	L	1	% v/v	MPost	D					
	Dry Ammonium Sulfate	100	D	1.2	% w/v	MPost	D					
12	Bicep II Magnum Premix	5.5	L	1.79	lb ai/a	15EPP	A			22.7 a	99.0 a	97.0 a
	----s-metolachlor	2.4		0.78								
	----atrazine	3.1		1.01								
	Ally.....metsulfuron	60	DF	0.00188	lb ai/a	MPost	D					
	Steadfast Q Premix	75	WG	0.035	lb ai/a	MPost	D					
	----nicosulfuron	50		0.0233								
	----rimsulfuron	25		0.0117								
	2,4-D amine	3.8	L	0.475	lb ae/a	MPost	D					
	Atrazine 4L	4	L	0.75	lb ai/a	MPost	D					
	Crop Oil Concentrate	100	L	1	% v/v	MPost	D					
	Dry Ammonium Sulfate	100	D	1.2	% w/v	MPost	D					

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Pest Code							IPOSS	DIGSA		IPOSS	DIGSA
Pest Name							mornglry	L.crbgrs		mornglry	L.crbgrs
Crop Code									SORVU		
Crop Name									GrnSrghm		
Crop Variety									Inzen		
Rating Type							Control	Control	Stunting	Control	Control
Rating Unit							%	%	%	%	%
Rating Date							08/06/15	08/06/15	08/17/15	08/17/15	08/17/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code				
13	Bicep II Magnum Premix	5.5	L	1.79	lb ai/a	15EPP	A		6.0 e	99.0 a	97.0 a
	----s-metolachlor	2.4		0.78							
	----atrazine	3.1		1.01							
	Huskie Premix	2.05	EC	0.208	lb ai/a	MPost	D				
	----pyrasulfotole	0.3		0.0304							
	----bromoxynil	1.75		0.178							
	Atrazine 4L	4	L	0.5	lb ai/a	MPost	D				
	Nonionic Surfactant	100	L	0.25	% v/v	MPost	D				
	Dry Ammonium Sulfate	100	D	0.6	% w/v	MPost	D				
14	Bicep II Magnum Premix	5.5	L	1.79	lb ai/a	15EPP	A		8.7 d	99.0 a	97.7 a
	----s-metolachlor	2.4		0.78							
	----atrazine	3.1		1.01							
	Huskie Premix	2.05	EC	0.256	lb ai/a	MPost	D				
	----pyrasulfotole	0.3		0.0375							
	----bromoxynil	1.75		0.219							
	Atrazine 4L	4	L	0.5	lb ai/a	MPost	D				
	Nonionic Surfactant	100	L	0.25	% v/v	MPost	D				
	Dry Ammonium Sulfate	100	D	0.6	% w/v	MPost	D				
LSD P=.05								28.09	13.13	2.62	6.35	6.48
Standard Deviation								14.92	6.97	1.55	3.77	3.85
CV								29.06	9.51	18.37	4.5	4.32
Replicate F								0.007	2.888	1.665	2.027	2.209
Replicate Prob(F)								0.9925	0.1137	0.2111	0.1528	0.1308
Treatment F								15.157	104.966	78.278	181.504	135.094
Treatment Prob(F)								0.0008	0.0001	0.0001	0.0001	0.0001

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Evaluating PRE Weed Control for Grain Sorghum

Trial ID: Milo3-15 Location: Field #36 Trial Year:
Protocol ID: Milo3-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Investigator: Mark VanGessel Title: Extension Weed Specialist
Organization: University of Delaware
Address: 16483 County Seat Hwy
City+State/Prov: Georgetown, Delaware
Postal Code: 19947 E-mail: mjv@udel.edu
Country: USA United States

Crop Description

Crop 1: SORVU Sorghum bicolor Grain sorghum
Variety: DKS28-05 BBCH Scale: BGRM
Planting Date: 06/22/15
Planting Rate, Unit: 4 S/ROWFT Planting Method: PLANTD planted
Depth, Unit: 1 in Planting Equipment: FE Field Equipment
Row Spacing, Unit: 15 in Emergence Date: 06/28/15
Harvest Date: 11/03/15
Harvested Width, Unit: 7.5 FT
Soil Temperature, Unit: 89 F Harvested Length, Unit: 25 FT
Soil Moisture: NORMAL normal, adequate Harvest Equipment: Plot combine
Seed Bed: MEDIUM medium % Standard Moisture: 14.0

Site and Design

Treated Plot Width: 10 FT Site Type: FIELD field
Treated Plot Length: 25 FT
Treated Plot Area: 250 FT2 Treatments: 12 Tillage Type: CONTIL conventional-till
Replications: 3 Study Design: RACOBL Randomized Complete Block (RCB)

Soil Description

% Sand: 77 % OM: 2.1 Texture: SL sandy loam
% Silt: 12 pH: 5.7
% Clay: 11 CEC: 7.6 Fert. Level: E excellent
Soil Drainage: F fair

Moisture and Weather Conditions

Overall Moisture Conditions: NORMAL normal
Closest Weather Station: UDREC Distance, Unit: 0.5 mi

Application Description

	A
Application Date:	06/22/15
Appl. Stop Time:	04:00 PM
Application Method:	SPRAY
Application Timing:	PRE
Application Placement:	BROADC
Applied By:	Johnson
Air Temperature, Unit:	88 F
% Relative Humidity:	43
Wind Velocity, Unit:	4 mph
Wind Direction:	W
Dew Presence (Y/N):	N no
Soil Temperature, Unit:	88 F
Soil Moisture:	NORMAL
% Cloud Cover:	40

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Crop Stage At Each Application

	A
Crop 1 Code, BBCH Scale:	SORVU BGRM

Application Equipment

	A
Appl. Equipment:	Tractor
Equipment Type:	TRMOSP
Operation Pressure, Unit:	40 psi
Nozzle Type:	AIRMIX
Nozzle Size:	11002
Nozzle Spacing, Unit:	20 in
Boom Length, Unit:	10 ft
Boom Height, Unit:	18 in
Ground Speed, Unit:	3 mph
Carrier:	WATER
Spray Volume, Unit:	20 gal/ac
Mix Size, Unit:	0.7 Gallons
Propellant:	COMAIR

Trial Comments

07/10/15: Plot 106 - heavy weed density here.

07/18/15: Biomass reduction = stand loss and stunting.

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Evaluating PRE Weed Control for Grain Sorghum

Trial ID: Milo3-15 Location: Field #36 Trial Year:
Protocol ID: Milo3-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code				
	Pest Code										AMAPA
	Pest Name										PalmerAm
	Crop Code							SORVU	SORVU	SORVU	
	Crop Name							GrnSrghm	GrnSrghm	GrnSrghm	
	Rating Type							plants	<4 inches	BiomRed	Control
	Rating Unit							#/25ft	#/25ft	%	%
	Rating Date							07/10/15	07/10/15	07/18/15	07/18/15
1	Untreated Check							61.33 ab	3.33 c	0.0 e	0.0 b
2	Lumax EZ Premix	3.67	SC	2.48	lb ai/a	PRE	A	58.67 b	7.33 c	16.3 cd	100.0 a
	----s-metolachlor	2.49		1.68							
	----mesotrione	0.25		0.169							
	----atrazine	0.93		0.63							
3	Lumax EZ Premix	3.67	SC	1.48	lb ai/a	PRE	A	60.50 ab	8.33 c	11.3 de	100.0 a
	----s-metolachlor	2.49		1							
	----mesotrione	0.25		0.101							
	----atrazine	0.93		0.375							
	Bicep II Magnum Premix	5.5	L	1.1	lb ai/a	PRE	A				
	----s-metolachlor	2.4		0.48							
	----atrazine	3.1		0.62							
4	Lumax EZ Premix	3.67	SC	0.99	lb ai/a	PRE	A	67.67 a	7.00 c	12.3 de	100.0 a
	----s-metolachlor	2.49		0.67							
	----mesotrione	0.25		0.0674							
	----atrazine	0.93		0.25							
	Bicep II Magnum Premix	5.5	L	1.65	lb ai/a	PRE	A				
	----s-metolachlor	2.4		0.72							
	----atrazine	3.1		0.93							
5	Lumax EZ Premix	3.67	SC	2.48	lb ai/a	PRE	A	55.50 b	3.67 c	9.0 de	100.0 a
	----s-metolachlor	2.49		1.68							
	----mesotrione	0.25		0.169							
	----atrazine	0.93		0.63							
	Atrazine 4L	4	L	0.625	lb ai/a	PRE	A				
6	Bicep II Magnum Premix	5.5	L	2.75	lb ai/a	PRE	A	62.83 ab	4.50 c		
	----s-metolachlor	2.4		1.2							
	----atrazine	3.1		1.55							
7	Zidua.....pyroxasulfone	85	WG	0.106	lb ai/a	PRE	A	42.00 c	20.17 b	60.0 a	100.0 a
	Atrazine 4L	4	L	1.2	lb ai/a	PRE	A				
8	Sharpen.....saflufenacil	2.85	SC	0.0445	lb ai/a	PRE	A	38.17 c	27.17 a	71.7 a	100.0 a
	Zidua.....pyroxasulfone	85	WG	0.106	lb ai/a	PRE	A				
9	Fierce Premix	76	WG	0.143	lb ai/a	PRE	A	42.83 c	9.83 c	43.3 b	100.0 a
	----flumioxazin	33.5		0.063							
	----pyroxasulfone	42.5		0.08							
10	Dual II Magnum..s-metolachlor	7.64	E	1.2	lb ai/a	PRE	A	61.17 ab	8.00 c	10.7 de	100.0 a
	Atrazine 4L	4	L	0.75	lb ai/a	PRE	A				

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.
Missing data estimates are included in columns:Average=6
Could not calculate LSD (% mean diff) for columns 4 because error mean square = 0.

University of Delaware

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code				
	Pest Code										AMAPA
	Pest Name										PalmerAm
	Crop Code							SORVU	SORVU	SORVU	
	Crop Name							GrnSrghm	GrnSrghm	GrnSrghm	
	Rating Type							plants	<4 inches	BiomRed	Control
	Rating Unit							#/25ft	#/25ft	%	%
	Rating Date							07/10/15	07/10/15	07/18/15	07/18/15
11	Acuron Premix	3.44	ZC	2.15	lb ai/a	PRE	A	60.83 ab	5.50 c	19.0 cd	100.0 a
	----atrazine	1		0.625							
	----bicyclopyrone	0.06		0.0375							
	----mesotrione	0.24		0.15							
	----s-metolachlor	2.14		1.34							
12	Acuron Premix	3.44	ZC	2.15	lb ai/a	PRE	A	62.83 ab	6.67 c	28.3 bc	100.0 a
	----atrazine	1		0.625							
	----bicyclopyrone	0.06		0.0375							
	----mesotrione	0.24		0.15							
	----s-metolachlor	2.14		1.34							
	Atrazine 4L	4	L	0.75	lb ai/a	PRE	A				
	LSD P=.05							7.871	6.520	15.61	.
	Standard Deviation							4.649	3.851	9.17	0.00
	CV							8.27	41.44	35.76	0.0
	Replicate F							8.251	0.544	1.081	0.000
	Replicate Prob(F)							0.0021	0.5882	0.3584	1.0000
	Treatment F							12.905	10.321	18.882	0.000
	Treatment Prob(F)							0.0001	0.0001	0.0001	1.0000

Pest Code Pest Name Crop Code Crop Name							IPOSS mornglry	SORVU GrnSrghm	IPOSS mornglry	SORVU GrnSrghm
Rating Type Rating Unit Rating Date							Control % 07/18/15	BiomRed % 07/28/15	Control % 07/28/15	Yield Bu/A 11/03/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code				
1	Untreated Check							0.0 d	0.0 c	0.0 e	37.3 d
2	Lumax EZ Premix	3.67	SC	2.48	lb ai/a	PRE	A	94.3 a	10.0 c	89.7 ab	86.0 abc
	----s-metolachlor	2.49		1.68							
	----mesotrione	0.25		0.169							
	----atrazine	0.93		0.63							
3	Lumax EZ Premix	3.67	SC	1.48	lb ai/a	PRE	A	93.0 ab	0.0 c	89.7 ab	68.0 bc
	----s-metolachlor	2.49		1							
	----mesotrione	0.25		0.101							
	----atrazine	0.93		0.375							
	Bicep II Magnum Premix	5.5	L	1.1	lb ai/a	PRE	A				
	----s-metolachlor	2.4		0.48							
	----atrazine	3.1		0.62							
4	Lumax EZ Premix	3.67	SC	0.99	lb ai/a	PRE	A	83.7 abc	3.3 c	73.3 bcd	93.2 a
	----s-metolachlor	2.49		0.67							
	----mesotrione	0.25		0.0674							
	----atrazine	0.93		0.25							
	Bicep II Magnum Premix	5.5	L	1.65	lb ai/a	PRE	A				
	----s-metolachlor	2.4		0.72							
	----atrazine	3.1		0.93							
5	Lumax EZ Premix	3.67	SC	2.48	lb ai/a	PRE	A	87.7 abc	10.0 c	91.3 a	88.1 ab
	----s-metolachlor	2.49		1.68							
	----mesotrione	0.25		0.169							
	----atrazine	0.93		0.63							
	Atrazine 4L	4	L	0.625	lb ai/a	PRE	A				
6	Bicep II Magnum Premix	5.5	L	2.75	lb ai/a	PRE	A				85.6 abc
	----s-metolachlor	2.4		1.2							
	----atrazine	3.1		1.55							
7	Zidua.....pyroxasulfone	85	WG	0.106	lb ai/a	PRE	A	80.0 bc	50.0 b	82.3 abc	91.9 ab
	Atrazine 4L	4	L	1.2	lb ai/a	PRE	A				
8	Sharpen.....saflufenacil	2.85	SC	0.0445	lb ai/a	PRE	A	94.0 ab	63.3 a	84.7 ab	87.0 abc
	Zidua.....pyroxasulfone	85	WG	0.106	lb ai/a	PRE	A				
9	Fierce Premix	76	WG	0.143	lb ai/a	PRE	A	77.0 c	45.0 b	60.0 d	70.2 abc
	----flumioxazin	33.5		0.063							
	----pyroxasulfone	42.5		0.08							
10	Dual II Magnum..s-metolachlor	7.64	E	1.2	lb ai/a	PRE	A	75.3 c	0.0 c	66.7 cd	63.3 c
	Atrazine 4L	4	L	0.75	lb ai/a	PRE	A				

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	IPOSS mornglry Control % 07/18/15	SORVU GrnSrghm BiomRed % 07/28/15	IPOSS mornglry Control % 07/28/15	SORVU GrnSrghm Yield Bu/A 11/03/15
11	Acuron Premix	3.44	ZC	2.15	lb ai/a	PRE	A	87.7 abc	0.0 c	87.0 ab	87.5 abc
	----atrazine	1		0.625							
	----bicyclopyrone	0.06		0.0375							
	----mesotrione	0.24		0.15							
	----s-metolachlor	2.14		1.34							
12	Acuron Premix	3.44	ZC	2.15	lb ai/a	PRE	A	92.7 ab	12.3 c	93.3 a	84.0 abc
	----atrazine	1		0.625							
	----bicyclopyrone	0.06		0.0375							
	----mesotrione	0.24		0.15							
	----s-metolachlor	2.14		1.34							
	Atrazine 4L	4	L	0.75	lb ai/a	PRE	A				
LSD P=.05								14.18	13.26	17.02	24.45
Standard Deviation								8.32	7.38	9.99	14.44
CV								10.58	41.84	13.43	18.39
Replicate F								0.809	0.155	0.427	3.767
Replicate Prob(F)								0.4595	0.8581	0.6581	0.0392
Treatment F								31.487	30.174	21.769	3.780
Treatment Prob(F)								0.0001	0.0001	0.0001	0.0038

University of Delaware

Fall Planted Brassicas for Winter Annual Weed Control

Trial ID: Cover1-15 Location: Field #4 Trial Year:
Protocol ID: Cover1-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact: NE-IPM

General Trial Information

Investigator: Mark VanGessel Title: Extension Weed Specialist

Conducted Under GLP: No
Conducted Under GEP: No

Investigator: Mark VanGessel Title: Extension Weed Specialist
Organization: University of Delaware
Address: 16483 County Seat Hwy
City+State/Prov: Georgetown, Delaware
Postal Code: 19947 E-mail: mjv@udel.edu
Country: USA United States

Crop Description

Description: Cover Crops (see treatments)
Planting Date: 09/29/14
Planting Method: PLANTD planted
Depth, Unit: 0.25 in
Planting Equipment: CP Cone Planter
Row Spacing, Unit: 7 in
Emergence Date: 10/04/14
Soil Temperature, Unit: 74 F
Soil Moisture: NORMAL normal, adequate

Site and Design

Treated Plot Width: 10 FT
Site Type: FIELD field
Treated Plot Length: 25 FT
Treated Plot Area: 250 FT2 Treatments: 10
Tillage Type: NOTILL no-till
Replications: 3
Study Design: RACOBL Randomized Complete Block (RCB)

Soil Description

% Sand: 79 % OM: 1.3 Texture: SL sandy loam
% Silt: 11 pH: 6.7
% Clay: 10 CEC: 6.8 Fert. Level: G good
Soil Drainage: G good

Moisture and Weather Conditions

Overall Moisture Conditions: NORMAL normal
Closest Weather Station: UDREC Distance, Unit: 0.3 mi

Trial Comments

11/10/14:
Treatment 2: Stunting 25-30%
3: Stunting >60%
4: Severe stunting >50%
5: Stunting >50%
Stunting due to Sandea carryover from Lima 2-14 trial.

Overall groundcover: rape ≥ radish > turnips> mustard. Rape is best, slightly better than radish, followed by turnips which is slightly better than mustard.
Dual @ 1pt ~ 12% injured oats 20-25%
Rate response with Anthem- 15, 20, 30% (15, 65 + 10 fl oz respectively)
Due to herbicide carryover, data is not replicated.

University of Delaware

Fall Planted Brassicas for Winter Annual Weed Control

Trial ID: Cover1-15 Location: Field #4 Trial Year:
Protocol ID: Cover1-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact: NE-IPM

Trt No.	Treatment Name	Other Rate	Other Rate Unit	Growth Stage
1	Check - No Cover			
2	Tillage Radish	10	lb/a	Fall
3	Turnip	10	lb/a	Fall
4	Mustard	10	lb/a	Fall
5	Essex Rape	10	lb/a	Fall
6	Tillage Radish Spring Oats	5 40	lb/a lb/a	Fall Fall
7	Turnip Spring Oats	5 40	lb/a lb/a	Fall Fall
8	Mustard Spring Oats	5 40	lb/a lb/a	Fall Fall
9	Essex Rape Spring Oats	5 40	lb/a lb/a	Fall Fall
10	Spring Oats	120	lb/a	Fall

Replications: 3, Untreated treatments: 1, Design: Randomized Complete Block (RCB), Treatment units: US standard, Treated 'Plot' experimental unit size Width: 10 feet, Treated 'Plot' experimental unit size Length: 25 feet, Application volume: 20 GAL/AC, Mix size: .7 gallons, Format definitions: G-All7.def, G-All7.frm

University of Delaware

Winter Peas for Cover Crops
Planting Strategies
Trial ID: Cover2-15 Cooperator: NE-IPM
Location: Field #16 Investigator: Mark VanGessel

GENERAL TRIAL INFORMATION

Study Director: Mark VanGessel **Title:** Extension Specialist, Weed Science
Affiliation: University of Delaware Research & Education Center
Address: 16483 County Seat Hwy **City:** Georgetown **State:** DE **Zip Code:** 19947

Conducted Under GLP (Y/N): N **Conducted Under GEP (Y/N):** N

Crop 1: Cover Crops (see trts)
Planting Date: 09/29/14 **Planting Method:** Drilled- Cone System **Depth:** 0.25 in
Row Spacing: 7.5 in **Seed Bed:** Smooth
Soil Temperature: 74 F **Soil Moisture:** Normal **Emergence Date:** 10/04/14

SITE AND DESIGN

Plot Width, Unit: 5.6 FT **Plot Length, Unit:** 15 FT **Reps:** 3
Site Type: Field **Study Design:** FACTORIAL
Tillage Type: Disked and Field Cultivated

SOIL DESCRIPTION

% Sand: 77 **% OM:** 0.9 **Texture:** sandy loam
% Silt: 12 **pH:** 5.9
% Clay: 11 **CEC:** 5.6 **Fert. Level:** Medium

Closest Weather Station: Univ. of Delaware Research & Education Center, Georgetown
Distance: 0.5 **Unit:** mi

Field Sheet

Planting Date: 9-29-14
Planting Method: Drilled- Cone System
Depth: 0.25 , in **Row Spacing:** 7.5 , in **Seed Bed:** Smooth
Soil Temp: 74 , F **Soil Mstr:** Normal **Emergence Date:** 10-4-14
Plot Wdth: 5.6 , FT **Plot Lgth:** 15 , FT **# Replications:** 3
Site Type: Field **Tillage:** Disked and Field Cultivated

Trial Comments

11/11/14: % groundcover from cover crops only
(broadcast) - handseeding was very uneven, most seed in center of plot

University of Delaware

Winter Peas for Cover Crops
Planting Strategies
Trial ID: Cover2-15 Cooperator: NE-IPM
Location: Field #16 Investigator: Mark VanGessel

Weed Code Weed or Crop Name	Cover Cr		Winter	Cover	LAMAM Henbit	OEOLA Cutleaf	SCRAN Knawel	STEME Common	VICVI Hairy
Weed or Crop Name	Rye/Pea	Rye	pea	Crop		EPrimrse		Chickwd	vetch
Rating Data Type	GrndCvr	Weight	Weight	Tot wt	GnrdCvr	GnrdCvr	GnrdCvr	GnrdCvr	GnrdCvr
Rating Unit	%	g/0.5M2	g/0.5M2	g/0.5M2	%	%	%	%	%
Rating Date	11/11/14	05/13/15	05/13/15	05/13/15	05/13/15	05/13/15	05/13/15	05/13/15	05/13/15
Trt Treatment Name / Rate Rate Unit									
1 Austrian Winter Pea - REC Rye	9.3 f	0.0 c	110.0 abc	110.0 bc	0.22 a	0.056 b	11.003 a	0.367 a	0.583 a
2 Austrian Winter Pea - REC Rye	24.7 abc	126.0 a	69.7 cde	195.7 a	0.06 a	0.116 b	7.003 a	0.567 a	0.200 a
3 Austrian Winter Pea - REC Rye	27.7 ab	126.7 a	37.0 ef	163.7 ab	0.04 a	0.116 b	6.000 a	0.403 a	0.370 a
4 Austrian Winter Pea - REC Rye	8.0 f	0.0 c	73.3 cde	73.3 c	0.32 a	0.175 b	10.337 a	0.733 a	0.200 a
5 Austrian Winter Pea - REC Rye	21.7 bcd	104.7 ab	64.0 cde	168.7 ab	0.15 a	0.056 b	5.033 a	0.837 a	0.667 a
6 Austrian Winter Pea - REC Rye	25.0 abc	129.7 a	68.3 cde	198.0 a	0.15 a	0.011 b	0.203 a	0.103 a	1.033 a
7 Austrian Winter Pea - REC Rye	14.0 ef	0.0 c	122.7 ab	122.7 bc	0.46 a	0.148 b	5.667 a	0.400 a	0.700 a
8 Austrian Winter Pea - REC Rye	30.0 a	98.3 ab	69.3 cde	167.7 ab	0.33 a	0.072 b	0.533 a	0.233 a	0.617 a
9 Austrian Winter Pea - REC Rye	27.3 ab	105.0 ab	64.3 cde	169.3 ab	0.06 a	0.001 b	0.233 a	0.100 a	1.667 a
10 Untreated Check	0.0 g	0.0 c	0.0 f	0.0 d	2.05 a	3.651 a	0.200 a	4.733 a	2.867 a
11 Austrian Winter Pea - REC	14.0 ef	0.0 c	143.3 a	143.3 ab	0.46 a	0.044 b	1.037 a	1.000 a	0.200 a
12 Austrian Winter Pea - REC Rye- Broadcast	18.3 cde	97.7 ab	55.7 de	153.3 ab	0.10 a	0.072 b	0.700 a	0.103 a	0.267 a
13 Austrian Winter Pea - REC Rye- Broadcast	16.3 de	98.7 ab	69.7 cde	168.3 ab	0.12 a	0.030 b	0.200 a	0.367 a	0.067 a
14 Austrian Winter Pea - REC Rye- Broadcast	22.7 bcd	65.3 b	109.0 abc	174.3 ab	0.33 a	0.004 b	0.100 a	0.367 a	0.900 a
15 Austrian Winter Pea - REC Rye- Broadcast	19.3 cde	70.0 b	87.3 bcd	157.3 ab	0.12 a	0.004 b	0.337 a	0.233 a	0.067 a
LSD P=.05	6.92	41.68	46.40	69.39	0.693 - 1.431	0.2487 - 1.5463	11.8715	2.7280	2.2556
Standard Deviation	4.14	24.92	27.74	41.49	2.222t	1.5987t	7.0980	1.6310	1.3486
CV	22.31	36.58	36.39	28.74	77.85t	82.49t	219.13	231.98	194.45
Replicate F	4.148	5.072	9.185	10.786	2.128	2.282	4.774	2.703	3.660
Replicate Prob(F)	0.0264	0.0132	0.0009	0.0003	0.1379	0.1208	0.0164	0.0844	0.0387
Treatment F	12.309	13.521	4.806	4.593	1.812	7.949	0.915	1.483	0.901
Treatment Prob(F)	0.0001	0.0001	0.0002	0.0003	0.0878	0.0001	0.5542	0.1817	0.5669

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
t=Mean descriptions are reported in transformed data units, and are not de-transformed.
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

Weed Code Weed or Crop Name Weed or Crop Name Rating Data Type Rating Unit Rating Date	VIORA Field Pansy GnrdCvr % 05/13/15	Total weed GnrdCvr % 05/13/15
Trt Treatment Rate No. Name Rate Unit		
1 Austrian Winter Pea - REC Rye	0.011 a	12.487 a
2 Austrian Winter Pea - REC Rye	0.116 a	8.270 a
3 Austrian Winter Pea - REC Rye	0.116 a	7.240 a
4 Austrian Winter Pea - REC Rye	0.072 a	12.177 a
5 Austrian Winter Pea - REC Rye	0.116 a	7.137 a
6 Austrian Winter Pea - REC Rye	0.019 a	1.643 a
7 Austrian Winter Pea - REC Rye	0.044 a	7.633 a
8 Austrian Winter Pea - REC Rye	0.060 a	1.990 a
9 Austrian Winter Pea - REC Rye	0.019 a	2.140 a
10 Untreated Check	0.223 a	14.537 a
11 Austrian Winter Pea - REC	0.030 a	2.877 a
12 Austrian Winter Pea - REC Rye- Broadcast	0.072 a	1.510 a
13 Austrian Winter Pea - REC Rye- Broadcast	0.060 a	0.943 a
14 Austrian Winter Pea - REC Rye- Broadcast	0.004 a	1.747 a
15 Austrian Winter Pea - REC Rye- Broadcast	0.004 a	0.850 a
LSD P=.05	0.1930 - 0.2142	12.8528
Standard Deviation	1.2945t	7.6847
CV	99.01t	138.58
Replicate F	6.853	7.778
Replicate Prob(F)	0.0038	0.0021
Treatment F	0.792	1.127
Treatment Prob(F)	0.6693	0.3785

University of Delaware

Winter Peas for Cover Crops
Planting Strategies
Trial ID: Cover2-15 Cooperator: NE-IPM
Location: Field #16 Investigator: Mark VanGessel

Weed Code Weed or Crop Name Weed or Crop Name Rating Data Type Rating Unit Rating Date	Cover Cr Rye/Pea GrndCvr % 11/11/14	Rye Weight g/0.5M2 05/13/15	Winter pea Weight g/0.5M2 05/13/15	Cover Crop Tot wt g/0.5M2 05/13/15	LAMAM Henbit GnrdCvr % 05/13/15
Trt Treatment Rate No. Name Rate Unit					
TABLE OF R MEANS Replicate 1	23.1	90.9	91.7	182.6	0.02
Replicate 2	19.1	71.7	81.6	153.2	0.22
Replicate 3	20.3	67.6	53.0	120.6	0.41
TABLE OF A (AWP Seeding rate) MEANS 1 Austrian Winter Pea - REC	20.6 ab	84.2 a	72.2 a	156.4 a	0.10 a
2 Austrian Winter Pea - REC	18.2 b	78.1 a	68.6 a	146.7 a	0.20 a
3 Austrian Winter Pea - REC	23.8 a	67.8 a	85.4 a	153.2 a	0.25 a
LSD P=.05	4.24	29.78	26.12	44.86	0.179 - 0.199
Standard Deviation	4.24	29.80	26.14	44.89	1.331t
CV	20.34	38.85	34.66	29.51	55.247t
TABLE OF B (Cereal Rye Seeding rate) MEANS 1 Rye	10.4 b	0.0 b	102.0 a	102.0 b	0.33 a
2 Rye	25.4 a	109.7 a	67.7 b	177.3 a	0.16 a
3 Rye	26.7 a	120.4 a	56.6 b	177.0 a	0.08 a
LSD P=.05	4.24	29.78	26.12	44.86	0.185 - 0.211
Standard Deviation	4.24	29.80	26.14	44.89	1.331t
CV	20.34	38.85	34.66	29.51	55.247t
TABLE OF A (AWP Seeding rate) B (Cereal Rye Seeding rate) MEANS 1 Austrian Winter Pea - REC 1 Rye	9.3 a	0.0 a	110.0 a	110.0 a	0.22 a
2 Austrian Winter Pea - REC 1 Rye	8.0 a	0.0 a	73.3 a	73.3 a	0.32 a
3 Austrian Winter Pea - REC 1 Rye	14.0 a	0.0 a	122.7 a	122.7 a	0.46 a
1 Austrian Winter Pea - REC 2 Rye	24.7 a	126.0 a	69.7 a	195.7 a	0.06 a
2 Austrian Winter Pea - REC 2 Rye	21.7 a	104.7 a	64.0 a	168.7 a	0.15 a
3 Austrian Winter Pea - REC 2 Rye	30.0 a	98.3 a	69.3 a	167.7 a	0.33 a
1 Austrian Winter Pea - REC 3 Rye	27.7 a	126.7 a	37.0 a	163.7 a	0.04 a
2 Austrian Winter Pea - REC 3 Rye	25.0 a	129.7 a	68.3 a	198.0 a	0.15 a

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.
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Weed Code						LAMAM
Weed or Crop Name		Cover Cr		Winter	Cover	Henbit
Weed or Crop Name		Rye/Pea	Rye	pea	Crop	
Rating Data Type		GrndCvr	Weight	Weight	Tot wt	GnrdCvr
Rating Unit		%	g/0.5M2	g/0.5M2	g/0.5M2	%
Rating Date		11/11/14	05/13/15	05/13/15	05/13/15	05/13/15
Trt No.	Treatment Name	Rate / Rate Unit				
3	Austrian Winter Pea - REC 3 Rye		27.3 a	105.0 a	64.3 a	169.3 a	0.06 a
LSD P=.05			7.34	51.58	45.24	77.71	0.331 - 0.381
Standard Deviation			4.24	29.80	26.14	44.89	1.331t
CV			20.34	38.85	34.66	29.51	55.247t

Weed Code Weed or Crop Name Weed or Crop Name Rating Data Type Rating Unit Rating Date	OEOLA Cutleaf EPrimrse GnrdCvr % 05/13/15	SCRAN Knawel GnrdCvr % 05/13/15	STEME Common Chickwd GnrdCvr % 05/13/15	VICVI Hairy vetch GnrdCvr % 05/13/15	VIORA Field Pansy GnrdCvr % 05/13/15
Trt Treatment Rate No. Name Rate Unit					
TABLE OF R MEANS Replicate 1	0.183	12.800	0.711	1.389	0.207
Replicate 2	0.092	2.522	0.456	0.356	0.054
Replicate 3	0.003	0.016	0.081	0.268	0.000
TABLE OF A (AWP Seeding rate) MEANS 1 Austrian Winter Pea - REC	0.094 a	8.002 a	0.446 a	0.384 a	0.069 a
2 Austrian Winter Pea - REC	0.064 a	5.191 a	0.558 a	0.633 a	0.062 a
3 Austrian Winter Pea - REC	0.052 a	2.144 a	0.244 a	0.994 a	0.039 a
LSD P=.05 Standard Deviation CV	0.0937 - 0.2270 1.7190t 114.1516t	8.1200 8.1255 158.9303	0.5240 0.5244 126.0757	0.9847 0.9854 146.9094	0.0607 - 0.0975 0.9853t 72.6195t
TABLE OF B (Cereal Rye Seeding rate) MEANS 1 Rye	0.120 a	9.002 a	0.500 a	0.494 a	0.038 a
2 Rye	0.080 a	4.190 a	0.546 a	0.494 a	0.095 a
3 Rye	0.026 a	2.146 a	0.202 a	1.023 a	0.043 a
LSD P=.05 Standard Deviation CV	0.1177 - 0.1857 1.7190t 114.1516t	8.1200 8.1255 158.9303	0.5240 0.5244 126.0757	0.9847 0.9854 146.9094	0.0766 - 0.0966 0.9853t 72.6195t
TABLE OF A (AWP Seeding rate) B (Cereal Rye Seeding rate) MEANS 1 Austrian Winter Pea - REC 1 Rye	0.056 a	11.003 a	0.367 a	0.583 a	0.011 a
2 Austrian Winter Pea - REC 1 Rye	0.175 a	10.337 a	0.733 a	0.200 a	0.072 a
3 Austrian Winter Pea - REC 1 Rye	0.148 a	5.667 a	0.400 a	0.700 a	0.044 a
1 Austrian Winter Pea - REC 2 Rye	0.116 a	7.003 a	0.567 a	0.200 a	0.116 a
2 Austrian Winter Pea - REC 2 Rye	0.056 a	5.033 a	0.837 a	0.667 a	0.116 a
3 Austrian Winter Pea - REC 2 Rye	0.072 a	0.533 a	0.233 a	0.617 a	0.060 a
1 Austrian Winter Pea - REC 3 Rye	0.116 a	6.000 a	0.403 a	0.370 a	0.116 a
2 Austrian Winter Pea - REC 3 Rye	0.011 a	0.203 a	0.103 a	1.033 a	0.019 a

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Weed Code	OEOLA	SCRAN	STEME	VICVI	VIORA
Weed or Crop Name	Cutleaf	Knawel	Common	Hairy	Field
Weed or Crop Name	EPrimrse		Chickwd	vetch	Pansy
Rating Data Type	GnrdCvr	GnrdCvr	GnrdCvr	GnrdCvr	GnrdCvr
Rating Unit	%	%	%	%	%
Rating Date	05/13/15	05/13/15	05/13/15	05/13/15	05/13/15
Trt Treatment Name / Rate Rate Unit					
3 Austrian Winter Pea - REC 3 Rye	0.001 a	0.233 a	0.100 a	1.667 a	0.019 a
LSD P=.05	0.3040 - 99999.1849	14.0643	0.9076	1.7056	0.1146 - 0.1513
Standard Deviation	1.7190t	8.1255	0.5244	0.9854	0.9853t
CV	114.1516t	158.9303	126.0757	146.9094	72.6195t

Weed Code Weed or Crop Name Weed or Crop Name Rating Data Type Rating Unit Rating Date	 Total weed GnrdCvr % 05/13/15
Trt Treatment Rate No. Name Rate Unit	
TABLE OF R MEANS Replicate 1	 15.533
Replicate 2	3.859
Replicate 3	0.847
TABLE OF A (AWP Seeding rate) MEANS 1 Austrian Winter Pea - REC	 9.332 a
2 Austrian Winter Pea - REC	6.986 a
3 Austrian Winter Pea - REC	3.921 a
LSD P=.05 Standard Deviation CV	8.2130 8.2185 121.8225
TABLE OF B (Cereal Rye Seeding rate) MEANS 1 Rye	 10.766 a
2 Rye	5.799 a
3 Rye	3.674 a
LSD P=.05 Standard Deviation CV	8.2130 8.2185 121.8225
TABLE OF A (AWP Seeding rate) B (Cereal Rye Seeding rate) MEANS 1 Austrian Winter Pea - REC 1 Rye	 12.487 a
2 Austrian Winter Pea - REC 1 Rye	12.177 a
3 Austrian Winter Pea - REC 1 Rye	7.633 a
1 Austrian Winter Pea - REC 2 Rye	8.270 a
2 Austrian Winter Pea - REC 2 Rye	7.137 a
3 Austrian Winter Pea - REC 2 Rye	1.990 a
1 Austrian Winter Pea - REC 3 Rye	7.240 a
2 Austrian Winter Pea - REC 3 Rye	1.643 a

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Weed Code			
Weed or Crop Name			Total
Weed or Crop Name			weed
Rating Data Type			GnrdCvr
Rating Unit			%
Rating Date			05/13/15
Trt No.	Treatment Name	Rate / Rate Unit	
3	Austrian Winter Pea - REC		2.140 a
3	Rye		
LSD P=.05			14.2254
Standard Deviation			8.2185
CV			121.8225

FACTORIAL/POOLED ERROR AOV For Cover Cr Rye/Pea GrndCvr % 11/11/14

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	26	2011.407407				
R	2	75.629630	37.814815	2.103	0.1546	
A	2	140.074074	70.037037	3.895	0.0419	4.2
B	2	1468.962963	734.481481	40.847	0.0001	4.2
AB	4	39.037037	9.759259	0.543	0.7067	7.3
ERROR	16	287.703704	17.981481			

FACTORIAL/POOLED ERROR AOV For Rye Weight g/0.5M2 05/13/15

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	26	99297.629630				
R	2	2792.518519	1396.259259	1.572	0.2380	
A	2	1243.629630	621.814815	0.700	0.5111	29.8
B	2	79949.407407	39974.703704	45.016	0.0001	29.8
AB	4	1103.925926	275.981481	0.311	0.8665	51.6
ERROR	16	14208.148148	888.009259			

FACTORIAL/POOLED ERROR AOV For Winter pea Weight g/0.5M2 05/13/15

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	26	34014.518519				
R	2	7238.296296	3619.148148	5.298	0.0172	
A	2	1420.518519	710.259259	1.040	0.3762	26.1
B	2	10102.296296	5051.148148	7.394	0.0053	26.1
AB	4	4323.703704	1080.925926	1.582	0.2271	45.2
ERROR	16	10929.703704	683.106481			

FACTORIAL/POOLED ERROR AOV For Cover Crop Tot wt g/0.5M2 05/13/15

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	26	90948.666667				
R	2	17314.666667	8657.333333	4.295	0.0321	
A	2	446.888889	223.444444	0.111	0.8957	44.9
B	2	33900.666667	16950.333333	8.410	0.0032	44.9
AB	4	7038.444444	1759.611111	0.873	0.5015	77.7
ERROR	16	32248.000000	2015.500000			

FACTORIAL/POOLED ERROR AOV For LAMAM Henbit GnrdCvr % 05/13/15

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	26	86.704954				
R	2	37.100655	18.550327	10.473	0.0012	
A	2	5.632368	2.816184	1.590	0.2345	0.18 - 0.20
B	2	12.418458	6.209229	3.506	0.0546	0.19 - 0.21
AB	4	3.213127	0.803282	0.454	0.7685	0.33 - 0.38
ERROR	16	28.340345	1.771272			

FACTORIAL/POOLED ERROR AOV For OEOLA Cutleaf EPrimrse GnrdCvr % 05/13/15

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	26	81.145136				
R	2	21.035298	10.517649	3.559	0.0526	
A	2	0.919323	0.459661	0.156	0.8572	0.094 - 0.227
B	2	5.291049	2.645524	0.895	0.4280	0.118 - 0.186
AB	4	6.620577	1.655144	0.560	0.6949	0.304 - 99999.185
ERROR	16	47.278890	2.954931			

FACTORIAL/POOLED ERROR AOV For SCRAN Knawel GnrdCvr % 05/13/15

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	26	2289.078119				
R	2	826.074341	413.037170	6.256	0.0098	
A	2	154.494252	77.247126	1.170	0.3356	8.120
B	2	223.053341	111.526670	1.689	0.2160	8.120
AB	4	29.087593	7.271898	0.110	0.9772	14.064
ERROR	16	1056.368593	66.023037			

FACTORIAL/POOLED ERROR AOV For STEME Common Chickwd GnrdCvr % 05/13/15

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	26	7.809452				
R	2	1.807252	0.903626	3.286	0.0637	
A	2	0.453652	0.226826	0.825	0.4561	0.524
B	2	0.625874	0.312937	1.138	0.3451	0.524
AB	4	0.523059	0.130765	0.476	0.7532	0.908
ERROR	16	4.399615	0.274976			

FACTORIAL/POOLED ERROR AOV For VICVI Hairy vetch GnrdCvr % 05/13/15

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	26	27.537985				
R	2	6.997119	3.498559	3.603	0.0511	
A	2	1.693341	0.846670	0.872	0.4371	0.985
B	2	1.678341	0.839170	0.864	0.4401	0.985
AB	4	1.633570	0.408393	0.421	0.7915	1.706
ERROR	16	15.535615	0.970976			

FACTORIAL/POOLED ERROR AOV For VIORA Field Pansy GnrdCvr % 05/13/15

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	26	50.216174				
R	2	27.687681	13.843840	14.261	0.0003	
A	2	0.694111	0.347056	0.358	0.7049	0.061 - 0.098
B	2	2.325033	1.162517	1.198	0.3276	0.077 - 0.097
AB	4	3.977077	0.994269	1.024	0.4247	0.115 - 0.151
ERROR	16	15.532272	0.970767			

FACTORIAL/POOLED ERROR AOV For Total weed GnrdCvr % 05/13/15

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	26	2571.373030				
R	2	1083.192941	541.596470	8.018	0.0039	
A	2	132.533363	66.266681	0.981	0.3964	8.213
B	2	238.394696	119.197348	1.765	0.2030	8.213
AB	4	36.549837	9.137459	0.135	0.9669	14.225
ERROR	16	1080.702193	67.543887			

University of Delaware

Cover Crop With Broadcast Seeding Over Various Conditions

Trial ID: Cover4-15 Cooperator:
Location: Various Investigator: Mark VanGessel

GENERAL TRIAL INFORMATION

Study Director: Mark VanGessel Title: Extension Specialist, Weed Science
Affiliation: University of Delaware Research & Education Center
Address: 16483 County Seat Hwy City: Georgetown State: DE Zip Code: 19947

Conducted Under GLP (Y/N): N Conducted Under GEP (Y/N): N

Crop 1: cover crops (see trts)
Planting Date: 09/26/14 Planting Method: Seeded - hand Depth: 0 in
Emergence Date: 10/01/14

SITE AND DESIGN

Plot Width, Unit: 5.6 FT Plot Length, Unit: 15 FT Reps: 3
Site Type: Field Study Design: SPLIT-PLOT
Tillage Type: various

Closest Weather Station: Univ. of Delaware Research & Education Center, Georgetown

Field Sheet

Planting Date: 9-26-14
Planting Method: Seeded - hand
Depth: 0 , in
Emergence Date: 10-1-14
Plot Wdth: 5.6 , FT Plot Lgth: 15 , FT # Replications: 3
Site Type: Field Tillage: various

Trial Comments

9/26/14: Seeded was weighed out and sprinkled over 0.25 sq m area.
Rained approx 3" starting evening of the 24th and all day the 25th

Field 22: No residue
worked in spring and not planted all summer; area was sprayed occasionally with paraquat/glyphosate to keep weeds out

Field 4: Freshly worked
worked on 9/15/14

Field 32: Seeded over rye resiude
Rye cover crop was seeded in the fall of 2013 and sprayed just before soybean planting in spring. This area is behind trial where no soybeans were planted

Field 30: Mowed corn fodder
Corn was harvested and then flail mowed; corn fodder was quite uniform over the area.

29 April 2015:

Field 32: Hairy vetch was only species to establish and produce significant ground cover. Barley was better than cereal rye, but ground cover was poor.

Field 30: Overall, hairy vetch had best establishment over the three reps. Only 1 rep of annual ryegrass had plants large and looking robust (other two reps had small, spindly plants). Only 1 rep of cereal rye had an acceptable stand as a cover crop.

Field 4: Cereal rye stand was best, but still only poor to fair stand. Ryegrass plants were small and spindly.

Field 22: Was disked before evaluations were taken.

University of Delaware

Cover Crop With Broadcast Seeding Over Various Conditions

Trial ID: Cover4-15 Cooperator:
Location: Various Investigator: Mark VanGessel

Trt No.	Treatment Name	Product Rate	Product Rate Unit
Factor A (Fields)			
1	Field 22: No residues		
2	Field 4: Freshly tilled soil		
3	Field 32: Rye residue (soys)		
4	Field 30: Mowed corn fodder		
Factor B (Cover Crop Species)			
1	Tillage Radish	20	seeds/ft2
2	Essex Rape	20	seeds/ft2
3	Spring Oats	40	seeds/ft2
4	Cereal Rye	40	seeds/ft2
5	Barley	40	seeds/ft2
6	Annual Ryegrass	80	seeds/ft2
7	Hairy Vetch	20	seeds/ft2
8	Crimson Clover	20	seeds/ft2

Replications: 3, Untreated treatments: 10, Design: Split-Plot, Factors: 2, (Fields, Cover Crop Species), Treatment units: US standard, Treated 'Plot' experimental unit size Width: 5.6 feet, Treated 'Plot' experimental unit size Length: 15 feet, Application volume: 20 GAL/AC, Mix size: .7 gallons, Format definitions: D-HERB00.def, D-herb00.frm

University of Delaware

Control of Annual Ryegrass Cover Crop

Trial ID: Cover5-15 Cooperator:
Location: Field #4 Investigator: Mark VanGessel

GENERAL TRIAL INFORMATION

Study Director: Mark VanGessel **Title:** Extension Specialist, Weed Science
Affiliation: University of Delaware Research & Education Center
Address: 16483 County Seat Hwy **City:** Georgetown **State:** DE **Zip Code:** 19947

Conducted Under GLP (Y/N): N **Conducted Under GEP (Y/N):** N

Crop 1: Annual Ryegrass LOLMG **Variety:** See treatments
Planting Date: 09/29/14 **Planting Method:** Drilled **Depth:** 0.75 in
Rate: 30 lb/A **Row Spacing:** 7 in **Seed Bed:** Medium/Trashy
Soil Temperature: 74 F **Soil Moisture:** Moist **Emergence Date:** 10/04/14

SITE AND DESIGN

Plot Width, Unit: 5.6 FT **Plot Length, Unit:** 15 FT **Reps:** 3
Site Type: Field **Study Design:** SPLIT-PLOT
Tillage Type: No Tillage

No.	Date	Treatment Name	Form Conc	Form Type	Rate	Rate Unit
1.	10/30/14	Harmony Extra	75	DF	0.6	oz/A
2.	10/30/14	2,4-D amine	3.8	L	10	fl oz/A
3.	10/30/14	NIS	100	L	0.25	% v/v

SOIL DESCRIPTION

% Sand: 79 **% OM:** 1.3 **Texture:** sandy loam
% Silt: 11 **pH:** 6.7
% Clay: 10 **CEC:** 6.8 **Fert. Level:** Medium

Overall Moisture Conditions: Normal
Closest Weather Station: Univ. of Delaware Research & Education Center, Georgetown
Distance: 0.2 **Unit:** mi

APPLICATION DESCRIPTION

	A
Application Date:	04/27/15
Time of Day:	10:00 am
Application Method:	Spray
Application Timing:	Spring
Applic. Placement:	Brdcst
Air Temp., Unit:	54 F
% Relative Humidity:	45
Wind Velocity, Unit:	3 mph
Wind Direction:	North
Dew Presence (Y/N):	Y
Soil Temp., Unit:	53 F
Soil Surf. Moisture:	Moist
Root Zone Moisture:	Moist
Leaf Surf. Moisture:	Moist
% Cloud Cover:	50

CROP STAGE AT EACH APPLICATION

	A
Crop 1 Code:	LOLMG
Growth Stage:	tillered
Height, Unit:	10 in
Crop Health:	Good

APPLICATION EQUIPMENT

	A
Appl. Equipment:	Tractor
Operating Pressure:	40 psi
Nozzle Type:	AIRMIX
Nozzle Size:	11002
Nozzle Spacing, Unit:	20 in
Boom Length, Unit:	6 nozl
Boom Height, Unit:	28 in
Ground Speed, Unit:	3 mph
Carrier:	water
Spray Volume, Unit:	20 gpa
Propellant:	Comp. Air

Field Sheet

Crop: LOLMG
Variety: See treatments
Planting Date: 9-29-14
Planting Method: Drilled
Rate: 30 , lb/A
Depth: 0.75 , in
Row Spacing: 7 , in
Seed Bed: Medium/Trashy
Soil Temp: 74 , F
Soil Mstr: Moist
Emergence Date: 10-4-14
Plot Wdth: 5.6 , FT
Plot Lgth: 15 , FT
Replications: 3
Site Type: Field
Tillage: No Tillage

Crop 1, Stage: LOLMG

Trial Comments

University of Delaware

Control of Annual Ryegrass Cover Crop

Trial ID: Cover5-15 Cooperator:
Location: Field #4 Investigator: Mark VanGessel

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Grow Stg	Appl Code	LOLMU Annual Ryegrass Control % 05/11/15	LOLMU Annual Ryegrass Control % 05/25/15	LOLMU Annual Ryegrass Control % 06/05/15
	Weed Code							LOLMU	LOLMU	LOLMU
	Weed or Crop Name							Annual	Annual	Annual
	Weed or Crop Name							Ryegrass	Ryegrass	Ryegrass
	Rating Data Type							Control	Control	Control
	Rating Unit							%	%	%
	Rating Date							05/11/15	05/25/15	06/05/15
1	CCS Tillage Max							0.0 g	0.0 f	0.0 f
	Untreated Check									
2	CCS Tillage Max							81.9 bc	84.1 bc	82.9 c
	Roundup PowerMa	4.5	AS	0.77	lb ae/A	Spring	A			
3	CCS Tillage Max							83.7 abc	87.7 ab	92.7 b
	Roundup PowerMa	4.5	AS	0.95	lb ae/A	Spring	A			
4	CCS Tillage Max							87.7 ab	90.0 a	98.3 a
	Roundup PowerMa	4.5	AS	1.12	lb ae/A	Spring	A			
5	CCS Tillage Max							74.3 de	70.1 e	65.4 e
	Roundup PowerMa	4.5	AS	0.77	lb ae/A	Spring	A			
	Valor SX.....	51	WG	0.064	lb ai/A	Spring	A			
6	CCS Tillage Max							68.0 f	74.1 de	74.4 d
	Roundup PowerMa	4.5	AS	0.77	lb ae/A	Spring	A			
	Atrazine 4L	4	L	1.25	lb ai/A	Spring	A			
7	VNS Annual Ryeg							0.0 g	0.0 f	0.0 f
	Untreated Check									
8	VNS Annual Ryeg							78.3 cd	78.7 cd	66.7 e
	Roundup PowerMa	4.5	AS	0.77	lb ae/A	Spring	A			
9	VNS Annual Ryeg							85.3 ab	87.7 ab	82.7 c
	Roundup PowerMa	4.5	AS	0.95	lb ae/A	Spring	A			
10	VNS Annual Ryeg							88.7 a	90.0 a	88.7 b
	Roundup PowerMa	4.5	AS	1.12	lb ae/A	Spring	A			
11	VNS Annual Ryeg							74.7 d	76.7 d	65.0 e
	Roundup PowerMa	4.5	AS	0.77	lb ae/A	Spring	A			
	Valor SX.....	51	WG	0.064	lb ai/A	Spring	A			
12	VNS Annual Ryeg							68.3 ef	75.0 de	73.3 d
	Roundup PowerMa	4.5	AS	0.77	lb ae/A	Spring	A			
	Atrazine 4L	4	L	1.25	lb ai/A	Spring	A			
	LSD P=.05							6.30	5.92	5.61
	Standard Deviation							3.67	3.44	3.26
	CV							5.58	5.07	4.95
	Replicate F							0.615	0.270	2.886
	Replicate Prob(F)							0.5514	0.7664	0.0833
	Treatment F							220.948	265.758	300.208
	Treatment Prob(F)							0.0001	0.0001	0.0001

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
Mean separations are based on the complete error term.
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.
Missing data estimates are included in columns:Yates=1,2,3

University of Delaware

Control of Annual Ryegrass Cover Crop

Trial ID: Cover5-15 Cooperator:
Location: Field #4 Investigator: Mark VanGessel

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Grow Stg	Appl Code			
	Weed Code							LOLMU	LOLMU	LOLMU
	Weed or Crop Name							Annual	Annual	Annual
	Weed or Crop Name							Ryegrass	Ryegrass	Ryegrass
	Rating Data Type							Control	Control	Control
	Rating Unit							%	%	%
	Rating Date							05/11/15	05/25/15	06/05/15
	TABLE OF R MEANS									
	Replicate 1							65.2	68.3	66.8
	Replicate 2							65.8	67.3	64.0
	Replicate 3							66.8	68.0	66.7
	TABLE OF A (Ryegrass Source) MEANS									
1	CCS Tillage Max							65.9 a	67.6 a	69.0 a
2	VNS Annual Ryeg							65.9 a	68.0 a	62.7 b
	LSD P=.05							2.68	2.35	2.27
	Standard Deviation							3.85	3.37	3.25
	CV							5.84	4.98	4.93
	TABLE OF B (Termination) MEANS									
1	Untreated Check							0.0 e	0.0 d	0.0 e
2	Roundup PowerMa	4.5	AS	0.77	lb ae/A	Spring	A	80.1 b	81.4 b	74.8 c
3	Roundup PowerMa	4.5	AS	0.95	lb ae/A	Spring	A	84.5 ab	87.7 a	87.7 b
4	Roundup PowerMa	4.5	AS	1.12	lb ae/A	Spring	A	88.2 a	90.0 a	93.5 a
5	Roundup PowerMa	4.5	AS	0.77	lb ae/A	Spring	A	74.5 c	73.4 c	65.2 d
5	Valor SX.....	51	WG	0.064	lb ai/A	Spring	A			
6	Roundup PowerMa	4.5	AS	0.77	lb ae/A	Spring	A	68.1 d	74.5 c	73.9 c
6	Atrazine 4L	4	L	1.25	lb ai/A	Spring	A			
	LSD P=.05							4.63	4.08	3.93
	Standard Deviation							3.85	3.37	3.25
	CV							5.84	4.98	4.93
	TABLE OF A (Ryegrass Source) B (Termination) MEANS									
1	CCS Tillage Max							0.0 a	0.0 a	0.0 f
1	Untreated Check									
2	VNS Annual Ryeg							0.0 a	0.0 a	0.0 f
1	Untreated Check									
1	CCS Tillage Max							81.9 a	84.1 a	82.9 c
2	Roundup PowerMa	4.5	AS	0.77	lb ae/A	Spring	A			
2	VNS Annual Ryeg							78.3 a	78.7 a	66.7 e
2	Roundup PowerMa	4.5	AS	0.77	lb ae/A	Spring	A			
1	CCS Tillage Max							83.7 a	87.7 a	92.7 b
3	Roundup PowerMa	4.5	AS	0.95	lb ae/A	Spring	A			
2	VNS Annual Ryeg							85.3 a	87.7 a	82.7 c
3	Roundup PowerMa	4.5	AS	0.95	lb ae/A	Spring	A			
1	CCS Tillage Max							87.7 a	90.0 a	98.3 a
4	Roundup PowerMa	4.5	AS	1.12	lb ae/A	Spring	A			
2	VNS Annual Ryeg							88.7 a	90.0 a	88.7 b
4	Roundup PowerMa	4.5	AS	1.12	lb ae/A	Spring	A			

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

University of Delaware

Weed Code							LOLMU	LOLMU	LOLMU
Weed or Crop Name							Annual	Annual	Annual
Weed or Crop Name							Ryegrass	Ryegrass	Ryegrass
Rating Data Type							Control	Control	Control
Rating Unit							%	%	%
Rating Date							05/11/15	05/25/15	06/05/15
Trt No. Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Grow Stg	Appl Code			
1 CCS Tillage Max							74.3 a	70.1 a	65.4 e
5 Roundup PowerMa	4.5	AS	0.77	lb ae/A	Spring	A			
5 Valor SX.....	51	WG	0.064	lb ai/A	Spring	A			
2 VNS Annual Ryeg							74.7 a	76.7 a	65.0 e
5 Roundup PowerMa	4.5	AS	0.77	lb ae/A	Spring	A			
5 Valor SX.....	51	WG	0.064	lb ai/A	Spring	A			
1 CCS Tillage Max							68.0 a	74.1 a	74.4 d
6 Roundup PowerMa	4.5	AS	0.77	lb ae/A	Spring	A			
6 Atrazine 4L	4	L	1.25	lb ai/A	Spring	A			
2 VNS Annual Ryeg							68.3 a	75.0 a	73.3 d
6 Roundup PowerMa	4.5	AS	0.77	lb ae/A	Spring	A			
6 Atrazine 4L	4	L	1.25	lb ai/A	Spring	A			
LSD P=.05							6.55	5.77	5.55
Standard Deviation							3.85	3.37	3.25
CV							5.84	4.98	4.93

FACTORIAL/POOLED ERROR AOV For LOLMU Annual Ryegrass Control % 05/11/15 Missing values in column 1 results in unbalanced data, Least Squares Analysis is preferred

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	33	33136.741313				
R	2	16.621599	8.310799	0.561	0.5792	
A	1	0.013610	0.013610	0.001	0.9761	2.7
B	5	32798.304004	6559.660801	443.008	0.0001	4.6
AB	5	25.660433	5.132087	0.347	0.8784	6.6
ERROR	20	296.141667	14.807083			

FACTORIAL/POOLED ERROR AOV For LOLMU Annual Ryegrass Control % 05/25/15 Missing values in column 2 results in unbalanced data, Least Squares Analysis is preferred

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	32	34802.537629				
R	2	6.393052	3.196526	0.281	0.7583	
A	1	1.116589	1.116589	0.098	0.7576	2.4
B	5	34469.447066	6893.889413	605.369	0.0001	4.1
AB	5	109.210539	21.842108	1.918	0.1385	5.8
ERROR	19	216.370383	11.387915			

FACTORIAL/POOLED ERROR AOV For LOLMU Annual Ryegrass Control % 06/05/15 Missing values in column 3 results in unbalanced data, Least Squares Analysis is preferred

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	32	35280.121053				
R	2	61.215635	30.607818	2.900	0.0796	
A	1	350.474856	350.474856	33.206	0.0001	2.3
B	5	34329.675513	6865.935103	650.517	0.0001	3.9
AB	5	338.217997	67.643599	6.409	0.0012	5.6
ERROR	19	200.537053	10.554582			

University of Delaware

Cover Crop Management with Authority MTZ and Aim Managing Crop Crop Biomass

Trial ID: Cover6-15 Location: Field #30 Trial Year:
Protocol ID: Cover6-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact: FMC

Investigator: Mark VanGessel Title: Extension Weed Specialist
Organization: University of Delaware
Address: 16483 County Seat Hwy
City+State/Prov: Georgetown, Delaware
Postal Code: 19947 E-mail: mjv@udel.edu
Country: USA United States

Crop Description

Crop 1: TRZAW Triticum aestivum (winter) Winter wheat
Variety: Shirley BBCH Scale: BCER
Planting Date: 10/20/14
Planting Rate, Unit: 150 LB/A Planting Method: PLANTD planted
Depth, Unit: 0.75 in Planting Equipment: PD Plot Drilling Machine
Row Spacing, Unit: 7 in Emergence Date: 10/29/14
Harvest Date: 07/01/15
Harvested Width, Unit: 7 FT
Soil Temperature, Unit: 64 F Harvested Length, Unit: 24 FT
Soil Moisture: NORMAL normal, adequate Harvest Equipment: Plot combine
Seed Bed: MEDTRA medium/trashy % Standard Moisture: 13.5

Pest Description

Pest 1 Type: W Code: LAMAM Lamium amplexicaule
Common Name: Henbit

Pest 2 Type: W Code: HLOUM Holosteum umbellatum
Common Name: Jagged chickweed

Pest 3 Type: W Code: OEOLA Oenothera laciniata
Common Name: Cutleaf eveningprimrose

Site and Design

Treated Plot Width: 10 FT Site Type: FIELD field
Treated Plot Length: 25 FT
Treated Plot Area: 250 FT2 Treatments: 8 Tillage Type: NOTILL no-till
Replications: 3 Study Design: RACOBL Randomized Complete Block (RCB)

Soil Description

% Sand: 83 % OM: 1.0 Texture: LS loamy sand
% Silt: 8 pH: 4.7
% Clay: 9 CEC: 4.2 Fert. Level: G good
Soil Drainage: G good

Moisture and Weather Conditions

Overall Moisture Conditions: NORMAL normal
Closest Weather Station: UD REC Distance, Unit: 0.4 mi

University of Delaware

Application Description

	A
Application Date:	11/20/14
Appl. Stop Time:	09:00 AM
Application Method:	SPRAY
Application Timing:	1-3 lvs
Application Placement:	BROADC
Applied By:	Johnson
Air Temperature, Unit:	43 F
% Relative Humidity:	47
Wind Velocity, Unit:	5 mph
Wind Direction:	SW
Dew Presence (Y/N):	N no
Soil Temperature, Unit:	42 F
Soil Moisture:	NORMAL
% Cloud Cover:	30

Crop Stage At Each Application

	A
Crop 1 Code, BBCH Scale:	TRZAW BCER
Stage Scale Used:	DESC
Stage Majority, Percent:	3-leaf 100
Height, Unit:	4 in
Height Minimum, Maximum:	3 4.5

Pest Stage At Each Application

	A
Pest 1 Code, Type, Scale:	LAMAM W
Stage Majority, Percent:	2-leaf 100
Height, Unit:	1 in
Density, Unit:	30 m2
Pest 2 Code, Type, Scale:	HLOUM W
Stage Majority, Percent:	veg 100
Height, Unit:	1 in
Density, Unit:	5 m2
Pest 3 Code, Type, Scale:	OEOLA W
Stage Majority, Percent:	veg 100
Diameter, Unit:	1.5 in
Height Minimum, Maximum:	1 2
Density, Unit:	2 m2

University of Delaware

Application Equipment

	A
Appl. Equipment:	Backpack
Equipment Type:	SPRBAC
Operation Pressure, Unit:	31 psi
Nozzle Type:	AIRMIX
Nozzle Size:	11002
Nozzle Spacing, Unit:	18 in
Boom Length, Unit:	9 ft
Boom Height, Unit:	20 in
Ground Speed, Unit:	3 mph
Carrier:	WATER
Spray Volume, Unit:	20 gal/ac
Mix Size, Unit:	2 Liters
Propellant:	COMCO2

Trial Comments

12/05/14: Trts 6 & 7 had severe leaf burn.

04/07/15: Stand loss observed with treatments 4 and 7. Treatments 5 and 6 appear to achieve good suppression of the wheat without reducing wheat stand. Treatments 2-7 all providing similar level of weed control at this time.

04/28/15: Biomass reduction is a combination of stand loss and stunting (overall injury).

University of Delaware

Cover Crop Management with Authority MTZ and Aim Managing Crop Crop Biomass

Trial ID: Cover6-15 Location: Field #30 Trial Year:
Protocol ID: Cover6-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact: FMC

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code					
	Pest Code											
	Pest Name											
	Crop Code							TRZAW	TRZAW	TRZAW	TRZAW	TRZAW
	Crop Name							WhtCovr	WhtCovr	WhtCovr	WhtCovr	WhtCovr
	Rating Type							Stunting	Stunting	BiomRed	Stunting	StndRed
	Rating Unit							%	%	%	%	%
	Rating Date							12/15/14	01/02/15	04/07/15	04/28/15	04/28/15
1	Untreated Check							0.0 e	0.0 e	0.0 d	0.0 d	0.0 c
2	Authority MTZ Premix	45	DF	0.155	lb ai/a	1-3 lvs	A	11.3 d	10.7 d	8.0 cd	0.0 d	0.0 c
	----sulfentrazone	18		0.062								
	----metribuzin	27		0.093								
3	Authority MTZ Premix	45	DF	0.225	lb ai/a	1-3 lvs	A	14.0 cd	20.7 c	17.3 c	8.7 c	5.7 bc
	----sulfentrazone	18		0.09								
	----metribuzin	27		0.135								
4	Authority MTZ Premix	45	DF	0.338	lb ai/a	1-3 lvs	A	18.0 b	30.0 b	61.7 a	21.7 ab	30.0 a
	----sulfentrazone	18		0.135								
	----metribuzin	27		0.203								
5	Authority MTZ Premix	45	DF	0.155	lb ai/a	1-3 lvs	A	16.3 bc	20.7 c	31.7 b	11.7 c	0.0 c
	----sulfentrazone	18		0.062								
	----metribuzin	27		0.093								
	2,4-D ester	3.8	L	0.475	lb ae/a	1-3 lvs	A					
6	Authority MTZ Premix	45	DF	0.225	lb ai/a	1-3 lvs	A	19.0 b	31.7 b	36.7 b	15.0 bc	10.7 b
	----sulfentrazone	18		0.09								
	----metribuzin	27		0.135								
	2,4-D ester	3.8	L	0.475	lb ae/a	1-3 lvs	A					
7	Authority MTZ Premix	45	DF	0.338	lb ai/a	1-3 lvs	A	25.0 a	40.0 a	65.0 a	26.7 a	28.3 a
	----sulfentrazone	18		0.135								
	----metribuzin	27		0.203								
	2,4-D ester	3.8	L	0.475	lb ae/a	1-3 lvs	A					
8	Aim.....carfentrazone	2	EC	0.0156	lb ai/a	1-3 lvs	A	11.3 d	14.0 d	9.7 cd	20.0 ab	0.0 c
	2,4-D ester	3.8	L	0.475	lb ae/a	1-3 lvs	A					
	LSD P=.05							3.48	5.05	10.58	7.52	5.98
	Standard Deviation							1.99	2.89	6.04	4.30	3.42
	CV							13.82	13.77	21.02	33.15	36.61
	Replicate F							0.095	1.446	0.688	1.581	1.995
	Replicate Prob(F)							0.9099	0.2686	0.5187	0.2405	0.1728
	Treatment F							40.891	59.327	49.546	15.641	42.289
	Treatment Prob(F)							0.0001	0.0001	0.0001	0.0001	0.0001

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.
Missing data estimates are included in columns:Yates=8

University of Delaware

Pest Code									LAMAM	HLOUM	
Pest Name									Henbit	JagChkwd	
Crop Code											
Crop Name											
Rating Type											
Rating Unit											
Rating Date											
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	TRZAW WhtCovr BiomRed % 04/28/15	Control % 04/28/15	Control % 04/28/15	TRZAW WhtCovr Yield Bu/A 07/01/15
1	Untreated Check							0.0 d	0.0 d	0.0 d	52.3 ab
2	Authority MTZ Premix	45	DF	0.155	lb ai/a	1-3 lvs	A	0.0 d	83.3 c	66.7 bc	55.3 a
	----sulfentrazone	18		0.062							
	----metribuzin	27		0.093							
3	Authority MTZ Premix	45	DF	0.225	lb ai/a	1-3 lvs	A	9.7 cd	90.0 bc	70.0 bc	46.8 abc
	----sulfentrazone	18		0.09							
	----metribuzin	27		0.135							
4	Authority MTZ Premix	45	DF	0.338	lb ai/a	1-3 lvs	A	40.0 a	91.7 b	91.7 a	26.7 e
	----sulfentrazone	18		0.135							
	----metribuzin	27		0.203							
5	Authority MTZ Premix	45	DF	0.155	lb ai/a	1-3 lvs	A	11.7 bc	100.0 a	70.0 bc	37.1 cde
	----sulfentrazone	18		0.062							
	----metribuzin	27		0.093							
	2,4-D ester	3.8	L	0.475	lb ae/a	1-3 lvs	A				
6	Authority MTZ Premix	45	DF	0.225	lb ai/a	1-3 lvs	A	22.3 b	100.0 a	73.6 b	40.8 bcd
	----sulfentrazone	18		0.09							
	----metribuzin	27		0.135							
	2,4-D ester	3.8	L	0.475	lb ae/a	1-3 lvs	A				
7	Authority MTZ Premix	45	DF	0.338	lb ai/a	1-3 lvs	A	50.0 a	100.0 a	86.7 a	26.6 e
	----sulfentrazone	18		0.135							
	----metribuzin	27		0.203							
	2,4-D ester	3.8	L	0.475	lb ae/a	1-3 lvs	A				
8	Aim.....carfentrazone	2	EC	0.0156	lb ai/a	1-3 lvs	A	20.0 bc	90.0 bc	65.0 c	34.3 de
	2,4-D ester	3.8	L	0.475	lb ae/a	1-3 lvs	A				
LSD P=.05								11.60	8.13	8.32	11.99
Standard Deviation								6.62	4.65	4.72	6.85
CV								34.47	5.67	7.21	17.12
Replicate F								2.031	3.041	2.763	2.569
Replicate Prob(F)								0.1681	0.0800	0.1000	0.1121
Treatment F								22.250	157.290	106.508	7.572
Treatment Prob(F)								0.0001	0.0001	0.0001	0.0007

University of Delaware

Demo: Control of Crimson Clover

Trial ID: Cover7-15 Location: REC Fld 4 Trial Year:
Protocol ID: Cover7-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Investigator: Mark VanGessel Title: Extension Weed Specialist
Organization: University of Delaware
Address: 16483 County Seat Hwy
City+State/Prov: Georgetown, Delaware
Postal Code: 19947 E-mail: mjv@udel.edu
Country: USA United States

Pest Description

Pest 1 Type: W Code: TRFIE Trifolium incarnatum elatius
Common Name: Crimson clover
Artificial Population: X Establishment Date: 09/17/14
Establishment Rate, Unit: 25 LB/A
Establishment Method/Description: Emerged 9-22-14

Site and Design

Treated Plot Width: 10 FT Site Type: FIELD field
Treated Plot Length: 25 FT
Treated Plot Area: 250 FT2 Treatments: 6 Tillage Type: NOTILL no-till
Replications: 1 Study Design: RACOBL Randomized Complete Block (RCB)

Soil Description

% Sand: 79 % OM: 1.3 Texture: SL sandy loam
% Silt: 11 pH: 6.7
% Clay: 10 CEC: 6.8 Fert. Level: G good
Soil Drainage: G good

Moisture and Weather Conditions

Overall Moisture Conditions: NORMAL normal
Closest Weather Station: UDREC Distance, Unit: 0.3 mi

Application Description

	A
Application Date:	05/14/15
Appl. Stop Time:	04:00 PM
Application Method:	SPRAY
Application Timing:	PrePlant
Application Placement:	BROADC
Applied By:	Johnson
Air Temperature, Unit:	67 F
% Relative Humidity:	27
Wind Velocity, Unit:	3 mph
Wind Direction:	N
Dew Presence (Y/N):	N no
Soil Temperature, Unit:	68 F
Soil Moisture:	NORMAL
% Cloud Cover:	15

University of Delaware

Pest Stage At Each Application

	A
Pest 1 Code, Type, Scale:	TRFIE W
Stage Majority, Percent:	flowr 100
Height, Unit:	30 in
Height Minimum, Maximum:	27 32

Application Equipment

	A
Appl. Equipment:	Tractor
Equipment Type:	TRMOSP
Operation Pressure, Unit:	40 psi
Nozzle Type:	AIRMIX
Nozzle Size:	11002
Nozzle Spacing, Unit:	20 in
Boom Length, Unit:	10 ft
Boom Height, Unit:	48 in
Ground Speed, Unit:	3 mph
Carrier:	WATER
Spray Volume, Unit:	20 gal/ac
Mix Size, Unit:	0.7 Gallons
Propellant:	COMAIR

Trial Comments

University of Delaware

Demo: Control of Crimson Clover

Trial ID: Cover7-15 Location: REC Fld 4 Trial Year:
Protocol ID: Cover7-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	TRFIE Crimson clover Descicated % 05/22/15	TRFIE Crimson clover Control % 06/05/15
	Pest Code								
	Pest Name								
	Rating Type								
	Rating Unit								
	Rating Date								
1	Lexar EZ Premix	3.71	SC	2.5	lb ai/a	PrePlant	A	88.0	99.0
	----s-metolachlor	1.742819		1.17					
	----mesotrione	0.2243629		0.151					
	----atrazine	1.742819		1.17					
	Gramoxone SL....paraquat	2	SL	1	lb ai/a	PrePlant	A		
	Crop Oil Concentrate	100	L	1.25	% v/v	PrePlant	A		
2	Stinger.....clopyralid	3	EC	0.094	lb ae/a	PrePlant	A	70.0	83.0
	Roundup PowerMax..glyphosate	4.5	AS	1.55	lb ae/a	PrePlant	A		
3	Stinger.....clopyralid	3	EC	0.188	lb ae/a	PrePlant	A	78.0	90.0
	Roundup PowerMax..glyphosate	4.5	AS	1.55	lb ae/a	PrePlant	A		
4	Tricor DF.....metribuzin	75	DF	0.188	lb ai/a	PrePlant	A	90.0	100.0
	Gramoxone SL....paraquat	2	SL	1	lb ai/a	PrePlant	A		
	Crop Oil Concentrate	100	L	1.25	% v/v	PrePlant	A		
5	Lexar EZ Premix	3.71	SC	2.5	lb ai/a	PrePlant	A	75.0	92.0
	----s-metolachlor	1.742819		1.17					
	----mesotrione	0.2243629		0.151					
	----atrazine	1.742819		1.17					
	Roundup PowerMax..glyphosate	4.5	AS	1.55	lb ae/a	PrePlant	A		
6	2,4-D ester	3.8	L	0.375	lb ae/a	PrePlant	A	78.0	95.0
	Roundup PowerMax..glyphosate	4.5	AS	1.55	lb ae/a	PrePlant	A		
	LSD P=.05							.	.
	Standard Deviation							.	.
	CV							.	.

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.
Could not calculate LSD (% mean diff) for columns 1,2 because error mean square = 0.

University of Delaware

Early-Season Weed Control in No-Till Winter Wheat

Trial ID: SG1-15 Location: Field #30 Trial Year:
Protocol ID: SG1-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Investigator: Mark VanGessel Title: Extension Weed Specialist
Organization: University of Delaware
Address: 16483 County Seat Hwy
City+State/Prov: Georgetown, Delaware
Postal Code: 19947 E-mail: mjv@udel.edu
Country: USA United States

Crop Description

Crop 1: TRZAW Triticum aestivum (winter) Winter wheat
Variety: Shirley BBCH Scale: BCER
Planting Date: 10/20/14
Planting Rate, Unit: 150 LB/A Planting Method: PLANTD planted
Depth, Unit: 0.75 in Planting Equipment: PD Plot Drilling Machine
Row Spacing, Unit: 7 in Emergence Date: 10/29/14
Harvest Date: 07/01/15
Harvested Width, Unit: 7 FT
Soil Temperature, Unit: 64 F Harvested Length, Unit: 24 FT
Soil Moisture: NORMAL normal, adequate Harvest Equipment: Plot combine
Seed Bed: MEDTRA medium/trashy % Standard Moisture: 13.5

Site and Design

Treated Plot Width: 10 FT Site Type: FIELD field
Treated Plot Length: 25 FT
Treated Plot Area: 250 FT2 Treatments: 14 Tillage Type: NOTILL no-till
Replications: 3 Study Design: RACOBL Randomized Complete Block (RCB)

Soil Description

% Sand: 83 % OM: 1.0 Texture: LS loamy sand
% Silt: 8 pH: 4.7
% Clay: 9 CEC: 4.2 Fert. Level: G good
Soil Drainage: G good

Moisture and Weather Conditions

Overall Moisture Conditions: NORMAL normal
Closest Weather Station: UD REC Distance, Unit: 0.4 mi

Application Description

	A	B	C
Application Date:	10/08/14	10/20/14	10/30/14
Appl. Stop Time:	09:00 AM	10:30 AM	09:30 AM
Interval to Prev. Appl., Unit:		12 DAYS	10 DAYS
Application Method:	SPRAY	SPRAY	SPRAY
Application Timing:	7 DPP	PRE	Spike
Application Placement:	BROADC	BROADC	BROADC
Applied By:	VanGessl	VanGessl	VanGessl
Air Temperature, Unit:	67 F	57 F	50 F
% Relative Humidity:	79	49	93
Wind Velocity, Unit:	5 mph	4 mph	3 mph
Wind Direction:	W	S	S
Dew Presence (Y/N):	N no	Y yes	Y yes
Soil Temperature, Unit:	67 F	56 F	50 F
Soil Moisture:	NORMAL	NORMAL	NORMAL
% Cloud Cover:	15	10	80

University of Delaware

Crop Stage At Each Application

	A	B	C
Crop 1 Code, BBCH Scale:	TRZAW BCER	TRZAW BCER	TRZAW BCER
Stage Scale Used:			DESC
Stage Majority, Percent:			spike 100
Height, Unit:			0.5 in
Height Minimum, Maximum:			0.2 0.7

Application Equipment

	A	B	C
Appl. Equipment:	Backpack	Backpack	Backpack
Equipment Type:	SPRBAC	SPRBAC	SPRBAC
Operation Pressure, Unit:	31 psi	31 psi	31 psi
Nozzle Type:	AIRMIX	AIRMIX	AIRMIX
Nozzle Size:	11002	11002	11002
Nozzle Spacing, Unit:	18 in	18 in	18 in
Boom Length, Unit:	9 ft	9 ft	9 ft
Boom Height, Unit:	18 in	18 in	18 in
Ground Speed, Unit:	3 mph	3 mph	3 mph
Carrier:	WATER	WATER	WATER
Spray Volume, Unit:	20 gal/ac	20 gal/ac	20 gal/ac
Mix Size, Unit:	2 Liters	2 Liters	2 Liters
Propellant:	COMCO2	COMCO2	COMCO2

Trial Comments

04/29/15: Weed denisty was variable, so data is a little inconsistant. Treatments 2,3,4,5,8,9,10,12,14 poor on primrose.
Treatments 2,5,7,8,10,12,14 poor on knawel. Treatments 5,8,13 weak on field pansy. Trreatment 8 poor on horseweed. Treatment 11 had good primrose control.

Stand loss was observed mostly in tire tracks and ratings based on visual estimates.

University of Delaware

Early-Season Weed Control in No-Till Winter Wheat

Trial ID: SG1-15 Location: Field #30 Trial Year:
Protocol ID: SG1-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code			
	Pest Code									
	Pest Name									
	Crop Code							TRZAW	TRZAW	TRZAW
	Crop Name							Wt.Wheat	Wt.Wheat	Wt.Wheat
	Rating Type							Stunting	BiomRed	StndRed
	Rating Unit							%	%	%
	Rating Date							01/02/15	04/29/15	04/29/15
1	Untreated Check							0.0 d	0.0 f	0.0 e
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	PRE	B			
2	Valor SX.....flumioxazin	51	WG	0.064	lb ai/a	7 DPP	A	5.7 cd	17.3 c	4.7 d
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	7 DPP	A			
3	Sharpen.....saflufenacil	2.85	SC	0.0223	lb ai/a	PRE	B	2.3 d	0.0 f	0.0 e
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	PRE	B			
4	Sharpen.....saflufenacil	2.85	SC	0.067	lb ai/a	PRE	B	2.3 d	7.8 de	0.0 e
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	PRE	B			
5	Glory.....metribuzin	75	DF	0.047	lb ai/a	PRE	B	5.7 cd	15.0 cd	0.0 e
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	PRE	B			
6	Authority MTZ Premix	45	DF	0.155	lb ai/a	PRE	B	10.7 bc	26.7 b	11.3 bc
	----sulfentrazone	18		0.062						
	----metribuzin	27		0.093						
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	PRE	B			
7	Authority MTZ Premix	45	DF	0.225	lb ai/a	PRE	B	25.0 a	60.0 a	25.0 a
	----sulfentrazone	18		0.09						
	----metribuzin	27		0.135						
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	PRE	B			
8	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	PRE	B	2.3 d	6.7 ef	0.0 e
	Zidua.....pyroxasulfone	85	WG	0.053	lb ai/a	Spike	C			
9	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	PRE	B	2.3 d	7.3 def	0.0 e
	Zidua.....pyroxasulfone	85	WG	0.08	lb ai/a	Spike	C			
10	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	PRE	B	0.0 d	0.0 f	0.0 e
	Anthem Flex Premix	4	SE	0.094	lb ai/a	Spike	C			
	----pyroxasulfone	3.733		0.088						
	----carfentrazone	0.267		0.0063						
11	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	PRE	B	13.3 b	20.7 bc	9.7 c
	Axiom Premix	68	WG	0.17	lb ai/a	Spike	C			
	----flufenacet	54		0.135						
	----metribuzin	14		0.035						
	Nonionic Surfactant	100	L	0.25	% v/v	Spike	C			
12	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	PRE	B	12.3 b	19.4 bc	10.1 bc
	Axiom Premix	68	WG	0.255	lb ai/a	Spike	C			
	----flufenacet	54		0.202						
	----metribuzin	14		0.0525						
	Nonionic Surfactant	100	L	0.25	% v/v	Spike	C			
13	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	PRE	B	5.7 cd	3.3 ef	0.0 e
	Glory.....metribuzin	75	DF	0.047	lb ai/a	Spike	C			
	Nonionic Surfactant	100	L	0.25	% v/v	Spike	C			

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.
Missing data estimates are included in columns:Yates=2,3; Average=4,5

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Pest Code									
Pest Name									
Crop Code							TRZAW	TRZAW	TRZAW
Crop Name							Wt.Wheat	Wt.Wheat	Wt.Wheat
Rating Type							Stunting	BiomRed	StndRed
Rating Unit							%	%	%
Rating Date							01/02/15	04/29/15	04/29/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code		
14	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	PRE	B	20.0 a	25.7 b	14.0 b
	Glory.....metribuzin	75	DF	0.094	lb ai/a	Spike	C			
	Nonionic Surfactant	100	L	0.25	% v/v	Spike	C			
LSD P=.05								6.48	7.81	4.11
Standard Deviation								3.86	4.63	2.44
CV								50.18	30.89	45.67
Replicate F								3.810	1.436	0.780
Replicate Prob(F)								0.0354	0.2575	0.4696
Treatment F								11.758	35.724	29.775
Treatment Prob(F)								0.0001	0.0001	0.0001

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	HLOUM JagChkwd	LAMAM Henbit	TRZAW Wt.Wheat Yield
	Pest Code							HLOUM	LAMAM	
	Pest Name							JagChkwd	Henbit	
	Crop Code									TRZAW
	Crop Name									Wt.Wheat
	Rating Type							Control	Control	Yield
	Rating Unit							%	%	Bu/A
	Rating Date							04/29/15	04/29/15	07/01/15
1	Untreated Check							0.0 d	0.0 f	44.9 ab
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	PRE	B			
2	Valor SX.....flumioxazin	51	WG	0.064	lb ai/a	7 DPP	A	100.0 a	56.7 bcd	51.2 ab
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	7 DPP	A			
3	Sharpen.....saflufenacil	2.85	SC	0.0223	lb ai/a	PRE	B	40.0 c	30.0 e	60.2 a
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	PRE	B			
4	Sharpen.....saflufenacil	2.85	SC	0.067	lb ai/a	PRE	B	40.0 c	50.0 cd	52.9 ab
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	PRE	B			
5	Glory.....metribuzin	75	DF	0.047	lb ai/a	PRE	B	40.0 c	40.0 de	45.0 ab
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	PRE	B			
6	Authority MTZ Premix	45	DF	0.155	lb ai/a	PRE	B	40.0 c	50.0 cd	38.5 bc
	----sulfentrazone	18		0.062						
	----metribuzin	27		0.093						
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	PRE	B			
7	Authority MTZ Premix	45	DF	0.225	lb ai/a	PRE	B	93.3 a	60.0 bc	20.9 c
	----sulfentrazone	18		0.09						
	----metribuzin	27		0.135						
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	PRE	B			
8	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	PRE	B	72.5 b	73.3 b	48.7 ab
	Zidua.....pyroxasulfone	85	WG	0.053	lb ai/a	Spike	C			
9	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	PRE	B	65.0 b	91.7 a	55.9 ab
	Zidua.....pyroxasulfone	85	WG	0.08	lb ai/a	Spike	C			
10	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	PRE	B	65.0 b	66.7 bc	56.7 ab
	Anthem Flex Premix	4	SE	0.094	lb ai/a	Spike	C			
	----pyroxasulfone	3.733		0.088						
	----carfentrazone	0.267		0.0063						
11	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	PRE	B	70.0 b	63.3 bc	48.3 ab
	Axiom Premix	68	WG	0.17	lb ai/a	Spike	C			
	----flufenacet	54		0.135						
	----metribuzin	14		0.035						
	Nonionic Surfactant	100	L	0.25	% v/v	Spike	C			
12	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	PRE	B	40.0 c	63.3 bc	42.1 ab
	Axiom Premix	68	WG	0.255	lb ai/a	Spike	C			
	----flufenacet	54		0.202						
	----metribuzin	14		0.0525						
	Nonionic Surfactant	100	L	0.25	% v/v	Spike	C			
13	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	PRE	B	45.0 c	40.0 de	50.9 ab
	Glory.....metribuzin	75	DF	0.047	lb ai/a	Spike	C			
	Nonionic Surfactant	100	L	0.25	% v/v	Spike	C			

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Pest Code								HLOUM	LAMAM	
Pest Name								JagChkwd	Henbit	
Crop Code										TRZAW
Crop Name										Wt.Wheat
Rating Type								Control	Control	Yield
Rating Unit								%	%	Bu/A
Rating Date								04/29/15	04/29/15	07/01/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code			
14	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	PRE	B	65.0 b	66.7 bc	45.5 ab
	Glory.....metribuzin	75	DF	0.094	lb ai/a	Spike	C			
	Nonionic Surfactant	100	L	0.25	% v/v	Spike	C			
LSD P=.05								10.48	16.99	18.21
Standard Deviation								5.94	10.04	10.85
CV								10.73	18.69	22.95
Replicate F								0.282	0.999	6.410
Replicate Prob(F)								0.7586	0.3844	0.0055
Treatment F								56.007	14.312	2.367
Treatment Prob(F)								0.0001	0.0001	0.0298

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Postemergence Weed Control for Winter Wheat

Trial ID: SG2-15 Location: Field #30 Trial Year:
Protocol ID: SG2-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Investigator: Mark VanGessel Title: Extension Weed Specialist
Organization: University of Delaware
Address: 16483 County Seat Hwy
City+State/Prov: Georgetown, Delaware
Postal Code: 19947 E-mail: mjv@udel.edu
Country: USA United States

Crop Description

Crop 1: TRZAW Triticum aestivum (winter) Winter wheat
Variety: Shirley BBCH Scale: BCER
Planting Date: 10/20/14
Planting Rate, Unit: 150 LB/A Planting Method: PLANTD planted
Depth, Unit: 0.75 in Planting Equipment: PD Plot Drilling Machine
Row Spacing, Unit: 7 in Emergence Date: 10/29/14
Harvest Date: 07/01/15
Harvested Width, Unit: 7 FT
Soil Temperature, Unit: 64 F Harvested Length, Unit: 24 FT
Soil Moisture: NORMAL normal, adequate Harvest Equipment: Plot combine
Seed Bed: MEDTRA medium/trashy % Standard Moisture: 13.5

Pest Description

Pest 1 Type: W Code: LAMAM Lamium amplexicaule
Common Name: Henbit

Pest 2 Type: W Code: HLOUM Holosteum umbellatum
Common Name: Jagged chickweed

Pest 3 Type: W Code: OXAST Oxalis stricta
Common Name: Common yellow wood sorrel

Pest 4 Type: W Code: ERPVE Erophila verna
Common Name: Whitlowgrass

Pest 5 Type: W Code: OEOLA Oenothera laciniata
Common Name: Cutleaf eveningprimrose

Site and Design

Treated Plot Width: 10 FT Site Type: FIELD field
Treated Plot Length: 25 FT
Treated Plot Area: 250 FT2 Treatments: 14 Tillage Type: MINTIL minimum-till
Replications: 3 Study Design: RACOBL Randomized Complete Block (RCB)

Trial Initiation Comments:
Tillage was with verticle tillage equipment.

Soil Description

% Sand: 83 % OM: 1.0 Texture: LS loamy sand
% Silt: 8 pH: 4.7
% Clay: 9 CEC: 4.2 Fert. Level: G good
Soil Drainage: G good

Moisture and Weather Conditions

Overall Moisture Conditions: NORMAL normal
Closest Weather Station: UD REC Distance, Unit: 0.4 mi

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Application Description

	A	B	C
Application Date:	10/30/14	12/15/14	04/06/15
Appl. Stop Time:	09:30 AM	10:30 AM	10:45 AM
Interval to Prev. Appl., Unit:		46 DAYS	112 DAYS
Application Method:	SPRAY	SPRAY	SPRAY
Application Timing:	Spike	3-lvs	Spring
Application Placement:	BROADC	BROADC	BROADC
Applied By:	VanGessl	Johnson	Johnson
Air Temperature, Unit:	50 F	45 F	58 F
% Relative Humidity:	93	67	60
Wind Velocity, Unit:	3 mph	1 mph	5 mph
Wind Direction:	NW	N	SW
Dew Presence (Y/N):	Y yes	N no	N no
Soil Temperature, Unit:	50 F	45 F	57 F
Soil Moisture:	NORMAL	NORMAL	NORMAL
% Cloud Cover:	80	100	0

Crop Stage At Each Application

	A	B	C
Crop 1 Code, BBCH Scale:	TRZAW BCER	TRZAW BCER	TRZAW BCER
Stage Scale Used:	DESC	DESC	DESC
Stage Majority, Percent:	Spike 100	4-leaf 80	3-tiller 85
Stage Minimum, Percent:		3-leaf 20	2-tiller 10
Stage Maximum, Percent:		4-leaf 80	4-tiller 5
Height, Unit:	1 in	5 in	6 in
Height Minimum, Maximum:	1 2	4 6	5 7

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Pest Stage At Each Application

	A	B	C
Pest 1 Code, Type, Scale:	LAMAM W	LAMAM W	LAMAM W
Stage Majority, Percent:		veg 100	veg 100
Height, Unit:		2.5 in	4 in
Height Minimum, Maximum:		2 3	3 5
Density, Unit:		50 m2	50 m2
Pest 2 Code, Type, Scale:	HLOUM W	HLOUM W	HLOUM W
Stage Majority, Percent:		veg 100	veg 70
Stage Minimum, Percent:			veg 70
Stage Maximum, Percent:			flowr 30
Height, Unit:		0.8 in	4 in
Height Minimum, Maximum:			3 5
Density, Unit:		8 m2	8 m2
Pest 3 Code, Type, Scale:	OXAST W	OXAST W	OXAST W
Stage Majority, Percent:		veg 100	
Height, Unit:		2 in	
Density, Unit:		4 m2	
Pest 4 Code, Type, Scale:	ERPVE W	ERPVE W	ERPVE W
Stage Majority, Percent:			flower 100
Height, Unit:			3 in
Density, Unit:			30 m2
Pest 5 Code, Type, Scale:	OEOLA W	OEOLA W	OEOLA W
Stage Majority, Percent:			rosett 100
Diameter, Unit:			5 in
Height Minimum, Maximum:			2 7
Density, Unit:			8 m2

Application Equipment

	A	B	C
Appl. Equipment:	Backpack	Backpack	Backpack
Equipment Type:	SPRBAC	SPRBAC	SPRBAC
Operation Pressure, Unit:	31 psi	31 psi	31 psi
Nozzle Type:	AIRMIX	AIRMIX	AIRMIX
Nozzle Size:	11002	11002	11002
Nozzle Spacing, Unit:	18 in	18 in	18 in
Boom Length, Unit:	9 ft	9 ft	9 ft
Boom Height, Unit:	18 in	22 in	23 in
Ground Speed, Unit:	3 mph	3 mph	3 mph
Carrier:	WATER	WATER	WATER
Spray Volume, Unit:	20 gal/ac	20 gal/ac	20 gal/ac
Mix Size, Unit:	2 Liters	2 Liters	2 Liters
Propellant:	COMCO2	COMCO2	COMCO2

Trial Comments

04/17/15: Injury observed in treatment 4 - twisting.

04/30/15: Some stand loss in treatments 8, 12, 13. Weak to no control of Field Pansy in treatments 2, 3, 8. Weak to no control of Primrose in treatmetns 7, 10, 11.

05/13/15: Weed control was good or better unless noted. Jagged chickweed had senesced so difficult to rate. Overall weed control should not impact yield, except in plots/treatments marked fair or worse. Treatment 3 fair to good. Treatment 6 fair. Treatment 7 poor to fair. Treatment 8 fair to good. Treatment 9 fair to good.

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Postemergence Weed Control for Winter Wheat

Trial ID: SG2-15 Location: Field #30 Trial Year:
Protocol ID: SG2-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	TRZAW Wt.Wheat Injury % 01/02/15	TRZAW Wt.Wheat Injury % 04/17/15	TRZAW Wt.Wheat Injury % 04/30/15	LAMAM Henbit Control % 04/30/15
1	Untreated Check							0.0 e	0.0 h	0.0 e	0.0 e
2	Harmony Extra SG Premix	50	SG	0.0234	lb ai/a	Spring	C	0.0 e	0.0 h	0.0 e	70.0 c
	----thifensulfuron	33		0.0154							
	----tribenuron	17		0.00796							
	Nonionic Surfactant	100	L	0.25	% v/v	Spring	C				
	30% Urea Ammonium Nitrate	100	L	1.25	% v/v	Spring	C				
3	Harmony Extra SG Premix	50	SG	0.028	lb ai/a	Spring	C	0.0 e	0.0 h	4.0 de	70.0 c
	----thifensulfuron	33		0.0185							
	----tribenuron	17		0.0095							
	Nonionic Surfactant	100	L	0.25	% v/v	Spring	C				
	30% Urea Ammonium Nitrate	100	L	1.25	% v/v	Spring	C				
4	Harmony Extra SG Premix	50	SG	0.0234	lb ai/a	Spring	C	0.0 e	20.7 a	14.7 ab	71.7 c
	----thifensulfuron	33		0.0154							
	----tribenuron	17		0.00796							
	Clarity.....dicamba	4	L	0.188	lb ai/a	Spring	C				
	Nonionic Surfactant	100	L	0.25	% v/v	Spring	C				
	30% Urea Ammonium Nitrate	100	L	1.25	% v/v	Spring	C				
5	Harmony Extra SG Premix	50	SG	0.0234	lb ai/a	Spring	C	0.0 e	4.0 fg	7.0 cd	75.0 bc
	----thifensulfuron	33		0.0154							
	----tribenuron	17		0.00796							
	2,4-D amine	3.8	L	0.356	lb ae/a	Spring	C				
	Nonionic Surfactant	100	L	0.25	% v/v	Spring	C				
	30% Urea Ammonium Nitrate	100	L	1.25	% v/v	Spring	C				
6	Harmony Extra SG Premix	50	SG	0.0234	lb ai/a	Spring	C	0.0 e	2.3 gh	0.0 e	66.7 c
	----thifensulfuron	33		0.0154							
	----tribenuron	17		0.00796							
	Starane Ultra...fluroxypyr	2.8	EC	0.24	lb ae/a	Spring	C				
	Nonionic Surfactant	100	L	0.25	% v/v	Spring	C				
	30% Urea Ammonium Nitrate	100	L	1.25	% v/v	Spring	C				
7	Osprey.....mesosulfuron	4.5	WG	0.0134	lb ai/a	3-lvs	B	6.7 c	0.0 h	2.3 de	39.1 d
	Nonionic Surfactant	100	L	0.5	% v/v	3-lvs	B				
	30% Urea Ammonium Nitrate	100	L	1.25	% v/v	3-lvs	B				
8	Osprey.....mesosulfuron	4.5	WG	0.0134	lb ai/a	3-lvs	B	10.3 b	12.3 cd	14.7 ab	99.0 a
	Glory.....metribuzin	75	DF	0.188	lb ai/a	3-lvs	B				
	Nonionic Surfactant	100	L	0.5	% v/v	3-lvs	B				
	30% Urea Ammonium Nitrate	100	L	1.25	% v/v	3-lvs	B				
9	PowerFlex HL....pyroxsulam	13.1	WG	0.0164	lb ai/a	Spring	C	0.0 e	8.7 de	4.0 de	68.3 c
	Nonionic Surfactant	100	L	0.25	% v/v	Spring	C				
	30% Urea Ammonium Nitrate	100	L	1.25	% v/v	Spring	C				

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.
Missing data estimates are included in columns:Yates=3,4,5

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	TRZAW Wt.Wheat Injury % 01/02/15	TRZAW Wt.Wheat Injury % 04/17/15	TRZAW Wt.Wheat Injury % 04/30/15	LAMAM Henbit Control % 04/30/15
	Pest Code										
	Pest Name										
	Crop Code										
	Crop Name										
	Rating Type										
	Rating Unit										
	Rating Date										
10	Huskie Premix	2.05	EC	0.176	lb ai/a	3-lvs	B	1.7 de	0.0 h	0.0 e	93.3 a
	----pyrasulfotole	0.3		0.0258							
	----bromoxynil	1.75		0.15							
	Nonionic Surfactant	100	L	0.25	% v/v	3-lvs	B				
	30% Urea Ammonium Nitrate	100	L	1.25	% v/v	3-lvs	B				
11	Huskie Premix	2.05	EC	0.24	lb ai/a	3-lvs	B	4.7 cd	3.3 fgh	4.7 de	86.0 ab
	----pyrasulfotole	0.3		0.035							
	----bromoxynil	1.75		0.205							
	Nonionic Surfactant	100	L	0.25	% v/v	3-lvs	B				
	30% Urea Ammonium Nitrate	100	L	1.25	% v/v	3-lvs	B				
12	Huskie Premix	2.05	EC	0.176	lb ai/a	3-lvs	B	8.0 bc	14.7 bc	11.3 bc	96.3 a
	----pyrasulfotole	0.3		0.0258							
	----bromoxynil	1.75		0.15							
	Glory.....metribuzin	75	DF	0.188	lb ai/a	3-lvs	B				
	Nonionic Surfactant	100	L	0.25	% v/v	3-lvs	B				
13	Axiom Premix	68	WG	0.255	lb ai/a	Spike	A	15.0 a	16.7 b	17.3 a	95.7 a
	----flufenacet	54		0.202							
	----metribuzin	14		0.0525							
	Harmony Extra SG Premix	50	SG	0.0234	lb ai/a	Spring	C				
	----thifensulfuron	33		0.0154							
	----tribenuron	17		0.00796							
	Nonionic Surfactant	100	L	0.25	% v/v	Spring	C				
	30% Urea Ammonium Nitrate	100	L	1.25	% v/v	Spring	C				
14	Zidua.....pyroxasulfone	85	WG	0.053	lb ai/a	Spike	A	11.3 b	7.0 ef	3.6 de	92.3 a
	Harmony Extra SG Premix	50	SG	0.0234	lb ai/a	Spring	C				
	----thifensulfuron	33		0.0154							
	----tribenuron	17		0.00796							
	Nonionic Surfactant	100	L	0.25	% v/v	Spring	C				
	30% Urea Ammonium Nitrate	100	L	1.25	% v/v	Spring	C				
	LSD P=.05							3.42	3.98	5.49	13.18
	Standard Deviation							2.04	2.37	3.26	7.82
	CV							49.51	37.04	54.65	10.7
	Replicate F							0.384	1.806	0.294	0.855
	Replicate Prob(F)							0.6852	0.1843	0.7479	0.4380
	Treatment F							19.734	26.835	10.420	34.933
	Treatment Prob(F)							0.0001	0.0001	0.0001	0.0001

Pest Code								HLOUM	
Pest Name								JagChkwd	
Crop Code									TRZAW
Crop Name									Wt.Wheat
Rating Type								Control	Yield
Rating Unit								%	Bu/A
Rating Date								04/30/15	07/01/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code		
1	Untreated Check							0.0 f	46.5 a
2	Harmony Extra SG Premix	50	SG	0.0234	lb ai/a	Spring	C	63.3 d	50.8 a
	----thifensulfuron	33		0.0154					
	----tribenuron	17		0.00796					
	Nonionic Surfactant	100	L	0.25	% v/v	Spring	C		
	30% Urea Ammonium Nitrate	100	L	1.25	% v/v	Spring	C		
3	Harmony Extra SG Premix	50	SG	0.028	lb ai/a	Spring	C	63.3 d	60.1 a
	----thifensulfuron	33		0.0185					
	----tribenuron	17		0.0095					
	Nonionic Surfactant	100	L	0.25	% v/v	Spring	C		
	30% Urea Ammonium Nitrate	100	L	1.25	% v/v	Spring	C		
4	Harmony Extra SG Premix	50	SG	0.0234	lb ai/a	Spring	C	66.7 cd	49.3 a
	----thifensulfuron	33		0.0154					
	----tribenuron	17		0.00796					
	Clarity.....dicamba	4	L	0.188	lb ai/a	Spring	C		
	Nonionic Surfactant	100	L	0.25	% v/v	Spring	C		
	30% Urea Ammonium Nitrate	100	L	1.25	% v/v	Spring	C		
5	Harmony Extra SG Premix	50	SG	0.0234	lb ai/a	Spring	C	76.7 c	58.4 a
	----thifensulfuron	33		0.0154					
	----tribenuron	17		0.00796					
	2,4-D amine	3.8	L	0.356	lb ae/a	Spring	C		
	Nonionic Surfactant	100	L	0.25	% v/v	Spring	C		
	30% Urea Ammonium Nitrate	100	L	1.25	% v/v	Spring	C		
6	Harmony Extra SG Premix	50	SG	0.0234	lb ai/a	Spring	C	70.0 cd	54.9 a
	----thifensulfuron	33		0.0154					
	----tribenuron	17		0.00796					
	Starane Ultra...fluroxypyr	2.8	EC	0.24	lb ae/a	Spring	C		
	Nonionic Surfactant	100	L	0.25	% v/v	Spring	C		
	30% Urea Ammonium Nitrate	100	L	1.25	% v/v	Spring	C		
7	Osprey.....mesosulfuron	4.5	WG	0.0134	lb ai/a	3-lvs	B	40.0 e	53.4 a
	Nonionic Surfactant	100	L	0.5	% v/v	3-lvs	B		
	30% Urea Ammonium Nitrate	100	L	1.25	% v/v	3-lvs	B		
8	Osprey.....mesosulfuron	4.5	WG	0.0134	lb ai/a	3-lvs	B	99.0 a	43.7 a
	Glory.....metribuzin	75	DF	0.188	lb ai/a	3-lvs	B		
	Nonionic Surfactant	100	L	0.5	% v/v	3-lvs	B		
	30% Urea Ammonium Nitrate	100	L	1.25	% v/v	3-lvs	B		
9	PowerFlex HL....pyroxsulam	13.1	WG	0.0164	lb ai/a	Spring	C	60.0 d	60.1 a
	Nonionic Surfactant	100	L	0.25	% v/v	Spring	C		
	30% Urea Ammonium Nitrate	100	L	1.25	% v/v	Spring	C		

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Pest Code							HLOUM	
Pest Name							JagChkwd	
Crop Code								TRZAW
Crop Name								Wt.Wheat
Rating Type							Control	Yield
Rating Unit							%	Bu/A
Rating Date							04/30/15	07/01/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	
10	Huskie Premix	2.05	EC	0.176	lb ai/a	3-lvs	B	78.3 bc	56.9 a
	----pyrasulfotole	0.3		0.0258				
	----bromoxynil	1.75		0.15				
	Nonionic Surfactant	100	L	0.25	% v/v	3-lvs	B	
	30% Urea Ammonium Nitrate	100	L	1.25	% v/v	3-lvs	B	
11	Huskie Premix	2.05	EC	0.24	lb ai/a	3-lvs	B	66.1 cd	53.6 a
	----pyrasulfotole	0.3		0.035				
	----bromoxynil	1.75		0.205				
	Nonionic Surfactant	100	L	0.25	% v/v	3-lvs	B	
	30% Urea Ammonium Nitrate	100	L	1.25	% v/v	3-lvs	B	
12	Huskie Premix	2.05	EC	0.176	lb ai/a	3-lvs	B	96.3 a	48.1 a
	----pyrasulfotole	0.3		0.0258				
	----bromoxynil	1.75		0.15				
	Glory.....metribuzin	75	DF	0.188	lb ai/a	3-lvs	B	
	Nonionic Surfactant	100	L	0.25	% v/v	3-lvs	B	
13	Axiom Premix	68	WG	0.255	lb ai/a	Spike	A	95.7 a	47.3 a
	----flufenacet	54		0.202				
	----metribuzin	14		0.0525				
	Harmony Extra SG Premix	50	SG	0.0234	lb ai/a	Spring	C	
	----thifensulfuron	33		0.0154				
	----tribenuron	17		0.00796				
	Nonionic Surfactant	100	L	0.25	% v/v	Spring	C	
	30% Urea Ammonium Nitrate	100	L	1.25	% v/v	Spring	C	
14	Zidua.....pyroxasulfone	85	WG	0.053	lb ai/a	Spike	A	90.7 ab	53.7 a
	Harmony Extra SG Premix	50	SG	0.0234	lb ai/a	Spring	C	
	----thifensulfuron	33		0.0154				
	----tribenuron	17		0.00796				
	Nonionic Surfactant	100	L	0.25	% v/v	Spring	C	
	30% Urea Ammonium Nitrate	100	L	1.25	% v/v	Spring	C	
LSD P=.05								12.51	10.76
Standard Deviation								7.44	6.41
CV								10.78	12.18
Replicate F								1.718	17.652
Replicate Prob(F)								0.2000	0.0001
Treatment F								36.400	1.986
Treatment Prob(F)								0.0001	0.0662

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Weed Interference on Winter Wheat Or Winter Barley

Trial ID: SG3-15 Location: Field #14 Trial Year:
Protocol ID: SG3-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Investigator: Mark VanGessel Title: Extension Weed Specialist
Organization: University of Delaware
Address: 16483 County Seat Hwy
City+State/Prov: Georgetown, Delaware
Postal Code: 19947 E-mail: mjv@udel.edu
Country: USA United States

Crop Description

Crop 1: TRZAW Triticum aestivum (winter) Winter wheat
Variety: Shirley BBCH Scale: BCER
Planting Date: 10/20/14
Planting Rate, Unit: 150 lb/A Planting Method: PLANTD planted
Depth, Unit: 0.75 in Planting Equipment: PD Plot Drilling Machine
Row Spacing, Unit: 7 in Emergence Date: 10/29/14
Harvest Date: 06/30/15
Harvested Width, Unit: 7 FT
Soil Temperature, Unit: 65 F Harvested Length, Unit: 24 FT
Soil Moisture: NORMAL normal, adequate Harvest Equipment: Plot combine
Seed Bed: SMOOTH smooth % Standard Moisture: 13.5

Pest Description

Pest 1 Type: W Code: LOLMG Lolium multiflorum gaudini
Common Name: Annual ryegrass
Artificial Population: X Establishment Date: 10/20/14
Establishment Method/Description: Hand-Seeded, rotary hoe 2X

Pest 2 Type: W Code: BRSSS Brassica sp.
Common Name: Brassica sp.
Description: Essex Rape
Artificial Population: X Establishment Date: 10/20/14
Establishment Method/Description: Hand-seeded, rotrary hoe 2X

Site and Design

Treated Plot Width: 10 FT Site Type: FIELD field
Treated Plot Length: 25 FT
Treated Plot Area: 250 FT2 Treatments: 12 Tillage Type: CONTIL conventional-till
Replications: 3 Study Design: FACTOR Factorial

Trial Initiation Comments:

Field Prep./Maintenance:

Soil Description

% Sand: 74 % OM: 0.8 Texture: SL sandy loam
% Silt: 19 pH: 6.1
% Clay: 7 CEC: 4.7 Fert. Level: G good
Soil Drainage: G good

Moisture and Weather Conditions

Overall Moisture Conditions: NORMAL normal
Closest Weather Station: UDREC Distance, Unit: 0.3 mi

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Application Description

	A	B	C	D	E
Application Date:	11/20/14	03/19/15	04/06/15	04/06/15	04/24/15
Appl. Stop Time:	08:40 AM	02:30 PM	11:30 AM	11:30 AM	07:45 AM
Interval to Prev. Appl., Unit:		119 DAYS	18 DAYS	18 DAYS	18 DAYS
Application Method:	SPRAY	SPRAY	SPRAY	SPRAY	SPRAY
Application Timing:	fall	laWintr	eaSprn	Spring	laSprn
Application Placement:	BROADC	BROADC	BROADC	BROADC	BROADC
Applied By:	Johnson	Johnson	Johnson	Johnson	Johnson
Air Temperature, Unit:	40 F	45 F	58 F	58 F	40 F
% Relative Humidity:	55	36	60	60	47
Wind Velocity, Unit:	3 mph	3 mph	5 mph	5 mph	8 mph
Wind Direction:	SW	NE	SW	SW	NW
Dew Presence (Y/N):	Y yes	N no	N no	N no	N no
Soil Temperature, Unit:	39 F	45 F	57 F	57 F	40 F
Soil Moisture:	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
% Cloud Cover:	30	0	0	0	40

Crop Stage At Each Application

	A	B	C	D	E
Crop 1 Code, BBCH Scale:	TRZAW BCER	TRZAW BCER	TRZAW BCER	TRZAW BCER	TRZAW BCER
Stage Scale Used:	DESC	DESC	DESC	DESC	DESC
Stage Majority, Percent:	3-leaf 65	3-tiller 70	3-tiller 80	3-tiller 80	jointing 85
Stage Minimum, Percent:	2-leaf 35	1-tiller 30	2-tiller 20	2-tiller 20	4-tiller 15
Stage Maximum, Percent:	3-leaf 65	3-tiller 70	3-tiller 80	3-tiller 80	jointing 85
Height, Unit:	3.5 in	4 in	5 in	5 in	10 in
Height Minimum, Maximum:	3 4	3.5 5	4 6	4 6	8 12

Pest Stage At Each Application

	A	B	C	D	E
Pest 1 Code, Type, Scale:	LOLMG W	LOLMG W	LOLMG W	LOLMG W	LOLMG W
Stage Majority, Percent:	2-leaf 100	2-tilr 80	2-tilr 60	2-tilr 60	3-tilr 70
Stage Minimum, Percent:		2-tilr 80	2-tilr 60	2-tilr 60	2-tilr 30
Stage Maximum, Percent:		3-tilr 20	3-tilr 40	3-tilr 40	3-tilr 70
Height, Unit:	1.5 in	2.5 in	3 in	3 in	6 in
Height Minimum, Maximum:	1 2	2 3	2 4	2 4	5 8
Density, Unit:	150 m2	10 m2	10 m2	10 m2	10 m2
Pest 2 Code, Type, Scale:	BRSSS W	BRSSS W	BRSSS W	BRSSS W	BRSSS W
Stage Majority, Percent:	2-leaf 100	rosett 100	rosett 100	rosett 100	rosett 100
Diameter, Unit:	1.5 in	4 in	4.5 in	4.5 in	6 in
Height Minimum, Maximum:	1 2	3 4	4 5	4 5	5 7
Density, Unit:	75 m2	15 m2	15 m2	15 m2	15 m2

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Application Equipment

	A	B	C	D	E
Appl. Equipment:	Backpack	Backpack	Backpack	Backpack	Backpack
Equipment Type:	SPRBAC	SPRBAC	SPRBAC	SPRBAC	SPRBAC
Operation Pressure, Unit:	31 psi	31 psi	31 psi	31 psi	31 psi
Nozzle Type:	AIRMIX	AIRMIX	AIRMIX	AIRMIX	AIRMIX
Nozzle Size:	11002	11002	11002	11002	11002
Nozzle Spacing, Unit:	18 in	18 in	18 in	18 in	18 in
Boom Length, Unit:	9 ft	9 ft	9 ft	9 ft	9 ft
Boom Height, Unit:	20 in	22 in	22 in	22 in	28 in
Ground Speed, Unit:	3 mph	3 mph	3 mph	3 mph	3 mph
Carrier:	WATER	WATER	WATER	WATER	WATER
Spray Volume, Unit:	20 gal/ac	20 gal/ac	20 gal/ac	20 gal/ac	20 gal/ac
Mix Size, Unit:	2 Liters	2 Liters	2 Liters	2 Liters	2 Liters
Propellant:	COMCO2	COMCO2	COMCO2	COMCO2	COMCO2

Trial Comments

Surrogate weed density: Low= 5 lbs/A annual ryegrass + 7 lbs/A Essex rape seed
High= 15 lbs/A annual ryegrass + 15 lbs/A Essex rape seed

Herbicide treatment: 0.9 oz Harmony Extra + 16.4 fl oz Axial XL + 0.25% NIS

Additional nitrogen= 15 gal/A UAN (~50 lbs N)

04/07/15: Most of brassica emerged in the row where press wheels ran. Ryegrass was between the rows as well as in the row.

06/25/15: Late winter treatments had some ryegrass that was not killed, control was 80 to 85%. Early spring treatments had 85% control of mustard, while late spring was about 75% control. Fall and late winter treatments provided 100% control.

Crop Code	TRZAW
Crop Name	Wt.Wheat
Rating Type	Yield
Rating Unit	Bu/A
Rating Date	06/30/15

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	
1	Weed Density (Level HIGH)							67.3 abc
	Removal fall							
	Harmony Extra SG Premix	50	SG	0.028	lb ai/a	fall	A	
	----thifensulfuron	33		0.0185				
	----tribenuron	17		0.0095				
	Axial XL.....pinoxaden	0.42	L	0.054	lb ai/a	fall	A	
	NIS	100	SL	0.25	% v/v	fall	A	
2	Weed Density (Level HIGH)							62.1 cd
	Removal late winter							
	Harmony Extra SG Premix	50	SG	0.028	lb ai/a	laWintr	B	
	----thifensulfuron	33		0.0185				
	----tribenuron	17		0.0095				
	Axial XL.....pinoxaden	0.42	L	0.054	lb ai/a	laWintr	B	
	NIS	100	SL	0.25	% v/v	laWintr	B	

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Crop Code	TRZAW
Crop Name	Wt.Wheat
Rating Type	Yield
Rating Unit	Bu/A
Rating Date	06/30/15

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	
3	Weed Density (Level HIGH)							58.8 de
	Removal ealy spring							
	Harmony Extra SG Premix	50	SG	0.028	lb ai/a	eaSprn	C	
	----thifensulfuron	33		0.0185				
	----tribenuron	17		0.0095				
	Axial XL.....pinoxaden	0.42	L	0.054	lb ai/a	eaSprn	C	
	NIS	100	SL	0.25	% v/v	eaSprn	C	
4	Weed Density (Level HIGH)							49.5 f
	Removal late spring							
	Harmony Extra SG Premix	50	SG	0.028	lb ai/a	laSprn	E	
	----thifensulfuron	33		0.0185				
	----tribenuron	17		0.0095				
	Axial XL.....pinoxaden	0.42	L	0.054	lb ai/a	laSprn	E	
	NIS	100	SL	0.25	% v/v	laSprn	E	
5	Weed Density (Level HIGH)							43.7 g
	No removal							
6	Weed Density (Level LOW)							69.2 ab
	Removal fall							
	Harmony Extra SG Premix	50	SG	0.028	lb ai/a	fall	A	
	----thifensulfuron	33		0.0185				
	----tribenuron	17		0.0095				
	Axial XL.....pinoxaden	0.42	L	0.054	lb ai/a	fall	A	
	NIS	100	SL	0.25	% v/v	fall	A	
7	Weed Density (Level LOW)							65.3 bc
	Removal late winter							
	Harmony Extra SG Premix	50	SG	0.028	lb ai/a	laWintr	B	
	----thifensulfuron	33		0.0185				
	----tribenuron	17		0.0095				
	Axial XL.....pinoxaden	0.42	L	0.054	lb ai/a	laWintr	B	
	NIS	100	SL	0.25	% v/v	laWintr	B	
8	Weed Density (Level LOW)							62.3 cd
	Removal ealy spring							
	Harmony Extra SG Premix	50	SG	0.028	lb ai/a	eaSprn	C	
	----thifensulfuron	33		0.0185				
	----tribenuron	17		0.0095				
	Axial XL.....pinoxaden	0.42	L	0.054	lb ai/a	eaSprn	C	
	NIS	100	SL	0.25	% v/v	eaSprn	C	
9	Weed Density (Level LOW)							56.2 e
	Removal late spring							
	Harmony Extra SG Premix	50	SG	0.028	lb ai/a	laSprn	E	
	----thifensulfuron	33		0.0185				
	----tribenuron	17		0.0095				
	Axial XL.....pinoxaden	0.42	L	0.054	lb ai/a	laSprn	E	
	NIS	100	SL	0.25	% v/v	laSprn	E	
10	Weed Density (Level LOW)							50.0 f
	No removal							
11	Maintain Weed Free							72.0 a

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Crop Code	TRZAW
Crop Name	Wt.Wheat
Rating Type	Yield
Rating Unit	Bu/A
Rating Date	06/30/15

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	
12	Weed Density (Level HIGH) + N Removal ealy spring							68.7 ab
	Harmony Extra SG Premix	50	SG	0.028	lb ai/a	eaSprn	C	
	----thifensulfuron	33		0.0185				
	----tribenuron	17		0.0095				
	Axial XL.....pinoxaden	0.42	L	0.054	lb ai/a	eaSprn	C	
	NIS	100	SL	0.25	% v/v	eaSprn	C	
	Nitrogen (50 lbs N spring)	3.25	L	48.8	lb ai/a	Spring	D	

LSD P=.05	5.80
Standard Deviation	3.43
CV	5.67
Replicate F	5.740
Replicate Prob(F)	0.0099
Treatment F	20.560
Treatment Prob(F)	0.0001

Crop Code	TRZAW
Crop Name	Wt.Wheat
Rating Type	Yield
Rating Unit	Bu/A
Rating Date	06/30/15

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	
	TABLE OF R MEANS Replicate 1							55.4
	Replicate 2							59.9
	Replicate 3							60.0
	TABLE OF A (Weed Density) MEANS							
1	Weed Density (Level HIGH)							56.3 b
2	Weed Density (Level LOW)							60.6 a
	LSD P=.05							2.67
	Standard Deviation							3.49
	CV							5.97
	TABLE OF B (Removal Timing) MEANS							
1	Removal fall							68.2 a
1								
1	----thifensulfuron	33		0.0185				
1	----tribenuron	17		0.0095				
1								
1								
2	Removal late winter							63.7 b
2								
2	----thifensulfuron	33		0.0185				
2	----tribenuron	17		0.0095				
2								
2								
3	Removal ealy spring							60.5 b
3								
3	----thifensulfuron	33		0.0185				
3	----tribenuron	17		0.0095				
3								
3								

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Crop Code	TRZAW
Crop Name	Wt.Wheat
Rating Type	Yield
Rating Unit	Bu/A
Rating Date	06/30/15

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	
4	Removal late spring							52.9 c
4								
4	----thifensulfuron	33		0.0185				
4	----tribenuron	17		0.0095				
4								
4								
5	No removal							46.9 d
LSD P=.05								4.23
Standard Deviation								3.49
CV								5.97
TABLE OF A (Weed Density) B (Removal Timing) MEANS								
1	Weed Density (Level HIGH)							67.3 a
1	Removal fall							
1								
1	----thifensulfuron	33		0.0185				
1	----tribenuron	17		0.0095				
1								
1								
2	Weed Density (Level LOW)							69.2 a
1	Removal fall							
1								
1	----thifensulfuron	33		0.0185				
1	----tribenuron	17		0.0095				
1								
1								
1	Weed Density (Level HIGH)							62.1 a
2	Removal late winter							
2								
2	----thifensulfuron	33		0.0185				
2	----tribenuron	17		0.0095				
2								
2								
2	Weed Density (Level LOW)							65.3 a
2	Removal late winter							
2								
2	----thifensulfuron	33		0.0185				
2	----tribenuron	17		0.0095				
2								
2								
1	Weed Density (Level HIGH)							58.8 a
3	Removal ealy spring							
3								
3	----thifensulfuron	33		0.0185				
3	----tribenuron	17		0.0095				
3								
3								
2	Weed Density (Level LOW)							62.3 a
3	Removal ealy spring							
3								
3	----thifensulfuron	33		0.0185				
3	----tribenuron	17		0.0095				
3								
3								

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Crop Code	TRZAW
Crop Name	Wt.Wheat
Rating Type	Yield
Rating Unit	Bu/A
Rating Date	06/30/15

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	
1	Weed Density (Level HIGH)							49.5 a
4	Removal late spring							
4								
4	----thifensulfuron	33		0.0185				
4	----tribenuron	17		0.0095				
4								
4								
2	Weed Density (Level LOW)							56.2 a
4	Removal late spring							
4								
4	----thifensulfuron	33		0.0185				
4	----tribenuron	17		0.0095				
4								
4								
1	Weed Density (Level HIGH)							43.7 a
5	No removal							
2	Weed Density (Level LOW)							50.0 a
5	No removal							

LSD P=.05	5.98
Standard Deviation	3.49
CV	5.97

FACTORIAL/POOLED ERROR AOV For TRZAW Wt.Wheat Yield Bu/A 06/30/15

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	29	2281.465798				
R	2	136.892627	68.446313	5.630	0.0126	
A	1	140.665551	140.665551	11.570	0.0032	2.7
B	4	1759.247940	439.811985	36.175	0.0001	4.2
AB	4	25.816636	6.454159	0.531	0.7147	6.0
ERROR	18	218.843044	12.157947			

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Sharpen and Zidua for Winter Wheat

Trial ID: SG4-15 Location: Field #14 Trial Year:
Protocol ID: SG4-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Investigator: Mark VanGessel Title: Extension Weed Specialist
Organization: University of Delaware
Address: 16483 County Seat Hwy
City+State/Prov: Georgetown, Delaware
Postal Code: 19947 E-mail: mjv@udel.edu
Country: USA United States

Crop Description

Crop 1: TRZAW Triticum aestivum (winter) Winter wheat
Variety: Shirley BBCH Scale: BCER
Planting Date: 10/20/14
Planting Rate, Unit: 150 lb/A Planting Method: PLANTD planted
Depth, Unit: 0.75 in Planting Equipment: PD Plot Drilling Machine
Row Spacing, Unit: 7 in Emergence Date: 10/29/14
Harvest Date: 06/30/15
Harvested Width, Unit: 7 FT
Soil Temperature, Unit: 65 F Harvested Length, Unit: 24 FT
Soil Moisture: NORMAL normal, adequate Harvest Equipment: Plot combine
Seed Bed: SMOOTH smooth % Standard Moisture: 13.5

Pest Description

Pest 1 Type: W Code: LOLMG Lolium multiflorum gaudini
Common Name: Annual ryegrass
Artificial Population: X Establishment Date: 10/20/14
Establishment Rate, Unit: 10 LB/A
Establishment Method/Description: broadcast prior to planting

Site and Design

Treated Plot Width: 10 FT Site Type: FIELD field
Treated Plot Length: 25 FT
Treated Plot Area: 250 FT2 Treatments: 14 Tillage Type: CONTIL conventional-till
Replications: 3 Study Design: RACOBL Randomized Complete Block (RCB)

Trial Initiation Comments:
Annual ryegrass was broadcast seeded at 10 lb/A prior to planting on 10-20-14.

Soil Description

% Sand: 74 % OM: 0.8 Texture: SL sandy loam
% Silt: 19 pH: 6.1
% Clay: 7 CEC: 4.7 Fert. Level: G good
Soil Drainage: G good

Moisture and Weather Conditions

Overall Moisture Conditions: NORMAL normal
Closest Weather Station: UDREC Distance, Unit: 0.3 mi

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Application Description

	A	B	C
Application Date:	10/21/14	10/30/14	11/11/14
Appl. Stop Time:	10:00 AM	09:40 AM	11:00 AM
Interval to Prev. Appl., Unit:		9 DAYS	12 DAYS
Application Method:	SPRAY	SPRAY	SPRAY
Application Timing:	PRE	Spike	2 lvs
Application Placement:	BROADC	BROADC	BROADC
Applied By:	Johnson	Johnson	Johnson
Air Temperature, Unit:	61 F	50 F	67 F
% Relative Humidity:	83	93	76
Wind Velocity, Unit:	2 mph	3 mph	2 mph
Wind Direction:	SW	NW	SE
Dew Presence (Y/N):	Y yes	Y yes	N no
Soil Temperature, Unit:	60 F	50 F	66 F
Soil Moisture:	NORMAL	NORMAL	NORMAL
% Cloud Cover:	65	80	90

Crop Stage At Each Application

	A	B	C
Crop 1 Code, BBCH Scale:	TRZAW BCER	TRZAW BCER	TRZAW BCER
Stage Scale Used:		DESC	BBCH
Stage Majority, Percent:		spike 100	2-leaf 75
Stage Minimum, Percent:			1-leaf 25
Stage Maximum, Percent:			2-leaf 75
Height, Unit:		0.5 in	3.7 in
Height Minimum, Maximum:		0.4 0.7	3.5 4

Pest Stage At Each Application

	A	B	C
Pest 1 Code, Type, Scale:	LOLMG W	LOLMG W	LOLMG W
Stage Majority, Percent:			1 leaf 100
Height, Unit:			2 in
Height Minimum, Maximum:			1.5 2.5
Density, Unit:			50 m2

Application Equipment

	A	B	C
Appl. Equipment:	Backpack	Backpack	Backpack
Equipment Type:	SPRBAC	SPRBAC	SPRBAC
Operation Pressure, Unit:	31 psi	31 psi	31 psi
Nozzle Type:	AIRMIX	AIRMIX	AIRMIX
Nozzle Size:	11002	11002	11002
Nozzle Spacing, Unit:	18 in	18 in	18 in
Boom Length, Unit:	9 ft	9 ft	9 ft
Boom Height, Unit:	18 in	18 in	20 in
Ground Speed, Unit:	3 mph	3 mph	3 mph
Carrier:	WATER	WATER	WATER
Spray Volume, Unit:	20 gal/ac	20 gal/ac	20 gal/ac
Mix Size, Unit:	2 Liters	2 Liters	2 Liters
Propellant:	COMCO2	COMCO2	COMCO2

University of Delaware

Sharpen and Zidua for Winter Wheat

Trial ID: SG4-15 Location: Field #14 Trial Year:
Protocol ID: SG4-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Trial Comments

11/10/14: Trt13: some superficial leaf burn.

04/07/15: Heavy goose feeding in the plots and very difficult to detect stunting and biomass reduction from herbicides. However, all plots with metribuzin (trts 11,12,14) are noticeably shorter than other treatments. Henbit density is light, but present in all untreated checks.

05/02/15: Treatment 3 poor jagged chickweed control. Rating injury is difficult due to goose feeding, only those treatments with moderate to heavy herbicide injury could be detected. Ryegrass was purchased seed and spun on in the fall, as a result we did not have ryegrass emergence in the spring. Ryegrass emerged mostly in the row with wheat, which made rating difficult. Small and injured ryegras plants were not visible.

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Sharpen and Zidua for Winter Wheat

Trial ID: SG4-15 Location: Field #14 Trial Year:
Protocol ID: SG4-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	TRZAW Wt.Wheat Injury % 11/10/14	LAMAM Henbit Control % 04/07/15	LOLMU A.ryegrs Control % 04/07/15	TRZAW Wt.Wheat Stunting % 05/02/15
1	Untreated Check							0.0 d	0.0 c	0.1 c	0.0 c
2	Sharpen.....saflufenacil	2.85	SC	0.067	lb ai/a	PRE	A	8.7 ab	100.0 a	0.0 c	0.0 c
3	Sharpen.....saflufenacil	2.85	SC	0.089	lb ai/a	PRE	A	0.0 d	100.0 a	0.0 c	0.0 c
4	Sharpen.....saflufenacil	2.85	SC	0.067	lb ai/a	PRE	A	4.7 bc	100.0 a	100.0 a	0.0 c
	Zidua.....pyroxasulfone	85	WG	0.08	lb ai/a	Spike	B				
5	Sharpen.....saflufenacil	2.85	SC	0.067	lb ai/a	PRE	A	4.7 bc	100.0 a	96.7 b	2.3 c
	Zidua.....pyroxasulfone	85	WG	0.106	lb ai/a	Spike	B				
6	Sharpen.....saflufenacil	2.85	SC	0.067	lb ai/a	PRE	A	2.3 cd	100.0 a	100.0 a	0.0 c
	Zidua.....pyroxasulfone	85	WG	0.08	lb ai/a	2 lvs	C				
	Osprey.....mesosulfuron	4.5	WG	0.0134	lb ai/a	2 lvs	C				
	Nonionic Surfactant	100	L	0.5	% v/v	2 lvs	C				
	30% Urea Ammonium Nitrate	100	L	1.25	% v/v	2 lvs	C				
7	Zidua.....pyroxasulfone	85	WG	0.08	lb ai/a	Spike	B	0.0 d		100.0 a	0.0 c
8	Zidua.....pyroxasulfone	85	WG	0.106	lb ai/a	Spike	B	2.3 cd		100.0 a	0.0 c
9	Zidua.....pyroxasulfone	85	WG	0.08	lb ai/a	2 lvs	C		100.0 a	100.0 a	2.3 c
	PowerFlex HL....pyroxsulam	13.1	WG	0.0164	lb ai/a	2 lvs	C				
	Nonionic Surfactant	100	L	0.25	% v/v	2 lvs	C				
10	Zidua.....pyroxasulfone	85	WG	0.08	lb ai/a	2 lvs	C			100.0 a	0.0 c
	Axial XL.....pinoxaden	0.42	L	0.054	lb ai/a	2 lvs	C				
11	Zidua.....pyroxasulfone	85	WG	0.08	lb ai/a	2 lvs	C		100.0 a	100.0 a	18.3 a
	Glory.....metribuzin	75	DF	0.094	lb ai/a	2 lvs	C				
	Nonionic Surfactant	100	L	0.25	% v/v	2 lvs	C				
12	Axiom Premix	68	WG	0.255	lb ai/a	2 lvs	C		100.0 a	100.0 a	8.0 b
	----flufenacet	54		0.202							
	----metribuzin	14		0.0525							
13	Anthem Flex Premix	4	SE	0.094	lb ai/a	Spike	B	10.0 a	70.0 b	100.0 a	2.3 c
	----pyroxasulfone	3.733		0.088							
	----carfentrazone	0.267		0.0063							

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.
Missing data estimates are included in columns:Yates=3,5; Average=2
Could not calculate LSD (% mean diff) for columns 2,6 because error mean square = 0.

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code				
Pest Code									LAMAM	LOLMU	
Pest Name									Henbit	A.ryegrs	
Crop Code								TRZAW			TRZAW
Crop Name								Wt.Wheat			Wt.Wheat
Rating Type								Injury	Control	Control	Stunting
Rating Unit								%	%	%	%
Rating Date								11/10/14	04/07/15	04/07/15	05/02/15
14	Anthem Premix	2.153	SE	0.084	lb ai/a	2 lvs	C		100.0 a	100.0 a	20.0 a
	----pyroxasulfone	2.09		0.0815							
	----fluthiacet	0.06300001		0.00246							
	Glory.....metribuzin	75	DF	0.094	lb ai/a	2 lvs	C				
	Nonionic Surfactant	100	L	0.25	% v/v	2 lvs	C				
LSD P=.05								4.37	.	2.64	3.74
Standard Deviation								2.52	0.00	1.57	2.23
CV								69.54	0.0	2.01	58.45
Replicate F								3.564	0.000	1.001	4.212
Replicate Prob(F)								0.0525	1.0000	0.3816	0.0260
Treatment F								6.533	0.000	2185.757	28.545
Treatment Prob(F)								0.0007	1.0000	0.0001	0.0001

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Pest Code								LAMAM	LOLMU	
Pest Name								Henbit	A.ryegrs	
Crop Code										TRZAW
Crop Name										Wt.Wheat
Rating Type								Control	Control	Yield
Rating Unit								%	%	Bu/A
Rating Date								05/02/15	05/02/15	06/30/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code			
1	Untreated Check							0.0 c	0.0 b	53.1 bc
2	Sharpen.....saflufenacil	2.85	SC	0.067	lb ai/a	PRE	A	0.0 c	0.0 b	53.4 bc
3	Sharpen.....saflufenacil	2.85	SC	0.089	lb ai/a	PRE	A	100.0 a	0.0 b	50.4 c
4	Sharpen.....saflufenacil	2.85	SC	0.067	lb ai/a	PRE	A	100.0 a	100.0 a	63.4 a
	Zidua.....pyroxasulfone	85	WG	0.08	lb ai/a	Spike	B			
5	Sharpen.....saflufenacil	2.85	SC	0.067	lb ai/a	PRE	A	100.0 a	100.0 a	62.5 a
	Zidua.....pyroxasulfone	85	WG	0.106	lb ai/a	Spike	B			
6	Sharpen.....saflufenacil	2.85	SC	0.067	lb ai/a	PRE	A	100.0 a	100.0 a	65.9 a
	Zidua.....pyroxasulfone	85	WG	0.08	lb ai/a	2 lvs	C			
	Osprey.....mesosulfuron	4.5	WG	0.0134	lb ai/a	2 lvs	C			
	Nonionic Surfactant	100	L	0.5	% v/v	2 lvs	C			
	30% Urea Ammonium Nitrate	100	L	1.25	% v/v	2 lvs	C			
7	Zidua.....pyroxasulfone	85	WG	0.08	lb ai/a	Spike	B	100.0 a	100.0 a	65.5 a
8	Zidua.....pyroxasulfone	85	WG	0.106	lb ai/a	Spike	B	100.0 a	100.0 a	63.6 a
9	Zidua.....pyroxasulfone	85	WG	0.08	lb ai/a	2 lvs	C	100.0 a	100.0 a	58.8 ab
	PowerFlex HL....pyroxsulam	13.1	WG	0.0164	lb ai/a	2 lvs	C			
	Nonionic Surfactant	100	L	0.25	% v/v	2 lvs	C			
10	Zidua.....pyroxasulfone	85	WG	0.08	lb ai/a	2 lvs	C	93.3 b	100.0 a	60.2 ab
	Axial XL.....pinoxaden	0.42	L	0.054	lb ai/a	2 lvs	C			
11	Zidua.....pyroxasulfone	85	WG	0.08	lb ai/a	2 lvs	C	100.0 a	100.0 a	54.1 bc
	Glory.....metribuzin	75	DF	0.094	lb ai/a	2 lvs	C			
	Nonionic Surfactant	100	L	0.25	% v/v	2 lvs	C			
12	Axiom Premix	68	WG	0.255	lb ai/a	2 lvs	C	100.0 a	100.0 a	62.0 a
	----flufenacet	54		0.202						
	----metribuzin	14		0.0525						
13	Anthem Flex Premix	4	SE	0.094	lb ai/a	Spike	B	100.0 a	100.0 a	58.9 ab
	----pyroxasulfone	3.733		0.088						
	----carfentrazone	0.267		0.0063						

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Pest Code								LAMAM	LOLMU	
Pest Name								Henbit	A.ryegrs	
Crop Code										TRZAW
Crop Name										Wt.Wheat
Rating Type								Control	Control	Yield
Rating Unit								%	%	Bu/A
Rating Date								05/02/15	05/02/15	06/30/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code			
14	Anthem Premix	2.153	SE	0.084	lb ai/a	2 lvs	C	100.0 a	100.0 a	53.2 bc
	----pyroxasulfone	2.09		0.0815						
	----fluthiacet	0.06300001		0.00246						
	Glory.....metribuzin	75	DF	0.094	lb ai/a	2 lvs	C			
	Nonionic Surfactant	100	L	0.25	% v/v	2 lvs	C			
LSD P=.05								5.29	.	7.50
Standard Deviation								3.15	0.00	4.47
CV								3.69	0.0	7.59
Replicate F								0.962	0.000	0.513
Replicate Prob(F)								0.3960	1.0000	0.6047
Treatment F								395.932	0.000	4.021
Treatment Prob(F)								0.0001	1.0000	0.0012

University of Delaware

Pyroxasulfone for Conventional Tillage Wheat

Trial ID: SG5-15 Location: Field #14 Trial Year:
Protocol ID: SG5-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Investigator: Mark VanGessel Title: Extension Weed Specialist
Organization: University of Delaware
Address: 16483 County Seat Hwy
City+State/Prov: Georgetown, Delaware
Postal Code: 19947 E-mail: mjv@udel.edu
Country: USA United States

Crop Description

Crop 1: TRZAW Triticum aestivum (winter) Winter wheat
Variety: Shirley BBCH Scale: BCER
Planting Date: 10/20/14
Planting Rate, Unit: 150 lb/A Planting Method: PLANTD planted
Depth, Unit: 0.75 in Planting Equipment: PD Plot Drilling Machine
Row Spacing, Unit: 7 in Emergence Date: 10/29/14
Harvest Date: 06/30/15
Harvested Width, Unit: 7 FT
Soil Temperature, Unit: 65 F Harvested Length, Unit: 24 FT
Soil Moisture: NORMAL normal, adequate Harvest Equipment: Plot combine
Seed Bed: SMOOTH smooth % Standard Moisture: 13.5

Pest Description

Pest 1 Type: W Code: LOLMG Lolium multiflorum gaudini
Common Name: Annual ryegrass

Site and Design

Treated Plot Width: 10 FT Site Type: FIELD field
Treated Plot Length: 25 FT
Treated Plot Area: 250 FT2 Treatments: 10 Tillage Type: CONTIL conventional-till
Replications: 3 Study Design: RACOBL Randomized Complete Block (RCB)

Trial Initiation Comments:

Soil Description

% Sand: 74 % OM: 0.8 Texture: SL sandy loam
% Silt: 19 pH: 6.1
% Clay: 7 CEC: 4.7 Fert. Level: G good
Soil Drainage: G good

Moisture and Weather Conditions

Overall Moisture Conditions: NORMAL normal
Closest Weather Station: UDREC Distance, Unit: 0.3 mi

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Application Description

	A	B	C
Application Date:	10/21/14	10/30/14	11/11/14
Appl. Stop Time:	10:00 AM	09:30 AM	11:00 AM
Interval to Prev. Appl., Unit:		9 DAYS	12 DAYS
Application Method:	SPRAY	SPRAY	SPRAY
Application Timing:	PRE	DPre	1-3 lvs
Application Placement:	BROADC	BROADC	BROADC
Applied By:	Johnson	Johnson	Johnson
Air Temperature, Unit:	61 F	50 F	67 F
% Relative Humidity:	83	93	76
Wind Velocity, Unit:	2 mph	3 mph	2 mph
Wind Direction:	SW	NW	SE
Dew Presence (Y/N):	Y yes	Y yes	N no
Soil Temperature, Unit:	60 F	50 F	66 F
Soil Moisture:	NORMAL	NORMAL	NORMAL
% Cloud Cover:	65	80	90

Crop Stage At Each Application

	A	B	C
Crop 1 Code, BBCH Scale:	TRZAW BCER	TRZAW BCER	TRZAW BCER
Stage Scale Used:		DESC	DESC
Stage Majority, Percent:		Spike 100	2-leaf 80
Stage Minimum, Percent:			1-leaf 20
Stage Maximum, Percent:			2-leaf 80
Height, Unit:		0.5 in	3.5 in
Height Minimum, Maximum:		0.3 0.5	3.5 4

Pest Stage At Each Application

	A	B	C
Pest 1 Code, Type, Scale:	LOLMG W	LOLMG W	LOLMG W
Stage Majority, Percent:			1-leaf 100
Height, Unit:			2 in
Density, Unit:			50 m2

Application Equipment

	A	B	C
Appl. Equipment:	Backpack	Backpack	Backpack
Equipment Type:	SPRBAC	SPRBAC	SPRBAC
Operation Pressure, Unit:	31 psi	31 psi	31 psi
Nozzle Type:	AIRMIX	AIRMIX	AIRMIX
Nozzle Size:	11002	11002	11002
Nozzle Spacing, Unit:	18 in	18 in	18 in
Boom Length, Unit:	9 ft	9 ft	9 ft
Boom Height, Unit:	18 in	18 in	20 in
Ground Speed, Unit:	3 mph	3 mph	3 mph
Carrier:	WATER	WATER	WATER
Spray Volume, Unit:	20 gal/ac	20 gal/ac	20 gal/ac
Mix Size, Unit:	2 Liters	2 Liters	2 Liters
Propellant:	COMCO2	COMCO2	COMCO2

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Pyroxasulfone for Conventional Tillage Wheat

Trial ID: SG5-15 Location: Field #14 Trial Year:
Protocol ID: SG5-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Trial Comments

11/10/14: Injury is biomass reduction, stand loss, and stunting. Treatment 5 had superficial leaf burn less than 3%.

04/07/15: Injury is biomass reduction, stand loss, and stunting. Heavy goose feeding in the plot area has made injury ratings difficult. Henbit density is light but plants were present in all untreated checks.

05/02/15: Ryegrass was purchased seed spun on at planting. Ryegrass emerged mostly in the row with the wheat: then difficult to rate stunting or injured ryegrass plants. Injury rating is variable due to goose feeding. Difficult to detect subtle treatment differences.

University of Delaware

Pyroxasulfone for Conventional Tillage Wheat

Trial ID: SG5-15 Location: Field #14 Trial Year:
Protocol ID: SG5-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	TRZAW Wt.Wheat	TRZAW Wt.Wheat	LAMAM Henbit	LOLMU A.ryegrs
	Pest Code										
	Pest Name										
	Crop Code							TRZAW	TRZAW		
	Crop Name							Wt.Wheat	Wt.Wheat		
	Rating Type							Injury	Injury	Control	Control
	Rating Unit							%	%	%	%
	Rating Date							11/10/14	04/07/15	04/07/15	04/07/15
1	Untreated Check							0.0 d	0.0 e	0.0 b	0.0 c
2	Anthem Flex Premix	4	SE	0.078	lb ai/a	PRE	A	63.3 b	33.3 c	100.0 a	100.0 a
	----pyroxasulfone	3.733		0.073							
	----carfentrazone	0.267		0.0052							
3	Anthem Flex Premix	4	SE	0.094	lb ai/a	PRE	A	78.3 a	36.7 c	100.0 a	100.0 a
	----pyroxasulfone	3.733		0.088							
	----carfentrazone	0.267		0.0063							
4	Anthem Flex Premix	4	SE	0.119	lb ai/a	PRE	A	76.7 a	53.3 b	100.0 a	100.0 a
	----pyroxasulfone	3.733		0.111							
	----carfentrazone	0.267		0.00794							
5	Anthem Flex Premix	4	SE	0.119	lb ai/a	DPRE	B	9.0 c	12.3 d	100.0 a	95.0 b
	----pyroxasulfone	3.733		0.111							
	----carfentrazone	0.267		0.00794							
6	Anthem Flex Premix	4	SE	0.094	lb ai/a	PRE	A	63.3 b	33.3 c	100.0 a	100.0 a
	----pyroxasulfone	3.733		0.088							
	----carfentrazone	0.267		0.0063							
	PowerFlex HL....pyroxsulam	13.1	WG	0.0117	lb ai/a	1-3 lvs	C				
	Nonionic Surfactant	100	L	0.25	% v/v	1-3 lvs	C				
	Dry Ammonium Sulfate	100	D	2.04	% w/v	1-3 lvs	C				
7	PowerFlex HL....pyroxsulam	13.1	WG	0.0117	lb ai/a	1-3 lvs	C		5.7 de	100.0 a	100.0 a
	Nonionic Surfactant	100	L	0.25	% v/v	1-3 lvs	C				
	Dry Ammonium Sulfate	100	D	2.04	% w/v	1-3 lvs	C				
8	PowerFlex HL....pyroxsulam	13.1	WG	0.0164	lb ai/a	1-3 lvs	C		12.0 d	100.0 a	100.0 a
	Nonionic Surfactant	100	L	0.25	% v/v	1-3 lvs	C				
	Dry Ammonium Sulfate	100	D	2.04	% w/v	1-3 lvs	C				
9	Anthem Flex Premix	4	SE	0.119	lb ai/a	PRE	A	78.3 a	66.7 a	100.0 a	100.0 a
	----pyroxasulfone	3.733		0.111							
	----carfentrazone	0.267		0.00794							
	Glory.....metribuzin	75	DF	0.094	lb ai/a	1-3 lvs	C				
10	Authority MTZ Premix	45	DF	0.154	lb ai/a	1-3 lvs	C		31.7 c	100.0 a	100.0 a
	----sulfentrazone	18		0.0616							
	----metribuzin	27		0.092							
	LSD P=.05							7.29	9.03	.	4.70
	Standard Deviation							4.10	5.26	0.00	2.74
	CV							7.77	18.47	0.0	3.06
	Replicate F							1.132	3.909	0.000	1.000
	Replicate Prob(F)							0.3544	0.0389	1.0000	0.3874
	Treatment F							202.698	48.893	0.000	396.556
	Treatment Prob(F)							0.0001	0.0001	1.0000	0.0001

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.
Missing data estimates are included in columns:Yates=6,7
Could not calculate LSD (% mean diff) for columns 3 because error mean square = 0.

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	TRZAW Wt.Wheat Injury % 05/02/15	LAMAM Henbit Control % 05/02/15	LOLMU A.ryegrs Control % 05/02/15	TRZAW Wt.Wheat Yield Bu/A 06/30/15
1	Untreated Check							0.0 f	0.0 d	0.0 d	49.8 de
2	Anthem Flex Premix	4	SE	0.078	lb ai/a	PRE	A	12.3 cd	47.1 c	54.1 c	57.6 abc
	----pyroxasulfone	3.733		0.073							
	----carfentrazone	0.267		0.0052							
3	Anthem Flex Premix	4	SE	0.094	lb ai/a	PRE	A	15.0 c	76.7 b	85.0 ab	55.7 bcd
	----pyroxasulfone	3.733		0.088							
	----carfentrazone	0.267		0.0063							
4	Anthem Flex Premix	4	SE	0.119	lb ai/a	PRE	A	23.3 b	86.7 ab	85.0 ab	49.7 e
	----pyroxasulfone	3.733		0.111							
	----carfentrazone	0.267		0.00794							
5	Anthem Flex Premix	4	SE	0.119	lb ai/a	DPRE	B	0.0 f	100.0 a	97.3 a	63.6 a
	----pyroxasulfone	3.733		0.111							
	----carfentrazone	0.267		0.00794							
6	Anthem Flex Premix	4	SE	0.094	lb ai/a	PRE	A	25.0 ab	100.0 a	93.3 a	51.8 cde
	----pyroxasulfone	3.733		0.088							
	----carfentrazone	0.267		0.0063							
	PowerFlex HL....pyroxsulam	13.1	WG	0.0117	lb ai/a	1-3 lvs	C				
	Nonionic Surfactant	100	L	0.25	% v/v	1-3 lvs	C				
	Dry Ammonium Sulfate	100	D	2.04	% w/v	1-3 lvs	C				
7	PowerFlex HL....pyroxsulam	13.1	WG	0.0117	lb ai/a	1-3 lvs	C	4.7 ef	95.0 ab	78.3 b	61.9 a
	Nonionic Surfactant	100	L	0.25	% v/v	1-3 lvs	C				
	Dry Ammonium Sulfate	100	D	2.04	% w/v	1-3 lvs	C				
8	PowerFlex HL....pyroxsulam	13.1	WG	0.0164	lb ai/a	1-3 lvs	C	9.7 cde	95.0 ab	83.3 ab	61.5 ab
	Nonionic Surfactant	100	L	0.25	% v/v	1-3 lvs	C				
	Dry Ammonium Sulfate	100	D	2.04	% w/v	1-3 lvs	C				
9	Anthem Flex Premix	4	SE	0.119	lb ai/a	PRE	A	30.0 a	100.0 a	83.3 ab	48.9 e
	----pyroxasulfone	3.733		0.111							
	----carfentrazone	0.267		0.00794							
	Glory.....metribuzin	75	DF	0.094	lb ai/a	1-3 lvs	C				
10	Authority MTZ Premix	45	DF	0.154	lb ai/a	1-3 lvs	C	6.7 de	93.3 ab	40.0 c	54.4 cde
	----sulfentrazone	18		0.0616							
	----metribuzin	27		0.092							
LSD P=.05								5.86	19.84	14.89	5.99
Standard Deviation								3.42	11.51	8.64	3.49
CV								26.97	14.51	12.35	6.3
Replicate F								1.340	1.031	0.762	7.654
Replicate Prob(F)								0.2869	0.3779	0.4819	0.0039
Treatment F								28.613	23.533	36.671	7.398
Treatment Prob(F)								0.0001	0.0001	0.0001	0.0002

University of Delaware

Rotation to Soybean after GF-3313 in Winter Wheat

Trial ID: SG6-15 Location: Field #14 Trial Year:
Protocol ID: SG6-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact: Dow

Investigator: Mark VanGessel Title: Extension Weed Specialist
Organization: University of Delaware
Address: 16483 County Seat Hwy
City+State/Prov: Georgetown, Delaware
Postal Code: 19947 E-mail: mjv@udel.edu
Country: USA United States

Crop Description

Crop 1: TRZAW Triticum aestivum (winter) Winter wheat
Variety: Shirley BBCH Scale: BCER
Planting Date: 10/20/14
Planting Rate, Unit: 150 lb/A Planting Method: PLANTD planted
Depth, Unit: 0.75 in Planting Equipment: PD Plot Drilling Machine
Row Spacing, Unit: 7 in Emergence Date: 10/29/14
Harvest Date: 06/30/15
Harvested Width, Unit: 7 FT
Soil Temperature, Unit: 65 F Harvested Length, Unit: 24 FT
Soil Moisture: NORMAL normal, adequate Harvest Equipment: Plot combine
Seed Bed: SMOOTH smooth % Standard Moisture: 13.5

Crop 2: GLXMA Glycine max Soybean
Variety: NK S44-K7 BBCH Scale: BSOY
Planting Date: 07/09/15
Planting Rate, Unit: 180000 S/A Planting Method: PLANTD planted
Depth, Unit: 1 in Planting Equipment: PP Plot Planter
Row Spacing, Unit: 15 in Emergence Date: 07/14/15
Harvested Width, Unit: 6.25 FT
Soil Temperature, Unit: 88 F Harvested Length, Unit: 24 FT
Soil Moisture: NORMAL normal, adequate
Seed Bed: MEDTRA medium/trashy % Standard Moisture: 13.0

Site and Design

Treated Plot Width: 10 FT Site Type: FIELD field
Treated Plot Length: 25 FT
Treated Plot Area: 250 FT2 Treatments: 6 Tillage Type: CONTIL conventional-till
Replications: 3 Study Design: RACOBL Randomized Complete Block (RCB)

Trial Initiation Comments:
Wheat was established with conventional tillage; soybeans were planted no-tillage into wheat stubble.

Soil Description

% Sand: 74 % OM: 0.8 Texture: SL sandy loam
% Silt: 19 pH: 6.1
% Clay: 7 CEC: 4.7 Fert. Level: G good
Soil Drainage: G good

Moisture and Weather Conditions

Overall Moisture Conditions: NORMAL normal
Closest Weather Station: UDREC Distance, Unit: 0.3 mi

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Application Description

	A
Application Date:	04/06/15
Appl. Stop Time:	09:00 AM
Application Method:	SPRAY
Application Timing:	Spring
Application Placement:	BROADC
Applied By:	Johnson
Air Temperature, Unit:	58 F
% Relative Humidity:	60
Wind Velocity, Unit:	5 mph
Wind Direction:	SW
Dew Presence (Y/N):	N no
Soil Temperature, Unit:	57 F
Soil Moisture:	NORMAL
% Cloud Cover:	0

Crop Stage At Each Application

	A
Crop 1 Code, BBCH Scale:	TRZAW BCER
Stage Scale Used:	DESC
Stage Majority, Percent:	2-tiller 50
Stage Minimum, Percent:	1-tiller 20
Stage Maximum, Percent:	3-tiller 30
Height, Unit:	5 in
Height Minimum, Maximum:	4 6
Crop 2 Code, BBCH Scale:	GLXMA BSOY

Application Equipment

	A
Appl. Equipment:	Backpack
Equipment Type:	SPRBAC
Operation Pressure, Unit:	31 psi
Nozzle Type:	AIRMIX
Nozzle Size:	11002
Nozzle Spacing, Unit:	18 in
Boom Length, Unit:	9 ft
Boom Height, Unit:	24 in
Ground Speed, Unit:	3 mph
Carrier:	WATER
Spray Volume, Unit:	20 gal/ac
Mix Size, Unit:	2 Liters
Propellant:	COMCO2

Trial Comments

4/17/15: Heavy goose feeding in the plots over the winter so wheat height is variable and difficult to rate stunting. No other injury observed than stunting with treatment 5.

5/01/15: Stunting is difficult to rate due to goose feeding and uneven height of the wheat.

5/13/15: Henbit control was excellent for all treatments.

University of Delaware

Rotation to Soybean after GF-3313 in Winter Wheat

Trial ID: SG6-15 Location: Field #14 Trial Year:
Protocol ID: SG6-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact: Dow

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	TRZAW Wt.Wheat Stunting % 04/17/15	TRZAW Wt.Wheat Stunting % 05/01/15	TRZAW Wt.Wheat Yield Bu/A 06/30/15	GLXMA Soybean Stunting % 07/29/15	GLXMA Soybean Stunting % 08/06/15
1	GF-3313 Premix	20	WG	0.0094	lb ai/a	Spring	A	0.0 b	0.0 c	65.0 a	0.0 a	0.0 a
	----florasulam	10		0.0047								
	----halauxifen	10		0.0047								
	Nonionic Surfactant	100	L	0.5	% v/v	Spring	A					
2	GF-3313 Premix	20	WG	0.0188	lb ai/a	Spring	A	0.0 b	0.0 c	64.3 a	4.7 a	0.0 a
	----florasulam	10		0.0094								
	----halauxifen	10		0.0094								
	Nonionic Surfactant	100	L	0.5	% v/v	Spring	A					
3	GF-3313 Premix	20	WG	0.0375	lb ai/a	Spring	A	0.0 b	8.0 a	62.2 a	2.3 a	0.0 a
	----florasulam	10		0.0188								
	----halauxifen	10		0.0188								
	Nonionic Surfactant	100	L	0.5	% v/v	Spring	A					
4	Finesse Premix	75	DF	0.0234	lb ai/a	Spring	A	0.0 b	2.3 bc	62.3 a	4.0 a	0.0 a
	----chlorsulfuron	62.5		0.0195								
	----metsulfuron	12.5		0.0039								
	2,4-D ester	3.8	L	0.314	lb ae/a	Spring	A					
	Nonionic Surfactant	100	L	0.5	% v/v	Spring	A					
5	Finesse Premix	75	DF	0.047	lb ai/a	Spring	A	8.0 a	7.3 ab	60.1 a	0.0 a	0.0 a
	----chlorsulfuron	62.5		0.039								
	----metsulfuron	12.5		0.0078								
	2,4-D ester	3.8	L	0.62	lb ae/a	Spring	A					
	Nonionic Surfactant	100	L	0.5	% v/v	Spring	A					
6	Untreated Check							0.0 b	0.0 c	63.8 a	0.0 a	0.0 a
	LSD P=.05							1.29	5.53	5.45	5.37	.
	Standard Deviation							0.71	3.04	3.00	2.95	0.00
	CV							53.03	103.32	4.76	160.89	0.0
	Replicate F							1.000	1.555	2.561	0.249	0.000
	Replicate Prob(F)							0.4019	0.2583	0.1264	0.7842	1.0000
	Treatment F							64.000	4.616	1.078	1.590	0.000
	Treatment Prob(F)							0.0001	0.0192	0.4279	0.2488	1.0000

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.
Could not calculate LSD (% mean diff) for columns 7 because error mean square = 0.

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	GLXMA Soybean Count #/1meter 08/10/15	GLXMA Soybean AvgHght Inches 08/10/15	GLXMA Soybean Yield Bu/A 11/23/15
1	GF-3313 Premix	20	WG	0.0094	lb ai/a	Spring	A	17.3 a	12.00 ab	40.8 a
	----florasulam	10		0.0047						
	----halauxifen	10		0.0047						
	Nonionic Surfactant	100	L	0.5	% v/v	Spring	A			
2	GF-3313 Premix	20	WG	0.0188	lb ai/a	Spring	A	15.0 a	11.83 ab	39.4 a
	----florasulam	10		0.0094						
	----halauxifen	10		0.0094						
	Nonionic Surfactant	100	L	0.5	% v/v	Spring	A			
3	GF-3313 Premix	20	WG	0.0375	lb ai/a	Spring	A	12.3 a	10.17 c	39.4 a
	----florasulam	10		0.0188						
	----halauxifen	10		0.0188						
	Nonionic Surfactant	100	L	0.5	% v/v	Spring	A			
4	Finesse Premix	75	DF	0.0234	lb ai/a	Spring	A	16.0 a	10.83 bc	37.1 a
	----chlorsulfuron	62.5		0.0195						
	----metsulfuron	12.5		0.0039						
	2,4-D ester	3.8	L	0.314	lb ae/a	Spring	A			
	Nonionic Surfactant	100	L	0.5	% v/v	Spring	A			
5	Finesse Premix	75	DF	0.047	lb ai/a	Spring	A	16.7 a	12.50 a	37.3 a
	----chlorsulfuron	62.5		0.039						
	----metsulfuron	12.5		0.0078						
	2,4-D ester	3.8	L	0.62	lb ae/a	Spring	A			
	Nonionic Surfactant	100	L	0.5	% v/v	Spring	A			
6	Untreated Check							16.3 a	11.83 ab	36.3 a
	LSD P=.05							4.44	1.356	4.78
	Standard Deviation							2.44	0.745	2.63
	CV							15.63	6.47	6.85
	Replicate F							0.597	0.100	0.203
	Replicate Prob(F)							0.5689	0.9057	0.8196
	Treatment F							1.599	3.985	1.299
	Treatment Prob(F)							0.2465	0.0300	0.3379

University of Delaware

Efficacy of GF-3313 on ALS-resistant Common Chickweed

Trial ID: SG7-15 Location: Field #30 Trial Year:
Protocol ID: SG7-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact: Dow

Investigator: Mark VanGessel Title: Extension Weed Specialist
Organization: University of Delaware
Address: 16483 County Seat Hwy
City+State/Prov: Georgetown, Delaware
Postal Code: 19947 E-mail: mjv@udel.edu
Country: USA United States

Crop Description

Crop 1: TRZAW Triticum aestivum (winter) Winter wheat
Variety: Shirley BBCH Scale: BCER
Planting Date: 10/26/14
Planting Rate, Unit: 150 lb/A Planting Method: PLANTD planted
Depth, Unit: 0.75 in Planting Equipment: PD Plot Drilling Machine
Row Spacing, Unit: 7 in Emergence Date: 11/05/14
Harvest Date: 07/01/15
Harvested Width, Unit: 7 FT
Soil Temperature, Unit: 67 F Harvested Length, Unit: 24 FT
Soil Moisture: NORMAL normal, adequate Harvest Equipment: Plot combine
Seed Bed: SMOOTH smooth % Standard Moisture: 13.5

Pest Description

Pest 1 Type: W Code: HLOUM Holosteum umbellatum
Common Name: Jagged chickweed

Pest 2 Type: W Code: LAMAM Lamium amplexicaule
Common Name: Henbit

Pest 3 Type: W Code: ERPSS Erophila sp.
Common Name: Whitlowgrass

Site and Design

Treated Plot Width: 10 FT Site Type: FIELD field
Treated Plot Length: 25 FT
Treated Plot Area: 250 FT2 Treatments: 8 Tillage Type: CONTIL conventional-till
Replications: 3 Study Design: RACOBL Randomized Complete Block (RCB)
Untreated Arrangement: INCLUDED single control randomized in each block

Soil Description

% Sand: 83 % OM: 1.0 Texture: LS loamy sand
% Silt: 8 pH: 4.7
% Clay: 9 CEC: 4.2 Fert. Level: G good
Soil Drainage: G good

Moisture and Weather Conditions

Overall Moisture Conditions: NORMAL normal
Closest Weather Station: UDREC Distance, Unit: 0.3 mi

University of Delaware

Application Description

	A
Application Date:	04/06/15
Appl. Stop Time:	11:15 AM
Application Method:	SPRAY
Application Timing:	Spring
Application Placement:	BROADC
Applied By:	Johnson
Air Temperature, Unit:	67 F
% Relative Humidity:	41
Wind Velocity, Unit:	7 mph
Wind Direction:	SW
Dew Presence (Y/N):	N no
Soil Temperature, Unit:	66 F
Soil Moisture:	NORMAL
% Cloud Cover:	0

Crop Stage At Each Application

	A
Crop 1 Code, BBCH Scale:	TRZAW BCER
Stage Scale Used:	DESC
Stage Majority, Percent:	2-tiller 50
Stage Minimum, Percent:	1-tiller 30
Stage Maximum, Percent:	3-tiller 20
Height, Unit:	5 in
Height Minimum, Maximum:	4 6

Pest Stage At Each Application

	A
Pest 1 Code, Type, Scale:	HLOUM W
Stage Majority, Percent:	veg 80
Stage Minimum, Percent:	veg 80
Stage Maximum, Percent:	eaFlwr 20
Height, Unit:	4.5 in
Height Minimum, Maximum:	4 5
Density, Unit:	30 m2
Pest 2 Code, Type, Scale:	LAMAM W
Stage Majority, Percent:	veg 100
Height, Unit:	5 in
Height Minimum, Maximum:	4 6
Density, Unit:	20 m2
Pest 3 Code, Type, Scale:	ERPSS W
Stage Majority, Percent:	flower 100
Height, Unit:	3 in
Density, Unit:	50 m2

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Application Equipment

	A
Appl. Equipment:	Backpack
Equipment Type:	SPRBAC
Operation Pressure, Unit:	31 psi
Nozzle Type:	AIRMIX
Nozzle Size:	11002
Nozzle Spacing, Unit:	18 in
Boom Length, Unit:	9 ft
Boom Height, Unit:	24 in
Ground Speed, Unit:	3 mph
Carrier:	WATER
Spray Volume, Unit:	20 gal/ac
Mix Size, Unit:	2 Liters
Propellant:	COMCO2

Trial Comments

4/17/15: Overall injury equals stunting.

4/28/15: Treatments 1, 3, and 4 weak on field pansy
Treatment 7 good on field pansy.
GF-3313 did not provide good control of ivyleaf speedwell, while PowerFlex was fair to good.

5/13/15: Jagged chickweed has senesced and so is difficult to rate. Treatments 2,3,4,5,7 poor on ivyleaf speedwell.
Treatments 2,3,4 poor on field pansy. Treatment 6 fair on speedwell and field pansy.

University of Delaware

Efficacy of GF-3313 on ALS-resistant Common Chickweed

Trial ID: SG7-15 Location: Field #30 Trial Year:
Protocol ID: SG7-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact: Dow

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	TRZAW Wt.Wheat Stunting % 04/17/15	TRZAW Wt.Wheat Stunting % 04/28/15	HLOUM JagChkwd Control % 04/28/15	LAMAM Henbit Control % 04/28/15
1	GF-3313 Premix	20	WG	0.0094	lb ai/a	Spring	A	0.0 d	0.0 d	80.0 c	78.3 b
	----florasulam	10		0.0047							
	----halauxifen	10		0.0047							
	Crop Oil Concentrate	100	L	1	% v/v	Spring	A				
2	GF-3313 Premix	20	WG	0.0094	lb ai/a	Spring	A	2.3 cd	2.3 d	86.0 ab	90.0 a
	----florasulam	10		0.0047							
	----halauxifen	10		0.0047							
	30% Urea Ammonium Nitrate	100	L	1	% v/v	Spring	A				
	Nonionic Surfactant	100	L	0.25	% v/v	Spring	A				
3	GF-3313 Premix	20	WG	0.0094	lb ai/a	Spring	A	4.7 bc	8.0 c	89.3 a	88.3 a
	----florasulam	10		0.0047							
	----halauxifen	10		0.0047							
	2,4-D ester	3.8	L	0.312	lb ae/a	Spring	A				
	Crop Oil Concentrate	100	L	1	% v/v	Spring	A				
4	GF-3313 Premix	20	WG	0.0094	lb ai/a	Spring	A	6.3 bc	10.7 bc	88.3 ab	90.0 a
	----florasulam	10		0.0047							
	----halauxifen	10		0.0047							
	2,4-D ester	3.8	L	0.312	lb ae/a	Spring	A				
	Nonionic Surfactant	100	L	0.25	% v/v	Spring	A				
5	Harmony Extra SG Premix	50	SG	0.0234	lb ai/a	Spring	A	7.0 b	8.0 c	60.0 d	75.0 b
	----thifensulfuron	33		0.0154							
	----tribenuron	17		0.00796							
	2,4-D ester	3.8	L	0.312	lb ae/a	Spring	A				
	Nonionic Surfactant	100	L	0.25	% v/v	Spring	A				
6	PowerFlex HL....pyroxsulam	13.1	WG	0.0164	lb ai/a	Spring	A	12.3 a	15.7 a	83.3 bc	86.0 a
	Dry Ammonium Sulfate	100	D	0.9	% w/v	Spring	A				
	Crop Oil Concentrate	100	L	1	% v/v	Spring	A				
7	PowerFlex HL....pyroxsulam	13.1	WG	0.0164	lb ai/a	Spring	A	14.0 a	14.0 ab	88.3 ab	90.0 a
	GF-3313 Premix	20	WG	0.0094	lb ai/a	Spring	A				
	----florasulam	10		0.0047							
	----halauxifen	10		0.0047							
	Dry Ammonium Sulfate	100	D	0.9	% w/v	Spring	A				
	Crop Oil Concentrate	100	L	1	% v/v	Spring	A				

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.
Missing data estimates are included in columns:Average=3

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Pest Code										HLOUM	LAMAM
Pest Name										JagChkwd	Henbit
Crop Code								TRZAW	TRZAW		
Crop Name								Wt.Wheat	Wt.Wheat		
Rating Type								Stunting	Stunting	Control	Control
Rating Unit								%	%	%	%
Rating Date								04/17/15	04/28/15	04/28/15	04/28/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code				
8	Untreated Check							0.0 d	0.0 d	0.0 e	0.0 c
LSD P=.05								4.00	4.55	5.35	5.49
Standard Deviation								2.28	2.60	3.01	3.14
CV								39.17	35.41	4.18	4.2
Replicate F								1.301	1.600	0.005	0.080
Replicate Prob(F)								0.3032	0.2367	0.9954	0.9231
Treatment F								15.781	16.424	310.248	287.878
Treatment Prob(F)								0.0001	0.0001	0.0001	0.0001

University of Delaware

Pest Code								HLOUM	LAMAM	
Pest Name								JagChkwd	Henbit	
Crop Code										TRZAW
Crop Name										Wt.Wheat
Rating Type								Control	Control	Yield
Rating Unit								%	%	Bu/A
Rating Date								05/13/15	05/13/15	07/01/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code			
1	GF-3313 Premix	20	WG	0.0094	lb ai/a	Spring	A	100.0 a	100.0 a	59.5 a
	----florasulam	10		0.0047						
	----halauxifen	10		0.0047						
	Crop Oil Concentrate	100	L	1	% v/v	Spring	A			
2	GF-3313 Premix	20	WG	0.0094	lb ai/a	Spring	A	100.0 a	100.0 a	57.1 a
	----florasulam	10		0.0047						
	----halauxifen	10		0.0047						
	30% Urea Ammonium Nitrate	100	L	1	% v/v	Spring	A			
	Nonionic Surfactant	100	L	0.25	% v/v	Spring	A			
3	GF-3313 Premix	20	WG	0.0094	lb ai/a	Spring	A	100.0 a	100.0 a	48.5 a
	----florasulam	10		0.0047						
	----halauxifen	10		0.0047						
	2,4-D ester	3.8	L	0.312	lb ae/a	Spring	A			
	Crop Oil Concentrate	100	L	1	% v/v	Spring	A			
4	GF-3313 Premix	20	WG	0.0094	lb ai/a	Spring	A	100.0 a	100.0 a	54.6 a
	----florasulam	10		0.0047						
	----halauxifen	10		0.0047						
	2,4-D ester	3.8	L	0.312	lb ae/a	Spring	A			
	Nonionic Surfactant	100	L	0.25	% v/v	Spring	A			
5	Harmony Extra SG Premix	50	SG	0.0234	lb ai/a	Spring	A		63.3 c	58.8 a
	----thifensulfuron	33		0.0154						
	----tribenuron	17		0.00796						
	2,4-D ester	3.8	L	0.312	lb ae/a	Spring	A			
	Nonionic Surfactant	100	L	0.25	% v/v	Spring	A			
6	PowerFlex HL....pyroxsulam	13.1	WG	0.0164	lb ai/a	Spring	A	93.3 a	93.3 b	54.1 a
	Dry Ammonium Sulfate	100	D	0.9	% w/v	Spring	A			
	Crop Oil Concentrate	100	L	1	% v/v	Spring	A			
7	PowerFlex HL....pyroxsulam	13.1	WG	0.0164	lb ai/a	Spring	A	96.7 a	100.0 a	61.7 a
	GF-3313 Premix	20	WG	0.0094	lb ai/a	Spring	A			
	----florasulam	10		0.0047						
	----halauxifen	10		0.0047						
	Dry Ammonium Sulfate	100	D	0.9	% w/v	Spring	A			
	Crop Oil Concentrate	100	L	1	% v/v	Spring	A			

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Pest Code								HLOUM	LAMAM	
Pest Name								JagChkwd	Henbit	
Crop Code										TRZAW
Crop Name										Wt.Wheat
Rating Type								Control	Control	Yield
Rating Unit								%	%	Bu/A
Rating Date								05/13/15	05/13/15	07/01/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code			
8	Untreated Check							0.0 b	0.0 d	49.5 a
LSD P=.05								6.82	5.61	10.28
Standard Deviation								3.83	3.20	5.87
CV								4.55	3.9	10.58
Replicate F								0.243	1.928	8.965
Replicate Prob(F)								0.7879	0.1822	0.0031
Treatment F								283.568	368.174	1.937
Treatment Prob(F)								0.0001	0.0001	0.1385

University of Delaware

Benefits of Soil-Residual Herbicides with Early Planting Date

Trial ID: SG8a-15 Location: Field #28 Trial Year:
Protocol ID: SG8-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Investigator: Mark VanGessel Title: Extension Weed Specialist
Organization: University of Delaware
Address: 16483 County Seat Hwy
City+State/Prov: Georgetown, Delaware
Postal Code: 19947 E-mail: mjv@udel.edu
Country: USA United States

Crop Description

Crop 1: TRZAW Triticum aestivum (winter) Winter wheat
Variety: Shirley BBCH Scale: BCER
Planting Date: 10/01/14
Planting Rate, Unit: 150 LB/A Planting Method: PLANTD planted
Depth, Unit: 0.75 in Planting Equipment: PD Plot Drilling Machine
Row Spacing, Unit: 7 in Emergence Date: 10/07/14
Harvest Date: 07/01/15
Harvested Width, Unit: 7 FT
Soil Temperature, Unit: 69 F Harvested Length, Unit: 24 FT
Soil Moisture: NORMAL normal, adequate Harvest Equipment: Plot combine
Seed Bed: SMOOTH smooth % Standard Moisture: 13.5

Pest Description

Pest 1 Type: W Code: HLOUM Holosteum umbellatum
Common Name: Jagged chickweed

Pest 2 Type: W Code: LAMAM Lamium amplexicaule
Common Name: Henbit

Pest 3 Type: W Code: SCRAN Scleranthus annuus
Common Name: Annual knawel

Site and Design

Treated Plot Width: 10 FT Site Type: FIELD field
Treated Plot Length: 25 FT
Treated Plot Area: 250 FT2 Treatments: 6 Tillage Type: REDTIL reduced-till
Replications: 3 Study Design: RACOBL Randomized Complete Block (RCB)

Trial Initiation Comments:
Plots were turbo-tilled immediately prior to planting.

Maintenance

No.	Date	Maintenance Product Name	Form Conc	Form Type	Rate	Rate Unit
1.	09/30/14	Gramoxone	2	SL	2	QT/A
2.	09/30/14	COC	100	L	1	% V/V

Comment: Gramoxone applied for preplant burndown.

Soil Description

% Sand: 81 % OM: 0.9 Texture: SL sandy loam
% Silt: 2 pH: 5.5
% Clay: 17 CEC: 4.3 Fert. Level: G good
Soil Drainage: G good

Moisture and Weather Conditions

Overall Moisture Conditions: NORMAL normal
Closest Weather Station: UDREC Distance, Unit: 0.4 mi

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Application Description

	A	B	C
Application Date:	10/02/14	10/15/14	04/06/15
Appl. Stop Time:	11:00 AM	08:30 AM	11:50 AM
Interval to Prev. Appl., Unit:		13 DAYS	173 DAYS
Application Method:	SPRAY	SPRAY	SPRAY
Application Timing:	Pre	Spike	Spring
Application Placement:	BROADC	BROADC	BROADC
Applied By:	VanGessl	VanGessl	Johnson
Air Temperature, Unit:	66 F	74 F	70 F
% Relative Humidity:	73	80	32
Wind Velocity, Unit:	6 mph	8 mph	5 mph
Wind Direction:	NE	SE	SW
Dew Presence (Y/N):	N no	N no	N no
Soil Temperature, Unit:	66 F	75 F	70 F
Soil Moisture:	NORMAL	NORMAL	NORMAL
% Cloud Cover:	35	100	0

Crop Stage At Each Application

	A	B	C
Crop 1 Code, BBCH Scale:	TRZAW BCER	TRZAW BCER	TRZAW BCER
Stage Scale Used:		DESC	DESC
Stage Majority, Percent:		Spike 100	2-tiller 60
Stage Minimum, Percent:			1-tiller 10
Stage Maximum, Percent:			3-tiller 30
Height, Unit:		0.3 in	5 in
Height Minimum, Maximum:			4 6

Pest Stage At Each Application

	A	B	C
Pest 1 Code, Type, Scale:	HLOUM W	HLOUM W	HLOUM W
Stage Majority, Percent:			veg 80
Stage Minimum, Percent:			veg 80
Stage Maximum, Percent:			eaFlwr 20
Height, Unit:			4.5 in
Height Minimum, Maximum:			4 5
Density, Unit:			30 m2
Pest 2 Code, Type, Scale:	LAMAM W	LAMAM W	LAMAM W
Stage Majority, Percent:			veg 100
Height, Unit:			5 in
Height Minimum, Maximum:			4 6
Density, Unit:			20 m2
Pest 3 Code, Type, Scale:	SCRAN W	SCRAN W	SCRAN W
Stage Majority, Percent:			veg 100
Height, Unit:			1.5 in
Height Minimum, Maximum:			1 2
Density, Unit:			10 m2

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Application Equipment

	A	B	C
Appl. Equipment:	Backpack	Backpack	Backpack
Equipment Type:	SPRBAC	SPRBAC	SPRBAC
Operation Pressure, Unit:	31 psi	31 psi	31 psi
Nozzle Type:	AIRMIX	AIRMIX	AIRMIX
Nozzle Size:	11002	11002	11002
Nozzle Spacing, Unit:	18 in	18 in	18 in
Boom Length, Unit:	9 ft	9 ft	9 ft
Boom Height, Unit:	18 in	18 in	24 in
Ground Speed, Unit:	3 mph	3 mph	3 mph
Carrier:	WATER	WATER	WATER
Spray Volume, Unit:	20 gal/ac	20 gal/ac	20 gal/ac
Mix Size, Unit:	2 Liters	2 Liters	2 Liters
Propellant:	COMCO2	COMCO2	COMCO2

Trial Comments

11/10/14: Wonder if Axiom may not have been shaken up well??

04/11/15: No/poor control with Zidua = mouseear chickweed.
with Anthem = knawel, primrose.

04/30/15:Unless noted >80% control of knawel, henbit, jagged chickweed. Comments based on fall herbicides not Harmony in the spray.
Treatment 2: weak on knawel. fair to poor on jagged chickweed.
Treatment 3: poor to none on knawel and jagged chickweed
Treatment 4: poor on knawel, henbit, and mouseear chickweed. fair to poor on jagged chickweed
Treatment 5: poor on knawel. fair to poor on jagged chickweed.

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Benefits of Soil-Residual Herbicides with Early Planting Date

Trial ID: SG8a-15 Location: Field #28 Trial Year:
Protocol ID: SG8-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	TRZAW Wt.Wheat Stunting % 11/10/14	TRZAW Wt.Wheat Stunting % 01/02/15	TRZAW Wt.Wheat Stunting % 04/11/15
1	Untreated Check							0.0 d	0.0 b	0.0 b
2	Axiom Premix	68	WG	0.255	lb ai/a	SPIKE	B	21.4 a	50.0 a	55.0 a
	----flufenacet	54		0.202						
	----metribuzin	14		0.0525						
	Harmony Extra SG Premix	50	SG	0.0234	lb ai/a	Spring	C			
	----thifensulfuron	33		0.0154						
	----tribenuron	17		0.00796						
	Nonionic Surfactant	100	L	0.25	% v/v	Spring	C			
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	Spring	C			
3	Sharpen.....saflufenacil	2.85	SC	0.067	lb ai/a	PRE	A	4.0 cd	2.3 b	0.0 b
	Harmony Extra SG Premix	50	SG	0.0234	lb ai/a	Spring	C			
	----thifensulfuron	33		0.0154						
	----tribenuron	17		0.00796						
	Nonionic Surfactant	100	L	0.25	% v/v	Spring	C			
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	Spring	C			
4	Zidua.....pyroxasulfone	85	WG	0.0664	lb ai/a	SPIKE	B	14.0 b	0.0 b	4.7 b
	Harmony Extra SG Premix	50	SG	0.0234	lb ai/a	Spring	C			
	----thifensulfuron	33		0.0154						
	----tribenuron	17		0.00796						
	Nonionic Surfactant	100	L	0.25	% v/v	Spring	C			
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	Spring	C			
5	Anthem Premix	2.153	SE	0.067	lb ai/a	SPIKE	B	9.7 bc	7.0 b	2.3 b
	----pyroxasulfone	2.09		0.065						
	----fluthiacet	0.06300001		0.00196						
	Harmony Extra SG Premix	50	SG	0.0234	lb ai/a	Spring	C			
	----thifensulfuron	33		0.0154						
	----tribenuron	17		0.00796						
	Nonionic Surfactant	100	L	0.25	% v/v	Spring	C			
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	Spring	C			
6	Harmony Extra SG Premix	50	SG	0.0234	lb ai/a	Spring	C	0.0 d	0.0 b	0.0 b
	----thifensulfuron	33		0.0154						
	----tribenuron	17		0.00796						
	Nonionic Surfactant	100	L	0.25	% v/v	Spring	C			
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	Spring	C			
	LSD P=.05							6.99	19.49	6.89
	Standard Deviation							3.79	10.71	3.66
	CV							46.26	108.31	35.39
	Replicate F							1.921	1.244	0.312
	Replicate Prob(F)							0.2020	0.3292	0.7408
	Treatment F							15.203	10.291	108.182
	Treatment Prob(F)							0.0004	0.0011	0.0001

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.
Missing data estimates are included in columns:Yates=1,3,4,5,6,7

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	HLOUM JagChkwd Control % 04/11/15	LAMAM Henbit Control % 04/11/15	SCRAN Knawel Control % 04/11/15	TRZAW Wt.Wheat Stunting % 04/30/15
1	Untreated Check							0.0 c	0.0 d	0.0 d	0.0 a
2	Axiom Premix	68	WG	0.255	lb ai/a	SPIKE	B	70.2 a	96.7 a	83.7 a	0.0 a
	----flufenacet	54		0.202							
	----metribuzin	14		0.0525							
	Harmony Extra SG Premix	50	SG	0.0234	lb ai/a	Spring	C				
	----thifensulfuron	33		0.0154							
	----tribenuron	17		0.00796							
	Nonionic Surfactant	100	L	0.25	% v/v	Spring	C				
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	Spring	C				
3	Sharpen.....saflufenacil	2.85	SC	0.067	lb ai/a	PRE	A	45.2 b	58.3 c	18.7 cd	0.0 a
	Harmony Extra SG Premix	50	SG	0.0234	lb ai/a	Spring	C				
	----thifensulfuron	33		0.0154							
	----tribenuron	17		0.00796							
	Nonionic Surfactant	100	L	0.25	% v/v	Spring	C				
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	Spring	C				
4	Zidua.....pyroxasulfone	85	WG	0.0664	lb ai/a	SPIKE	B	43.3 b	63.3 c	44.1 bc	7.3 a
	Harmony Extra SG Premix	50	SG	0.0234	lb ai/a	Spring	C				
	----thifensulfuron	33		0.0154							
	----tribenuron	17		0.00796							
	Nonionic Surfactant	100	L	0.25	% v/v	Spring	C				
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	Spring	C				
5	Anthem Premix	2.153	SE	0.067	lb ai/a	SPIKE	B	65.0 a	80.0 b	56.7 ab	9.8 a
	----pyroxasulfone	2.09		0.065							
	----fluthiacet	0.06300001		0.00196							
	Harmony Extra SG Premix	50	SG	0.0234	lb ai/a	Spring	C				
	----thifensulfuron	33		0.0154							
	----tribenuron	17		0.00796							
	Nonionic Surfactant	100	L	0.25	% v/v	Spring	C				
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	Spring	C				
6	Harmony Extra SG Premix	50	SG	0.0234	lb ai/a	Spring	C	0.0 c	0.0 d	0.0 d	1.8 a
	----thifensulfuron	33		0.0154							
	----tribenuron	17		0.00796							
	Nonionic Surfactant	100	L	0.25	% v/v	Spring	C				
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	Spring	C				
	LSD P=.05							17.15	15.09	27.40	10.18
	Standard Deviation							9.11	8.01	14.19	5.27
	CV							24.42	16.12	41.93	167.91
	Replicate F							0.625	2.616	0.456	2.476
	Replicate Prob(F)							0.5596	0.1336	0.6515	0.1538
	Treatment F							34.229	77.756	16.772	1.996
	Treatment Prob(F)							0.0001	0.0001	0.0009	0.1964

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Pest Code	
Pest Name	
Crop Code	TRZAW
Crop Name	Wt.Wheat
Rating Type	Yield
Rating Unit	Bu/A
Rating Date	07/01/15

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	
1	Untreated Check							39.6 b
2	Axiom Premix	68	WG	0.255	lb ai/a	SPIKE	B	26.3 c
	----flufenacet	54		0.202				
	----metribuzin	14		0.0525				
	Harmony Extra SG Premix	50	SG	0.0234	lb ai/a	Spring	C	
	----thifensulfuron	33		0.0154				
	----tribenuron	17		0.00796				
	Nonionic Surfactant	100	L	0.25	% v/v	Spring	C	
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	Spring	C	
3	Sharpen.....saflufenacil	2.85	SC	0.067	lb ai/a	PRE	A	43.4 ab
	Harmony Extra SG Premix	50	SG	0.0234	lb ai/a	Spring	C	
	----thifensulfuron	33		0.0154				
	----tribenuron	17		0.00796				
	Nonionic Surfactant	100	L	0.25	% v/v	Spring	C	
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	Spring	C	
4	Zidua.....pyroxasulfone	85	WG	0.0664	lb ai/a	SPIKE	B	51.7 ab
	Harmony Extra SG Premix	50	SG	0.0234	lb ai/a	Spring	C	
	----thifensulfuron	33		0.0154				
	----tribenuron	17		0.00796				
	Nonionic Surfactant	100	L	0.25	% v/v	Spring	C	
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	Spring	C	
5	Anthem Premix	2.153	SE	0.067	lb ai/a	SPIKE	B	51.2 ab
	----pyroxasulfone	2.09		0.065				
	----fluthiacet	0.06300001		0.00196				
	Harmony Extra SG Premix	50	SG	0.0234	lb ai/a	Spring	C	
	----thifensulfuron	33		0.0154				
	----tribenuron	17		0.00796				
	Nonionic Surfactant	100	L	0.25	% v/v	Spring	C	
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	Spring	C	
6	Harmony Extra SG Premix	50	SG	0.0234	lb ai/a	Spring	C	52.7 a
	----thifensulfuron	33		0.0154				
	----tribenuron	17		0.00796				
	Nonionic Surfactant	100	L	0.25	% v/v	Spring	C	
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	Spring	C	

LSD P=.05	12.81
Standard Deviation	7.04
CV	15.96
Replicate F	20.419
Replicate Prob(F)	0.0003
Treatment F	6.309
Treatment Prob(F)	0.0068

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Benefits of Soil-Residual Herbicides with Early Planting Date

Trial ID: SG8b-15 Location: Field #28 Trial Year:
Protocol ID: SG8-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Investigator: Mark VanGessel Title: Extension Weed Specialist
Organization: University of Delaware
Address: 16483 County Seat Hwy
City+State/Prov: Georgetown, Delaware
Postal Code: 19947 E-mail: mjv@udel.edu
Country: USA United States

Crop Description

Crop 1: TRZAW Triticum aestivum (winter) Winter wheat
Variety: Shirley BBCH Scale: BCER
Planting Date: 10/29/14
Planting Rate, Unit: 150 LB/A Planting Method: PLANTD planted
Depth, Unit: 0.75 in Planting Equipment: PD Plot Drilling Machine
Row Spacing, Unit: 7 in Emergence Date: 11/07/14
Harvest Date: 07/01/15
Harvested Width, Unit: 7 FT
Soil Temperature, Unit: 72 F Harvested Length, Unit: 24 FT
Soil Moisture: NORMAL normal, adequate Harvest Equipment: Plot combine
Seed Bed: SMOOTH smooth % Standard Moisture: 13.5

Pest Description

Pest 1 Type: W Code: HLOUM Holosteum umbellatum
Common Name: Jagged chickweed

Pest 2 Type: W Code: LAMAM Lamium amplexicaule
Common Name: Henbit

Pest 3 Type: W Code: SCRAN Scleranthus annuus
Common Name: Annual knawel

Site and Design

Treated Plot Width: 10 FT Site Type: FIELD field
Treated Plot Length: 25 FT
Treated Plot Area: 250 FT2 Treatments: 6 Tillage Type: REDTIL reduced-till
Replications: 3 Study Design: RACOBL Randomized Complete Block (RCB)

Trial Initiation Comments:
Plots were turbo-tilled immediately prior to planting.

Maintenance

No.	Date	Maintenance Product Name	Form Conc	Form Type	Rate	Rate Unit
1.	10/22/14	Gramoxone	2	SL	2	QT/A
2.	10/22/14	COC	100	L	1	% V/V

Comment: Gramoxone applied for preplant burndown.

Soil Description

% Sand: 81 % OM: 0.9 Texture: SL sandy loam
% Silt: 2 pH: 5.5
% Clay: 17 CEC: 4.3 Fert. Level: G good
Soil Drainage: G good

Moisture and Weather Conditions

Overall Moisture Conditions: NORMAL normal
Closest Weather Station: UDREC Distance, Unit: 0.4 mi

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Application Description

	A	B	C
Application Date:	10/30/14	11/11/14	04/06/15
Appl. Stop Time:	10:00 AM	10:00 AM	11:50 AM
Interval to Prev. Appl., Unit:		12 DAYS	146 DAYS
Application Method:	SPRAY	SPRAY	SPRAY
Application Timing:	Pre	Spike	Spring
Application Placement:	BROADC	BROADC	BROADC
Applied By:	VanGessl	VanGessl	Johnson
Air Temperature, Unit:	53 F	67 F	70 F
% Relative Humidity:	80	76	32
Wind Velocity, Unit:	3 mph	2 mph	5 mph
Wind Direction:	N	SE	SW
Dew Presence (Y/N):	N no	N no	N no
Soil Temperature, Unit:	52 F	66 F	70 F
Soil Moisture:	NORMAL	NORMAL	NORMAL
% Cloud Cover:	60	90	0

Crop Stage At Each Application

	A	B	C
Crop 1 Code, BBCH Scale:	TRZAW BCER	TRZAW BCER	TRZAW BCER
Stage Scale Used:		DESC	DESC
Stage Majority, Percent:		1-leaf 85	2-tiller 60
Stage Minimum, Percent:		1-leaf 85	1-tiller 10
Stage Maximum, Percent:		2-leaf 15	3-tiller 30
Height, Unit:		1 in	5 in
Height Minimum, Maximum:		0.75 1.5	4 6

Pest Stage At Each Application

	A	B	C
Pest 1 Code, Type, Scale:	HLOUM W	HLOUM W	HLOUM W
Stage Majority, Percent:			veg 80
Stage Minimum, Percent:			veg 80
Stage Maximum, Percent:			eaFlwr 20
Height, Unit:			4.5 in
Height Minimum, Maximum:			4 5
Density, Unit:			30 m2
Pest 2 Code, Type, Scale:	LAMAM W	LAMAM W	LAMAM W
Stage Majority, Percent:			veg 100
Height, Unit:			5 in
Height Minimum, Maximum:			4 6
Density, Unit:			20 m2
Pest 3 Code, Type, Scale:	SCRAN W	SCRAN W	SCRAN W
Stage Majority, Percent:			veg 100
Height, Unit:			1.5 in
Height Minimum, Maximum:			1 2
Density, Unit:			10 m2

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Application Equipment

	A	B	C
Appl. Equipment:	Backpack	Backpack	Backpack
Equipment Type:	SPRBAC	SPRBAC	SPRBAC
Operation Pressure, Unit:	31 psi	31 psi	31 psi
Nozzle Type:	AIRMIX	AIRMIX	AIRMIX
Nozzle Size:	11002	11002	11002
Nozzle Spacing, Unit:	18 in	18 in	18 in
Boom Length, Unit:	9 ft	9 ft	9 ft
Boom Height, Unit:	18 in	18 in	24 in
Ground Speed, Unit:	3 mph	3 mph	3 mph
Carrier:	WATER	WATER	WATER
Spray Volume, Unit:	20 gal/ac	20 gal/ac	20 gal/ac
Mix Size, Unit:	2 Liters	2 Liters	2 Liters
Propellant:	COMCO2	COMCO2	COMCO2

Trial Comments

4/24/15: Unles noted >85% control of henbit, jagged chickweed, and knawel.
Treatment 2: weak on knawel.
Treatment 3: weak on knawel and jagged chickweed.

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Benefits of Soil-Residual Herbicides with Early Planting Date

Trial ID: SG8b-15 Location: Field #28 Trial Year:
Protocol ID: SG8-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	TRZAW W.Wheat	TRZAW W.Wheat	HLOUM JagChkwd	LAMAM Henbit
	Pest Code										
	Pest Name										
	Crop Code										
	Crop Name										
	Rating Type							Stunting	Stunting	Control	Control
	Rating Unit							%	%	%	%
	Rating Date							01/02/15	04/11/15	04/11/15	04/11/15
1	Untreated Check							0.0 d	0.0 d	0.0 d	0.0 c
2	Axiom Premix	68	WG	0.255	lb ai/a	SPIKE	B	13.3 a	21.7 a	93.3 a	100.0 a
	----flufenacet	54		0.202							
	----metribuzin	14		0.0525							
	Harmony Extra SG Premix	50	SG	0.0234	lb ai/a	Spring	C				
	----thifensulfuron	33		0.0154							
	----tribenuron	17		0.00796							
	Nonionic Surfactant	100	L	0.25	% v/v	Spring	C				
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	Spring	C				
3	Sharpen.....saflufenacil	2.85	SC	0.067	lb ai/a	PRE	A	7.0 c	7.0 c	37.4 c	0.0 c
	Harmony Extra SG Premix	50	SG	0.0234	lb ai/a	Spring	C				
	----thifensulfuron	33		0.0154							
	----tribenuron	17		0.00796							
	Nonionic Surfactant	100	L	0.25	% v/v	Spring	C				
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	Spring	C				
4	Zidua.....pyroxasulfone	85	WG	0.0664	lb ai/a	SPIKE	B	8.0 bc	10.7 bc		35.1 b
	Harmony Extra SG Premix	50	SG	0.0234	lb ai/a	Spring	C				
	----thifensulfuron	33		0.0154							
	----tribenuron	17		0.00796							
	Nonionic Surfactant	100	L	0.25	% v/v	Spring	C				
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	Spring	C				
5	Anthem Premix	2.153	SE	0.067	lb ai/a	SPIKE	B	10.0 b	12.0 b	57.4 b	63.3 b
	----pyroxasulfone	2.09		0.065							
	----fluthiacet	0.06300001		0.00196							
	Harmony Extra SG Premix	50	SG	0.0234	lb ai/a	Spring	C				
	----thifensulfuron	33		0.0154							
	----tribenuron	17		0.00796							
	Nonionic Surfactant	100	L	0.25	% v/v	Spring	C				
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	Spring	C				
6	Harmony Extra SG Premix	50	SG	0.0234	lb ai/a	Spring	C	0.0 d	0.0 d	0.0 d	0.0 c
	----thifensulfuron	33		0.0154							
	----tribenuron	17		0.00796							
	Nonionic Surfactant	100	L	0.25	% v/v	Spring	C				
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	Spring	C				
	LSD P=.05							2.39	4.22	15.06	29.63
	Standard Deviation							1.31	2.32	7.54	15.74
	CV							20.54	27.13	20.03	47.59
	Replicate F							1.581	4.216	2.210	1.082
	Replicate Prob(F)							0.2532	0.0470	0.1909	0.3837
	Treatment F							50.819	37.526	83.546	21.035
	Treatment Prob(F)							0.0001	0.0001	0.0001	0.0002

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.
Missing data estimates are included in columns:Yates=3,4; Average=5,6

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Pest Code									SCRAN		
Pest Name									Knawel		
Crop Code										TRZAW	TRZAW
Crop Name										W.Wheat	W.Wheat
Rating Type									Control	Stunting	Yield
Rating Unit									%	%	Bu/A
Rating Date									04/11/15	04/24/15	07/01/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code				
1	Untreated Check								0.0 d	0.0 b	53.5 a
2	Axiom Premix	68	WG	0.255	lb ai/a	SPIKE	B		100.0 a	17.5 a	43.9 a
	----flufenacet	54		0.202							
	----metribuzin	14		0.0525							
	Harmony Extra SG Premix	50	SG	0.0234	lb ai/a	Spring	C				
	----thifensulfuron	33		0.0154							
	----tribenuron	17		0.00796							
	Nonionic Surfactant	100	L	0.25	% v/v	Spring	C				
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	Spring	C				
3	Sharpen.....saflufenacil	2.85	SC	0.067	lb ai/a	PRE	A		50.0 c	0.0 b	45.2 a
	Harmony Extra SG Premix	50	SG	0.0234	lb ai/a	Spring	C				
	----thifensulfuron	33		0.0154							
	----tribenuron	17		0.00796							
	Nonionic Surfactant	100	L	0.25	% v/v	Spring	C				
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	Spring	C				
4	Zidua.....pyroxasulfone	85	WG	0.0664	lb ai/a	SPIKE	B			3.5 b	54.9 a
	Harmony Extra SG Premix	50	SG	0.0234	lb ai/a	Spring	C				
	----thifensulfuron	33		0.0154							
	----tribenuron	17		0.00796							
	Nonionic Surfactant	100	L	0.25	% v/v	Spring	C				
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	Spring	C				
5	Anthem Premix	2.153	SE	0.067	lb ai/a	SPIKE	B		70.0 b	2.5 b	46.6 a
	----pyroxasulfone	2.09		0.065							
	----fluthiacet	0.06300001		0.00196							
	Harmony Extra SG Premix	50	SG	0.0234	lb ai/a	Spring	C				
	----thifensulfuron	33		0.0154							
	----tribenuron	17		0.00796							
	Nonionic Surfactant	100	L	0.25	% v/v	Spring	C				
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	Spring	C				
6	Harmony Extra SG Premix	50	SG	0.0234	lb ai/a	Spring	C		0.0 d	2.5 b	45.1 a
	----thifensulfuron	33		0.0154							
	----tribenuron	17		0.00796							
	Nonionic Surfactant	100	L	0.25	% v/v	Spring	C				
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	Spring	C				
LSD P=.05									11.87	9.83	15.90
Standard Deviation									5.66	3.78	8.74
CV									12.86	87.28	18.13
Replicate F									0.625	0.667	5.071
Replicate Prob(F)									0.5724	0.5759	0.0302
Treatment F									180.938	9.157	0.885
Treatment Prob(F)									0.0001	0.0489	0.5252

University of Delaware

Axiom and Huskie Programs for ALS-Chickweed Control

Trial ID: SG9-15 Location: Kent County Trial Year:
Protocol ID: SG9-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Crop Description

Crop 1: TRZAW Triticum aestivum (winter) Winter wheat
Variety: SS5208 BBCH Scale: BCER
Planting Date: 10/26/14
Planting Method: PLANTD planted
Depth, Unit: 1 in Planting Equipment: SR Drilling Machine
Row Spacing, Unit: 7 in Emergence Date: 11/05/14
Soil Moisture: NORMAL normal, adequate
Seed Bed: MEDIUM medium

Pest Description

Pest 1 Type: W Code: STEME Stellaria media
Common Name: Common chickweed
Description: suspected ALS-resistant

Site and Design

Treated Plot Width: 10 FT Site Type: FIELD field
Treated Plot Length: 25 FT
Treated Plot Area: 250 FT2 Treatments: 12 Tillage Type: CONTIL conventional-till
Replications: 3 Study Design: RACOBL Randomized Complete Block (RCB)

No.	Previous Crop
1.	potatoes

Soil Description

% OM: 1.2 Texture: SL sandy loam
pH: 6.2
Fert. Level: G good
Soil Drainage: G good

Moisture and Weather Conditions

Overall Moisture Conditions: NORMAL normal

Application Description

	A	B	C	D
Application Date:	11/05/14	11/11/14	11/25/14	04/16/15
Appl. Stop Time:	02:00 PM	01:45 PM	11:30 AM	09:00 AM
Interval to Prev. Appl., Unit:		6 DAYS	14 DAYS	142 DAYS
Application Method:	SPRAY	SPRAY	SPRAY	SPRAY
Application Timing:	Spike	1 LfWht	3lvs-1Tilr	Spring
Application Placement:	BROADC	BROADC	BROADC	BROADC
Applied By:	Johnson	Johnson	Johnson	Johnson
Air Temperature, Unit:	66 F	70 F	60 F	56 F
% Relative Humidity:	47	71	43	49
Wind Velocity, Unit:	3 mph	3 mph	3 mph	3 mph
Wind Direction:	SW	SE	N	E
Dew Presence (Y/N):	N no	N no	Y yes	Y yes
Soil Temperature, Unit:	65 F	70 F	59 F	54 F
Soil Moisture:	NORMAL	NORMAL	NORMAL	NORMAL
% Cloud Cover:	80	90	100	15

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Crop Stage At Each Application

	A	B	C	D
Crop 1 Code, BBCH Scale:	TRZAW BCER	TRZAW BCER	TRZAW BCER	TRZAW BCER
Stage Scale Used:	DESC	DESC	DESC	DESC
Stage Majority, Percent:	1-leaf 100	1- leaf 75	2-leaf 100	3-tiller 70
Stage Minimum, Percent:		2-leaf 25		3-tiller 70
Stage Maximum, Percent:				4-tiller 30
Height, Unit:	0.3 in	1.5 in	3.5 in	7 in
Height Minimum, Maximum:	0.2 0.4	1.2 1.6	3 4	

Pest Stage At Each Application

	A	B	C	D
Pest 1 Code, Type, Scale:	STEME W	STEME W	STEME W	STEME W
Stage Majority, Percent:	cotldn 100	2-leaf 100	veg 100	eaSeed 70
Stage Minimum, Percent:				veg 30
Stage Maximum, Percent:				eaSeed 70
Height, Unit:	0.2 in	0.3 in	0.4 in	7 in
Height Minimum, Maximum:		0.2 0.4	0.2 0.5	5 8
Density, Unit:	20 m2	20 m2	20 m2	15 m2

Application Equipment

	A	B	C	D
Appl. Equipment:	Backpack	Backpack	Backpack	Backpack
Equipment Type:	SPRBAC	SPRBAC	SPRBAC	SPRBAC
Operation Pressure, Unit:	31 psi	31 psi	31 psi	31 psi
Nozzle Type:	AIRMIX	AIRMIX	AIRMIX	AIRMIX
Nozzle Size:	11002	11002	11002	11002
Nozzle Spacing, Unit:	18 in	18 in	18 in	18 in
Boom Length, Unit:	9 ft	9 ft	9 ft	9 ft
Boom Height, Unit:	18 in	18 in	20 in	24 in
Ground Speed, Unit:	3 mph	3 mph	3 mph	3 mph
Carrier:	WATER	WATER	WATER	WATER
Spray Volume, Unit:	20 gal/ac	20 gal/ac	20 gal/ac	20 gal/ac
Mix Size, Unit:	2 Liters	2 Liters	2 Liters	2 Liters
Propellant:	COMCO2	COMCO2	COMCO2	COMCO2

Trial Comments

11/11/14: No injury observed from spike treatments; wheat at 1-leaf stage.

12/5/14: Trt 8 exhibited noticeable amount of yellowing

4/15/15: Huskie in the fall was weak/poor on field pansy. Spring treatments have yet to be sprayed.

4/23/15: Treatment 12 rep 2 in low spot of field so standing water maybe contributing to injury. Leaf burn was observed with treatment 10 (Glory POST) and leaf burn averaged 20% for the three reps.

5/12/15: Huskie and Glory weak on field pansy.

University of Delaware

Axiom and Huskie Programs for ALS-Chickweed Control

Trial ID: SG9-15 Location: Kent County Trial Year:
Protocol ID: SG9-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	TRZAW Wt.Wheat Stunting % 12/05/14	TRZAW Wt.Wheat Stunting % 04/15/15	STEME C.chkwd Control % 04/15/15
1	Untreated Check							0.0 d	0.0 e	0.0 b
2	Axiom Premix	68	WG	0.255	lb ai/a	Spike	A	8.0 bc	8.0 cd	100.0 a
	----flufenacet	54		0.202						
	----metribuzin	14		0.0525						
3	Axiom Premix	68	WG	0.255	lb ai/a	Spike	A	7.0 c	11.3 bc	100.0 a
	----flufenacet	54		0.202						
	----metribuzin	14		0.0525						
	Osprey.....mesosulfuron	4.5	WG	0.0134	lb ai/a	3lvs-1Tilr	C			
	Nonionic Surfactant	100	L	0.5	% v/v	3lvs-1Tilr	C			
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	3lvs-1Tilr	C			
4	Axiom Premix	68	WG	0.255	lb ai/a	Spike	A	8.0 bc	10.7 cd	100.0 a
	----flufenacet	54		0.202						
	----metribuzin	14		0.0525						
	Huskie Premix	2.05	EC	0.24	lb ai/a	3lvs-1Tilr	C			
	----pyrasulfotole	0.3		0.035						
	----bromoxynil	1.75		0.205						
	Nonionic Surfactant	100	L	0.5	% v/v	3lvs-1Tilr	C			
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	3lvs-1Tilr	C			
5	Huskie Premix	2.05	EC	0.176	lb ai/a	1LfWht	B	0.0 d	0.0 e	100.0 a
	----pyrasulfotole	0.3		0.0258						
	----bromoxynil	1.75		0.15						
	Nonionic Surfactant	100	L	0.5	% v/v	1LfWht	B			
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	1LfWht	B			
6	Huskie Premix	2.05	EC	0.24	lb ai/a	1LfWht	B	8.0 bc	4.0 de	100.0 a
	----pyrasulfotole	0.3		0.035						
	----bromoxynil	1.75		0.205						
	Nonionic Surfactant	100	L	0.5	% v/v	1LfWht	B			
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	1LfWht	B			
7	Huskie Premix	2.05	EC	0.24	lb ai/a	3lvs-1Tilr	C	9.7 b	5.7 cde	100.0 a
	----pyrasulfotole	0.3		0.035						
	----bromoxynil	1.75		0.205						
	Nonionic Surfactant	100	L	0.5	% v/v	3lvs-1Tilr	C			
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	3lvs-1Tilr	C			
8	Huskie Premix	2.05	EC	0.24	lb ai/a	3lvs-1Tilr	C	18.0 a	36.7 a	100.0 a
	----pyrasulfotole	0.3		0.035						
	----bromoxynil	1.75		0.205						
	Glory.....metribuzin	75	DF	0.188	lb ai/a	3lvs-1Tilr	C			
	Nonionic Surfactant	100	L	0.5	% v/v	3lvs-1Tilr	C			
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	3lvs-1Tilr	C			

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.
Missing data estimates are included in columns:Yates=4
Could not calculate LSD (% mean diff) for columns 3 because error mean square = 0.

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Pest Code										STEME
Pest Name										C.chkwd
Crop Code								TRZAW	TRZAW	
Crop Name								Wt.Wheat	Wt.Wheat	
Rating Type								Stunting	Stunting	Control
Rating Unit								%	%	%
Rating Date								12/05/14	04/15/15	04/15/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code			
9	Huskie Premix	2.05	EC	0.24	lb ai/a	Spring	D			
	----pyrasulfotole	0.3		0.035						
	----bromoxynil	1.75		0.205						
	Nonionic Surfactant	100	L	0.5	% v/v	Spring	D			
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	Spring	D			
10	Huskie Premix	2.05	EC	0.24	lb ai/a	Spring	D			
	----pyrasulfotole	0.3		0.035						
	----bromoxynil	1.75		0.205						
	Glory.....metribuzin	75	DF	0.188	lb ai/a	Spring	D			
	Nonionic Surfactant	100	L	0.5	% v/v	Spring	D			
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	Spring	D			
11	Harmony Extra SG Premix	50	SG	0.0234	lb ai/a	Spring	D			
	----thifensulfuron	33		0.0154						
	----tribenuron	17		0.00796						
	Starane Ultra...fluroxypyr	2.8	EC	0.14	lb ae/a	Spring	D			
	Nonionic Surfactant	100	L	0.5	% v/v	Spring	D			
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	Spring	D			
12	Anthem Premix	2.153	SE	0.067	lb ai/a	Spike	A	7.0 c	18.3 b	100.0 a
	----pyroxasulfone	2.09		0.065						
	----fluthiacet	0.06300001		0.00196						
	Huskie Premix	2.05	EC	0.24	lb ai/a	3lvs-1Tilr	C			
	----pyrasulfotole	0.3		0.035						
	----bromoxynil	1.75		0.205						
	Nonionic Surfactant	100	L	0.5	% v/v	3lvs-1Tilr	C			
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	3lvs-1Tilr	C			
LSD P=.05								2.61	7.04	.
Standard Deviation								1.51	4.06	0.00
CV								20.66	38.64	0.0
Replicate F								0.065	1.784	0.000
Replicate Prob(F)								0.9372	0.1998	1.0000
Treatment F								37.666	23.584	0.000
Treatment Prob(F)								0.0001	0.0001	1.0000

Pest Code Pest Name Crop Code Crop Name Rating Type Rating Unit Rating Date								TRZAW Wt.Wheat Injury % 05/12/15	STEME C.chkwd Control % 05/12/15	TRZAW Wt.Wheat Stunting % 05/25/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code			
1	Untreated Check							0.0 d	0.0 d	0.0 e
2	Axiom Premix	68	WG	0.255	lb ai/a	Spike	A	2.3 cd	98.3 a	7.0 cd
	----flufenacet	54		0.202						
	----metribuzin	14		0.0525						
3	Axiom Premix	68	WG	0.255	lb ai/a	Spike	A	6.7 bc	96.0 a	14.0 b
	----flufenacet	54		0.202						
	----metribuzin	14		0.0525						
	Osprey.....mesosulfuron	4.5	WG	0.0134	lb ai/a	3lvs-1Tilr	C			
	Nonionic Surfactant	100	L	0.5	% v/v	3lvs-1Tilr	C			
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	3lvs-1Tilr	C			
4	Axiom Premix	68	WG	0.255	lb ai/a	Spike	A	2.3 cd	96.7 a	8.0 cd
	----flufenacet	54		0.202						
	----metribuzin	14		0.0525						
	Huskie Premix	2.05	EC	0.24	lb ai/a	3lvs-1Tilr	C			
	----pyrasulfotole	0.3		0.035						
	----bromoxynil	1.75		0.205						
	Nonionic Surfactant	100	L	0.5	% v/v	3lvs-1Tilr	C			
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	3lvs-1Tilr	C			
5	Huskie Premix	2.05	EC	0.176	lb ai/a	1LfWht	B	0.0 d	100.0 a	0.0 e
	----pyrasulfotole	0.3		0.0258						
	----bromoxynil	1.75		0.15						
	Nonionic Surfactant	100	L	0.5	% v/v	1LfWht	B			
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	1LfWht	B			
6	Huskie Premix	2.05	EC	0.24	lb ai/a	1LfWht	B	0.0 d	100.0 a	6.3 d
	----pyrasulfotole	0.3		0.035						
	----bromoxynil	1.75		0.205						
	Nonionic Surfactant	100	L	0.5	% v/v	1LfWht	B			
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	1LfWht	B			
7	Huskie Premix	2.05	EC	0.24	lb ai/a	3lvs-1Tilr	C	0.0 d	100.0 a	4.7 d
	----pyrasulfotole	0.3		0.035						
	----bromoxynil	1.75		0.205						
	Nonionic Surfactant	100	L	0.5	% v/v	3lvs-1Tilr	C			
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	3lvs-1Tilr	C			
8	Huskie Premix	2.05	EC	0.24	lb ai/a	3lvs-1Tilr	C	25.0 a	87.7 b	28.3 a
	----pyrasulfotole	0.3		0.035						
	----bromoxynil	1.75		0.205						
	Glory.....metribuzin	75	DF	0.188	lb ai/a	3lvs-1Tilr	C			
	Nonionic Surfactant	100	L	0.5	% v/v	3lvs-1Tilr	C			
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	3lvs-1Tilr	C			

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	TRZAW Wt.Wheat Injury % 05/12/15	STEME C.chkwd Control % 05/12/15	TRZAW Wt.Wheat Stunting % 05/25/15
9	Huskie Premix	2.05	EC	0.24	lb ai/a	Spring	D	0.0 d	100.0 a	0.0 e
	----pyrasulfotole	0.3		0.035						
	----bromoxynil	1.75		0.205						
	Nonionic Surfactant	100	L	0.5	% v/v	Spring	D			
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	Spring	D			
10	Huskie Premix	2.05	EC	0.24	lb ai/a	Spring	D	2.3 cd	100.0 a	10.3 bc
	----pyrasulfotole	0.3		0.035						
	----bromoxynil	1.75		0.205						
	Glory.....metribuzin	75	DF	0.188	lb ai/a	Spring	D			
	Nonionic Surfactant	100	L	0.5	% v/v	Spring	D			
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	Spring	D			
11	Harmony Extra SG Premix	50	SG	0.0234	lb ai/a	Spring	D	0.0 d	76.7 c	0.0 e
	----thifensulfuron	33		0.0154						
	----tribenuron	17		0.00796						
	Starane Ultra...fluroxypyr	2.8	EC	0.14	lb ae/a	Spring	D			
	Nonionic Surfactant	100	L	0.5	% v/v	Spring	D			
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	Spring	D			
12	Anthem Premix	2.153	SE	0.067	lb ai/a	Spike	A	9.7 b	95.0 ab	14.0 b
	----pyroxasulfone	2.09		0.065						
	----fluthiacet	0.06300001		0.00196						
	Huskie Premix	2.05	EC	0.24	lb ai/a	3lvs-1Tilr	C			
	----pyrasulfotole	0.3		0.035						
	----bromoxynil	1.75		0.205						
	Nonionic Surfactant	100	L	0.5	% v/v	3lvs-1Tilr	C			
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	3lvs-1Tilr	C			
LSD P=.05								4.98	7.36	3.95
Standard Deviation								2.93	4.35	2.33
CV								72.66	4.97	30.24
Replicate F								0.354	2.452	1.534
Replicate Prob(F)								0.7065	0.1093	0.2380
Treatment F								18.616	128.163	38.060
Treatment Prob(F)								0.0001	0.0001	0.0001

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Wheat Safety to Metribuzin Timing

Trial ID: SG10-15 Location: Field #14 Trial Year:
Protocol ID: SG10-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Investigator: Mark VanGessel Title: Extension Weed Specialist
Organization: University of Delaware
Address: 16483 County Seat Hwy
City+State/Prov: Georgetown, Delaware
Postal Code: 19947 E-mail: mjv@udel.edu
Country: USA United States

Crop Description

Crop 1: TRZAW Triticum aestivum (winter) Winter wheat
Variety: Shirley BBCH Scale: BCER
Planting Date: 10/20/14
Planting Rate, Unit: 150 lb/A Planting Method: PLANTD planted
Depth, Unit: 0.75 in Planting Equipment: PD Plot Drilling Machine
Row Spacing, Unit: 7 in Emergence Date: 10/29/14
Harvest Date: 06/30/15
Harvested Width, Unit: 7 FT
Soil Temperature, Unit: 65 F Harvested Length, Unit: 24 FT
Soil Moisture: NORMAL normal, adequate Harvest Equipment: Plot combine
Seed Bed: SMOOTH smooth % Standard Moisture: 13.5

Site and Design

Treated Plot Width: 10 FT Site Type: FIELD field
Treated Plot Length: 25 FT
Treated Plot Area: 250 FT2 Treatments: 10 Tillage Type: CONTIL conventional-till
Replications: 3 Study Design: FACTOR Factorial

Trial Initiation Comments:

Soil Description

% Sand: 74 % OM: 0.8 Texture: SL sandy loam
% Silt: 19 pH: 6.1
% Clay: 7 CEC: 4.7 Fert. Level: G good
Soil Drainage: G good

Moisture and Weather Conditions

Overall Moisture Conditions: NORMAL normal
Closest Weather Station: UDREC Distance, Unit: 0.3 mi

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Application Description

	A	B	C	D	E
Application Date:	10/21/14	10/30/14	11/11/14	03/19/15	04/06/15
Appl. Stop Time:	10:00 AM	09:30 AM	11:00 AM	02:45 PM	08:50 AM
Interval to Prev. Appl., Unit:		9 DAYS	12 DAYS	128 DAYS	18 DAYS
Application Method:	SPRAY	SPRAY	SPRAY	SPRAY	SPRAY
Application Timing:	PRE	Spike	2-lvs	EaSpring	Spring
Application Placement:	BROADC	BROADC	BROADC	BROADC	BROADC
Applied By:	Johnson	Johnson	Johnson	Johnson	Johnson
Air Temperature, Unit:	61 F	50 F	67 F	45 F	58 F
% Relative Humidity:	83	93	76	36	60
Wind Velocity, Unit:	2 mph	3 mph	2 mph	3 mph	5 mph
Wind Direction:	SW	NW	SE	NE	SW
Dew Presence (Y/N):	Y yes	Y yes	N no	N no	N no
Soil Temperature, Unit:	60 F	50 F	66 F	45 F	57 F
Soil Moisture:	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
% Cloud Cover:	65	80	90	0	0

Crop Stage At Each Application

	A	B	C	D	E
Crop 1 Code, BBCH Scale:	TRZAW BCER	TRZAW BCER	TRZAW BCER	TRZAW BCER	TRZAW BCER
Stage Scale Used:		DESC	DESC	DESC	DESC
Stage Majority, Percent:		Spike 100	2-leaf 75	3-tiller 70	3-tiller 75
Stage Minimum, Percent:			1-leaf 25	1-tiller 30	2-tiller 25
Stage Maximum, Percent:			2-leaf 75	3-tiller 70	3-tiller 75
Height, Unit:		0.5 in	3.5 in	4 in	5 in
Height Minimum, Maximum:		0.3 0.7	3 4	3.5 5	4 6

Application Equipment

	A	B	C	D	E
Appl. Equipment:	Backpack	Backpack	Backpack	Backpack	Backpack
Equipment Type:	SPRBAC	SPRBAC	SPRBAC	SPRBAC	SPRBAC
Operation Pressure, Unit:	31 psi	31 psi	31 psi	31 psi	31 psi
Nozzle Type:	AIRMIX	AIRMIX	AIRMIX	AIRMIX	AIRMIX
Nozzle Size:	11002	11002	11002	11002	11002
Nozzle Spacing, Unit:	18 in	18 in	18 in	18 in	18 in
Boom Length, Unit:	9 ft	9 ft	9 ft	9 ft	9 ft
Boom Height, Unit:	18 in	18 in	20 in	22 in	24 in
Ground Speed, Unit:	3 mph	3 mph	3 mph	3 mph	3 mph
Carrier:	WATER	WATER	WATER	WATER	WATER
Spray Volume, Unit:	20 gal/ac	20 gal/ac	20 gal/ac	20 gal/ac	20 gal/ac
Mix Size, Unit:	2 Liters	2 Liters	2 Liters	2 Liters	2 Liters
Propellant:	COMCO2	COMCO2	COMCO2	COMCO2	COMCO2

Trial Comments

04/17/15: Biomass reduction is stand loss and stunting and any value over 15 is the result of stand loss.

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Wheat Safety to Metribuzin Timing

Trial ID: SG10-15 Location: Field #14 Trial Year:
Protocol ID: SG10-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	TRZAW Wt.Wheat Stunting % 11/10/14	TRZAW Wt.Wheat BiomRed % 04/08/15	TRZAW Wt.Wheat BiomRed % 04/17/15	TRZAW Wt.Wheat LfTipBrn % 04/17/15
1	Glory.....metribuzin	75	DF	0.094	lb ai/a	PRE	A	5.7 b	26.7 b	15.7 d	0.0 b
	Nonionic Surfactant	100	L	0.25	% v/v	PRE	A				
	PRE Application										
2	Glory.....metribuzin	75	DF	0.094	lb ai/a	2-lvs	C		40.0 b	36.7 c	0.0 b
	Nonionic Surfactant	100	L	0.25	% v/v	2-lvs	C				
	EPOST - Fall (2lvs)										
3	Glory.....metribuzin	75	DF	0.094	lb ai/a	EaSpring	D		26.7 b	0.0 e	6.0 a
	Nonionic Surfactant	100	L	0.25	% v/v	EaSpring	D				
	Spring - First N Application										
4	Glory.....metribuzin	75	DF	0.094	lb ai/a	Spring	E			0.0 e	5.0 a
	Nonionic Surfactant	100	L	0.25	% v/v	Spring	E				
	Spring - After Green Up										
5	Glory.....metribuzin	75	DF	0.187	lb ai/a	PRE	A	10.7 a	66.7 a	53.3 b	0.0 b
	Nonionic Surfactant	100	L	0.25	% v/v	PRE	A				
	PRE Application										
6	Glory.....metribuzin	75	DF	0.187	lb ai/a	2-lvs	C		80.0 a	63.3 a	0.0 b
	Nonionic Surfactant	100	L	0.25	% v/v	2-lvs	C				
	EPOST - Fall (2lvs)										
7	Glory.....metribuzin	75	DF	0.187	lb ai/a	EaSpring	D		35.0 b	0.0 e	5.0 a
	Nonionic Surfactant	100	L	0.25	% v/v	EaSpring	D				
	Spring - First N Application										
8	Glory.....metribuzin	75	DF	0.187	lb ai/a	Spring	E			1.7 e	6.7 a
	Nonionic Surfactant	100	L	0.25	% v/v	Spring	E				
	Spring - After Green Up										
9	Untreated Check							0.0 c	0.0 c	0.0 e	0.0 b
10	Glory.....metribuzin	100	L	0.25	% v/v	Spike	B	9.0 a	0.0 c	0.0 e	0.0 b
	Nonionic Surfactant	100	L	0.25	% v/v	Spike	B				
LSD P=.05								1.85	14.19	9.40	2.75
Standard Deviation								0.93	8.10	5.46	1.61
CV								14.65	23.57	31.97	70.83
Replicate F								3.581	1.000	1.231	0.828
Replicate Prob(F)								0.0947	0.3927	0.3169	0.4531
Treatment F								77.161	36.823	61.984	10.224
Treatment Prob(F)								0.0001	0.0001	0.0001	0.0001

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.
Missing data estimates are included in columns:Yates=3

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	TRZAW Wt.Wheat Stunting % 05/02/15	TRZAW Wt.Wheat StndLoss % 05/02/15	TRZAW Wt.Wheat BiomRed % 05/02/15	TRZAW Wt.Wheat Yield Bu/A 06/30/15
1	Glory.....metribuzin	75	DF	0.094	lb ai/a	PRE	A	9.0 cd	4.3 c	12.3 c	61.6 bc
	Nonionic Surfactant	100	L	0.25	% v/v	PRE	A				
	PRE Application										
2	Glory.....metribuzin	75	DF	0.094	lb ai/a	2-lvs	C	13.3 bc	5.7 c	20.0 b	57.6 cd
	Nonionic Surfactant	100	L	0.25	% v/v	2-lvs	C				
	EPOST - Fall (2lvs)										
3	Glory.....metribuzin	75	DF	0.094	lb ai/a	EaSpring	D	3.3 e	0.0 d	3.3 d	69.3 a
	Nonionic Surfactant	100	L	0.25	% v/v	EaSpring	D				
	Spring - First N Application										
4	Glory.....metribuzin	75	DF	0.094	lb ai/a	Spring	E	2.3 e	0.0 d	2.3 d	65.2 ab
	Nonionic Surfactant	100	L	0.25	% v/v	Spring	E				
	Spring - After Green Up										
5	Glory.....metribuzin	75	DF	0.187	lb ai/a	PRE	A	14.0 ab	9.0 b	23.3 b	54.2 d
	Nonionic Surfactant	100	L	0.25	% v/v	PRE	A				
	PRE Application										
6	Glory.....metribuzin	75	DF	0.187	lb ai/a	2-lvs	C	18.3 a	15.0 a	36.7 a	45.7 e
	Nonionic Surfactant	100	L	0.25	% v/v	2-lvs	C				
	EPOST - Fall (2lvs)										
7	Glory.....metribuzin	75	DF	0.187	lb ai/a	EaSpring	D	8.0 d	0.0 d	8.7 c	65.7 ab
	Nonionic Surfactant	100	L	0.25	% v/v	EaSpring	D				
	Spring - First N Application										
8	Glory.....metribuzin	75	DF	0.187	lb ai/a	Spring	E	0.0 e	0.0 d	0.0 d	62.2 bc
	Nonionic Surfactant	100	L	0.25	% v/v	Spring	E				
	Spring - After Green Up										
9	Untreated Check							0.0 e	0.0 d	0.0 d	65.1 ab
10	Glory.....metribuzin	100	L	0.25	% v/v	Spike	B	0.0 e	0.0 d	0.0 d	67.7 ab
	Nonionic Surfactant	100	L	0.25	% v/v	Spike	B				
LSD P=.05								4.55	3.10	5.11	6.16
Standard Deviation								2.65	1.81	2.98	3.59
CV								38.81	53.13	27.93	5.85
Replicate F								1.711	0.398	2.945	31.528
Replicate Prob(F)								0.2088	0.6772	0.0783	0.0001
Treatment F								19.171	24.649	52.396	11.941
Treatment Prob(F)								0.0001	0.0001	0.0001	0.0001

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Wheat Safety to Metribuzin Timing

Trial ID: SG10-15 Location: Field #14 Trial Year:
Protocol ID: SG10-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Crop Code Crop Name Rating Type Rating Unit Rating Date							TRZAW Wt.Wheat Stunting % 11/10/14	TRZAW Wt.Wheat BiomRed % 04/08/15	TRZAW Wt.Wheat BiomRed % 04/17/15	TRZAW Wt.Wheat LfTipBrn % 04/17/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code			
TABLE OF R MEANS Replicate 1								45.0	19.4	2.5
Replicate 2								50.0	20.6	2.5
Replicate 3								42.5	24.0	3.5
TABLE OF A (Metribuzin Rate) MEANS 1	Glory.....metribuzin	75	DF	0.094	lb ai/a			31.1 b	13.1 b	2.8 a
1	Nonionic Surfactant	100	L	0.25	% v/v					
2	Glory.....metribuzin	75	DF	0.187	lb ai/a			60.6 a	29.6 a	2.9 a
2	Nonionic Surfactant	100	L	0.25	% v/v					
LSD P=.05 Standard Deviation CV								8.51 9.35 20.41	5.40 6.13 28.71	1.58 1.80 63.51
TABLE OF B (Application Timing) MEANS 1	PRE Application							46.7 b	34.5 b	0.0 b
2	EPOST - Fall (2lvs)							60.0 a	50.0 a	0.0 b
3	Spring - First N Application							30.8 c	0.0 c	5.5 a
4	Spring - After Green Up							.	0.8 c	5.8 a
LSD P=.05 Standard Deviation CV								12.03 9.35 20.41	7.64 6.13 28.71	2.23 1.80 63.51
TABLE OF A (Metribuzin Rate) B (Application Timing) MEANS 1	Glory.....metribuzin	75	DF	0.094	lb ai/a			5.7 a	26.7 b	15.7 c	0.0 a
1	Nonionic Surfactant	100	L	0.25	% v/v					
1	PRE Application									
2	Glory.....metribuzin	75	DF	0.187	lb ai/a			10.7 a	66.7 a	53.3 a	0.0 a
2	Nonionic Surfactant	100	L	0.25	% v/v					
1	PRE Application									
1	Glory.....metribuzin	75	DF	0.094	lb ai/a			.	40.0 b	36.7 b	0.0 a
1	Nonionic Surfactant	100	L	0.25	% v/v					
2	EPOST - Fall (2lvs)									
2	Glory.....metribuzin	75	DF	0.187	lb ai/a			.	80.0 a	63.3 a	0.0 a
2	Nonionic Surfactant	100	L	0.25	% v/v					
2	EPOST - Fall (2lvs)									
1	Glory.....metribuzin	75	DF	0.094	lb ai/a			.	26.7 b	0.0 d	6.0 a
1	Nonionic Surfactant	100	L	0.25	% v/v					
3	Spring - First N Application									
2	Glory.....metribuzin	75	DF	0.187	lb ai/a			.	35.0 b	0.0 d	5.0 a
2	Nonionic Surfactant	100	L	0.25	% v/v					
3	Spring - First N Application									
1	Glory.....metribuzin	75	DF	0.094	lb ai/a			.	.	0.0 d	5.0 a
1	Nonionic Surfactant	100	L	0.25	% v/v					
4	Spring - After Green Up									

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

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Crop Code							TRZAW	TRZAW	TRZAW	TRZAW
Crop Name							Wt.Wheat	Wt.Wheat	Wt.Wheat	Wt.Wheat
Rating Type							Stunting	BiomRed	BiomRed	LfTipBrn
Rating Unit							%	%	%	%
Rating Date							11/10/14	04/08/15	04/17/15	04/17/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code			
2	Glory.....metribuzin	75	DF	0.187	lb ai/a			.	.	1.7 d	6.7 a
2	Nonionic Surfactant	100	L	0.25	% v/v						
4	Spring - After Green Up										
LSD P=.05								1.85	17.02	10.80	3.15
Standard Deviation								0.93	9.35	6.13	1.80
CV								11.36	20.41	28.71	63.51

Crop Code Crop Name Rating Type Rating Unit Rating Date							TRZAW Wt.Wheat Stunting % 05/02/15	TRZAW Wt.Wheat StndLoss % 05/02/15	TRZAW Wt.Wheat BiomRed % 05/02/15	TRZAW Wt.Wheat Yield Bu/A 06/30/15
Trt Treatment No. Name	Form Form Conc Type	Rate Rate	Rate Unit	Growth Stage	Appl Code					
TABLE OF R MEANS Replicate 1							7.8	3.8	11.5	54.3
Replicate 2							10.1	4.6	15.5	59.7
Replicate 3							7.8	4.4	13.0	66.5
TABLE OF A (Metribuzin Rate) MEANS 1 Glory.....metribuzin 1 Nonionic Surfactant	75 DF 100 L	0.094 0.25	lb ai/a % v/v				7.0 b	2.5 b	9.5 b	63.4 a
2 Glory.....metribuzin 2 Nonionic Surfactant	75 DF 100 L	0.187 0.25	lb ai/a % v/v				10.1 a	6.0 a	17.2 a	56.9 b
LSD P=.05 Standard Deviation CV							2.57 2.93 34.36	1.78 2.04 47.93	2.83 3.24 24.28	3.06 3.50 5.81
TABLE OF B (Application Timing) MEANS 1 PRE Application							11.5 b	6.7 b	17.8 b	57.9 b
2 EPOST - Fall (2lvs)							15.8 a	10.3 a	28.3 a	51.7 c
3 Spring - First N Application							5.7 c	0.0 c	6.0 c	67.5 a
4 Spring - After Green Up							1.2 d	0.0 c	1.2 d	63.7 a
LSD P=.05 Standard Deviation CV							3.63 2.93 34.36	2.52 2.04 47.93	4.01 3.24 24.28	4.33 3.50 5.81
TABLE OF A (Metribuzin Rate) B (Application Timing) MEANS 1 Glory.....metribuzin 1 Nonionic Surfactant 1 PRE Application	75 DF 100 L	0.094 0.25	lb ai/a % v/v				9.0 a	4.3 c	12.3 c	61.6 a
2 Glory.....metribuzin 2 Nonionic Surfactant 1 PRE Application	75 DF 100 L	0.187 0.25	lb ai/a % v/v				14.0 a	9.0 b	23.3 b	54.2 a
1 Glory.....metribuzin 1 Nonionic Surfactant 2 EPOST - Fall (2lvs)	75 DF 100 L	0.094 0.25	lb ai/a % v/v				13.3 a	5.7 bc	20.0 b	57.6 a
2 Glory.....metribuzin 2 Nonionic Surfactant 2 EPOST - Fall (2lvs)	75 DF 100 L	0.187 0.25	lb ai/a % v/v				18.3 a	15.0 a	36.7 a	45.7 a
1 Glory.....metribuzin 1 Nonionic Surfactant 3 Spring - First N Application	75 DF 100 L	0.094 0.25	lb ai/a % v/v				3.3 a	0.0 d	3.3 de	69.3 a
2 Glory.....metribuzin 2 Nonionic Surfactant 3 Spring - First N Application	75 DF 100 L	0.187 0.25	lb ai/a % v/v				8.0 a	0.0 d	8.7 cd	65.7 a
1 Glory.....metribuzin 1 Nonionic Surfactant 4 Spring - After Green Up	75 DF 100 L	0.094 0.25	lb ai/a % v/v				2.3 a	0.0 d	2.3 e	65.2 a

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Crop Code Crop Name Rating Type Rating Unit Rating Date							TRZAW Wt.Wheat Stunting % 05/02/15	TRZAW Wt.Wheat StndLoss % 05/02/15	TRZAW Wt.Wheat BiomRed % 05/02/15	TRZAW Wt.Wheat Yield Bu/A 06/30/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code			
2	Glory.....metribuzin	75	DF	0.187	lb ai/a			0.0 a	0.0 d	0.0 e	62.2 a
2	Nonionic Surfactant	100	L	0.25	% v/v						
4	Spring - After Green Up										
LSD P=.05								5.14	3.57	5.67	6.12
Standard Deviation								2.93	2.04	3.24	3.50
CV								34.36	47.93	24.28	5.81

Randomized Complete Block (RCB) AOV For TRZAW Wt.Wheat Stunting % 11/10/14 Missing factor B levels prevents analyzing column 1 as Factorial design

Source	DF	Sum of Squares	Mean Square	F	Prob(F)
Total	11	210.666667			
Replicate	2	6.166667	3.083333	3.581	0.0947
Treatment	3	199.333333	66.444444	77.161	0.0001
ERROR	6	5.166667	0.861111		

FACTORIAL/POOLED ERROR AOV For TRZAW Wt.Wheat BiomRed % 04/08/15 Analysis will skip factor level B4 for column 2 - all B4 treatments are missing

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	17	8512.500000				
R	2	175.000000	87.500000	1.000	0.4019	
A	1	3901.388889	3901.388889	44.587	0.0001	8.5
B	2	2558.333333	1279.166667	14.619	0.0011	12.0
AB	2	1002.777778	501.388889	5.730	0.0220	17.0
ERROR	10	875.000000	87.500000			

FACTORIAL/POOLED ERROR AOV For TRZAW Wt.Wheat BiomRed % 04/17/15 Missing values in column 3 results in unbalanced data, Least Squares Analysis is preferred

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	22	15001.333333				
R	2	91.583333	45.791667	1.220	0.3268	
A	1	1633.500000	1633.500000	43.538	0.0001	5.4
B	3	11223.000000	3741.000000	99.709	0.0001	7.6
AB	3	1565.500000	521.833333	13.908	0.0002	10.8
ERROR	13	487.750000	37.519231			

FACTORIAL/POOLED ERROR AOV For TRZAW Wt.Wheat LfTipBrn % 04/17/15

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	23	249.333333				
R	2	5.333333	2.666667	0.824	0.4591	
A	1	0.166667	0.166667	0.051	0.8238	1.6
B	3	193.000000	64.333333	19.868	0.0001	2.2
AB	3	5.500000	1.833333	0.566	0.6463	3.2
ERROR	14	45.333333	3.238095			

FACTORIAL/POOLED ERROR AOV For TRZAW Wt.Wheat Stunting % 05/02/15

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	23	1013.958333				
R	2	30.083333	15.041667	1.746	0.2103	
A	1	57.041667	57.041667	6.623	0.0221	2.6
B	3	747.458333	249.152778	28.927	0.0001	3.6
AB	3	58.791667	19.597222	2.275	0.1246	5.1
ERROR	14	120.583333	8.613095			

FACTORIAL/POOLED ERROR AOV For TRZAW Wt.Wheat StndLoss % 05/02/15

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	23	698.500000				
R	2	3.250000	1.625000	0.392	0.6831	
A	1	73.500000	73.500000	17.716	0.0009	1.8
B	3	473.833333	157.944444	38.070	0.0001	2.5
AB	3	89.833333	29.944444	7.218	0.0037	3.6
ERROR	14	58.083333	4.148810			

FACTORIAL/POOLED ERROR AOV For TRZAW Wt.Wheat BiomRed % 05/02/15

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	23	3543.333333				
R	2	65.333333	32.666667	3.118	0.0759	
A	1	352.666667	352.666667	33.664	0.0001	2.8
B	3	2682.333333	894.111111	85.347	0.0001	4.0
AB	3	296.333333	98.777778	9.429	0.0012	5.7
ERROR	14	146.666667	10.476190			

FACTORIAL/POOLED ERROR AOV For TRZAW Wt.Wheat Yield Bu/A 06/30/15

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	23	1954.120169				
R	2	592.495881	296.247941	24.251	0.0001	
A	1	253.124392	253.124392	20.721	0.0005	3.1
B	3	860.935431	286.978477	23.493	0.0001	4.3
AB	3	76.544352	25.514784	2.089	0.1477	6.1
ERROR	14	171.020112	12.215722			

University of Delaware

Potential Wheat Injury with Metribuzin and Surfactants

Trial ID: SG11-15 Location: Field #14 Trial Year:
Protocol ID: SG11-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Investigator: Mark VanGessel Title: Extension Weed Specialist
Organization: University of Delaware
Address: 16483 County Seat Hwy
City+State/Prov: Georgetown, Delaware
Postal Code: 19947 E-mail: mjv@udel.edu
Country: USA United States

Crop Description

Crop 1: TRZAW Triticum aestivum (winter) Winter wheat
Variety: Shirley BBCH Scale: BCER
Planting Date: 10/20/14
Planting Rate, Unit: 150 lb/A Planting Method: PLANTD planted
Depth, Unit: 0.75 in Planting Equipment: PD Plot Drilling Machine
Row Spacing, Unit: 7 in Emergence Date: 10/29/14
Harvest Date: 06/30/15
Harvested Width, Unit: 7 FT
Soil Temperature, Unit: 65 F Harvested Length, Unit: 24 FT
Soil Moisture: NORMAL normal, adequate Harvest Equipment: Plot combine
Seed Bed: SMOOTH smooth % Standard Moisture: 13.5

Site and Design

Treated Plot Width: 10 FT Site Type: FIELD field
Treated Plot Length: 25 FT
Treated Plot Area: 250 FT2 Treatments: 8 Tillage Type: CONTIL conventional-till
Replications: 3 Study Design: RACOBL Randomized Complete Block (RCB)

Soil Description

% Sand: 74 % OM: 0.8 Texture: SL sandy loam
% Silt: 19 pH: 6.1
% Clay: 7 CEC: 4.7 Fert. Level: G good
Soil Drainage: G good

Moisture and Weather Conditions

Overall Moisture Conditions: NORMAL normal
Closest Weather Station: UDREC Distance, Unit: 0.3 mi

Application Description

	A
Application Date:	04/06/15
Appl. Stop Time:	08:30 AM
Application Method:	SPRAY
Application Timing:	2-3 Tlrs
Application Placement:	BROADC
Applied By:	Johnson
Air Temperature, Unit:	58 F
% Relative Humidity:	60
Wind Velocity, Unit:	5 mph
Wind Direction:	SW
Dew Presence (Y/N):	N no
Soil Temperature, Unit:	57 F
Soil Moisture:	NORMAL
% Cloud Cover:	0

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Crop Stage At Each Application

	A
Crop 1 Code, BBCH Scale:	TRZAW BCER
Stage Scale Used:	DESC
Stage Majority, Percent:	2-tiller 60
Stage Minimum, Percent:	1-tiller 10
Stage Maximum, Percent:	3-tiller 30
Height, Unit:	5 in
Height Minimum, Maximum:	4 6

Application Equipment

	A
Appl. Equipment:	Backpack
Equipment Type:	SPRBAC
Operation Pressure, Unit:	31 psi
Nozzle Type:	AIRMIX
Nozzle Size:	11002
Nozzle Spacing, Unit:	18 in
Boom Length, Unit:	9 ft
Boom Height, Unit:	22 in
Ground Speed, Unit:	3 mph
Carrier:	WATER
Spray Volume, Unit:	20 gal/ac
Mix Size, Unit:	2 Liters
Propellant:	COMCO2

Trial Comments

05/01/15: Stunting is difficult to rate due to uneven heights as a result of winter goose feeding.

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Potential Wheat Injury with Metribuzin and Surfactants

Trial ID: SG11-15 Location: Field #14 Trial Year:
Protocol ID: SG11-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Crop Code Crop Name Rating Type Rating Unit Rating Date							TRZAW Wt.Wheat LeafBurn % 04/17/15	TRZAW Wt.Wheat Stunting % 05/01/15	TRZAW Wt.Wheat Yield Bu/A 06/30/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code			
1	Untreated Check							0.0 d	0.0 c	63.9 a
2	Glory.....metribuzin	75	DF	0.187	lb ai/a	2-3 Tlrs	A	0.0 d	2.3 c	59.7 a
3	Glory.....metribuzin	75	DF	0.187	lb ai/a	2-3 Tlrs	A	8.0 c	5.7 bc	61.3 a
	Nonionic Surfactant	100	L	0.25	% v/v	2-3 Tlrs	A			
4	Glory.....metribuzin	75	DF	0.187	lb ai/a	2-3 Tlrs	A	10.7 b	4.7 bc	59.1 a
	Nonionic Surfactant	100	L	0.25	% v/v	2-3 Tlrs	A			
	30% Urea Ammonium Nitrate	100	L	1.25	% v/v	2-3 Tlrs	A			
5	Glory.....metribuzin	75	DF	0.187	lb ai/a	2-3 Tlrs	A	11.3 b	8.7 ab	60.4 a
	Nonionic Surfactant	100	L	0.5	% v/v	2-3 Tlrs	A			
6	Glory.....metribuzin	75	DF	0.187	lb ai/a	2-3 Tlrs	A	7.0 c	5.7 bc	62.1 a
	LI-700	100	L	0.25	% v/v	2-3 Tlrs	A			
7	Glory.....metribuzin	75	DF	0.187	lb ai/a	2-3 Tlrs	A	11.3 b	14.2 a	60.4 a
	Axial XL.....pinoxaden	0.42	L	0.054	lb ai/a	2-3 Tlrs	A			
8	Glory.....metribuzin	75	DF	0.187	lb ai/a	2-3 Tlrs	A	15.0 a	13.3 a	60.3 a
	Axial XL.....pinoxaden	0.42	L	0.054	lb ai/a	2-3 Tlrs	A			
	Nonionic Surfactant	100	L	0.25	% v/v	2-3 Tlrs	A			
LSD P=.05								1.65	6.27	7.77
Standard Deviation								0.94	3.55	4.44
CV								11.9	52.15	7.29
Replicate F								0.893	1.730	5.076
Replicate Prob(F)								0.4317	0.2157	0.0220
Treatment F								100.161	5.906	0.352
Treatment Prob(F)								0.0001	0.0030	0.9154

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.
Missing data estimates are included in columns:Yates=2

University of Delaware

Winter Wheat Response to PGR Herbicides

Trial ID: SG12-15 Location: Field #14 Trial Year:
Protocol ID: SG12-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Investigator: Mark VanGessel Title: Extension Weed Specialist
Organization: University of Delaware
Address: 16483 County Seat Hwy
City+State/Prov: Georgetown, Delaware
Postal Code: 19947 E-mail: mjv@udel.edu
Country: USA United States

Crop Description

Crop 1: TRZAW Triticum aestivum (winter) Winter wheat
Variety: Shirley BBCH Scale: BCER
Planting Date: 10/20/14
Planting Rate, Unit: 150 lb/A Planting Method: PLANTD planted
Depth, Unit: 0.75 in Planting Equipment: PD Plot Drilling Machine
Row Spacing, Unit: 7 in Emergence Date: 10/29/14
Harvest Date: 06/30/15
Harvested Width, Unit: 7 FT
Soil Temperature, Unit: 65 F Harvested Length, Unit: 24 FT
Soil Moisture: NORMAL normal, adequate Harvest Equipment: Plot combine
Seed Bed: SMOOTH smooth % Standard Moisture: 13.5

Site and Design

Treated Plot Width: 10 FT Site Type: FIELD field
Treated Plot Length: 25 FT
Treated Plot Area: 250 FT2 Treatments: 18 Tillage Type: CONTIL conventional-till
Replications: 3 Study Design: FACTOR Factorial

Trial Initiation Comments:

Soil Description

% Sand: 74 % OM: 0.8 Texture: SL sandy loam
% Silt: 19 pH: 6.1
% Clay: 7 CEC: 4.7 Fert. Level: G good
Soil Drainage: G good

Moisture and Weather Conditions

Overall Moisture Conditions: NORMAL normal
Closest Weather Station: UDREC Distance, Unit: 0.3 mi

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Application Description

	A	B	C	D
Application Date:	11/11/14	12/15/14	04/16/15	04/24/15
Appl. Stop Time:	11:00 AM	11:15 AM	07:20 AM	07:45 AM
Interval to Prev. Appl., Unit:		34 DAYS	122 DAYS	8 DAYS
Application Method:	SPRAY	SPRAY	SPRAY	SPRAY
Application Timing:	2-leaf	tiller	Spring	LaSprn
Application Placement:	BROADC	BROADC	BROADC	BROADC
Applied By:	Johnson	Johnson	Johnson	Johnson
Air Temperature, Unit:	67 F	45 F	47 F	40 F
% Relative Humidity:	76	67	75	47
Wind Velocity, Unit:	2 mph	1 mph	0 mph	8 mph
Wind Direction:	SE	N	N/A	NW
Dew Presence (Y/N):	N no	N no	Y yes	N no
Soil Temperature, Unit:	66 F	45 F	45 F	40 F
Soil Moisture:	NORMAL	NORMAL	WET	NORMAL
% Cloud Cover:	90	100	20	40

Crop Stage At Each Application

	A	B	C	D
Crop 1 Code, BBCH Scale:	TRZAW BCER	TRZAW BCER	TRZAW BCER	TRZAW BCER
Stage Scale Used:	DESC	DESC	DESC	DESC
Stage Majority, Percent:	2-leaf 80	1-tiller 100	4-tiller 65	jointing 85
Stage Minimum, Percent:	1-leaf 20		3-tiller 45	4-tiller 15
Stage Maximum, Percent:	2-leaf 80		4-tiller 65	jointing 85
Height, Unit:	4 in	5 in	8 in	10 in
Height Minimum, Maximum:	3.5 4.5	4 6	7 9	8 12

Application Equipment

	A	B	C	D
Appl. Equipment:	Backpack	Backpack	Backpack	Backpack
Equipment Type:	SPRBAC	SPRBAC	SPRBAC	SPRBAC
Operation Pressure, Unit:	31 psi	31 psi	31 psi	31 psi
Nozzle Type:	AIRMIX	AIRMIX	AIRMIX	AIRMIX
Nozzle Size:	11002	11002	11002	11002
Nozzle Spacing, Unit:	18 in	18 in	18 in	18 in
Boom Length, Unit:	9 ft	9 ft	9 ft	9 ft
Boom Height, Unit:	20 in	22 in	24 in	28 in
Ground Speed, Unit:	3 mph	3 mph	3 mph	3 mph
Carrier:	WATER	WATER	WATER	WATER
Spray Volume, Unit:	20 gal/ac	20 gal/ac	20 gal/ac	20 gal/ac
Mix Size, Unit:	2 Liters	2 Liters	2 Liters	2 Liters
Propellant:	COMCO2	COMCO2	COMCO2	COMCO2

Trial Comments

05/02/15: Due to goose feeding difficult to detect subtle differences in the treatments. Poor henbit control (<70%) in treatments 2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 15, 16, 17. Fair control of henbit in treatments 11, 13. Fair to good henbit control in treatment 14.

06/25/15: Clairty sprayed late (treatment 12) had heads that are more noticablely darker and fewer than the other treatments (which had normal looking heads).

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Winter Wheat Response to PGR Herbicides

Trial ID: SG12-15 Location: Field #14 Trial Year:
Protocol ID: SG12-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Crop Code Crop Name Rating Type Rating Unit Rating Date							TRZAW Wt.Wheat Stunting % 04/08/15	TRZAW Wt.Wheat Stunting % 05/02/15	TRZAW Wt.Wheat Yield Bu/A 06/30/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code			
1	2,4-D amine 2-leaf wheat	3.8	L	0.475	lb ae/a	2-leafWht	A	13.3 a	8.0 cd	60.7 abc
2	2,4-D amine Tillering	3.8	L	0.475	lb ae/a	tiller	B	9.7 ab	13.3 ab	53.2 cd
3	2,4-D amine Spring	3.8	L	0.475	lb ae/a	Spring	C		6.7 de	61.5 abc
4	2,4-D amine Late Spring	3.8	L	0.475	lb ae/a	LaSprn	D		11.9 bc	60.1 abc
5	2,4-D amine 2-leaf wheat	3.8	L	0.238	lb ae/a	2-leafWht	A	2.3 cd	0.0 g	68.1 a
6	2,4-D amine Tillering	3.8	L	0.238	lb ae/a	tiller	B	6.3 bc	8.0 cd	59.4 abc
7	2,4-D amine Spring	3.8	L	0.238	lb ae/a	Spring	C		0.0 g	63.7 ab
8	2,4-D amine Late Spring	3.8	L	0.238	lb ae/a	LaSprn	D		2.3 efg	58.2 bc
9	Clarity.....dicamba Nonionic Surfactant 2-leaf wheat	4 100	L L	0.125 0.25	lb ai/a % v/v	2-leafWht 2-leafWht	A A	0.0 d	2.3 efg	64.3 ab
10	Clarity.....dicamba Nonionic Surfactant Tillering	4 100	L L	0.125 0.25	lb ai/a % v/v	tiller tiller	B B	0.3 cd	0.0 g	63.3 ab
11	Clarity.....dicamba Nonionic Surfactant Spring	4 100	L L	0.125 0.25	lb ai/a % v/v	Spring Spring	C C	0.0 d	17.0 a	48.2 d
12	Clarity.....dicamba Nonionic Surfactant Late Spring	4 100	L L	0.125 0.25	lb ai/a % v/v	LaSprn LaSprn	D D		17.3 a	25.3 e
13	Starane Ultra...fluroxypyr 2-leaf wheat	2.8	EC	0.14	lb ae/a	2-leafWht	A	3.3 cd	3.7 d-g	65.3 ab
14	Starane Ultra...fluroxypyr Tillering	2.8	EC	0.14	lb ae/a	tiller	B	0.3 cd	0.0 g	62.9 ab
15	Starane Ultra...fluroxypyr Spring	2.8	EC	0.14	lb ae/a	Spring	C		1.7 fg	59.5 abc
16	Starane Ultra...fluroxypyr Late Spring	2.8	EC	0.14	lb ae/a	LaSprn	D		5.7 def	60.4 abc
17	Untreated Check								0.0 g	64.0 ab

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.
Missing data estimates are included in columns:Yates=1,2

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Crop Code							TRZAW	TRZAW	TRZAW
Crop Name							Wt.Wheat	Wt.Wheat	Wt.Wheat
Rating Type							Stunting	Stunting	Yield
Rating Unit							%	%	Bu/A
Rating Date							04/08/15	05/02/15	06/30/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code			
18	Untreated Check							0.0 d	0.0 g	61.8 abc
LSD P=.05								6.30	4.78	8.98
Standard Deviation								3.64	2.88	5.41
CV								102.35	52.9	9.19
Replicate F								0.761	2.873	20.947
Replicate Prob(F)								0.4834	0.0712	0.0001
Treatment F								5.064	12.948	9.286
Treatment Prob(F)								0.0024	0.0001	0.0001

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Winter Wheat Response to PGR Herbicides

Trial ID: SG12-15 Location: Field #14 Trial Year:
Protocol ID: SG12-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Crop Code Crop Name Rating Type Rating Unit Rating Date								TRZAW Wt.Wheat Stunting % 04/08/15	TRZAW Wt.Wheat Stunting % 05/02/15	TRZAW Wt.Wheat Yield Bu/A 06/30/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate Rate	Rate Unit	Growth Stage	Appl Code			
TABLE OF R MEANS Replicate 1									4.7	51.6
Replicate 2									7.1	62.8
Replicate 3									6.6	60.8
TABLE OF A (Herbicide) MEANS 1	2,4-D amine	3.8	L	0.475	lb ae/a				10.0 a	58.9 a
2	2,4-D amine	3.8	L	0.238	lb ae/a				2.6 b	62.3 a
3 3	Clarity.....dicamba Nonionic Surfactant	4 100	L L	0.125 0.25	lb ai/a % v/v				9.2 a	50.3 b
4	Starane Ultra...fluroxypyr	2.8	EC	0.14	lb ae/a				2.8 b	62.0 a
LSD P=.05 Standard Deviation CV									2.54 3.04 49.71	4.70 5.64 9.66
TABLE OF B (Application Timing) MEANS 1	2-leaf wheat								3.5 c	64.6 a
2	Tillering								5.3 bc	59.7 b
3	Spring								6.3 b	58.2 b
4	Late Spring								9.3 a	51.0 c
LSD P=.05 Standard Deviation CV									2.54 3.04 49.71	4.70 5.64 9.66
TABLE OF A (Herbicide) B (Application Timing) MEANS 1 1	2,4-D amine 2-leaf wheat	3.8	L	0.475	lb ae/a			13.3 a	8.0 cd	60.7 abc
2 1	2,4-D amine 2-leaf wheat	3.8	L	0.238	lb ae/a			2.3 a	0.0 f	68.1 a
3 3 1	Clarity.....dicamba Nonionic Surfactant 2-leaf wheat	4 100	L L	0.125 0.25	lb ai/a % v/v			0.0 a	2.3 ef	64.3 ab
4 1	Starane Ultra...fluroxypyr 2-leaf wheat	2.8	EC	0.14	lb ae/a			3.3 a	3.7 def	65.3 ab
1 2	2,4-D amine Tillering	3.8	L	0.475	lb ae/a			9.7 a	13.3 ab	53.2 cd
2 2	2,4-D amine Tillering	3.8	L	0.238	lb ae/a			6.3 a	8.0 cd	59.4 abc
3 3 2	Clarity.....dicamba Nonionic Surfactant Tillering	4 100	L L	0.125 0.25	lb ai/a % v/v			0.3 a	0.0 f	63.3 ab
4 2	Starane Ultra...fluroxypyr Tillering	2.8	EC	0.14	lb ae/a			0.3 a	0.0 f	62.9 ab

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

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Crop Code Crop Name Rating Type Rating Unit Rating Date								TRZAW Wt.Wheat Stunting % 04/08/15	TRZAW Wt.Wheat Stunting % 05/02/15	TRZAW Wt.Wheat Yield Bu/A 06/30/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code			
1 3	2,4-D amine Spring	3.8	L	0.475	lb ae/a			.	6.7 de	61.5 abc
2 3	2,4-D amine Spring	3.8	L	0.238	lb ae/a			.	0.0 f	63.7 ab
3 3 3	Clarity.....dicamba Nonionic Surfactant Spring	4 100	L L	0.125 0.25	lb ai/a % v/v			0.0 a	17.0 a	48.2 d
4 3	Starane Ultra...fluroxypyr Spring	2.8	EC	0.14	lb ae/a			.	1.7 ef	59.5 abc
1 4	2,4-D amine Late Spring	3.8	L	0.475	lb ae/a			.	11.9 bc	60.1 abc
2 4	2,4-D amine Late Spring	3.8	L	0.238	lb ae/a			.	2.3 ef	58.2 bc
3 3 4	Clarity.....dicamba Nonionic Surfactant Late Spring	4 100	L L	0.125 0.25	lb ai/a % v/v			.	17.3 a	25.3 e
4 4	Starane Ultra...fluroxypyr Late Spring	2.8	EC	0.14	lb ae/a			.	5.7 de	60.4 abc
LSD P=.05 Standard Deviation CV								6.30 3.64 92.12	5.09 3.04 49.71	9.41 5.64 9.66

Randomized Complete Block (RCB) AOV For TRZAW Wt.Wheat Stunting % 04/08/15 Missing factor A1 B3 levels prevents analyzing column 1 as Factorial design; Missing factor A2 B3 levels prevents analyzing column 1 as Factorial design; Missing factor A4 B3 levels prevents analyzing column 1 as Factorial design; Missing factor A1 B4 levels prevents analyzing column 1 as Factorial design; Missing factor A2 B4 levels prevents analyzing column 1 as Factorial design; Missing factor A3 B4 levels prevents analyzing column 1 as Factorial design; Missing factor A4 B4 levels prevents analyzing column 1 as Factorial design; Missing values in column 1 results in unbalanced data, Least Squares Analysis is preferred

Source	DF	Sum of Squares	Mean Square	F	Prob(F)
Total	27	836.765436			
Replicate	2	20.180007	10.090003	0.761	0.4834
Treatment	9	604.416183	67.157354	5.064	0.0024
ERROR	16	212.169247	13.260578		

FACTORIAL/POOLED ERROR AOV For TRZAW Wt.Wheat Stunting % 05/02/15 Missing values in column 2 results in unbalanced data, Least Squares Analysis is preferred

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	45	1934.694048				
R	2	53.501106	26.750553	2.893	0.0721	
A	3	574.305538	191.435179	20.702	0.0001	2.5
B	3	210.883027	70.294342	7.602	0.0007	2.5
AB	9	837.077947	93.008661	10.058	0.0001	5.1
ERROR	28	258.926428	9.247372			

FACTORIAL/POOLED ERROR AOV For TRZAW Wt.Wheat Yield Bu/A 06/30/15

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	47	6607.975813				
R	2	1148.628278	574.314139	18.036	0.0001	
A	3	1135.630909	378.543636	11.888	0.0001	4.7
B	3	1140.873875	380.291292	11.943	0.0001	4.7
AB	9	2227.540387	247.504487	7.773	0.0001	9.4
ERROR	30	955.302364	31.843412			

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Annual Ryegrass Control in Winter Wheat

Trial ID: SG13-15 Location: Field #30 Trial Year:
Protocol ID: SG13-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Investigator: Mark VanGessel Title: Extension Weed Specialist
Organization: University of Delaware
Address: 16483 County Seat Hwy
City+State/Prov: Georgetown, Delaware
Postal Code: 19947 E-mail: mjv@udel.edu
Country: USA United States

Crop Description

Crop 1: TRZAW Triticum aestivum (winter) Winter wheat
Variety: Shirley BBCH Scale: BCER
Planting Date: 10/20/14
Planting Rate, Unit: 150 LB/A Planting Method: PLANTD planted
Depth, Unit: 0.75 in Planting Equipment: PD Plot Drilling Machine
Row Spacing, Unit: 7 in Emergence Date: 10/29/14
Harvest Date: 07/01/15
Harvested Width, Unit: 7 FT
Soil Temperature, Unit: 64 F Harvested Length, Unit: 24 FT
Soil Moisture: NORMAL normal, adequate Harvest Equipment: Plot combine
Seed Bed: MEDTRA medium/trashy % Standard Moisture: 13.5

Pest Description

Pest 1 Type: W Code: LOLMG Lolium multiflorum gaudini
Common Name: Annual ryegrass
Artificial Population: X Establishment Date: 10/20/14
Establishment Rate, Unit: 10 LB/A
Establishment Method/Description: Overseed 10 lb pre & 5 lb spring-3/25/15

Pest 2 Type: W Code: HLOUM Holosteum umbellatum
Common Name: Jagged chickweed

Pest 3 Type: W Code: STEME Stellaria media
Common Name: Common chickweed

Site and Design

Treated Plot Width: 10 FT Site Type: FIELD field
Treated Plot Length: 25 FT
Treated Plot Area: 250 FT2 Treatments: 10 Tillage Type: NOTILL no-till
Replications: 3 Study Design: RACOBL Randomized Complete Block (RCB)

Trial Initiation Comments:
Annual ryegrass was overseeded at 10 lb/A prior to planting on 10-20-14, and at 5 lb/A 3-25-15.

Soil Description

% Sand: 83 % OM: 1.0 Texture: LS loamy sand
% Silt: 8 pH: 4.7
% Clay: 9 CEC: 4.2 Fert. Level: G good
Soil Drainage: G good

Moisture and Weather Conditions

Overall Moisture Conditions: NORMAL normal
Closest Weather Station: UD REC Distance, Unit: 0.4 mi

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Application Description

	A	B	C	D
Application Date:	10/08/14	10/30/14	11/20/14	04/06/15
Appl. Stop Time:	09:00 AM	09:30 AM	09:30 AM	10:30 AM
Interval to Prev. Appl., Unit:		22 DAYS	21 DAYS	137 DAYS
Application Method:	SPRAY	SPRAY	SPRAY	SPRAY
Application Timing:	7 DPP	Spike	3 lvs	Spring
Application Placement:	BROADC	BROADC	BROADC	BROADC
Applied By:	VanGessl	VanGessl	Johnson	Johnson
Air Temperature, Unit:	67 F	50 F	43 F	58 F
% Relative Humidity:	79	93	47	60
Wind Velocity, Unit:	5 mph	3 mph	5 mph	5 mph
Wind Direction:	W	NW	SW	SW
Dew Presence (Y/N):	N no	Y yes	N no	N no
Soil Temperature, Unit:	67 F	50 F	42 F	58 F
Soil Moisture:	NORMAL	NORMAL	NORMAL	NORMAL
% Cloud Cover:	15	80	30	0

Crop Stage At Each Application

	A	B	C	D
Crop 1 Code, BBCH Scale:	TRZAW BCER	TRZAW BCER	TRZAW BCER	TRZAW BCER
Stage Scale Used:		DESC	DESC	DESC
Stage Majority, Percent:		spike 100	2-leaf 60	3-tiller 70
Stage Minimum, Percent:			2-leaf 60	2-tiller 30
Stage Maximum, Percent:			3-leaf 40	3-tiller 70
Height, Unit:		0.5 in	3.5 in	5 in
Height Minimum, Maximum:		0.2 0.7	3 4	4.5 5.5

Pest Stage At Each Application

	A	B	C	D
Pest 1 Code, Type, Scale:	LOLMG W	LOLMG W	LOLMG W	LOLMG W
Stage Majority, Percent:			1-leaf 70	
Stage Minimum, Percent:			1-leaf 70	
Stage Maximum, Percent:			2-leaf 30	
Height, Unit:			2 in	
Height Minimum, Maximum:			2 2.5	
Density, Unit:			350 m2	
Pest 2 Code, Type, Scale:	HLOUM W	HLOUM W	HLOUM W	HLOUM W
Stage Majority, Percent:			veg 100	flower 100
Height, Unit:			1.5 in	5 in
Height Minimum, Maximum:			1 1.5	3 6
Density, Unit:			4 m2	15 m2
Pest 3 Code, Type, Scale:	STEME W	STEME W	STEME W	STEME W
Stage Majority, Percent:			2-leaf 75	
Stage Minimum, Percent:			cotyld 25	
Stage Maximum, Percent:			2-leaf 75	
Height, Unit:			0.25 in	
Height Minimum, Maximum:			0.2 0.3	
Density, Unit:			15 m2	

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Application Equipment

	A	B	C	D
Appl. Equipment:	Backpack	Backpack	Backpack	Backpack
Equipment Type:	SPRBAC	SPRBAC	SPRBAC	SPRBAC
Operation Pressure, Unit:	31 psi	31 psi	31 psi	31 psi
Nozzle Type:	AIRMIX	AIRMIX	AIRMIX	AIRMIX
Nozzle Size:	11002	11002	11002	11002
Nozzle Spacing, Unit:	18 in	18 in	18 in	18 in
Boom Length, Unit:	9 ft	9 ft	9 ft	9 ft
Boom Height, Unit:	18 in	18 in	20 in	22 in
Ground Speed, Unit:	3 mph	3 mph	3 mph	3 mph
Carrier:	WATER	WATER	WATER	WATER
Spray Volume, Unit:	20 gal/ac	20 gal/ac	20 gal/ac	20 gal/ac
Mix Size, Unit:	2 Liters	2 Liters	2 Liters	2 Liters
Propellant:	COMCO2	COMCO2	COMCO2	COMCO2

Trial Comments

04/30/15 : Poor to fair for jagged chickweed treatment 2, 4.

05/13/15: Treatments 2, 3, 7, 8, 9, 10 Zidua was poor for control of spring emerged annual ryegrass seedlings, although these seedlings may not mature, nor impact yield.

University of Delaware

Annual Ryegrass Control in Winter Wheat

Trial ID: SG13-15 Location: Field #30 Trial Year:
Protocol ID: SG13-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	TRZAW Wt.Wheat Stunting % 01/02/15	TRZAW Wt.Wheat Stunting % 04/17/15	TRZAW Wt.Wheat Stunting % 04/30/15	LOLMU A.ryegrs Control 04/30/15
1	Untreated Check							0.0 d	0.0 e	0.0 d	-0.7 e
	Harmony Extra SG Premix	50	SG	0.028	lb ai/a	3 lvs	C				
	----thifensulfuron	33		0.0185							
	----tribenuron	17		0.0095							
	Nonionic Surfactant	100	L	0.25	% v/v	3 lvs	C				
2	PowerFlex HL....pyroxsulam	13.1	WG	0.0164	lb ai/a	3 lvs	C	15.0 a	8.5 d	0.0 d	83.2 bc
	Nonionic Surfactant	100	L	0.5	% v/v	3 lvs	C				
	Ammonium Sulfate	100	SG	0.9	% w/v	3 lvs	C				
3	Axial XL.....pinoxaden	0.42	L	0.054	lb ai/a	3 lvs	C	4.7 c	0.0 e	2.3 cd	78.3 c
	Harmony Extra SG Premix	50	SG	0.028	lb ai/a	3 lvs	C				
	----thifensulfuron	33		0.0185							
	----tribenuron	17		0.0095							
4	Osprey.....mesosulfuron	4.5	WG	0.0134	lb ai/a	3 lvs	C	8.0 bc	7.3 d	12.3 b	86.7 abc
	Harmony Extra SG Premix	50	SG	0.0234	lb ai/a	3 lvs	C				
	----thifensulfuron	33		0.0154							
	----tribenuron	17		0.00796							
	Nonionic Surfactant	100	L	0.5	% v/v	3 lvs	C				
	Ammonium Sulfate	100	SG	0.9	% w/v	3 lvs	C				
5	Axiom Premix	68	WG	0.17	lb ai/a	Spike	B	4.7 c	7.7 d	11.7 b	86.7 abc
	----flufenacet	54		0.135							
	----metribuzin	14		0.035							
	Axial XL.....pinoxaden	0.42	L	0.054	lb ai/a	Spring	D				
	Harmony Extra SG Premix	50	SG	0.028	lb ai/a	Spring	D				
	----thifensulfuron	33		0.0185							
	----tribenuron	17		0.0095							
6	Axiom Premix	68	WG	0.255	lb ai/a	Spike	B	18.3 a	15.7 b	14.5 b	95.3 a
	----flufenacet	54		0.202							
	----metribuzin	14		0.0525							
	Axial XL.....pinoxaden	0.42	L	0.054	lb ai/a	Spring	D				
	Harmony Extra SG Premix	50	SG	0.028	lb ai/a	Spring	D				
	----thifensulfuron	33		0.0185							
	----tribenuron	17		0.0095							
7	Axial XL.....pinoxaden	0.42	L	0.054	lb ai/a	Spring	D	0.0 d	1.0 e	7.3 bcd	91.7 ab
	Harmony Extra SG Premix	50	SG	0.028	lb ai/a	Spring	D				
	----thifensulfuron	33		0.0185							
	----tribenuron	17		0.0095							
8	PowerFlex HL....pyroxsulam	13.1	WG	0.0164	lb ai/a	Spring	D	0.0 d	15.0 bc	12.5 b	93.3 a
	Nonionic Surfactant	100	L	0.5	% v/v	Spring	D				
	Ammonium Sulfate	100	SG	0.9	% w/v	Spring	D				

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.
Missing data estimates are included in columns:Yates=2,4; Average=3

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Pest Code											LOLMU
Pest Name											A.ryegrs
Crop Code								TRZAW	TRZAW	TRZAW	
Crop Name								Wt.Wheat	Wt.Wheat	Wt.Wheat	
Rating Type								Stunting	Stunting	Stunting	Control
Rating Unit								%	%	%	
Rating Date								01/02/15	04/17/15	04/30/15	04/30/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code				
9	Valor SX.....flumioxazin	51	WG	0.064	lb ai/a	7 DPP	A	15.0 a	26.7 a	25.0 a	90.7 ab
	Axiom Premix	68	WG	0.17	lb ai/a	Spike	B				
	----flufenacet	54		0.135							
	----metribuzin	14		0.035							
	Harmony Extra SG Premix	50	SG	0.028	lb ai/a	3 lvs	C				
	----thifensulfuron	33		0.0185							
	----tribenuron	17		0.0095							
	Nonionic Surfactant	100	L	0.25	% v/v	3 lvs	C				
10	Zidua.....pyroxasulfone	85	WG	0.08	lb ai/a	Spike	B	9.7 b	9.0 cd	9.0 bc	60.0 d
	Harmony Extra SG Premix	50	SG	0.028	lb ai/a	3 lvs	C				
	----thifensulfuron	33		0.0185							
	----tribenuron	17		0.0095							
	Nonionic Surfactant	100	L	0.25	% v/v	3 lvs	C				
LSD P=.05								3.72	6.10	8.15	8.91
Standard Deviation								2.17	3.52	4.66	5.12
CV								28.78	38.75	49.19	6.69
Replicate F								4.901	0.103	0.510	0.666
Replicate Prob(F)								0.0200	0.9028	0.6112	0.5282
Treatment F								29.759	16.747	8.052	95.951
Treatment Prob(F)								0.0001	0.0001	0.0003	0.0001

Pest Code	
Pest Name	
Crop Code	TRZAW
Crop Name	Wt.Wheat
Rating Type	Yield
Rating Unit	Bu/A
Rating Date	07/01/15

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	
1	Untreated Check							39.6 a
	Harmony Extra SG Premix	50	SG	0.028	lb ai/a	3 lvs	C	
	----thifensulfuron	33		0.0185				
	----tribenuron	17		0.0095				
	Nonionic Surfactant	100	L	0.25	% v/v	3 lvs	C	
2	PowerFlex HL....pyroxsulam	13.1	WG	0.0164	lb ai/a	3 lvs	C	33.5 a
	Nonionic Surfactant	100	L	0.5	% v/v	3 lvs	C	
	Ammonium Sulfate	100	SG	0.9	% w/v	3 lvs	C	
3	Axial XL.....pinoxaden	0.42	L	0.054	lb ai/a	3 lvs	C	46.0 a
	Harmony Extra SG Premix	50	SG	0.028	lb ai/a	3 lvs	C	
	----thifensulfuron	33		0.0185				
	----tribenuron	17		0.0095				
4	Osprey.....mesosulfuron	4.5	WG	0.0134	lb ai/a	3 lvs	C	43.4 a
	Harmony Extra SG Premix	50	SG	0.0234	lb ai/a	3 lvs	C	
	----thifensulfuron	33		0.0154				
	----tribenuron	17		0.00796				
	Nonionic Surfactant	100	L	0.5	% v/v	3 lvs	C	
	Ammonium Sulfate	100	SG	0.9	% w/v	3 lvs	C	
5	Axiom Premix	68	WG	0.17	lb ai/a	Spike	B	43.6 a
	----flufenacet	54		0.135				
	----metribuzin	14		0.035				
	Axial XL.....pinoxaden	0.42	L	0.054	lb ai/a	Spring	D	
	Harmony Extra SG Premix	50	SG	0.028	lb ai/a	Spring	D	
	----thifensulfuron	33		0.0185				
	----tribenuron	17		0.0095				
6	Axiom Premix	68	WG	0.255	lb ai/a	Spike	B	27.2 a
	----flufenacet	54		0.202				
	----metribuzin	14		0.0525				
	Axial XL.....pinoxaden	0.42	L	0.054	lb ai/a	Spring	D	
	Harmony Extra SG Premix	50	SG	0.028	lb ai/a	Spring	D	
	----thifensulfuron	33		0.0185				
	----tribenuron	17		0.0095				
7	Axial XL.....pinoxaden	0.42	L	0.054	lb ai/a	Spring	D	39.2 a
	Harmony Extra SG Premix	50	SG	0.028	lb ai/a	Spring	D	
	----thifensulfuron	33		0.0185				
	----tribenuron	17		0.0095				
8	PowerFlex HL....pyroxsulam	13.1	WG	0.0164	lb ai/a	Spring	D	32.1 a
	Nonionic Surfactant	100	L	0.5	% v/v	Spring	D	
	Ammonium Sulfate	100	SG	0.9	% w/v	Spring	D	

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Pest Code	
Pest Name	
Crop Code	TRZAW
Crop Name	Wt.Wheat
Rating Type	Yield
Rating Unit	Bu/A
Rating Date	07/01/15

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	
9	Valor SX.....flumioxazin	51	WG	0.064	lb ai/a	7 DPP	A	30.9 a
	Axiom Premix	68	WG	0.17	lb ai/a	Spike	B	
	----flufenacet	54		0.135				
	----metribuzin	14		0.035				
	Harmony Extra SG Premix	50	SG	0.028	lb ai/a	3 lvs	C	
	----thifensulfuron	33		0.0185				
	----tribenuron	17		0.0095				
	Nonionic Surfactant	100	L	0.25	% v/v	3 lvs	C	
10	Zidua.....pyroxasulfone	85	WG	0.08	lb ai/a	Spike	B	42.1 a
	Harmony Extra SG Premix	50	SG	0.028	lb ai/a	3 lvs	C	
	----thifensulfuron	33		0.0185				
	----tribenuron	17		0.0095				
	Nonionic Surfactant	100	L	0.25	% v/v	3 lvs	C	

LSD P=.05	15.31
Standard Deviation	8.92
CV	23.64
Replicate F	2.649
Replicate Prob(F)	0.0981
Treatment F	1.549
Treatment Prob(F)	0.2051

University of Delaware

Control of ALS-R Chickweed in a Harmony Extra POST Program for Winter Wheat

Trial ID: SG14-15 Location: Kent Co, DE Trial Year:
Protocol ID: SG14-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Crop Description

Crop 1: TRZAW Triticum aestivum (winter) Winter wheat
Variety: SS5208 BBCH Scale: BCER
Planting Date: 10/26/14
Planting Method: PLANTD planted
Depth, Unit: 1 in Planting Equipment: SR Drilling Machine
Row Spacing, Unit: 7 in Emergence Date: 11/05/14
Soil Moisture: NORMAL normal, adequate
Seed Bed: MEDIUM medium

Pest Description

Pest 1 Type: W Code: STEME Stellaria media
Common Name: Common chickweed

Site and Design

Treated Plot Width: 10 FT Site Type: FIELD field
Treated Plot Length: 25 FT
Treated Plot Area: 250 FT2 Treatments: 10 Tillage Type: CONTIL conventional-till
Replications: 3 Study Design: RACOBL Randomized Complete Block (RCB)

No.	Previous Crop
1.	potatoes

Soil Description

% OM: 1.2 Texture: SL sandy loam
pH: 6.2
Fert. Level: G good
Soil Drainage: G good

Moisture and Weather Conditions

Overall Moisture Conditions: NORMAL normal

Application Description

	A	B
Application Date:	11/25/14	04/16/15
Appl. Stop Time:	11:30 AM	09:00 AM
Interval to Prev. Appl., Unit:		142 DAYS
Application Method:	SPRAY	SPRAY
Application Timing:	3 lvs	Spring
Application Placement:	BROADC	BROADC
Applied By:	Johnson	Johnson
Air Temperature, Unit:	60 F	56 F
% Relative Humidity:	43	49
Wind Velocity, Unit:	3 mph	3 mph
Wind Direction:	N	E
Dew Presence (Y/N):	Y yes	Y yes
Soil Temperature, Unit:	59 F	54 F
Soil Moisture:	NORMAL	NORMAL
% Cloud Cover:	100	15

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Crop Stage At Each Application

	A	B
Crop 1 Code, BBCH Scale:	TRZAW BCER	TRZAW BCER
Stage Scale Used:	DESC	DESC
Stage Majority, Percent:	2-leaf 100	4-tiller 70
Stage Minimum, Percent:		4-tiller 70
Stage Maximum, Percent:		3-tiller 30
Height, Unit:	3.5 in	7 in
Height Minimum, Maximum:	3 4	6 8

Pest Stage At Each Application

	A	B
Pest 1 Code, Type, Scale:	STEME W	STEME W
Stage Majority, Percent:	veg 100	EaSeed 100
Diameter, Unit:	0.4 in	6 in
Height Minimum, Maximum:	0.2 0.5	5 8
Density, Unit:	10 m2	15 m2

Application Equipment

	A	B
Appl. Equipment:	Backpack	Backpack
Equipment Type:	SPRBAC	SPRBAC
Operation Pressure, Unit:	31 psi	31 psi
Nozzle Type:	AIRMIX	AIRMIX
Nozzle Size:	11002	11002
Nozzle Spacing, Unit:	18 in	18 in
Boom Length, Unit:	9 ft	9 ft
Boom Height, Unit:	18 in	22 in
Ground Speed, Unit:	3 mph	3 mph
Carrier:	WATER	WATER
Spray Volume, Unit:	20 gal/ac	20 gal/ac
Mix Size, Unit:	2 Liters	2 Liters
Propellant:	COMCO2	COMCO2

Trial Comments

04/15/15: Spring treatments not yet applied. Plots 101-105 oversprayed with Harmony Extra and Starane.

04/23/15: Glory caused leaf burn with 7% for treatement 7; and 10% for treatment 8.

University of Delaware

Control of ALS-R Chickweed in a Harmony Extra POST Program for Winter Wheat

Trial ID: SG14-15 Location: Kent Co, DE Trial Year:
Protocol ID: SG14-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	TRZAW Wt.Wheat Stunting % 12/05/14	TRZAW Wt.Wheat Stunting % 04/15/15	STEME C.chkwd Control % 04/15/15	TRZAW Wt.Wheat Stunting % 04/23/15
1	Harmony Extra SG Premix	50	SG	0.0234	lb ai/a	3 lvs	A	0.0 c	9.7 c	100.0 a	8.0 b
	----thifensulfuron	33		0.0154							
	----tribenuron	17		0.00796							
	Nonionic Surfactant	100	L	0.25	% ai/v	3 lvs	A				
2	Glory.....metribuzin	75	DF	0.094	lb ai/a	3 lvs	A	15.7 a	14.0 ab	100.0 a	20.7 a
	Harmony Extra SG Premix	50	SG	0.0234	lb ai/a	3 lvs	A				
	----thifensulfuron	33		0.0154							
	----tribenuron	17		0.00796							
	Nonionic Surfactant	100	L	0.25	% ai/v	3 lvs	A				
3	Glory.....metribuzin	75	DF	0.14	lb ai/a	3 lvs	A	17.3 a	16.7 a	100.0 a	22.3 a
	Harmony Extra SG Premix	50	SG	0.0234	lb ai/a	3 lvs	A				
	----thifensulfuron	33		0.0154							
	----tribenuron	17		0.00796							
	Nonionic Surfactant	100	L	0.25	% ai/v	3 lvs	A				
4	Starane Ultra...fluroxypyr	2.8	EC	0.105	lb ae/a	3 lvs	A	7.0 b	11.3 bc	100.0 a	9.7 b
	Harmony Extra SG Premix	50	SG	0.0234	lb ai/a	3 lvs	A				
	----thifensulfuron	33		0.0154							
	----tribenuron	17		0.00796							
	Nonionic Surfactant	100	L	0.25	% ai/v	3 lvs	A				
5	Huskie Premix	2.05	EC	0.24	lb ai/a	3 lvs	A	6.9 b	0.0 d	100.0 a	0.0 c
	----pyrasulfotole	0.3		0.035							
	----bromoxynil	1.75		0.205							
	Nonionic Surfactant	100	L	0.25	% ai/v	3 lvs	A				
6	Harmony Extra SG Premix	50	SG	0.0234	lb ai/a	Spring	B				0.0 c
	----thifensulfuron	33		0.0154							
	----tribenuron	17		0.00796							
	Nonionic Surfactant	100	L	0.25	% ai/v	Spring	B				
7	Glory.....metribuzin	75	DF	0.14	lb ai/a	Spring	B				9.7 b
	Harmony Extra SG Premix	50	SG	0.0234	lb ai/a	Spring	B				
	----thifensulfuron	33		0.0154							
	----tribenuron	17		0.00796							
	Nonionic Surfactant	100	L	0.25	% ai/v	Spring	B				
8	Glory.....metribuzin	75	DF	0.188	lb ai/a	Spring	B				9.0 b
	Harmony Extra SG Premix	50	SG	0.0234	lb ai/a	Spring	B				
	----thifensulfuron	33		0.0154							
	----tribenuron	17		0.00796							
	Nonionic Surfactant	100	L	0.25	% ai/v	Spring	B				

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.
Missing data estimates are included in columns:Yates=1,5,6
Could not calculate LSD (% mean diff) for columns 3 because error mean square = 0.

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| Pest Code | | |

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Pest Code								STEME
Pest Name								C.chkwd
Crop Code							TRZAW	
Crop Name							Wt.Wheat	
Rating Type							Stunting	Control
Rating Unit							%	%
Rating Date							05/12/15	05/12/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code		
1	Harmony Extra SG Premix	50	SG	0.0234	lb ai/a	3 lvs	A		100.0 a
	----thifensulfuron	33		0.0154					
	----tribenuron	17		0.00796					
	Nonionic Surfactant	100	L	0.25	% ai/v	3 lvs	A		
2	Glory.....metribuzin	75	DF	0.094	lb ai/a	3 lvs	A	11.7 a	100.0 a
	Harmony Extra SG Premix	50	SG	0.0234	lb ai/a	3 lvs	A		
	----thifensulfuron	33		0.0154					
	----tribenuron	17		0.00796					
	Nonionic Surfactant	100	L	0.25	% ai/v	3 lvs	A		
3	Glory.....metribuzin	75	DF	0.14	lb ai/a	3 lvs	A	10.2 a	100.0 a
	Harmony Extra SG Premix	50	SG	0.0234	lb ai/a	3 lvs	A		
	----thifensulfuron	33		0.0154					
	----tribenuron	17		0.00796					
	Nonionic Surfactant	100	L	0.25	% ai/v	3 lvs	A		
4	Starane Ultra...fluroxypyr	2.8	EC	0.105	lb ae/a	3 lvs	A	0.0 b	78.1 b
	Harmony Extra SG Premix	50	SG	0.0234	lb ai/a	3 lvs	A		
	----thifensulfuron	33		0.0154					
	----tribenuron	17		0.00796					
	Nonionic Surfactant	100	L	0.25	% ai/v	3 lvs	A		
5	Huskie Premix	2.05	EC	0.24	lb ai/a	3 lvs	A	0.0 b	100.0 a
	----pyrasulfotole	0.3		0.035					
	----bromoxynil	1.75		0.205					
	Nonionic Surfactant	100	L	0.25	% ai/v	3 lvs	A		
6	Harmony Extra SG Premix	50	SG	0.0234	lb ai/a	Spring	B	0.0 b	23.3 c
	----thifensulfuron	33		0.0154					
	----tribenuron	17		0.00796					
	Nonionic Surfactant	100	L	0.25	% ai/v	Spring	B		
7	Glory.....metribuzin	75	DF	0.14	lb ai/a	Spring	B	0.0 b	86.7 ab
	Harmony Extra SG Premix	50	SG	0.0234	lb ai/a	Spring	B		
	----thifensulfuron	33		0.0154					
	----tribenuron	17		0.00796					
	Nonionic Surfactant	100	L	0.25	% ai/v	Spring	B		
8	Glory.....metribuzin	75	DF	0.188	lb ai/a	Spring	B	3.3 b	100.0 a
	Harmony Extra SG Premix	50	SG	0.0234	lb ai/a	Spring	B		
	----thifensulfuron	33		0.0154					
	----tribenuron	17		0.00796					
	Nonionic Surfactant	100	L	0.25	% ai/v	Spring	B		

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Pest Code								STEME
Pest Name								C.chkwd
Crop Code							TRZAW	
Crop Name							Wt.Wheat	
Rating Type							Stunting	Control
Rating Unit							%	%
Rating Date							05/12/15	05/12/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	
9	Starane Ultra...fluroxypyr	2.8	EC	0.14	lb ae/a	Spring	B	4.7 b / 100.0 a
	Harmony Extra SG Premix	50	SG	0.0234	lb ai/a	Spring	B	
	----thifensulfuron	33		0.0154				
	----tribenuron	17		0.00796				
	Nonionic Surfactant	100	L	0.25	% ai/v	Spring	B	
10	Untreated Check							0.0 b / 0.0 d
LSD P=.05								5.17 / 14.03
Standard Deviation								2.90 / 8.15
CV								87.37 / 10.34
Replicate F								2.977 / 0.903
Replicate Prob(F)								0.0892 / 0.4241
Treatment F								7.767 / 60.515
Treatment Prob(F)								0.0010 / 0.0001

University of Delaware

Influence of Soil-Disturbance in Reduced Tillage Wheat Impacts Valor Performance

Trial ID: SG15-15 Location: Field #30 Trial Year:
Protocol ID: SG15-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Investigator: Mark VanGessel Title: Extension Weed Specialist
Organization: University of Delaware
Address: 16483 County Seat Hwy
City+State/Prov: Georgetown, Delaware
Postal Code: 19947 E-mail: mjv@udel.edu
Country: USA United States

Crop Description

Crop 1: TRZAW Triticum aestivum (winter) Winter wheat
Variety: Shirley BBCH Scale: BCER
Planting Date: 10/20/14
Planting Rate, Unit: 150 LB/A Planting Method: PLANTD planted
Depth, Unit: 0.75 in Planting Equipment: PD Plot Drilling Machine
Row Spacing, Unit: 7 in Emergence Date: 10/29/14
Harvest Date: 07/01/15
Harvested Width, Unit: 7 FT
Soil Temperature, Unit: 64 F Harvested Length, Unit: 24 FT
Soil Moisture: NORMAL normal, adequate Harvest Equipment: Plot combine
Seed Bed: MEDTRA medium/trashy % Standard Moisture: 13.5

Site and Design

Treated Plot Width: 10 FT Site Type: FIELD field
Treated Plot Length: 25 FT
Treated Plot Area: 250 FT2 Treatments: 6 Tillage Type: NOTILL no-till
Replications: 3 Study Design: FACTOR Factorial

Trial Initiation Comments:
Soil disturbance was accomplished by two passes with an empty Great Plains No-Till drill prior to planting on 10-20-14.

Soil Description

% Sand: 83 % OM: 1.0 Texture: LS loamy sand
% Silt: 8 pH: 4.7
% Clay: 9 CEC: 4.2 Fert. Level: G good
Soil Drainage: G good

Moisture and Weather Conditions

Overall Moisture Conditions: NORMAL normal
Closest Weather Station: UD REC Distance, Unit: 0.4 mi

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Application Description

	A	B
Application Date:	10/08/14	10/20/14
Appl. Stop Time:	09:00 AM	10:30 AM
Interval to Prev. Appl., Unit:		12 DAYS
Application Method:	SPRAY	SPRAY
Application Timing:	Befor Till	After Till
Application Placement:	BROADC	BROADC
Applied By:	VanGessl	VanGessl
Air Temperature, Unit:	67 F	57 F
% Relative Humidity:	79	49
Wind Velocity, Unit:	5 mph	4 mph
Wind Direction:	W	S
Dew Presence (Y/N):	N no	Y yes
Soil Temperature, Unit:	67 F	56 F
Soil Moisture:	NORMAL	NORMAL
% Cloud Cover:	15	10

Crop Stage At Each Application

	A	B
Crop 1 Code, BBCH Scale:	TRZAW BCER	TRZAW BCER

Application Equipment

	A	B
Appl. Equipment:	Backpack	Backpack
Equipment Type:	SPRBAC	SPRBAC
Operation Pressure, Unit:	31 psi	31 psi
Nozzle Type:	AIRMIX	AIRMIX
Nozzle Size:	11002	11002
Nozzle Spacing, Unit:	18 in	18 in
Boom Length, Unit:	9 ft	9 ft
Boom Height, Unit:	18 in	18 in
Ground Speed, Unit:	3 mph	3 mph
Carrier:	WATER	WATER
Spray Volume, Unit:	20 gal/ac	20 gal/ac
Mix Size, Unit:	2 Liters	2 Liters
Propellant:	COMCO2	COMCO2

Trial Comments

01/02/15: No wheat injury to note.

04/28/15: Treatment 6 weak on primrose and field pansy.

University of Delaware

Influence of Soil-Disturbance in Reduced Tillage Wheat Impacts Valor Performance

Trial ID: SG15-15 Location: Field #30 Trial Year:
Protocol ID: SG15-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	TRZAW Wt.Wheat Stunting % 04/28/15	LAMAM Henbit Control % 04/28/15	HLOUM JagChkwd Control % 04/28/15	TRZAW Wt.Wheat Yield Bu/A 07/01/15
1	Vertical tillage AFTER applic	51	WG	0.064	lb ai/a	After Till	B	15.7 a	60.0 a	60.0 a	51.1 a
	Valor SX.....flumioxazin	51	WG	0.064	lb ai/a	After Till	B				
2	Vertical tillage AFTER applic	2.85	SC	0.0445	lb ai/a	After Till	B	0.0 c	50.0 a	56.7 a	57.7 a
	Sharpen.....saflufenacil	2.85	SC	0.089	lb ai/a	After Till	B				
3	Vertical tillage BEFORE applic	51	WG	0.064	lb ai/a	Befor Till	A	8.7 b	58.0 a	40.0 b	59.1 a
	Valor SX.....flumioxazin	51	WG	0.064	lb ai/a	Befor Till	A				
4	Vertical tillage BEFORE applic	2.85	SC	0.0445	lb ai/a	Befor Till	A	0.0 c	0.0 b	0.0 c	58.2 a
	Sharpen.....saflufenacil	2.85	SC	0.089	lb ai/a	Befor Till	A				
5	Untreated							0.0 c	0.0 b	0.0 c	57.0 a
6	Valor SX.....flumioxazin	51	WG	0.048	lb ai/a	After Till	B	9.0 b	50.0 a	40.0 b	61.0 a
LSD P=.05								4.88	18.94	13.15	8.52
Standard Deviation								2.68	10.26	7.23	4.68
CV								48.26	28.23	22.05	8.17
Replicate F								0.240	1.699	1.383	4.712
Replicate Prob(F)								0.7914	0.2367	0.2949	0.0362
Treatment F								18.059	23.064	40.957	1.545
Treatment Prob(F)								0.0001	0.0001	0.0001	0.2608

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.
Missing data estimates are included in columns:Yates=2

University of Delaware

Influence of Soil-Disturbance in Reduced Tillage Wheat Impacts Valor Performance

Trial ID: SG15-15 Location: Field #30 Trial Year:
Protocol ID: SG15-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Pest Code Pest Name Crop Code Crop Name Rating Type Rating Unit Rating Date							TRZAW Wt.Wheat Stunting % 04/28/15	LAMAM Henbit Control % 04/28/15	HLOUM JagChkwd Control % 04/28/15	TRZAW Wt.Wheat Yield Bu/A 07/01/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code			
TABLE OF R MEANS										
Replicate 1								6.8	37.5	35.0	50.8
Replicate 2								5.5	37.5	37.5	61.6
Replicate 3								6.0	51.0	45.0	57.2
TABLE OF A (Timing of Herb Application) MEANS										
1	Vertical tillage AFTER applic					After Till	B	7.8 a	55.0 a	58.3 a	54.4 a
2	Vertical tillage BEFORE applic					Befor Till	A	4.3 a	29.0 b	20.0 b	58.6 a
LSD P=.05								4.69	16.50	12.23	6.38
Standard Deviation								3.32	11.12	8.66	4.51
CV								54.59	26.47	22.11	7.99
TABLE OF B (Herbicide) MEANS										
1	Valor SX.....flumioxazin	51	WG	0.064	lb ai/a			12.2 a	59.0 a	50.0 a	55.1 a
2	Sharpen.....saflufenacil	2.85	SC	0.089	lb ai/a			0.0 b	25.0 b	28.3 b	58.0 a
LSD P=.05								4.69	16.50	12.23	6.38
Standard Deviation								3.32	11.12	8.66	4.51
CV								54.59	26.47	22.11	7.99
TABLE OF A (Timing of Herb Application) B (Herbicide) MEANS										
1	Vertical tillage AFTER applic					After Till	B	15.7 a	60.0 a	60.0 a	51.1 a
1	Valor SX.....flumioxazin	51	WG	0.064	lb ai/a						
2	Vertical tillage BEFORE applic					Befor Till	A	8.7 a	58.0 a	40.0 b	59.1 a
1	Valor SX.....flumioxazin	51	WG	0.064	lb ai/a						
1	Vertical tillage AFTER applic					After Till	B	0.0 a	50.0 a	56.7 ab	57.7 a
2	Sharpen.....saflufenacil	2.85	SC	0.089	lb ai/a						
2	Vertical tillage BEFORE applic					Befor Till	A	0.0 a	0.0 b	0.0 c	58.2 a
2	Sharpen.....saflufenacil	2.85	SC	0.089	lb ai/a						
LSD P=.05								6.63	23.33	17.30	9.02
Standard Deviation								3.32	11.12	8.66	4.51
CV								54.59	26.47	22.11	7.99

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

FACTORIAL/POOLED ERROR AOV For TRZAW Wt.Wheat Stunting % 04/28/15

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	11	586.916667				
R	2	3.166667	1.583333	0.144	0.8691	
A	1	36.750000	36.750000	3.332	0.1177	4.7
B	1	444.083333	444.083333	40.270	0.0007	4.7
AB	1	36.750000	36.750000	3.332	0.1177	6.6
ERROR	6	66.166667	11.027778			

FACTORIAL/POOLED ERROR AOV For LAMAM Henbit Control % 04/28/15 Missing values in column 2 results in unbalanced data, Least Squares Analysis is preferred

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	10	8328.000000				
R	2	486.000000	243.000000	1.966	0.2344	
A	1	2028.000000	2028.000000	16.408	0.0098	16.5
B	1	3468.000000	3468.000000	28.058	0.0032	16.5
AB	1	1728.000000	1728.000000	13.981	0.0134	23.3
ERROR	5	618.000000	123.600000			

FACTORIAL/POOLED ERROR AOV For HLOUM JagChkwd Control % 04/28/15

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	11	7491.666667				
R	2	216.666667	108.333333	1.444	0.3075	
A	1	4408.333333	4408.333333	58.778	0.0003	12.2
B	1	1408.333333	1408.333333	18.778	0.0049	12.2
AB	1	1008.333333	1008.333333	13.444	0.0105	17.3
ERROR	6	450.000000	75.000000			

FACTORIAL/POOLED ERROR AOV For TRZAW Wt.Wheat Yield Bu/A 07/01/15

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	11	482.352665				
R	2	238.696877	119.348439	5.855	0.0389	
A	1	53.664235	53.664235	2.633	0.1558	6.4
B	1	24.897794	24.897794	1.221	0.3114	6.4
AB	1	42.784445	42.784445	2.099	0.1976	9.0
ERROR	6	122.309314	20.384886			

University of Delaware

Tankmix Partners with Huskie

Trial ID: SG16-15 Location: Field #14 Trial Year:
Protocol ID: SG16-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Investigator: Mark VanGessel Title: Extension Weed Specialist
Organization: University of Delaware
Address: 16483 County Seat Hwy
City+State/Prov: Georgetown, Delaware
Postal Code: 19947 E-mail: mjv@udel.edu
Country: USA United States

Crop Description

Crop 1: TRZAW Triticum aestivum (winter) Winter wheat
Variety: Shirley BBCH Scale: BCER
Planting Date: 10/20/14
Planting Rate, Unit: 150 lb/A Planting Method: PLANTD planted
Depth, Unit: 0.75 in Planting Equipment: PD Plot Drilling Machine
Row Spacing, Unit: 7 in Emergence Date: 10/29/14
Harvest Date: 06/30/15
Harvested Width, Unit: 7 FT
Soil Temperature, Unit: 65 F Harvested Length, Unit: 24 FT
Soil Moisture: NORMAL normal, adequate Harvest Equipment: Plot combine
Seed Bed: SMOOTH smooth % Standard Moisture: 13.5

Pest Description

Pest 1 Type: W Code: LAMAM Lamium amplexicaule
Common Name: Henbit

Site and Design

Treated Plot Width: 10 FT Site Type: FIELD field
Treated Plot Length: 25 FT
Treated Plot Area: 250 FT2 Treatments: 10 Tillage Type: CONTIL conventional-till
Replications: 3 Study Design: RACOBL Randomized Complete Block (RCB)

Trial Initiation Comments:

Soil Description

% Sand: 74 % OM: 0.8 Texture: SL sandy loam
% Silt: 19 pH: 6.1
% Clay: 7 CEC: 4.7 Fert. Level: G good
Soil Drainage: G good

Moisture and Weather Conditions

Overall Moisture Conditions: NORMAL normal
Closest Weather Station: UDREC Distance, Unit: 0.3 mi

University of Delaware

Application Description

	A
Application Date:	12/15/14
Appl. Stop Time:	10:50 AM
Application Method:	SPRAY
Application Timing:	3-lvs
Application Placement:	BROADC
Applied By:	Johnson
Air Temperature, Unit:	45 F
% Relative Humidity:	67
Wind Velocity, Unit:	1 mph
Wind Direction:	N
Dew Presence (Y/N):	N no
Soil Temperature, Unit:	45 F
Soil Moisture:	NORMAL
% Cloud Cover:	100

Crop Stage At Each Application

	A
Crop 1 Code, BBCH Scale:	TRZAW BCER
Stage Scale Used:	DESC
Stage Majority, Percent:	1-tiller 100
Height, Unit:	5 in
Height Minimum, Maximum:	4 6

Pest Stage At Each Application

	A
Pest 1 Code, Type, Scale:	LAMAM W
Stage Majority, Percent:	2-leaf 100
Height, Unit:	0.2 in
Density, Unit:	1 m2

Application Equipment

	A
Appl. Equipment:	Backpack
Equipment Type:	SPRBAC
Operation Pressure, Unit:	31 psi
Nozzle Type:	AIRMIX
Nozzle Size:	11002
Nozzle Spacing, Unit:	18 in
Boom Length, Unit:	9 ft
Boom Height, Unit:	22 in
Ground Speed, Unit:	3 mph
Carrier:	WATER
Spray Volume, Unit:	20 gal/ac
Mix Size, Unit:	2 Liters
Propellant:	COMCO2

Trial Comments

05/02/15: Stunting and injury was difficult to rate due to uneven growth as a result of goose feeding. All treatmetns provided excellent henbit control (>90%).

University of Delaware

Tankmix Partners with Huskie

Trial ID: SG16-15 Location: Field #14 Trial Year:
Protocol ID: SG16-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	TRZAW Wt.Wheat Stunting % 04/08/15	TRZAW Wt.Wheat Stunting % 05/05/15	TRZAW Wt.Wheat Yield Bu/A 06/30/15
1	Untreated Check							0.0 d	0.0 c	63.9 a
2	Huskie Premix	2.05	EC	0.24	lb ai/a	3-lvs	A	0.0 d	0.0 c	64.3 a
	----pyrasulfotole	0.3		0.035						
	----bromoxynil	1.75		0.205						
	Nonionic Surfactant	100	L	0.5	% v/v	3-lvs	A			
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	3-lvs	A			
3	Huskie Premix	2.05	EC	0.24	lb ai/a	3-lvs	A	0.0 d	2.3 bc	59.3 a
	----pyrasulfotole	0.3		0.035						
	----bromoxynil	1.75		0.205						
	Harmony Extra SG Premix	50	SG	0.028	lb ai/a	3-lvs	A			
	----thifensulfuron	33		0.0185						
	----tribenuron	17		0.0095						
	Nonionic Surfactant	100	L	0.5	% v/v	3-lvs	A			
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	3-lvs	A			
4	Huskie Premix	2.05	EC	0.24	lb ai/a	3-lvs	A	0.0 d	6.3 ab	64.2 a
	----pyrasulfotole	0.3		0.035						
	----bromoxynil	1.75		0.205						
	Clarity.....dicamba	4	L	0.188	lb ai/a	3-lvs	A			
	Nonionic Surfactant	100	L	0.5	% v/v	3-lvs	A			
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	3-lvs	A			
5	Huskie Premix	2.05	EC	0.24	lb ai/a	3-lvs	A	8.5 b	9.0 a	59.2 a
	----pyrasulfotole	0.3		0.035						
	----bromoxynil	1.75		0.205						
	2,4-D amine	3.8	L	0.356	lb ae/a	3-lvs	A			
	Nonionic Surfactant	100	L	0.5	% v/v	3-lvs	A			
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	3-lvs	A			
6	Huskie Premix	2.05	EC	0.24	lb ai/a	3-lvs	A	2.3 d	0.0 c	59.4 a
	----pyrasulfotole	0.3		0.035						
	----bromoxynil	1.75		0.205						
	Starane Ultra...fluroxypyr	2.8	EC	0.24	lb ae/a	3-lvs	A			
	Nonionic Surfactant	100	L	0.5	% v/v	3-lvs	A			
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	3-lvs	A			
7	Huskie Premix	2.05	EC	0.24	lb ai/a	3-lvs	A	8.0 bc	0.0 c	64.9 a
	----pyrasulfotole	0.3		0.035						
	----bromoxynil	1.75		0.205						
	Osprey.....mesosulfuron	4.5	WG	0.0134	lb ai/a	3-lvs	A			
	Nonionic Surfactant	100	L	0.5	% v/v	3-lvs	A			
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	3-lvs	A			
8	Huskie Premix	2.05	EC	0.24	lb ai/a	3-lvs	A	3.5 cd	2.3 bc	66.7 a
	----pyrasulfotole	0.3		0.035						
	----bromoxynil	1.75		0.205						
	PowerFlex HL....pyroxsulam	13.1	WG	0.0164	lb ai/a	3-lvs	A			
	Nonionic Surfactant	100	L	0.5	% v/v	3-lvs	A			
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	3-lvs	A			

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.
Missing data estimates are included in columns:Yates=1

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	TRZAW Wt.Wheat Stunting % 04/08/15	TRZAW Wt.Wheat Stunting % 05/05/15	TRZAW Wt.Wheat Yield Bu/A 06/30/15
9	Huskie Premix	2.05	EC	0.24	lb ai/a	3-lvs	A	16.7 a	9.0 a	60.2 a
	----pyrasulfotole	0.3		0.035						
	----bromoxynil	1.75		0.205						
	Glory.....metribuzin	75	DF	0.188	lb ai/a	3-lvs	A			
	Nonionic Surfactant	100	L	0.5	% v/v	3-lvs	A			
10	Huskie Premix	2.05	EC	0.24	lb ai/a	3-lvs	A	2.3 d	0.0 c	64.2 a
	----pyrasulfotole	0.3		0.035						
	----bromoxynil	1.75		0.205						
	Axial XL.....pinoxaden	0.42	L	0.054	lb ai/a	3-lvs	A			
	Nonionic Surfactant	100	L	0.5	% v/v	3-lvs	A			
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	3-lvs	A			
LSD P=.05								4.85	4.34	8.36
Standard Deviation								2.79	2.53	4.87
CV								67.49	87.16	7.78
Replicate F								0.030	2.739	10.783
Replicate Prob(F)								0.9700	0.0915	0.0008
Treatment F								11.422	6.725	0.987
Treatment Prob(F)								0.0001	0.0003	0.4830

University of Delaware

Fierce Early Postemergence in Winter Wheat

Trial ID: SG17-15 Location: Field #30 Trial Year:
Protocol ID: SG17-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Investigator: Mark VanGessel Title: Extension Weed Specialist
Organization: University of Delaware
Address: 16483 County Seat Hwy
City+State/Prov: Georgetown, Delaware
Postal Code: 19947 E-mail: mjv@udel.edu
Country: USA United States

Crop Description

Crop 1: TRZAW Triticum aestivum (winter) Winter wheat
Variety: Shirley

Planting Date: 10/20/14
Planting Rate, Unit: 150 LB/A
Planting Method: PLANTD planted
Depth, Unit: 0.75 in
Planting Equipment: PD Plot Drilling Machine
Row Spacing, Unit: 7 in
Emergence Date: 10/29/14
Harvest Date: 07/01/15
Harvested Width, Unit: 7 FT
Soil Temperature, Unit: 64 F
Harvested Length, Unit: 24 FT
Soil Moisture: NORMAL normal, adequate
Harvest Equipment: Plot combine
Seed Bed: MEDTRA medium/trashy
% Standard Moisture: 13.5

Pest Description

Pest 1 Type: W Code: OEOLA Oenothera laciniata
Common Name: Cutleaf eveningprimrose

Pest 2 Type: W Code: LAMAM Lamium amplexicaule
Common Name: Henbit

Pest 3 Type: W Code: ERPVE Erophila verna
Common Name: Whitlowgrass

Pest 4 Type: W Code: ARBTH Arabidopsis thaliana
Common Name: Mouse-ear cress

Pest 5 Type: W Code: HLOUM Holosteum umbellatum
Common Name: Jagged chickweed

Site and Design

Treated Plot Width: 10 FT
Site Type: FIELD field
Treated Plot Length: 25 FT
Treated Plot Area: 250 FT2 Treatments: 10
Tillage Type: NOTILL no-till
Replications: 3
Study Design: RACOBL Randomized Complete Block (RCB)

Soil Description

% Sand: 83 % OM: 1.0 Texture: LS loamy sand
% Silt: 8 pH: 4.7
% Clay: 9 CEC: 4.2 Fert. Level: G good
Soil Drainage: G good

Moisture and Weather Conditions

Overall Moisture Conditions: NORMAL normal
Closest Weather Station: UD REC Distance, Unit: 0.4 mi

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Application Description

	A	B
Application Date:	11/05/14	11/20/14
Appl. Stop Time:	11:20 AM	09:00 AM
Application Method:	SPRAY	SPRAY
Application Timing:	1 lf wht	3 lvs wht
Application Placement:	BROADC	BROADC
Applied By:	Johnson	Johnson
Air Temperature, Unit:	61 F	43 F
% Relative Humidity:	52	47
Wind Velocity, Unit:	3 mph	5 mph
Wind Direction:	SW	SW
Dew Presence (Y/N):	N no	N no
Soil Temperature, Unit:	60 F	42 F
Soil Moisture:	NORMAL	NORMAL
% Cloud Cover:	95	30

Crop Stage At Each Application

	A	B
Crop 1 Code, BBCH Scale:	TRZAW BCER	TRZAW BCER
Stage Scale Used:	DESC	DESC
Stage Majority, Percent:	1-leaf 100	3-leaf 100
Height, Unit:	3 in	4 in
Height Minimum, Maximum:	2.5 4	3.5 4.5

Pest Stage At Each Application

	A	B
Pest 1 Code, Type, Scale:	OEOLA W	OEOLA W
Stage Majority, Percent:	rosett 100	rosett 100
Diameter, Unit:	2 in	2.5 in
Height Minimum, Maximum:	1 4	2 4
Density, Unit:	25 m2	25 m2
Pest 2 Code, Type, Scale:	LAMAM W	LAMAM W
Stage Majority, Percent:	veg 100	veg 100
Height, Unit:	1 in	1 in
Height Minimum, Maximum:	0.5 1.5	1 2
Density, Unit:	15 m2	30 m2
Pest 3 Code, Type, Scale:	ERPVE W	ERPVE W
Stage Majority, Percent:	rosett 100	rosett 100
Diameter, Unit:	0.5 in	1 in
Density, Unit:	2 m2	2 m2
Pest 4 Code, Type, Scale:	ARBTH W	ARBTH W
Stage Majority, Percent:	rosett 100	rosett 100
Diameter, Unit:	0.5 in	1 in
Density, Unit:	2 m2	2 m2
Pest 5 Code, Type, Scale:	HLOUM W	HLOUM W
Stage Majority, Percent:		veg 100
Height, Unit:		1 in
Density, Unit:		5 m2

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Application Equipment

	A	B
Appl. Equipment:	Backpack	Backpack
Equipment Type:	SPRBAC	SPRBAC
Operation Pressure, Unit:	31 psi	31 psi
Nozzle Type:	AIRMIX	AIRMIX
Nozzle Size:	11002	11002
Nozzle Spacing, Unit:	18 in	18 in
Boom Length, Unit:	9 ft	9 ft
Boom Height, Unit:	20 in	20 in
Ground Speed, Unit:	3 mph	3 mph
Carrier:	WATER	WATER
Spray Volume, Unit:	20 gal/ac	20 gal/ac
Mix Size, Unit:	2 Liters	2 Liters
Propellant:	COMCO2	COMCO2

Trial Comments

12/05/14: Valor caused some tip burn of leaves.

04/28/15: Weed densitiesare variable; but some henbit and jagged chickweed are present in all reps of the untreated check. Poor control of primrose is observed with 2, 7-10 (good control with flumioxazin).

University of Delaware

Fierce Early Postemergence in Winter Wheat

Trial ID: SG17-15 Location: Field #30 Trial Year:
Protocol ID: SG17-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code				
	Pest Code										ARBTH
	Pest Name										ME cress
	Crop Code							TRZAW	TRZAW	TRZAW	
	Crop Name							Wt.Wheat	Wt.Wheat	Wt.Wheat	
	Rating Type							Stunting	Stunting	Stunting	Control
	Rating Unit							%	%	%	%
	Rating Date							12/05/14	01/02/15	04/02/15	04/02/15
1	Untreated Check							0.0 c	0.0 d	0.0 d	0.0 d
2	Fierce Premix	76	WG	0.071	lb ai/a	1 lf wht	A	7.0 ab	10.7 bc	3.7 d	100.0 a
	----flumioxazin	33.5		0.0313							
	----pyroxasulfone	42.5		0.0397							
3	Fierce Premix	76	WG	0.095	lb ai/a	1 lf wht	A	5.7 ab	10.7 bc	8.3 c	100.0 a
	----flumioxazin	33.5		0.042							
	----pyroxasulfone	42.5		0.053							
4	Fierce Premix	76	WG	0.119	lb ai/a	1 lf wht	A	5.7 ab	14.0 ab	11.7 bc	100.0 a
	----flumioxazin	33.5		0.0525							
	----pyroxasulfone	42.5		0.0665							
5	Fierce Premix	76	WG	0.143	lb ai/a	1 lf wht	A	7.0 ab	14.0 ab	18.3 a	100.0 a
	----flumioxazin	33.5		0.063							
	----pyroxasulfone	42.5		0.08							
6	Valor SX.....flumioxazin	51	WG	0.064	lb ai/a	1 lf wht	A	8.0 a	15.0 a	13.3 b	96.7 a
7	Anthem Premix	2.153	SE	0.067	lb ai/a	1 lf wht	A	4.0 b	9.0 c	0.0 d	63.3 b
	----pyroxasulfone	2.09		0.065							
	----fluthiacet	0.06300001		0.00196							
8	Anthem Flexx	4	SE	0.0706	lb ai/a	1 lf wht	A	4.7 ab	1.7 d	8.7 c	43.3 c
9	Anthem Flexx	4	SE	0.094	lb ai/a	1 lf wht	A	6.3 ab	10.0 c	14.0 b	66.7 b
10	Harmony Extra SG Premix	50	SG	0.0219	lb ai/a	3 lvs wht	B	0.0 c	0.0 d	0.3 d	96.7 a
	----thifensulfuron	33		0.0145							
	----tribenuron	17		0.00745							
	Axial XL.....pinoxaden	0.42	L	0.054	lb ai/a	3 lvs wht	B				
	LSD P=.05							3.43	3.65	4.22	19.27
	Standard Deviation							2.00	2.13	2.44	11.18
	CV							41.32	25.02	31.11	14.59
	Replicate F							0.109	0.951	1.653	0.426
	Replicate Prob(F)							0.8976	0.4050	0.2226	0.6597
	Treatment F							5.891	22.543	21.853	27.297
	Treatment Prob(F)							0.0007	0.0001	0.0001	0.0001

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.
Missing data estimates are included in columns:Yates=3,4,5,6,9

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	HLOUM JagChkwd	LAMAM Henbit	TRZAW Wt.Wheat	LAMAM Henbit
	Pest Code							HLOUM	LAMAM		LAMAM
	Pest Name							JagChkwd	Henbit		Henbit
	Crop Code									TRZAW	
	Crop Name									Wt.Wheat	
	Rating Type							Control	Control	Stunting	Control
	Rating Unit							%	%	%	%
	Rating Date							04/02/15	04/02/15	04/28/15	04/28/15
1	Untreated Check							0.0 e	0.0 f	0.0 d	0.0 e
2	Fierce Premix	76	WG	0.071	lb ai/a	1 lf wht	A	76.2 abc	80.5 c	9.7 bc	81.7 ab
	----flumioxazin	33.5		0.0313							
	----pyroxasulfone	42.5		0.0397							
3	Fierce Premix	76	WG	0.095	lb ai/a	1 lf wht	A	68.3 bc	90.0 abc	9.0 bc	85.0 a
	----flumioxazin	33.5		0.042							
	----pyroxasulfone	42.5		0.053							
4	Fierce Premix	76	WG	0.119	lb ai/a	1 lf wht	A	81.7 ab	100.0 a	11.7 ab	95.0 a
	----flumioxazin	33.5		0.0525							
	----pyroxasulfone	42.5		0.0665							
5	Fierce Premix	76	WG	0.143	lb ai/a	1 lf wht	A	76.7 abc	96.7 ab	14.0 ab	85.0 a
	----flumioxazin	33.5		0.063							
	----pyroxasulfone	42.5		0.08							
6	Valor SX.....flumioxazin	51	WG	0.064	lb ai/a	1 lf wht	A	73.3 bc	81.0 c	15.0 a	93.3 a
7	Anthem Premix	2.153	SE	0.067	lb ai/a	1 lf wht	A	73.3 bc	36.7 e	5.0 cd	30.0 d
	----pyroxasulfone	2.09		0.065							
	----fluthiacet	0.06300001		0.00196							
8	Anthem Flexx	4	SE	0.0706	lb ai/a	1 lf wht	A	50.0 d	63.3 d	4.7 cd	55.0 c
9	Anthem Flexx	4	SE	0.094	lb ai/a	1 lf wht	A	64.5 cd	61.0 d	4.7 cd	63.3 bc
10	Harmony Extra SG Premix	50	SG	0.0219	lb ai/a	3 lvs wht	B	90.0 a	86.7 bc	1.7 d	83.3 a
	----thifensulfuron	33		0.0145							
	----tribenuron	17		0.00745							
	Axial XL.....pinoxaden	0.42	L	0.054	lb ai/a	3 lvs wht	B				
	LSD P=.05							16.49	12.57	5.12	19.45
	Standard Deviation							9.53	7.23	2.98	11.34
	CV							14.57	10.38	39.61	16.88
	Replicate F							0.506	1.413	0.734	3.311
	Replicate Prob(F)							0.6123	0.2740	0.4939	0.0596
	Treatment F							21.166	55.270	8.812	22.348
	Treatment Prob(F)							0.0001	0.0001	0.0001	0.0001

University of Delaware

Pest Code								LAMAM	
Pest Name								Henbit	
Crop Code									TRZAW
Crop Name									Wt.Wheat
Rating Type								Control	Yield
Rating Unit								%	Bu/A
Rating Date								04/28/15	07/01/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code		
1	Untreated Check							0.0 f	47.2 a
2	Fierce Premix	76	WG	0.071	lb ai/a	1 lf wht	A	52.3 de	48.3 a
	----flumioxazin	33.5		0.0313					
	----pyroxasulfone	42.5		0.0397					
3	Fierce Premix	76	WG	0.095	lb ai/a	1 lf wht	A	60.0 bcd	54.4 a
	----flumioxazin	33.5		0.042					
	----pyroxasulfone	42.5		0.053					
4	Fierce Premix	76	WG	0.119	lb ai/a	1 lf wht	A	66.7 abc	54.5 a
	----flumioxazin	33.5		0.0525					
	----pyroxasulfone	42.5		0.0665					
5	Fierce Premix	76	WG	0.143	lb ai/a	1 lf wht	A	71.7 ab	52.0 a
	----flumioxazin	33.5		0.063					
	----pyroxasulfone	42.5		0.08					
6	Valor SX.....flumioxazin	51	WG	0.064	lb ai/a	1 lf wht	A	68.3 ab	46.6 a
7	Anthem Premix	2.153	SE	0.067	lb ai/a	1 lf wht	A	43.3 e	53.5 a
	----pyroxasulfone	2.09		0.065					
	----fluthiacet	0.06300001		0.00196					
8	Anthem Flexx	4	SE	0.0706	lb ai/a	1 lf wht	A	46.7 e	51.2 a
9	Anthem Flexx	4	SE	0.094	lb ai/a	1 lf wht	A	54.0 cde	50.5 a
10	Harmony Extra SG Premix	50	SG	0.0219	lb ai/a	3 lvs wht	B	78.3 a	51.1 a
	----thifensulfuron	33		0.0145					
	----tribenuron	17		0.00745					
	Axial XL.....pinoxaden	0.42	L	0.054	lb ai/a	3 lvs wht	B		
LSD P=.05								13.15	8.50
Standard Deviation								7.60	4.95
CV								14.03	9.73
Replicate F								8.829	0.783
Replicate Prob(F)								0.0026	0.4720
Treatment F								25.371	0.988
Treatment Prob(F)								0.0001	0.4821

University of Delaware

Annual Bluegrass Control in Winter Wheat

Trial ID: SG21-15 Location: Field #2 Trial Year:
Protocol ID: SG21-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Investigator: Mark VanGessel Title: Extension Weed Specialist
Organization: University of Delaware
Address: 16483 County Seat Hwy
City+State/Prov: Georgetown, Delaware
Postal Code: 19947 E-mail: mjv@udel.edu
Country: USA United States

Crop Description

Crop 1: TRZAW Triticum aestivum (winter) Winter wheat
Variety: Shirley BBCH Scale: BCER
Planting Date: 10/09/14
Planting Rate, Unit: 150 LB/A Planting Method: PLANTD planted
Depth, Unit: 0.75 in Planting Equipment: PD Plot Drilling Machine
Row Spacing, Unit: 7 in Emergence Date: 10/16/14
Soil Temperature, Unit: 71 F
Soil Moisture: NORMAL normal, adequate
Seed Bed: MEDTRA medium/trashy

Pest Description

Pest 1 Type: W Code: POAAN Poa annua
Common Name: Annual bluegrass

Pest 2 Type: W Code: CERVU Cerastium fontanum vulgare
Common Name: Mouse-ear chickweed

Site and Design

Treated Plot Width: 10 FT Site Type: FIELD field
Treated Plot Length: 25 FT
Treated Plot Area: 250 FT2 Treatments: 10 Tillage Type: MINTIL minimum-till
Replications: 3 Study Design: RACOBL Randomized Complete Block (RCB)

Trial Initiation Comments:
Plots received vertical tillage prior to planting.

Soil Description

% Sand: 77 % OM: 1.2 Texture: SL sandy loam
% Silt: 14 pH: 6.3
% Clay: 9 CEC: 4.7 Fert. Level: E excellent
Soil Drainage: F fair

Moisture and Weather Conditions

Overall Moisture Conditions: NORMAL normal
Closest Weather Station: UD REC Distance, Unit: 0.1 mi

University of Delaware

Application Description

	A	B
Application Date:	10/17/14	11/05/14
Appl. Stop Time:	09:00 AM	11:00 AM
Interval to Prev. Appl., Unit:		19 DAYS
Application Method:	SPRAY	SPRAY
Application Timing:	Spike	3-lvs
Application Placement:	BROADC	BROADC
Applied By:	Johnson	Johnson
Air Temperature, Unit:	60 F	61 F
% Relative Humidity:	83	52
Wind Velocity, Unit:	2 mph	3 mph
Wind Direction:	S	SW
Dew Presence (Y/N):	Y yes	N no
Soil Temperature, Unit:	59 F	60 F
Soil Moisture:	NORMAL	NORMAL
% Cloud Cover:	10	95

Crop Stage At Each Application

	A	B
Crop 1 Code, BBCH Scale:	TRZAW BCER	TRZAW BCER
Stage Scale Used:		DESC
Stage Majority, Percent:		3-leaf 60
Stage Minimum, Percent:		3-leaf 60
Stage Maximum, Percent:		4-leaf 40
Height, Unit:		5.5 in
Height Minimum, Maximum:		5 6

Pest Stage At Each Application

	A	B
Pest 1 Code, Type, Scale:	POAAN W	POAAN W
Stage Majority, Percent:		4-leaf 60
Stage Minimum, Percent:		3-leaf 25
Stage Maximum, Percent:		5-leaf 15
Height, Unit:		1 in
Height Minimum, Maximum:		0.5 1.5
Density, Unit:		8 m2
Pest 2 Code, Type, Scale:	CERVU W	CERVU W
Stage Majority, Percent:		2-leaf 70
Stage Minimum, Percent:		cotyld 10
Stage Maximum, Percent:		4-leaf 20
Height, Unit:		1 in
Height Minimum, Maximum:		0.4 1.5
Density, Unit:		10 m2

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Application Equipment

	A	B
Appl. Equipment:	Backpack	Backpack
Equipment Type:	SPRBAC	SPRBAC
Operation Pressure, Unit:	31 psi	31 psi
Nozzle Type:	AIRMIX	AIRMIX
Nozzle Size:	11002	11002
Nozzle Spacing, Unit:	18 in	18 in
Boom Length, Unit:	9 ft	9 ft
Boom Height, Unit:	18 in	22 in
Ground Speed, Unit:	3 mph	3 mph
Carrier:	WATER	WATER
Spray Volume, Unit:	20 gal/ac	20 gal/ac
Mix Size, Unit:	2 Liters	2 Liters
Propellant:	COMCO2	COMCO2

Trial Comments

11/10/14: No treatment had more than 3% leaf burn- superficial only

04/02/15: Glory also resulted in 70 to 85% stand loss. Plot area had standing water in the spring - wheat height is variable.

University of Delaware

Annual Bluegrass Control in Winter Wheat

Trial ID: SG21-15 Location: Field #2 Trial Year:
Protocol ID: SG21-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	TRZAW Wt.Wheat Injury % 11/10/14	TRZAW Wt.Wheat Stunting % 04/02/15	CERVU ME chkwd Control % 04/02/15	POAAN A.blugrs Control % 04/02/15
1	Untreated Check							0.0 d	0.0 e	0.0 d	0.0 e
2	PowerFlex HL....pyroxsulam	13.1	WG	0.0164	lb ai/a	3-lvs	B	12.0 bc	9.0 b	95.0 b	100.0 a
	Nonionic Surfactant	100	L	0.5	% v/v	3-lvs	B				
	Ammonium Sulfate	100	SG	0.9	% w/v	3-lvs	B				
3	Olympus Flex Premix	11.25	DF	0.0246	lb ai/a	3-lvs	B	15.0 ab	9.7 b	100.0 a	100.0 a
	----mesosulfuron	4.5		0.0098							
	----propoxycarbazone	6.75		0.0148							
	Nonionic Surfactant	100	L	0.5	% v/v	3-lvs	B				
	Ammonium Sulfate	100	SG	0.9	% w/v	3-lvs	B				
4	Olympus.....propoxycarbazone	70	WG	0.0394	lb ai/a	3-lvs	B	11.7 bc	7.3 bcd	50.3 c	43.3 d
	Nonionic Surfactant	100	L	0.5	% v/v	3-lvs	B				
	Ammonium Sulfate	100	SG	0.9	% w/v	3-lvs	B				
5	Maverick.....sulfosulfuron	75	WG	0.0314	lb ai/a	3-lvs	B	8.7 c	2.3 cde	100.0 a	63.3 c
	Nonionic Surfactant	100	L	0.5	% v/v	3-lvs	B				
6	Osprey.....mesosulfuron	4.5	WG	0.0134	lb ai/a	3-lvs	B	11.7 bc	1.7 de	100.0 a	85.0 b
	Nonionic Surfactant	100	L	0.5	% v/v	3-lvs	B				
	Ammonium Sulfate	100	SG	0.9	% w/v	3-lvs	B				
7	Axiom Premix	68	WG	0.255	lb ai/a	Spike	A	18.3 a	9.0 b	100.0 a	100.0 a
	----flufenacet	54		0.202							
	----metribuzin	14		0.0525							
8	Zidua.....pyroxasulfone	85	WG	0.0664	lb ai/a	Spike	A	6.3 c	7.2 bcd	100.0 a	100.0 a
9	Zidua.....pyroxasulfone	85	WG	0.0664	lb ai/a	Spike	A	8.3 c	8.0 bc	100.0 a	100.0 a
	Glory.....metribuzin	75	DF	0.0525	lb ai/a	Spike	A				
	Nonionic Surfactant	100	L	0.25	% v/v	Spike	A				
10	Glory.....metribuzin	75	DF	0.187	lb ai/a	3-lvs	B	6.3 c	81.7 a	100.0 a	100.0 a
	Nonionic Surfactant	100	L	0.25	% v/v	3-lvs	B				
	LSD P=.05							6.19	5.83	4.85	5.30
	Standard Deviation							3.61	3.39	2.81	3.09
	CV							36.7	24.92	3.33	3.9
	Replicate F							0.932	0.642	1.003	0.612
	Replicate Prob(F)							0.4121	0.5385	0.3875	0.5534
	Treatment F							6.020	152.782	425.406	364.903
	Treatment Prob(F)							0.0006	0.0001	0.0001	0.0001

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.
Missing data estimates are included in columns:Yates=2,3

University of Delaware

ALS-Resistant Horseweed Control in Winter Wheat

Trial ID: SG24-15 Location: Field #18 Trial Year:
Protocol ID: SG24-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Investigator: Mark VanGessel Title: Extension Weed Specialist
Organization: University of Delaware
Address: 16483 County Seat Hwy
City+State/Prov: Georgetown, Delaware
Postal Code: 19947 E-mail: mjv@udel.edu
Country: USA United States

Crop Description

Description: non-crop

Pest Description

Pest 1 Type: W Code: ERICA Conyza canadensis
Common Name: Canada horseweed

Site and Design

Treated Plot Width: 10 FT Site Type: FIELD field
Treated Plot Length: 25 FT
Treated Plot Area: 250 FT2 Treatments: 12 Tillage Type: NOTILL no-till
Replications: 3 Study Design: RACOBL Randomized Complete Block (RCB)

Maintenance

No.	Date	Maintenance Product Name	Form Conc	Form Type	Rate	Rate Unit
1.	10/30/14	Roundup	4.5	AS	1	QT/A

Comment: Roundup for burndown.

Soil Description

% Sand: 83 % OM: 1.3 Texture: LS loamy sand
% Silt: 10 pH: 5.9
% Clay: 7 CEC: 4.3 Fert. Level: G good
Soil Drainage: G good

Moisture and Weather Conditions

Overall Moisture Conditions: NORMAL normal
Closest Weather Station: UDREC Distance, Unit: 0.5 mi

University of Delaware

Application Description

	A	B	C	D	E	F
Application Date:	10/21/14	10/30/14	11/05/14	11/20/14	03/19/15	04/06/15
Appl. Stop Time:	10:00 AM	09:30 AM	11:00 AM	08:30 AM	03:00 PM	09:30 AM
Interval to Prev. Appl., Unit:		9 DAYS	6 DAYS	15 DAYS	119 DAYS	18 DAYS
Application Method:	SPRAY	SPRAY	SPRAY	SPRAY	SPRAY	SPRAY
Application Timing:	7 DPP	PRE	Spike	2-lvs	Tillers	Spring
Application Placement:	BROADC	BROADC	BROADC	BROADC	BROADC	BROADC
Applied By:	Johnson	Johnson	Johnson	Johnson	Johnson	Johnson
Air Temperature, Unit:	61 F	50 F	61 F	40 F	45 F	58 F
% Relative Humidity:	83	93	52	55	36	60
Wind Velocity, Unit:	2 mph	3 mph	3 mph	3 mph	3 mph	5 mph
Wind Direction:	SW	NW	SW	SW	NE	SW
Dew Presence (Y/N):	Y yes	Y yes	N no	Y yes	N no	N no
Soil Temperature, Unit:	60 F	50 F	60 F	39 F	45 F	57 F
Soil Moisture:	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
% Cloud Cover:	65	80	95	30	0	0

Pest Stage At Each Application

	A	B	C	D	E	F
Pest 1 Code, Type, Scale:	ERICA W	ERICA W	ERICA W	ERICA W	ERICA W	ERICA W
Stage Majority, Percent:				cotyld 100	bolt 100	bolt 100
Diameter, Unit:				0.2 in	1 in	2 in
Height Minimum, Maximum:						2 3
Density, Unit:				10 m2	5 m2	2 m2

Application Equipment

	A	B	C	D	E	F
Appl. Equipment:	Backpack	Backpack	Backpack	Backpack	Backpack	Backpack
Equipment Type:	SPRBAC	SPRBAC	SPRBAC	SPRBAC	SPRBAC	SPRBAC
Operation Pressure, Unit:	31 psi	31 psi	31 psi	31 psi	31 psi	31 psi
Nozzle Type:	AIRMIX	AIRMIX	AIRMIX	AIRMIX	AIRMIX	AIRMIX
Nozzle Size:	11002	11002	11002	11002	11002	11002
Nozzle Spacing, Unit:	18 in	18 in	18 in	18 in	18 in	18 in
Boom Length, Unit:	9 ft	9 ft	9 ft	9 ft	9 ft	9 ft
Boom Height, Unit:	18 in	18 in	20 in	20 in	22 in	24 in
Ground Speed, Unit:	3 mph	3 mph	3 mph	3 mph	3 mph	3 mph
Carrier:	WATER	WATER	WATER	WATER	WATER	WATER
Spray Volume, Unit:	20 gal/ac	20 gal/ac	20 gal/ac	20 gal/ac	20 gal/ac	20 gal/ac
Mix Size, Unit:	2 Liters	2 Liters	2 Liters	2 Liters	2 Liters	2 Liters
Propellant:	COMCO2	COMCO2	COMCO2	COMCO2	COMCO2	COMCO2

Trial Comments

05/11/15: Ratings 85% or higher are spring emergence. Treatments 6,7,8,9,10,11 weak on henbit. Treatments 7,8,9,10 weak on jagged chickweed. Treatments 6,7,8,11 weak on cress. Treatments 6,7,8,9,10 week on common chickweed. Treatments 6,11 weak on filaree. Treatment 7 weak on shepherdspurse and field pansy.

University of Delaware

ALS-Resistant Horseweed Control in Winter Wheat

Trial ID: SG24-15 Location: Field #18 Trial Year:
Protocol ID: SG24-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	ERICA Horsewd Control %
	Pest Code							
	Pest Name							
	Rating Type							
	Rating Unit							
	Rating Date							05/11/15
1	Untreated Check							0.0 c
2	Valor SX.....flumioxazin	51	WG	0.064	lb ai/a	7 DPP	A	91.7 ab
	Crop Oil Concentrate	100	SL	1	% v/v	7 DPP	A	
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	7 DPP	A	
	Harmony Extra SG Premix	50	SG	0.0234	lb ai/a	Spring	F	
	----thifensulfuron	33		0.0154				
	----tribenuron	17		0.00796				
	Nonionic Surfactant	100	L	0.25	% v/v	Spring	F	
	30% Urea Ammonium Nitrate	100	L	1.25	% v/v	Spring	F	
3	Sharpen.....saflufenacil	2.85	SC	0.067	lb ai/a	PRE	B	66.7 b
	Crop Oil Concentrate	100	SL	1	% v/v	PRE	B	
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	PRE	B	
	Harmony Extra SG Premix	50	SG	0.0234	lb ai/a	Spring	F	
	----thifensulfuron	33		0.0154				
	----tribenuron	17		0.00796				
	Nonionic Surfactant	100	L	0.25	% v/v	Spring	F	
	30% Urea Ammonium Nitrate	100	L	1.25	% v/v	Spring	F	
4	Axiom Premix	68	WG	0.255	lb ai/a	Spike	C	71.7 b
	----flufenacet	54		0.202				
	----metribuzin	14		0.0525				
	Harmony Extra SG Premix	50	SG	0.0234	lb ai/a	Spring	F	
	----thifensulfuron	33		0.0154				
	----tribenuron	17		0.00796				
	Nonionic Surfactant	100	L	0.25	% v/v	Spring	F	
	30% Urea Ammonium Nitrate	100	L	1.25	% v/v	Spring	F	
5	Glory.....metribuzin	75	DF	0.07	lb ai/a	2-lvs	D	86.0 ab
	Nonionic Surfactant	100	L	0.25	% v/v	2-lvs	D	
	Harmony Extra SG Premix	50	SG	0.0234	lb ai/a	Spring	F	
	----thifensulfuron	33		0.0154				
	----tribenuron	17		0.00796				
	Nonionic Surfactant	100	L	0.25	% v/v	Spring	F	
	30% Urea Ammonium Nitrate	100	L	1.25	% v/v	Spring	F	
6	Clarity.....dicamba	4	L	0.125	lb ai/a	Tillers	E	100.0 a
	Nonionic Surfactant	100	L	0.25	% v/v	Tillers	E	
7	Clarity.....dicamba	4	L	0.125	lb ai/a	Spring	F	100.0 a
	Nonionic Surfactant	100	L	0.25	% v/v	Spring	F	
8	2,4-D amine	3.8	L	0.238	lb ae/a	Tillers	E	78.3 ab
9	2,4-D amine	3.8	L	0.238	lb ae/a	Spring	F	88.3 ab
10	2,4-D amine	3.8	L	0.475	lb ae/a	Spring	F	89.3 ab
11	Huskie Premix	2.05	EC	0.24	lb ai/a	2-lvs	D	73.3 ab
	----pyrasulfotole	0.3		0.035				
	----bromoxynil	1.75		0.205				
	Ammonium Sulfate	100	SG	0.3	% w/v	2-lvs	D	

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.
Missing data estimates are included in columns:Yates=1

University of Delaware

Pest Code	ERICA
Pest Name	Horsewd
Rating Type	Control
Rating Unit	%
Rating Date	05/11/15

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	
12	Huskie Premix	2.05	EC	0.24	lb ai/a	Spring	F	100.0 a
	----pyrasulfotole	0.3		0.035				
	----bromoxynil	1.75		0.205				
	Ammonium Sulfate	100	SG	0.3	% w/v	Spring	F	

LSD P=.05	26.98
Standard Deviation	15.89
CV	20.17
Replicate F	1.116
Replicate Prob(F)	0.3464
Treatment F	8.862
Treatment Prob(F)	0.0001

University of Delaware

Control of ALS-Resistant Common Chickweed in Winter Wheat

Trial ID: SG25-15 Location: Kent County, DE Trial Year:
Protocol ID: SG25-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Investigator: Mark VanGessel Title: Extension Weed Specialist
Organization: University of Delaware
Address: 16483 County Seat Hwy
City+State/Prov: Georgetown, Delaware
Postal Code: 19947 E-mail: mjv@udel.edu
Country: USA United States

Crop Description

Crop 1: TRZAW Triticum aestivum (winter) Winter wheat
Variety: SS5208 BBCH Scale: BCER
Planting Date: 10/26/14
Planting Method: PLANTD planted
Depth, Unit: 1 in Planting Equipment: SR Drilling Machine
Row Spacing, Unit: 7 in Emergence Date: 11/05/14
Soil Moisture: NORMAL normal, adequate
Seed Bed: MEDIUM medium

Pest Description

Pest 1 Type: W Code: STEME Stellaria media
Common Name: Common chickweed
Description: suspected ALS-resistant

Site and Design

Treated Plot Width: 10 FT Site Type: FIELD field
Treated Plot Length: 25 FT
Treated Plot Area: 250 FT2 Treatments: 12 Tillage Type: CONTIL conventional-till
Replications: 3 Study Design: RACOBL Randomized Complete Block (RCB)

No.	Previous Crop
1.	potatoes

Soil Description

% OM: 1.2 Texture: SL sandy loam
pH: 6.2
Fert. Level: G good
Soil Drainage: G good

Application Description

	A	B	C
Application Date:	10/28/14	11/05/14	11/25/14
Appl. Stop Time:	03:00 PM	02:00 PM	11:30 AM
Interval to Prev. Appl., Unit:		8 DAYS	20 DAYS
Application Method:	SPRAY	SPRAY	SPRAY
Application Timing:	PRE	Spike	3 lvs
Application Placement:	BROADC	BROADC	BROADC
Applied By:	VanGessl	Johnson	Johnson
Air Temperature, Unit:	79 F	66 F	60 F
% Relative Humidity:	45	47	43
Wind Velocity, Unit:	4 mph	3 mph	3 mph
Wind Direction:	SW	SW	N
Dew Presence (Y/N):	N no	N no	Y yes
Soil Temperature, Unit:	80 F	65 F	59 F
Soil Moisture:	NORMAL	NORMAL	NORMAL
% Cloud Cover:	15	80	100

University of Delaware

Crop Stage At Each Application			
	A	B	C
Crop 1 Code, BBCH Scale:	TRZAW BCER	TRZAW BCER	TRZAW BCER
Stage Scale Used:		DESC	DESC
Stage Majority, Percent:		spike 100	2-leaf 100
Height, Unit:		0.3 in	3.5 in
Height Minimum, Maximum:		0.2 0.4	3 4

Pest Stage At Each Application			
	A	B	C
Pest 1 Code, Type, Scale:	STEME W	STEME W	STEME W
Stage Majority, Percent:		1-leaf 100	veg 100
Height, Unit:		0.2 in	0.4 in
Height Minimum, Maximum:			0.2 0.5
Density, Unit:		10 m2	10 m2

Application Equipment			
	A	B	C
Appl. Equipment:	Backpack	Backpack	Backpack
Equipment Type:	SPRBAC	SPRBAC	SPRBAC
Operation Pressure, Unit:	31 psi	31 psi	31 psi
Nozzle Type:	AIRMIX	AIRMIX	AIRMIX
Nozzle Size:	11002	11002	11002
Nozzle Spacing, Unit:	18 in	18 in	18 in
Boom Length, Unit:	9 ft	9 ft	9 ft
Boom Height, Unit:	18 in	18 in	20 in
Ground Speed, Unit:	3 mph	3 mph	3 mph
Carrier:	WATER	WATER	WATER
Spray Volume, Unit:	20 gal/ac	20 gal/ac	20 gal/ac
Mix Size, Unit:	2 Liters	2 Liters	2 Liters
Propellant:	COMCO2	COMCO2	COMCO2

Trial Comments

11/11/14: No injury observed from PRE or Spike treatments; wheat at 1-leaf stage.

12/05/14: Trts. 4, 5, and 10 exhibited noticeable amount of chlorosis.

04/15/15: Plots 101-106 were oversprayed with Harmony Extra and Starane Ultra.

University of Delaware

Control of ALS-Resistant Common Chickweed in Winter Wheat

Trial ID: SG25-15 Location: Kent County, DE Trial Year:
Protocol ID: SG25-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	TRZAW Wt.Wheat Stunting % 12/05/14	TRZAW Wt.Wheat Stunting % 04/15/15	STEME C.chkwd Control % 04/15/15	TRZAW Wt.Wheat Stunting % 05/12/15
1	Untreated Check							0.0 d	0.0 h	0.0 c	0.2 d
2	Harmony Extra SG Premix	50	SG	0.0234	lb ai/a	3 lvs	C	2.3 d	8.3 ef	92.3 b	
	----thifensulfuron	33		0.0154							
	----tribenuron	17		0.00796							
	Nonionic Surfactant	100	L	0.25	% v/v	3 lvs	C				
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	3 lvs	C				
3	Huskie Premix	2.05	EC	0.24	lb ai/a	3 lvs	C	0.0 d	2.7 gh	99.9 a	0.3 d
	----pyrasulfotole	0.3		0.035							
	----bromoxynil	1.75		0.205							
	Dry Ammonium Sulfate	100	D	0.3	% w/v	3 lvs	C				
4	Harmony Extra SG Premix	50	SG	0.0234	lb ai/a	3 lvs	C	15.7 ab	20.0 c	99.9 a	16.3 bc
	----thifensulfuron	33		0.0154							
	----tribenuron	17		0.00796							
	Glory.....metribuzin	75	DF	0.188	lb ai/a	3 lvs	C				
	Nonionic Surfactant	100	L	0.25	% v/v	3 lvs	C				
5	Huskie Premix	2.05	EC	0.24	lb ai/a	3 lvs	C	9.2 c	21.7 c	99.9 a	22.8 ab
	----pyrasulfotole	0.3		0.035							
	----bromoxynil	1.75		0.205							
	Glory.....metribuzin	75	DF	0.188	lb ai/a	3 lvs	C				
	Dry Ammonium Sulfate	100	D	0.3	% w/v	3 lvs	C				
6	Harmony Extra SG Premix	50	SG	0.0234	lb ai/a	3 lvs	C	0.0 d	13.3 d	99.9 a	3.8 d
	----thifensulfuron	33		0.0154							
	----tribenuron	17		0.00796							
	Starane Ultra...fluroxypyr	2.8	EC	0.131	lb ae/a	3 lvs	C				
	Nonionic Surfactant	100	L	0.25	% v/v	3 lvs	C				
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	3 lvs	C				
7	Huskie Premix	2.05	EC	0.24	lb ai/a	3 lvs	C	0.0 d	5.0 fg	100.0 a	
	----pyrasulfotole	0.3		0.035							
	----bromoxynil	1.75		0.205							
	Starane Ultra...fluroxypyr	2.8	EC	0.131	lb ae/a	3 lvs	C				
	Dry Ammonium Sulfate	100	D	0.3	% w/v	3 lvs	C				
8	Axiom Premix	68	WG	0.255	lb ai/a	SPIKE	B	4.0 d	13.0 de	100.0 a	10.7 c
	----flufenacet	54		0.202							
	----metribuzin	14		0.0525							
	Starane Ultra...fluroxypyr	2.8	EC	0.131	lb ae/a	3 lvs	C				
	Dry Ammonium Sulfate	100	D	0.3	% w/v	3 lvs	C				
9	Sharpen.....saflufenacil	2.85	SC	0.067	lb ai/a	PRE	A	11.3 bc	9.0 def	100.0 a	0.0 d
	Starane Ultra...fluroxypyr	2.8	EC	0.131	lb ae/a	3 lvs	C				
	Dry Ammonium Sulfate	100	D	0.3	% w/v	3 lvs	C				

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.
Missing data estimates are included in columns:Yates=1,3,4,5

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code				
	Pest Code									STEME	
	Pest Name									C.chkwd	
	Crop Code							TRZAW	TRZAW		TRZAW
	Crop Name							Wt.Wheat	Wt.Wheat		Wt.Wheat
	Rating Type							Stunting	Stunting	Control	Stunting
	Rating Unit							%	%	%	%
	Rating Date							12/05/14	04/15/15	04/15/15	05/12/15
10	Sharpen.....saflufenacil	2.85	SC	0.067	lb ai/a	PRE	A	18.0 a	23.3 c	100.0 a	22.3 ab
	Harmony Extra SG Premix	50	SG	0.0234	lb ai/a	3 lvs	C				
	----thifensulfuron	33		0.0154							
	----tribenuron	17		0.00796							
	Glory.....metribuzin	75	DF	0.188	lb ai/a	3 lvs	C				
	Nonionic Surfactant	100	L	0.25	% v/v	3 lvs	C				
11	Valor SX.....flumioxazin	51	WG	0.064	lb ai/a	PRE	A	19.0 a	30.0 b	100.0 a	18.0 ab
	Starane Ultra...fluroxypyr	2.8	EC	0.131	lb ae/a	3 lvs	C				
	Dry Ammonium Sulfate	100	D	0.3	% w/v	3 lvs	C				
12	Valor SX.....flumioxazin	51	WG	0.064	lb ai/a	PRE	A	17.3 a	40.0 a	100.0 a	23.3 a
	Axiom Premix	68	WG	0.255	lb ai/a	SPIKE	B				
	----flufenacet	54		0.202							
	----metribuzin	14		0.0525							
	Starane Ultra...fluroxypyr	2.8	EC	0.131	lb ae/a	3 lvs	C				
	Dry Ammonium Sulfate	100	D	0.3	% w/v	3 lvs	C				
	LSD P=.05							4.88	4.82	4.40	6.63
	Standard Deviation							2.86	2.84	2.54	3.76
	CV							35.48	18.32	2.79	31.96
	Replicate F							2.286	3.919	0.739	1.957
	Replicate Prob(F)							0.1276	0.0350	0.4933	0.1807
	Treatment F							22.716	52.259	383.355	21.098
	Treatment Prob(F)							0.0001	0.0001	0.0001	0.0001

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Pest Code	STEME
Pest Name	C.chkwd
Crop Code	
Crop Name	
Rating Type	Control
Rating Unit	%
Rating Date	05/12/15

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	
1	Untreated Check							0.0 c
2	Harmony Extra SG Premix	50	SG	0.0234	lb ai/a	3 lvs	C	
	----thifensulfuron	33		0.0154				
	----tribenuron	17		0.00796				
	Nonionic Surfactant	100	L	0.25	% v/v	3 lvs	C	
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	3 lvs	C	
3	Huskie Premix	2.05	EC	0.24	lb ai/a	3 lvs	C	99.9 a
	----pyrasulfotole	0.3		0.035				
	----bromoxynil	1.75		0.205				
	Dry Ammonium Sulfate	100	D	0.3	% w/v	3 lvs	C	
4	Harmony Extra SG Premix	50	SG	0.0234	lb ai/a	3 lvs	C	99.9 a
	----thifensulfuron	33		0.0154				
	----tribenuron	17		0.00796				
	Glory.....metribuzin	75	DF	0.188	lb ai/a	3 lvs	C	
	Nonionic Surfactant	100	L	0.25	% v/v	3 lvs	C	
5	Huskie Premix	2.05	EC	0.24	lb ai/a	3 lvs	C	95.0 b
	----pyrasulfotole	0.3		0.035				
	----bromoxynil	1.75		0.205				
	Glory.....metribuzin	75	DF	0.188	lb ai/a	3 lvs	C	
	Dry Ammonium Sulfate	100	D	0.3	% w/v	3 lvs	C	
6	Harmony Extra SG Premix	50	SG	0.0234	lb ai/a	3 lvs	C	100.0 a
	----thifensulfuron	33		0.0154				
	----tribenuron	17		0.00796				
	Starane Ultra...fluroxypyr	2.8	EC	0.131	lb ae/a	3 lvs	C	
	Nonionic Surfactant	100	L	0.25	% v/v	3 lvs	C	
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	3 lvs	C	
7	Huskie Premix	2.05	EC	0.24	lb ai/a	3 lvs	C	100.0 a
	----pyrasulfotole	0.3		0.035				
	----bromoxynil	1.75		0.205				
	Starane Ultra...fluroxypyr	2.8	EC	0.131	lb ae/a	3 lvs	C	
	Dry Ammonium Sulfate	100	D	0.3	% w/v	3 lvs	C	
8	Axiom Premix	68	WG	0.255	lb ai/a	SPIKE	B	100.0 a
	----flufenacet	54		0.202				
	----metribuzin	14		0.0525				
	Starane Ultra...fluroxypyr	2.8	EC	0.131	lb ae/a	3 lvs	C	
	Dry Ammonium Sulfate	100	D	0.3	% w/v	3 lvs	C	
9	Sharpen.....saflufenacil	2.85	SC	0.067	lb ai/a	PRE	A	100.0 a
	Starane Ultra...fluroxypyr	2.8	EC	0.131	lb ae/a	3 lvs	C	
	Dry Ammonium Sulfate	100	D	0.3	% w/v	3 lvs	C	

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Pest Code	STEME
Pest Name	C.chkwd
Crop Code	
Crop Name	
Rating Type	Control
Rating Unit	%
Rating Date	05/12/15

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	
10	Sharpen.....saflufenacil	2.85	SC	0.067	lb ai/a	PRE	A	100.0 a
	Harmony Extra SG Premix	50	SG	0.0234	lb ai/a	3 lvs	C	
	----thifensulfuron	33		0.0154				
	----tribenuron	17		0.00796				
	Glory.....metribuzin	75	DF	0.188	lb ai/a	3 lvs	C	
	Nonionic Surfactant	100	L	0.25	% v/v	3 lvs	C	
11	Valor SX.....flumioxazin	51	WG	0.064	lb ai/a	PRE	A	100.0 a
	Starane Ultra...fluroxypyr	2.8	EC	0.131	lb ae/a	3 lvs	C	
	Dry Ammonium Sulfate	100	D	0.3	% w/v	3 lvs	C	
12	Valor SX.....flumioxazin	51	WG	0.064	lb ai/a	PRE	A	100.0 a
	Axiom Premix	68	WG	0.255	lb ai/a	SPIKE	B	
	----flufenacet	54		0.202				
	----metribuzin	14		0.0525				
	Starane Ultra...fluroxypyr	2.8	EC	0.131	lb ae/a	3 lvs	C	
	Dry Ammonium Sulfate	100	D	0.3	% w/v	3 lvs	C	

LSD P=.05	3.03
Standard Deviation	1.74
CV	1.93
Replicate F	0.753
Replicate Prob(F)	0.4880
Treatment F	891.942
Treatment Prob(F)	0.0001

University of Delaware

Comparing Different Programs for No-Till Soybeans

Trial ID: DSB2-15 Location: Field #9 Trial Year:
Protocol ID: DSB2-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact: Delaware Soybean Board

Investigator: Mark VanGessel Title: Extension Weed Specialist
Organization: University of Delaware
Address: 16483 County Seat Hwy
City+State/Prov: Georgetown, Delaware
Postal Code: 19947 E-mail: mjv@udel.edu
Country: USA United States

Crop Description

Crop 1: GLXMA Glycine max Soybean
Variety: P94Y23 BBCH Scale: BSOY
Planting Date: 05/07/15
Planting Rate, Unit: 180000 S/A Planting Method: PLANTD planted
Depth, Unit: 1 in Planting Equipment: FE Field Equipment
Row Spacing, Unit: 15 in Emergence Date: 05/14/15
Harvest Date: 10/15/15
Harvested Width, Unit: 6.25 FT
Soil Temperature, Unit: 76 F Harvested Length, Unit: 25 FT
Soil Moisture: NORMAL normal, adequate Harvest Equipment: Plot combine
Seed Bed: MEDTRA medium/trashy % Standard Moisture: 13.0

Pest Description

Pest 1 Type: W Code: SCRAN Scleranthus annuus
Common Name: Annual knawel

Pest 2 Type: W Code: EROCI Erodium cicutarium
Common Name: Redstem filaree

Pest 3 Type: W Code: OEOLA Oenothera laciniata
Common Name: Cutleaf eveningprimrose

Pest 4 Type: W Code: LAMAM Lamium amplexicaule
Common Name: Henbit

Pest 5 Type: W Code: STEME Stellaria media
Common Name: Common chickweed

Pest 6 Type: W Code: CERVU Cerastium fontanum vulgare
Common Name: Mouse-ear chickweed

Site and Design

Treated Plot Width: 10 FT Site Type: FIELD field
Treated Plot Length: 25 FT
Treated Plot Area: 250 FT2 Treatments: 16 Tillage Type: NOTILL no-till
Replications: 3 Study Design: FACTOR Factorial

Maintenance

No.	Date	Maintenance Product Name	Form Conc	Form Type	Rate	Rate Unit
1.	06/25/15	Roundup	4.5	AS	22	FL OZ/A
2.	06/25/15	Reflex	2	EC	1.5	PT/A

Comment: Total POST application.

Soil Description

% Sand: 83 % OM: 1.4 Texture: LS loamy sand
% Silt: 8 pH: 5.4
% Clay: 9 CEC: 4.8 Fert. Level: G good
Soil Drainage: G good

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Moisture and Weather Conditions

Overall Moisture Conditions: NORMAL normal

Closest Weather Station: UDREC Distance, Unit: 0.1 mi

Application Description

	A	B	C	D
Application Date:	12/15/14	04/13/15	04/24/15	05/07/15
Appl. Stop Time:	11:55 AM	11:15 AM	08:45 AM	03:00 PM
Interval to Prev. Appl., Unit:		119 DAYS	11 DAYS	13 DAYS
Application Method:	SPRAY	SPRAY	SPRAY	SPRAY
Application Timing:	Fall	4 WPP	10 DPP	PRE
Application Placement:	BROADC	BROADC	BROADC	BROADC
Applied By:	Johnson	Johnson	Johnson	Johnson
Air Temperature, Unit:	46 F	64 F	40 F	73 F
% Relative Humidity:	66	50	47	51
Wind Velocity, Unit:	2 mph	2 mph	8 mph	2 mph
Wind Direction:	N	S	NW	SE
Dew Presence (Y/N):	N no	Y yes	N no	N no
Soil Temperature, Unit:	46 F	63 F	40 F	73 F
Soil Moisture:	NORMAL	NORMAL	NORMAL	NORMAL
% Cloud Cover:	100	70	40	0

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Pest Stage At Each Application

	A	B	C	D
Pest 1 Code, Type, Scale:	SCRAN W	SCRAN W	SCRAN W	SCRAN W
Stage Majority, Percent:	veg 100	veg 100		
Diameter, Unit:	2 in	5 in		
Density, Unit:	75 m2	20 m2		
Pest 2 Code, Type, Scale:	EROCI W	EROCI W	EROCI W	EROCI W
Stage Majority, Percent:	veg 100	veg 65		
Stage Minimum, Percent:		veg 65		
Stage Maximum, Percent:		flowr 35		
Height, Unit:	3 in	6 in		
Height Minimum, Maximum:	2 4	4 7		
Density, Unit:	7 m2	5 m2		
Pest 3 Code, Type, Scale:	OEOLA W	OEOLA W	OEOLA W	OEOLA W
Stage Majority, Percent:	veg 100	veg 100		
Diameter, Unit:	3.5 in	4 in		
Height Minimum, Maximum:	3 4	2 6		
Density, Unit:	5 m2	8 m2		
Pest 4 Code, Type, Scale:	LAMAM W	LAMAM W	LAMAM W	LAMAM W
Stage Majority, Percent:	veg 100	flowr 70		
Stage Minimum, Percent:		veg 30		
Stage Maximum, Percent:		flowr 70		
Height, Unit:	0.5 in	3 in		
Density, Unit:	30 m2	7 m2		
Pest 5 Code, Type, Scale:	STEME W	STEME W	STEME W	STEME W
Stage Majority, Percent:	veg 100	flowr 100		
Height, Unit:	0.75 in	5 in		
Height Minimum, Maximum:	0.5 1	4 6		
Density, Unit:	30 m2	10 m2		
Pest 6 Code, Type, Scale:	CERVU W	CERVU W	CERVU W	CERVU W
Stage Majority, Percent:	veg 100	veg 100		
Height, Unit:	0.75 in	2 in		
Height Minimum, Maximum:	0.5 1	1 2.5		
Density, Unit:	30 m2	4 m2		

Application Equipment

	A	B	C	D
Appl. Equipment:	Backpack	Backpack	Backpack	Tractor
Equipment Type:	SPRBAC	SPRBAC	SPRBAC	TRMOSP
Operation Pressure, Unit:	31 psi	31 psi	31 psi	40 psi
Nozzle Type:	AIRMIX	AIRMIX	AIRMIX	AIRMIX
Nozzle Size:	11002	11002	11002	11002
Nozzle Spacing, Unit:	18 in	18 in	18 in	20 in
Boom Length, Unit:	9 ft	9 ft	9 ft	10 ft
Boom Height, Unit:	20 in	22 in	22 in	18 in
Ground Speed, Unit:	3 mph	3 mph	3 mph	3 mph
Carrier:	WATER	WATER	WATER	WATER
Spray Volume, Unit:	20 gal/ac	20 gal/ac	20 gal/ac	20 gal/ac
Mix Size, Unit:	2 Liters	2 Liters	2 Liters	0.7 Gallons
Propellant:	COMCO2	COMCO2	COMCO2	COMAIR

Trt No	Treatment Application Comment
11	Plot 208 was mistakenly oversprayed with trt. 4.

Trial Comments

04/13/15: Plots that were previously treated had only mouseear and common chickweed.

05/13/15: % ground cover is % ground cover of live tissue. Crabgrass and morninglory emerging in plots with no ground cover and/or no residue herbicides. Treatment 1 had knawel, filaree, primrose, filed pansy, mousear chickweed. Treatment 3 had filaree. Treatments 4,6,11,12,15 had wild garlic. Treatment 5 had mousear chickweed, knawel, horseweed, henbit, speedwell, primrose, cress. Treatment 9 had horseweed. Treatment 13 had vetch, knawel, filaree, primrose.

06/07/15: Better control of winter annual weeds allowed for more summer annual weed emergence. Trt 1 has poor emergence of summer annuals due to presence of winter annual weeds. Only stunting observed from herbicide was in trt 16, averaging 10%.

Winter annuals: most common were: primrose, knawel, carolina geranium; horseweed was in the first and second reps; and redstem filaree and henbit were scattered.

Plot 301 had high density of redstem filaree seedlings; and had lower ground cover by winter annuals due to senescence of some species sooner than others.

06/25/15: Annual grass is mostly large crabgrass and some giant foxtail. Grass pressure is very high. Heavy grass pressure i.e. trt 9 resulted in grasses suppressing broadleaf weeds (AMAPA, IPOSS, lg crabgrass). Trt 1 has no soybeans in some of the reps due to weed competition.

Those treatments with poor or no spring burndown resulted in low densities of summer annual weeds (i.e. those treatments with with <50% control).

07/13/15: Plots with heavy grass pressure had fewer broadleaf weeds due to competition. Since some of the Palmer amaranth plants are resistant to glyphosate and a few are suspected resistant to Group 2 herbicides, data is quite variable.

University of Delaware

Comparing Different Programs for No-Till Soybeans

Trial ID: DSB2-15 Location: Field #9 Trial Year:
Protocol ID: DSB2-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact: Delaware Soybean Board

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	WntrAnns	AMAPA PalmerAm	IPOSS mornglry	DIGSA L.crbgrs
	Pest Code										
	Pest Name							WntrAnns	PalmerAm	mornglry	L.crbgrs
	Crop Code										
	Crop Name										
	Rating Type							GrndCovr	Control	Control	Control
	Rating Unit							%	%	%	%
	Rating Date							05/13/15	06/07/15	06/07/15	06/07/15
1	Fall__None							87.67 a			
	No Spring Burndown										
2	Fall__None							0.00 c	43.3 bc	46.7 abc	36.7 cde
	Early Spring Pre-Plant										
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	4 WPP	B				
	2,4-D ester	3.8	L	0.95	lb ae/a	4 WPP	B				
	Canopy Premix	75	DF	0.21	lb ai/a	4 WPP	B				
	----metribuzin	64.3		0.18							
	----chlorimuron	10.7		0.03							
3	Fall__None							3.33 c	100.0 a	71.7 a	60.0 abc
	Ten Days Pre-Plant										
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	10 DPP	C				
	2,4-D ester	3.8	L	0.475	lb ae/a	10 DPP	C				
	Canopy Premix	75	DF	0.21	lb ai/a	10 DPP	C				
	----metribuzin	64.3		0.18							
	----chlorimuron	10.7		0.03							
4	Fall__None							0.17 c	96.7 a	77.3 a	66.7 abc
	Spring_Double Knock										
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	4 WPP	B				
	2,4-D ester	3.8	L	0.71	lb ae/a	4 WPP	B				
	Gramoxone SL....paraquat	2	SL	0.75	lb ai/a	PRE	D				
	Canopy Premix	75	DF	0.21	lb ai/a	PRE	D				
	----metribuzin	64.3		0.18							
	----chlorimuron	10.7		0.03							
	Crop Oil Concentrate	100	SL	1.25	% v/v	PRE	D				
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	PRE	D				
5	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A	12.33 b	30.0 c	0.0 d	0.0 e
	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A				
	No Spring Burndown										
6	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A	0.17 c	63.3 abc	61.7 ab	46.7 bcd
	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A				
	Early Spring Pre-Plant										
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	4 WPP	B				
	2,4-D ester	3.8	L	0.95	lb ae/a	4 WPP	B				
	Canopy Premix	75	DF	0.21	lb ai/a	4 WPP	B				
	----metribuzin	64.3		0.18							
	----chlorimuron	10.7		0.03							

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.
Missing data estimates are included in columns:Yates=1,2,3,4,5,10,11,12; Average=7,8,9

University of Delaware

Pest Code								WntrAnns	AMAPA PalmerAm	IPOSS mornglry	DIGSA L.crbgrs
Pest Name											
Crop Code											
Crop Name											
Rating Type								GrndCovr	Control	Control	Control
Rating Unit								%	%	%	%
Rating Date								05/13/15	06/07/15	06/07/15	06/07/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code				
7	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A	0.00 c	90.0 ab	71.7 a	89.0 a
	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A				
	Ten Days Pre-Plant										
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	10 DPP	C				
	2,4-D ester	3.8	L	0.475	lb ae/a	10 DPP	C				
	Canopy Premix	75	DF	0.21	lb ai/a	10 DPP	C				
	----metribuzin	64.3		0.18							
	----chlorimuron	10.7		0.03							
8	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A	0.00 c	100.0 a	67.7 a	68.3 abc
	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A				
	Spring_Double Knock										
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	4 WPP	B				
	2,4-D ester	3.8	L	0.71	lb ae/a	4 WPP	B				
	Gramoxone SL....paraquat	2	SL	0.75	lb ai/a	PRE	D				
	Canopy Premix	75	DF	0.21	lb ai/a	PRE	D				
	----metribuzin	64.3		0.18							
	----chlorimuron	10.7		0.03							
	Crop Oil Concentrate	100	SL	1.25	% v/v	PRE	D				
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	PRE	D				
9	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A	0.33 c	43.3 bc	26.7 bcd	43.3 cd
	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A				
	Canopy EX Premix	29.5	WG	0.0406	lb ai/a	Fall	A				
	----chlorimuron	22.7		0.0312							
	----tribenuron	6.8		0.0094							
	No Spring Burndown										
10	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A	0.00 c	60.0 abc	72.7 a	56.7 abc
	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A				
	Canopy EX Premix	29.5	WG	0.0406	lb ai/a	Fall	A				
	----chlorimuron	22.7		0.0312							
	----tribenuron	6.8		0.0094							
	Early Spring Pre-Plant										
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	4 WPP	B				
	2,4-D ester	3.8	L	0.95	lb ae/a	4 WPP	B				
	Canopy Premix	75	DF	0.21	lb ai/a	4 WPP	B				
	----metribuzin	64.3		0.18							
	----chlorimuron	10.7		0.03							
11	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A	0.49 c	97.6 a	77.5 a	63.1 abc
	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A				
	Canopy EX Premix	29.5	WG	0.0406	lb ai/a	Fall	A				
	----chlorimuron	22.7		0.0312							
	----tribenuron	6.8		0.0094							
	Ten Days Pre-Plant										
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	10 DPP	C				
	2,4-D ester	3.8	L	0.475	lb ae/a	10 DPP	C				
	Canopy Premix	75	DF	0.21	lb ai/a	10 DPP	C				
	----metribuzin	64.3		0.18							
	----chlorimuron	10.7		0.03							

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Pest Code									WntrAnns	AMAPA PalmerAm	IPOSS mornglry	DIGSA L.crbgrs
Pest Name												
Crop Code												
Crop Name												
Rating Type									GrndCovr	Control	Control	Control
Rating Unit									%	%	%	%
Rating Date									05/13/15	06/07/15	06/07/15	06/07/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code					
12	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A		0.17 c	96.7 a	80.7 a	78.3 abc
	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A					
	Canopy EX Premix	29.5	WG	0.0406	lb ai/a	Fall	A					
	----chlorimuron	22.7		0.0312								
	----tribenuron	6.8		0.0094								
	Spring_Double Knock											
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	4 WPP	B					
	2,4-D ester	3.8	L	0.71	lb ae/a	4 WPP	B					
	Gramoxone SL....paraquat	2	SL	0.75	lb ai/a	PRE	D					
	Canopy Premix	75	DF	0.21	lb ai/a	PRE	D					
	----metribuzin	64.3		0.18								
	----chlorimuron	10.7		0.03								
	Crop Oil Concentrate	100	SL	1.25	% v/v	PRE	D					
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	PRE	D					
13	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A		2.33 c	66.7 abc	16.7 cd	10.0 de
	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A					
	Valor SX.....flumioxazin	51	WG	0.096	lb ai/a	Fall	A					
	No Spring Burndown											
14	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A		0.00 c	100.0 a	63.3 ab	86.7 ab
	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A					
	Valor SX.....flumioxazin	51	WG	0.096	lb ai/a	Fall	A					
	Early Spring Pre-Plant											
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	4 WPP	B					
	2,4-D ester	3.8	L	0.95	lb ae/a	4 WPP	B					
	Canopy Premix	75	DF	0.21	lb ai/a	4 WPP	B					
	----metribuzin	64.3		0.18								
	----chlorimuron	10.7		0.03								
15	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A		0.17 c	91.7 ab	80.0 a	86.7 ab
	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A					
	Valor SX.....flumioxazin	51	WG	0.096	lb ai/a	Fall	A					
	Ten Days Pre-Plant											
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	10 DPP	C					
	2,4-D ester	3.8	L	0.475	lb ae/a	10 DPP	C					
	Canopy Premix	75	DF	0.21	lb ai/a	10 DPP	C					
	----metribuzin	64.3		0.18								
	----chlorimuron	10.7		0.03								

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code				
	Pest Code								AMAPA	IPOSS	DIGSA
	Pest Name							WntrAnns	PalmerAm	mornglry	L.crbgrs
	Crop Code										
	Crop Name										
	Rating Type							GrndCovr	Control	Control	Control
	Rating Unit							%	%	%	%
	Rating Date							05/13/15	06/07/15	06/07/15	06/07/15
16	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A	0.00 c	100.0 a	65.0 ab	86.7 ab
	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A				
	Valor SX.....flumioxazin	51	WG	0.096	lb ai/a	Fall	A				
	Spring_Double Knock										
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	4 WPP	B				
	2,4-D ester	3.8	L	0.71	lb ae/a	4 WPP	B				
	Gramoxone SL....paraquat	2	SL	0.75	lb ai/a	PRE	D				
	Canopy Premix	75	DF	0.21	lb ai/a	PRE	D				
	----metribuzin	64.3		0.18							
	----chlorimuron	10.7		0.03							
	Crop Oil Concentrate	100	SL	1.25	% v/v	PRE	D				
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	PRE	D				
	LSD P=.05							3.512	48.49	39.34	42.25
	Standard Deviation							2.103	28.94	23.48	25.22
	CV							31.4	36.82	40.06	43.05
	Replicate F							1.611	1.182	0.744	3.255
	Replicate Prob(F)							0.2171	0.3221	0.4848	0.0541
	Treatment F							322.785	2.230	3.383	3.543
	Treatment Prob(F)							0.0001	0.0358	0.0032	0.0023

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	WntrAnns	annuals	AMAPA PalmerAm	IPOSS mornglry
	Pest Code										
	Pest Name							WntrAnns	annuals	AMAPA PalmerAm	IPOSS mornglry
	Crop Code										
	Crop Name										
	Rating Type							Control	GrndCovr	Control	Control
	Rating Unit							%	%	%	%
	Rating Date							06/07/15	06/07/15	06/25/15	06/25/15
1	Fall__None							0.0 d	50.0 a		
	No Spring Burndown										
2	Fall__None							100.0 a		60.0 cde	62.5 ab
	Early Spring Pre-Plant										
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	4 WPP	B				
	2,4-D ester	3.8	L	0.95	lb ae/a	4 WPP	B				
	Canopy Premix	75	DF	0.21	lb ai/a	4 WPP	B				
	----metribuzin	64.3		0.18							
	----chlorimuron	10.7		0.03							
3	Fall__None							97.3 a		91.7 ab	68.3 ab
	Ten Days Pre-Plant										
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	10 DPP	C				
	2,4-D ester	3.8	L	0.475	lb ae/a	10 DPP	C				
	Canopy Premix	75	DF	0.21	lb ai/a	10 DPP	C				
	----metribuzin	64.3		0.18							
	----chlorimuron	10.7		0.03							
4	Fall__None							100.0 a		87.5 abc	62.5 ab
	Spring_Double Knock										
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	4 WPP	B				
	2,4-D ester	3.8	L	0.71	lb ae/a	4 WPP	B				
	Gramoxone SL....paraquat	2	SL	0.75	lb ai/a	PRE	D				
	Canopy Premix	75	DF	0.21	lb ai/a	PRE	D				
	----metribuzin	64.3		0.18							
	----chlorimuron	10.7		0.03							
	Crop Oil Concentrate	100	SL	1.25	% v/v	PRE	D				
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	PRE	D				
5	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A	26.7 c	45.0 a	0.0 f	0.0 d
	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A				
	No Spring Burndown										
6	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A	100.0 a		73.3 a-e	63.3 ab
	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A				
	Early Spring Pre-Plant										
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	4 WPP	B				
	2,4-D ester	3.8	L	0.95	lb ae/a	4 WPP	B				
	Canopy Premix	75	DF	0.21	lb ai/a	4 WPP	B				
	----metribuzin	64.3		0.18							
	----chlorimuron	10.7		0.03							

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Pest Code								WntrAnns	annuals	AMAPA PalmerAm	IPOSS mornglry
Pest Name											
Crop Code											
Crop Name											
Rating Type								Control	GrndCovr	Control	Control
Rating Unit								%	%	%	%
Rating Date								06/07/15	06/07/15	06/25/15	06/25/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code				
7	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A	99.7 a		88.3 abc	68.3 ab
	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A				
	Ten Days Pre-Plant										
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	10 DPP	C				
	2,4-D ester	3.8	L	0.475	lb ae/a	10 DPP	C				
	Canopy Premix	75	DF	0.21	lb ai/a	10 DPP	C				
	----metribuzin	64.3		0.18							
	----chlorimuron	10.7		0.03							
8	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A	100.0 a		90.0 ab	67.5 ab
	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A				
	Spring_Double Knock										
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	4 WPP	B				
	2,4-D ester	3.8	L	0.71	lb ae/a	4 WPP	B				
	Gramoxone SL....paraquat	2	SL	0.75	lb ai/a	PRE	D				
	Canopy Premix	75	DF	0.21	lb ai/a	PRE	D				
	----metribuzin	64.3		0.18							
	----chlorimuron	10.7		0.03							
	Crop Oil Concentrate	100	SL	1.25	% v/v	PRE	D				
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	PRE	D				
9	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A	93.0 ab		50.0 e	0.0 d
	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A				
	Canopy EX Premix	29.5	WG	0.0406	lb ai/a	Fall	A				
	----chlorimuron	22.7		0.0312							
	----tribenuron	6.8		0.0094							
	No Spring Burndown										
10	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A	100.0 a		57.5 de	75.0 a
	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A				
	Canopy EX Premix	29.5	WG	0.0406	lb ai/a	Fall	A				
	----chlorimuron	22.7		0.0312							
	----tribenuron	6.8		0.0094							
	Early Spring Pre-Plant										
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	4 WPP	B				
	2,4-D ester	3.8	L	0.95	lb ae/a	4 WPP	B				
	Canopy Premix	75	DF	0.21	lb ai/a	4 WPP	B				
	----metribuzin	64.3		0.18							
	----chlorimuron	10.7		0.03							
11	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A	100.0 a		100.0 a	75.0 a
	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A				
	Canopy EX Premix	29.5	WG	0.0406	lb ai/a	Fall	A				
	----chlorimuron	22.7		0.0312							
	----tribenuron	6.8		0.0094							
	Ten Days Pre-Plant										
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	10 DPP	C				
	2,4-D ester	3.8	L	0.475	lb ae/a	10 DPP	C				
	Canopy Premix	75	DF	0.21	lb ai/a	10 DPP	C				
	----metribuzin	64.3		0.18							
	----chlorimuron	10.7		0.03							

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Pest Code								WntrAnns	annuals	AMAPA	IPOSS
Pest Name										PalmerAm	mornglry
Crop Code											
Crop Name											
Rating Type								Control	GrndCovr	Control	Control
Rating Unit								%	%	%	%
Rating Date								06/07/15	06/07/15	06/25/15	06/25/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code				
12	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A	100.0 a		80.0 a-d	73.3 ab
	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A				
	Canopy EX Premix	29.5	WG	0.0406	lb ai/a	Fall	A				
	----chlorimuron	22.7		0.0312							
	----tribenuron	6.8		0.0094							
	Spring_Double Knock										
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	4 WPP	B				
	2,4-D ester	3.8	L	0.71	lb ae/a	4 WPP	B				
	Gramoxone SL....paraquat	2	SL	0.75	lb ai/a	PRE	D				
	Canopy Premix	75	DF	0.21	lb ai/a	PRE	D				
	----metribuzin	64.3		0.18							
	----chlorimuron	10.7		0.03							
	Crop Oil Concentrate	100	SL	1.25	% v/v	PRE	D				
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	PRE	D				
13	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A	85.0 b		65.0 b-e	40.0 c
	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A				
	Valor SX.....flumioxazin	51	WG	0.096	lb ai/a	Fall	A				
	No Spring Burndown										
14	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A	100.0 a		91.0 ab	56.7 abc
	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A				
	Valor SX.....flumioxazin	51	WG	0.096	lb ai/a	Fall	A				
	Early Spring Pre-Plant										
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	4 WPP	B				
	2,4-D ester	3.8	L	0.95	lb ae/a	4 WPP	B				
	Canopy Premix	75	DF	0.21	lb ai/a	4 WPP	B				
	----metribuzin	64.3		0.18							
	----chlorimuron	10.7		0.03							
15	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A	99.7 a		74.0 a-e	71.0 ab
	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A				
	Valor SX.....flumioxazin	51	WG	0.096	lb ai/a	Fall	A				
	Ten Days Pre-Plant										
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	10 DPP	C				
	2,4-D ester	3.8	L	0.475	lb ae/a	10 DPP	C				
	Canopy Premix	75	DF	0.21	lb ai/a	10 DPP	C				
	----metribuzin	64.3		0.18							
	----chlorimuron	10.7		0.03							

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Pest Code										AMAPA	IPOSS
Pest Name								WntrAnns	annuals	PalmerAm	mornglry
Crop Code											
Crop Name											
Rating Type								Control	GrndCovr	Control	Control
Rating Unit								%	%	%	%
Rating Date								06/07/15	06/07/15	06/25/15	06/25/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code				
16	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A	100.0 a		96.7 a	53.3 bc
	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A				
	Valor SX.....flumioxazin	51	WG	0.096	lb ai/a	Fall	A				
	Spring_Double Knock										
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	4 WPP	B				
	2,4-D ester	3.8	L	0.71	lb ae/a	4 WPP	B				
	Gramoxone SL....paraquat	2	SL	0.75	lb ai/a	PRE	D				
	Canopy Premix	75	DF	0.21	lb ai/a	PRE	D				
	----metribuzin	64.3		0.18							
	----chlorimuron	10.7		0.03							
	Crop Oil Concentrate	100	SL	1.25	% v/v	PRE	D				
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	PRE	D				
LSD P=.05								10.93	190.59	28.70	21.44
Standard Deviation								6.54	15.00	16.58	12.32
CV								7.47	31.58	22.5	22.08
Replicate F								1.337	9.000	1.823	1.294
Replicate Prob(F)								0.2783	0.2048	0.1935	0.3031
Treatment F								61.601	0.111	7.072	11.798
Treatment Prob(F)								0.0001	0.7952	0.0002	0.0001

Pest Code							GGGAN	AMAPA	IPOSS	DIGSA
Pest Name							AnnGrass	PalmerAm	mornglry	L.crbgrs
Crop Code										
Crop Name										
Rating Type							Control	Control	Control	Control
Rating Unit							%	%	%	%
Rating Date							06/25/15	07/13/15	07/13/15	07/13/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code				
1	Fall__None										
	No Spring Burndown										
2	Fall__None							52.7 a	77.3 c	77.7 a	93.3 cd
	Early Spring Pre-Plant										
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	4 WPP	B				
	2,4-D ester	3.8	L	0.95	lb ae/a	4 WPP	B				
	Canopy Premix	75	DF	0.21	lb ai/a	4 WPP	B				
	----metribuzin	64.3		0.18							
	----chlorimuron	10.7		0.03							
3	Fall__None							61.7 a	95.0 a	80.3 a	98.3 a
	Ten Days Pre-Plant										
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	10 DPP	C				
	2,4-D ester	3.8	L	0.475	lb ae/a	10 DPP	C				
	Canopy Premix	75	DF	0.21	lb ai/a	10 DPP	C				
	----metribuzin	64.3		0.18							
	----chlorimuron	10.7		0.03							
4	Fall__None							65.0 a	98.3 a	90.0 a	97.0 ab
	Spring_Double Knock										
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	4 WPP	B				
	2,4-D ester	3.8	L	0.71	lb ae/a	4 WPP	B				
	Gramoxone SL....paraquat	2	SL	0.75	lb ai/a	PRE	D				
	Canopy Premix	75	DF	0.21	lb ai/a	PRE	D				
	----metribuzin	64.3		0.18							
	----chlorimuron	10.7		0.03							
	Crop Oil Concentrate	100	SL	1.25	% v/v	PRE	D				
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	PRE	D				
5	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A	30.0 a	65.2 d	84.2 a	91.0 d
	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A				
	No Spring Burndown										
6	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A	56.7 a	79.0 c	87.0 a	96.3 abc
	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A				
	Early Spring Pre-Plant										
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	4 WPP	B				
	2,4-D ester	3.8	L	0.95	lb ae/a	4 WPP	B				
	Canopy Premix	75	DF	0.21	lb ai/a	4 WPP	B				
	----metribuzin	64.3		0.18							
	----chlorimuron	10.7		0.03							

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	GGGAN AnnGrass	AMAPA PalmerAm	IPOSS mornglry	DIGSA L.crbgrs
	Pest Code							GGGAN	AMAPA	IPOSS	DIGSA
	Pest Name							AnnGrass	PalmerAm	mornglry	L.crbgrs
	Crop Code										
	Crop Name										
	Rating Type							Control	Control	Control	Control
	Rating Unit							%	%	%	%
	Rating Date							06/25/15	07/13/15	07/13/15	07/13/15
7	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A	76.7 a	96.7 a	85.7 a	98.3 a
	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A				
	Ten Days Pre-Plant										
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	10 DPP	C				
	2,4-D ester	3.8	L	0.475	lb ae/a	10 DPP	C				
	Canopy Premix	75	DF	0.21	lb ai/a	10 DPP	C				
	----metribuzin	64.3		0.18							
	----chlorimuron	10.7		0.03							
8	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A	60.0 a	94.7 a	83.3 a	98.3 a
	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A				
	Spring_Double Knock										
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	4 WPP	B				
	2,4-D ester	3.8	L	0.71	lb ae/a	4 WPP	B				
	Gramoxone SL....paraquat	2	SL	0.75	lb ai/a	PRE	D				
	Canopy Premix	75	DF	0.21	lb ai/a	PRE	D				
	----metribuzin	64.3		0.18							
	----chlorimuron	10.7		0.03							
	Crop Oil Concentrate	100	SL	1.25	% v/v	PRE	D				
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	PRE	D				
9	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A	15.0 a	83.0 bc	89.0 a	94.0 bcd
	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A				
	Canopy EX Premix	29.5	WG	0.0406	lb ai/a	Fall	A				
	----chlorimuron	22.7		0.0312							
	----tribenuron	6.8		0.0094							
	No Spring Burndown										
10	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A	41.7 a	80.7 c	91.7 a	97.0 ab
	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A				
	Canopy EX Premix	29.5	WG	0.0406	lb ai/a	Fall	A				
	----chlorimuron	22.7		0.0312							
	----tribenuron	6.8		0.0094							
	Early Spring Pre-Plant										
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	4 WPP	B				
	2,4-D ester	3.8	L	0.95	lb ae/a	4 WPP	B				
	Canopy Premix	75	DF	0.21	lb ai/a	4 WPP	B				
	----metribuzin	64.3		0.18							
	----chlorimuron	10.7		0.03							
11	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A	60.0 a	100.0 a	73.3 a	98.1 a
	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A				
	Canopy EX Premix	29.5	WG	0.0406	lb ai/a	Fall	A				
	----chlorimuron	22.7		0.0312							
	----tribenuron	6.8		0.0094							
	Ten Days Pre-Plant										
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	10 DPP	C				
	2,4-D ester	3.8	L	0.475	lb ae/a	10 DPP	C				
	Canopy Premix	75	DF	0.21	lb ai/a	10 DPP	C				
	----metribuzin	64.3		0.18							
	----chlorimuron	10.7		0.03							

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	GGGAN AnnGrass	AMAPA PalmerAm	IPOSS mornglry	DIGSA L.crbgrs
	Pest Code							GGGAN	AMAPA	IPOSS	DIGSA
	Pest Name							AnnGrass	PalmerAm	mornglry	L.crbgrs
	Crop Code										
	Crop Name										
	Rating Type							Control	Control	Control	Control
	Rating Unit							%	%	%	%
	Rating Date							06/25/15	07/13/15	07/13/15	07/13/15
12	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A	61.7 a	97.3 a	100.0 a	97.7 a
	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A				
	Canopy EX Premix	29.5	WG	0.0406	lb ai/a	Fall	A				
	----chlorimuron	22.7		0.0312							
	----tribenuron	6.8		0.0094							
	Spring_Double Knock										
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	4 WPP	B				
	2,4-D ester	3.8	L	0.71	lb ae/a	4 WPP	B				
	Gramoxone SL....paraquat	2	SL	0.75	lb ai/a	PRE	D				
	Canopy Premix	75	DF	0.21	lb ai/a	PRE	D				
	----metribuzin	64.3		0.18							
	----chlorimuron	10.7		0.03							
	Crop Oil Concentrate	100	SL	1.25	% v/v	PRE	D				
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	PRE	D				
13	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A	40.0 a	100.0 a	84.3 a	97.7 a
	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A				
	Valor SX.....flumioxazin	51	WG	0.096	lb ai/a	Fall	A				
	No Spring Burndown										
14	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A	62.7 a	95.7 a	87.7 a	98.3 a
	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A				
	Valor SX.....flumioxazin	51	WG	0.096	lb ai/a	Fall	A				
	Early Spring Pre-Plant										
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	4 WPP	B				
	2,4-D ester	3.8	L	0.95	lb ae/a	4 WPP	B				
	Canopy Premix	75	DF	0.21	lb ai/a	4 WPP	B				
	----metribuzin	64.3		0.18							
	----chlorimuron	10.7		0.03							
15	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A	74.3 a	92.7 ab	91.7 a	98.7 a
	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A				
	Valor SX.....flumioxazin	51	WG	0.096	lb ai/a	Fall	A				
	Ten Days Pre-Plant										
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	10 DPP	C				
	2,4-D ester	3.8	L	0.475	lb ae/a	10 DPP	C				
	Canopy Premix	75	DF	0.21	lb ai/a	10 DPP	C				
	----metribuzin	64.3		0.18							
	----chlorimuron	10.7		0.03							

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	GGGAN AnnGrass	AMAPA PalmerAm	IPOSS mornglry	DIGSA L.crbgrs
	Pest Code							GGGAN	AMAPA	IPOSS	DIGSA
	Pest Name							AnnGrass	PalmerAm	mornglry	L.crbgrs
	Crop Code										
	Crop Name										
	Rating Type							Control	Control	Control	Control
	Rating Unit							%	%	%	%
	Rating Date							06/25/15	07/13/15	07/13/15	07/13/15
16	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A	73.3 a	95.7 a	90.7 a	98.3 a
	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A				
	Valor SX.....flumioxazin	51	WG	0.096	lb ai/a	Fall	A				
	Spring_Double Knock										
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	4 WPP	B				
	2,4-D ester	3.8	L	0.71	lb ae/a	4 WPP	B				
	Gramoxone SL....paraquat	2	SL	0.75	lb ai/a	PRE	D				
	Canopy Premix	75	DF	0.21	lb ai/a	PRE	D				
	----metribuzin	64.3		0.18							
	----chlorimuron	10.7		0.03							
	Crop Oil Concentrate	100	SL	1.25	% v/v	PRE	D				
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	PRE	D				
	LSD P=.05							38.29	11.36	15.47	3.19
	Standard Deviation							22.67	6.77	9.18	1.90
	CV							40.91	7.51	10.62	1.97
	Replicate F							0.240	9.381	0.295	0.407
	Replicate Prob(F)							0.7884	0.0009	0.7474	0.6695
	Treatment F							1.714	7.110	1.484	4.273
	Treatment Prob(F)							0.1219	0.0001	0.1916	0.0006

Pest Code	
Pest Name	
Crop Code	GLXMA
Crop Name	Soybean
Rating Type	Yield
Rating Unit	Bu/A
Rating Date	10/15/15

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	
1	Fall__None							24.6 a
	No Spring Burndown							
2	Fall__None							26.5 a
	Early Spring Pre-Plant							
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	4 WPP	B	
	2,4-D ester	3.8	L	0.95	lb ae/a	4 WPP	B	
	Canopy Premix	75	DF	0.21	lb ai/a	4 WPP	B	
	----metribuzin	64.3		0.18				
	----chlorimuron	10.7		0.03				
3	Fall__None							30.6 a
	Ten Days Pre-Plant							
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	10 DPP	C	
	2,4-D ester	3.8	L	0.475	lb ae/a	10 DPP	C	
	Canopy Premix	75	DF	0.21	lb ai/a	10 DPP	C	
	----metribuzin	64.3		0.18				
	----chlorimuron	10.7		0.03				
4	Fall__None							38.0 a
	Spring_Double Knock							
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	4 WPP	B	
	2,4-D ester	3.8	L	0.71	lb ae/a	4 WPP	B	
	Gramoxone SL....paraquat	2	SL	0.75	lb ai/a	PRE	D	
	Canopy Premix	75	DF	0.21	lb ai/a	PRE	D	
	----metribuzin	64.3		0.18				
	----chlorimuron	10.7		0.03				
	Crop Oil Concentrate	100	SL	1.25	% v/v	PRE	D	
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	PRE	D	
5	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A	23.3 a
	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A	
	No Spring Burndown							
6	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A	29.8 a
	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A	
	Early Spring Pre-Plant							
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	4 WPP	B	
	2,4-D ester	3.8	L	0.95	lb ae/a	4 WPP	B	
	Canopy Premix	75	DF	0.21	lb ai/a	4 WPP	B	
	----metribuzin	64.3		0.18				
	----chlorimuron	10.7		0.03				

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Pest Code	
Pest Name	
Crop Code	GLXMA
Crop Name	Soybean
Rating Type	Yield
Rating Unit	Bu/A
Rating Date	10/15/15

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	
7	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A	38.8 a
	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A	
	Ten Days Pre-Plant							
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	10 DPP	C	
	2,4-D ester	3.8	L	0.475	lb ae/a	10 DPP	C	
	Canopy Premix	75	DF	0.21	lb ai/a	10 DPP	C	
	----metribuzin	64.3		0.18				
	----chlorimuron	10.7		0.03				
8	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A	25.7 a
	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A	
	Spring_Double Knock							
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	4 WPP	B	
	2,4-D ester	3.8	L	0.71	lb ae/a	4 WPP	B	
	Gramoxone SL....paraquat	2	SL	0.75	lb ai/a	PRE	D	
	Canopy Premix	75	DF	0.21	lb ai/a	PRE	D	
	----metribuzin	64.3		0.18				
	----chlorimuron	10.7		0.03				
	Crop Oil Concentrate	100	SL	1.25	% v/v	PRE	D	
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	PRE	D	
9	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A	21.2 a
	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A	
	Canopy EX Premix	29.5	WG	0.0406	lb ai/a	Fall	A	
	----chlorimuron	22.7		0.0312				
	----tribenuron	6.8		0.0094				
	No Spring Burndown							
10	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A	26.8 a
	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A	
	Canopy EX Premix	29.5	WG	0.0406	lb ai/a	Fall	A	
	----chlorimuron	22.7		0.0312				
	----tribenuron	6.8		0.0094				
	Early Spring Pre-Plant							
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	4 WPP	B	
	2,4-D ester	3.8	L	0.95	lb ae/a	4 WPP	B	
	Canopy Premix	75	DF	0.21	lb ai/a	4 WPP	B	
	----metribuzin	64.3		0.18				
	----chlorimuron	10.7		0.03				
11	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A	31.9 a
	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A	
	Canopy EX Premix	29.5	WG	0.0406	lb ai/a	Fall	A	
	----chlorimuron	22.7		0.0312				
	----tribenuron	6.8		0.0094				
	Ten Days Pre-Plant							
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	10 DPP	C	
	2,4-D ester	3.8	L	0.475	lb ae/a	10 DPP	C	
	Canopy Premix	75	DF	0.21	lb ai/a	10 DPP	C	
	----metribuzin	64.3		0.18				
	----chlorimuron	10.7		0.03				

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Pest Code	
Pest Name	
Crop Code	GLXMA
Crop Name	Soybean
Rating Type	Yield
Rating Unit	Bu/A
Rating Date	10/15/15

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	
12	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A	27.8 a
	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A	
	Canopy EX Premix	29.5	WG	0.0406	lb ai/a	Fall	A	
	----chlorimuron	22.7		0.0312				
	----tribenuron	6.8		0.0094				
	Spring_Double Knock							
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	4 WPP	B	
	2,4-D ester	3.8	L	0.71	lb ae/a	4 WPP	B	
	Gramoxone SL....paraquat	2	SL	0.75	lb ai/a	PRE	D	
	Canopy Premix	75	DF	0.21	lb ai/a	PRE	D	
	----metribuzin	64.3		0.18				
	----chlorimuron	10.7		0.03				
	Crop Oil Concentrate	100	SL	1.25	% v/v	PRE	D	
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	PRE	D	
13	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A	34.7 a
	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A	
	Valor SX.....flumioxazin	51	WG	0.096	lb ai/a	Fall	A	
	No Spring Burndown							
14	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A	30.2 a
	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A	
	Valor SX.....flumioxazin	51	WG	0.096	lb ai/a	Fall	A	
	Early Spring Pre-Plant							
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	4 WPP	B	
	2,4-D ester	3.8	L	0.95	lb ae/a	4 WPP	B	
	Canopy Premix	75	DF	0.21	lb ai/a	4 WPP	B	
	----metribuzin	64.3		0.18				
	----chlorimuron	10.7		0.03				
15	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A	28.0 a
	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A	
	Valor SX.....flumioxazin	51	WG	0.096	lb ai/a	Fall	A	
	Ten Days Pre-Plant							
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	10 DPP	C	
	2,4-D ester	3.8	L	0.475	lb ae/a	10 DPP	C	
	Canopy Premix	75	DF	0.21	lb ai/a	10 DPP	C	
	----metribuzin	64.3		0.18				
	----chlorimuron	10.7		0.03				

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Pest Code	
Pest Name	
Crop Code	GLXMA
Crop Name	Soybean
Rating Type	Yield
Rating Unit	Bu/A
Rating Date	10/15/15

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	
16	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A	24.9 a
	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A	
	Valor SX.....flumioxazin	51	WG	0.096	lb ai/a	Fall	A	
	Spring_Double Knock							
	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	4 WPP	B	
	2,4-D ester	3.8	L	0.71	lb ae/a	4 WPP	B	
	Gramoxone SL....paraquat	2	SL	0.75	lb ai/a	PRE	D	
	Canopy Premix	75	DF	0.21	lb ai/a	PRE	D	
	----metribuzin	64.3		0.18				
	----chlorimuron	10.7		0.03				
	Crop Oil Concentrate	100	SL	1.25	% v/v	PRE	D	
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	PRE	D	

LSD P=.05	12.30
Standard Deviation	7.38
CV	25.51
Replicate F	2.416
Replicate Prob(F)	0.1064
Treatment F	1.386
Treatment Prob(F)	0.2170

University of Delaware

Comparing Different Programs for No-Till Soybeans

Trial ID: DSB2-15 Location: Field #9 Trial Year:
Protocol ID: DSB2-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact: Delaware Soybean Board

Trt No.	Treatment Name	Form Conc	Form Type	Rate Rate	Rate Unit	Growth Stage	Appl Code	WntrAnns	AMAPA PalmerAm	IPOSS mornglry	DIGSA L.crbgrs
	Pest Code										
	Pest Name							WntrAnns	PalmerAm	mornglry	L.crbgrs
	Crop Code										
	Crop Name										
	Rating Type							GrndCovr	Control	Control	Control
	Rating Unit							%	%	%	%
	Rating Date							05/13/15	06/07/15	06/07/15	06/07/15
	TABLE OF R MEANS										
	Replicate 1							6.97			
	Replicate 2							7.19			
	Replicate 3							5.94			
	TABLE OF A (Fall Treatment) MEANS										
1	Fall__None							22.79 a			
2	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A	3.13 b			
2	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A				
3	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A	0.25 c			
3	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A				
3	Canopy EX Premix	29.5	WG	0.0406	lb ai/a	Fall					
3	----chlorimuron	22.7		0.0312							
3	----tribenuron	6.8		0.0094							
4	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A	0.63 c			
4	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A				
4	Valor SX.....flumioxazin	51	WG	0.096	lb ai/a	Fall	A				
	LSD P=.05							1.756			
	Standard Deviation							2.103			
	CV							31.397			
	TABLE OF B (Burndown Treatment) MEANS										
1	No Spring Burndown							25.67 a			
2	Early Spring Pre-Plant							0.04 b			
2	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	4 WPP	B				
2	2,4-D ester	3.8	L	0.95	lb ae/a	4 WPP	B				
2	Canopy Premix	75	DF	0.21	lb ai/a	4 WPP	B				
2	----metribuzin	64.3		0.18							
2	----chlorimuron	10.7		0.03							
3	Ten Days Pre-Plant							1.00 b			
3	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	10 DPP	C				
3	2,4-D ester	3.8	L	0.475	lb ae/a	10 DPP	C				
3	Canopy Premix	75	DF	0.21	lb ai/a	10 DPP	C				
3	----metribuzin	64.3		0.18							
3	----chlorimuron	10.7		0.03							

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	WntrAnns	AMAPA PalmerAm	IPOSS morngIry	DIGSA L.crbgrs
	Pest Code								AMAPA	IPOSS	DIGSA
	Pest Name							WntrAnns	PalmerAm	morngIry	L.crbgrs
	Crop Code										
	Crop Name										
	Rating Type							GrndCovr	Control	Control	Control
	Rating Unit							%	%	%	%
	Rating Date							05/13/15	06/07/15	06/07/15	06/07/15
4	Spring_Double Knock							0.08 b			
4	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	4 WPP	B				
4	2,4-D ester	3.8	L	0.71	lb ae/a	4 WPP	B				
4	Gramoxone SL....paraquat	2	SL	0.75	lb ai/a	PRE	D				
4	Canopy Premix	75	DF	0.21	lb ai/a	PRE	D				
4	----metribuzin	64.3		0.18							
4	----chlorimuron	10.7		0.03							
4	Crop Oil Concentrate	100	SL	1.25	% v/v	PRE	D				
4	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	PRE	D				
	LSD P=.05							1.756			
	Standard Deviation							2.103			
	CV							31.397			
	TABLE OF A (Fall Treatment) B (Burndown Treatment) MEANS										
1	Fall__None							87.67 a	.	.	.
1	No Spring Burndown										
2	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A	12.33 b	30.0 a	0.0 a	0.0 a
2	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A				
1	No Spring Burndown										
3	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A	0.33 c	43.3 a	26.7 a	43.3 a
3	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A				
3	Canopy EX Premix	29.5	WG	0.0406	lb ai/a	Fall					
3	----chlorimuron	22.7		0.0312							
3	----tribenuron	6.8		0.0094							
1	No Spring Burndown										
4	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A	2.33 c	66.7 a	16.7 a	10.0 a
4	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A				
4	Valor SX.....flumioxazin	51	WG	0.096	lb ai/a	Fall	A				
1	No Spring Burndown										
1	Fall__None							0.00 c	43.3 a	46.7 a	36.7 a
2	Early Spring Pre-Plant										
2	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	4 WPP	B				
2	2,4-D ester	3.8	L	0.95	lb ae/a	4 WPP	B				
2	Canopy Premix	75	DF	0.21	lb ai/a	4 WPP	B				
2	----metribuzin	64.3		0.18							
2	----chlorimuron	10.7		0.03							
2	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A	0.17 c	63.3 a	61.7 a	46.7 a
2	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A				
2	Early Spring Pre-Plant										
2	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	4 WPP	B				
2	2,4-D ester	3.8	L	0.95	lb ae/a	4 WPP	B				
2	Canopy Premix	75	DF	0.21	lb ai/a	4 WPP	B				
2	----metribuzin	64.3		0.18							
2	----chlorimuron	10.7		0.03							

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Pest Code							WntrAnns	AMAPA PalmerAm	IPOSS mornglry	DIGSA L.crbgrs
Pest Name										
Crop Code										
Crop Name										
Rating Type							GrndCovr	Control	Control	Control
Rating Unit							%	%	%	%
Rating Date							05/13/15	06/07/15	06/07/15	06/07/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code			
3	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A	0.00 c	60.0 a	72.7 a	56.7 a
3	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A				
3	Canopy EX Premix	29.5	WG	0.0406	lb ai/a	Fall					
3	----chlorimuron	22.7		0.0312							
3	----tribenuron	6.8		0.0094							
2	Early Spring Pre-Plant										
2	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	4 WPP	B				
2	2,4-D ester	3.8	L	0.95	lb ae/a	4 WPP	B				
2	Canopy Premix	75	DF	0.21	lb ai/a	4 WPP	B				
2	----metribuzin	64.3		0.18							
2	----chlorimuron	10.7		0.03							
4	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A	0.00 c	100.0 a	63.3 a	86.7 a
4	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A				
4	Valor SX.....flumioxazin	51	WG	0.096	lb ai/a	Fall	A				
2	Early Spring Pre-Plant										
2	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	4 WPP	B				
2	2,4-D ester	3.8	L	0.95	lb ae/a	4 WPP	B				
2	Canopy Premix	75	DF	0.21	lb ai/a	4 WPP	B				
2	----metribuzin	64.3		0.18							
2	----chlorimuron	10.7		0.03							
1	Fall__None							3.33 c	100.0 a	71.7 a	60.0 a
3	Ten Days Pre-Plant										
3	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	10 DPP	C				
3	2,4-D ester	3.8	L	0.475	lb ae/a	10 DPP	C				
3	Canopy Premix	75	DF	0.21	lb ai/a	10 DPP	C				
3	----metribuzin	64.3		0.18							
3	----chlorimuron	10.7		0.03							
2	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A	0.00 c	90.0 a	71.7 a	89.0 a
2	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A				
3	Ten Days Pre-Plant										
3	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	10 DPP	C				
3	2,4-D ester	3.8	L	0.475	lb ae/a	10 DPP	C				
3	Canopy Premix	75	DF	0.21	lb ai/a	10 DPP	C				
3	----metribuzin	64.3		0.18							
3	----chlorimuron	10.7		0.03							
3	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A	0.49 c	97.6 a	77.5 a	63.1 a
3	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A				
3	Canopy EX Premix	29.5	WG	0.0406	lb ai/a	Fall					
3	----chlorimuron	22.7		0.0312							
3	----tribenuron	6.8		0.0094							
3	Ten Days Pre-Plant										
3	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	10 DPP	C				
3	2,4-D ester	3.8	L	0.475	lb ae/a	10 DPP	C				
3	Canopy Premix	75	DF	0.21	lb ai/a	10 DPP	C				
3	----metribuzin	64.3		0.18							
3	----chlorimuron	10.7		0.03							

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	WntrAnns	AMAPA PalmerAm	IPOSS morngIry	DIGSA L.crbgrs
	Pest Code										
	Pest Name							WntrAnns	AMAPA PalmerAm	IPOSS morngIry	DIGSA L.crbgrs
	Crop Code										
	Crop Name										
	Rating Type							GrndCovr	Control	Control	Control
	Rating Unit							%	%	%	%
	Rating Date							05/13/15	06/07/15	06/07/15	06/07/15
4	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A	0.17 c	91.7 a	80.0 a	86.7 a
4	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A				
4	Valor SX.....flumioxazin	51	WG	0.096	lb ai/a	Fall	A				
3	Ten Days Pre-Plant										
3	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	10 DPP	C				
3	2,4-D ester	3.8	L	0.475	lb ae/a	10 DPP	C				
3	Canopy Premix	75	DF	0.21	lb ai/a	10 DPP	C				
3	----metribuzin	64.3		0.18							
3	----chlorimuron	10.7		0.03							
1	Fall__None							0.17 c	96.7 a	77.3 a	66.7 a
4	Spring_Double Knock										
4	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	4 WPP	B				
4	2,4-D ester	3.8	L	0.71	lb ae/a	4 WPP	B				
4	Gramoxone SL....paraquat	2	SL	0.75	lb ai/a	PRE	D				
4	Canopy Premix	75	DF	0.21	lb ai/a	PRE	D				
4	----metribuzin	64.3		0.18							
4	----chlorimuron	10.7		0.03							
4	Crop Oil Concentrate	100	SL	1.25	% v/v	PRE	D				
4	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	PRE	D				
2	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A	0.00 c	100.0 a	67.7 a	68.3 a
2	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A				
4	Spring_Double Knock										
4	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	4 WPP	B				
4	2,4-D ester	3.8	L	0.71	lb ae/a	4 WPP	B				
4	Gramoxone SL....paraquat	2	SL	0.75	lb ai/a	PRE	D				
4	Canopy Premix	75	DF	0.21	lb ai/a	PRE	D				
4	----metribuzin	64.3		0.18							
4	----chlorimuron	10.7		0.03							
4	Crop Oil Concentrate	100	SL	1.25	% v/v	PRE	D				
4	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	PRE	D				
3	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A	0.17 c	96.7 a	80.7 a	78.3 a
3	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A				
3	Canopy EX Premix	29.5	WG	0.0406	lb ai/a	Fall					
3	----chlorimuron	22.7		0.0312							
3	----tribenuron	6.8		0.0094							
4	Spring_Double Knock										
4	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	4 WPP	B				
4	2,4-D ester	3.8	L	0.71	lb ae/a	4 WPP	B				
4	Gramoxone SL....paraquat	2	SL	0.75	lb ai/a	PRE	D				
4	Canopy Premix	75	DF	0.21	lb ai/a	PRE	D				
4	----metribuzin	64.3		0.18							
4	----chlorimuron	10.7		0.03							
4	Crop Oil Concentrate	100	SL	1.25	% v/v	PRE	D				
4	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	PRE	D				

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Pest Code									AMAPA	IPOSS	DIGSA
Pest Name								WntrAnns	PalmerAm	mornglry	L.crbgrs
Crop Code											
Crop Name											
Rating Type								GrndCovr	Control	Control	Control
Rating Unit								%	%	%	%
Rating Date								05/13/15	06/07/15	06/07/15	06/07/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code				
4	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A	0.00 c	100.0 a	65.0 a	86.7 a
4	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A				
4	Valor SX.....flumioxazin	51	WG	0.096	lb ai/a	Fall	A				
4	Spring_Double Knock										
4	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	4 WPP	B				
4	2,4-D ester	3.8	L	0.71	lb ae/a	4 WPP	B				
4	Gramoxone SL....paraquat	2	SL	0.75	lb ai/a	PRE	D				
4	Canopy Premix	75	DF	0.21	lb ai/a	PRE	D				
4	----metribuzin	64.3		0.18							
4	----chlorimuron	10.7		0.03							
4	Crop Oil Concentrate	100	SL	1.25	% v/v	PRE	D				
4	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	PRE	D				
LSD P=.05								3.512	48.49	39.34	42.25
Standard Deviation								2.103	28.94	23.48	25.22
CV								31.397	36.82	40.06	43.05

Pest Code									AMAPA	IPOSS
Pest Name							WntrAnns	annuals	PalmerAm	mornglry
Crop Code										
Crop Name										
Rating Type							Control	GrndCovr	Control	Control
Rating Unit							%	%	%	%
Rating Date							06/07/15	06/07/15	06/25/15	06/25/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code				
TABLE OF R MEANS											
Replicate 1								85.6			
Replicate 2								89.3			
Replicate 3								87.9			
TABLE OF A (Fall Treatment) MEANS											
1	Fall__None							74.3 c			
2	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A	81.6 b			
2	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A				
3	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A	98.3 a			
3	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A				
3	Canopy EX Premix	29.5	WG	0.0406	lb ai/a	Fall					
3	----chlorimuron	22.7		0.0312							
3	----tribenuron	6.8		0.0094							
4	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A	96.2 a			
4	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A				
4	Valor SX.....flumioxazin	51	WG	0.096	lb ai/a	Fall	A				
LSD P=.05								5.46			
Standard Deviation								6.54			
CV								7.47			
TABLE OF B (Burndown Treatment) MEANS											
1	No Spring Burndown							51.2 b			
2	Early Spring Pre-Plant							100.0 a			
2	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	4 WPP	B				
2	2,4-D ester	3.8	L	0.95	lb ae/a	4 WPP	B				
2	Canopy Premix	75	DF	0.21	lb ai/a	4 WPP	B				
2	----metribuzin	64.3		0.18							
2	----chlorimuron	10.7		0.03							
3	Ten Days Pre-Plant							99.2 a			
3	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	10 DPP	C				
3	2,4-D ester	3.8	L	0.475	lb ae/a	10 DPP	C				
3	Canopy Premix	75	DF	0.21	lb ai/a	10 DPP	C				
3	----metribuzin	64.3		0.18							
3	----chlorimuron	10.7		0.03							

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Pest Code							WntrAnns	annuals	AMAPA	IPOSS
Pest Name									PalmerAm	mornglry
Crop Code										
Crop Name										
Rating Type							Control	GrndCovr	Control	Control
Rating Unit							%	%	%	%
Rating Date							06/07/15	06/07/15	06/25/15	06/25/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code			
4	Spring_Double Knock							100.0 a		
4	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	4 WPP	B			
4	2,4-D ester	3.8	L	0.71	lb ae/a	4 WPP	B			
4	Gramoxone SL....paraquat	2	SL	0.75	lb ai/a	PRE	D			
4	Canopy Premix	75	DF	0.21	lb ai/a	PRE	D			
4	----metribuzin	64.3		0.18						
4	----chlorimuron	10.7		0.03						
4	Crop Oil Concentrate	100	SL	1.25	% v/v	PRE	D			
4	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	PRE	D			
LSD P=.05								5.46		
Standard Deviation								6.54		
CV								7.47		
TABLE OF A (Fall Treatment) B (Burndown Treatment) MEANS										
1	Fall__None							0.0 d	50.0 a	.	.
1	No Spring Burndown										
2	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A	26.7 c	45.0 a	0.0 a	0.0 a
2	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A				
1	No Spring Burndown										
3	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A	93.0 ab	.	50.0 a	0.0 a
3	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A				
3	Canopy EX Premix	29.5	WG	0.0406	lb ai/a	Fall					
3	----chlorimuron	22.7		0.0312							
3	----tribenuron	6.8		0.0094							
1	No Spring Burndown										
4	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A	85.0 b	.	65.0 a	40.0 a
4	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A				
4	Valor SX.....flumioxazin	51	WG	0.096	lb ai/a	Fall	A				
1	No Spring Burndown										
1	Fall__None							100.0 a	.	60.0 a	62.5 a
2	Early Spring Pre-Plant										
2	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	4 WPP	B				
2	2,4-D ester	3.8	L	0.95	lb ae/a	4 WPP	B				
2	Canopy Premix	75	DF	0.21	lb ai/a	4 WPP	B				
2	----metribuzin	64.3		0.18							
2	----chlorimuron	10.7		0.03							
2	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A	100.0 a	.	73.3 a	63.3 a
2	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A				
2	Early Spring Pre-Plant										
2	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	4 WPP	B				
2	2,4-D ester	3.8	L	0.95	lb ae/a	4 WPP	B				
2	Canopy Premix	75	DF	0.21	lb ai/a	4 WPP	B				
2	----metribuzin	64.3		0.18							
2	----chlorimuron	10.7		0.03							

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Pest Code								WntrAnns	annuals	AMAPA	IPOSS
Pest Name										PalmerAm	mornglry
Crop Code											
Crop Name											
Rating Type								Control	GrndCovr	Control	Control
Rating Unit								%	%	%	%
Rating Date								06/07/15	06/07/15	06/25/15	06/25/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code				
3	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A	100.0 a	.	57.5 a	75.0 a
3	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A				
3	Canopy EX Premix	29.5	WG	0.0406	lb ai/a	Fall					
3	----chlorimuron	22.7		0.0312							
3	----tribenuron	6.8		0.0094							
2	Early Spring Pre-Plant										
2	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	4 WPP	B				
2	2,4-D ester	3.8	L	0.95	lb ae/a	4 WPP	B				
2	Canopy Premix	75	DF	0.21	lb ai/a	4 WPP	B				
2	----metribuzin	64.3		0.18							
2	----chlorimuron	10.7		0.03							
4	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A	100.0 a	.	91.0 a	56.7 a
4	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A				
4	Valor SX.....flumioxazin	51	WG	0.096	lb ai/a	Fall	A				
2	Early Spring Pre-Plant										
2	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	4 WPP	B				
2	2,4-D ester	3.8	L	0.95	lb ae/a	4 WPP	B				
2	Canopy Premix	75	DF	0.21	lb ai/a	4 WPP	B				
2	----metribuzin	64.3		0.18							
2	----chlorimuron	10.7		0.03							
1	Fall__None							97.3 a	.	91.7 a	68.3 a
3	Ten Days Pre-Plant										
3	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	10 DPP	C				
3	2,4-D ester	3.8	L	0.475	lb ae/a	10 DPP	C				
3	Canopy Premix	75	DF	0.21	lb ai/a	10 DPP	C				
3	----metribuzin	64.3		0.18							
3	----chlorimuron	10.7		0.03							
2	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A	99.7 a	.	88.3 a	68.3 a
2	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A				
3	Ten Days Pre-Plant										
3	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	10 DPP	C				
3	2,4-D ester	3.8	L	0.475	lb ae/a	10 DPP	C				
3	Canopy Premix	75	DF	0.21	lb ai/a	10 DPP	C				
3	----metribuzin	64.3		0.18							
3	----chlorimuron	10.7		0.03							
3	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A	100.0 a	.	100.0 a	75.0 a
3	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A				
3	Canopy EX Premix	29.5	WG	0.0406	lb ai/a	Fall					
3	----chlorimuron	22.7		0.0312							
3	----tribenuron	6.8		0.0094							
3	Ten Days Pre-Plant										
3	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	10 DPP	C				
3	2,4-D ester	3.8	L	0.475	lb ae/a	10 DPP	C				
3	Canopy Premix	75	DF	0.21	lb ai/a	10 DPP	C				
3	----metribuzin	64.3		0.18							
3	----chlorimuron	10.7		0.03							

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Pest Code								WntrAnns	annuals	AMAPA	IPOSS
Pest Name										PalmerAm	mornglry
Crop Code											
Crop Name											
Rating Type								Control	GrndCovr	Control	Control
Rating Unit								%	%	%	%
Rating Date								06/07/15	06/07/15	06/25/15	06/25/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code				
4	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A	99.7 a	.	74.0 a	71.0 a
4	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A				
4	Valor SX.....flumioxazin	51	WG	0.096	lb ai/a	Fall	A				
3	Ten Days Pre-Plant										
3	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	10 DPP	C				
3	2,4-D ester	3.8	L	0.475	lb ae/a	10 DPP	C				
3	Canopy Premix	75	DF	0.21	lb ai/a	10 DPP	C				
3	----metribuzin	64.3		0.18							
3	----chlorimuron	10.7		0.03							
1	Fall__None							100.0 a	.	87.5 a	62.5 a
4	Spring_Double Knock										
4	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	4 WPP	B				
4	2,4-D ester	3.8	L	0.71	lb ae/a	4 WPP	B				
4	Gramoxone SL....paraquat	2	SL	0.75	lb ai/a	PRE	D				
4	Canopy Premix	75	DF	0.21	lb ai/a	PRE	D				
4	----metribuzin	64.3		0.18							
4	----chlorimuron	10.7		0.03							
4	Crop Oil Concentrate	100	SL	1.25	% v/v	PRE	D				
4	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	PRE	D				
2	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A	100.0 a	.	90.0 a	67.5 a
2	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A				
4	Spring_Double Knock										
4	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	4 WPP	B				
4	2,4-D ester	3.8	L	0.71	lb ae/a	4 WPP	B				
4	Gramoxone SL....paraquat	2	SL	0.75	lb ai/a	PRE	D				
4	Canopy Premix	75	DF	0.21	lb ai/a	PRE	D				
4	----metribuzin	64.3		0.18							
4	----chlorimuron	10.7		0.03							
4	Crop Oil Concentrate	100	SL	1.25	% v/v	PRE	D				
4	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	PRE	D				
3	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A	100.0 a	.	80.0 a	73.3 a
3	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A				
3	Canopy EX Premix	29.5	WG	0.0406	lb ai/a	Fall					
3	----chlorimuron	22.7		0.0312							
3	----tribenuron	6.8		0.0094							
4	Spring_Double Knock										
4	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	4 WPP	B				
4	2,4-D ester	3.8	L	0.71	lb ae/a	4 WPP	B				
4	Gramoxone SL....paraquat	2	SL	0.75	lb ai/a	PRE	D				
4	Canopy Premix	75	DF	0.21	lb ai/a	PRE	D				
4	----metribuzin	64.3		0.18							
4	----chlorimuron	10.7		0.03							
4	Crop Oil Concentrate	100	SL	1.25	% v/v	PRE	D				
4	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	PRE	D				

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| Pest Code | | |

Pest Code Pest Name Crop Code Crop Name Rating Type Rating Unit Rating Date							GGGAN AnnGrass Control % 06/25/15	AMAPA PalmerAm Control % 07/13/15	IPOSS mornglry Control % 07/13/15	DIGSA L.crbgrs Control % 07/13/15
Trt Treatment No. Name	Form Form Conc Type	Rate	Rate Unit	Growth Stage	Appl Code					
TABLE OF R MEANS Replicate 1										
Replicate 2										
Replicate 3										
TABLE OF A (Fall Treatment) MEANS 1 Fall__None										
2 Roundup WeatherMax..glyphosate	4.5 AS	0.77	lb ae/a	Fall	A					
2 2,4-D ester	3.8 L	0.71	lb ae/a	Fall	A					
3 Roundup WeatherMax..glyphosate	4.5 AS	0.77	lb ae/a	Fall	A					
3 2,4-D ester	3.8 L	0.71	lb ae/a	Fall	A					
3 Canopy EX Premix	29.5 WG	0.0406	lb ai/a	Fall						
3 ----chlorimuron	22.7	0.0312								
3 ----tribenuron	6.8	0.0094								
4 Roundup WeatherMax..glyphosate	4.5 AS	0.77	lb ae/a	Fall	A					
4 2,4-D ester	3.8 L	0.71	lb ae/a	Fall	A					
4 Valor SX.....flumioxazin	51 WG	0.096	lb ai/a	Fall	A					
LSD P=.05 Standard Deviation CV										
TABLE OF B (Burndown Treatment) MEANS 1 No Spring Burndown										
2 Early Spring Pre-Plant										
2 Roundup WeatherMax..glyphosate	4.5 AS	0.77	lb ae/a	4 WPP	B					
2 2,4-D ester	3.8 L	0.95	lb ae/a	4 WPP	B					
2 Canopy Premix	75 DF	0.21	lb ai/a	4 WPP	B					
2 ----metribuzin	64.3	0.18								
2 ----chlorimuron	10.7	0.03								
3 Ten Days Pre-Plant										
3 Roundup WeatherMax..glyphosate	4.5 AS	0.77	lb ae/a	10 DPP	C					
3 2,4-D ester	3.8 L	0.475	lb ae/a	10 DPP	C					
3 Canopy Premix	75 DF	0.21	lb ai/a	10 DPP	C					
3 ----metribuzin	64.3	0.18								
3 ----chlorimuron	10.7	0.03								

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Pest Code Pest Name Crop Code Crop Name Rating Type Rating Unit Rating Date							GGGAN AnnGrass Control % 06/25/15	AMAPA PalmerAm Control % 07/13/15	IPOSS morngIry Control % 07/13/15	DIGSA L.crbgrs Control % 07/13/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code			
4	Spring_Double Knock									
4	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	4 WPP	B			
4	2,4-D ester	3.8	L	0.71	lb ae/a	4 WPP	B			
4	Gramoxone SL....paraquat	2	SL	0.75	lb ai/a	PRE	D			
4	Canopy Premix	75	DF	0.21	lb ai/a	PRE	D			
4	----metribuzin	64.3		0.18						
4	----chlorimuron	10.7		0.03						
4	Crop Oil Concentrate	100	SL	1.25	% v/v	PRE	D			
4	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	PRE	D			
LSD P=.05										
Standard Deviation										
CV										
TABLE OF A (Fall Treatment) B (Burndown Treatment) MEANS										
1	Fall__None							.	.	.	.
1	No Spring Burndown									
2	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A	30.0 a	65.2 a	84.2 a	91.0 a
2	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A				
1	No Spring Burndown										
3	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A	15.0 a	83.0 a	89.0 a	94.0 a
3	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A				
3	Canopy EX Premix	29.5	WG	0.0406	lb ai/a	Fall					
3	----chlorimuron	22.7		0.0312							
3	----tribenuron	6.8		0.0094							
1	No Spring Burndown										
4	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A	40.0 a	100.0 a	84.3 a	97.7 a
4	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A				
4	Valor SX.....flumioxazin	51	WG	0.096	lb ai/a	Fall	A				
1	No Spring Burndown										
1	Fall__None							52.7 a	77.3 a	77.7 a	93.3 a
2	Early Spring Pre-Plant										
2	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	4 WPP	B				
2	2,4-D ester	3.8	L	0.95	lb ae/a	4 WPP	B				
2	Canopy Premix	75	DF	0.21	lb ai/a	4 WPP	B				
2	----metribuzin	64.3		0.18							
2	----chlorimuron	10.7		0.03							
2	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A	56.7 a	79.0 a	87.0 a	96.3 a
2	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A				
2	Early Spring Pre-Plant										
2	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	4 WPP	B				
2	2,4-D ester	3.8	L	0.95	lb ae/a	4 WPP	B				
2	Canopy Premix	75	DF	0.21	lb ai/a	4 WPP	B				
2	----metribuzin	64.3		0.18							
2	----chlorimuron	10.7		0.03							

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Pest Code							GGGAN	AMAPA	IPOSS	DIGSA
Pest Name							AnnGrass	PalmerAm	mornglry	L.crbgrs
Crop Code										
Crop Name										
Rating Type							Control	Control	Control	Control
Rating Unit							%	%	%	%
Rating Date							06/25/15	07/13/15	07/13/15	07/13/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code				
3	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A	41.7 a	80.7 a	91.7 a	97.0 a
3	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A				
3	Canopy EX Premix	29.5	WG	0.0406	lb ai/a	Fall					
3	----chlorimuron	22.7		0.0312							
3	----tribenuron	6.8		0.0094							
2	Early Spring Pre-Plant										
2	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	4 WPP	B				
2	2,4-D ester	3.8	L	0.95	lb ae/a	4 WPP	B				
2	Canopy Premix	75	DF	0.21	lb ai/a	4 WPP	B				
2	----metribuzin	64.3		0.18							
2	----chlorimuron	10.7		0.03							
4	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A	62.7 a	95.7 a	87.7 a	98.3 a
4	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A				
4	Valor SX.....flumioxazin	51	WG	0.096	lb ai/a	Fall	A				
2	Early Spring Pre-Plant										
2	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	4 WPP	B				
2	2,4-D ester	3.8	L	0.95	lb ae/a	4 WPP	B				
2	Canopy Premix	75	DF	0.21	lb ai/a	4 WPP	B				
2	----metribuzin	64.3		0.18							
2	----chlorimuron	10.7		0.03							
1	Fall__None							61.7 a	95.0 a	80.3 a	98.3 a
3	Ten Days Pre-Plant										
3	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	10 DPP	C				
3	2,4-D ester	3.8	L	0.475	lb ae/a	10 DPP	C				
3	Canopy Premix	75	DF	0.21	lb ai/a	10 DPP	C				
3	----metribuzin	64.3		0.18							
3	----chlorimuron	10.7		0.03							
2	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A	76.7 a	96.7 a	85.7 a	98.3 a
2	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A				
3	Ten Days Pre-Plant										
3	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	10 DPP	C				
3	2,4-D ester	3.8	L	0.475	lb ae/a	10 DPP	C				
3	Canopy Premix	75	DF	0.21	lb ai/a	10 DPP	C				
3	----metribuzin	64.3		0.18							
3	----chlorimuron	10.7		0.03							
3	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A	60.0 a	100.0 a	73.3 a	98.1 a
3	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A				
3	Canopy EX Premix	29.5	WG	0.0406	lb ai/a	Fall					
3	----chlorimuron	22.7		0.0312							
3	----tribenuron	6.8		0.0094							
3	Ten Days Pre-Plant										
3	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	10 DPP	C				
3	2,4-D ester	3.8	L	0.475	lb ae/a	10 DPP	C				
3	Canopy Premix	75	DF	0.21	lb ai/a	10 DPP	C				
3	----metribuzin	64.3		0.18							
3	----chlorimuron	10.7		0.03							

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	GGGAN AnnGrass	AMAPA PalmerAm	IPOSS mornglry	DIGSA L.crbgrs
	Pest Code							GGGAN	AMAPA	IPOSS	DIGSA
	Pest Name							AnnGrass	PalmerAm	mornglry	L.crbgrs
	Crop Code										
	Crop Name										
	Rating Type							Control	Control	Control	Control
	Rating Unit							%	%	%	%
	Rating Date							06/25/15	07/13/15	07/13/15	07/13/15
4	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A	74.3 a	92.7 a	91.7 a	98.7 a
4	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A				
4	Valor SX.....flumioxazin	51	WG	0.096	lb ai/a	Fall	A				
3	Ten Days Pre-Plant										
3	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	10 DPP	C				
3	2,4-D ester	3.8	L	0.475	lb ae/a	10 DPP	C				
3	Canopy Premix	75	DF	0.21	lb ai/a	10 DPP	C				
3	----metribuzin	64.3		0.18							
3	----chlorimuron	10.7		0.03							
1	Fall__None							65.0 a	98.3 a	90.0 a	97.0 a
4	Spring_Double Knock										
4	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	4 WPP	B				
4	2,4-D ester	3.8	L	0.71	lb ae/a	4 WPP	B				
4	Gramoxone SL....paraquat	2	SL	0.75	lb ai/a	PRE	D				
4	Canopy Premix	75	DF	0.21	lb ai/a	PRE	D				
4	----metribuzin	64.3		0.18							
4	----chlorimuron	10.7		0.03							
4	Crop Oil Concentrate	100	SL	1.25	% v/v	PRE	D				
4	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	PRE	D				
2	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A	60.0 a	94.7 a	83.3 a	98.3 a
2	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A				
4	Spring_Double Knock										
4	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	4 WPP	B				
4	2,4-D ester	3.8	L	0.71	lb ae/a	4 WPP	B				
4	Gramoxone SL....paraquat	2	SL	0.75	lb ai/a	PRE	D				
4	Canopy Premix	75	DF	0.21	lb ai/a	PRE	D				
4	----metribuzin	64.3		0.18							
4	----chlorimuron	10.7		0.03							
4	Crop Oil Concentrate	100	SL	1.25	% v/v	PRE	D				
4	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	PRE	D				
3	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A	61.7 a	97.3 a	100.0 a	97.7 a
3	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A				
3	Canopy EX Premix	29.5	WG	0.0406	lb ai/a	Fall					
3	----chlorimuron	22.7		0.0312							
3	----tribenuron	6.8		0.0094							
4	Spring_Double Knock										
4	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	4 WPP	B				
4	2,4-D ester	3.8	L	0.71	lb ae/a	4 WPP	B				
4	Gramoxone SL....paraquat	2	SL	0.75	lb ai/a	PRE	D				
4	Canopy Premix	75	DF	0.21	lb ai/a	PRE	D				
4	----metribuzin	64.3		0.18							
4	----chlorimuron	10.7		0.03							
4	Crop Oil Concentrate	100	SL	1.25	% v/v	PRE	D				
4	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	PRE	D				

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	GGGAN AnnGrass	AMAPA PalmerAm	IPOSS mornglry	DIGSA L.crbgrs
	Crop Code										
	Crop Name										
	Rating Type							Control	Control	Control	Control
	Rating Unit							%	%	%	%
	Rating Date							06/25/15	07/13/15	07/13/15	07/13/15
4	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A	73.3 a	95.7 a	90.7 a	98.3 a
4	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A				
4	Valor SX.....flumioxazin	51	WG	0.096	lb ai/a	Fall	A				
4	Spring_Double Knock										
4	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	4 WPP	B				
4	2,4-D ester	3.8	L	0.71	lb ae/a	4 WPP	B				
4	Gramoxone SL....paraquat	2	SL	0.75	lb ai/a	PRE	D				
4	Canopy Premix	75	DF	0.21	lb ai/a	PRE	D				
4	----metribuzin	64.3		0.18							
4	----chlorimuron	10.7		0.03							
4	Crop Oil Concentrate	100	SL	1.25	% v/v	PRE	D				
4	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	PRE	D				
	LSD P=.05							38.29	11.36	15.47	3.19
	Standard Deviation							22.67	6.77	9.18	1.90
	CV							40.91	7.51	10.62	1.97

Pest Code							
Pest Name							
Crop Code							GLXMA
Crop Name							Soybean
Rating Type							Yield
Rating Unit							Bu/A
Rating Date							10/15/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	
TABLE OF R MEANS								
Replicate 1								31.3
Replicate 2								29.8
Replicate 3								25.7
TABLE OF A (Fall Treatment) MEANS								
1	Fall__None							29.9 a
2	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A	29.4 a
2	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A	
3	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A	26.9 a
3	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A	
3	Canopy EX Premix	29.5	WG	0.0406	lb ai/a	Fall		
3	----chlorimuron	22.7		0.0312				
3	----tribenuron	6.8		0.0094				
4	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A	29.4 a
4	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A	
4	Valor SX.....flumioxazin	51	WG	0.096	lb ai/a	Fall	A	
LSD P=.05								6.15
Standard Deviation								7.38
CV								25.51
TABLE OF B (Burndown Treatment) MEANS								
1	No Spring Burndown							25.9 a
2	Early Spring Pre-Plant							28.3 a
2	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	4 WPP	B	
2	2,4-D ester	3.8	L	0.95	lb ae/a	4 WPP	B	
2	Canopy Premix	75	DF	0.21	lb ai/a	4 WPP	B	
2	----metribuzin	64.3		0.18				
2	----chlorimuron	10.7		0.03				
3	Ten Days Pre-Plant							32.3 a
3	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	10 DPP	C	
3	2,4-D ester	3.8	L	0.475	lb ae/a	10 DPP	C	
3	Canopy Premix	75	DF	0.21	lb ai/a	10 DPP	C	
3	----metribuzin	64.3		0.18				
3	----chlorimuron	10.7		0.03				

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Pest Code	
Pest Name	
Crop Code	GLXMA
Crop Name	Soybean
Rating Type	Yield
Rating Unit	Bu/A
Rating Date	10/15/15

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	
4	Spring_Double Knock							29.1 a
4	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	4 WPP	B	
4	2,4-D ester	3.8	L	0.71	lb ae/a	4 WPP	B	
4	Gramoxone SL....paraquat	2	SL	0.75	lb ai/a	PRE	D	
4	Canopy Premix	75	DF	0.21	lb ai/a	PRE	D	
4	----metribuzin	64.3		0.18				
4	----chlorimuron	10.7		0.03				
4	Crop Oil Concentrate	100	SL	1.25	% v/v	PRE	D	
4	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	PRE	D	
LSD P=.05								6.15
Standard Deviation								7.38
CV								25.51
TABLE OF A (Fall Treatment) B (Burndown Treatment) MEANS								
1	Fall__None							24.6 a
1	No Spring Burndown							
2	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A	23.3 a
2	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A	
1	No Spring Burndown							
3	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A	21.2 a
3	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A	
3	Canopy EX Premix	29.5	WG	0.0406	lb ai/a	Fall		
3	----chlorimuron	22.7		0.0312				
3	----tribenuron	6.8		0.0094				
1	No Spring Burndown							
4	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A	34.7 a
4	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A	
4	Valor SX.....flumioxazin	51	WG	0.096	lb ai/a	Fall	A	
1	No Spring Burndown							
1	Fall__None							26.5 a
2	Early Spring Pre-Plant							
2	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	4 WPP	B	
2	2,4-D ester	3.8	L	0.95	lb ae/a	4 WPP	B	
2	Canopy Premix	75	DF	0.21	lb ai/a	4 WPP	B	
2	----metribuzin	64.3		0.18				
2	----chlorimuron	10.7		0.03				
2	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A	29.8 a
2	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A	
2	Early Spring Pre-Plant							
2	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	4 WPP	B	
2	2,4-D ester	3.8	L	0.95	lb ae/a	4 WPP	B	
2	Canopy Premix	75	DF	0.21	lb ai/a	4 WPP	B	
2	----metribuzin	64.3		0.18				
2	----chlorimuron	10.7		0.03				

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Pest Code	
Pest Name	
Crop Code	GLXMA
Crop Name	Soybean
Rating Type	Yield
Rating Unit	Bu/A
Rating Date	10/15/15

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	
3	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A	26.8 a
3	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A	
3	Canopy EX Premix	29.5	WG	0.0406	lb ai/a	Fall		
3	----chlorimuron	22.7		0.0312				
3	----tribenuron	6.8		0.0094				
2	Early Spring Pre-Plant							
2	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	4 WPP	B	
2	2,4-D ester	3.8	L	0.95	lb ae/a	4 WPP	B	
2	Canopy Premix	75	DF	0.21	lb ai/a	4 WPP	B	
2	----metribuzin	64.3		0.18				
2	----chlorimuron	10.7		0.03				
4	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A	30.2 a
4	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A	
4	Valor SX.....flumioxazin	51	WG	0.096	lb ai/a	Fall	A	
2	Early Spring Pre-Plant							
2	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	4 WPP	B	
2	2,4-D ester	3.8	L	0.95	lb ae/a	4 WPP	B	
2	Canopy Premix	75	DF	0.21	lb ai/a	4 WPP	B	
2	----metribuzin	64.3		0.18				
2	----chlorimuron	10.7		0.03				
1	Fall__None							30.6 a
3	Ten Days Pre-Plant							
3	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	10 DPP	C	
3	2,4-D ester	3.8	L	0.475	lb ae/a	10 DPP	C	
3	Canopy Premix	75	DF	0.21	lb ai/a	10 DPP	C	
3	----metribuzin	64.3		0.18				
3	----chlorimuron	10.7		0.03				
2	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A	38.8 a
2	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A	
3	Ten Days Pre-Plant							
3	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	10 DPP	C	
3	2,4-D ester	3.8	L	0.475	lb ae/a	10 DPP	C	
3	Canopy Premix	75	DF	0.21	lb ai/a	10 DPP	C	
3	----metribuzin	64.3		0.18				
3	----chlorimuron	10.7		0.03				
3	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A	31.9 a
3	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A	
3	Canopy EX Premix	29.5	WG	0.0406	lb ai/a	Fall		
3	----chlorimuron	22.7		0.0312				
3	----tribenuron	6.8		0.0094				
3	Ten Days Pre-Plant							
3	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	10 DPP	C	
3	2,4-D ester	3.8	L	0.475	lb ae/a	10 DPP	C	
3	Canopy Premix	75	DF	0.21	lb ai/a	10 DPP	C	
3	----metribuzin	64.3		0.18				
3	----chlorimuron	10.7		0.03				

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Pest Code	
Pest Name	
Crop Code	GLXMA
Crop Name	Soybean
Rating Type	Yield
Rating Unit	Bu/A
Rating Date	10/15/15

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	
4	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A	28.0 a
4	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A	
4	Valor SX.....flumioxazin	51	WG	0.096	lb ai/a	Fall	A	
3	Ten Days Pre-Plant							
3	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	10 DPP	C	
3	2,4-D ester	3.8	L	0.475	lb ae/a	10 DPP	C	
3	Canopy Premix	75	DF	0.21	lb ai/a	10 DPP	C	
3	----metribuzin	64.3		0.18				
3	----chlorimuron	10.7		0.03				
1	Fall__None							38.0 a
4	Spring_Double Knock							
4	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	4 WPP	B	
4	2,4-D ester	3.8	L	0.71	lb ae/a	4 WPP	B	
4	Gramoxone SL....paraquat	2	SL	0.75	lb ai/a	PRE	D	
4	Canopy Premix	75	DF	0.21	lb ai/a	PRE	D	
4	----metribuzin	64.3		0.18				
4	----chlorimuron	10.7		0.03				
4	Crop Oil Concentrate	100	SL	1.25	% v/v	PRE	D	
4	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	PRE	D	
2	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A	25.7 a
2	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A	
4	Spring_Double Knock							
4	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	4 WPP	B	
4	2,4-D ester	3.8	L	0.71	lb ae/a	4 WPP	B	
4	Gramoxone SL....paraquat	2	SL	0.75	lb ai/a	PRE	D	
4	Canopy Premix	75	DF	0.21	lb ai/a	PRE	D	
4	----metribuzin	64.3		0.18				
4	----chlorimuron	10.7		0.03				
4	Crop Oil Concentrate	100	SL	1.25	% v/v	PRE	D	
4	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	PRE	D	
3	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A	27.8 a
3	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A	
3	Canopy EX Premix	29.5	WG	0.0406	lb ai/a	Fall		
3	----chlorimuron	22.7		0.0312				
3	----tribenuron	6.8		0.0094				
4	Spring_Double Knock							
4	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	4 WPP	B	
4	2,4-D ester	3.8	L	0.71	lb ae/a	4 WPP	B	
4	Gramoxone SL....paraquat	2	SL	0.75	lb ai/a	PRE	D	
4	Canopy Premix	75	DF	0.21	lb ai/a	PRE	D	
4	----metribuzin	64.3		0.18				
4	----chlorimuron	10.7		0.03				
4	Crop Oil Concentrate	100	SL	1.25	% v/v	PRE	D	
4	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	PRE	D	

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Pest Code	
Pest Name	
Crop Code	GLXMA
Crop Name	Soybean
Rating Type	Yield
Rating Unit	Bu/A
Rating Date	10/15/15

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	
4	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	Fall	A	24.9 a
4	2,4-D ester	3.8	L	0.71	lb ae/a	Fall	A	
4	Valor SX.....flumioxazin	51	WG	0.096	lb ai/a	Fall	A	
4	Spring_Double Knock							
4	Roundup WeatherMax..glyphosate	4.5	AS	0.77	lb ae/a	4 WPP	B	
4	2,4-D ester	3.8	L	0.71	lb ae/a	4 WPP	B	
4	Gramoxone SL....paraquat	2	SL	0.75	lb ai/a	PRE	D	
4	Canopy Premix	75	DF	0.21	lb ai/a	PRE	D	
4	----metribuzin	64.3		0.18				
4	----chlorimuron	10.7		0.03				
4	Crop Oil Concentrate	100	SL	1.25	% v/v	PRE	D	
4	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	PRE	D	

LSD P=.05	12.30
Standard Deviation	7.38
CV	25.51

FACTORIAL/POOLED ERROR AOV For WntrAnns GrndCovr % 05/13/15 Missing values in column 1 results in unbalanced data, Least Squares Analysis is preferred

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	46	21553.059994				
R	2	14.244109	7.122054	1.611	0.2171	
A	3	4202.980573	1400.993524	316.820	0.0001	1.76
B	3	5764.247240	1921.415747	434.508	0.0001	1.76
AB	9	11443.348663	1271.483185	287.533	0.0001	3.51
ERROR	29	128.239410	4.422049			

Randomized Complete Block (RCB) AOV For AMAPA PalmerAm Control % 06/07/15 Missing factor A1 B1 levels prevents analyzing column 2 as Factorial design; Missing values in column 2 results in unbalanced data, Least Squares Analysis is preferred

Source	DF	Sum of Squares	Mean Square	F	Prob(F)
Total	43	50754.489796			
Replicate	2	1980.204082	990.102041	1.182	0.3221
Treatment	14	26153.809524	1868.129252	2.230	0.0358
ERROR	27	22620.476190	837.795414		

Randomized Complete Block (RCB) AOV For IPOSS mornglry Control % 06/07/15 Missing factor A1 B1 levels prevents analyzing column 3 as Factorial design; Missing values in column 3 results in unbalanced data, Least Squares Analysis is preferred

Source	DF	Sum of Squares	Mean Square	F	Prob(F)
Total	43	41812.152041			
Replicate	2	820.169898	410.084949	0.744	0.4848
Treatment	14	26106.960714	1864.782908	3.383	0.0032
ERROR	27	14885.021429	551.297090		

Randomized Complete Block (RCB) AOV For DIGSA L.crbgrs Control % 06/07/15 Missing factor A1 B1 levels prevents analyzing column 4 as Factorial design; Missing values in column 4 results in unbalanced data, Least Squares Analysis is preferred

Source	DF	Sum of Squares	Mean Square	F	Prob(F)
Total	43	52857.975510			
Replicate	2	4140.323129	2070.161565	3.255	0.0541
Treatment	14	31545.509524	2253.250680	3.543	0.0023
ERROR	27	17172.142857	636.005291		

FACTORIAL/POOLED ERROR AOV For WntrAnns Control % 06/07/15 Missing values in column 5 results in unbalanced data, Least Squares Analysis is preferred

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	46	40933.666667				
R	2	114.541667	57.270833	1.337	0.2783	
A	3	4788.166667	1596.055556	37.263	0.0001	5.5
B	3	21224.333333	7074.777778	165.175	0.0001	5.5
AB	9	13564.500000	1507.166667	35.188	0.0001	10.9
ERROR	29	1242.125000	42.831897			

Randomized Complete Block (RCB) AOV For annuals GrndCovr % 06/07/15 Missing factor A3 B1 levels prevents analyzing column 6 as Factorial design; Missing factor A4 B1 levels prevents analyzing column 6 as Factorial design; Missing factor A1 B2 levels prevents analyzing column 6 as Factorial design; Missing factor A2 B2 levels prevents analyzing column 6 as Factorial design; Missing factor A3 B2 levels prevents analyzing column 6 as Factorial design; Missing factor A4 B2 levels prevents analyzing column 6 as Factorial design; Missing factor A1 B3 levels prevents analyzing column 6 as Factorial design; Missing factor A2 B3 levels prevents analyzing column 6 as Factorial design; Missing factor A3 B3 levels prevents analyzing column 6 as Factorial design; Missing factor A4 B3 levels prevents analyzing column 6 as Factorial design; Missing factor A1 B4 levels prevents analyzing column 6 as Factorial design; Missing factor A2 B4 levels prevents analyzing column 6 as Factorial design; Missing factor A3 B4 levels prevents analyzing column 6 as Factorial design; Missing factor A4 B4 levels prevents analyzing column 6 as Factorial design

Source	DF	Sum of Squares	Mean Square	F	Prob(F)
Total	3	2275.000000			
Replicate	1	2025.000000	2025.000000	9.000	0.2048
Treatment	1	25.000000	25.000000	0.111	0.7952
ERROR	1	225.000000	225.000000		

Randomized Complete Block (RCB) AOV For AMAPA PalmerAm Control % 06/25/15 Missing factor A1 B1 levels prevents analyzing column 7 as Factorial design; Missing values in column 7 results in unbalanced data, Least Squares Analysis is preferred

Source	DF	Sum of Squares	Mean Square	F	Prob(F)
Total	32	32611.500000			
Replicate	2	1002.133333	501.066667	1.823	0.1935
Treatment	14	27211.833333	1943.702381	7.072	0.0002
ERROR	16	4397.533333	274.845833		

Randomized Complete Block (RCB) AOV For IPOSS mornglry Control % 06/25/15 Missing factor A1 B1 levels prevents analyzing column 8 as Factorial design; Missing values in column 8 results in unbalanced data, Least Squares Analysis is preferred

Source	DF	Sum of Squares	Mean Square	F	Prob(F)
Total	31	27740.744444			
Replicate	2	392.744444	196.372222	1.294	0.3031
Treatment	14	25071.244444	1790.803175	11.798	0.0001
ERROR	15	2276.755556	151.783704		

Randomized Complete Block (RCB) AOV For GGGAN AnnGrass Control % 06/25/15 Missing factor A1 B1 levels prevents analyzing column 9 as Factorial design; Missing values in column 9 results in unbalanced data, Least Squares Analysis is preferred

Source	DF	Sum of Squares	Mean Square	F	Prob(F)
Total	39	24398.977778			
Replicate	2	246.977778	123.488889	0.240	0.7884
Treatment	14	12330.977778	880.784127	1.714	0.1219
ERROR	23	11821.022222	513.957488		

Randomized Complete Block (RCB) AOV For AMAPA PalmerAm Control % 07/13/15 Missing factor A1 B1 levels prevents analyzing column 10 as Factorial design; Missing values in column 10 results in unbalanced data, Least Squares Analysis is preferred

Source	DF	Sum of Squares	Mean Square	F	Prob(F)
Total	42	6607.174087			
Replicate	2	859.068181	429.534091	9.381	0.0009
Treatment	14	4557.618039	325.544146	7.110	0.0001
ERROR	26	1190.487867	45.787995		

Randomized Complete Block (RCB) AOV For IPOSS mornglry Control % 07/13/15 Missing factor A1 B1 levels prevents analyzing column 11 as Factorial design; Missing values in column 11 results in unbalanced data, Least Squares Analysis is preferred

Source	DF	Sum of Squares	Mean Square	F	Prob(F)
Total	40	3822.764544			
Replicate	2	49.684043	24.842021	0.295	0.7474
Treatment	14	1750.451037	125.032217	1.484	0.1916
ERROR	24	2022.629464	84.276228		

Randomized Complete Block (RCB) AOV For DIGSA L.crbgrs Control % 07/13/15 Missing factor A1 B1 levels prevents analyzing column 12 as Factorial design; Missing values in column 12 results in unbalanced data, Least Squares Analysis is preferred

Source	DF	Sum of Squares	Mean Square	F	Prob(F)
Total	43	317.330612			
Replicate	2	2.949660	1.474830	0.407	0.6695
Treatment	14	216.609524	15.472109	4.273	0.0006
ERROR	27	97.771429	3.621164		

FACTORIAL/POOLED ERROR AOV For GLXMA Soybean Yield Bu/A 10/15/15

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	47	3027.530928				
R	2	263.060794	131.530397	2.416	0.1064	
A	3	65.416063	21.805354	0.401	0.7536	6.2
B	3	248.472537	82.824179	1.521	0.2291	6.2
AB	9	817.461822	90.829091	1.669	0.1409	12.3
ERROR	30	1633.119712	54.437324			

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Herbicide Approaches for Rye Cover Crop in No-Till Soybeans

Trial ID: DSB3-15 Location: Field #7 Trial Year: 2015
Protocol ID: DSB3-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact: Delaware Soybean Board

Investigator: Mark VanGessel Title: Extension Weed Specialist
Organization: University of Delaware
Address: 16483 County Seat Hwy
City+State/Prov: Georgetown, Delaware
Postal Code: 19947 E-mail: mjv@udel.edu
Country: USA United States

Crop Description

Crop 1: GLXMA Glycine max Soybean
Variety: 4306R2/STS BBCH Scale: BSOY
Planting Date: 05/20/15
Planting Rate, Unit: 150000 S/A Planting Method: PLANTD planted
Depth, Unit: 1 in Planting Equipment: PP Plot Planter
Row Spacing, Unit: 15 in Emergence Date: 05/27/15
Harvest Date: 10/22/15
Harvested Width, Unit: 6.25 FT
Soil Temperature, Unit: 72 F Harvested Length, Unit: 25 FT
Soil Moisture: NORMAL normal, adequate Harvest Equipment: Plot combine
Seed Bed: MEDTRA medium/trashy % Standard Moisture: 13.0

Site and Design

Treated Plot Width: 10 FT Site Type: FIELD field
Treated Plot Length: 25 FT
Treated Plot Area: 250 FT2 Treatments: 14 Tillage Type: NOTILL no-till
Replications: 3 Study Design: FACTOR Factorial

Trial Initiation Comments:
Rye cover crop at 2 bu/A was established in the fall.

Maintenance

No.	Date	Maintenance Product Name	Form Conc	Form Type	Rate	Rate Unit
1.	06/25/15	Roundup	4.5	AS	1	QT/A
2.	06/25/15	Reflex	2	EC	1.5	PT/A

Comment: Total POST application on 6-25-15.

Field Prep./Maintenance:
Rye was killed for NT plots with an application of Roundup on 4-24-15.

Soil Description

% Sand: 78 % OM: 2.5 Texture: SL sandy loam
% Silt: 13 pH: 4.8
% Clay: 9 CEC: 7.0 Fert. Level: G good
Soil Drainage: G good

Moisture and Weather Conditions

Overall Moisture Conditions: NORMAL normal
Closest Weather Station: UD REC Distance, Unit: 0.1 mi

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Application Description

	A	B	C	D
Application Date:	03/19/15	04/29/15	05/07/15	05/21/15
Appl. Stop Time:	03:30 PM	02:30 PM	03:00 PM	07:50 AM
Interval to Prev. Appl., Unit:		41 DAYS	8 DAYS	14 DAYS
Application Method:	SPRAY	SPRAY	SPRAY	SPRAY
Application Timing:	ESpring	20 DPP	10DPP	PRE
Application Placement:	BROADC	BROADC	BROADC	BROADC
Applied By:	Johnson	Johnson	Johnson	Johnson
Air Temperature, Unit:	45 F	70 F	73 F	54 F
% Relative Humidity:	36	31	51	75
Wind Velocity, Unit:	3 mph	5 mph	2 mph	0 mph
Wind Direction:	NE	SW	SE	N/A
Dew Presence (Y/N):	N no	N no	N no	Y yes
Soil Temperature, Unit:	45 F	70 F	73 F	54 F
Soil Moisture:	NORMAL	NORMAL	NORMAL	NORMAL
% Cloud Cover:	0	15	0	100

Crop Stage At Each Application

	A	B	C	D
Crop 1 Code, BBCH Scale:	GLXMA BSOY	GLXMA BSOY	GLXMA BSOY	GLXMA BSOY

Application Equipment

	A	B	C	D
Appl. Equipment:	Backpack	Tractor	Tractor	Tractor
Equipment Type:	SPRBAC	TRMOSP	TRMOSP	TRMOSP
Operation Pressure, Unit:	31 psi	40 psi	40 psi	40 psi
Nozzle Type:	AIRMIX	AIRMIX	AIRMIX	AIRMIX
Nozzle Size:	11002	11002	11002	11002
Nozzle Spacing, Unit:	18 in	20 in	20 in	20 in
Boom Length, Unit:	9 ft	10 ft	10 ft	10 ft
Boom Height, Unit:	22 in	44 in	44 in	22 in
Ground Speed, Unit:	3 mph	3 mph	3 mph	3 mph
Carrier:	WATER	WATER	WATER	WATER
Spray Volume, Unit:	20 gal/ac	20 gal/ac	20 gal/ac	20 gal/ac
Mix Size, Unit:	2 Liters	0.7 Gallons	0.7 Gallons	0.7 Gallons
Propellant:	COMCO2	COMAIR	COMAIR	COMAIR

Trial Comments

04/29/15: Average rye heights at application: High rye biomass 24" - 30"; Low rye biomass 18".

05/07/15: Average rye heights essentially the same as 04/29/15.

06/05/15: Weed absent = 0; Present = 1; greater than 1 true leaf = 2.

06/25/15: Annual grasses consist mainly of large crabgrass but some fall panicum is present. Untreated had no burndown so rye is still standing and weed suppression has been very good. The "No rye" trts had rye removal late so some weed suppression occurred. Ratings based on untreated checks in adjacent trials. For ANCVR column 5=excellent, 4=good, 3=fair, 2=poor.

University of Delaware

Herbicide Approaches for Rye Cover Crop in No-Till Soybeans

Trial ID: DSB3-15 Location: Field #7 Trial Year: 2015
Protocol ID: DSB3-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact: Delaware Soybean Board

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code		AMAPA PalmerAm	AMBEL C.ragwd
	Pest Code									
	Pest Name								PalmerAm	C.ragwd
	Crop Code							SECCE		
	Crop Name							Rye		
	Rating Type							DryWt	Pres/Abs	Pres/Abs
	Rating Unit							g/0.25m2	0,1,2	0,1,2
	Rating Date							05/12/15	06/05/15	06/05/15
1	High Rye Biomass								0.0 b	0.0 a
	30% Urea Ammonium Nitrate	3.25	L	60	lb ai/a	ESpring	A			
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
	Envive Premix	41.3	WG	0.0774	lb ai/a					
	----chlorimuron	9.199999		0.0172						
	----flumioxazin	29.2		0.0547						
	----thifensulfuron	2.9		0.00543						
	20days Early Pre-Plant					20days EPP	B			
2	High Rye Biomass								0.0 b	0.0 a
	30% Urea Ammonium Nitrate	3.25	L	60	lb ai/a	ESpring	A			
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
	Envive Premix	41.3	WG	0.0774	lb ai/a					
	----chlorimuron	9.199999		0.0172						
	----flumioxazin	29.2		0.0547						
	----thifensulfuron	2.9		0.00543						
	10days Pre-Plant					10days PP	C			
3	High Rye Biomass							191.0 a-d	0.3 ab	0.0 a
	30% Urea Ammonium Nitrate	3.25	L	60	lb ai/a	ESpring	A			
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
	20days Early Pre-Plant					20days EPP	B			
4	High Rye Biomass							286.0 a	0.0 b	0.0 a
	30% Urea Ammonium Nitrate	3.25	L	60	lb ai/a	ESpring	A			
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
	10days Pre-Plant					10days PP	C			
5	Low Rye Biomass								0.0 b	0.0 a
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
	Envive Premix	41.3	WG	0.0774	lb ai/a					
	----chlorimuron	9.199999		0.0172						
	----flumioxazin	29.2		0.0547						
	----thifensulfuron	2.9		0.00543						
	20days Early Pre-Plant					20days EPP	B			
6	Low Rye Biomass								0.0 b	0.0 a
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
	Envive Premix	41.3	WG	0.0774	lb ai/a					
	----chlorimuron	9.199999		0.0172						
	----flumioxazin	29.2		0.0547						
	----thifensulfuron	2.9		0.00543						
	10days Pre-Plant					10days PP	C			

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.
Missing data estimates are included in columns:Yates=8,9,10,11
Could not calculate LSD (% mean diff) for columns 7 because error mean square = 0.

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code			
	Pest Code								AMAPA	AMBEL
	Pest Name								PalmerAm	C.ragwd
	Crop Code							SECCE		
	Crop Name							Rye		
	Rating Type							DryWt	Pres/Abs	Pres/Abs
	Rating Unit							g/0.25m2	0,1,2	0,1,2
	Rating Date							05/12/15	06/05/15	06/05/15
7	Low Rye Biomass							100.7 bcd	0.7 a	0.0 a
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
	20days Early Pre-Plant					20days EPP	B			
8	Low Rye Biomass							222.3 ab	0.0 b	0.0 a
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
	10days Pre-Plant					10days PP	C			
9	No Rye - NT								0.0 b	0.0 a
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
	Envive Premix	41.3	WG	0.0774	lb ai/a					
	----chlorimuron	9.199999		0.0172						
	----flumioxazin	29.2		0.0547						
	----thifensulfuron	2.9		0.00543						
	20days Early Pre-Plant					20days EPP	B			
10	No Rye - NT								0.0 b	0.0 a
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
	Envive Premix	41.3	WG	0.0774	lb ai/a					
	----chlorimuron	9.199999		0.0172						
	----flumioxazin	29.2		0.0547						
	----thifensulfuron	2.9		0.00543						
	10days Pre-Plant					10days PP	C			
11	No Rye - NT							97.0 cd	0.0 b	0.3 a
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
	20days Early Pre-Plant					20days EPP	B			
12	No Rye - NT							89.7 d	0.0 b	0.0 a
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
	10days Pre-Plant					10days PP	C			
13	Untreated Check							214.0 abc	0.0 b	0.0 a
14	No Rye - NT								0.0 b	0.0 a
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a	20days EPP	B			
	Envive Premix	41.3	WG	0.0774	lb ai/a	PRE	D			
	----chlorimuron	9.199999		0.0172						
	----flumioxazin	29.2		0.0547						
	----thifensulfuron	2.9		0.00543						
	Crop Oil Concentrate	100	L	1.25	% v/v	PRE	D			
	LSD P=.05							122.83	0.36	0.26
	Standard Deviation							69.04	0.21	0.15
	CV							40.25	299.57	648.07
	Replicate F							2.105	1.560	1.000
	Replicate Prob(F)							0.1646	0.2292	0.3816
	Treatment F							3.686	2.440	1.000
	Treatment Prob(F)							0.0260	0.0256	0.4786

Pest Code									ANVCR	IPOSS	DIGSA
Pest Name									Sp.anoda	mornglry	L.crbgrs
Crop Code											
Crop Name											
Rating Type									Pres/Abs	Pres/Abs	Pres/Abs
Rating Unit									0,1,2	0,1,2	0,1,2
Rating Date									06/05/15	06/05/15	06/05/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code			
1	High Rye Biomass								0.0 d	0.7 a	0.0 a
	30% Urea Ammonium Nitrate	3.25	L	60	lb ai/a	ESpring	A			
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
	Envive Premix	41.3	WG	0.0774	lb ai/a					
	----chlorimuron	9.199999		0.0172						
	----flumioxazin	29.2		0.0547						
	----thifensulfuron	2.9		0.00543						
	20days Early Pre-Plant					20days EPP	B			
2	High Rye Biomass								0.0 d	0.3 a	0.0 a
	30% Urea Ammonium Nitrate	3.25	L	60	lb ai/a	ESpring	A			
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
	Envive Premix	41.3	WG	0.0774	lb ai/a					
	----chlorimuron	9.199999		0.0172						
	----flumioxazin	29.2		0.0547						
	----thifensulfuron	2.9		0.00543						
	10days Pre-Plant					10days PP	C			
3	High Rye Biomass								1.0 a-d	1.0 a	0.3 a
	30% Urea Ammonium Nitrate	3.25	L	60	lb ai/a	ESpring	A			
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
	20days Early Pre-Plant					20days EPP	B			
4	High Rye Biomass								1.7 ab	1.0 a	0.7 a
	30% Urea Ammonium Nitrate	3.25	L	60	lb ai/a	ESpring	A			
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
	10days Pre-Plant					10days PP	C			
5	Low Rye Biomass								0.0 d	1.3 a	0.7 a
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
	Envive Premix	41.3	WG	0.0774	lb ai/a					
	----chlorimuron	9.199999		0.0172						
	----flumioxazin	29.2		0.0547						
	----thifensulfuron	2.9		0.00543						
	20days Early Pre-Plant					20days EPP	B			
6	Low Rye Biomass								0.3 cd	1.0 a	0.0 a
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
	Envive Premix	41.3	WG	0.0774	lb ai/a					
	----chlorimuron	9.199999		0.0172						
	----flumioxazin	29.2		0.0547						
	----thifensulfuron	2.9		0.00543						
	10days Pre-Plant					10days PP	C			

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	ANVCR	IPOSS	DIGSA
	Pest Code							ANVCR	IPOSS	DIGSA
	Pest Name							Sp.anoda	mornglry	L.crbgrs
	Crop Code									
	Crop Name									
	Rating Type							Pres/Abs	Pres/Abs	Pres/Abs
	Rating Unit							0,1,2	0,1,2	0,1,2
	Rating Date							06/05/15	06/05/15	06/05/15
7	Low Rye Biomass							1.7 ab	2.0 a	1.0 a
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
	20days Early Pre-Plant					20days EPP	B			
8	Low Rye Biomass							2.0 a	2.0 a	0.7 a
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
	10days Pre-Plant					10days PP	C			
9	No Rye - NT							1.0 a-d	2.0 a	0.3 a
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
	Envive Premix	41.3	WG	0.0774	lb ai/a					
	----chlorimuron	9.199999		0.0172						
	----flumioxazin	29.2		0.0547						
	----thifensulfuron	2.9		0.00543						
	20days Early Pre-Plant					20days EPP	B			
10	No Rye - NT							0.7 bcd	1.0 a	0.3 a
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
	Envive Premix	41.3	WG	0.0774	lb ai/a					
	----chlorimuron	9.199999		0.0172						
	----flumioxazin	29.2		0.0547						
	----thifensulfuron	2.9		0.00543						
	10days Pre-Plant					10days PP	C			
11	No Rye - NT							2.0 a	2.0 a	1.7 a
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
	20days Early Pre-Plant					20days EPP	B			
12	No Rye - NT							1.3 abc	1.3 a	0.3 a
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
	10days Pre-Plant					10days PP	C			
13	Untreated Check							0.7 bcd	1.0 a	0.0 a
14	No Rye - NT							0.0 d	0.3 a	0.3 a
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a	20days EPP	B			
	Envive Premix	41.3	WG	0.0774	lb ai/a	PRE	D			
	----chlorimuron	9.199999		0.0172						
	----flumioxazin	29.2		0.0547						
	----thifensulfuron	2.9		0.00543						
	Crop Oil Concentrate	100	L	1.25	% v/v	PRE	D			
	LSD P=.05							1.07	1.21	1.02
	Standard Deviation							0.64	0.72	0.61
	CV							72.22	59.6	133.79
	Replicate F							1.824	1.636	3.380
	Replicate Prob(F)							0.1815	0.2141	0.0496
	Treatment F							4.258	2.017	1.765
	Treatment Prob(F)							0.0008	0.0619	0.1055

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	WntrAnns	AMAPA PalmerAm	IPOSS mornglry
	Pest Code									
	Pest Name							WntrAnns	PalmerAm	mornglry
	Crop Code									
	Crop Name									
	Rating Type							Pres/Abs	Control	Control
	Rating Unit							0,1,2	%	%
	Rating Date							06/05/15	06/25/15	06/25/15
1	High Rye Biomass							0.0 a	97.3 a	66.8 a
	30% Urea Ammonium Nitrate	3.25	L	60	lb ai/a	ESpring	A			
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
	Envive Premix	41.3	WG	0.0774	lb ai/a					
	----chlorimuron	9.199999		0.0172						
	----flumioxazin	29.2		0.0547						
	----thifensulfuron	2.9		0.00543						
	20days Early Pre-Plant					20days EPP	B			
2	High Rye Biomass							0.0 a	100.0 a	78.3 a
	30% Urea Ammonium Nitrate	3.25	L	60	lb ai/a	ESpring	A			
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
	Envive Premix	41.3	WG	0.0774	lb ai/a					
	----chlorimuron	9.199999		0.0172						
	----flumioxazin	29.2		0.0547						
	----thifensulfuron	2.9		0.00543						
	10days Pre-Plant					10days PP	C			
3	High Rye Biomass							0.0 a	91.8 ab	63.2 a
	30% Urea Ammonium Nitrate	3.25	L	60	lb ai/a	ESpring	A			
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
	20days Early Pre-Plant					20days EPP	B			
4	High Rye Biomass							0.0 a	84.0 bc	66.0 a
	30% Urea Ammonium Nitrate	3.25	L	60	lb ai/a	ESpring	A			
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
	10days Pre-Plant					10days PP	C			
5	Low Rye Biomass							0.0 a	100.0 a	46.0 a
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
	Envive Premix	41.3	WG	0.0774	lb ai/a					
	----chlorimuron	9.199999		0.0172						
	----flumioxazin	29.2		0.0547						
	----thifensulfuron	2.9		0.00543						
	20days Early Pre-Plant					20days EPP	B			
6	Low Rye Biomass							0.0 a	100.0 a	75.0 a
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
	Envive Premix	41.3	WG	0.0774	lb ai/a					
	----chlorimuron	9.199999		0.0172						
	----flumioxazin	29.2		0.0547						
	----thifensulfuron	2.9		0.00543						
	10days Pre-Plant					10days PP	C			

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	WntrAnns	AMAPA PalmerAm	IPOSS mornglry
	Pest Code								AMAPA	IPOSS
	Pest Name							WntrAnns	PalmerAm	mornglry
	Crop Code									
	Crop Name									
	Rating Type							Pres/Abs	Control	Control
	Rating Unit							0,1,2	%	%
	Rating Date							06/05/15	06/25/15	06/25/15
7	Low Rye Biomass							0.0 a	67.9 de	46.7 a
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
	20days Early Pre-Plant					20days EPP	B			
8	Low Rye Biomass							0.0 a	78.3 cd	55.0 a
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
	10days Pre-Plant					10days PP	C			
9	No Rye - NT							0.0 a	100.0 a	46.7 a
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
	Envive Premix	41.3	WG	0.0774	lb ai/a					
	----chlorimuron	9.199999		0.0172						
	----flumioxazin	29.2		0.0547						
	----thifensulfuron	2.9		0.00543						
	20days Early Pre-Plant					20days EPP	B			
10	No Rye - NT							0.0 a	100.0 a	63.7 a
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
	Envive Premix	41.3	WG	0.0774	lb ai/a					
	----chlorimuron	9.199999		0.0172						
	----flumioxazin	29.2		0.0547						
	----thifensulfuron	2.9		0.00543						
	10days Pre-Plant					10days PP	C			
11	No Rye - NT							0.0 a	63.3 e	34.3 a
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
	20days Early Pre-Plant					20days EPP	B			
12	No Rye - NT							0.0 a	70.0 de	51.7 a
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
	10days Pre-Plant					10days PP	C			
13	Untreated Check							0.0 a	96.7 a	68.3 a
14	No Rye - NT							0.0 a	100.0 a	82.7 a
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a	20days EPP	B			
	Envive Premix	41.3	WG	0.0774	lb ai/a	PRE	D			
	----chlorimuron	9.199999		0.0172						
	----flumioxazin	29.2		0.0547						
	----thifensulfuron	2.9		0.00543						
	Crop Oil Concentrate	100	L	1.25	% v/v	PRE	D			
	LSD P=.05							.	11.77	35.04
	Standard Deviation							0.00	6.97	20.75
	CV							0.0	7.81	34.4
	Replicate F							0.000	6.586	1.803
	Replicate Prob(F)							1.0000	0.0055	0.1873
	Treatment F							0.000	11.719	1.370
	Treatment Prob(F)							1.0000	0.0001	0.2462

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	GGGAN AnnGrass	ANVCR Sp.anoda	AMAPA PalmerAm
	Pest Code							GGGAN	ANVCR	AMAPA
	Pest Name							AnnGrass	Sp.anoda	PalmerAm
	Crop Code									
	Crop Name									
	Rating Type							Control	Control	Control
	Rating Unit							%	0-5	%
	Rating Date							06/25/15	06/25/15	08/01/15
1	High Rye Biomass							89.4 ab	4.06 ab	100.0 a
	30% Urea Ammonium Nitrate	3.25	L	60	lb ai/a	ESpring	A			
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
	Envive Premix	41.3	WG	0.0774	lb ai/a					
	----chlorimuron	9.199999		0.0172						
	----flumioxazin	29.2		0.0547						
	----thifensulfuron	2.9		0.00543						
	20days Early Pre-Plant					20days EPP	B			
2	High Rye Biomass							92.3 ab	3.67 abc	100.0 a
	30% Urea Ammonium Nitrate	3.25	L	60	lb ai/a	ESpring	A			
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
	Envive Premix	41.3	WG	0.0774	lb ai/a					
	----chlorimuron	9.199999		0.0172						
	----flumioxazin	29.2		0.0547						
	----thifensulfuron	2.9		0.00543						
	10days Pre-Plant					10days PP	C			
3	High Rye Biomass							74.4 abc	3.63 abc	100.0 a
	30% Urea Ammonium Nitrate	3.25	L	60	lb ai/a	ESpring	A			
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
	20days Early Pre-Plant					20days EPP	B			
4	High Rye Biomass							84.3 ab	2.50 de	93.3 ab
	30% Urea Ammonium Nitrate	3.25	L	60	lb ai/a	ESpring	A			
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
	10days Pre-Plant					10days PP	C			
5	Low Rye Biomass							86.7 ab	4.38 a	100.0 a
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
	Envive Premix	41.3	WG	0.0774	lb ai/a					
	----chlorimuron	9.199999		0.0172						
	----flumioxazin	29.2		0.0547						
	----thifensulfuron	2.9		0.00543						
	20days Early Pre-Plant					20days EPP	B			
6	Low Rye Biomass							91.7 ab	3.13 bcd	100.0 a
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
	Envive Premix	41.3	WG	0.0774	lb ai/a					
	----chlorimuron	9.199999		0.0172						
	----flumioxazin	29.2		0.0547						
	----thifensulfuron	2.9		0.00543						
	10days Pre-Plant					10days PP	C			

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Pest Code										GGGAN	ANVCR	AMAPA
Pest Name										AnnGrass	Sp.anoda	PalmerAm
Crop Code												
Crop Name												
Rating Type										Control	Control	Control
Rating Unit										%	0-5	%
Rating Date										06/25/15	06/25/15	08/01/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code					
7	Low Rye Biomass									58.3 cd	2.00 e	86.7 bc
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a							
	20days Early Pre-Plant					20days EPP	B					
8	Low Rye Biomass									75.0 abc	2.33 de	94.3 ab
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a							
	10days Pre-Plant					10days PP	C					
9	No Rye - NT									71.7 bc	3.67 abc	100.0 a
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a							
	Envive Premix	41.3	WG	0.0774	lb ai/a							
	----chlorimuron	9.199999		0.0172								
	----flumioxazin	29.2		0.0547								
	----thifensulfuron	2.9		0.00543								
	20days Early Pre-Plant					20days EPP	B					
10	No Rye - NT									91.0 ab	2.88 cde	100.0 a
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a							
	Envive Premix	41.3	WG	0.0774	lb ai/a							
	----chlorimuron	9.199999		0.0172								
	----flumioxazin	29.2		0.0547								
	----thifensulfuron	2.9		0.00543								
	10days Pre-Plant					10days PP	C					
11	No Rye - NT									40.0 d	2.00 e	77.3 c
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a							
	20days Early Pre-Plant					20days EPP	B					
12	No Rye - NT									60.0 cd	2.00 e	77.3 c
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a							
	10days Pre-Plant					10days PP	C					
13	Untreated Check									93.3 ab	2.38 de	100.0 a
14	No Rye - NT									94.3 a	4.00 ab	100.0 a
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a	20days EPP	B					
	Envive Premix	41.3	WG	0.0774	lb ai/a	PRE	D					
	----chlorimuron	9.199999		0.0172								
	----flumioxazin	29.2		0.0547								
	----thifensulfuron	2.9		0.00543								
	Crop Oil Concentrate	100	L	1.25	% v/v	PRE	D					
LSD P=.05										22.06	1.039	12.86
Standard Deviation										13.09	0.610	7.67
CV										16.62	20.04	8.07
Replicate F										1.493	1.729	4.031
Replicate Prob(F)										0.2448	0.2030	0.0299
Treatment F										4.735	5.817	3.621
Treatment Prob(F)										0.0005	0.0003	0.0025

Pest Code Pest Name Crop Code Crop Name Rating Type Rating Unit Rating Date							IPOSS mornglry Control % 08/01/15	GLXMA Soybean Yield Bu/A 10/22/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code		
1	High Rye Biomass							81.7 a	31.2 a
	30% Urea Ammonium Nitrate	3.25	L	60	lb ai/a	ESpring	A		
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a				
	Envive Premix	41.3	WG	0.0774	lb ai/a				
	----chlorimuron	9.199999		0.0172					
	----flumioxazin	29.2		0.0547					
	----thifensulfuron	2.9		0.00543					
	20days Early Pre-Plant					20days EPP	B		
2	High Rye Biomass							92.7 a	34.6 a
	30% Urea Ammonium Nitrate	3.25	L	60	lb ai/a	ESpring	A		
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a				
	Envive Premix	41.3	WG	0.0774	lb ai/a				
	----chlorimuron	9.199999		0.0172					
	----flumioxazin	29.2		0.0547					
	----thifensulfuron	2.9		0.00543					
	10days Pre-Plant					10days PP	C		
3	High Rye Biomass							78.3 a	30.5 a
	30% Urea Ammonium Nitrate	3.25	L	60	lb ai/a	ESpring	A		
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a				
	20days Early Pre-Plant					20days EPP	B		
4	High Rye Biomass							86.0 a	32.2 a
	30% Urea Ammonium Nitrate	3.25	L	60	lb ai/a	ESpring	A		
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a				
	10days Pre-Plant					10days PP	C		
5	Low Rye Biomass							83.3 a	26.2 a
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a				
	Envive Premix	41.3	WG	0.0774	lb ai/a				
	----chlorimuron	9.199999		0.0172					
	----flumioxazin	29.2		0.0547					
	----thifensulfuron	2.9		0.00543					
	20days Early Pre-Plant					20days EPP	B		
6	Low Rye Biomass							89.3 a	35.1 a
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a				
	Envive Premix	41.3	WG	0.0774	lb ai/a				
	----chlorimuron	9.199999		0.0172					
	----flumioxazin	29.2		0.0547					
	----thifensulfuron	2.9		0.00543					
	10days Pre-Plant					10days PP	C		

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Pest Code									IPOSS	
Pest Name									mornglry	
Crop Code										GLXMA
Crop Name										Soybean
Rating Type									Control	Yield
Rating Unit									%	Bu/A
Rating Date									08/01/15	10/22/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code			
7	Low Rye Biomass								76.7 a	33.6 a
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
	20days Early Pre-Plant					20days EPP	B			
8	Low Rye Biomass								100.0 a	35.5 a
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
	10days Pre-Plant					10days PP	C			
9	No Rye - NT								75.7 a	34.7 a
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
	Envive Premix	41.3	WG	0.0774	lb ai/a					
	----chlorimuron	9.199999		0.0172						
	----flumioxazin	29.2		0.0547						
	----thifensulfuron	2.9		0.00543						
	20days Early Pre-Plant					20days EPP	B			
10	No Rye - NT								89.0 a	30.6 a
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
	Envive Premix	41.3	WG	0.0774	lb ai/a					
	----chlorimuron	9.199999		0.0172						
	----flumioxazin	29.2		0.0547						
	----thifensulfuron	2.9		0.00543						
	10days Pre-Plant					10days PP	C			
11	No Rye - NT								83.3 a	30.5 a
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
	20days Early Pre-Plant					20days EPP	B			
12	No Rye - NT								80.0 a	29.6 a
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
	10days Pre-Plant					10days PP	C			
13	Untreated Check								86.7 a	28.2 a
14	No Rye - NT								82.0 a	30.2 a
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a	20days EPP	B			
	Envive Premix	41.3	WG	0.0774	lb ai/a	PRE	D			
	----chlorimuron	9.199999		0.0172						
	----flumioxazin	29.2		0.0547						
	----thifensulfuron	2.9		0.00543						
	Crop Oil Concentrate	100	L	1.25	% v/v	PRE	D			
LSD P=.05									23.72	6.09
Standard Deviation									14.13	3.63
CV									16.7	11.47
Replicate F									0.880	0.701
Replicate Prob(F)									0.4269	0.5055
Treatment F									0.661	1.756
Treatment Prob(F)									0.7811	0.1075

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Herbicide Approaches for Rye Cover Crop in No-Till Soybeans

Trial ID: DSB3-15 Location: Field #7 Trial Year: 2015
Protocol ID: DSB3-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact: Delaware Soybean Board

Pest Code								AMAPA	AMBEL
Pest Name								PalmerAm	C.ragwd
Crop Code							SECCE		
Crop Name							Rye		
Rating Type							DryWt	Pres/Abs	Pres/Abs
Rating Unit							g/0.25m2	0,1,2	0,1,2
Rating Date							05/12/15	06/05/15	06/05/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code		
TABLE OF R MEANS									
Replicate 1								0.2	0.1
Replicate 2								0.1	0.0
Replicate 3								0.0	0.0
TABLE OF A (Rye cover) MEANS									
1	High Rye Biomass							0.1 a	0.0 a
1	30% Urea Ammonium Nitrate	3.25	L	60	lb ai/a	ESpring	A		
2	Low Rye Biomass							0.2 a	0.0 a
3	No Rye - NT							0.0 a	0.1 a
LSD P=.05								0.19	0.14
Standard Deviation								0.23	0.17
CV								276.34	600.00
TABLE OF B (Burndown Treatments) MEANS									
1	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a			0.0 b	0.0 a
1	Envive Premix	41.3	WG	0.0774	lb ai/a				
1	----chlorimuron	9.199999		0.0172					
1	----flumioxazin	29.2		0.0547					
1	----thifensulfuron	2.9		0.00543					
2	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a			0.2 a	0.1 a
LSD P=.05								0.16	0.12
Standard Deviation								0.23	0.17
CV								276.34	600.00
TABLE OF C (Timing of Burndowns) MEANS									
1	20days Early Pre-Plant					20days EPP	B	0.2 a	0.1 a
2	10days Pre-Plant					10days PP	C	0.0 b	0.0 a
LSD P=.05								0.16	0.12
Standard Deviation								0.23	0.17
CV								276.34	600.00
TABLE OF A (Rye cover) B (Burndown Treatments) MEANS									
1	High Rye Biomass							0.0 a	0.0 a
1	30% Urea Ammonium Nitrate	3.25	L	60	lb ai/a	ESpring	A		
1	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a				
1	Envive Premix	41.3	WG	0.0774	lb ai/a				
1	----chlorimuron	9.199999		0.0172					
1	----flumioxazin	29.2		0.0547					
1	----thifensulfuron	2.9		0.00543					

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code			
	Pest Code								AMAPA	AMBEL
	Pest Name								PalmerAm	C.ragwd
	Crop Code							SECCE		
	Crop Name							Rye		
	Rating Type							DryWt	Pres/Abs	Pres/Abs
	Rating Unit							g/0.25m2	0,1,2	0,1,2
	Rating Date							05/12/15	06/05/15	06/05/15
2	Low Rye Biomass								0.0 a	0.0 a
1	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
1	Envive Premix	41.3	WG	0.0774	lb ai/a					
1	----chlorimuron	9.199999		0.0172						
1	----flumioxazin	29.2		0.0547						
1	----thifensulfuron	2.9		0.00543						
3	No Rye - NT								0.0 a	0.0 a
1	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
1	Envive Premix	41.3	WG	0.0774	lb ai/a					
1	----chlorimuron	9.199999		0.0172						
1	----flumioxazin	29.2		0.0547						
1	----thifensulfuron	2.9		0.00543						
1	High Rye Biomass								0.2 a	0.0 a
1	30% Urea Ammonium Nitrate	3.25	L	60	lb ai/a	ESpring	A			
2	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
2	Low Rye Biomass								0.3 a	0.0 a
2	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
3	No Rye - NT								0.0 a	0.2 a
2	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
LSD P=.05									0.28	0.20
Standard Deviation									0.23	0.17
CV									276.34	600.00
TABLE OF A (Rye cover) C (Timing of Burndowns) MEANS										
1	High Rye Biomass								0.2 a	0.0 a
1	30% Urea Ammonium Nitrate	3.25	L	60	lb ai/a	ESpring	A			
1	20days Early Pre-Plant					20days EPP	B			
2	Low Rye Biomass								0.3 a	0.0 a
1	20days Early Pre-Plant					20days EPP	B			
3	No Rye - NT								0.0 a	0.2 a
1	20days Early Pre-Plant					20days EPP	B			
1	High Rye Biomass								0.0 a	0.0 a
1	30% Urea Ammonium Nitrate	3.25	L	60	lb ai/a	ESpring	A			
2	10days Pre-Plant					10days PP	C			
2	Low Rye Biomass								0.0 a	0.0 a
2	10days Pre-Plant					10days PP	C			
3	No Rye - NT								0.0 a	0.0 a
2	10days Pre-Plant					10days PP	C			
LSD P=.05									0.28	0.20
Standard Deviation									0.23	0.17
CV									276.34	600.00
TABLE OF B (Burndown Treatments) C (Timing of Burndowns) MEANS										
1	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a				0.0 b	0.0 a
1	Envive Premix	41.3	WG	0.0774	lb ai/a					
1	----chlorimuron	9.199999		0.0172						
1	----flumioxazin	29.2		0.0547						
1	----thifensulfuron	2.9		0.00543						
1	20days Early Pre-Plant					20days EPP	B			
2	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a				0.3 a	0.1 a
1	20days Early Pre-Plant					20days EPP	B			

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	SECCE Rye DryWt g/0.25m2 05/12/15	AMAPA PalmerAm Pres/Abs 0,1,2 06/05/15	AMBEL C.ragwd Pres/Abs 0,1,2 06/05/15
	Pest Code								AMAPA	AMBEL
	Pest Name								PalmerAm	C.ragwd
	Crop Code							SECCE		
	Crop Name							Rye		
	Rating Type							DryWt	Pres/Abs	Pres/Abs
	Rating Unit							g/0.25m2	0,1,2	0,1,2
	Rating Date							05/12/15	06/05/15	06/05/15
1	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a				0.0 b	0.0 a
1	Envive Premix	41.3	WG	0.0774	lb ai/a					
1	----chlorimuron	9.199999		0.0172						
1	----flumioxazin	29.2		0.0547						
1	----thifensulfuron	2.9		0.00543						
2	10days Pre-Plant					10days PP	C			
2	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a				0.0 b	0.0 a
2	10days Pre-Plant					10days PP	C			
LSD P=.05									0.23	0.16
Standard Deviation									0.23	0.17
CV									276.34	600.00
TABLE OF A (Rye cover) B (Burndown Treatments) C (Timing of Burndowns) MEANS										
1	High Rye Biomass							.	0.0 a	0.0 a
1	30% Urea Ammonium Nitrate	3.25	L	60	lb ai/a	ESpring	A			
1	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
1	Envive Premix	41.3	WG	0.0774	lb ai/a					
1	----chlorimuron	9.199999		0.0172						
1	----flumioxazin	29.2		0.0547						
1	----thifensulfuron	2.9		0.00543						
1	20days Early Pre-Plant					20days EPP	B			
2	Low Rye Biomass							.	0.0 a	0.0 a
1	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
1	Envive Premix	41.3	WG	0.0774	lb ai/a					
1	----chlorimuron	9.199999		0.0172						
1	----flumioxazin	29.2		0.0547						
1	----thifensulfuron	2.9		0.00543						
1	20days Early Pre-Plant					20days EPP	B			
3	No Rye - NT							.	0.0 a	0.0 a
1	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
1	Envive Premix	41.3	WG	0.0774	lb ai/a					
1	----chlorimuron	9.199999		0.0172						
1	----flumioxazin	29.2		0.0547						
1	----thifensulfuron	2.9		0.00543						
1	20days Early Pre-Plant					20days EPP	B			
1	High Rye Biomass							191.0 a	0.3 a	0.0 a
1	30% Urea Ammonium Nitrate	3.25	L	60	lb ai/a	ESpring	A			
2	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
1	20days Early Pre-Plant					20days EPP	B			
2	Low Rye Biomass							100.7 a	0.7 a	0.0 a
2	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
1	20days Early Pre-Plant					20days EPP	B			
3	No Rye - NT							97.0 a	0.0 a	0.3 a
2	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
1	20days Early Pre-Plant					20days EPP	B			

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code			
	Pest Code								AMAPA	AMBEL
	Pest Name								PalmerAm	C.ragwd
	Crop Code							SECCE		
	Crop Name							Rye		
	Rating Type							DryWt	Pres/Abs	Pres/Abs
	Rating Unit							g/0.25m2	0,1,2	0,1,2
	Rating Date							05/12/15	06/05/15	06/05/15
1	High Rye Biomass							.	0.0 a	0.0 a
1	30% Urea Ammonium Nitrate	3.25	L	60	lb ai/a	ESpring	A			
1	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
1	Envive Premix	41.3	WG	0.0774	lb ai/a					
1	----chlorimuron	9.199999		0.0172						
1	----flumioxazin	29.2		0.0547						
1	----thifensulfuron	2.9		0.00543						
2	10days Pre-Plant					10days PP	C			
2	Low Rye Biomass							.	0.0 a	0.0 a
1	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
1	Envive Premix	41.3	WG	0.0774	lb ai/a					
1	----chlorimuron	9.199999		0.0172						
1	----flumioxazin	29.2		0.0547						
1	----thifensulfuron	2.9		0.00543						
2	10days Pre-Plant					10days PP	C			
3	No Rye - NT							.	0.0 a	0.0 a
1	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
1	Envive Premix	41.3	WG	0.0774	lb ai/a					
1	----chlorimuron	9.199999		0.0172						
1	----flumioxazin	29.2		0.0547						
1	----thifensulfuron	2.9		0.00543						
2	10days Pre-Plant					10days PP	C			
1	High Rye Biomass							286.0 a	0.0 a	0.0 a
1	30% Urea Ammonium Nitrate	3.25	L	60	lb ai/a	ESpring	A			
2	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
2	10days Pre-Plant					10days PP	C			
2	Low Rye Biomass							222.3 a	0.0 a	0.0 a
2	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
2	10days Pre-Plant					10days PP	C			
3	No Rye - NT							89.7 a	0.0 a	0.0 a
2	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
2	10days Pre-Plant					10days PP	C			
	LSD P=.05							122.83	0.39	0.28
	Standard Deviation							69.04	0.23	0.17
	CV							41.98	276.34	600.00

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	ANVCR Sp.anoda	IPOSS mornglry	DIGSA L.crbgrs
	Pest Code							ANVCR	IPOSS	DIGSA
	Pest Name							Sp.anoda	mornglry	L.crbgrs
	Crop Code									
	Crop Name									
	Rating Type							Pres/Abs	Pres/Abs	Pres/Abs
	Rating Unit							0,1,2	0,1,2	0,1,2
	Rating Date							06/05/15	06/05/15	06/05/15
	TABLE OF R MEANS									
	Replicate 1							0.8	0.9	0.2
	Replicate 2							0.9	1.5	0.4
	Replicate 3							1.3	1.5	0.9
	TABLE OF A (Rye cover) MEANS									
1	High Rye Biomass							0.7 a	0.8 b	0.3 a
1	30% Urea Ammonium Nitrate	3.25	L	60	lb ai/a	ESpring	A			
2	Low Rye Biomass							1.0 a	1.6 a	0.6 a
3	No Rye - NT							1.3 a	1.6 a	0.7 a
	LSD P=.05							0.56	0.62	0.51
	Standard Deviation							0.67	0.74	0.60
	CV							68.57	56.44	119.34
	TABLE OF B (Burndown Treatments) MEANS									
1	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a			0.3 b	1.1 a	0.2 b
1	Envive Premix	41.3	WG	0.0774	lb ai/a					
1	----chlorimuron	9.199999		0.0172						
1	----flumioxazin	29.2		0.0547						
1	----thifensulfuron	2.9		0.00543						
2	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a			1.6 a	1.6 a	0.8 a
	LSD P=.05							0.46	0.51	0.41
	Standard Deviation							0.67	0.74	0.60
	CV							68.57	56.44	119.34
	TABLE OF C (Timing of Burndowns) MEANS									
1	20days Early Pre-Plant					20days EPP	B	0.9 a	1.5 a	0.7 a
2	10days Pre-Plant					10days PP	C	1.0 a	1.1 a	0.3 a
	LSD P=.05							0.46	0.51	0.41
	Standard Deviation							0.67	0.74	0.60
	CV							68.57	56.44	119.34
	TABLE OF A (Rye cover) B (Burndown Treatments) MEANS									
1	High Rye Biomass							0.0 a	0.5 a	0.0 a
1	30% Urea Ammonium Nitrate	3.25	L	60	lb ai/a	ESpring	A			
1	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
1	Envive Premix	41.3	WG	0.0774	lb ai/a					
1	----chlorimuron	9.199999		0.0172						
1	----flumioxazin	29.2		0.0547						
1	----thifensulfuron	2.9		0.00543						

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	ANVCR	IPOSS	DIGSA
	Pest Code							ANVCR	IPOSS	DIGSA
	Pest Name							Sp.anoda	mornglry	L.crbgrs
	Crop Code									
	Crop Name									
	Rating Type							Pres/Abs	Pres/Abs	Pres/Abs
	Rating Unit							0,1,2	0,1,2	0,1,2
	Rating Date							06/05/15	06/05/15	06/05/15
2	Low Rye Biomass							0.2 a	1.2 a	0.3 a
1	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
1	Envive Premix	41.3	WG	0.0774	lb ai/a					
1	----chlorimuron	9.199999		0.0172						
1	----flumioxazin	29.2		0.0547						
1	----thifensulfuron	2.9		0.00543						
3	No Rye - NT							0.8 a	1.5 a	0.3 a
1	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
1	Envive Premix	41.3	WG	0.0774	lb ai/a					
1	----chlorimuron	9.199999		0.0172						
1	----flumioxazin	29.2		0.0547						
1	----thifensulfuron	2.9		0.00543						
1	High Rye Biomass							1.3 a	1.0 a	0.5 a
1	30% Urea Ammonium Nitrate	3.25	L	60	lb ai/a	ESpring	A			
2	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
2	Low Rye Biomass							1.8 a	2.0 a	0.8 a
2	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
3	No Rye - NT							1.7 a	1.7 a	1.0 a
2	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
LSD P=.05								0.80	0.88	0.71
Standard Deviation								0.67	0.74	0.60
CV								68.57	56.44	119.34
TABLE OF A (Rye cover) C (Timing of Burndowns) MEANS										
1	High Rye Biomass							0.5 a	0.8 a	0.2 a
1	30% Urea Ammonium Nitrate	3.25	L	60	lb ai/a	ESpring	A			
1	20days Early Pre-Plant					20days EPP	B			
2	Low Rye Biomass							0.8 a	1.7 a	0.8 a
1	20days Early Pre-Plant					20days EPP	B			
3	No Rye - NT							1.5 a	2.0 a	1.0 a
1	20days Early Pre-Plant					20days EPP	B			
1	High Rye Biomass							0.8 a	0.7 a	0.3 a
1	30% Urea Ammonium Nitrate	3.25	L	60	lb ai/a	ESpring	A			
2	10days Pre-Plant					10days PP	C			
2	Low Rye Biomass							1.2 a	1.5 a	0.3 a
2	10days Pre-Plant					10days PP	C			
3	No Rye - NT							1.0 a	1.2 a	0.3 a
2	10days Pre-Plant					10days PP	C			
LSD P=.05								0.80	0.88	0.71
Standard Deviation								0.67	0.74	0.60
CV								68.57	56.44	119.34
TABLE OF B (Burndown Treatments) C (Timing of Burndowns) MEANS										
1	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a			0.3 a	1.3 a	0.3 a
1	Envive Premix	41.3	WG	0.0774	lb ai/a					
1	----chlorimuron	9.199999		0.0172						
1	----flumioxazin	29.2		0.0547						
1	----thifensulfuron	2.9		0.00543						
1	20days Early Pre-Plant					20days EPP	B			
2	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a			1.6 a	1.7 a	1.0 a
1	20days Early Pre-Plant					20days EPP	B			

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	ANVCR Sp.anoda	IPOSS mornglry	DIGSA L.crbgrs
	Pest Code									
	Pest Name							ANVCR Sp.anoda	IPOSS mornglry	DIGSA L.crbgrs
	Crop Code									
	Crop Name									
	Rating Type							Pres/Abs	Pres/Abs	Pres/Abs
	Rating Unit							0,1,2	0,1,2	0,1,2
	Rating Date							06/05/15	06/05/15	06/05/15
1	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a			0.3 a	0.8 a	0.1 a
1	Envive Premix	41.3	WG	0.0774	lb ai/a					
1	----chlorimuron	9.199999		0.0172						
1	----flumioxazin	29.2		0.0547						
1	----thifensulfuron	2.9		0.00543						
2	10days Pre-Plant					10days PP	C			
2	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a			1.7 a	1.4 a	0.6 a
2	10days Pre-Plant					10days PP	C			
LSD P=.05								0.65	0.72	0.58
Standard Deviation								0.67	0.74	0.60
CV								68.57	56.44	119.34
TABLE OF A (Rye cover) B (Burndown Treatments) C (Timing of Burndowns) MEANS										
1	High Rye Biomass							0.0 a	0.7 a	0.0 a
1	30% Urea Ammonium Nitrate	3.25	L	60	lb ai/a	ESpring	A			
1	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
1	Envive Premix	41.3	WG	0.0774	lb ai/a					
1	----chlorimuron	9.199999		0.0172						
1	----flumioxazin	29.2		0.0547						
1	----thifensulfuron	2.9		0.00543						
1	20days Early Pre-Plant					20days EPP	B			
2	Low Rye Biomass							0.0 a	1.3 a	0.7 a
1	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
1	Envive Premix	41.3	WG	0.0774	lb ai/a					
1	----chlorimuron	9.199999		0.0172						
1	----flumioxazin	29.2		0.0547						
1	----thifensulfuron	2.9		0.00543						
1	20days Early Pre-Plant					20days EPP	B			
3	No Rye - NT							1.0 a	2.0 a	0.3 a
1	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
1	Envive Premix	41.3	WG	0.0774	lb ai/a					
1	----chlorimuron	9.199999		0.0172						
1	----flumioxazin	29.2		0.0547						
1	----thifensulfuron	2.9		0.00543						
1	20days Early Pre-Plant					20days EPP	B			
1	High Rye Biomass							1.0 a	1.0 a	0.3 a
1	30% Urea Ammonium Nitrate	3.25	L	60	lb ai/a	ESpring	A			
2	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
1	20days Early Pre-Plant					20days EPP	B			
2	Low Rye Biomass							1.7 a	2.0 a	1.0 a
2	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
1	20days Early Pre-Plant					20days EPP	B			
3	No Rye - NT							2.0 a	2.0 a	1.7 a
2	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
1	20days Early Pre-Plant					20days EPP	B			

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Pest Code								ANVCR	IPOSS	DIGSA
Pest Name								Sp.anoda	mornglry	L.crbgrs
Crop Code										
Crop Name										
Rating Type								Pres/Abs	Pres/Abs	Pres/Abs
Rating Unit								0,1,2	0,1,2	0,1,2
Rating Date								06/05/15	06/05/15	06/05/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code			
1	High Rye Biomass							0.0 a	0.3 a	0.0 a
1	30% Urea Ammonium Nitrate	3.25	L	60	lb ai/a	ESpring	A			
1	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
1	Envive Premix	41.3	WG	0.0774	lb ai/a					
1	----chlorimuron	9.199999		0.0172						
1	----flumioxazin	29.2		0.0547						
1	----thifensulfuron	2.9		0.00543						
2	10days Pre-Plant					10days PP	C			
2	Low Rye Biomass							0.3 a	1.0 a	0.0 a
1	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
1	Envive Premix	41.3	WG	0.0774	lb ai/a					
1	----chlorimuron	9.199999		0.0172						
1	----flumioxazin	29.2		0.0547						
1	----thifensulfuron	2.9		0.00543						
2	10days Pre-Plant					10days PP	C			
3	No Rye - NT							0.7 a	1.0 a	0.3 a
1	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
1	Envive Premix	41.3	WG	0.0774	lb ai/a					
1	----chlorimuron	9.199999		0.0172						
1	----flumioxazin	29.2		0.0547						
1	----thifensulfuron	2.9		0.00543						
2	10days Pre-Plant					10days PP	C			
1	High Rye Biomass							1.7 a	1.0 a	0.7 a
1	30% Urea Ammonium Nitrate	3.25	L	60	lb ai/a	ESpring	A			
2	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
2	10days Pre-Plant					10days PP	C			
2	Low Rye Biomass							2.0 a	2.0 a	0.7 a
2	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
2	10days Pre-Plant					10days PP	C			
3	No Rye - NT							1.3 a	1.3 a	0.3 a
2	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
2	10days Pre-Plant					10days PP	C			
LSD P=.05								1.13	1.25	1.01
Standard Deviation								0.67	0.74	0.60
CV								68.57	56.44	119.34

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	WntrAnns	AMAPA PalmerAm	IPOSS mornglry
	Pest Code								AMAPA	IPOSS
	Pest Name							WntrAnns	PalmerAm	mornglry
	Crop Code									
	Crop Name									
	Rating Type							Pres/Abs	Control	Control
	Rating Unit							0,1,2	%	%
	Rating Date							06/05/15	06/25/15	06/25/15
	TABLE OF R MEANS									
	Replicate 1							0.0	81.6	67.3
	Replicate 2							0.0	89.4	52.5
	Replicate 3							0.0	92.2	53.6
	TABLE OF A (Rye cover) MEANS									
1	High Rye Biomass							0.0 a	93.3 a	68.6 a
1	30% Urea Ammonium Nitrate	3.25	L	60	lb ai/a	ESpring	A			
2	Low Rye Biomass							0.0 a	86.6 b	55.7 a
3	No Rye - NT							0.0 a	83.3 b	49.1 a
	LSD P=.05							.	6.23	19.11
	Standard Deviation							0.00	7.30	22.36
	CV							0.00	8.32	38.71
	TABLE OF B (Burndown Treatments) MEANS									
1	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a			0.0 a	99.6 a	62.7 a
1	Envive Premix	41.3	WG	0.0774	lb ai/a					
1	----chlorimuron	9.199999		0.0172						
1	----flumioxazin	29.2		0.0547						
1	----thifensulfuron	2.9		0.00543						
2	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a			0.0 a	75.9 b	52.8 a
	LSD P=.05							.	5.09	15.60
	Standard Deviation							0.00	7.30	22.36
	CV							0.00	8.32	38.71
	TABLE OF C (Timing of Burndowns) MEANS									
1	20days Early Pre-Plant					20days EPP	B	0.0 a	86.7 a	50.6 a
2	10days Pre-Plant					10days PP	C	0.0 a	88.7 a	64.9 a
	LSD P=.05							.	5.09	15.60
	Standard Deviation							0.00	7.30	22.36
	CV							0.00	8.32	38.71
	TABLE OF A (Rye cover) B (Burndown Treatments) MEANS									
1	High Rye Biomass							0.0 a	98.7 a	72.6 a
1	30% Urea Ammonium Nitrate	3.25	L	60	lb ai/a	ESpring	A			
1	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
1	Envive Premix	41.3	WG	0.0774	lb ai/a					
1	----chlorimuron	9.199999		0.0172						
1	----flumioxazin	29.2		0.0547						
1	----thifensulfuron	2.9		0.00543						

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	WntrAnns	AMAPA PalmerAm	IPOSS mornglry
	Pest Code								AMAPA	IPOSS
	Pest Name							WntrAnns	PalmerAm	mornglry
	Crop Code									
	Crop Name									
	Rating Type							Pres/Abs	Control	Control
	Rating Unit							0,1,2	%	%
	Rating Date							06/05/15	06/25/15	06/25/15
2	Low Rye Biomass							0.0 a	100.0 a	60.5 a
1	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
1	Envive Premix	41.3	WG	0.0774	lb ai/a					
1	----chlorimuron	9.199999		0.0172						
1	----flumioxazin	29.2		0.0547						
1	----thifensulfuron	2.9		0.00543						
3	No Rye - NT							0.0 a	100.0 a	55.2 a
1	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
1	Envive Premix	41.3	WG	0.0774	lb ai/a					
1	----chlorimuron	9.199999		0.0172						
1	----flumioxazin	29.2		0.0547						
1	----thifensulfuron	2.9		0.00543						
1	High Rye Biomass							0.0 a	87.9 b	64.6 a
1	30% Urea Ammonium Nitrate	3.25	L	60	lb ai/a	ESpring	A			
2	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
2	Low Rye Biomass							0.0 a	73.1 c	50.8 a
2	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
3	No Rye - NT							0.0 a	66.7 c	43.0 a
2	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
LSD P=.05								.	8.82	27.02
Standard Deviation								0.00	7.30	22.36
CV								0.00	8.32	38.71
TABLE OF A (Rye cover) C (Timing of Burndowns) MEANS										
1	High Rye Biomass							0.0 a	94.6 a	65.0 a
1	30% Urea Ammonium Nitrate	3.25	L	60	lb ai/a	ESpring	A			
1	20days Early Pre-Plant					20days EPP	B			
2	Low Rye Biomass							0.0 a	83.9 a	46.3 a
1	20days Early Pre-Plant					20days EPP	B			
3	No Rye - NT							0.0 a	81.7 a	40.5 a
1	20days Early Pre-Plant					20days EPP	B			
1	High Rye Biomass							0.0 a	92.0 a	72.2 a
1	30% Urea Ammonium Nitrate	3.25	L	60	lb ai/a	ESpring	A			
2	10days Pre-Plant					10days PP	C			
2	Low Rye Biomass							0.0 a	89.2 a	65.0 a
2	10days Pre-Plant					10days PP	C			
3	No Rye - NT							0.0 a	85.0 a	57.7 a
2	10days Pre-Plant					10days PP	C			
LSD P=.05								.	8.82	27.02
Standard Deviation								0.00	7.30	22.36
CV								0.00	8.32	38.71
TABLE OF B (Burndown Treatments) C (Timing of Burndowns) MEANS										
1	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a			0.0 a	99.1 a	53.2 a
1	Envive Premix	41.3	WG	0.0774	lb ai/a					
1	----chlorimuron	9.199999		0.0172						
1	----flumioxazin	29.2		0.0547						
1	----thifensulfuron	2.9		0.00543						
1	20days Early Pre-Plant					20days EPP	B			
2	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a			0.0 a	74.3 a	48.0 a
1	20days Early Pre-Plant					20days EPP	B			

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	WntrAnns	AMAPA PalmerAm	IPOSS mornglry
	Pest Code								AMAPA	IPOSS
	Pest Name							WntrAnns	PalmerAm	mornglry
	Crop Code									
	Crop Name									
	Rating Type							Pres/Abs	Control	Control
	Rating Unit							0,1,2	%	%
	Rating Date							06/05/15	06/25/15	06/25/15
1	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a			0.0 a	100.0 a	72.3 a
1	Envive Premix	41.3	WG	0.0774	lb ai/a					
1	----chlorimuron	9.199999		0.0172						
1	----flumioxazin	29.2		0.0547						
1	----thifensulfuron	2.9		0.00543						
2	10days Pre-Plant					10days PP	C			
2	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a			0.0 a	77.4 a	57.6 a
2	10days Pre-Plant					10days PP	C			
LSD P=.05								.	7.20	22.07
Standard Deviation								0.00	7.30	22.36
CV								0.00	8.32	38.71
TABLE OF A (Rye cover) B (Burndown Treatments) C (Timing of Burndowns) MEANS										
1	High Rye Biomass							0.0 a	97.3 a	66.8 a
1	30% Urea Ammonium Nitrate	3.25	L	60	lb ai/a	ESpring	A			
1	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
1	Envive Premix	41.3	WG	0.0774	lb ai/a					
1	----chlorimuron	9.199999		0.0172						
1	----flumioxazin	29.2		0.0547						
1	----thifensulfuron	2.9		0.00543						
1	20days Early Pre-Plant					20days EPP	B			
2	Low Rye Biomass							0.0 a	100.0 a	46.0 a
1	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
1	Envive Premix	41.3	WG	0.0774	lb ai/a					
1	----chlorimuron	9.199999		0.0172						
1	----flumioxazin	29.2		0.0547						
1	----thifensulfuron	2.9		0.00543						
1	20days Early Pre-Plant					20days EPP	B			
3	No Rye - NT							0.0 a	100.0 a	46.7 a
1	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
1	Envive Premix	41.3	WG	0.0774	lb ai/a					
1	----chlorimuron	9.199999		0.0172						
1	----flumioxazin	29.2		0.0547						
1	----thifensulfuron	2.9		0.00543						
1	20days Early Pre-Plant					20days EPP	B			
1	High Rye Biomass							0.0 a	91.8 a	63.2 a
1	30% Urea Ammonium Nitrate	3.25	L	60	lb ai/a	ESpring	A			
2	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
1	20days Early Pre-Plant					20days EPP	B			
2	Low Rye Biomass							0.0 a	67.9 a	46.7 a
2	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
1	20days Early Pre-Plant					20days EPP	B			
3	No Rye - NT							0.0 a	63.3 a	34.3 a
2	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
1	20days Early Pre-Plant					20days EPP	B			

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	WntrAnns	AMAPA PalmerAm	IPOSS mornglry
	Pest Code								AMAPA	IPOSS
	Pest Name							WntrAnns	PalmerAm	mornglry
	Crop Code									
	Crop Name									
	Rating Type							Pres/Abs	Control	Control
	Rating Unit							0,1,2	%	%
	Rating Date							06/05/15	06/25/15	06/25/15
1	High Rye Biomass							0.0 a	100.0 a	78.3 a
1	30% Urea Ammonium Nitrate	3.25	L	60	lb ai/a	ESpring	A			
1	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
1	Envive Premix	41.3	WG	0.0774	lb ai/a					
1	----chlorimuron	9.199999		0.0172						
1	----flumioxazin	29.2		0.0547						
1	----thifensulfuron	2.9		0.00543						
2	10days Pre-Plant					10days PP	C			
2	Low Rye Biomass							0.0 a	100.0 a	75.0 a
1	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
1	Envive Premix	41.3	WG	0.0774	lb ai/a					
1	----chlorimuron	9.199999		0.0172						
1	----flumioxazin	29.2		0.0547						
1	----thifensulfuron	2.9		0.00543						
2	10days Pre-Plant					10days PP	C			
3	No Rye - NT							0.0 a	100.0 a	63.7 a
1	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
1	Envive Premix	41.3	WG	0.0774	lb ai/a					
1	----chlorimuron	9.199999		0.0172						
1	----flumioxazin	29.2		0.0547						
1	----thifensulfuron	2.9		0.00543						
2	10days Pre-Plant					10days PP	C			
1	High Rye Biomass							0.0 a	84.0 a	66.0 a
1	30% Urea Ammonium Nitrate	3.25	L	60	lb ai/a	ESpring	A			
2	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
2	10days Pre-Plant					10days PP	C			
2	Low Rye Biomass							0.0 a	78.3 a	55.0 a
2	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
2	10days Pre-Plant					10days PP	C			
3	No Rye - NT							0.0 a	70.0 a	51.7 a
2	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
2	10days Pre-Plant					10days PP	C			
	LSD P=.05							.	12.47	38.22
	Standard Deviation							0.00	7.30	22.36
	CV							0.00	8.32	38.71

Pest Code							GGGAN	ANVCR	AMAPA
Pest Name							AnnGrass	Sp.anoda	PalmerAm
Crop Code									
Crop Name									
Rating Type							Control	Control	Control
Rating Unit							%	0-5	%
Rating Date							06/25/15	06/25/15	08/01/15
Trt No. Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code			
TABLE OF R MEANS									
Replicate 1							76.9	3.10	88.6
Replicate 2							81.1	2.75	96.3
Replicate 3							70.7	3.21	97.4
TABLE OF A (Rye cover) MEANS									
1 High Rye Biomass							85.1 a	3.46 a	98.3 a
1 30% Urea Ammonium Nitrate	3.25	L	60	lb ai/a	ESpring	A			
2 Low Rye Biomass							77.9 a	2.96 ab	95.3 ab
3 No Rye - NT							65.7 b	2.64 b	88.7 b
LSD P=.05							11.85	0.544	6.87
Standard Deviation							13.92	0.631	8.11
CV							18.25	20.907	8.63
TABLE OF B (Burndown Treatments) MEANS									
1 Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a			87.1 a	3.63 a	100.0 a
1 Envive Premix	41.3	WG	0.0774	lb ai/a					
1 ----chlorimuron	9.199999		0.0172						
1 ----flumioxazin	29.2		0.0547						
1 ----thifensulfuron	2.9		0.00543						
2 Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a			65.3 b	2.41 b	88.2 b
LSD P=.05							9.68	0.444	5.61
Standard Deviation							13.92	0.631	8.11
CV							18.25	20.907	8.63
TABLE OF C (Timing of Burndowns) MEANS									
1 20days Early Pre-Plant					20days EPP	B	70.1 b	3.29 a	94.0 a
2 10days Pre-Plant					10days PP	C	82.4 a	2.75 b	94.2 a
LSD P=.05							9.68	0.444	5.61
Standard Deviation							13.92	0.631	8.11
CV							18.25	20.907	8.63
TABLE OF A (Rye cover) B (Burndown Treatments) MEANS									
1 High Rye Biomass							90.9 a	3.86 a	100.0 a
1 30% Urea Ammonium Nitrate	3.25	L	60	lb ai/a	ESpring	A			
1 Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
1 Envive Premix	41.3	WG	0.0774	lb ai/a					
1 ----chlorimuron	9.199999		0.0172						
1 ----flumioxazin	29.2		0.0547						
1 ----thifensulfuron	2.9		0.00543						

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	GGGAN AnnGrass	ANVCR Sp.anoda	AMAPA PalmerAm
	Pest Code							GGGAN	ANVCR	AMAPA
	Pest Name							AnnGrass	Sp.anoda	PalmerAm
	Crop Code									
	Crop Name									
	Rating Type							Control	Control	Control
	Rating Unit							%	0-5	%
	Rating Date							06/25/15	06/25/15	08/01/15
2	Low Rye Biomass							89.2 a	3.75 a	100.0 a
1	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
1	Envive Premix	41.3	WG	0.0774	lb ai/a					
1	----chlorimuron	9.199999		0.0172						
1	----flumioxazin	29.2		0.0547						
1	----thifensulfuron	2.9		0.00543						
3	No Rye - NT							81.3 a	3.27 a	100.0 a
1	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
1	Envive Premix	41.3	WG	0.0774	lb ai/a					
1	----chlorimuron	9.199999		0.0172						
1	----flumioxazin	29.2		0.0547						
1	----thifensulfuron	2.9		0.00543						
1	High Rye Biomass							79.4 a	3.06 a	96.7 a
1	30% Urea Ammonium Nitrate	3.25	L	60	lb ai/a	ESpring	A			
2	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
2	Low Rye Biomass							66.7 a	2.17 a	90.5 a
2	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
3	No Rye - NT							50.0 a	2.00 a	77.3 b
2	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
LSD P=.05								16.76	0.769	9.72
Standard Deviation								13.92	0.631	8.11
CV								18.25	20.907	8.63
TABLE OF A (Rye cover) C (Timing of Burndowns) MEANS										
1	High Rye Biomass							81.9 a	3.84 a	100.0 a
1	30% Urea Ammonium Nitrate	3.25	L	60	lb ai/a	ESpring	A			
1	20days Early Pre-Plant					20days EPP	B			
2	Low Rye Biomass							72.5 a	3.19 a	93.3 a
1	20days Early Pre-Plant					20days EPP	B			
3	No Rye - NT							55.8 a	2.83 a	88.7 a
1	20days Early Pre-Plant					20days EPP	B			
1	High Rye Biomass							88.3 a	3.08 a	96.7 a
1	30% Urea Ammonium Nitrate	3.25	L	60	lb ai/a	ESpring	A			
2	10days Pre-Plant					10days PP	C			
2	Low Rye Biomass							83.3 a	2.73 a	97.2 a
2	10days Pre-Plant					10days PP	C			
3	No Rye - NT							75.5 a	2.44 a	88.7 a
2	10days Pre-Plant					10days PP	C			
LSD P=.05								16.76	0.769	9.72
Standard Deviation								13.92	0.631	8.11
CV								18.25	20.907	8.63
TABLE OF B (Burndown Treatments) C (Timing of Burndowns) MEANS										
1	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a			82.6 a	4.03 a	100.0 a
1	Envive Premix	41.3	WG	0.0774	lb ai/a					
1	----chlorimuron	9.199999		0.0172						
1	----flumioxazin	29.2		0.0547						
1	----thifensulfuron	2.9		0.00543						
1	20days Early Pre-Plant					20days EPP	B			
2	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a			57.6 a	2.54 a	88.0 a
1	20days Early Pre-Plant					20days EPP	B			

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	GGGAN AnnGrass	ANVCR Sp.anoda	AMAPA PalmerAm
Pest Code								GGGAN	ANVCR	AMAPA
Pest Name								AnnGrass	Sp.anoda	PalmerAm
Crop Code										
Crop Name										
Rating Type								Control	Control	Control
Rating Unit								%	0-5	%
Rating Date								06/25/15	06/25/15	08/01/15
1	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a			91.7 a	3.22 a	100.0 a
1	Envive Premix	41.3	WG	0.0774	lb ai/a					
1	----chlorimuron	9.199999		0.0172						
1	----flumioxazin	29.2		0.0547						
1	----thifensulfuron	2.9		0.00543						
2	10days Pre-Plant					10days PP	C			
2	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a			73.1 a	2.28 a	88.3 a
2	10days Pre-Plant					10days PP	C			
LSD P=.05								13.68	0.628	7.93
Standard Deviation								13.92	0.631	8.11
CV								18.25	20.907	8.63
TABLE OF A (Rye cover) B (Burndown Treatments) C (Timing of Burndowns) MEANS										
1	High Rye Biomass							89.4 a	4.06 a	100.0 a
1	30% Urea Ammonium Nitrate	3.25	L	60	lb ai/a	ESpring	A			
1	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
1	Envive Premix	41.3	WG	0.0774	lb ai/a					
1	----chlorimuron	9.199999		0.0172						
1	----flumioxazin	29.2		0.0547						
1	----thifensulfuron	2.9		0.00543						
1	20days Early Pre-Plant					20days EPP	B			
2	Low Rye Biomass							86.7 a	4.38 a	100.0 a
1	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
1	Envive Premix	41.3	WG	0.0774	lb ai/a					
1	----chlorimuron	9.199999		0.0172						
1	----flumioxazin	29.2		0.0547						
1	----thifensulfuron	2.9		0.00543						
1	20days Early Pre-Plant					20days EPP	B			
3	No Rye - NT							71.7 a	3.67 a	100.0 a
1	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
1	Envive Premix	41.3	WG	0.0774	lb ai/a					
1	----chlorimuron	9.199999		0.0172						
1	----flumioxazin	29.2		0.0547						
1	----thifensulfuron	2.9		0.00543						
1	20days Early Pre-Plant					20days EPP	B			
1	High Rye Biomass							74.4 a	3.63 a	100.0 a
1	30% Urea Ammonium Nitrate	3.25	L	60	lb ai/a	ESpring	A			
2	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
1	20days Early Pre-Plant					20days EPP	B			
2	Low Rye Biomass							58.3 a	2.00 a	86.7 a
2	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
1	20days Early Pre-Plant					20days EPP	B			
3	No Rye - NT							40.0 a	2.00 a	77.3 a
2	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
1	20days Early Pre-Plant					20days EPP	B			

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	GGGAN AnnGrass	ANVCR Sp.anoda	AMAPA PalmerAm
	Pest Code							GGGAN	ANVCR	AMAPA
	Pest Name							AnnGrass	Sp.anoda	PalmerAm
	Crop Code									
	Crop Name									
	Rating Type							Control	Control	Control
	Rating Unit							%	0-5	%
	Rating Date							06/25/15	06/25/15	08/01/15
1	High Rye Biomass							92.3 a	3.67 a	100.0 a
1	30% Urea Ammonium Nitrate	3.25	L	60	lb ai/a	ESpring	A			
1	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
1	Envive Premix	41.3	WG	0.0774	lb ai/a					
1	----chlorimuron	9.199999		0.0172						
1	----flumioxazin	29.2		0.0547						
1	----thifensulfuron	2.9		0.00543						
2	10days Pre-Plant					10days PP	C			
2	Low Rye Biomass							91.7 a	3.13 a	100.0 a
1	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
1	Envive Premix	41.3	WG	0.0774	lb ai/a					
1	----chlorimuron	9.199999		0.0172						
1	----flumioxazin	29.2		0.0547						
1	----thifensulfuron	2.9		0.00543						
2	10days Pre-Plant					10days PP	C			
3	No Rye - NT							91.0 a	2.88 a	100.0 a
1	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
1	Envive Premix	41.3	WG	0.0774	lb ai/a					
1	----chlorimuron	9.199999		0.0172						
1	----flumioxazin	29.2		0.0547						
1	----thifensulfuron	2.9		0.00543						
2	10days Pre-Plant					10days PP	C			
1	High Rye Biomass							84.3 a	2.50 a	93.3 a
1	30% Urea Ammonium Nitrate	3.25	L	60	lb ai/a	ESpring	A			
2	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
2	10days Pre-Plant					10days PP	C			
2	Low Rye Biomass							75.0 a	2.33 a	94.3 a
2	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
2	10days Pre-Plant					10days PP	C			
3	No Rye - NT							60.0 a	2.00 a	77.3 a
2	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a					
2	10days Pre-Plant					10days PP	C			
	LSD P=.05							23.70	1.087	13.74
	Standard Deviation							13.92	0.631	8.11
	CV							18.25	20.907	8.63

Pest Code							IPOSS	
Pest Name							mornglry	
Crop Code								GLXMA
Crop Name								Soybean
Rating Type							Control	Yield
Rating Unit							%	Bu/A
Rating Date							08/01/15	10/22/15
Trt No. Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code		
TABLE OF R MEANS								
Replicate 1							88.2	31.5
Replicate 2							83.1	32.7
Replicate 3							82.8	31.9
TABLE OF A (Rye cover) MEANS								
1 High Rye Biomass							84.7 a	32.1 a
1 30% Urea Ammonium Nitrate	3.25	L	60	lb ai/a	ESpring	A		
2 Low Rye Biomass							87.3 a	32.6 a
3 No Rye - NT							82.0 a	31.3 a
LSD P=.05							11.70	3.27
Standard Deviation							13.82	3.86
CV							16.32	12.06
TABLE OF B (Burndown Treatments) MEANS								
1 Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a			85.3 a	32.1 a
1 Envive Premix	41.3	WG	0.0774	lb ai/a				
1 ----chlorimuron	9.199999		0.0172					
1 ----flumioxazin	29.2		0.0547					
1 ----thifensulfuron	2.9		0.00543					
2 Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a			84.1 a	32.0 a
LSD P=.05							9.55	2.67
Standard Deviation							13.82	3.86
CV							16.32	12.06
TABLE OF C (Timing of Burndowns) MEANS								
1 20days Early Pre-Plant					20days EPP	B	79.8 b	31.1 a
2 10days Pre-Plant					10days PP	C	89.5 a	32.9 a
LSD P=.05							9.55	2.67
Standard Deviation							13.82	3.86
CV							16.32	12.06
TABLE OF A (Rye cover) B (Burndown Treatments) MEANS								
1 High Rye Biomass							87.2 a	32.9 a
1 30% Urea Ammonium Nitrate	3.25	L	60	lb ai/a	ESpring	A		
1 Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a				
1 Envive Premix	41.3	WG	0.0774	lb ai/a				
1 ----chlorimuron	9.199999		0.0172					
1 ----flumioxazin	29.2		0.0547					
1 ----thifensulfuron	2.9		0.00543					

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	IPOSS morngIry Control % 08/01/15	GLXMA Soybean Yield Bu/A 10/22/15
2	Low Rye Biomass							86.3 a	30.7 a
1	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a				
1	Envive Premix	41.3	WG	0.0774	lb ai/a				
1	----chlorimuron	9.199999		0.0172					
1	----flumioxazin	29.2		0.0547					
1	----thifensulfuron	2.9		0.00543					
3	No Rye - NT							82.3 a	32.6 a
1	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a				
1	Envive Premix	41.3	WG	0.0774	lb ai/a				
1	----chlorimuron	9.199999		0.0172					
1	----flumioxazin	29.2		0.0547					
1	----thifensulfuron	2.9		0.00543					
1	High Rye Biomass							82.2 a	31.4 a
1	30% Urea Ammonium Nitrate	3.25	L	60	lb ai/a	ESpring	A		
2	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a				
2	Low Rye Biomass							88.3 a	34.6 a
2	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a				
3	No Rye - NT							81.7 a	30.0 a
2	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a				
LSD P=.05								16.55	4.63
Standard Deviation								13.82	3.86
CV								16.32	12.06
TABLE OF A (Rye cover) C (Timing of Burndowns) MEANS									
1	High Rye Biomass							80.0 a	30.9 a
1	30% Urea Ammonium Nitrate	3.25	L	60	lb ai/a	ESpring	A		
1	20days Early Pre-Plant					20days EPP	B		
2	Low Rye Biomass							80.0 a	29.9 a
1	20days Early Pre-Plant					20days EPP	B		
3	No Rye - NT							79.5 a	32.6 a
1	20days Early Pre-Plant					20days EPP	B		
1	High Rye Biomass							89.3 a	33.4 a
1	30% Urea Ammonium Nitrate	3.25	L	60	lb ai/a	ESpring	A		
2	10days Pre-Plant					10days PP	C		
2	Low Rye Biomass							94.7 a	35.3 a
2	10days Pre-Plant					10days PP	C		
3	No Rye - NT							84.5 a	30.1 a
2	10days Pre-Plant					10days PP	C		
LSD P=.05								16.55	4.63
Standard Deviation								13.82	3.86
CV								16.32	12.06
TABLE OF B (Burndown Treatments) C (Timing of Burndowns) MEANS									
1	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a			80.2 a	30.7 a
1	Envive Premix	41.3	WG	0.0774	lb ai/a				
1	----chlorimuron	9.199999		0.0172					
1	----flumioxazin	29.2		0.0547					
1	----thifensulfuron	2.9		0.00543					
1	20days Early Pre-Plant					20days EPP	B		
2	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a			79.4 a	31.5 a
1	20days Early Pre-Plant					20days EPP	B		

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	IPOSS morngIry Control % 08/01/15	GLXMA Soybean Yield Bu/A 10/22/15
1	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a			90.3 a	33.4 a
1	Envive Premix	41.3	WG	0.0774	lb ai/a				
1	----chlorimuron	9.199999		0.0172					
1	----flumioxazin	29.2		0.0547					
1	----thifensulfuron	2.9		0.00543					
2	10days Pre-Plant					10days PP	C		
2	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a			88.7 a	32.5 a
2	10days Pre-Plant					10days PP	C		
LSD P=.05								13.51	3.78
Standard Deviation								13.82	3.86
CV								16.32	12.06
TABLE OF A (Rye cover) B (Burndown Treatments) C (Timing of Burndowns) MEANS									
1	High Rye Biomass							81.7 a	31.2 a
1	30% Urea Ammonium Nitrate	3.25	L	60	lb ai/a	ESpring	A		
1	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a				
1	Envive Premix	41.3	WG	0.0774	lb ai/a				
1	----chlorimuron	9.199999		0.0172					
1	----flumioxazin	29.2		0.0547					
1	----thifensulfuron	2.9		0.00543					
1	20days Early Pre-Plant					20days EPP	B		
2	Low Rye Biomass							83.3 a	26.2 a
1	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a				
1	Envive Premix	41.3	WG	0.0774	lb ai/a				
1	----chlorimuron	9.199999		0.0172					
1	----flumioxazin	29.2		0.0547					
1	----thifensulfuron	2.9		0.00543					
1	20days Early Pre-Plant					20days EPP	B		
3	No Rye - NT							75.7 a	34.7 a
1	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a				
1	Envive Premix	41.3	WG	0.0774	lb ai/a				
1	----chlorimuron	9.199999		0.0172					
1	----flumioxazin	29.2		0.0547					
1	----thifensulfuron	2.9		0.00543					
1	20days Early Pre-Plant					20days EPP	B		
1	High Rye Biomass							78.3 a	30.5 a
1	30% Urea Ammonium Nitrate	3.25	L	60	lb ai/a	ESpring	A		
2	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a				
1	20days Early Pre-Plant					20days EPP	B		
2	Low Rye Biomass							76.7 a	33.6 a
2	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a				
1	20days Early Pre-Plant					20days EPP	B		
3	No Rye - NT							83.3 a	30.5 a
2	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a				
1	20days Early Pre-Plant					20days EPP	B		

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Pest Code							IPOSS	
Pest Name							morngIry	
Crop Code								GLXMA
Crop Name								Soybean
Rating Type							Control	Yield
Rating Unit							%	Bu/A
Rating Date							08/01/15	10/22/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	
1	High Rye Biomass							92.7 a	34.6 a
1	30% Urea Ammonium Nitrate	3.25	L	60	lb ai/a	ESpring	A	
1	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a			
1	Envive Premix	41.3	WG	0.0774	lb ai/a			
1	----chlorimuron	9.199999		0.0172				
1	----flumioxazin	29.2		0.0547				
1	----thifensulfuron	2.9		0.00543				
2	10days Pre-Plant					10days PP	C	
2	Low Rye Biomass							89.3 a	35.1 a
1	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a			
1	Envive Premix	41.3	WG	0.0774	lb ai/a			
1	----chlorimuron	9.199999		0.0172				
1	----flumioxazin	29.2		0.0547				
1	----thifensulfuron	2.9		0.00543				
2	10days Pre-Plant					10days PP	C	
3	No Rye - NT							89.0 a	30.6 a
1	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a			
1	Envive Premix	41.3	WG	0.0774	lb ai/a			
1	----chlorimuron	9.199999		0.0172				
1	----flumioxazin	29.2		0.0547				
1	----thifensulfuron	2.9		0.00543				
2	10days Pre-Plant					10days PP	C	
1	High Rye Biomass							86.0 a	32.2 a
1	30% Urea Ammonium Nitrate	3.25	L	60	lb ai/a	ESpring	A	
2	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a			
2	10days Pre-Plant					10days PP	C	
2	Low Rye Biomass							100.0 a	35.5 a
2	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a			
2	10days Pre-Plant					10days PP	C	
3	No Rye - NT							80.0 a	29.6 a
2	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a			
2	10days Pre-Plant					10days PP	C	
LSD P=.05								23.40	6.54
Standard Deviation								13.82	3.86
CV								16.32	12.06

Randomized Complete Block (RCB) AOV For SECCE Rye DryWt g/0.25m2 05/12/15 Missing factor B levels prevents analyzing column 1 as Factorial design

Source	DF	Sum of Squares	Mean Square	F	Prob(F)
Total	20	182701.238095			
Replicate	2	20064.666667	10032.333333	2.105	0.1646
Treatment	6	105435.238095	17572.539683	3.686	0.0260
ERROR	12	57201.333333	4766.777778		

FACTORIAL/POOLED ERROR AOV For AMAPA PalmerAm Pres/Abs 0,1,2 06/05/15

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	35	2.750000				
R	2	0.166667	0.083333	1.571	0.2302	
A	2	0.166667	0.083333	1.571	0.2302	0.2
B	1	0.250000	0.250000	4.714	0.0410	0.2
AB	2	0.166667	0.083333	1.571	0.2302	0.3
C	1	0.250000	0.250000	4.714	0.0410	0.2
AC	2	0.166667	0.083333	1.571	0.2302	0.3
BC	1	0.250000	0.250000	4.714	0.0410	0.2
ABC	2	0.166667	0.083333	1.571	0.2302	0.4
ERROR	22	1.166667	0.053030			

FACTORIAL/POOLED ERROR AOV For AMBEL C.ragwd Pres/Abs 0,1,2 06/05/15

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	35	0.972222				
R	2	0.055556	0.027778	1.000	0.3840	
A	2	0.055556	0.027778	1.000	0.3840	0.1
B	1	0.027778	0.027778	1.000	0.3282	0.1
AB	2	0.055556	0.027778	1.000	0.3840	0.2
C	1	0.027778	0.027778	1.000	0.3282	0.1
AC	2	0.055556	0.027778	1.000	0.3840	0.2
BC	1	0.027778	0.027778	1.000	0.3282	0.2
ABC	2	0.055556	0.027778	1.000	0.3840	0.3
ERROR	22	0.611111	0.027778			

FACTORIAL/POOLED ERROR AOV For ANVCR Sp.anoda Pres/Abs 0,1,2 06/05/15

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	35	30.972222				
R	2	1.555556	0.777778	1.750	0.1971	
A	2	2.055556	1.027778	2.313	0.1226	0.6
B	1	14.694444	14.694444	33.063	0.0001	0.5
AB	2	1.055556	0.527778	1.188	0.3238	0.8
C	1	0.027778	0.027778	0.063	0.8049	0.5
AC	2	1.388889	0.694444	1.563	0.2320	0.8
BC	1	0.027778	0.027778	0.063	0.8049	0.7
ABC	2	0.388889	0.194444	0.438	0.6511	1.1
ERROR	22	9.777778	0.444444			

FACTORIAL/POOLED ERROR AOV For IPOSS mornglry Pres/Abs 0,1,2 06/05/15

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	35	25.638889				
R	2	2.722222	1.361111	2.507	0.1045	
A	2	5.555556	2.777778	5.116	0.0150	0.6
B	1	2.250000	2.250000	4.144	0.0540	0.5
AB	2	0.666667	0.333333	0.614	0.5502	0.9
C	1	1.361111	1.361111	2.507	0.1276	0.5
AC	2	0.888889	0.444444	0.819	0.4540	0.9
BC	1	0.250000	0.250000	0.460	0.5045	0.7
ABC	2	0.000000	0.000000	0.000	1.0000	1.2
ERROR	22	11.944444	0.542929			

FACTORIAL/POOLED ERROR AOV For DIGSA L.crbgrs Pres/Abs 0,1,2 06/05/15

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	35	19.000000				
R	2	3.500000	1.750000	4.915	0.0172	
A	2	1.166667	0.583333	1.638	0.2171	0.5
B	1	2.777778	2.777778	7.801	0.0106	0.4
AB	2	0.055556	0.027778	0.078	0.9252	0.7
C	1	1.000000	1.000000	2.809	0.1079	0.4
AC	2	1.166667	0.583333	1.638	0.2171	0.7
BC	1	0.111111	0.111111	0.312	0.5821	0.6
ABC	2	1.388889	0.694444	1.950	0.1660	1.0
ERROR	22	7.833333	0.356061			

FACTORIAL/POOLED ERROR AOV For WntrAnns Pres/Abs 0,1,2 06/05/15

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	35	0.000000				
R	2	0.000000	0.000000	0.000	1.0000	
A	2	0.000000	0.000000	0.000	1.0000	.
B	1	0.000000	0.000000	0.000	1.0000	.
AB	2	0.000000	0.000000	0.000	1.0000	.
C	1	0.000000	0.000000	0.000	1.0000	.
AC	2	0.000000	0.000000	0.000	1.0000	.
BC	1	0.000000	0.000000	0.000	1.0000	.
ABC	2	0.000000	0.000000	0.000	1.0000	.
ERROR	22	0.000000	0.000000			

FACTORIAL/POOLED ERROR AOV For AMAPA PalmerAm Control % 06/25/15 Missing values in column 8 results in unbalanced data, Least Squares Analysis is preferred

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	32	8542.579810				
R	2	728.327844	364.163922	6.840	0.0058	
A	2	618.749758	309.374879	5.811	0.0107	6.2
B	1	5037.215337	5037.215337	94.616	0.0001	5.1
AB	2	812.991432	406.495716	7.635	0.0037	8.8
C	1	35.999851	35.999851	0.676	0.4211	5.1
AC	2	99.260364	49.630182	0.932	0.4110	8.8
BC	1	10.934105	10.934105	0.205	0.6555	7.2
ABC	2	187.565106	93.782553	1.762	0.1987	12.5
ERROR	19	1011.536014	53.238738			

FACTORIAL/POOLED ERROR AOV For IPOSS mornglry Control % 06/25/15 Missing values in column 9 results in unbalanced data, Least Squares Analysis is preferred

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	32	16876.758654				
R	2	1631.874326	815.937163	1.631	0.2219	
A	2	2360.110438	1180.055219	2.359	0.1216	19.1
B	1	890.492967	890.492967	1.780	0.1979	15.6
AB	2	26.899891	13.449946	0.027	0.9735	27.0
C	1	1853.794833	1853.794833	3.706	0.0693	15.6
AC	2	233.544576	116.772288	0.233	0.7940	27.0
BC	1	210.023993	210.023993	0.420	0.5247	22.1
ABC	2	167.173295	83.586648	0.167	0.8473	38.2
ERROR	19	9502.844335	500.149702			

FACTORIAL/POOLED ERROR AOV For GGGAN AnnGrass Control % 06/25/15 Missing values in column 10 results in unbalanced data, Least Squares Analysis is preferred

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	33	13491.205252				
R	2	662.488502	331.244251	1.711	0.2062	
A	2	2320.951609	1160.475804	5.993	0.0091	11.9
B	1	4265.831512	4265.831512	22.028	0.0001	9.7
AB	2	593.623022	296.811511	1.533	0.2403	16.8
C	1	1363.979919	1363.979919	7.043	0.0152	9.7
AC	2	272.552431	136.276216	0.704	0.5066	16.8
BC	1	93.058178	93.058178	0.481	0.4961	13.7
ABC	2	45.689689	22.844844	0.118	0.8893	23.7
ERROR	20	3873.030390	193.651520			

FACTORIAL/POOLED ERROR AOV For ANVCR Sp.anoda Control 0-5 06/25/15 Missing values in column 11 results in unbalanced data, Least Squares Analysis is preferred

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	30	32.171355				
R	2	1.363948	0.681974	1.712	0.2102	
A	2	4.163032	2.081516	5.225	0.0170	0.54
B	1	13.355187	13.355187	33.524	0.0001	0.44
AB	2	0.940233	0.470117	1.180	0.3312	0.77
C	1	2.595999	2.595999	6.517	0.0206	0.44
AC	2	0.225199	0.112600	0.283	0.7573	0.77
BC	1	0.669798	0.669798	1.681	0.2121	0.63
ABC	2	2.085650	1.042825	2.618	0.1021	1.09
ERROR	17	6.772309	0.398371			

FACTORIAL/POOLED ERROR AOV For AMAPA PalmerAm Control % 08/01/15

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	35	4586.750000				
R	2	552.666667	276.333333	4.197	0.0286	
A	2	585.166667	292.583333	4.443	0.0239	6.9
B	1	1260.250000	1260.250000	19.139	0.0002	5.6
AB	2	585.166667	292.583333	4.443	0.0239	9.7
C	1	0.250000	0.250000	0.004	0.9514	5.6
AC	2	77.166667	38.583333	0.586	0.5650	9.7
BC	1	0.250000	0.250000	0.004	0.9514	7.9
ABC	2	77.166667	38.583333	0.586	0.5650	13.7
ERROR	22	1448.666667	65.848485			

FACTORIAL/POOLED ERROR AOV For IPOSS mornglry Control % 08/01/15

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	35	6106.000000				
R	2	221.166667	110.583333	0.579	0.5688	
A	2	170.666667	85.333333	0.447	0.6454	11.7
B	1	13.444444	13.444444	0.070	0.7932	9.6
AB	2	74.888889	37.444444	0.196	0.8234	16.5
C	1	841.000000	841.000000	4.403	0.0476	9.6
AC	2	140.666667	70.333333	0.368	0.6961	16.5
BC	1	1.777778	1.777778	0.009	0.9240	13.5
ABC	2	440.222222	220.111111	1.152	0.3342	23.4
ERROR	22	4202.166667	191.007576			

FACTORIAL/POOLED ERROR AOV For GLXMA Soybean Yield Bu/A 10/22/15

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	35	591.741003				
R	2	9.445578	4.722789	0.316	0.7320	
A	2	10.001902	5.000951	0.335	0.7189	3.3
B	1	0.038732	0.038732	0.003	0.9598	2.7
AB	2	73.306912	36.653456	2.455	0.1090	4.6
C	1	29.960120	29.960120	2.007	0.1706	2.7
AC	2	94.958367	47.479183	3.181	0.0612	4.6
BC	1	7.443573	7.443573	0.499	0.4875	3.8
ABC	2	38.188836	19.094418	1.279	0.2982	6.5
ERROR	22	328.396984	14.927136			

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Tank mix Partners with Liberty 280 to Improve Residual Control

Trial ID: DSB4-15 Location: Field #7 Trial Year: 2
Protocol ID: DSB4-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact: Delaware Soybean Board

Investigator: Mark VanGessel Title: Extension Weed Specialist
Organization: University of Delaware
Address: 16483 County Seat Hwy
City+State/Prov: Georgetown, Delaware
Postal Code: 19947 E-mail: mjv@udel.edu
Country: USA United States

Crop Description

Crop 1: GLXMA Glycine max Soybean
Variety: S45LL33 BBCH Scale: BSOY
Description: Liberty Link

Planting Date: 05/20/15
Planting Rate, Unit: 150000 S/A Planting Method: PLANTD planted
Depth, Unit: 1 in Planting Equipment: FE Field Equipment
Row Spacing, Unit: 15 in Emergence Date: 05/27/15
Harvest Date: 10/15/15
Harvested Width, Unit: 6.25 FT
Soil Temperature, Unit: 72 F Harvested Length, Unit: 25 FT
Soil Moisture: NORMAL normal, adequate Harvest Equipment: Plot combine
Seed Bed: MEDTRA medium/trashy % Standard Moisture: 13.0

Pest Description

Pest 1 Type: W Code: IPOSS Ipomoea sp.
Common Name: Morning glory

Pest 2 Type: W Code: AMAPA Amaranthus palmeri
Common Name: Palmer amaranth

Pest 3 Type: W Code: ANVCR Anoda cristata
Common Name: Spurred anoda

Pest 4 Type: W Code: DIGSA Digitaria sanguinalis
Common Name: large crabgrass

Site and Design

Treated Plot Width: 10 FT Site Type: FIELD field
Treated Plot Length: 25 FT
Treated Plot Area: 250 FT2 Treatments: 14 Tillage Type: NOTILL no-till
Replications: 3 Study Design: FACTOR Factorial

Trial Initiation Comments:
An early preplant burndown was made on April 28.

Maintenance

No.	Date	Maintenance Product Name	Form Conc	Form Type	Rate	Rate Unit
1.	07/08/15	Liberty 280	2.34	SL	1	QT/A
2.	07/08/15	AMS	100	D	8.5	LB/100 GAL

Comment: Total POST application on 7-8-15.

Soil Description

% Sand: 78 % OM: 2.5 Texture: SL sandy loam
% Silt: 13 pH: 4.8
% Clay: 9 CEC: 7.0 Fert. Level: G good
Soil Drainage: G good

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Moisture and Weather Conditions

Overall Moisture Conditions: NORMAL normal

Closest Weather Station: UD REC Distance, Unit: 0.1 mi

Application Description

	A
Application Date:	06/17/15
Appl. Stop Time:	02:20 PM
Application Method:	SPRAY
Application Timing:	4 WAP
Application Placement:	BROADC
Applied By:	VanGessl
Air Temperature, Unit:	80 F
% Relative Humidity:	52
Wind Velocity, Unit:	4 mph
Wind Direction:	E
Dew Presence (Y/N):	N no
Soil Temperature, Unit:	80 F
Soil Moisture:	NORMAL
% Cloud Cover:	35

Crop Stage At Each Application

	A
Crop 1 Code, BBCH Scale:	GLXMA BSOY
Stage Scale Used:	DESC
Stage Majority, Percent:	3-trif 65
Stage Minimum, Percent:	2-trif 35
Stage Maximum, Percent:	3-trif 65
Height, Unit:	7 in
Height Minimum, Maximum:	5 8

Pest Stage At Each Application

	A
Pest 1 Code, Type, Scale:	IPOSS W
Stage Majority, Percent:	run 100
Height, Unit:	12 in
Height Minimum, Maximum:	4 18
Density, Unit:	12 m2
Pest 2 Code, Type, Scale:	AMAPA W
Stage Majority, Percent:	veg 100
Height, Unit:	5 in
Height Minimum, Maximum:	4 6
Density, Unit:	6 m2
Pest 3 Code, Type, Scale:	ANVCR W
Stage Majority, Percent:	veg 100
Height, Unit:	4 in
Height Minimum, Maximum:	2 6
Density, Unit:	8 m2
Pest 4 Code, Type, Scale:	DIGSA W
Stage Majority, Percent:	3-tilr 100
Height, Unit:	10 in
Height Minimum, Maximum:	6 12
Density, Unit:	5 m2

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Application Equipment

	A
Appl. Equipment:	Backpack
Equipment Type:	SPRBAC
Operation Pressure, Unit:	31 psi
Nozzle Type:	AIRMIX
Nozzle Size:	11002
Nozzle Spacing, Unit:	18 in
Boom Length, Unit:	9 ft
Boom Height, Unit:	26 in
Ground Speed, Unit:	3 mph
Carrier:	WATER
Spray Volume, Unit:	20 gal/ac
Mix Size, Unit:	2 Liters
Propellant:	COMCO2

Trial Comments

University of Delaware

Tank mix Partners with Liberty 280 to Improve Residual Control

Trial ID: DSB4-15 Location: Field #7 Trial Year: 2
Protocol ID: DSB4-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact: Delaware Soybean Board

Pest Code Pest Name Crop Code Crop Name Rating Type Rating Unit Rating Date								GLXMA Soybean LeafBrn % 06/22/15	GLXMA Soybean Stunting % 07/09/15	AMAPA PalmerAm Control % 07/09/15	ANVCR Sp.anoda Control % 07/09/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code				
1	Dual Magnum.....s-metolachlor	7.62	E	0.95	lb ai/a	4 WAP	A	6.3 f	0.0 e	95.0 a	82.7 a
	Liberty 280.....glufosinate	2.34	SL	0.585	lb ai/a	4 WAP	A				
	Dry Ammonium Sulfate	100	D	0	lb ai/a						
2	Dual Magnum.....s-metolachlor	7.62	E	0.95	lb ai/a	4 WAP	A	18.3 bc	5.7 b-e	96.0 a	84.3 a
	Liberty 280.....glufosinate	2.34	SL	0.585	lb ai/a	4 WAP	A				
	Dry Ammonium Sulfate	100	D	1.2	% w/v	4 WAP	A				
3	Zidua.....pyroxasulfone	85	WG	0.053	lb ai/a	4 WAP	A	10.3 ef	10.3 ab	100.0 a	77.7 ab
	Liberty 280.....glufosinate	2.34	SL	0.585	lb ai/a	4 WAP	A				
	Dry Ammonium Sulfate	100	D	0	lb ai/a						
4	Zidua.....pyroxasulfone	85	WG	0.053	lb ai/a	4 WAP	A	16.7 bcd	8.8 bcd	95.7 a	76.8 ab
	Liberty 280.....glufosinate	2.34	SL	0.585	lb ai/a	4 WAP	A				
	Dry Ammonium Sulfate	100	D	1.2	% w/v	4 WAP	A				
5	Outlook.....dimethenamid-p	6	L	0.56	lb ai/a	4 WAP	A	13.0 cde	8.3 bcd	97.3 a	76.7 ab
	Liberty 280.....glufosinate	2.34	SL	0.585	lb ai/a	4 WAP	A				
	Dry Ammonium Sulfate	100	D	0	lb ai/a						
6	Outlook.....dimethenamid-p	6	L	0.56	lb ai/a	4 WAP	A	17.0 bcd	15.7 a	88.3 a	83.3 a
	Liberty 280.....glufosinate	2.34	SL	0.585	lb ai/a	4 WAP	A				
	Dry Ammonium Sulfate	100	D	1.2	% w/v	4 WAP	A				
7	Prowl H2O.....pendimethalin	3.8	CS	0.71	lb ai/a	4 WAP	A	19.0 bc	0.0 e	90.0 a	80.0 ab
	Liberty 280.....glufosinate	2.34	SL	0.585	lb ai/a	4 WAP	A				
	Dry Ammonium Sulfate	100	D	0	lb ai/a						
8	Prowl H2O.....pendimethalin	3.8	CS	0.71	lb ai/a	4 WAP	A	16.3 b-e	2.3 de	97.3 a	87.1 a
	Liberty 280.....glufosinate	2.34	SL	0.585	lb ai/a	4 WAP	A				
	Dry Ammonium Sulfate	100	D	1.2	% w/v	4 WAP	A				
9	Warrant.....acetochlor	3	CS	0.56	lb ai/a	4 WAP	A	11.3 def	3.3 cde	93.3 a	58.3 b
	Liberty 280.....glufosinate	2.34	SL	0.585	lb ai/a	4 WAP	A				
	Dry Ammonium Sulfate	100	D	0	lb ai/a						
10	Warrant.....acetochlor	3	CS	0.56	lb ai/a	4 WAP	A	13.7 cde	6.7 b-e	100.0 a	83.7 a
	Liberty 280.....glufosinate	2.34	SL	0.585	lb ai/a	4 WAP	A				
	Dry Ammonium Sulfate	100	D	1.2	% w/v	4 WAP	A				
11	Reflex.....fomesafen	2	L	0.25	lb ai/a	4 WAP	A	21.7 b	10.0 abc	100.0 a	76.7 ab
	Liberty 280.....glufosinate	2.34	SL	0.585	lb ai/a	4 WAP	A				
	Dry Ammonium Sulfate	100	D	0	lb ai/a						
12	Reflex.....fomesafen	2	L	0.25	lb ai/a	4 WAP	A	33.3 a	11.7 ab	100.0 a	89.3 a
	Liberty 280.....glufosinate	2.34	SL	0.585	lb ai/a	4 WAP	A				
	Dry Ammonium Sulfate	100	D	1.2	% w/v	4 WAP	A				
13	Untreated Check							0.0 g	0.0 e	0.0 b	0.0 c

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.
Missing data estimates are included in columns:Yates=2,4

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Pest Code										AMAPA	ANVCR
Pest Name										PalmerAm	Sp.anoda
Crop Code								GLXMA	GLXMA		
Crop Name								Soybean	Soybean		
Rating Type								LeafBrn	Stunting	Control	Control
Rating Unit								%	%	%	%
Rating Date								06/22/15	07/09/15	07/09/15	07/09/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code				
14	Select Max.....clethodim	1	EC	0.125	lb ai/a	4 WAP	A	11.7 def	11.7 ab	97.3 a	91.1 a
	Liberty 280.....glufosinate	2.34	SL	0.585	lb ai/a	4 WAP	A				
	Dry Ammonium Sulfate	100	D	1.2	% w/v	4 WAP	A				
LSD P=.05								6.14	6.86	12.12	24.21
Standard Deviation								3.66	4.06	7.22	14.30
CV								24.56	60.23	8.09	19.11
Replicate F								0.306	1.320	1.278	0.975
Replicate Prob(F)								0.7393	0.2867	0.2956	0.3929
Treatment F								13.229	4.570	38.749	7.726
Treatment Prob(F)								0.0001	0.0008	0.0001	0.0001

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Pest Code Pest Name Crop Code Crop Name Rating Type Rating Unit Rating Date								IPOSS mornglry Control % 07/09/15	DIGSA L.crbgrs Control % 07/09/15	GLXMA Soybean Yield Bu/A 10/15/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code			
1	Dual Magnum.....s-metolachlor	7.62	E	0.95	lb ai/a	4 WAP	A	85.0 a	82.3 b	27.4 a
	Liberty 280.....glufosinate	2.34	SL	0.585	lb ai/a	4 WAP	A			
	Dry Ammonium Sulfate	100	D	0	lb ai/a					
2	Dual Magnum.....s-metolachlor	7.62	E	0.95	lb ai/a	4 WAP	A	72.7 a	90.0 ab	26.1 a
	Liberty 280.....glufosinate	2.34	SL	0.585	lb ai/a	4 WAP	A			
	Dry Ammonium Sulfate	100	D	1.2	% w/v	4 WAP	A			
3	Zidua.....pyroxasulfone	85	WG	0.053	lb ai/a	4 WAP	A	81.7 a	85.0 b	30.1 a
	Liberty 280.....glufosinate	2.34	SL	0.585	lb ai/a	4 WAP	A			
	Dry Ammonium Sulfate	100	D	0	lb ai/a					
4	Zidua.....pyroxasulfone	85	WG	0.053	lb ai/a	4 WAP	A	77.0 a	96.7 a	28.1 a
	Liberty 280.....glufosinate	2.34	SL	0.585	lb ai/a	4 WAP	A			
	Dry Ammonium Sulfate	100	D	1.2	% w/v	4 WAP	A			
5	Outlook.....dimethenamid-p	6	L	0.56	lb ai/a	4 WAP	A	76.3 a	83.3 b	32.5 a
	Liberty 280.....glufosinate	2.34	SL	0.585	lb ai/a	4 WAP	A			
	Dry Ammonium Sulfate	100	D	0	lb ai/a					
6	Outlook.....dimethenamid-p	6	L	0.56	lb ai/a	4 WAP	A	71.7 a	96.3 a	28.6 a
	Liberty 280.....glufosinate	2.34	SL	0.585	lb ai/a	4 WAP	A			
	Dry Ammonium Sulfate	100	D	1.2	% w/v	4 WAP	A			
7	Prowl H2O.....pendimethalin	3.8	CS	0.71	lb ai/a	4 WAP	A	84.3 a	87.7 ab	31.0 a
	Liberty 280.....glufosinate	2.34	SL	0.585	lb ai/a	4 WAP	A			
	Dry Ammonium Sulfate	100	D	0	lb ai/a					
8	Prowl H2O.....pendimethalin	3.8	CS	0.71	lb ai/a	4 WAP	A	81.0 a	90.7 ab	32.5 a
	Liberty 280.....glufosinate	2.34	SL	0.585	lb ai/a	4 WAP	A			
	Dry Ammonium Sulfate	100	D	1.2	% w/v	4 WAP	A			
9	Warrant.....acetochlor	3	CS	0.56	lb ai/a	4 WAP	A	70.0 a	96.3 a	30.2 a
	Liberty 280.....glufosinate	2.34	SL	0.585	lb ai/a	4 WAP	A			
	Dry Ammonium Sulfate	100	D	0	lb ai/a					
10	Warrant.....acetochlor	3	CS	0.56	lb ai/a	4 WAP	A	86.0 a	87.7 ab	31.3 a
	Liberty 280.....glufosinate	2.34	SL	0.585	lb ai/a	4 WAP	A			
	Dry Ammonium Sulfate	100	D	1.2	% w/v	4 WAP	A			
11	Reflex.....fomesafen	2	L	0.25	lb ai/a	4 WAP	A	76.0 a	91.7 ab	31.4 a
	Liberty 280.....glufosinate	2.34	SL	0.585	lb ai/a	4 WAP	A			
	Dry Ammonium Sulfate	100	D	0	lb ai/a					
12	Reflex.....fomesafen	2	L	0.25	lb ai/a	4 WAP	A	86.7 a	97.0 a	28.5 a
	Liberty 280.....glufosinate	2.34	SL	0.585	lb ai/a	4 WAP	A			
	Dry Ammonium Sulfate	100	D	1.2	% w/v	4 WAP	A			
13	Untreated Check							0.0 b	0.0 c	29.1 a

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	IPOSS morngIry	DIGSA L.crbgrs	GLXMA Soybean
	Pest Code							IPOSS	DIGSA	
	Pest Name							morngIry	L.crbgrs	
	Crop Code									GLXMA
	Crop Name									Soybean
	Rating Type							Control	Control	Yield
	Rating Unit							%	%	Bu/A
	Rating Date							07/09/15	07/09/15	10/15/15
14	Select Max.....clethodim	1	EC	0.125	lb ai/a	4 WAP	A	80.3 a	96.3 a	32.0 a
	Liberty 280.....glufosinate	2.34	SL	0.585	lb ai/a	4 WAP	A			
	Dry Ammonium Sulfate	100	D	1.2	% w/v	4 WAP	A			
	LSD P=.05							24.85	10.89	4.36
	Standard Deviation							14.80	6.49	2.60
	CV							20.15	7.69	8.69
	Replicate F							0.034	2.573	0.869
	Replicate Prob(F)							0.9666	0.0956	0.4312
	Treatment F							6.522	43.928	1.747
	Treatment Prob(F)							0.0001	0.0001	0.1095

University of Delaware

Residual Control with Potenial Tankmix Partners for POST Applications

Trial ID: DSB4-15_demo Location: Field #10 Trial Year: 2
Protocol ID: DSB4-15_demo Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact: Delaware Soybean Board

Investigator: Mark VanGessel Title: Extension Weed Specialist
Organization: University of Delaware
Address: 16483 County Seat Hwy
City+State/Prov: Georgetown, Delaware
Postal Code: 19947 E-mail: mjv@udel.edu
Country: USA United States

Crop Description

Description: Non-crop

Site and Design

Treated Plot Width: 10 FT Site Type: FIELD field
Treated Plot Length: 25 FT
Treated Plot Area: 250 FT2 Treatments: 8 Tillage Type: NOTILL no-till
Replications: 3 Study Design: RACOBL Randomized Complete Block (RCB)

Trial Initiation Comments:
Total Early preplant of Roundup 1qt/A + 2,4-D 1.5pt/A on 5-5-15.

Maintenance

No.	Date	Maintenance Product Name	Form Conc	Form Type	Rate	Rate Unit	Tank Mix Code	Tank Mix
1.	06/12/15	Roundup	4.5	AS	1	QT/A	Y	yes
2.	06/12/15	Liberty 280	2.34	SL	1	QT/A	Y	yes

Comment: Total POST application on 6-12-15 to control plants that emerged between preplant burndown and early POST application.

Soil Description

% Sand: 79 % OM: 2.1 Texture: SL sandy loam
% Silt: 10 pH: 6.2
% Clay: 11 CEC: 7.7 Fert. Level: E excellent
Soil Drainage: G good

Moisture and Weather Conditions

Overall Moisture Conditions: NORMAL normal
Closest Weather Station: UD REC Distance, Unit: 0.4 mi

University of Delaware

Application Description

	A
Application Date:	06/05/15
Appl. Stop Time:	11:15 AM
Application Method:	SPRAY
Application Timing:	14DAP
Application Placement:	BROADC
Applied By:	Johnson
Air Temperature, Unit:	62 F
% Relative Humidity:	93
Wind Velocity, Unit:	1 mph
Wind Direction:	N
Dew Presence (Y/N):	Y yes
Soil Temperature, Unit:	62 F
Soil Moisture:	WET
% Cloud Cover:	100

Application Equipment

	A
Appl. Equipment:	Tractor
Equipment Type:	TRMOSP
Operation Pressure, Unit:	40 psi
Nozzle Type:	AIRMIX
Nozzle Size:	11002
Nozzle Spacing, Unit:	20 in
Boom Length, Unit:	10 ft
Boom Height, Unit:	20 in
Ground Speed, Unit:	3 mph
Carrier:	WATER
Spray Volume, Unit:	20 gal/ac
Mix Size, Unit:	0.7 Gallons
Propellant:	COMAIR

Trial Comments

University of Delaware

Residual Control with Potenial Tankmix Partners for POST Applications

Trial ID: DSB4-15_demo Location: Field #10 Trial Year: 2
Protocol ID: DSB4-15_demo Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact: Delaware Soybean Board

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	AMAPA PalmerAm Control % 07/09/15	IPOSS mornglry Control % 07/09/15
1	Untreated Check							0.0 e	0.0 e
	Liberty 280.....glufosinate	2.34	SL	0.585	lb ai/a	14DAP	A		
	Dry Ammonium Sulfate	100	D	1.2	% w/v	14DAP	A		
2	Dual Magnum.....s-metolachlor	7.62	E	0.95	lb ai/a	14DAP	A	75.0 abc	26.7 bcd
3	Zidua.....pyroxasulfone	85	WG	0.053	lb ai/a	14DAP	A	85.9 ab	48.2 ab
4	Outlook.....dimethenamid-p	6	L	0.56	lb ai/a	14DAP	A	50.0 d	6.7 de
5	Prowl H2O.....pendimethalin	3.8	CS	0.71	lb ai/a	14DAP	A	61.7 cd	23.3 cd
6	Warrant.....acetochlor	3	CS	0.56	lb ai/a	14DAP	A	63.3 bcd	30.0 bc
7	Reflex.....fomesafen	2	L	0.25	lb ai/a	14DAP	A	96.7 a	53.3 a
8	Reflex.....fomesafen	2	L	0.375	lb ai/a	14DAP	A	90.0 a	60.0 a
LSD P=.05								23.75	22.39
Standard Deviation								13.46	12.69
CV								20.61	40.9
Replicate F								1.683	1.661
Replicate Prob(F)								0.2240	0.2278
Treatment F								15.672	8.696
Treatment Prob(F)								0.0001	0.0005

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.
Missing data estimates are included in columns:Yates=1,2

University of Delaware

Burndown for Double Cropped Soybeans Palmer Amaranth Management

Trial ID: DSB7-15 Location: Field #2 Trial Year:
Protocol ID: DSB7-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact: Delaware Soybean Board

Investigator: Mark VanGessel Title: Extension Weed Specialist
Organization: University of Delaware
Address: 16483 County Seat Hwy
City+State/Prov: Georgetown, Delaware
Postal Code: 19947 E-mail: mjv@udel.edu
Country: USA United States

Crop Description

Description: Non-crop

Pest Description

Pest 1 Type: W Code: AMAPA Amaranthus palmeri
Common Name: Palmer amaranth

Pest 2 Type: W Code: DIGSA Digitaria sanguinalis
Common Name: large crabgrass

Site and Design

Treated Plot Width: 10 FT Site Type: FIELD field
Treated Plot Length: 25 FT
Treated Plot Area: 250 FT2 Treatments: 11 Tillage Type: NOTILL no-till
Replications: 3 Study Design: RACOBL Randomized Complete Block (RCB)

Trial Initiation Comments:
Plots were established in wheat stubble.

Soil Description

% Sand: 87 % OM: 1.2 Texture: LS loamy sand
% Silt: 4 pH: 6.3
% Clay: 9 CEC: 4.7 Fert. Level: E excellent
Soil Drainage: G good

Moisture and Weather Conditions

Overall Moisture Conditions: NORMAL normal
Closest Weather Station: UDREC Distance, Unit: 0.1 mi

Application Description

	A
Application Date:	07/07/15
Appl. Stop Time:	02:45 PM
Application Method:	SPRAY
Application Timing:	PRE
Application Placement:	BROADC
Applied By:	Johnson
Air Temperature, Unit:	88 F
% Relative Humidity:	53
Wind Velocity, Unit:	5 mph
Wind Direction:	SW
Dew Presence (Y/N):	N no
Soil Temperature, Unit:	87 F
Soil Moisture:	NORMAL
% Cloud Cover:	5

University of Delaware

Pest Stage At Each Application

	A
Pest 1 Code, Type, Scale:	AMAPA W
Stage Majority, Percent:	veg 100
Height, Unit:	10 in
Height Minimum, Maximum:	8 12
Density, Unit:	7 m2
Pest 2 Code, Type, Scale:	DIGSA W
Stage Majority, Percent:	veg 100
Height, Unit:	9 in
Height Minimum, Maximum:	8 10
Density, Unit:	40 m2

Application Equipment

	A
Appl. Equipment:	Backpack
Equipment Type:	SPRBAC
Operation Pressure, Unit:	31 psi
Nozzle Type:	AIRMIX
Nozzle Size:	11002
Nozzle Spacing, Unit:	18 in
Boom Length, Unit:	9 ft
Boom Height, Unit:	26 in
Ground Speed, Unit:	3 mph
Carrier:	WATER
Spray Volume, Unit:	20 gal/ac
Mix Size, Unit:	2 Liters
Propellant:	COMCO2

Trial Comments

07/21/15: Only plants emerged at time of applicaiton were rated; thus this is rating burndown control, not residual activity of the treatments.

University of Delaware

Burndown for Double Cropped Soybeans Palmer Amaranth Management

Trial ID: DSB7-15 Location: Field #2 Trial Year:
Protocol ID: DSB7-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact: Delaware Soybean Board

Pest Code							AMAPA	DIGSA	AMAPA	DIGSA
Pest Name							PalmerAm	L.crbgrs	PalmerAm	L.crbgrs
Rating Type							Burndwn	Burndwn	Burndwn	Burndwn
Rating Unit							%	%	%	%
Rating Date							07/14/15	07/14/15	07/21/15	07/21/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code				
1	Untreated Check							0.0 e	0.0 g	0.0 c	0.0 e
2	Canopy Premix	75	DF	0.188	lb ai/a	PRE	A	99.7 a	86.0 b	100.0 a	90.0 ab
	----metribuzin	64.3		0.161							
	----chlorimuron	10.7		0.0268							
	Gramoxone SL....paraquat	2	SL	0.75	lb ai/a	PRE	A				
	Crop Oil Concentrate	100	L	1.25	% v/v	PRE	A				
	30% Urea Ammonium Nitrate	100	L	2	% v/v	PRE	A				
3	Valor XLT Premix	40.3	WG	0.091	lb ai/a	PRE	A	99.0 a	68.3 e	100.0 a	63.3 c
	----flumioxazin	30		0.068							
	----chlorimuron	10.3		0.0233							
	Gramoxone SL....paraquat	2	SL	0.75	lb ai/a	PRE	A				
	Crop Oil Concentrate	100	L	1.25	% v/v	PRE	A				
	30% Urea Ammonium Nitrate	100	L	2	% v/v	PRE	A				
4	Authority XL Premix	70	DG	0.21	lb ai/a	PRE	A	100.0 a	71.7 de	100.0 a	56.7 c
	----sulfentrazone	62.2		0.187							
	----chlorimuron	7.8		0.0234							
	Gramoxone SL....paraquat	2	SL	0.75	lb ai/a	PRE	A				
	Crop Oil Concentrate	100	L	1.25	% v/v	PRE	A				
	30% Urea Ammonium Nitrate	100	L	2	% v/v	PRE	A				
5	Liberty 280.....glufosinate	2.34	SL	0.66	lb ai/a	PRE	A	82.5 d	96.0 a	79.9 b	99.6 a
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a	PRE	A				
	Dry Ammonium Sulfate	100	D	1.2	% w/v	PRE	A				
6	Callisto.....mesotrione	4	SC	0.166	lb ai/a	PRE	A	98.0 ab	78.3 cd	100.0 a	84.3 b
	Gramoxone SL....paraquat	2	SL	0.75	lb ai/a	PRE	A				
	Crop Oil Concentrate	100	L	1.25	% v/v	PRE	A				
	30% Urea Ammonium Nitrate	100	L	2	% v/v	PRE	A				
7	Canopy Premix	75	DF	0.188	lb ai/a	PRE	A	91.0 bc	96.3 a	96.0 a	97.0 a
	----metribuzin	64.3		0.161							
	----chlorimuron	10.7		0.0268							
	Liberty 280.....glufosinate	2.34	SL	0.66	lb ai/a	PRE	A				
	Crop Oil Concentrate	100	L	1.25	% v/v	PRE	A				
	Dry Ammonium Sulfate	100	D	1.2	% w/v	PRE	A				
8	Canopy Premix	75	DF	0.188	lb ai/a	PRE	A	90.0 c	97.0 a	91.7 a	99.0 a
	----metribuzin	64.3		0.161							
	----chlorimuron	10.7		0.0268							
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a	PRE	A				
	Dry Ammonium Sulfate	100	D	1.2	% w/v	PRE	A				
9	Liberty 280.....glufosinate	2.34	SL	0.66	lb ai/a	PRE	A	96.0 abc	80.0 bc	81.7 b	93.3 ab
	Dry Ammonium Sulfate	100	D	1.2	% w/v	PRE	A				
10	Tricor DF.....metribuzin	75	DF	0.188	lb ai/a	PRE	A	99.0 a	98.7 a	100.0 a	99.0 a
	Valor SX.....flumioxazin	51	WG	0.094	lb ai/a	PRE	A				
	Gramoxone SL....paraquat	2	SL	0.75	lb ai/a	PRE	A				
	Crop Oil Concentrate	100	L	1.25	% v/v	PRE	A				
	30% Urea Ammonium Nitrate	100	L	2	% v/v	PRE	A				

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.
Missing data estimates are included in columns:Yates=1,2,3,4

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	AMAPA PalmerAm	DIGSA L.crbgrs	AMAPA PalmerAm	DIGSA L.crbgrs
	Pest Code							AMAPA	DIGSA	AMAPA	DIGSA
	Pest Name							PalmerAm	L.crbgrs	PalmerAm	L.crbgrs
	Rating Type							Burndwn	Burndwn	Burndwn	Burndwn
	Rating Unit							%	%	%	%
	Rating Date							07/14/15	07/14/15	07/21/15	07/21/15
11	Tricor DF.....metribuzin	75	DF	0.188	lb ai/a	PRE	A	100.0 a	36.7 f	100.0 a	43.3 d
	Valor SX.....flumioxazin	51	WG	0.094	lb ai/a	PRE	A				
	Crop Oil Concentrate	100	L	1.25	% v/v	PRE	A				
	30% Urea Ammonium Nitrate	100	L	2	% v/v	PRE	A				
	LSD P=.05							7.37	7.27	9.35	10.11
	Standard Deviation							4.31	4.25	5.47	5.92
	CV							4.96	5.78	6.34	7.88
	Replicate F							0.003	1.061	1.474	1.190
	Replicate Prob(F)							0.9968	0.3656	0.2540	0.3260
	Treatment F							138.889	152.971	87.731	85.622
	Treatment Prob(F)							0.0001	0.0001	0.0001	0.0001

University of Delaware

POST Weed Control in Double-Cropped Soybeans

Trial ID: DSB8-15 Location: Field #14 Trial Year:
Protocol ID: DSB8-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact: Delaware Soybean Board

Investigator: Mark VanGessel Title: Extension Weed Specialist
Organization: University of Delaware
Address: 16483 County Seat Hwy
City+State/Prov: Georgetown, Delaware
Postal Code: 19947 E-mail: mjv@udel.edu
Country: USA United States

Crop Description

Crop 1: GLXMA Glycine max Soybean
Variety: NK S44-K7 BBCH Scale: BSOY
Planting Date: 07/09/15
Planting Rate, Unit: 180000 S/A Planting Method: PLANTD planted
Depth, Unit: 1 in Planting Equipment: PP Plot Planter
Row Spacing, Unit: 15 in Emergence Date: 07/14/15
Harvest Date: 11/23/15
Harvested Width, Unit: 6.25 FT
Soil Temperature, Unit: 89 F Harvested Length, Unit: 24 FT
Soil Moisture: NORMAL normal, adequate
Seed Bed: SMOOTH smooth % Standard Moisture: 13.0

Pest Description

Pest 1 Type: W Code: AMAPA Amaranthus palmeri
Common Name: Palmer amaranth

Pest 2 Type: W Code: IPOSS Ipomoea sp.
Common Name: Morning glory

Site and Design

Treated Plot Width: 10 FT Site Type: FIELD field
Treated Plot Length: 25 FT
Treated Plot Area: 250 FT2 Treatments: 8 Tillage Type: NOTILL no-till
Replications: 3 Study Design: RACOBL Randomized Complete Block (RCB)

Trial Initiation Comments:
Plots were planted into wheat stubble.

Maintenance

No.	Date	Maintenance Product Name	Form Conc	Form Type	Rate	Rate Unit
1.	07/06/15	Roundup	4.5	AS	1	QT/A
2.	07/06/15	Liberty 280	2.34	SL	1	QT/A
3.	07/06/15	AMS	100	D	8.5	LB/100 GAL

Comment: Burndown on 7-6-15.

Soil Description

% Sand: 81 % OM: 1.0 Texture: LS loamy sand
% Silt: 12 pH: 6.1
% Clay: 7 CEC: 4.7 Fert. Level: E excellent
Soil Drainage: G good

Moisture and Weather Conditions

Overall Moisture Conditions: NORMAL normal
Closest Weather Station: UD REC Distance, Unit: 0.3 mi

University of Delaware

Application Description

	A
Application Date:	07/30/15
Appl. Stop Time:	09:30 AM
Application Method:	SPRAY
Application Timing:	POST
Application Placement:	BROADC
Applied By:	Johnson
Air Temperature, Unit:	83 F
% Relative Humidity:	79
Wind Velocity, Unit:	3 mph
Wind Direction:	S
Dew Presence (Y/N):	N no
Soil Temperature, Unit:	82 F
Soil Moisture:	NORMAL
% Cloud Cover:	55

Crop Stage At Each Application

	A
Crop 1 Code, BBCH Scale:	GLXMA BSOY
Stage Scale Used:	DESC
Stage Majority, Percent:	V3 100
Height, Unit:	10 in
Height Minimum, Maximum:	8 11

Pest Stage At Each Application

	A
Pest 1 Code, Type, Scale:	AMAPA W
Stage Majority, Percent:	veg 100
Height, Unit:	12 in
Height Minimum, Maximum:	6 16
Density, Unit:	6 m2
Pest 2 Code, Type, Scale:	IPOSS W
Stage Majority, Percent:	run 80
Stage Minimum, Percent:	veg 20
Stage Maximum, Percent:	run 80
Height, Unit:	12 in
Height Minimum, Maximum:	4 18
Density, Unit:	8 m2

University of Delaware

Application Equipment

	A
Appl. Equipment:	Tractor
Equipment Type:	TRMOSP
Operation Pressure, Unit:	40 psi
Nozzle Type:	AIRMIX
Nozzle Size:	11002
Nozzle Spacing, Unit:	20 in
Boom Length, Unit:	10 ft
Boom Height, Unit:	32 in
Ground Speed, Unit:	3 mph
Carrier:	WATER
Spray Volume, Unit:	20 gal/ac
Mix Size, Unit:	0.7 Gallons
Propellant:	COMAIR

Trial Comments

08/6/15: Trt 8 has poor nightshade control.

University of Delaware

POST Weed Control in Double-Cropped Soybeans

Trial ID: DSB8-15 Location: Field #14 Trial Year:
Protocol ID: DSB8-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact: Delaware Soybean Board

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code				
	Pest Code							AMAPA	IPOSS	AMAPA	IPOSS
	Pest Name							PalmerAm	mornglry	PalmerAm	mornglry
	Crop Code										
	Crop Name										
	Rating Type							Control	Control	Control	Control
	Rating Unit							%	%	%	%
	Rating Date							08/06/15	08/06/15	08/17/15	08/17/15
1	Untreated Check							0.0 d	0.0 f	0.0 d	0.0 e
2	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a	POST	A	100.0 a	89.0 b	99.3 a	98.0 a
	Dry Ammonium Sulfate	100	D	1.2	% w/v	POST	A				
3	Liberty 280.....glufosinate	2.34	SL	0.53	lb ai/a	POST	A	96.3 a	99.0 a	93.3 ab	92.3 d
	Dry Ammonium Sulfate	100	D	1.2	% w/v	POST	A				
4	Liberty 280.....glufosinate	2.34	SL	0.66	lb ai/a	POST	A	98.7 a	99.0 a	93.7 ab	96.3 abc
	Dry Ammonium Sulfate	100	D	1.2	% w/v	POST	A				
5	Ultra Blazer....acifluorfen	2	L	0.375	lb ai/a	POST	A	62.1 c	88.3 b	81.5 c	95.3 bc
	Nonionic Surfactant	100	L	0.25	% v/v	POST	A				
6	Storm Premix	4	EC	0.75	lb ai/a	POST	A	68.3 bc	83.3 c	86.7 bc	97.7 ab
	----bentazon	2.67		0.5							
	----acifluorfen	1.33		0.25							
	Nonionic Surfactant	100	L	0.25	% v/v	POST	A				
7	Raptor.....imazamox	1	AS	0.039	lb ai/a	POST	A	76.7 b	53.3 e	100.0 a	94.7 cd
	Crop Oil Concentrate	100	L	1.25	% v/v	POST	A				
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	POST	A				
8	Synchrony XP Premix	28.4	DG	0.0133	lb ai/a	POST	A	65.0 c	71.7 d	89.0 abc	96.0 abc
	----chlorimuron	21.5		0.0101							
	----thifensulfuron	6.9		0.00323							
	Crop Oil Concentrate	100	L	1.25	% v/v	POST	A				
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	POST	A				
	LSD P=.05							9.98	4.55	11.24	2.55
	Standard Deviation							5.66	2.60	6.37	1.46
	CV							7.98	3.56	7.92	1.74
	Replicate F							2.882	1.338	1.761	1.314
	Replicate Prob(F)							0.0921	0.2939	0.2105	0.3000
	Treatment F							99.724	486.392	80.859	1622.765
	Treatment Prob(F)							0.0001	0.0001	0.0001	0.0001

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.
Missing data estimates are included in columns:Yates=1,3

University of Delaware

Pest Code	
Pest Name	
Crop Code	GLXMA
Crop Name	Soybean
Rating Type	Yield
Rating Unit	Bu/A
Rating Date	11/23/15

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	
1	Untreated Check							28.8 c
2	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a	POST	A	40.7 a
	Dry Ammonium Sulfate	100	D	1.2	% w/v	POST	A	
3	Liberty 280.....glufosinate	2.34	SL	0.53	lb ai/a	POST	A	0.0 d
	Dry Ammonium Sulfate	100	D	1.2	% w/v	POST	A	
4	Liberty 280.....glufosinate	2.34	SL	0.66	lb ai/a	POST	A	0.0 d
	Dry Ammonium Sulfate	100	D	1.2	% w/v	POST	A	
5	Ultra Blazer....acifluorfen	2	L	0.375	lb ai/a	POST	A	36.6 ab
	Nonionic Surfactant	100	L	0.25	% v/v	POST	A	
6	Storm Premix	4	EC	0.75	lb ai/a	POST	A	32.3 bc
	----bentazon	2.67		0.5				
	----acifluorfen	1.33		0.25				
	Nonionic Surfactant	100	L	0.25	% v/v	POST	A	
7	Raptor.....imazamox	1	AS	0.039	lb ai/a	POST	A	32.3 bc
	Crop Oil Concentrate	100	L	1.25	% v/v	POST	A	
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	POST	A	
8	Synchrony XP Premix	28.4	DG	0.0133	lb ai/a	POST	A	31.8 bc
	----chlorimuron	21.5		0.0101				
	----thifensulfuron	6.9		0.00323				
	Crop Oil Concentrate	100	L	1.25	% v/v	POST	A	
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	POST	A	

LSD P=.05	6.22
Standard Deviation	3.55
CV	14.02
Replicate F	0.600
Replicate Prob(F)	0.5626
Treatment F	61.107
Treatment Prob(F)	0.0001

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Burndown for Double Cropped Soybeans Broad-Spectrum Control

Trial ID: DSB9-15 Location: Field #14 Trial Year:
Protocol ID: DSB9-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact: Delaware Soybean Board

Investigator: Mark VanGessel Title: Extension Weed Specialist
Organization: University of Delaware
Address: 16483 County Seat Hwy
City+State/Prov: Georgetown, Delaware
Postal Code: 19947 E-mail: mjv@udel.edu
Country: USA United States

Crop Description

Crop 1: GLXMA Glycine max Soybean
Variety: NK S44-K7 BBCH Scale: BSOY
Planting Date: 07/09/15
Planting Rate, Unit: 180000 S/A Planting Method: PLANTD planted
Depth, Unit: 1 in Planting Equipment: PP Plot Planter
Row Spacing, Unit: 15 in Emergence Date: 07/14/15
Soil Temperature, Unit: 89 F
Soil Moisture: NORMAL normal, adequate
Seed Bed: MEDTRA medium/trashy

Pest Description

Pest 1 Type: W Code: ERICA Conyza canadensis
Common Name: Canada horseweed

Pest 2 Type: W Code: AMBEL Ambrosia artemisiifolia
Common Name: Common ragweed

Pest 3 Type: W Code: IPOSS Ipomoea sp.
Common Name: Morning glory

Pest 4 Type: W Code: DIGSA Digitaria sanguinalis
Common Name: large crabgrass

Site and Design

Treated Plot Width: 10 FT Site Type: FIELD field
Treated Plot Length: 25 FT
Treated Plot Area: 250 FT2 Treatments: 12 Tillage Type: NOTILL no-till
Replications: 3 Study Design: RACOBL Randomized Complete Block (RCB)

Trial Initiation Comments:
Plots were planted into wheat stubble. Most of the weeds were not damaged (cut) by the combine header.

Maintenance

No.	Date	Maintenance Product Name	Form Conc	Form Type	Rate	Rate Unit
1.	07/23/15	Roundup	4.5	AS	1	QT/A
2.	07/23/15	Reflex	2	EC	1.5	PT/A
3.	07/23/15	NIS	100	L	0.25	% V/V

Soil Description

% Sand: 81 % OM: 1.0 Texture: LS loamy sand
% Silt: 12 pH: 6.1
% Clay: 7 CEC: 4.7 Fert. Level: E excellent
Soil Drainage: G good

Moisture and Weather Conditions

Overall Moisture Conditions: NORMAL normal
Closest Weather Station: UD REC Distance, Unit: 0.3 mi

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Application Description

	A
Application Date:	07/06/15
Appl. Stop Time:	04:00 PM
Application Method:	SPRAY
Application Timing:	PRE
Application Placement:	BROADC
Applied By:	Johnson
Air Temperature, Unit:	87 F
% Relative Humidity:	59
Wind Velocity, Unit:	2 mph
Wind Direction:	SE
Dew Presence (Y/N):	N no
Soil Temperature, Unit:	87 F
Soil Moisture:	NORMAL
% Cloud Cover:	95

Crop Stage At Each Application

	A
Crop 1 Code, BBCH Scale:	GLXMA BSOY

Pest Stage At Each Application

	A
Pest 1 Code, Type, Scale:	ERICA W
Stage Majority, Percent:	bolt 100
Height, Unit:	12 in
Height Minimum, Maximum:	10 15
Density, Unit:	3 m2
Pest 2 Code, Type, Scale:	AMBEL W
Stage Majority, Percent:	veg 100
Height, Unit:	8 in
Height Minimum, Maximum:	6 11
Density, Unit:	4 m2
Pest 3 Code, Type, Scale:	IPOSS W
Stage Majority, Percent:	run 100
Height, Unit:	9 in
Height Minimum, Maximum:	7 12
Density, Unit:	7 m2
Pest 4 Code, Type, Scale:	DIGSA W
Stage Majority, Percent:	veg 100
Height, Unit:	9 in
Height Minimum, Maximum:	8 11
Density, Unit:	30 m2

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Application Equipment

	A
Appl. Equipment:	Tractor
Equipment Type:	TRMOSP
Operation Pressure, Unit:	40 psi
Nozzle Type:	AIRMIX
Nozzle Size:	11002
Nozzle Spacing, Unit:	20 in
Boom Length, Unit:	10 ft
Boom Height, Unit:	30 in
Ground Speed, Unit:	3 mph
Carrier:	WATER
Spray Volume, Unit:	20 gal/ac
Mix Size, Unit:	0.7 Gallons
Propellant:	COMAIR

Trial Comments

07/16/15: Only plants emerged at time of applicaiton were evaluated, thus only evaluation burndown activity, not residual control. Mixed population of susceptible and resistant Palmer amarnath plants, resulting in variable results.

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Burndown for Double Cropped Soybeans Broad-Spectrum Control

Trial ID: DSB9-15 Location: Field #14 Trial Year:
Protocol ID: DSB9-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact: Delaware Soybean Board

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	ERICA Horsewd Control % 07/16/15	AMAPA PalmerAm Control % 07/16/15	AMBEL C.ragwd Control % 07/16/15
1	Untreated Check							0.0 d	0.0 c	0.0 d
2	Liberty 280.....glufosinate	2.34	SL	0.66	lb ai/a	PRE	A	100.0 a	91.7 ab	97.8 a
	Dry Ammonium Sulfate	100	D	1.2	% w/v	PRE	A			
3	Tricor DF.....metribuzin	75	DF	0.188	lb ai/a	PRE	A	100.0 a	100.0 a	74.8 c
	Valor SX.....flumioxazin	51	WG	0.064	lb ai/a	PRE	A			
	Crop Oil Concentrate	100	L	1.25	% v/v	PRE	A			
	Dry Ammonium Sulfate	100	D	1.2	% w/v	PRE	A			
4	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a	PRE	A	50.0 c	88.3 b	85.0 bc
	Dry Ammonium Sulfate	100	D	1.2	% w/v	PRE	A			
5	Roundup PowerMax..glyphosate	4.5	AS	1.5	lb ae/a	PRE	A	60.0 bc	96.0 ab	93.0 ab
	Dry Ammonium Sulfate	100	D	1.2	% w/v	PRE	A			
6	Canopy Premix	75	DF	0.188	lb ai/a	PRE	A	65.0 bc	96.7 ab	83.3 bc
	----metribuzin	64.3		0.161						
	----chlorimuron	10.7		0.0268						
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a	PRE	A			
	Dry Ammonium Sulfate	100	D	1.2	% w/v	PRE	A			
7	Liberty 280.....glufosinate	2.34	SL	0.66	lb ai/a	PRE	A	100.0 a	97.3 ab	97.7 a
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a	PRE	A			
	Dry Ammonium Sulfate	100	D	1.2	% w/v	PRE	A			
8	Liberty 280.....glufosinate	2.34	SL	0.66	lb ai/a	PRE	A	100.0 a	99.0 ab	90.7 ab
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a	PRE	A			
	Dry Ammonium Sulfate	100	D	1.2	% w/v	PRE	A			
	Methylated Seed Oil	100	L	0.94	% v/v	PRE	A			
9	Anthem Premix	2.153	SE	0.101	lb ai/a	PRE	A	55.0 bc	95.7 ab	84.0 bc
	----pyroxasulfone	2.09		0.098						
	----fluthiacet	0.06300001		0.00296						
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a	PRE	A			
	Dry Ammonium Sulfate	100	D	1.2	% w/v	PRE	A			
	Crop Oil Concentrate	100	L	1.25	% v/v	PRE	A			
10	Anthem Premix	2.153	SE	0.101	lb ai/a	PRE	A	66.5 b	99.7 a	87.7 ab
	----pyroxasulfone	2.09		0.098						
	----fluthiacet	0.06300001		0.00296						
	Aim.....carfentrazone	2	EC	0.0234	lb ai/a	PRE	A			
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a	PRE	A			
	Dry Ammonium Sulfate	100	D	1.2	% w/v	PRE	A			
	Crop Oil Concentrate	100	L	1.25	% v/v	PRE	A			
11	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a	PRE	A	100.0 a	99.7 a	98.3 a
	Sharpen.....saflufenacil	2.85	SC	0.0223	lb ai/a	PRE	A			
	Dry Ammonium Sulfate	100	D	1.2	% w/v	PRE	A			
	Methylated Seed Oil	100	L	0.94	% v/v	PRE	A			

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.
Missing data estimates are included in columns:Yates=3,8,9,10,11; Average=1,7

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	ERICA Horsewd Control % 07/16/15	AMAPA PalmerAm Control % 07/16/15	AMBEL C.ragwd Control % 07/16/15
12	Tricor DF.....metribuzin	75	DF	0.188	lb ai/a	PRE	A	100.0 a	100.0 a	97.7 a
	Valor SX.....flumioxazin	51	WG	0.064	lb ai/a	PRE	A			
	Gramoxone SL....paraquat	2	SL	0.75	lb ai/a	PRE	A			
	Crop Oil Concentrate	100	L	1.25	% v/v	PRE	A			
	Dry Ammonium Sulfate	100	D	1.2	% w/v	PRE	A			
LSD P=.05								16.34	10.96	11.50
Standard Deviation								6.68	6.48	6.75
CV								8.94	7.3	8.18
Replicate F								2.626	0.145	1.583
Replicate Prob(F)								0.1563	0.8658	0.2301
Treatment F								44.036	56.705	48.029
Treatment Prob(F)								0.0001	0.0001	0.0001

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Pest Code Pest Name Rating Type Rating Unit Rating Date								CHEAL C.lmsqtr Control % 07/16/15	IPOSS mornglry Control % 07/16/15	GGGAN AnnGrass Control % 07/16/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code			
1	Untreated Check							0.0 e	0.0 f	0.0 c
2	Liberty 280.....glufosinate	2.34	SL	0.66	lb ai/a	PRE	A	72.7 d	85.3 bc	56.0 b
	Dry Ammonium Sulfate	100	D	1.2	% w/v	PRE	A			
3	Tricor DF.....metribuzin	75	DF	0.188	lb ai/a	PRE	A	94.0 a	99.0 a	53.3 b
	Valor SX.....flumioxazin	51	WG	0.064	lb ai/a	PRE	A			
	Crop Oil Concentrate	100	L	1.25	% v/v	PRE	A			
	Dry Ammonium Sulfate	100	D	1.2	% w/v	PRE	A			
4	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a	PRE	A	95.3 a	60.0 e	95.7 a
	Dry Ammonium Sulfate	100	D	1.2	% w/v	PRE	A			
5	Roundup PowerMax..glyphosate	4.5	AS	1.5	lb ae/a	PRE	A	93.0 abc	70.0 d	96.3 a
	Dry Ammonium Sulfate	100	D	1.2	% w/v	PRE	A			
6	Canopy Premix	75	DF	0.188	lb ai/a	PRE	A	79.3 d	76.7 cd	93.0 a
	----metribuzin	64.3		0.161						
	----chlorimuron	10.7		0.0268						
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a	PRE	A			
	Dry Ammonium Sulfate	100	D	1.2	% w/v	PRE	A			
7	Liberty 280.....glufosinate	2.34	SL	0.66	lb ai/a	PRE	A	83.0 bcd	96.7 a	93.0 a
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a	PRE	A			
	Dry Ammonium Sulfate	100	D	1.2	% w/v	PRE	A			
8	Liberty 280.....glufosinate	2.34	SL	0.66	lb ai/a	PRE	A	82.3 cd	91.7 ab	88.7 a
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a	PRE	A			
	Dry Ammonium Sulfate	100	D	1.2	% w/v	PRE	A			
	Methylated Seed Oil	100	L	0.94	% v/v	PRE	A			
9	Anthem Premix	2.153	SE	0.101	lb ai/a	PRE	A	93.3 ab	81.0 c	98.3 a
	----pyroxasulfone	2.09		0.098						
	----fluthiacet	0.06300001		0.00296						
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a	PRE	A			
	Dry Ammonium Sulfate	100	D	1.2	% w/v	PRE	A			
	Crop Oil Concentrate	100	L	1.25	% v/v	PRE	A			
10	Anthem Premix	2.153	SE	0.101	lb ai/a	PRE	A	96.0 a	99.7 a	97.7 a
	----pyroxasulfone	2.09		0.098						
	----fluthiacet	0.06300001		0.00296						
	Aim.....carfentrazone	2	EC	0.0234	lb ai/a	PRE	A			
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a	PRE	A			
	Dry Ammonium Sulfate	100	D	1.2	% w/v	PRE	A			
	Crop Oil Concentrate	100	L	1.25	% v/v	PRE	A			
11	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a	PRE	A	92.3 abc	98.0 a	97.7 a
	Sharpen.....saflufenacil	2.85	SC	0.0223	lb ai/a	PRE	A			
	Dry Ammonium Sulfate	100	D	1.2	% w/v	PRE	A			
	Methylated Seed Oil	100	L	0.94	% v/v	PRE	A			

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	CHEAL C.lmsqtr Control % 07/16/15	IPOSS mornglry Control % 07/16/15	GGGAN AnnGrass Control % 07/16/15
12	Tricor DF.....metribuzin	75	DF	0.188	lb ai/a	PRE	A	95.7 a	100.0 a	98.0 a
	Valor SX.....flumioxazin	51	WG	0.064	lb ai/a	PRE	A			
	Gramoxone SL....paraquat	2	SL	0.75	lb ai/a	PRE	A			
	Crop Oil Concentrate	100	L	1.25	% v/v	PRE	A			
	Dry Ammonium Sulfate	100	D	1.2	% w/v	PRE	A			
LSD P=.05								10.78	9.94	13.53
Standard Deviation								6.37	5.87	7.99
CV								7.82	7.36	9.91
Replicate F								3.853	0.242	4.331
Replicate Prob(F)								0.0368	0.7874	0.0260
Treatment F								52.968	69.801	42.275
Treatment Prob(F)								0.0001	0.0001	0.0001

Pest Code Pest Name Rating Type Rating Unit Rating Date								ERICA Horsewd Control % 07/22/15	AMAPA PalmerAm Control % 07/22/15	AMBEL C.ragwd Control % 07/22/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code			
1	Untreated Check							0.0 d	0.0 d	0.0 d
2	Liberty 280.....glufosinate	2.34	SL	0.66	lb ai/a	PRE	A	100.0 a	84.3 ab	80.8 ab
	Dry Ammonium Sulfate	100	D	1.2	% w/v	PRE	A			
3	Tricor DF.....metribuzin	75	DF	0.188	lb ai/a	PRE	A	100.0 a	100.0 a	58.3 c
	Valor SX.....flumioxazin	51	WG	0.064	lb ai/a	PRE	A			
	Crop Oil Concentrate	100	L	1.25	% v/v	PRE	A			
	Dry Ammonium Sulfate	100	D	1.2	% w/v	PRE	A			
4	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a	PRE	A	56.7 bc	75.0 bc	78.3 bc
	Dry Ammonium Sulfate	100	D	1.2	% w/v	PRE	A			
5	Roundup PowerMax..glyphosate	4.5	AS	1.5	lb ae/a	PRE	A	60.0 bc	65.0 c	91.8 ab
	Dry Ammonium Sulfate	100	D	1.2	% w/v	PRE	A			
6	Canopy Premix	75	DF	0.188	lb ai/a	PRE	A	60.0 bc	100.0 a	85.7 ab
	----metribuzin	64.3		0.161						
	----chlorimuron	10.7		0.0268						
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a	PRE	A			
	Dry Ammonium Sulfate	100	D	1.2	% w/v	PRE	A			
7	Liberty 280.....glufosinate	2.34	SL	0.66	lb ai/a	PRE	A	100.0 a	91.7 a	91.7 ab
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a	PRE	A			
	Dry Ammonium Sulfate	100	D	1.2	% w/v	PRE	A			
8	Liberty 280.....glufosinate	2.34	SL	0.66	lb ai/a	PRE	A	100.0 a	91.3 a	96.0 ab
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a	PRE	A			
	Dry Ammonium Sulfate	100	D	1.2	% w/v	PRE	A			
	Methylated Seed Oil	100	L	0.94	% v/v	PRE	A			
9	Anthem Premix	2.153	SE	0.101	lb ai/a	PRE	A	50.0 c	94.0 a	77.3 bc
	----pyroxasulfone	2.09		0.098						
	----fluthiacet	0.06300001		0.00296						
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a	PRE	A			
	Dry Ammonium Sulfate	100	D	1.2	% w/v	PRE	A			
	Crop Oil Concentrate	100	L	1.25	% v/v	PRE	A			
10	Anthem Premix	2.153	SE	0.101	lb ai/a	PRE	A	65.0 b	96.3 a	82.7 ab
	----pyroxasulfone	2.09		0.098						
	----fluthiacet	0.06300001		0.00296						
	Aim.....carfentrazone	2	EC	0.0234	lb ai/a	PRE	A			
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a	PRE	A			
	Dry Ammonium Sulfate	100	D	1.2	% w/v	PRE	A			
	Crop Oil Concentrate	100	L	1.25	% v/v	PRE	A			
11	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a	PRE	A	100.0 a	100.0 a	96.7 ab
	Sharpen.....saflufenacil	2.85	SC	0.0223	lb ai/a	PRE	A			
	Dry Ammonium Sulfate	100	D	1.2	% w/v	PRE	A			
	Methylated Seed Oil	100	L	0.94	% v/v	PRE	A			

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	ERICA Horsewd Control % 07/22/15	AMAPA PalmerAm Control % 07/22/15	AMBEL C.ragwd Control % 07/22/15
12	Tricor DF.....metribuzin	75	DF	0.188	lb ai/a	PRE	A	88.0 a	100.0 a	99.7 a
	Valor SX.....flumioxazin	51	WG	0.064	lb ai/a	PRE	A			
	Gramoxone SL....paraquat	2	SL	0.75	lb ai/a	PRE	A			
	Crop Oil Concentrate	100	L	1.25	% v/v	PRE	A			
	Dry Ammonium Sulfate	100	D	1.2	% w/v	PRE	A			
LSD P=.05								12.48	15.84	20.75
Standard Deviation								7.01	9.27	12.10
CV								9.57	11.15	15.46
Replicate F								1.285	0.166	0.266
Replicate Prob(F)								0.3122	0.8486	0.7694
Treatment F								57.638	28.178	15.061
Treatment Prob(F)								0.0001	0.0001	0.0001

Pest Code Pest Name Rating Type Rating Unit Rating Date							CHEAL C.lmsqtr Control % 07/22/15	IPOSS mornglry Control % 07/22/15	GGGAN AnnGrass Control % 07/22/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code			
1	Untreated Check							0.0 d	0.0 f	0.0 e
2	Liberty 280.....glufosinate	2.34	SL	0.66	lb ai/a	PRE	A	53.3 c	80.0 cde	46.7 c
	Dry Ammonium Sulfate	100	D	1.2	% w/v	PRE	A			
3	Tricor DF.....metribuzin	75	DF	0.188	lb ai/a	PRE	A	86.7 a	93.3 ab	33.3 d
	Valor SX.....flumioxazin	51	WG	0.064	lb ai/a	PRE	A			
	Crop Oil Concentrate	100	L	1.25	% v/v	PRE	A			
	Dry Ammonium Sulfate	100	D	1.2	% w/v	PRE	A			
4	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a	PRE	A	93.7 a	70.0 e	100.0 a
	Dry Ammonium Sulfate	100	D	1.2	% w/v	PRE	A			
5	Roundup PowerMax..glyphosate	4.5	AS	1.5	lb ae/a	PRE	A	91.2 a	71.0 de	100.0 a
	Dry Ammonium Sulfate	100	D	1.2	% w/v	PRE	A			
6	Canopy Premix	75	DF	0.188	lb ai/a	PRE	A	85.0 a	81.0 cd	99.0 ab
	----metribuzin	64.3		0.161						
	----chlorimuron	10.7		0.0268						
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a	PRE	A			
	Dry Ammonium Sulfate	100	D	1.2	% w/v	PRE	A			
7	Liberty 280.....glufosinate	2.34	SL	0.66	lb ai/a	PRE	A	65.2 bc	95.0 a	94.0 ab
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a	PRE	A			
	Dry Ammonium Sulfate	100	D	1.2	% w/v	PRE	A			
8	Liberty 280.....glufosinate	2.34	SL	0.66	lb ai/a	PRE	A	68.3 b	84.0 bc	92.3 b
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a	PRE	A			
	Dry Ammonium Sulfate	100	D	1.2	% w/v	PRE	A			
	Methylated Seed Oil	100	L	0.94	% v/v	PRE	A			
9	Anthem Premix	2.153	SE	0.101	lb ai/a	PRE	A	85.0 a	79.7 cde	100.0 a
	----pyroxasulfone	2.09		0.098						
	----fluthiacet	0.06300001		0.00296						
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a	PRE	A			
	Dry Ammonium Sulfate	100	D	1.2	% w/v	PRE	A			
	Crop Oil Concentrate	100	L	1.25	% v/v	PRE	A			
10	Anthem Premix	2.153	SE	0.101	lb ai/a	PRE	A	94.0 a	91.6 ab	100.0 a
	----pyroxasulfone	2.09		0.098						
	----fluthiacet	0.06300001		0.00296						
	Aim.....carfentrazone	2	EC	0.0234	lb ai/a	PRE	A			
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a	PRE	A			
	Dry Ammonium Sulfate	100	D	1.2	% w/v	PRE	A			
	Crop Oil Concentrate	100	L	1.25	% v/v	PRE	A			
11	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a	PRE	A	94.0 a	100.0 a	100.0 a
	Sharpen.....saflufenacil	2.85	SC	0.0223	lb ai/a	PRE	A			
	Dry Ammonium Sulfate	100	D	1.2	% w/v	PRE	A			
	Methylated Seed Oil	100	L	0.94	% v/v	PRE	A			

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	CHEAL C.lmsqtr Control % 07/22/15	IPOSS mornglry Control % 07/22/15	GGGAN AnnGrass Control % 07/22/15
12	Tricor DF.....metribuzin	75	DF	0.188	lb ai/a	PRE	A	91.3 a	100.0 a	98.0 ab
	Valor SX.....flumioxazin	51	WG	0.064	lb ai/a	PRE	A			
	Gramoxone SL....paraquat	2	SL	0.75	lb ai/a	PRE	A			
	Crop Oil Concentrate	100	L	1.25	% v/v	PRE	A			
	Dry Ammonium Sulfate	100	D	1.2	% w/v	PRE	A			
LSD P=.05								14.23	10.60	6.94
Standard Deviation								8.33	6.24	4.10
CV								11.01	7.92	5.11
Replicate F								3.533	1.725	1.316
Replicate Prob(F)								0.0496	0.2025	0.2886
Treatment F								32.115	55.450	206.412
Treatment Prob(F)								0.0001	0.0001	0.0001

University of Delaware

PRE and POST Weed Control Programs in Soybean

Trial ID: Soy1-15 Location: Field #14 Trial Year:
Protocol ID: Soy1-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact: Dow

Investigator: Mark VanGessel Title: Extension Weed Specialist
Organization: University of Delaware
Address: 16483 County Seat Hwy
City+State/Prov: Georgetown, Delaware
Postal Code: 19947 E-mail: mjv@udel.edu
Country: USA United States

Crop Description

Crop 1: GLXMA Glycine max Soybean
Variety: 4306R2/STS BBCH Scale: BSOY
Planting Date: 05/13/15
Planting Rate, Unit: 180000 S/A Planting Method: PLANTD planted
Depth, Unit: 1 in Planting Equipment: PP Plot Planter
Row Spacing, Unit: 15 in Emergence Date: 05/19/15
Harvest Date: 11/04/15
Harvested Width, Unit: 6.25 FT
Soil Temperature, Unit: 76 F Harvested Length, Unit: 25 FT
Soil Moisture: NORMAL normal, adequate Harvest Equipment: Plot combine
Seed Bed: SMOOTH smooth % Standard Moisture: 13.0

Pest Description

Pest 1 Type: W Code: AMAPA Amaranthus palmeri
Common Name: Palmer amaranth

Pest 2 Type: W Code: IPOSS Ipomoea sp.
Common Name: Morning glory

Pest 3 Type: W Code: DIGSA Digitaria sanguinalis
Common Name: large crabgrass

Pest 4 Type: W Code: SETFA Setaria faberi
Common Name: Giant foxtail

Site and Design

Treated Plot Width: 10 FT Site Type: FIELD field
Treated Plot Length: 25 FT
Treated Plot Area: 250 FT2 Treatments: 8 Tillage Type: CONTIL conventional-till
Replications: 3 Study Design: RACOBL Randomized Complete Block (RCB)

Soil Description

% Sand: 81 % OM: 1.0 Texture: LS loamy sand
% Silt: 12 pH: 6.1
% Clay: 7 CEC: 4.7 Fert. Level: E excellent
Soil Drainage: G good

Moisture and Weather Conditions

Overall Moisture Conditions: NORMAL normal
Closest Weather Station: UD REC Distance, Unit: 0.3 mi

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Application Description

	A	B
Application Date:	05/14/15	06/17/15
Appl. Stop Time:	11:00 AM	02:20 PM
Interval to Prev. Appl., Unit:		34 DAYS
Application Method:	SPRAY	SPRAY
Application Timing:	PRE	2-4"wds
Application Placement:	BROADC	BROADC
Applied By:	Johnson	VanGessl
Air Temperature, Unit:	62 F	80 F
% Relative Humidity:	44	52
Wind Velocity, Unit:	4 mph	4 mph
Wind Direction:	NE	E
Dew Presence (Y/N):	N no	N no
Soil Temperature, Unit:	61 F	80 F
Soil Moisture:	NORMAL	NORMAL
% Cloud Cover:	5	35

Crop Stage At Each Application

	A	B
Crop 1 Code, BBCH Scale:	GLXMA BSOY	GLXMA BSOY
Stage Scale Used:		DESC
Stage Majority, Percent:		4-trif 80
Stage Minimum, Percent:		3-trif 20
Stage Maximum, Percent:		4-trif 80
Height, Unit:		8 in
Height Minimum, Maximum:		7 10

Pest Stage At Each Application

	A	B
Pest 1 Code, Type, Scale:	AMAPA W	AMAPA W
Stage Majority, Percent:		veg 100
Height, Unit:		6 in
Height Minimum, Maximum:		4 8
Density, Unit:		20 m2
Pest 2 Code, Type, Scale:	IPOSS W	IPOSS W
Stage Majority, Percent:		run 100
Height, Unit:		6 in
Height Minimum, Maximum:		4 8
Density, Unit:		8 m2
Pest 3 Code, Type, Scale:	DIGSA W	DIGSA W
Stage Majority, Percent:		2-tilr 70
Stage Minimum, Percent:		1-tilr 15
Stage Maximum, Percent:		3-tilr 15
Height, Unit:		6 in
Height Minimum, Maximum:		3 9
Density, Unit:		12 m2
Pest 4 Code, Type, Scale:	SETFA W	SETFA W
Stage Majority, Percent:		1-tilr 100
Height, Unit:		11 in
Height Minimum, Maximum:		10 12
Density, Unit:		4 m2

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Application Equipment

	A	B
Appl. Equipment:	Tractor	Backpack
Equipment Type:	TRMOSP	SPRBAC
Operation Pressure, Unit:	40 psi	31 psi
Nozzle Type:	AIRMIX	AIRMIX
Nozzle Size:	11002	11002
Nozzle Spacing, Unit:	20 in	18 in
Boom Length, Unit:	10 ft	9 ft
Boom Height, Unit:	18 in	26 in
Ground Speed, Unit:	3 mph	3 mph
Carrier:	WATER	WATER
Spray Volume, Unit:	20 gal/ac	20 gal/ac
Mix Size, Unit:	0.7 Gallons	2 Liters
Propellant:	COMAIR	COMCO2

Trial Comments

06/11/15: All treatments provided good to excellent grass control (mostly giant foxtail and crabgrass).

06/19/15: No injury observed from post applications.

University of Delaware

PRE and POST Weed Control Programs in Soybean

Trial ID: Soy1-15 Location: Field #14 Trial Year:
Protocol ID: Soy1-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact: Dow

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code				
	Pest Code								AMAPA	IPOSS	
	Pest Name								PalmerAm	mornglry	
	Crop Code							GLXMA			GLXMA
	Crop Name							Soybean			Soybean
	Rating Type							Stunting	Control	Control	Stunting
	Rating Unit							%	%	%	%
	Rating Date							06/11/15	06/11/15	06/11/15	06/23/15
1	Untreated Check							0.0 d	0.0 b	0.0 f	0.0 d
2	Sonic Premix	70	DF	0.131	lb ai/a	PRE	A	8.7 bc	100.0 a	84.3 d	8.7 bc
	----sulfentrazone	62.1		0.116							
	----cloransulam	7.9		0.0148							
	Durango DMA.....glyphosate	4	SL	1	lb ae/a	POST	B				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	POST	B				
3	Sonic Premix	70	DF	0.175	lb ai/a	PRE	A	12.0 ab	100.0 a	88.3 cd	8.3 bc
	----sulfentrazone	62.1		0.155							
	----cloransulam	7.9		0.0198							
	Durango DMA.....glyphosate	4	SL	1	lb ae/a	POST	B				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	POST	B				
4	Sonic Premix	70	DF	0.197	lb ai/a	PRE	A	12.0 ab	100.0 a	89.3 bc	14.0 ab
	----sulfentrazone	62.1		0.175							
	----cloransulam	7.9		0.0222							
	Durango DMA.....glyphosate	4	SL	1	lb ae/a	POST	B				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	POST	B				
5	Sonic Premix	70	DF	0.219	lb ai/a	PRE	A	14.0 a	100.0 a	91.7 abc	16.7 a
	----sulfentrazone	62.1		0.194							
	----cloransulam	7.9		0.0247							
	Durango DMA.....glyphosate	4	SL	1	lb ae/a	POST	B				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	POST	B				
6	---Surveil Co-Pack					PRE		7.0 c	100.0 a	93.0 ab	5.7 cd
	_Surveil V.....flumioxazin	51	WG	0.064	lb ai/a	PRE	A				
	_Surveil FR.....cloransulam	84	WG	0.021	lb ai/a	PRE	A				
	Durango DMA.....glyphosate	4	SL	1	lb ae/a	POST	B				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	POST	B				
7	---Surveil Co-Pack					PRE		10.7 ab	100.0 a	95.7 a	5.7 cd
	_Surveil V.....flumioxazin	51	WG	0.096	lb ai/a	PRE	A				
	_Surveil FR.....cloransulam	84	WG	0.0315	lb ai/a	PRE	A				
	Durango DMA.....glyphosate	4	SL	1	lb ae/a	POST	B				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	POST	B				

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.
Missing data estimates are included in columns:Yates=7
Could not calculate LSD (% mean diff) for columns 2,5,8 because error mean square = 0.

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Pest Code								AMAPA	IPOSS	
Pest Name								PalmerAm	mornglry	
Crop Code							GLXMA			GLXMA
Crop Name							Soybean			Soybean
Rating Type							Stunting	Control	Control	Stunting
Rating Unit							%	%	%	%
Rating Date							06/11/15	06/11/15	06/11/15	06/23/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code			
8	Valor SX.....flumioxazin	51	WG	0.064	lb ai/a	PRE	A	0.0 d	100.0 a	60.0 e	0.0 d
	Metribuzin.....metribuzin	75	DF	0.188	lb ai/a	PRE	A				
	Durango DMA.....glyphosate	4	SL	1	lb ae/a	POST	B				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	POST	B				
LSD P=.05								3.35	.	4.47	7.39
Standard Deviation								1.91	0.00	2.55	4.22
CV								23.79	0.0	3.39	57.19
Replicate F								0.558	0.000	1.080	0.344
Replicate Prob(F)								0.5847	1.0000	0.3662	0.7146
Treatment F								23.946	0.000	483.192	5.960
Treatment Prob(F)								0.0001	1.0000	0.0001	0.0023

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code				
	Pest Code							AMAPA	IPOSS		AMAPA
	Pest Name							PalmerAm	mornglry		PalmerAm
	Crop Code									GLXMA	
	Crop Name									Soybean	
	Rating Type							Control	Control	Stunting	Control
	Rating Unit							%	%	%	%
	Rating Date							06/23/15	06/23/15	07/03/15	07/03/15
1	Untreated Check							0.0 b	0.0 d	0.0 a	
2	Sonic Premix	70	DF	0.131	lb ai/a	PRE	A	100.0 a	84.0 b	1.7 a	100.0 a
	----sulfentrazone	62.1		0.116							
	----cloransulam	7.9		0.0148							
	Durango DMA.....glyphosate	4	SL	1	lb ae/a	POST	B				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	POST	B				
3	Sonic Premix	70	DF	0.175	lb ai/a	PRE	A	100.0 a	95.7 ab	2.3 a	100.0 a
	----sulfentrazone	62.1		0.155							
	----cloransulam	7.9		0.0198							
	Durango DMA.....glyphosate	4	SL	1	lb ae/a	POST	B				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	POST	B				
4	Sonic Premix	70	DF	0.197	lb ai/a	PRE	A	100.0 a	93.3 ab	2.3 a	100.0 a
	----sulfentrazone	62.1		0.175							
	----cloransulam	7.9		0.0222							
	Durango DMA.....glyphosate	4	SL	1	lb ae/a	POST	B				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	POST	B				
5	Sonic Premix	70	DF	0.219	lb ai/a	PRE	A	100.0 a	98.0 a	5.7 a	100.0 a
	----sulfentrazone	62.1		0.194							
	----cloransulam	7.9		0.0247							
	Durango DMA.....glyphosate	4	SL	1	lb ae/a	POST	B				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	POST	B				
6	---Surveil Co-Pack					PRE		100.0 a	98.0 a	2.3 a	100.0 a
	_Surveil V.....flumioxazin	51	WG	0.064	lb ai/a	PRE	A				
	_Surveil FR.....cloransulam	84	WG	0.021	lb ai/a	PRE	A				
	Durango DMA.....glyphosate	4	SL	1	lb ae/a	POST	B				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	POST	B				
7	---Surveil Co-Pack					PRE		100.0 a	98.7 a	2.3 a	100.0 a
	_Surveil V.....flumioxazin	51	WG	0.096	lb ai/a	PRE	A				
	_Surveil FR.....cloransulam	84	WG	0.0315	lb ai/a	PRE	A				
	Durango DMA.....glyphosate	4	SL	1	lb ae/a	POST	B				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	POST	B				

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Pest Code							AMAPA	IPOSS		AMAPA
Pest Name							PalmerAm	mornglry		PalmerAm
Crop Code									GLXMA	
Crop Name									Soybean	
Rating Type							Control	Control	Stunting	Control
Rating Unit							%	%	%	%
Rating Date							06/23/15	06/23/15	07/03/15	07/03/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code			
8	Valor SX.....flumioxazin	51	WG	0.064	lb ai/a	PRE	A	100.0 a	71.7 c	0.0 a	100.0 a
	Metribuzin.....metribuzin	75	DF	0.188	lb ai/a	PRE	A				
	Durango DMA.....glyphosate	4	SL	1	lb ae/a	POST	B				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	POST	B				
LSD P=.05								.	12.18	6.83	.
Standard Deviation								0.00	6.96	3.87	0.00
CV								0.0	8.7	185.6	0.0
Replicate F								0.000	0.593	0.170	0.000
Replicate Prob(F)								1.0000	0.5662	0.8457	1.0000
Treatment F								0.000	70.025	0.624	0.000
Treatment Prob(F)								1.0000	0.0001	0.7279	1.0000

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Pest Code Pest Name Crop Code Crop Name Rating Type Rating Unit Rating Date							IPOSS mornglry Control % 07/03/15	GLXMA Soybean Yield Bu/A 11/04/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code		
1	Untreated Check								29.9 a
2	Sonic Premix	70	DF	0.131	lb ai/a	PRE	A	91.7 ab	30.6 a
	----sulfentrazone	62.1		0.116					
	----cloransulam	7.9		0.0148					
	Durango DMA.....glyphosate	4	SL	1	lb ae/a	POST	B		
	Dry Ammonium Sulfate	100	D	1.02	% w/v	POST	B		
3	Sonic Premix	70	DF	0.175	lb ai/a	PRE	A	95.0 a	28.2 a
	----sulfentrazone	62.1		0.155					
	----cloransulam	7.9		0.0198					
	Durango DMA.....glyphosate	4	SL	1	lb ae/a	POST	B		
	Dry Ammonium Sulfate	100	D	1.02	% w/v	POST	B		
4	Sonic Premix	70	DF	0.197	lb ai/a	PRE	A	96.7 a	29.4 a
	----sulfentrazone	62.1		0.175					
	----cloransulam	7.9		0.0222					
	Durango DMA.....glyphosate	4	SL	1	lb ae/a	POST	B		
	Dry Ammonium Sulfate	100	D	1.02	% w/v	POST	B		
5	Sonic Premix	70	DF	0.219	lb ai/a	PRE	A	98.3 a	29.7 a
	----sulfentrazone	62.1		0.194					
	----cloransulam	7.9		0.0247					
	Durango DMA.....glyphosate	4	SL	1	lb ae/a	POST	B		
	Dry Ammonium Sulfate	100	D	1.02	% w/v	POST	B		
6	---Surveil Co-Pack					PRE		98.3 a	31.4 a
	_Surveil V.....flumioxazin	51	WG	0.064	lb ai/a	PRE	A		
	_Surveil FR.....cloransulam	84	WG	0.021	lb ai/a	PRE	A		
	Durango DMA.....glyphosate	4	SL	1	lb ae/a	POST	B		
	Dry Ammonium Sulfate	100	D	1.02	% w/v	POST	B		
7	---Surveil Co-Pack					PRE		96.7 a	28.5 a
	_Surveil V.....flumioxazin	51	WG	0.096	lb ai/a	PRE	A		
	_Surveil FR.....cloransulam	84	WG	0.0315	lb ai/a	PRE	A		
	Durango DMA.....glyphosate	4	SL	1	lb ae/a	POST	B		
	Dry Ammonium Sulfate	100	D	1.02	% w/v	POST	B		

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Pest Code							IPOSS	
Pest Name							mornglry	
Crop Code								GLXMA
Crop Name								Soybean
Rating Type							Control	Yield
Rating Unit							%	Bu/A
Rating Date							07/03/15	11/04/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	
8	Valor SX.....flumioxazin	51	WG	0.064	lb ai/a	PRE	A	85.3 b	31.2 a
	Metribuzin.....metribuzin	75	DF	0.188	lb ai/a	PRE	A		
	Durango DMA.....glyphosate	4	SL	1	lb ae/a	POST	B		
	Dry Ammonium Sulfate	100	D	1.02	% w/v	POST	B		
LSD P=.05								8.07	6.48
Standard Deviation								4.54	3.70
CV								4.8	12.4
Replicate F								0.757	4.761
Replicate Prob(F)								0.4902	0.0265
Treatment F								3.185	0.303
Treatment Prob(F)								0.0415	0.9408

University of Delaware

Soybean Variety Response to PPO Herbicides

Trial ID: Soy3-15 Location: Field #14 Trial Year:
Protocol ID: Soy3-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Investigator: Mark VanGessel Title: Extension Weed Specialist
Organization: University of Delaware
Address: 16483 County Seat Hwy
City+State/Prov: Georgetown, Delaware
Postal Code: 19947 E-mail: mjv@udel.edu
Country: USA United States

Crop Description

Crop 1: GLXMA Glycine max Soybean
Variety: SS4725; D39R43; P94Y23; P93Y42 BBCH Scale: BSOY
Planting Date: 05/14/15
Planting Rate, Unit: 180000 S/A Planting Method: PLANTD planted
Depth, Unit: 1 in Planting Equipment: FE Field Equipment
Row Spacing, Unit: 15 in Emergence Date: 05/20/15
Harvested Width, Unit: 3.75 FT
Soil Temperature, Unit: 69 F Harvested Length, Unit: 25 FT
Soil Moisture: NORMAL normal, adequate Harvest Equipment: Plot combine
Seed Bed: SMOOTH smooth % Standard Moisture: 13.0

Site and Design

Treated Plot Width: 20 FT Site Type: FIELD field
Treated Plot Length: 25 FT
Treated Plot Area: 500 FT2 Treatments: 6 Tillage Type: CONTIL conventional-till
Replications: 3 Study Design: RACOBL Randomized Complete Block (RCB)

Maintenance

No.	Date	Maintenance Product Name	Form Conc	Form Type	Rate	Rate Unit
1.	06/05/15	Roundup	4.5	AS	22	FL OZ/A
2.	06/23/15	Roundup	4.5	AS	22	FL OZ/A

Comment: Plots were maintained weed free.

Soil Description

% Sand: 81 % OM: 1.0 Texture: LS loamy sand
% Silt: 12 pH: 6.1
% Clay: 7 CEC: 4.7 Fert. Level: E excellent
Soil Drainage: G good

Moisture and Weather Conditions

Overall Moisture Conditions: NORMAL normal
Closest Weather Station: UD REC Distance, Unit: 0.3 mi

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Application Description

	A
Application Date:	05/14/15
Appl. Stop Time:	04:00 PM
Application Method:	SPRAY
Application Timing:	PRE
Application Placement:	BROADC
Applied By:	Johnson
Air Temperature, Unit:	67 F
% Relative Humidity:	27
Wind Velocity, Unit:	3 mph
Wind Direction:	N
Dew Presence (Y/N):	N no
Soil Temperature, Unit:	68 F
Soil Moisture:	NORMAL
% Cloud Cover:	15

Crop Stage At Each Application

	A
Crop 1 Code, BBCH Scale:	GLXMA BSOY

Application Equipment

	A
Appl. Equipment:	Tractor
Equipment Type:	TRMOSP
Operation Pressure, Unit:	40 psi
Nozzle Type:	AIRMIX
Nozzle Size:	11002
Nozzle Spacing, Unit:	20 in
Boom Length, Unit:	10 ft
Boom Height, Unit:	18 in
Ground Speed, Unit:	3 mph
Carrier:	WATER
Spray Volume, Unit:	20 gal/ac
Mix Size, Unit:	0.7 Gallons
Propellant:	COMAIR

Trial Comments

06/02/15: Weed control in treatments with 1 fl oz/A of sharpen (trt2) is poor to none for morningglory and palmer amaranth.

University of Delaware

Soybean Variety Response to PPO Herbicides

Trial ID: Soy3-15 Location: Field #14 Trial Year:
Protocol ID: Soy3-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code				
	Crop Code							GLXMA	GLXMA	GLXMA	GLXMA
	Crop Name							Soybean	Soybean	Soybean	Soybean
	Crop Variety							SS4725	Dyn39R43	P94Y23	P93Y42
	Rating Type							Stunting	Stunting	Stunting	Stunting
	Rating Unit							%	%	%	%
	Rating Date							06/02/15	06/02/15	06/02/15	06/02/15
1	Untreated Check							0.0 c	0.0 b	0.0 c	0.0 a
2	Sharpen.....saflufenacil	2.85	SC	0.0223	lb ai/a	PRE	A	7.3 b	7.0 a	5.7 b	4.7 a
3	Sharpen.....saflufenacil	2.85	SC	0.0445	lb ai/a	PRE	A	15.0 a	10.0 a	15.0 a	7.0 a
4	Spartan Charge Premix	3.5	F	0.191	lb ai/a	PRE	A	4.7 b	1.7 b	7.3 b	1.7 a
	----carfentrazone	0.35		0.0191							
	----sulfentrazone	3.15		0.172							
5	Valor SX.....flumioxazin	51	WG	0.08	lb ai/a	PRE	A	5.7 b	9.0 a	5.7 b	5.0 a
6	Valor SX.....flumioxazin	51	WG	0.08	lb ai/a	PRE	A	7.0 b	9.0 a	8.0 b	3.3 a
	Dual Magnum.....s-metolachlor	7.62	E	1.43	lb ai/a	PRE	A				
	LSD P=.05							4.18	3.07	4.88	5.77
	Standard Deviation							2.30	1.69	2.68	3.17
	CV							34.79	27.65	38.61	87.81
	Replicate F							0.294	0.019	0.147	0.768
	Replicate Prob(F)							0.7514	0.9808	0.8653	0.4895
	Treatment F							13.548	18.848	9.819	1.875
	Treatment Prob(F)							0.0003	0.0001	0.0013	0.1859

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
t=Mean descriptions are reported in transformed data units, and are not de-transformed.
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.
Missing data estimates are included in columns:Yates=9,10,11,12,15,16,19,20,23,24,45,46

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Crop Code							GLXMA	GLXMA	GLXMA	GLXMA
Crop Name							Soybean	Soybean	Soybean	Soybean
Crop Variety							SS4725	Dyn39R43	P94Y23	P93Y42
Rating Type							Stunting	Stunting	Stunting	Stunting
Rating Unit							%	%	%	%
Rating Date							06/11/15	06/11/15	06/11/15	06/11/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code				
1	Untreated Check							0.0 c	0.0 b	0.0 c	0.0 c
2	Sharpen.....saflufenacil	2.85	SC	0.0223	lb ai/a	PRE	A	9.7 b	14.0 a	8.0 b	8.7 ab
3	Sharpen.....saflufenacil	2.85	SC	0.0445	lb ai/a	PRE	A	23.3 a	14.0 a	21.7 a	13.0 a
4	Spartan Charge Premix	3.5	F	0.191	lb ai/a	PRE	A	2.3 c	2.3 b	4.7 bc	2.3 c
	----carfentrazone	0.35		0.0191							
	----sulfentrazone	3.15		0.172							
5	Valor SX.....flumioxazin	51	WG	0.08	lb ai/a	PRE	A	2.3 c	8.7 a	0.0 c	4.0 bc
6	Valor SX.....flumioxazin	51	WG	0.08	lb ai/a	PRE	A	9.0 b	12.3 a	8.0 b	10.0 ab
	Dual Magnum.....s-metolachlor	7.62	E	1.43	lb ai/a	PRE	A				
LSD P=.05								5.36	5.78	5.06	6.33
Standard Deviation								2.95	3.18	2.78	3.48
CV								37.9	37.13	39.39	54.92
Replicate F								0.793	0.154	0.266	1.253
Replicate Prob(F)								0.4791	0.8591	0.7716	0.3268
Treatment F								25.330	11.031	24.905	6.193
Treatment Prob(F)								0.0001	0.0008	0.0001	0.0072

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code				
	Crop Code							GLXMA	GLXMA	GLXMA	GLXMA
	Crop Name							Soybean	Soybean	Soybean	Soybean
	Crop Variety							SS4725	Dyn39R43	P94Y23	P93Y42
	Rating Type							Stunting	Stunting	Stunting	Stunting
	Rating Unit							%	%	%	%
	Rating Date							06/23/15	06/23/15	06/23/15	06/23/15
1	Untreated Check							0.0 c	0.0 d	0.0 c	0.0 c
2	Sharpen.....saflufenacil	2.85	SC	0.0223	lb ai/a	PRE	A	17.3 b	14.0 b	19.7 b	11.7 ab
3	Sharpen.....saflufenacil	2.85	SC	0.0445	lb ai/a	PRE	A	60.0 a	28.3 a	60.0 a	13.8 a
4	Spartan Charge Premix	3.5	F	0.191	lb ai/a	PRE	A	2.3 c	4.7 cd	2.3 c	3.3 c
	----carfentrazone	0.35		0.0191							
	----sulfentrazone	3.15		0.172							
5	Valor SX.....flumioxazin	51	WG	0.08	lb ai/a	PRE	A	2.3 c	5.7 cd	4.0 c	4.3 bc
6	Valor SX.....flumioxazin	51	WG	0.08	lb ai/a	PRE	A	7.3 bc	9.4 bc	4.4 c	4.8 bc
	Dual Magnum.....s-metolachlor	7.62	E	1.43	lb ai/a	PRE	A				
	LSD P=.05							11.77	7.33	14.71	8.27
	Standard Deviation							6.37	3.97	7.96	4.28
	CV							42.8	38.33	52.84	67.61
	Replicate F							0.314	0.582	0.102	1.418
	Replicate Prob(F)							0.7379	0.5786	0.9039	0.3041
	Treatment F							38.968	19.024	25.229	4.584
	Treatment Prob(F)							0.0001	0.0002	0.0001	0.0356

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code				
	Crop Code							GLXMA	GLXMA	GLXMA	GLXMA
	Crop Name							Soybean	Soybean	Soybean	Soybean
	Crop Variety							SS4725	Dyn39R43	P94Y23	P93Y42
	Rating Type							Stunting	Stunting	Stunting	Stunting
	Rating Unit							%	%	%	%
	Rating Date							07/03/15	07/03/15	07/03/15	07/03/15
1	Untreated Check							0.0 c	0.0 c	0.0 c	0.0 a
2	Sharpen.....saflufenacil	2.85	SC	0.0223	lb ai/a	PRE	A	14.0 b	9.0 b	12.3 b	4.7 a
3	Sharpen.....saflufenacil	2.85	SC	0.0445	lb ai/a	PRE	A	53.3 a	15.7 a	53.3 a	10.7 a
4	Spartan Charge Premix	3.5	F	0.191	lb ai/a	PRE	A	0.0 c	0.0 c	0.0 c	3.2 a
	----carfentrazone	0.35		0.0191							
	----sulfentrazone	3.15		0.172							
5	Valor SX.....flumioxazin	51	WG	0.08	lb ai/a	PRE	A	0.0 c	4.0 c	0.0 c	3.2 a
6	Valor SX.....flumioxazin	51	WG	0.08	lb ai/a	PRE	A	9.7 b	9.7 b	7.2 b	0.7 a
	Dual Magnum.....s-metolachlor	7.62	E	1.43	lb ai/a	PRE	A				
	LSD P=.05							4.89	4.65	6.63	7.27
	Standard Deviation							2.69	2.55	3.43	3.76
	CV							20.96	39.97	28.28	100.19
	Replicate F							2.972	0.928	1.148	0.673
	Replicate Prob(F)							0.0970	0.4267	0.3706	0.5404
	Treatment F							177.986	17.569	110.240	3.069
	Treatment Prob(F)							0.0001	0.0001	0.0001	0.0880

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code				
	Crop Code							GLXMA	GLXMA	GLXMA	GLXMA
	Crop Name							Soybean	Soybean	Soybean	Soybean
	Crop Variety							SS4725	Dyn39R43	P94Y23	P93Y42
	Rating Type							Stunting	Stunting	Stunting	Stunting
	Rating Unit							%	%	%	%
	Rating Date							07/17/15	07/17/15	07/17/15	07/17/15
1	Untreated Check							0.0 a	0.0 c	0.0 b	0.0 a
2	Sharpen.....saflufenacil	2.85	SC	0.0223	lb ai/a	PRE	A	9.7 a	10.0 ab	3.3 b	4.7 a
3	Sharpen.....saflufenacil	2.85	SC	0.0445	lb ai/a	PRE	A	19.0 a	16.7 a	28.3 a	5.7 a
4	Spartan Charge Premix	3.5	F	0.191	lb ai/a	PRE	A	5.7 a	0.0 c	1.7 b	4.7 a
	----carfentrazone	0.35		0.0191							
	----sulfentrazone	3.15		0.172							
5	Valor SX.....flumioxazin	51	WG	0.08	lb ai/a	PRE	A	2.3 a	0.0 c	0.2 b	0.0 a
6	Valor SX.....flumioxazin	51	WG	0.08	lb ai/a	PRE	A	4.0 a	4.7 bc	0.2 b	0.0 a
	Dual Magnum.....s-metolachlor	7.62	E	1.43	lb ai/a	PRE	A				
	LSD P=.05							12.37	9.64	6.56	6.44
	Standard Deviation							6.80	5.30	3.48	3.42
	CV							100.34	101.43	62.1	136.87
	Replicate F							0.297	0.335	0.136	1.039
	Replicate Prob(F)							0.7496	0.7233	0.8745	0.3970
	Treatment F							3.014	5.046	31.093	1.956
	Treatment Prob(F)							0.0648	0.0144	0.0001	0.1903

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code				
	Crop Code							GLXMA	GLXMA	GLXMA	GLXMA
	Crop Name							Soybean	Soybean	Soybean	Soybean
	Crop Variety							SS4725	Dyn39R43	P94Y23	P93Y42
	Rating Type							Stunting	Stunting	Stunting	Stunting
	Rating Unit							%	%	%	%
	Rating Date							07/28/15	07/28/15	07/28/15	07/28/15
1	Untreated Check							0.0 c	0.0 b	0.0 c	0.0 a
2	Sharpen.....saflufenacil	2.85	SC	0.0223	lb ai/a	PRE	A	10.3 b	4.7 ab	19.0 b	7.3 a
3	Sharpen.....saflufenacil	2.85	SC	0.0445	lb ai/a	PRE	A	28.3 a	10.0 a	33.3 a	6.7 a
4	Spartan Charge Premix	3.5	F	0.191	lb ai/a	PRE	A	2.3 c	0.0 b	3.3 c	2.3 a
	----carfentrazone	0.35		0.0191							
	----sulfentrazone	3.15		0.172							
5	Valor SX.....flumioxazin	51	WG	0.08	lb ai/a	PRE	A	2.3 c	3.3 b	1.1 c	2.5 a
6	Valor SX.....flumioxazin	51	WG	0.08	lb ai/a	PRE	A	6.7 bc	4.7 ab	0.0 c	0.5 a
	Dual Magnum.....s-metolachlor	7.62	E	1.43	lb ai/a	PRE	A				
	LSD P=.05							6.91	5.75	11.49	9.62
	Standard Deviation							3.80	3.16	6.10	5.11
	CV							45.59	83.66	64.48	158.37
	Replicate F							0.727	1.607	1.328	0.669
	Replicate Prob(F)							0.5070	0.2482	0.3177	0.5388
	Treatment F							22.790	4.147	15.248	1.097
	Treatment Prob(F)							0.0001	0.0267	0.0007	0.4309

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code				
	Crop Code							GLXMA	GLXMA	GLXMA	GLXMA
	Crop Name							Soybean	Soybean	Soybean	Soybean
	Crop Variety							SS4725	Dyn39R43	P94Y23	P93Y42
	Rating Type							Ct-lodge	Ct-lodge	Ct-lodge	Ct-lodge
	Rating Unit							#/plot	#/plot	#/plot	#/plot
	Rating Date							10/22/15	10/22/15	10/22/15	10/22/15
1	Untreated Check							18.7 a	13.7 a	10.5 a	11.0 a
2	Sharpen.....saflufenacil	2.85	SC	0.0223	lb ai/a	PRE	A	14.0 a	12.7 a	6.0 a	16.3 a
3	Sharpen.....saflufenacil	2.85	SC	0.0445	lb ai/a	PRE	A	7.3 a	18.7 a	10.4 a	9.7 a
4	Spartan Charge Premix	3.5	F	0.191	lb ai/a	PRE	A	11.7 a	11.3 a	4.0 a	3.3 a
	----carfentrazone	0.35		0.0191							
	----sulfentrazone	3.15		0.172							
5	Valor SX.....flumioxazin	51	WG	0.08	lb ai/a	PRE	A	15.3 a	9.3 a	9.3 a	10.0 a
6	Valor SX.....flumioxazin	51	WG	0.08	lb ai/a	PRE	A	13.3 a	12.3 a	7.2 a	11.0 a
	Dual Magnum.....s-metolachlor	7.62	E	1.43	lb ai/a	PRE	A				
	LSD P=.05							10.83	11.78	7.27 - 8.60	9.98
	Standard Deviation							5.95	6.47	0.24t	5.49
	CV							44.47	49.79	25.47t	53.66
	Replicate F							0.801	1.945	2.039	5.170
	Replicate Prob(F)							0.4758	0.1934	0.1809	0.0287
	Treatment F							1.212	0.706	1.055	1.722
	Treatment Prob(F)							0.3706	0.6319	0.4384	0.2171

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code				
	Crop Code							GLXMA	GLXMA	GLXMA	GLXMA
	Crop Name							Soybean	Soybean	Soybean	Soybean
	Crop Variety							SS4725	Dyn39R43	P94Y23	P93Y42
	Rating Type							Ct-brokn	Ct-brokn	Ct-brokn	Ct-brokn
	Rating Unit							#/plot	#/plot	#/plot	#/plot
	Rating Date							10/22/15	10/22/15	10/22/15	10/22/15
1	Untreated Check							24.3 a	55.3 a	25.0 a	58.3 a
2	Sharpen.....saflufenacil	2.85	SC	0.0223	lb ai/a	PRE	A	22.3 a	54.3 a	26.7 a	49.7 a
3	Sharpen.....saflufenacil	2.85	SC	0.0445	lb ai/a	PRE	A	12.0 a	44.7 a	16.7 a	78.7 a
4	Spartan Charge Premix	3.5	F	0.191	lb ai/a	PRE	A	21.3 a	52.3 a	32.3 a	68.0 a
	----carfentrazone	0.35		0.0191							
	----sulfentrazone	3.15		0.172							
5	Valor SX.....flumioxazin	51	WG	0.08	lb ai/a	PRE	A	30.0 a	61.0 a	33.3 a	62.7 a
6	Valor SX.....flumioxazin	51	WG	0.08	lb ai/a	PRE	A	30.0 a	50.3 a	33.7 a	56.7 a
	Dual Magnum.....s-metolachlor	7.62	E	1.43	lb ai/a	PRE	A				
	LSD P=.05							14.29	19.85	17.71	23.14
	Standard Deviation							7.85	10.91	9.73	12.72
	CV							33.66	20.58	34.83	20.4
	Replicate F							12.763	4.459	6.060	1.150
	Replicate Prob(F)							0.0018	0.0413	0.0189	0.3552
	Treatment F							2.172	0.747	1.384	1.883
	Treatment Prob(F)							0.1389	0.6062	0.3087	0.1845

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Crop Code							GLXMA	GLXMA	GLXMA	GLXMA
Crop Name							Soybean	Soybean	Soybean	Soybean
Crop Variety							SS4725	Dyn39R43	P94Y23	P93Y42
Rating Type							LdgeBrkn	LdgeBrkn	LdgeBrkn	LdgeBrkn
Rating Unit							#/plot	#/plot	#/plot	#/plot
Rating Date							10/22/15	10/22/15	10/22/15	10/22/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code				
1	Untreated Check							43 a	69 a	36 a	69 a
2	Sharpen.....saflufenacil	2.85	SC	0.0223	lb ai/a	PRE	A	36 a	67 a	33 a	66 a
3	Sharpen.....saflufenacil	2.85	SC	0.0445	lb ai/a	PRE	A	19 a	63 a	27 a	88 a
4	Spartan Charge Premix	3.5	F	0.191	lb ai/a	PRE	A	33 a	64 a	37 a	71 a
	----carfentrazone	0.35		0.0191							
	----sulfentrazone	3.15		0.172							
5	Valor SX.....flumioxazin	51	WG	0.08	lb ai/a	PRE	A	45 a	70 a	47 a	73 a
6	Valor SX.....flumioxazin	51	WG	0.08	lb ai/a	PRE	A	43 a	63 a	42 a	68 a
	Dual Magnum.....s-metolachlor	7.62	E	1.43	lb ai/a	PRE	A				
LSD P=.05								20.2	19.1	17.7	19.3
Standard Deviation								11.1	10.5	9.7	10.6
CV								30.27	15.89	26.31	14.61
Replicate F								7.593	2.146	3.957	0.014
Replicate Prob(F)								0.0099	0.1677	0.0542	0.9863
Treatment F								2.299	0.286	1.455	1.749
Treatment Prob(F)								0.1229	0.9102	0.2867	0.2112

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Crop Code							GLXMA	GLXMA	GLXMA	GLXMA
Crop Name							Soybean	Soybean	Soybean	Soybean
Crop Variety							SS4725	Dyn39R43	P94Y23	P93Y42
Rating Type							Yield	Yield	Yield	Yield
Rating Unit							Bu/A	Bu/A	Bu/A	Bu/A
Rating Date							11/04/15	11/04/15	11/04/15	11/04/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code				
1	Untreated Check							39.3 a	37.3 a	35.9 a	31.6 a
2	Sharpen.....saflufenacil	2.85	SC	0.0223	lb ai/a	PRE	A	38.5 a	38.1 a	33.8 ab	36.8 a
3	Sharpen.....saflufenacil	2.85	SC	0.0445	lb ai/a	PRE	A	32.3 a	41.9 a	26.2 c	33.8 a
4	Spartan Charge Premix	3.5	F	0.191	lb ai/a	PRE	A	38.7 a	35.5 a	29.9 abc	28.4 a
	----carfentrazone	0.35		0.0191							
	----sulfentrazone	3.15		0.172							
5	Valor SX.....flumioxazin	51	WG	0.08	lb ai/a	PRE	A	38.3 a	32.4 a	33.3 ab	24.6 a
6	Valor SX.....flumioxazin	51	WG	0.08	lb ai/a	PRE	A	36.3 a	34.1 a	27.7 bc	28.6 a
	Dual Magnum.....s-metolachlor	7.62	E	1.43	lb ai/a	PRE	A				
LSD P=.05								6.66	6.17	6.33	10.94
Standard Deviation								3.61	3.34	3.48	6.01
CV								9.68	9.14	11.17	19.62
Replicate F								2.876	1.766	1.024	0.554
Replicate Prob(F)								0.1082	0.2254	0.3940	0.5911
Treatment F								1.604	3.033	3.557	1.559
Treatment Prob(F)								0.2532	0.0706	0.0416	0.2569

University of Delaware

Herbicide Programs for Bolt Technology in Soybeans

Trial ID: Soy4-15 Location: Field #14 Trial Year:
Protocol ID: Soy4-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact: DuPont

Investigator: Mark VanGessel Title: Extension Weed Specialist
Organization: University of Delaware
Address: 16483 County Seat Hwy
City+State/Prov: Georgetown, Delaware
Postal Code: 19947 E-mail: mjv@udel.edu
Country: USA United States

Crop Description

Crop 1: GLXMA Glycine max Soybean
Variety: P50T15BR BBCH Scale: BSOY
Description: Bolt technology

Planting Rate, Unit: 180000 S/A
Depth, Unit: 1 in
Row Spacing, Unit: 15 in

Soil Temperature, Unit: 76 F
Soil Moisture: NORMAL normal, adequate
Seed Bed: SMOOTH smooth

Planting Date: 05/13/15
Planting Method: PLANTD planted
Planting Equipment: PP Plot Planter
Emergence Date: 05/19/15
Harvest Date: 10/19/15
Harvested Width, Unit: 6.25 FT
Harvested Length, Unit: 25 FT
Harvest Equipment: Plot combine
% Standard Moisture: 13.0

Pest Description

Pest 1 Type: W Code: AMAPA Amaranthus palmeri
Common Name: Palmer amaranth

Pest 2 Type: W Code: IPOSS Ipomoea sp.
Common Name: Morning glory

Pest 3 Type: W Code: CHEAL Chenopodium album
Common Name: Common lambsquarters

Site and Design

Treated Plot Width: 10 FT Site Type: FIELD field
Treated Plot Length: 25 FT
Treated Plot Area: 250 FT2 Treatments: 8 Tillage Type: CONTIL conventional-till
Replications: 3 Study Design: RACOBL Randomized Complete Block (RCB)

Soil Description

% Sand: 81 % OM: 1.0 Texture: LS loamy sand
% Silt: 12 pH: 6.1
% Clay: 7 CEC: 4.7 Fert. Level: E excellent
Soil Drainage: G good

Moisture and Weather Conditions

Overall Moisture Conditions: NORMAL normal
Closest Weather Station: UD REC Distance, Unit: 0.3 mi

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Application Description

	A	B
Application Date:	05/14/15	06/17/15
Appl. Stop Time:	10:40 AM	02:20 PM
Interval to Prev. Appl., Unit:		34 DAYS
Application Method:	SPRAY	SPRAY
Application Timing:	PRE	2-4"wds
Application Placement:	BROADC	BROADC
Applied By:	Johnson	VanGessl
Air Temperature, Unit:	62 F	80 F
% Relative Humidity:	44	52
Wind Velocity, Unit:	4 mph	4 mph
Wind Direction:	NE	E
Dew Presence (Y/N):	N no	N no
Soil Temperature, Unit:	61 F	80 F
Soil Moisture:	NORMAL	NORMAL
% Cloud Cover:	5	35

Crop Stage At Each Application

	A	B
Crop 1 Code, BBCH Scale:	GLXMA BSOY	GLXMA BSOY
Stage Scale Used:		DESC
Stage Majority, Percent:		4-trif 80
Stage Minimum, Percent:		3-trif 20
Stage Maximum, Percent:		4-trif 80
Height, Unit:		8 in
Height Minimum, Maximum:		7 10

Pest Stage At Each Application

	A	B
Pest 1 Code, Type, Scale:	AMAPA W	AMAPA W
Stage Majority, Percent:		veg 100
Height, Unit:		6 in
Height Minimum, Maximum:		4 8
Density, Unit:		8 m2
Pest 2 Code, Type, Scale:	IPOSS W	IPOSS W
Stage Majority, Percent:		run 100
Height, Unit:		8 in
Height Minimum, Maximum:		5 10
Density, Unit:		3 m2
Pest 3 Code, Type, Scale:	CHEAL W	CHEAL W
Stage Majority, Percent:		veg 100
Height, Unit:		4 in
Height Minimum, Maximum:		2 5
Density, Unit:		4 m2

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Application Equipment

	A	B
Appl. Equipment:	Tractor	Backpack
Equipment Type:	TRMOSP	SPRBAC
Operation Pressure, Unit:	40 psi	31 psi
Nozzle Type:	AIRMIX	AIRMIX
Nozzle Size:	11002	11002
Nozzle Spacing, Unit:	20 in	18 in
Boom Length, Unit:	10 ft	9 ft
Boom Height, Unit:	18 in	26 in
Ground Speed, Unit:	3 mph	3 mph
Carrier:	WATER	WATER
Spray Volume, Unit:	20 gal/ac	20 gal/ac
Mix Size, Unit:	0.7 Gallons	2 Liters
Propellant:	COMAIR	COMCO2

Trial Comments

06/19/15: Only top two leaves evaluated wih rating leaf puckering

07/03/15: Grass observed in untreated checks but none in any treated plot.

University of Delaware

Herbicide Programs for Bolt Technology in Soybeans

Trial ID: Soy4-15 Location: Field #14 Trial Year:
Protocol ID: Soy4-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact: DuPont

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	GLXMA Soybean Stunting	GLXMA Soybean Chlorosis	AMAPA PalmerAm Control	IPOSS mornglry Control
	Pest Code										
	Crop Code							GLXMA	GLXMA		
	Rating Type							Stunting	Chlorosis	Control	Control
	Rating Unit							%	%	%	%
	Rating Date							06/11/15	06/11/15	06/11/15	06/11/15
1	Valor SX.....flumioxazin	51	WG	0.064	lb ai/a	PRE	A	0.0 c	0.0 c	66.7 a	40.0 c
	Roundup PowerMax..glyphosate	4.5	AS	0.77	lb ae/a	2-4"wds	B				
	Classic.....chlorimuron	25	WG	0.005	lb ai/a	2-4"wds	B				
	Harmony XP.....thifensulfuron	75	SG	0.0019	lb ai/a	2-4"wds	B				
	Dry Ammonium Sulfate	100	D	2.04	% w/v	2-4"wds	B				
2	Envive Premix	41.3	WG	0.09	lb ai/a	PRE	A	9.7 b	0.0 c	100.0 a	94.7 a
	----chlorimuron	9.199999		0.02							
	----flumioxazin	29.2		.0636							
	----thifensulfuron	2.9		0.0063							
	Roundup PowerMax..glyphosate	4.5	AS	0.77	lb ae/a	2-4"wds	B				
	Classic.....chlorimuron	25	WG	0.005	lb ai/a	2-4"wds	B				
	Harmony XP.....thifensulfuron	75	SG	0.0019	lb ai/a	2-4"wds	B				
	Dry Ammonium Sulfate	100	D	2.04	% w/v	2-4"wds	B				
3	Basis Blend Premix	30	SG	0.0234	lb ai/a	PRE	A	9.7 b	10.7 a	91.7 a	72.3 ab
	----rimsulfuron	20		0.0156							
	----thifensulfuron	10		0.0078							
	Roundup PowerMax..glyphosate	4.5	AS	0.77	lb ae/a	2-4"wds	B				
	Classic.....chlorimuron	25	WG	0.005	lb ai/a	2-4"wds	B				
	Harmony XP.....thifensulfuron	75	SG	0.0019	lb ai/a	2-4"wds	B				
	Dry Ammonium Sulfate	100	D	2.04	% w/v	2-4"wds	B				
4	Basis Blend Premix	30	SG	0.0234	lb ai/a	PRE	A	10.3 b	9.0 a	100.0 a	90.0 a
	----rimsulfuron	20		0.0156							
	----thifensulfuron	10		0.0078							
	Valor SX.....flumioxazin	51	WG	0.064	lb ai/a	PRE	A				
	Roundup PowerMax..glyphosate	4.5	AS	0.77	lb ae/a	2-4"wds	B				
	Classic.....chlorimuron	25	WG	0.005	lb ai/a	2-4"wds	B				
	Harmony XP.....thifensulfuron	75	SG	0.0019	lb ai/a	2-4"wds	B				
	Dry Ammonium Sulfate	100	D	2.04	% w/v	2-4"wds	B				
5	Diligent Premix	37.9	WG	0.095	lb ai/a	PRE	A	18.3 a	5.0 b	100.0 a	91.7 a
	----flumioxazin	25.28		0.0634							
	----rimsulfuron	6.31		0.0158							
	----chlorimuron	6.31		0.0158							
	Roundup PowerMax..glyphosate	4.5	AS	0.77	lb ae/a	2-4"wds	B				
	Classic.....chlorimuron	25	WG	0.005	lb ai/a	2-4"wds	B				
	Harmony XP.....thifensulfuron	75	SG	0.0019	lb ai/a	2-4"wds	B				
	Dry Ammonium Sulfate	100	D	2.04	% w/v	2-4"wds	B				
6	Valor SX.....flumioxazin	51	WG	0.064	lb ai/a	PRE	A	6.3 b	2.3 bc	100.0 a	55.0 bc
	Metribuzin.....metribuzin	75	DF	0.188	lb ai/a	PRE	A				
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a	2-4"wds	B				
	Reflex.....fomesafen	2	L	0.313	lb ai/a	2-4"wds	B				
7	Untreated Check							0.0 c	0.0 c	0.0 b	0.0 d

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code				
	Pest Code									AMAPA	IPOSS
	Pest Name									PalmerAm	mornglry
	Crop Code							GLXMA	GLXMA		
	Crop Name							Soybean	Soybean		
	Rating Type							Stunting	Chlorosis	Control	Control
	Rating Unit							%	%	%	%
	Rating Date							06/11/15	06/11/15	06/11/15	06/11/15
8	Canopy Premix	75	DF	0.188	lb ai/a	PRE	A	9.0 b	0.0 c	100.0 a	85.3 a
	----metribuzin	64.3		0.161							
	----chlorimuron	10.7		0.0268							
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a	2-4"wds	B				
	Reflex.....fomesafen	2	L	0.313	lb ai/a	2-4"wds	B				
	LSD P=.05							5.36	3.96	35.55	25.47
	Standard Deviation							3.06	2.26	20.30	14.54
	CV							38.68	67.0	24.67	22.0
	Replicate F							0.324	4.865	1.231	0.669
	Replicate Prob(F)							0.7282	0.0249	0.3217	0.5279
	Treatment F							11.406	11.240	9.020	15.444
	Treatment Prob(F)							0.0001	0.0001	0.0003	0.0001

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	GLXMA Soybean Stunting	GLXMA Soybean Chlorosis	GLXMA Soybean Puckering	GLXMA Soybean Stunting
	Pest Code										
	Pest Name										
	Crop Code							GLXMA	GLXMA	GLXMA	GLXMA
	Crop Name							Soybean	Soybean	Soybean	Soybean
	Rating Type							Stunting	Chlorosis	Puckering	Stunting
	Rating Unit							%	%	%	%
	Rating Date							06/16/15	06/19/15	06/19/15	06/19/15
1	Valor SX.....flumioxazin	51	WG	0.064	lb ai/a	PRE	A	0.0 c	5.0 a	0.0 b	0.0 e
	Roundup PowerMax..glyphosate	4.5	AS	0.77	lb ae/a	2-4"wds	B				
	Classic.....chlorimuron	25	WG	0.005	lb ai/a	2-4"wds	B				
	Harmony XP.....thifensulfuron	75	SG	0.0019	lb ai/a	2-4"wds	B				
	Dry Ammonium Sulfate	100	D	2.04	% w/v	2-4"wds	B				
2	Envive Premix	41.3	WG	0.09	lb ai/a	PRE	A	10.7 b	7.0 a	0.0 b	9.7 cd
	----chlorimuron	9.199999		0.02							
	----flumioxazin	29.2		.0636							
	----thifensulfuron	2.9		0.0063							
	Roundup PowerMax..glyphosate	4.5	AS	0.77	lb ae/a	2-4"wds	B				
	Classic.....chlorimuron	25	WG	0.005	lb ai/a	2-4"wds	B				
	Harmony XP.....thifensulfuron	75	SG	0.0019	lb ai/a	2-4"wds	B				
	Dry Ammonium Sulfate	100	D	2.04	% w/v	2-4"wds	B				
3	Basis Blend Premix	30	SG	0.0234	lb ai/a	PRE	A	0.0 c	7.0 a	0.0 b	2.3 e
	----rimsulfuron	20		0.0156							
	----thifensulfuron	10		0.0078							
	Roundup PowerMax..glyphosate	4.5	AS	0.77	lb ae/a	2-4"wds	B				
	Classic.....chlorimuron	25	WG	0.005	lb ai/a	2-4"wds	B				
	Harmony XP.....thifensulfuron	75	SG	0.0019	lb ai/a	2-4"wds	B				
	Dry Ammonium Sulfate	100	D	2.04	% w/v	2-4"wds	B				
4	Basis Blend Premix	30	SG	0.0234	lb ai/a	PRE	A	2.3 c	8.7 a	0.0 b	8.0 d
	----rimsulfuron	20		0.0156							
	----thifensulfuron	10		0.0078							
	Valor SX.....flumioxazin	51	WG	0.064	lb ai/a	PRE	A				
	Roundup PowerMax..glyphosate	4.5	AS	0.77	lb ae/a	2-4"wds	B				
	Classic.....chlorimuron	25	WG	0.005	lb ai/a	2-4"wds	B				
	Harmony XP.....thifensulfuron	75	SG	0.0019	lb ai/a	2-4"wds	B				
	Dry Ammonium Sulfate	100	D	2.04	% w/v	2-4"wds	B				
5	Diligent Premix	37.9	WG	0.095	lb ai/a	PRE	A	19.0 a	6.7 a	0.0 b	17.3 a
	----flumioxazin	25.28		0.0634							
	----rimsulfuron	6.31		0.0158							
	----chlorimuron	6.31		0.0158							
	Roundup PowerMax..glyphosate	4.5	AS	0.77	lb ae/a	2-4"wds	B				
	Classic.....chlorimuron	25	WG	0.005	lb ai/a	2-4"wds	B				
	Harmony XP.....thifensulfuron	75	SG	0.0019	lb ai/a	2-4"wds	B				
	Dry Ammonium Sulfate	100	D	2.04	% w/v	2-4"wds	B				
6	Valor SX.....flumioxazin	51	WG	0.064	lb ai/a	PRE	A	0.0 c	0.0 b	20.0 a	13.0 bc
	Metribuzin.....metribuzin	75	DF	0.188	lb ai/a	PRE	A				
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a	2-4"wds	B				
	Reflex.....fomesafen	2	L	0.313	lb ai/a	2-4"wds	B				
7	Untreated Check							0.0 c	0.0 b	0.0 b	0.0 e

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code				
	Pest Code										
	Pest Name										
	Crop Code							GLXMA	GLXMA	GLXMA	GLXMA
	Crop Name							Soybean	Soybean	Soybean	Soybean
	Rating Type							Stunting	Chlorosis	Puckering	Stunting
	Rating Unit							%	%	%	%
	Rating Date							06/16/15	06/19/15	06/19/15	06/19/15
8	Canopy Premix	75	DF	0.188	lb ai/a	PRE	A	9.7 b	0.0 b	18.3 a	16.7 ab
	----metribuzin	64.3		0.161							
	----chlorimuron	10.7		0.0268							
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a	2-4"wds	B				
	Reflex.....fomesafen	2	L	0.313	lb ai/a	2-4"wds	B				
	LSD P=.05							3.91	4.33	3.38	4.33
	Standard Deviation							2.23	2.47	1.93	2.47
	CV							42.91	57.67	40.25	29.54
	Replicate F							1.410	0.456	1.960	0.082
	Replicate Prob(F)							0.2768	0.6430	0.1776	0.9220
	Treatment F							30.607	6.662	63.640	24.443
	Treatment Prob(F)							0.0001	0.0013	0.0001	0.0001

Pest Code Pest Name Crop Code Crop Name Rating Type Rating Unit Rating Date									GLXMA Soybean Stunting % 06/23/15	AMAPA PalmerAm Control % 06/23/15	IPOSS mornglry Control % 06/23/15	GLXMA Soybean Stunting % 07/03/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code					
1	Valor SX.....flumioxazin	51	WG	0.064	lb ai/a	PRE	A		0.0 d	100.0 a	74.3 b	0.0 c
	Roundup PowerMax..glyphosate	4.5	AS	0.77	lb ae/a	2-4"wds	B					
	Classic.....chlorimuron	25	WG	0.005	lb ai/a	2-4"wds	B					
	Harmony XP.....thifensulfuron	75	SG	0.0019	lb ai/a	2-4"wds	B					
	Dry Ammonium Sulfate	100	D	2.04	% w/v	2-4"wds	B					
2	Envive Premix	41.3	WG	0.09	lb ai/a	PRE	A		6.7 c	100.0 a	100.0 a	4.7 bc
	----chlorimuron	9.199999		0.02								
	----flumioxazin	29.2		.0636								
	----thifensulfuron	2.9		0.0063								
	Roundup PowerMax..glyphosate	4.5	AS	0.77	lb ae/a	2-4"wds	B					
	Classic.....chlorimuron	25	WG	0.005	lb ai/a	2-4"wds	B					
	Harmony XP.....thifensulfuron	75	SG	0.0019	lb ai/a	2-4"wds	B					
	Dry Ammonium Sulfate	100	D	2.04	% w/v	2-4"wds	B					
3	Basis Blend Premix	30	SG	0.0234	lb ai/a	PRE	A		10.7 bc	96.7 a	78.7 b	2.3 bc
	----rimsulfuron	20		0.0156								
	----thifensulfuron	10		0.0078								
	Roundup PowerMax..glyphosate	4.5	AS	0.77	lb ae/a	2-4"wds	B					
	Classic.....chlorimuron	25	WG	0.005	lb ai/a	2-4"wds	B					
	Harmony XP.....thifensulfuron	75	SG	0.0019	lb ai/a	2-4"wds	B					
	Dry Ammonium Sulfate	100	D	2.04	% w/v	2-4"wds	B					
4	Basis Blend Premix	30	SG	0.0234	lb ai/a	PRE	A		9.7 bc	100.0 a	94.3 a	4.7 bc
	----rimsulfuron	20		0.0156								
	----thifensulfuron	10		0.0078								
	Valor SX.....flumioxazin	51	WG	0.064	lb ai/a	PRE	A					
	Roundup PowerMax..glyphosate	4.5	AS	0.77	lb ae/a	2-4"wds	B					
	Classic.....chlorimuron	25	WG	0.005	lb ai/a	2-4"wds	B					
	Harmony XP.....thifensulfuron	75	SG	0.0019	lb ai/a	2-4"wds	B					
	Dry Ammonium Sulfate	100	D	2.04	% w/v	2-4"wds	B					
5	Diligent Premix	37.9	WG	0.095	lb ai/a	PRE	A		22.3 a	100.0 a	98.0 a	12.3 a
	----flumioxazin	25.28		0.0634								
	----rimsulfuron	6.31		0.0158								
	----chlorimuron	6.31		0.0158								
	Roundup PowerMax..glyphosate	4.5	AS	0.77	lb ae/a	2-4"wds	B					
	Classic.....chlorimuron	25	WG	0.005	lb ai/a	2-4"wds	B					
	Harmony XP.....thifensulfuron	75	SG	0.0019	lb ai/a	2-4"wds	B					
	Dry Ammonium Sulfate	100	D	2.04	% w/v	2-4"wds	B					
6	Valor SX.....flumioxazin	51	WG	0.064	lb ai/a	PRE	A		14.7 b	100.0 a	98.3 a	7.3 ab
	Metribuzin.....metribuzin	75	DF	0.188	lb ai/a	PRE	A					
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a	2-4"wds	B					
	Reflex.....fomesafen	2	L	0.313	lb ai/a	2-4"wds	B					
7	Untreated Check								0.0 d	0.0 b	0.0 c	0.0 c

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Pest Code								AMAPA	IPOSS	
Pest Name								PalmerAm	mornglry	
Crop Code							GLXMA			GLXMA
Crop Name							Soybean			Soybean
Rating Type							Stunting	Control	Control	Stunting
Rating Unit							%	%	%	%
Rating Date							06/23/15	06/23/15	06/23/15	07/03/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code			
8	Canopy Premix	75	DF	0.188	lb ai/a	PRE	A	21.7 a	100.0 a	99.7 a	13.0 a
	----metribuzin	64.3		0.161						
	----chlorimuron	10.7		0.0268						
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a	2-4"wds	B			
	Reflex.....fomesafen	2	L	0.313	lb ai/a	2-4"wds	B			
LSD P=.05								6.11	3.57	10.40	7.04
Standard Deviation								3.49	2.04	5.94	4.02
CV								32.61	2.34	7.38	72.54
Replicate F								1.367	1.000	0.504	1.642
Replicate Prob(F)								0.2868	0.3927	0.6144	0.2287
Treatment F								18.199	892.429	98.246	4.726
Treatment Prob(F)								0.0001	0.0001	0.0001	0.0066

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	AMAPA PalmerAm Control % 07/03/15	IPOSS mornglry Control % 07/03/15	GLXMA Soybean Yield Bu/A 10/19/15
	Pest Code							AMAPA	IPOSS	
	Pest Name							PalmerAm	mornglry	
	Crop Code									GLXMA
	Crop Name									Soybean
	Rating Type							Control	Control	Yield
	Rating Unit							%	%	Bu/A
	Rating Date							07/03/15	07/03/15	10/19/15
1	Valor SX.....flumioxazin	51	WG	0.064	lb ai/a	PRE	A	100.0 a	97.3 a	38.8 a
	Roundup PowerMax..glyphosate	4.5	AS	0.77	lb ae/a	2-4"wds	B			
	Classic.....chlorimuron	25	WG	0.005	lb ai/a	2-4"wds	B			
	Harmony XP.....thifensulfuron	75	SG	0.0019	lb ai/a	2-4"wds	B			
	Dry Ammonium Sulfate	100	D	2.04	% w/v	2-4"wds	B			
2	Envive Premix	41.3	WG	0.09	lb ai/a	PRE	A	100.0 a	100.0 a	36.5 a
	----chlorimuron	9.199999		0.02						
	----flumioxazin	29.2		.0636						
	----thifensulfuron	2.9		0.0063						
	Roundup PowerMax..glyphosate	4.5	AS	0.77	lb ae/a	2-4"wds	B			
	Classic.....chlorimuron	25	WG	0.005	lb ai/a	2-4"wds	B			
	Harmony XP.....thifensulfuron	75	SG	0.0019	lb ai/a	2-4"wds	B			
	Dry Ammonium Sulfate	100	D	2.04	% w/v	2-4"wds	B			
3	Basis Blend Premix	30	SG	0.0234	lb ai/a	PRE	A	99.0 a	90.0 b	36.6 a
	----rimsulfuron	20		0.0156						
	----thifensulfuron	10		0.0078						
	Roundup PowerMax..glyphosate	4.5	AS	0.77	lb ae/a	2-4"wds	B			
	Classic.....chlorimuron	25	WG	0.005	lb ai/a	2-4"wds	B			
	Harmony XP.....thifensulfuron	75	SG	0.0019	lb ai/a	2-4"wds	B			
	Dry Ammonium Sulfate	100	D	2.04	% w/v	2-4"wds	B			
4	Basis Blend Premix	30	SG	0.0234	lb ai/a	PRE	A	100.0 a	98.3 a	35.4 a
	----rimsulfuron	20		0.0156						
	----thifensulfuron	10		0.0078						
	Valor SX.....flumioxazin	51	WG	0.064	lb ai/a	PRE	A			
	Roundup PowerMax..glyphosate	4.5	AS	0.77	lb ae/a	2-4"wds	B			
	Classic.....chlorimuron	25	WG	0.005	lb ai/a	2-4"wds	B			
	Harmony XP.....thifensulfuron	75	SG	0.0019	lb ai/a	2-4"wds	B			
	Dry Ammonium Sulfate	100	D	2.04	% w/v	2-4"wds	B			
5	Diligent Premix	37.9	WG	0.095	lb ai/a	PRE	A	100.0 a	95.3 ab	33.1 a
	----flumioxazin	25.28		0.0634						
	----rimsulfuron	6.31		0.0158						
	----chlorimuron	6.31		0.0158						
	Roundup PowerMax..glyphosate	4.5	AS	0.77	lb ae/a	2-4"wds	B			
	Classic.....chlorimuron	25	WG	0.005	lb ai/a	2-4"wds	B			
	Harmony XP.....thifensulfuron	75	SG	0.0019	lb ai/a	2-4"wds	B			
	Dry Ammonium Sulfate	100	D	2.04	% w/v	2-4"wds	B			
6	Valor SX.....flumioxazin	51	WG	0.064	lb ai/a	PRE	A	100.0 a	95.3 ab	35.0 a
	Metribuzin.....metribuzin	75	DF	0.188	lb ai/a	PRE	A			
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a	2-4"wds	B			
	Reflex.....fomesafen	2	L	0.313	lb ai/a	2-4"wds	B			
7	Untreated Check							0.0 b	0.0 c	14.3 b

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Pest Code								AMAPA	IPOSS	
Pest Name								PalmerAm	mornglry	
Crop Code										GLXMA
Crop Name										Soybean
Rating Type								Control	Control	Yield
Rating Unit								%	%	Bu/A
Rating Date								07/03/15	07/03/15	10/19/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code			
8	Canopy Premix	75	DF	0.188	lb ai/a	PRE	A	100.0 a	98.3 a	34.9 a
	----metribuzin	64.3		0.161						
	----chlorimuron	10.7		0.0268						
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a	2-4"wds	B			
	Reflex.....fomesafen	2	L	0.313	lb ai/a	2-4"wds	B			
LSD P=.05								1.07	5.85	7.59
Standard Deviation								0.61	3.34	4.33
CV								0.7	3.96	13.11
Replicate F								1.000	1.675	12.988
Replicate Prob(F)								0.3927	0.2227	0.0006
Treatment F								9972.430	315.103	9.646
Treatment Prob(F)								0.0001	0.0001	0.0002

University of Delaware

Evaluation of Residual Herbicides for Soybeans

Trial ID: Soy5-15 Location: Field #3 Trial Year:
Protocol ID: Soy5-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Investigator: Mark VanGessel Title: Extension Weed Specialist
Organization: University of Delaware
Address: 16483 County Seat Hwy
City+State/Prov: Georgetown, Delaware
Postal Code: 19947 E-mail: mjv@udel.edu
Country: USA United States

Crop Description

Crop 1: GLXMA Glycine max Soybean
Variety: 4306R2/STS BBCH Scale: BSOY
Planting Date: 06/11/15
Planting Rate, Unit: 180000 S/A Planting Method: PLANTD planted
Depth, Unit: 1 in Planting Equipment: FE Field Equipment
Row Spacing, Unit: 15 in Emergence Date: 06/16/15
Harvest Date: 10/23/15
Harvested Width, Unit: 6.25 FT
Soil Temperature, Unit: 90 F Harvested Length, Unit: 25 FT
Soil Moisture: NORMAL normal, adequate Harvest Equipment: Plot combine
Seed Bed: MEDTRA medium/trashy % Standard Moisture: 13.0

Site and Design

Treated Plot Width: 10 FT Site Type: FIELD field
Treated Plot Length: 25 FT
Treated Plot Area: 250 FT2 Treatments: 14 Tillage Type: NOTILL no-till
Replications: 3 Study Design: RACOBL Randomized Complete Block (RCB)

Maintenance

No.	Date	Maintenance Product Name	Form Conc	Form Type	Rate	Rate Unit
1.	07/08/15	Roundup	4.5	AS	1	QT/A
2.	07/08/15	Reflex	2	EC	1.5	PT/A
3.	07/08/15	AMS	100	D	8.5	LB/100 GAL

Comment: Total POST application on 7-8-15.

Field Prep./Maintenance:
The field received a preplant burndown treatment of glyphosate + 2,4-D on 4-28-15.

Soil Description

Description Name: 79
% Sand: 79 % OM: 1.8 Texture: SL sandy loam
% Silt: 10 pH: 5.4
% Clay: 11 CEC: 5.8 Fert. Level: E excellent
Soil Drainage: F fair

Moisture and Weather Conditions

Overall Moisture Conditions: NORMAL normal
Closest Weather Station: UDREC Distance, Unit: 0.3 mi

University of Delaware

Application Description

	A
Application Date:	06/11/15
Appl. Stop Time:	01:30 PM
Application Method:	SPRAY
Application Timing:	PRE
Application Placement:	BROADC
Applied By:	Johnson
Air Temperature, Unit:	89 F
% Relative Humidity:	50
Wind Velocity, Unit:	4 mph
Wind Direction:	SW
Dew Presence (Y/N):	N no
Soil Temperature, Unit:	89 F
Soil Moisture:	NORMAL
% Cloud Cover:	40

Crop Stage At Each Application

	A
Crop 1 Code, BBCH Scale:	GLXMA BSOY

Application Equipment

	A
Appl. Equipment:	Tractor
Equipment Type:	TRMOSP
Operation Pressure, Unit:	40 psi
Nozzle Type:	AIRMIX
Nozzle Size:	11002
Nozzle Spacing, Unit:	20 in
Boom Length, Unit:	10 ft
Boom Height, Unit:	18 in
Ground Speed, Unit:	3 mph
Carrier:	WATER
Spray Volume, Unit:	20 gal/ac
Mix Size, Unit:	0.7 Gallons
Propellant:	COMAIR

Trial Comments

University of Delaware

Evaluation of Residual Herbicides for Soybeans

Trial ID: Soy5-15 Location: Field #3 Trial Year:
Protocol ID: Soy5-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	GLXMA Soybean Stunting % 06/26/15	GLXMA Soybean Stunting % 07/09/15	AMAPA PalmerAm Control % 07/09/15	IPOSS mornglry Control % 07/09/15
	Pest Code										
	Pest Name									AMAPA PalmerAm	IPOSS mornglry
	Crop Code							GLXMA	GLXMA		
	Crop Name							Soybean	Soybean		
	Rating Type							Stunting	Stunting	Control	Control
	Rating Unit							%	%	%	%
	Rating Date							06/26/15	07/09/15	07/09/15	07/09/15
1	Untreated Check							0.0 d	0.0 e	0.0 e	0.0 f
2	Authority First Premix	70	DF	0.232	lb ai/a	PRE	A	10.3 ab	9.0 b	75.0 cd	81.7 ab
	----sulfentrazone	62.1		0.206							
	----cloransulam	7.9		0.0262							
3	Authority MTZ Premix	45	DF	0.31	lb ai/a	PRE	A	4.7 bcd	2.3 de	83.3 abc	80.3 abc
	----sulfentrazone	18		0.124							
	----metribuzin	27		0.186							
4	Authority XL Premix	70	DG	0.232	lb ai/a	PRE	A	10.7 ab	14.0 a	79.3 abc	81.3 ab
	----sulfentrazone	62.2		0.206							
	----chlorimuron	7.8		0.0259							
5	Canopy Premix	75	DF	0.188	lb ai/a	PRE	A	2.3 cd	9.0 b	81.0 abc	92.7 a
	----metribuzin	64.3		0.161							
	----chlorimuron	10.7		0.0268							
6	Fierce Premix	76	WG	0.178	lb ai/a	PRE	A	0.0 d	4.0 cde	82.7 abc	67.0 de
	----flumioxazin	33.5		0.0785							
	----pyroxasulfone	42.5		0.1							
7	Prefix Premix	5.3	E	1.33	lb ai/a	PRE	A	11.3 a	4.7 b-e	83.3 abc	67.7 cde
	----s-metolachlor	4.35		1.09							
	----fomesafen	0.95		0.238							
8	Valor SX.....flumioxazin	51	WG	0.064	lb ai/a	PRE	A	6.7 abc	0.0 e	95.0 a	61.7 de
	Metribuzin.....metribuzin	75	DF	0.188	lb ai/a	PRE	A				
9	Valor XLT Premix	40.3	WG	0.101	lb ai/a	PRE	A	5.7 a-d	0.0 e	83.7 abc	92.3 a
	----flumioxazin	30		0.075							
	----chlorimuron	10.3		0.0258							
10	Trivence Premix	61.3	WG	0.23	lb ai/a	PRE	A	2.3 cd	5.7 bcd	76.7 bcd	71.0 b-e
	----chlorimuron	3.9		0.0146							
	----metribuzin	44.6		0.167							
	----flumioxazin	12.8		0.048							
11	Fierce XLT Premix	62.4	WG	0.146	lb ai/a	PRE	A	5.7 a-d	3.3 cde	92.3 ab	74.0 bcd
	----flumioxazin	24.57		0.0575							
	----pyroxasulfone	31.16		0.073							
	----chlorimuron	6.67		0.0156							
12	---Gangster/Surveil Co-Pack							8.0 abc	7.3 bc	87.7 abc	91.0 a
	_Valor SX.....flumioxazin	51	WG	0.08	lb ai/a	PRE	A				
	_Firstrate.....cloransulam	84	WG	0.0263	lb ai/a	PRE	A				
13	Boundary Premix	6.5	EC	1.02	lb ai/a	PRE	A	2.3 cd	0.0 e	63.3 d	60.0 e
	----s-metolachlor	5.25		0.82							
	----metribuzin	1.25		0.196							

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

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Pest Code									AMAPA	IPOSS
Pest Name									PalmerAm	mornglry
Crop Code							GLXMA	GLXMA		
Crop Name							Soybean	Soybean		
Rating Type							Stunting	Stunting	Control	Control
Rating Unit							%	%	%	%
Rating Date							06/26/15	07/09/15	07/09/15	07/09/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code			
14	Zidua.....pyroxasulfone	85	WG	0.08	lb ai/a	PRE	A	2.3 cd	2.3 de	72.7 cd	66.0 de
	Tricor DF.....metribuzin	75	DF	0.188	lb ai/a	PRE	A				
LSD P=.05								6.13	4.97	15.88	13.02
Standard Deviation								3.65	2.96	9.46	7.76
CV								70.74	67.26	12.54	11.01
Replicate F								1.724	2.607	0.772	4.103
Replicate Prob(F)								0.1982	0.0930	0.4724	0.0283
Treatment F								3.309	6.100	17.937	26.606
Treatment Prob(F)								0.0046	0.0001	0.0001	0.0001

University of Delaware

Evaluation of Residual Herbicides for Soybeans

Trial ID: Soy5b-15 Location: Greenwood Trial Year:
Protocol ID: Soy5b-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Investigator: Mark VanGessel Title: Extension Weed Specialist
Organization: University of Delaware
Address: 16483 County Seat Hwy
City+State/Prov: Georgetown, Delaware
Postal Code: 19947 E-mail: mjv@udel.edu
Country: USA United States

Crop Description

Crop 1: GLXMA Glycine max Soybean
Variety: P40T55PR BBCH Scale: BSOY
Planting Date: 04/24/15
Planting Rate, Unit: 140000 S/A Planting Method: PLANTD planted
Depth, Unit: 1.5 in Planting Equipment: FE Field Equipment
Row Spacing, Unit: 7.5 in Emergence Date: 04/30/15
Soil Temperature, Unit: 56 F
Soil Moisture: NORMAL normal, adequate
Seed Bed: MEDIUM medium

Pest Description

Pest 1 Type: W Code: ERICA Conyza canadensis
Common Name: Canada horseweed

Pest 2 Type: W Code: IPOSS Ipomoea sp.
Common Name: Morning glory

Site and Design

Treated Plot Width: 10 FT Site Type: FIELD field
Treated Plot Length: 25 FT
Treated Plot Area: 250 FT2 Treatments: 18 Tillage Type: MINTIL minimum-till
Replications: 3 Study Design: RACOBL Randomized Complete Block (RCB)

Moisture and Weather Conditions

Overall Moisture Conditions: NORMAL normal

Application Description

	A
Application Date:	04/29/15
Appl. Stop Time:	10:00 AM
Application Method:	SPRAY
Application Timing:	PRE
Application Placement:	BROADC
Applied By:	VanGessl
Air Temperature, Unit:	65 F
% Relative Humidity:	47
Wind Velocity, Unit:	2 mph
Wind Direction:	SW
Dew Presence (Y/N):	N no
Soil Temperature, Unit:	64 F
Soil Moisture:	NORMAL
% Cloud Cover:	5

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Crop Stage At Each Application

	A
Crop 1 Code, BBCH Scale:	GLXMA BSOY
Stage Scale Used:	DESC
Stage Majority, Percent:	cracking 100
Height, Unit:	0.5 in

Pest Stage At Each Application

	A
Pest 1 Code, Type, Scale:	ERICA W
Stage Majority, Percent:	bolt 100
Height, Unit:	3.5 in
Height Minimum, Maximum:	3 4
Density, Unit:	3 m2
Pest 2 Code, Type, Scale:	IPOSS W
Stage Majority, Percent:	cotyl 100
Height, Unit:	1 in
Density, Unit:	2 m2

Application Equipment

	A
Appl. Equipment:	Backpack
Equipment Type:	SPRBAC
Operation Pressure, Unit:	31 psi
Nozzle Type:	AIRMIX
Nozzle Size:	11002
Nozzle Spacing, Unit:	18 in
Boom Length, Unit:	9 ft
Boom Height, Unit:	20 in
Ground Speed, Unit:	3 mph
Carrier:	WATER
Spray Volume, Unit:	20 gal/ac
Mix Size, Unit:	2 Liters
Propellant:	COMCO2

Trial Comments

5/29/15: No noticeable injury or stunting observed. Weed density very light.

Trt #	
2	ERICA stunted
3	poor IPOSS or ERICA
4	ERICA stunted
5	poor ERICA
6	poor/no ERICA
7	poor/no ERICA
9	poor ERICA
10	poor/no ERICA
11	poor ERICA
12	poor/no ERICA
13	poor/no IPOSS or ERICA
14	poor/no IPOHE
15	poor/no IPOHE or ERICA
16	poor/no ERICA
17	poor/no IPOSS

University of Delaware

Evaluation of Residual Herbicides for Soybeans

Trial ID: Soy5b-15 Location: Greenwood Trial Year:
Protocol ID: Soy5b-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Crop Code	GLXMA
Crop Name	Soybean
Rating Type	Stunting
Rating Unit	%
Rating Date	05/20/15

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	
1	Untreated Check							0.0 a
2	Authority First Premix	70	DF	0.232	lb ai/a	PRE	A	0.0 a
	----sulfentrazone	62.1		0.206				
	----cloransulam	7.9		0.0262				
3	Authority MTZ Premix	45	DF	0.31	lb ai/a	PRE	A	0.0 a
	----sulfentrazone	18		0.124				
	----metribuzin	27		0.186				
4	Authority XL Premix	70	DG	0.232	lb ai/a	PRE	A	5.7 a
	----sulfentrazone	62.2		0.206				
	----chlorimuron	7.8		0.0259				
5	Canopy Premix	75	DF	0.188	lb ai/a	PRE	A	2.3 a
	----metribuzin	64.3		0.161				
	----chlorimuron	10.7		0.0268				
6	Fierce Premix	76	WG	0.178	lb ai/a	PRE	A	2.3 a
	----flumioxazin	33.5		0.0785				
	----pyroxasulfone	42.5		0.1				
7	Prefix Premix	5.3	E	1.33	lb ai/a	PRE	A	4.7 a
	----s-metolachlor	4.35		1.09				
	----fomesafen	0.95		0.238				
8	Valor SX.....flumioxazin	51	WG	0.064	lb ai/a	PRE	A	2.3 a
	Metribuzin.....metribuzin	75	DF	0.188	lb ai/a	PRE	A	
9	Valor XLT Premix	40.3	WG	0.101	lb ai/a	PRE	A	5.7 a
	----flumioxazin	30		0.075				
	----chlorimuron	10.3		0.0258				
10	Trivence Premix	61.3	WG	0.23	lb ai/a	PRE		2.3 a
	----chlorimuron	3.9		0.0146				
	----metribuzin	44.6		0.167				
	----flumioxazin	12.8		0.048				
	_Classic.....chlorimuron	25	WG	0.0146	lb ai/a	PRE	A	
	_Metribuzin.....metribuzin	75	DF	0.167	lb ai/a	PRE	A	
	_Valor SX.....flumioxazin	51	WG	0.048	lb ai/a	PRE	A	
11	Fierce XLT Premix	62.4	WG	0.146	lb ai/a	PRE		0.0 a
	----flumioxazin	24.57		0.0575				
	----pyroxasulfone	31.16		0.073				
	----chlorimuron	6.67		0.0156				
	_Valor SX.....flumioxazin	51	WG	0.0575	lb ai/a	PRE	A	
	_Zidua.....pyroxasulfone	85	WG	0.073	lb ai/a	PRE	A	
	_Classic.....chlorimuron	25	WG	0.0156	lb ai/a	PRE	A	
12	---Gangster/Surveil Co-Pack							4.0 a
	_Valor SX.....flumioxazin	51	WG	0.08	lb ai/a	PRE	A	
	_Firstrate.....cloransulam	84	WG	0.0263	lb ai/a	PRE	A	

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.
Missing data estimates are included in columns:Yates=1

University of Delaware

Crop Code	GLXMA
Crop Name	Soybean
Rating Type	Stunting
Rating Unit	%
Rating Date	05/20/15

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	
13	Boundary Premix	6.5	EC	1.02	lb ai/a	PRE	A	8.7 a
	----s-metolachlor	5.25		0.82				
	----metribuzin	1.25		0.196				
14	Zidua.....pyroxasulfone	85	WG	0.08	lb ai/a	PRE	A	4.0 a
	Tricor DF.....metribuzin	75	DF	0.188	lb ai/a	PRE	A	
15	Boundary Premix	6.5	EC	1.02	lb ai/a	PRE	A	2.3 a
	----s-metolachlor	5.25		0.82				
	----metribuzin	1.25		0.196				
	Dual Magnum.....s-metolachlor	7.62	E	0.476	lb ai/a	PRE	A	
16	Valor SX.....flumioxazin	51	WG	0.064	lb ai/a	PRE	A	3.6 a
	Lorox.....linuron	50	DF	0.875	lb ai/a	PRE	A	
17	Lorox.....linuron	50	DF	0.875	lb ai/a	PRE	A	3.3 a
	Dual Magnum.....s-metolachlor	7.62	E	0.476	lb ai/a	PRE	A	
18	Valor SX.....flumioxazin	51	WG	0.064	lb ai/a	PRE	A	9.0 a
	Outlook.....dimethenamid-p	6	L	0.75	lb ai/a	PRE	A	

LSD P=.05	6.14
Standard Deviation	3.70
CV	110.43
Replicate F	0.604
Replicate Prob(F)	0.5523
Treatment F	1.597
Treatment Prob(F)	0.1218

University of Delaware

Evaluation of Residual Soybean Herbicides for Vegetable Rotations

Trial ID: Soy6-15 Location: Field #6 Trial Year:
Protocol ID: Soy6-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Investigator: Mark VanGessel Title: Extension Weed Specialist
Organization: University of Delaware
Address: 16483 County Seat Hwy
City+State/Prov: Georgetown, Delaware
Postal Code: 19947 E-mail: mjv@udel.edu
Country: USA United States

Crop Description

Crop 1: GLXMA Glycine max Soybean
Variety: 4306R2/STS BBCH Scale: BSOY
Planting Date: 06/11/15
Planting Rate, Unit: 180000 S/A Planting Method: PLANTD planted
Depth, Unit: 1 in Planting Equipment: FE Field Equipment
Row Spacing, Unit: 15 in Emergence Date: 06/15/15
Harvest Date: 10/19/15
Harvested Width, Unit: 6.25 FT
Soil Temperature, Unit: 90 F Harvested Length, Unit: 25 FT
Soil Moisture: NORMAL normal, adequate Harvest Equipment: Plot combine
Seed Bed: MEDIUM medium % Standard Moisture: 13.0

Site and Design

Treated Plot Width: 10 FT Site Type: FIELD field
Treated Plot Length: 25 FT
Treated Plot Area: 250 FT2 Treatments: 10 Tillage Type: CONTIL conventional-till
Replications: 3 Study Design: RACOBL Randomized Complete Block (RCB)

Maintenance

No.	Date	Maintenance Product Name	Form Conc	Form Type	Rate	Rate Unit
1.	07/08/15	Roundup	4.5	AS	1	QT/A
2.	07/08/15	Reflex	2	EC	1.5	PT/A
3.	07/08/15	AMS	100	D	8.5	LB/100 GAL

Comment: Total POST application on 7-8-15.

Soil Description

% Sand: 82 % OM: 0.9 Texture: LS loamy sand
% Silt: 9 pH: 5.8
% Clay: 9 CEC: 5.3 Fert. Level: G good
Soil Drainage: E excellent

Moisture and Weather Conditions

Overall Moisture Conditions: NORMAL normal
Closest Weather Station: UDREC Distance, Unit: 0.3 mi

University of Delaware

Application Description

	A
Application Date:	06/12/15
Appl. Stop Time:	09:40 AM
Application Method:	SPRAY
Application Timing:	PRE
Application Placement:	BROADC
Applied By:	Johnson
Air Temperature, Unit:	84 F
% Relative Humidity:	69
Wind Velocity, Unit:	2 mph
Wind Direction:	SW
Dew Presence (Y/N):	N no
Soil Temperature, Unit:	84 F
Soil Moisture:	NORMAL
% Cloud Cover:	10

Crop Stage At Each Application

	A
Crop 1 Code, BBCH Scale:	GLXMA BSOY

Application Equipment

	A
Appl. Equipment:	Tractor
Equipment Type:	TRMOSP
Operation Pressure, Unit:	40 psi
Nozzle Type:	AIRMIX
Nozzle Size:	11002
Nozzle Spacing, Unit:	20 in
Boom Length, Unit:	10 ft
Boom Height, Unit:	18 in
Ground Speed, Unit:	3 mph
Carrier:	WATER
Spray Volume, Unit:	20 gal/ac
Mix Size, Unit:	0.7 Gallons
Propellant:	COMAIR

Trial Comments

University of Delaware

Evaluation of Residual Soybean Herbicides for Vegetable Rotations

Trial ID: Soy6-15 Location: Field #6 Trial Year:
Protocol ID: Soy6-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code				
	Pest Code									AMAPA	IPOSS
	Pest Name									PalmerAm	mornglry
	Crop Code							GLXMA	GLXMA		
	Crop Name							Soybean	Soybean		
	Rating Type							Stunting	Stunting	Control	Control
	Rating Unit							%	%	%	%
	Rating Date							06/25/15	07/08/15	07/08/15	07/08/15
1	Untreated Check							0.0 e	0.0 d	0.0 b	0.0 b
2	Boundary Premix	6.5	EC	1.02	lb ai/a	PRE	A	0.0 e	4.0 cd	100.0 a	95.0 a
	----s-metolachlor	5.25		0.82							
	----metribuzin	1.25		0.196							
3	Boundary Premix	6.5	EC	1.02	lb ai/a	PRE	A	7.0 d	5.7 c	100.0 a	97.3 a
	----s-metolachlor	5.25		0.82							
	----metribuzin	1.25		0.196							
	Dual II Magnum..s-metolachlor	7.64	E	0.478	lb ai/a	PRE	A				
4	Canopy Premix	75	DF	0.188	lb ai/a	PRE	A	0.0 e	8.0 bc	100.0 a	100.0 a
	----metribuzin	64.3		0.161							
	----chlorimuron	10.7		0.0268							
5	---Gangster/Surveil Co-Pack							18.3 a	12.3 ab	100.0 a	100.0 a
	_Valor SX.....flumioxazin	51	WG	0.08	lb ai/a	PRE	A				
	_Firstrate.....cloransulam	84	WG	0.0263	lb ai/a	PRE	A				
6	Lorox.....linuron	50	DF	0.625	lb ai/a	PRE	A	10.3 cd	8.3 bc	100.0 a	100.0 a
	Dual II Magnum..s-metolachlor	7.64	E	1.24	lb ai/a	PRE	A				
7	Prefix Premix	5.3	E	1.33	lb ai/a	PRE	A	11.7 c	8.0 bc	100.0 a	97.3 a
	----s-metolachlor	4.35		1.09							
	----fomesafen	0.95		0.238							
8	Valor XLT Premix	40.3	WG	0.101	lb ai/a	PRE	A	18.3 a	13.3 a	100.0 a	100.0 a
	----flumioxazin	30		0.075							
	----chlorimuron	10.3		0.0258							
9	Valor SX.....flumioxazin	51	WG	0.064	lb ai/a	PRE	A	16.7 ab	6.3 c	100.0 a	100.0 a
	Lorox.....linuron	50	DF	0.5	lb ai/a	PRE	A				
10	Valor SX.....flumioxazin	51	WG	0.064	lb ai/a	PRE	A	13.0 bc	4.0 cd	100.0 a	100.0 a
	Tricor DF.....metribuzin	75	DF	0.188	lb ai/a	PRE	A				
	LSD P=.05							3.75	4.74	.	5.65
	Standard Deviation							2.19	2.76	0.00	3.30
	CV							22.94	39.49	0.0	3.7
	Replicate F							0.342	7.709	0.000	1.191
	Replicate Prob(F)							0.7151	0.0038	1.0000	0.3268
	Treatment F							34.999	6.175	0.000	270.794
	Treatment Prob(F)							0.0001	0.0005	1.0000	0.0001

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.
Could not calculate LSD (% mean diff) for columns 3,6 because error mean square = 0.

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	MOLVE Carpetwd	POROL C.pursln	GGGAN AnnGrass	GLXMA Soybean Yield Bu/A
	Crop Code										
	Crop Name										
	Rating Type							Control	Control	Control	
	Rating Unit							%	%	%	
	Rating Date							07/08/15	07/08/15	07/08/15	10/19/15
1	Untreated Check							0.0 b	0.0 b	0.0 c	31.7 ab
2	Boundary Premix	6.5	EC	1.02	lb ai/a	PRE	A	98.3 a	100.0 a	100.0 a	31.6 ab
	----s-metolachlor	5.25		0.82							
	----metribuzin	1.25		0.196							
3	Boundary Premix	6.5	EC	1.02	lb ai/a	PRE	A	100.0 a	100.0 a	100.0 a	32.6 ab
	----s-metolachlor	5.25		0.82							
	----metribuzin	1.25		0.196							
	Dual II Magnum..s-metolachlor	7.64	E	0.478	lb ai/a	PRE	A				
4	Canopy Premix	75	DF	0.188	lb ai/a	PRE	A	100.0 a	100.0 a	72.7 b	27.7 bc
	----metribuzin	64.3		0.161							
	----chlorimuron	10.7		0.0268							
5	---Gangster/Surveil Co-Pack							100.0 a	100.0 a	98.3 a	26.1 c
	_Valor SX.....flumioxazin	51	WG	0.08	lb ai/a	PRE	A				
	_Firstrate.....cloransulam	84	WG	0.0263	lb ai/a	PRE	A				
6	Lorox.....linuron	50	DF	0.625	lb ai/a	PRE	A	98.3 a	100.0 a	99.0 a	32.9 ab
	Dual II Magnum..s-metolachlor	7.64	E	1.24	lb ai/a	PRE	A				
7	Prefix Premix	5.3	E	1.33	lb ai/a	PRE	A	100.0 a	100.0 a	100.0 a	36.0 a
	----s-metolachlor	4.35		1.09							
	----fomesafen	0.95		0.238							
8	Valor XLT Premix	40.3	WG	0.101	lb ai/a	PRE	A	100.0 a	100.0 a	99.0 a	24.9 c
	----flumioxazin	30		0.075							
	----chlorimuron	10.3		0.0258							
9	Valor SX.....flumioxazin	51	WG	0.064	lb ai/a	PRE	A	100.0 a	100.0 a	100.0 a	32.5 ab
	Lorox.....linuron	50	DF	0.5	lb ai/a	PRE	A				
10	Valor SX.....flumioxazin	51	WG	0.064	lb ai/a	PRE	A	100.0 a	100.0 a	98.0 a	34.4 a
	Tricor DF.....metribuzin	75	DF	0.188	lb ai/a	PRE	A				
	LSD P=.05							2.09	.	2.63	5.22
	Standard Deviation							1.22	0.00	1.53	3.04
	CV							1.36	0.0	1.77	9.81
	Replicate F							2.250	0.000	1.063	3.869
	Replicate Prob(F)							0.1342	1.0000	0.3661	0.0400
	Treatment F							2011.000	0.000	1273.747	4.263
	Treatment Prob(F)							0.0001	1.0000	0.0001	0.0043

University of Delaware

Residual Activity from Burndown Herbicides

Trial ID: Soy7-15 Location: Field #9 Trial Year:
Protocol ID: Soy7-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Investigator: Mark VanGessel Title: Extension Weed Specialist
Organization: University of Delaware
Address: 16483 County Seat Hwy
City+State/Prov: Georgetown, Delaware
Postal Code: 19947 E-mail: mjv@udel.edu
Country: USA United States

Crop Description

Description: Non-crop

Site and Design

Treated Plot Width: 10 FT Site Type: FIELD field
Treated Plot Length: 25 FT
Treated Plot Area: 250 FT2 Treatments: 10 Tillage Type: NOTILL no-till
Replications: 3 Study Design: RACOBL Randomized Complete Block (RCB)

Field Prep./Maintenance:
Roundup was added to all treatments on 5-6-15 to help with burndown. Additional burndown was sprayed on 5-14-15.

Soil Description

% Sand: 83 % OM: 1.4 Texture: LS loamy sand
% Silt: 8 pH: 5.4
% Clay: 9 CEC: 4.8 Fert. Level: G good
Soil Drainage: G good

Moisture and Weather Conditions

Overall Moisture Conditions: NORMAL normal
Closest Weather Station: UDREC Distance, Unit: 0.1 mi

Application Description

	A
Application Date:	05/06/15
Appl. Stop Time:	09:45 AM
Application Method:	SPRAY
Application Timing:	EPP
Application Placement:	BROADC
Applied By:	Johnson
Air Temperature, Unit:	73 F
% Relative Humidity:	66
Wind Velocity, Unit:	0 mph
Wind Direction:	N/A
Dew Presence (Y/N):	N no
Soil Temperature, Unit:	72 F
Soil Moisture:	NORMAL
% Cloud Cover:	40

University of Delaware

Application Equipment

	A
Appl. Equipment:	Tractor
Equipment Type:	TRMOSP
Operation Pressure, Unit:	40 psi
Nozzle Type:	AIRMIX
Nozzle Size:	11002
Nozzle Spacing, Unit:	20 in
Boom Length, Unit:	10 ft
Boom Height, Unit:	18 in
Ground Speed, Unit:	3 mph
Carrier:	WATER
Spray Volume, Unit:	20 gal/ac
Mix Size, Unit:	0.7 Gallons
Propellant:	COMAIR

Trial Comments

06/02/15: Presence = 1, Absence = 0. Morningglories are only summer annual observed in all three checks. All winter annuals - burndown control was excellent. Weather has been dry since burndown application thus poor emergence of summer annuals.
06/22/15: Presence of ALS-resistant Palmer amaranth influenced the rates and data was not very consistant.

University of Delaware

Residual Activity from Burndown Herbicides

Trial ID: Soy7-15 Location: Field #9 Trial Year:
Protocol ID: Soy7-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Pest Code Pest Name Rating Type Rating Unit Rating Date							IPOSS mornglry E-Coty Pres/Abs 06/02/15	IPOSS mornglry >=1truelf Pres/Abs 06/02/15	GGGAN AnnGrass Control Pres/Abs 06/02/15	AMAPA PalmerAm Control % 06/22/15	IPOSS mornglry Control % 06/22/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code				
1	Untreated Check							0.3 a	0.3 a	0.0 a	0.0 d	0.0 e
2	Clarity.....dicamba	4	L	0.5	lb ai/a	EPP	A	0.3 a	0.0 a	0.0 a	66.7 bc	63.3 cd
3	2,4-D amine	3.8	L	1	lb ae/a	EPP	A	0.3 a	0.0 a	0.3 a	0.0 d	0.0 e
4	Valor XLT Premix	40.3	WG	0.086	lb ai/a	EPP	A	0.0 a	0.0 a	0.0 a	76.7 ab	80.0 bc
	----flumioxazin	30		0.064								
	----chlorimuron	10.3		0.022								
5	Canopy Premix	75	DF	0.21	lb ai/a	EPP	A	0.3 a	0.0 a	0.7 a	81.7 ab	66.7 c
	----metribuzin	64.3		0.18								
	----chlorimuron	10.7		0.03								
6	Fierce Premix	76	WG	0.178	lb ai/a	EPP	A	0.0 a	0.0 a	0.0 a	100.0 a	46.7 d
	----flumioxazin	33.5		0.0785								
	----pyroxasulfone	42.5		0.1								
7	Authority XL Premix	70	DG	0.21	lb ai/a	EPP	A	0.0 a	0.3 a	0.0 a	86.7 ab	96.7 ab
	----sulfentrazone	62.2		0.187								
	----chlorimuron	7.8		0.0234								
8	Authority MTZ Premix	45	DF	0.394	lb ai/a	EPP	A	0.0 a	0.0 a	0.0 a	90.0 ab	49.3 d
	----sulfentrazone	18		0.158								
	----metribuzin	27		0.236								
9	Boundary Premix	6.5	EC	1.02	lb ai/a	EPP	A	0.3 a	0.7 a	0.3 a	46.7 c	10.0 e
	----s-metolachlor	5.25		0.82								
	----metribuzin	1.25		0.196								
10	Sonic Premix	70	DF	0.235	lb ai/a	EPP	A	0.0 a	0.0 a	0.3 a	82.3 ab	100.0 a
	----sulfentrazone	62.1		0.208								
	----cloransulam	7.9		0.0265								
LSD P=.05								0.73	0.50	0.63	25.94	17.21
Standard Deviation								0.43	0.29	0.37	14.91	9.94
CV								255.6	218.9	219.09	23.63	19.4
Replicate F								0.184	2.739	1.000	1.525	0.192
Replicate Prob(F)								0.8337	0.0915	0.3874	0.2496	0.8271
Treatment F								0.510	1.913	1.250	17.686	42.575
Treatment Prob(F)								0.8484	0.1154	0.3270	0.0001	0.0001

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.
Missing data estimates are included in columns:Yates=4,5

University of Delaware

Optimum mixtures for PRE herbicides in soybeans

Trial ID: Soy9-15 Location: Field #14 Trial Year:
Protocol ID: Soy9-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Investigator: Mark VanGessel Title: Extension Weed Specialist
Organization: University of Delaware
Address: 16483 County Seat Hwy
City+State/Prov: Georgetown, Delaware
Postal Code: 19947 E-mail: mjv@udel.edu
Country: USA United States

Crop Description

Crop 1: GLXMA Glycine max Soybean
Variety: NK S44-K7 BBCH Scale: BSOY
Planting Date: 07/09/15
Planting Rate, Unit: 180000 S/A Planting Method: PLANTD planted
Depth, Unit: 1 in Planting Equipment: PP Plot Planter
Row Spacing, Unit: 15 in Emergence Date: 07/14/15
Harvested Width, Unit: 6.25 FT
Soil Temperature, Unit: 89 F Harvested Length, Unit: 24 FT
Soil Moisture: NORMAL normal, adequate
Seed Bed: SMOOTH smooth % Standard Moisture: 13.0

Site and Design

Treated Plot Width: 10 FT Site Type: FIELD field
Treated Plot Length: 25 FT
Treated Plot Area: 250 FT2 Treatments: 10 Tillage Type: NOTILL no-till
Replications: 3 Study Design: FACTOR Factorial

Trial Initiation Comments:
Plots were planted into wheat stubble that had been turbotilled on 7-9-15.

Maintenance

No.	Date	Maintenance Product Name	Form Conc	Form Type	Rate	Rate Unit
1.	07/06/15	Roundup	4.5	AS	1	QT/A
2.	07/06/15	Liberty 280	2.34	SL	1	QT/A
3.	07/06/15	AMS	100	D	8.5	LB/100 GAL

Comment: Burndown on 7-6-15.

Soil Description

% Sand: 81 % OM: 1.0 Texture: LS loamy sand
% Silt: 12 pH: 6.1
% Clay: 7 CEC: 4.7 Fert. Level: E excellent
Soil Drainage: G good

Moisture and Weather Conditions

Overall Moisture Conditions: NORMAL normal
Closest Weather Station: UD REC Distance, Unit: 0.3 mi

University of Delaware

Application Description

	A
Application Date:	07/09/15
Appl. Stop Time:	02:45 PM
Application Method:	SPRAY
Application Timing:	PRE
Application Placement:	BROADC
Applied By:	Johnson
Air Temperature, Unit:	88 F
% Relative Humidity:	59
Wind Velocity, Unit:	4 mph
Wind Direction:	W
Dew Presence (Y/N):	N no
Soil Temperature, Unit:	88 F
Soil Moisture:	NORMAL
% Cloud Cover:	30

Crop Stage At Each Application

	A
Crop 1 Code, BBCH Scale:	GLXMA BSOY

Application Equipment

	A
Appl. Equipment:	Tractor
Equipment Type:	TRMOSP
Operation Pressure, Unit:	40 psi
Nozzle Type:	AIRMIX
Nozzle Size:	11002
Nozzle Spacing, Unit:	20 in
Boom Length, Unit:	10 ft
Boom Height, Unit:	18 in
Ground Speed, Unit:	3 mph
Carrier:	WATER
Spray Volume, Unit:	20 gal/ac
Mix Size, Unit:	0.7 Gallons
Propellant:	COMAIR

Trial Comments

07/28/15: AMAPA control was excellent (>97%) for all treatments.

University of Delaware

Optimum mixtures for PRE herbicides in soybeans

Trial ID: Soy9-15 Location: Field #14 Trial Year:
Protocol ID: Soy9-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	GLXMA Soybean Stunting % 07/28/15	IPOSS mornglry Control % 07/28/15	GLXMA Soybean Yield Bu/A 11/23/15
1	Valor SX.....flumioxazin	51	WG	0.048	lb ai/a	PRE	A	3.3 a	91.7 ab	37.5 a
	Metribuzin.....metribuzin	75	DF	0.164	lb ai/a	PRE	A			
	Classic.....chlorimuron	25	WG	0.0156	lb ai/a	PRE	A			
2	Valor SX.....flumioxazin	51	WG	0.048	lb ai/a	PRE	A	5.7 a	84.0 b	36.0 a
	Metribuzin.....metribuzin	75	DF	0.164	lb ai/a	PRE	A			
	Classic.....chlorimuron	25	WG	0.0234	lb ai/a	PRE	A			
3	Valor SX.....flumioxazin	51	WG	0.048	lb ai/a	PRE	A	5.0 a	85.0 b	34.8 a
	Metribuzin.....metribuzin	75	DF	0.188	lb ai/a	PRE	A			
	Classic.....chlorimuron	25	WG	0.0156	lb ai/a	PRE	A			
4	Valor SX.....flumioxazin	51	WG	0.048	lb ai/a	PRE	A	5.7 a	96.0 ab	37.4 a
	Metribuzin.....metribuzin	75	DF	0.188	lb ai/a	PRE	A			
	Classic.....chlorimuron	25	WG	0.0234	lb ai/a	PRE	A			
5	Valor SX.....flumioxazin	51	WG	0.064	lb ai/a	PRE	A	8.3 a	100.0 a	35.9 a
	Metribuzin.....metribuzin	75	DF	0.164	lb ai/a	PRE	A			
	Classic.....chlorimuron	25	WG	0.0156	lb ai/a	PRE	A			
6	Valor SX.....flumioxazin	51	WG	0.064	lb ai/a	PRE	A	6.7 a	87.3 ab	36.2 a
	Metribuzin.....metribuzin	75	DF	0.164	lb ai/a	PRE	A			
	Classic.....chlorimuron	25	WG	0.0234	lb ai/a	PRE	A			
7	Valor SX.....flumioxazin	51	WG	0.064	lb ai/a	PRE	A	11.3 a	100.0 a	36.4 a
	Metribuzin.....metribuzin	75	DF	0.188	lb ai/a	PRE	A			
	Classic.....chlorimuron	25	WG	0.0156	lb ai/a	PRE	A			
8	Valor SX.....flumioxazin	51	WG	0.064	lb ai/a	PRE	A	6.7 a	89.7 ab	38.7 a
	Metribuzin.....metribuzin	75	DF	0.188	lb ai/a	PRE	A			
	Classic.....chlorimuron	25	WG	0.0234	lb ai/a	PRE	A			
9	Untreated Check							0.0 a	0.0 c	28.5 a
10	Spartan.....sulfentrazone	4	F	0.188	lb ai/a	PRE	A	7.3 a	100.0 a	35.1 a
	Metribuzin.....metribuzin	75	DF	0.164	lb ai/a	PRE	A			
	Classic.....chlorimuron	25	WG	0.0156	lb ai/a	PRE	A			
LSD P=.05								10.50	13.38	6.46
Standard Deviation								6.12	7.77	3.76
CV								102.04	9.32	10.56
Replicate F								0.168	0.542	5.086
Replicate Prob(F)								0.8466	0.5915	0.0177
Treatment F								0.719	44.592	1.629
Treatment Prob(F)								0.6858	0.0001	0.1808

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.
Missing data estimates are included in columns:Yates=2

University of Delaware

Optimum mixtures for PRE herbicides in soybeans

Trial ID: Soy9-15 Location: Field #14 Trial Year:
Protocol ID: Soy9-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Pest Code Pest Name Crop Code Crop Name Rating Type Rating Unit Rating Date							GLXMA Soybean Stunting % 07/28/15	IPOSS mornglry Control % 07/28/15	GLXMA Soybean Yield Bu/A 11/23/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code			
TABLE OF R MEANS										
Replicate 1								5.3	93.3	34.2
Replicate 2								6.8	89.1	37.2
Replicate 3								7.8	92.8	38.4
TABLE OF A (Valor) MEANS										
1	Valor SX.....flumioxazin	51	WG	0.048	lb ai/a	PRE	A	4.9 a	89.2 a	36.4 a
2	Valor SX.....flumioxazin	51	WG	0.064	lb ai/a	PRE	A	8.3 a	94.3 a	36.8 a
LSD P=.05								5.48	7.77	3.43
Standard Deviation								6.26	8.81	3.92
CV								95.15	9.61	10.71
TABLE OF B (metribuzin) MEANS										
1	Metribuzin.....metribuzin	75	DF	0.164	lb ai/a	PRE	A	6.0 a	90.8 a	36.4 a
2	Metribuzin.....metribuzin	75	DF	0.188	lb ai/a	PRE	A	7.2 a	92.7 a	36.8 a
LSD P=.05								5.48	7.77	3.43
Standard Deviation								6.26	8.81	3.92
CV								95.15	9.61	10.71
TABLE OF C (Classic) MEANS										
1	Classic.....chlorimuron	25	WG	0.0156	lb ai/a	PRE	A	7.0 a	94.2 a	36.1 a
2	Classic.....chlorimuron	25	WG	0.0234	lb ai/a	PRE	A	6.2 a	89.3 a	37.1 a
LSD P=.05								5.48	7.77	3.43
Standard Deviation								6.26	8.81	3.92
CV								95.15	9.61	10.71
TABLE OF A (Valor) B (metribuzin) MEANS										
1	Valor SX.....flumioxazin	51	WG	0.048	lb ai/a	PRE	A	4.5 a	87.8 a	36.7 a
1	Metribuzin.....metribuzin	75	DF	0.164	lb ai/a	PRE	A			
2	Valor SX.....flumioxazin	51	WG	0.064	lb ai/a	PRE	A	7.5 a	93.7 a	36.0 a
1	Metribuzin.....metribuzin	75	DF	0.164	lb ai/a	PRE	A			
1	Valor SX.....flumioxazin	51	WG	0.048	lb ai/a	PRE	A	5.3 a	90.5 a	36.1 a
2	Metribuzin.....metribuzin	75	DF	0.188	lb ai/a	PRE	A			
2	Valor SX.....flumioxazin	51	WG	0.064	lb ai/a	PRE	A	9.0 a	94.8 a	37.5 a
2	Metribuzin.....metribuzin	75	DF	0.188	lb ai/a	PRE	A			
LSD P=.05								7.76	10.99	4.85
Standard Deviation								6.26	8.81	3.92
CV								95.15	9.61	10.71
TABLE OF A (Valor) C (Classic) MEANS										
1	Valor SX.....flumioxazin	51	WG	0.048	lb ai/a	PRE	A	4.2 a	88.3 a	36.1 a
1	Classic.....chlorimuron	25	WG	0.0156	lb ai/a	PRE	A			
2	Valor SX.....flumioxazin	51	WG	0.064	lb ai/a	PRE	A	9.8 a	100.0 a	36.1 a
1	Classic.....chlorimuron	25	WG	0.0156	lb ai/a	PRE	A			

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

University of Delaware

Pest Code Pest Name Crop Code Crop Name Rating Type Rating Unit Rating Date								GLXMA Soybean Stunting % 07/28/15	IPOSS mornglry Control % 07/28/15	GLXMA Soybean Yield Bu/A 11/23/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code			
1	Valor SX.....flumioxazin	51	WG	0.048	lb ai/a	PRE	A	5.7 a	90.0 a	36.7 a
2	Classic.....chlorimuron	25	WG	0.0234	lb ai/a	PRE	A			
2	Valor SX.....flumioxazin	51	WG	0.064	lb ai/a	PRE	A	6.7 a	88.5 a	37.5 a
2	Classic.....chlorimuron	25	WG	0.0234	lb ai/a	PRE	A			
LSD P=.05								7.76	10.99	4.85
Standard Deviation								6.26	8.81	3.92
CV								95.15	9.61	10.71
TABLE OF B (metribuzin) C (Classic) MEANS										
1	Metribuzin.....metribuzin	75	DF	0.164	lb ai/a	PRE	A	5.8 a	95.8 a	36.7 a
1	Classic.....chlorimuron	25	WG	0.0156	lb ai/a	PRE	A			
2	Metribuzin.....metribuzin	75	DF	0.188	lb ai/a	PRE	A	8.2 a	92.5 a	35.6 a
1	Classic.....chlorimuron	25	WG	0.0156	lb ai/a	PRE	A			
1	Metribuzin.....metribuzin	75	DF	0.164	lb ai/a	PRE	A	6.2 a	85.7 a	36.1 a
2	Classic.....chlorimuron	25	WG	0.0234	lb ai/a	PRE	A			
2	Metribuzin.....metribuzin	75	DF	0.188	lb ai/a	PRE	A	6.2 a	92.8 a	38.1 a
2	Classic.....chlorimuron	25	WG	0.0234	lb ai/a	PRE	A			
LSD P=.05								7.76	10.99	4.85
Standard Deviation								6.26	8.81	3.92
CV								95.15	9.61	10.71
TABLE OF A (Valor) B (metribuzin) C (Classic) MEANS										
1	Valor SX.....flumioxazin	51	WG	0.048	lb ai/a	PRE	A	3.3 a	91.7 a	37.5 a
1	Metribuzin.....metribuzin	75	DF	0.164	lb ai/a	PRE	A			
1	Classic.....chlorimuron	25	WG	0.0156	lb ai/a	PRE	A			
2	Valor SX.....flumioxazin	51	WG	0.064	lb ai/a	PRE	A	8.3 a	100.0 a	35.9 a
1	Metribuzin.....metribuzin	75	DF	0.164	lb ai/a	PRE	A			
1	Classic.....chlorimuron	25	WG	0.0156	lb ai/a	PRE	A			
1	Valor SX.....flumioxazin	51	WG	0.048	lb ai/a	PRE	A	5.0 a	85.0 a	34.8 a
2	Metribuzin.....metribuzin	75	DF	0.188	lb ai/a	PRE	A			
1	Classic.....chlorimuron	25	WG	0.0156	lb ai/a	PRE	A			
2	Valor SX.....flumioxazin	51	WG	0.064	lb ai/a	PRE	A	11.3 a	100.0 a	36.4 a
2	Metribuzin.....metribuzin	75	DF	0.188	lb ai/a	PRE	A			
1	Classic.....chlorimuron	25	WG	0.0156	lb ai/a	PRE	A			
1	Valor SX.....flumioxazin	51	WG	0.048	lb ai/a	PRE	A	5.7 a	84.0 a	36.0 a
1	Metribuzin.....metribuzin	75	DF	0.164	lb ai/a	PRE	A			
2	Classic.....chlorimuron	25	WG	0.0234	lb ai/a	PRE	A			
2	Valor SX.....flumioxazin	51	WG	0.064	lb ai/a	PRE	A	6.7 a	87.3 a	36.2 a
1	Metribuzin.....metribuzin	75	DF	0.164	lb ai/a	PRE	A			
2	Classic.....chlorimuron	25	WG	0.0234	lb ai/a	PRE	A			
1	Valor SX.....flumioxazin	51	WG	0.048	lb ai/a	PRE	A	5.7 a	96.0 a	37.4 a
2	Metribuzin.....metribuzin	75	DF	0.188	lb ai/a	PRE	A			
2	Classic.....chlorimuron	25	WG	0.0234	lb ai/a	PRE	A			
2	Valor SX.....flumioxazin	51	WG	0.064	lb ai/a	PRE	A	6.7 a	89.7 a	38.7 a
2	Metribuzin.....metribuzin	75	DF	0.188	lb ai/a	PRE	A			
2	Classic.....chlorimuron	25	WG	0.0234	lb ai/a	PRE	A			
LSD P=.05								10.97	15.54	6.86
Standard Deviation								6.26	8.81	3.92
CV								95.15	9.61	10.71

FACTORIAL/POOLED ERROR AOV For GLXMA Soybean Stunting % 07/28/15

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	23	695.833333				
R	2	25.333333	12.666667	0.323	0.7294	
A	1	66.666667	66.666667	1.699	0.2134	5.5
B	1	8.166667	8.166667	0.208	0.6552	5.5
AB	1	0.666667	0.666667	0.017	0.8981	7.8
C	1	4.166667	4.166667	0.106	0.7493	5.5
AC	1	32.666667	32.666667	0.833	0.3770	7.8
BC	1	8.166667	8.166667	0.208	0.6552	7.8
ABC	1	0.666667	0.666667	0.017	0.8981	11.0
ERROR	14	549.333333	39.238095			

FACTORIAL/POOLED ERROR AOV For IPOSS mornglry Control % 07/28/15 Missing values in column 2 results in unbalanced data, Least Squares Analysis is preferred

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	22	1942.905350				
R	2	81.658436	40.829218	0.526	0.6029	
A	1	155.606996	155.606996	2.005	0.1803	7.8
B	1	21.829218	21.829218	0.281	0.6048	7.8
AB	1	3.292181	3.292181	0.042	0.8400	11.0
C	1	144.495885	144.495885	1.862	0.1955	7.8
AC	1	260.773663	260.773663	3.361	0.0898	11.0
BC	1	165.958848	165.958848	2.139	0.1674	11.0
ABC	1	100.495885	100.495885	1.295	0.2757	15.5
ERROR	13	1008.794239	77.599557			

FACTORIAL/POOLED ERROR AOV For GLXMA Soybean Yield Bu/A 11/23/15

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	23	318.944213				
R	2	72.804533	36.402266	2.369	0.1300	
A	1	0.876217	0.876217	0.057	0.8147	3.4
B	1	1.091245	1.091245	0.071	0.7937	3.4
AB	1	6.769071	6.769071	0.441	0.5177	4.9
C	1	5.530434	5.530434	0.360	0.5581	3.4
AC	1	0.814008	0.814008	0.053	0.8213	4.9
BC	1	14.314387	14.314387	0.932	0.3508	4.9
ABC	1	1.616178	1.616178	0.105	0.7505	6.9
ERROR	14	215.128141	15.366296			

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Liberty Link Soybean Weed Control

Trial ID: Soy10-15 Location: Field #7 Trial Year:
Protocol ID: Soy10-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact: Bayer

Investigator: Mark VanGessel Title: Extension Weed Specialist
Organization: University of Delaware
Address: 16483 County Seat Hwy
City+State/Prov: Georgetown, Delaware
Postal Code: 19947 E-mail: mjv@udel.edu
Country: USA United States

Crop Description

Crop 1: GLXMA Glycine max Soybean
Variety: S45LL33 BBCH Scale: BSOY
Description: Liberty Link

Planting Date: 05/20/15
Planting Rate, Unit: 150000 S/A Planting Method: PLANTD planted
Depth, Unit: 1 in Planting Equipment: FE Field Equipment
Row Spacing, Unit: 15 in Emergence Date: 05/27/15
Harvest Date: 10/15/15
Harvested Width, Unit: 6.25 FT
Soil Temperature, Unit: 72 F Harvested Length, Unit: 25 FT
Soil Moisture: NORMAL normal, adequate Harvest Equipment: Plot combine
Seed Bed: MEDTRA medium/trashy % Standard Moisture: 13.0

Pest Description

Pest 1 Type: W Code: IPOSS Ipomoea sp.
Common Name: Morning glory

Pest 2 Type: W Code: AMAPA Amaranthus palmeri
Common Name: Palmer amaranth

Pest 3 Type: W Code: ANVCR Anoda cristata
Common Name: Spurred anoda

Pest 4 Type: W Code: SETFA Setaria faberi
Common Name: Giant foxtail

Pest 5 Type: W Code: DIGSA Digitaria sanguinalis
Common Name: large crabgrass

Site and Design

Treated Plot Width: 10 FT Site Type: FIELD field
Treated Plot Length: 25 FT
Treated Plot Area: 250 FT2 Treatments: 8 Tillage Type: NOTILL no-till
Replications: 3 Study Design: RACOBL Randomized Complete Block (RCB)

Trial Initiation Comments:
An early preplant burndown was made on April 28.

Maintenance

No.	Date	Maintenance Product Name	Form Conc	Form Type	Rate	Rate Unit
1.	07/08/15	Liberty 280	2.34	SL	1	QT/A
2.	07/08/15	AMS	100	D	8.5	LB/100 GAL

Comment: The PO2 (if needed) application was not made; however, a total POST application was made on 7-8-15 to clean up Palmer in weedy checks.

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Soil Description

% Sand: 78 % OM: 2.5 Texture: SL sandy loam
% Silt: 13 pH: 4.8
% Clay: 9 CEC: 7.0 Fert. Level: G good
Soil Drainage: G good

Moisture and Weather Conditions

Overall Moisture Conditions: NORMAL normal
Closest Weather Station: UD REC Distance, Unit: 0.1 mi

Application Description

	A	B
Application Date:	05/21/15	06/17/15
Appl. Stop Time:	07:30 AM	02:30 PM
Interval to Prev. Appl., Unit:		27 DAYS
Application Method:	SPRAY	SPRAY
Application Timing:	PRE	28DAP
Application Placement:	BROADC	BROADC
Applied By:	Johnson	VanGessl
Air Temperature, Unit:	54 F	80 F
% Relative Humidity:	75	52
Wind Velocity, Unit:	0 mph	4 mph
Wind Direction:	N/A	E
Dew Presence (Y/N):	Y yes	N no
Soil Temperature, Unit:	54 F	80 F
Soil Moisture:	NORMAL	NORMAL
% Cloud Cover:	100	35

Crop Stage At Each Application

	A	B
Crop 1 Code, BBCH Scale:	GLXMA BSOY	GLXMA BSOY
Stage Scale Used:		DESC
Stage Majority, Percent:		3-trif 65
Stage Minimum, Percent:		2-trif 35
Stage Maximum, Percent:		3-trif 65
Height, Unit:		7 in
Height Minimum, Maximum:		5 8

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Pest Stage At Each Application

	A	B
Pest 1 Code, Type, Scale:	IPOSS W	IPOSS W
Stage Majority, Percent:		run 100
Height, Unit:		12 in
Height Minimum, Maximum:		4 18
Density, Unit:		12 m2
Pest 2 Code, Type, Scale:	AMAPA W	AMAPA W
Stage Majority, Percent:		veg 100
Height, Unit:		5 in
Height Minimum, Maximum:		4 6
Density, Unit:		6 m2
Pest 3 Code, Type, Scale:	ANVCR W	ANVCR W
Stage Majority, Percent:		veg 100
Height, Unit:		4 in
Height Minimum, Maximum:		2 6
Density, Unit:		8 m2
Pest 4 Code, Type, Scale:	SETFA W	SETFA W
Stage Majority, Percent:		3-tilr 80
Stage Minimum, Percent:		2-tilr 20
Stage Maximum, Percent:		3-tilr 80
Height, Unit:		10 in
Height Minimum, Maximum:		6 14
Density, Unit:		1 m2
Pest 5 Code, Type, Scale:	DIGSA W	DIGSA W
Stage Majority, Percent:		3-tilr 80
Stage Minimum, Percent:		2-tilr 20
Stage Maximum, Percent:		3-tilr 80
Height, Unit:		8 in
Height Minimum, Maximum:		6 12
Density, Unit:		1 m2

Application Equipment

	A	B
Appl. Equipment:	Tractor	Backpack
Equipment Type:	TRMOSP	SPRBAC
Operation Pressure, Unit:	40 psi	31 psi
Nozzle Type:	AIRMIX	AIRMIX
Nozzle Size:	11002	11002
Nozzle Spacing, Unit:	20 in	18 in
Boom Length, Unit:	10 ft	9 ft
Boom Height, Unit:	18 in	28 in
Ground Speed, Unit:	3 mph	3 mph
Carrier:	WATER	WATER
Spray Volume, Unit:	20 gal/ac	20 gal/ac
Mix Size, Unit:	0.7 Gallons	2 Liters
Propellant:	COMAIR	COMCO2

Trial Comments

06/17/15: Annual grasses and annual spurge also observed in untreated check, but not present in any treatment. Weed pressure is quite light in this trial. Soybean stand is variable and fair amount of cereal rye regrowth from burndown applicaitons. None of the treatments affected the rye regrowth. Leaf surface has 7 to 10% chlorotic patches, while rest of the leaf has none. This is uniform for all treatments.

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Liberty Link Soybean Weed Control

Trial ID: Soy10-15 Location: Field #7 Trial Year:
Protocol ID: Soy10-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact: Bayer

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code					
	Pest Code								AMAPA	IPOSS		AMAPA
	Pest Name								PalmerAm	mornglry		PalmerAm
	Crop Code							GLXMA			GLXMA	
	Crop Name							Soybean			Soybean	
	Rating Type							Stunting	Control	Control	Stunting	Control
	Rating Unit							%	%	%	%	%
	Rating Date							06/17/15	06/17/15	06/17/15	07/09/15	07/09/15
1	Untreated Check							0.0 c	0.0 b	0.0 c	0.0 a	0.0 b
2	Authority First Premix	70	DF	0.236	lb ai/a	PRE	A	0.0 c	100.0 a	94.7 a	2.3 a	100.0 a
	----sulfentrazone	62.1		0.21								
	----cloransulam	7.9		0.0266								
	Liberty 280.....glufosinate	2.34	SL	0.585	lb ai/a	28DAP	B					
	Dry Ammonium Sulfate	100	D	1.02	% w/v	28DAP	B					
	Liberty 280.....glufosinate	2.34	SL	0.585	lb ai/a	if needed	C					
	Dry Ammonium Sulfate	100	D	1.02	% w/v	if needed	C					
3	Authority MTZ Premix	45	DF	0.394	lb ai/a	PRE	A	9.0 b	100.0 a	90.0 a	0.0 a	100.0 a
	----sulfentrazone	18		0.158								
	----metribuzin	27		0.236								
	Liberty 280.....glufosinate	2.34	SL	0.585	lb ai/a	28DAP	B					
	Dry Ammonium Sulfate	100	D	1.02	% w/v	28DAP	B					
	Liberty 280.....glufosinate	2.34	SL	0.585	lb ai/a	if needed	C					
	Dry Ammonium Sulfate	100	D	1.02	% w/v	if needed	C					
4	Valor XLT Premix	40.3	WG	0.088	lb ai/a	PRE	A	9.7 b	100.0 a	92.7 a	3.5 a	100.0 a
	----flumioxazin	30		0.0655								
	----chlorimuron	10.3		0.0225								
	Liberty 280.....glufosinate	2.34	SL	0.585	lb ai/a	28DAP	B					
	Dry Ammonium Sulfate	100	D	1.02	% w/v	28DAP	B					
	Liberty 280.....glufosinate	2.34	SL	0.585	lb ai/a	if needed	C					
	Dry Ammonium Sulfate	100	D	1.02	% w/v	if needed	C					
5	Fierce Premix	76	WG	0.178	lb ai/a	PRE	A	9.7 b	100.0 a	90.0 a	8.5 a	100.0 a
	----flumioxazin	33.5		0.0785								
	----pyroxasulfone	42.5		0.1								
	Liberty 280.....glufosinate	2.34	SL	0.585	lb ai/a	28DAP	B					
	Dry Ammonium Sulfate	100	D	1.02	% w/v	28DAP	B					
	Liberty 280.....glufosinate	2.34	SL	0.585	lb ai/a	if needed	C					
	Dry Ammonium Sulfate	100	D	1.02	% w/v	if needed	C					
6	Canopy Premix	75	DF	0.188	lb ai/a	PRE	A	12.0 a	100.0 a	92.3 a	2.3 a	100.0 a
	----metribuzin	64.3		0.161								
	----chlorimuron	10.7		0.0268								
	Liberty 280.....glufosinate	2.34	SL	0.585	lb ai/a	28DAP	B					
	Dry Ammonium Sulfate	100	D	1.02	% w/v	28DAP	B					
	Liberty 280.....glufosinate	2.34	SL	0.585	lb ai/a	if needed	C					
	Dry Ammonium Sulfate	100	D	1.02	% w/v	if needed	C					

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.
Missing data estimates are included in columns:Yates=3; Average=4
Could not calculate LSD (% mean diff) for columns 2,5,8 because error mean square = 0.

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code					
	Pest Code								AMAPA	IPOSS		AMAPA
	Pest Name								PalmerAm	mornglry		PalmerAm
	Crop Code							GLXMA			GLXMA	
	Crop Name							Soybean			Soybean	
	Rating Type							Stunting	Control	Control	Stunting	Control
	Rating Unit							%	%	%	%	%
	Rating Date							06/17/15	06/17/15	06/17/15	07/09/15	07/09/15
7	Prefix Premix	5.3	E	1.33	lb ai/a	PRE	A	0.0 c	100.0 a	72.1 b	0.0 a	100.0 a
	----s-metolachlor	4.35		1.09								
	----fomesafen	0.95		0.238								
	Liberty 280.....glufosinate	2.34	SL	0.585	lb ai/a	28DAP	B					
	Dry Ammonium Sulfate	100	D	1.02	% w/v	28DAP	B					
	Liberty 280.....glufosinate	2.34	SL	0.585	lb ai/a	if needed	C					
	Dry Ammonium Sulfate	100	D	1.02	% w/v	if needed	C					
8	Valor SX.....flumioxazin	51	WG	0.064	lb ai/a	PRE	A	0.0 c	100.0 a	88.3 a	0.0 a	100.0 a
	Metribuzin.....metribuzin	75	DF	0.188	lb ai/a	PRE	A					
	Liberty 280.....glufosinate	2.34	SL	0.585	lb ai/a	28DAP	B					
	Dry Ammonium Sulfate	100	D	1.02	% w/v	28DAP	B					
	LSD P=.05							2.33	.	8.10	5.66	.
	Standard Deviation							1.33	0.00	4.59	3.06	0.00
	CV							26.37	0.0	5.92	147.02	0.0
	Replicate F							1.862	0.000	1.000	0.527	0.000
	Replicate Prob(F)							0.1919	1.0000	0.3945	0.6073	1.0000
	Treatment F							50.556	0.000	146.699	2.771	0.000
	Treatment Prob(F)							0.0001	1.0000	0.0001	0.0783	1.0000

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Pest Code								ANVCR	IPOSS	DIGSA	
Pest Name								Sp.anoda	mornglry	L.crbgrs	
Crop Code											GLXMA
Crop Name											Soybean
Rating Type								Control	Control	Control	Yield
Rating Unit								%	%	%	Bu/A
Rating Date								07/09/15	07/09/15	07/09/15	10/15/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code				
1	Untreated Check							0.0 b	0.0 e	0.0 b	31.5 a
2	Authority First Premix	70	DF	0.236	lb ai/a	PRE	A	100.0 a	97.3 a	100.0 a	31.3 a
	----sulfentrazone	62.1		0.21							
	----cloransulam	7.9		0.0266							
	Liberty 280.....glufosinate	2.34	SL	0.585	lb ai/a	28DAP	B				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	28DAP	B				
	Liberty 280.....glufosinate	2.34	SL	0.585	lb ai/a	if needed	C				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	if needed	C				
3	Authority MTZ Premix	45	DF	0.394	lb ai/a	PRE	A	100.0 a	98.0 a	100.0 a	25.7 a
	----sulfentrazone	18		0.158							
	----metribuzin	27		0.236							
	Liberty 280.....glufosinate	2.34	SL	0.585	lb ai/a	28DAP	B				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	28DAP	B				
	Liberty 280.....glufosinate	2.34	SL	0.585	lb ai/a	if needed	C				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	if needed	C				
4	Valor XLT Premix	40.3	WG	0.088	lb ai/a	PRE	A	100.0 a	82.0 cd	100.0 a	30.3 a
	----flumioxazin	30		0.0655							
	----chlorimuron	10.3		0.0225							
	Liberty 280.....glufosinate	2.34	SL	0.585	lb ai/a	28DAP	B				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	28DAP	B				
	Liberty 280.....glufosinate	2.34	SL	0.585	lb ai/a	if needed	C				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	if needed	C				
5	Fierce Premix	76	WG	0.178	lb ai/a	PRE	A	98.3 a	86.0 c	100.0 a	30.6 a
	----flumioxazin	33.5		0.0785							
	----pyroxasulfone	42.5		0.1							
	Liberty 280.....glufosinate	2.34	SL	0.585	lb ai/a	28DAP	B				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	28DAP	B				
	Liberty 280.....glufosinate	2.34	SL	0.585	lb ai/a	if needed	C				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	if needed	C				
6	Canopy Premix	75	DF	0.188	lb ai/a	PRE	A	100.0 a	87.0 bc	100.0 a	31.7 a
	----metribuzin	64.3		0.161							
	----chlorimuron	10.7		0.0268							
	Liberty 280.....glufosinate	2.34	SL	0.585	lb ai/a	28DAP	B				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	28DAP	B				
	Liberty 280.....glufosinate	2.34	SL	0.585	lb ai/a	if needed	C				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	if needed	C				

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	ANVCR Sp.anoda Control % 07/09/15	IPOSS mornglry Control % 07/09/15	DIGSA L.crbgrs Control % 07/09/15	GLXMA Soybean Yield Bu/A 10/15/15
7	Prefix Premix	5.3	E	1.33	lb ai/a	PRE	A	100.0 a	76.3 d	100.0 a	29.0 a
	----s-metolachlor	4.35		1.09							
	----fomesafen	0.95		0.238							
	Liberty 280.....glufosinate	2.34	SL	0.585	lb ai/a	28DAP	B				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	28DAP	B				
	Liberty 280.....glufosinate	2.34	SL	0.585	lb ai/a	if needed	C				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	if needed	C				
8	Valor SX.....flumioxazin	51	WG	0.064	lb ai/a	PRE	A	100.0 a	96.0 ab	100.0 a	33.3 a
	Metribuzin.....metribuzin	75	DF	0.188	lb ai/a	PRE	A				
	Liberty 280.....glufosinate	2.34	SL	0.585	lb ai/a	28DAP	B				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	28DAP	B				
LSD P=.05								1.79	9.29	.	9.41
Standard Deviation								1.02	5.30	0.00	5.38
CV								1.17	6.81	0.0	17.67
Replicate F								1.000	2.766	0.000	3.869
Replicate Prob(F)								0.3927	0.0972	1.0000	0.0460
Treatment F								3583.858	111.929	0.000	0.542
Treatment Prob(F)								0.0001	0.0001	1.0000	0.7896

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PRE and POST Weed Control in Liberty Link Soybeans

Trial ID: Soy11-15 Location: Field #14 Trial Year:
Protocol ID: Soy11-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact: FMC

Investigator: Mark VanGessel Title: Extension Weed Specialist
Organization: University of Delaware
Address: 16483 County Seat Hwy
City+State/Prov: Georgetown, Delaware
Postal Code: 19947 E-mail: mjv@udel.edu
Country: USA United States

Crop Description

Crop 1: GLXMA Glycine max Soybean
Variety: S45LL33 BBCH Scale: BSOY
Description: Liberty Link

Planting Rate, Unit: 180000 S/A
Depth, Unit: 1 in
Row Spacing, Unit: 15 in

Soil Temperature, Unit: 76 F
Soil Moisture: NORMAL normal, adequate
Seed Bed: SMOOTH smooth

Planting Date: 05/13/15
Planting Method: PLANTD planted
Planting Equipment: FE Field Equipment
Emergence Date: 05/19/15
Harvest Date: 10/13/15
Harvested Width, Unit: 6.3 FT
Harvested Length, Unit: 25 FT
Harvest Equipment: Plot combine
% Standard Moisture: 13.0

Pest Description

Pest 1 Type: W Code: AMAPA Amaranthus palmeri
Common Name: Palmer amaranth

Pest 2 Type: W Code: IPOSS Ipomoea sp.
Common Name: Morning glory

Site and Design

Treated Plot Width: 10 FT
Treated Plot Length: 25 FT
Treated Plot Area: 250 FT2 Treatments: 14
Replications: 3

Site Type: FIELD field
Tillage Type: NOTILL no-till
Study Design: FACTOR Factorial

Trial Initiation Comments:
Preplant burbdown was applied on 4-27-15.

Soil Description

% Sand: 81 % OM: 1.0 Texture: LS loamy sand
% Silt: 12 pH: 6.1
% Clay: 7 CEC: 4.7 Fert. Level: E excellent
Soil Drainage: G good

Moisture and Weather Conditions

Overall Moisture Conditions: NORMAL normal
Closest Weather Station: UD REC Distance, Unit: 0.3 mi

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Application Description

	A	B	C	D
Application Date:	05/14/15	06/11/15	06/18/15	06/25/15
Appl. Stop Time:	10:00 AM	12:30 PM	01:00 PM	09:20 AM
Interval to Prev. Appl., Unit:		28 DAYS	7 DAYS	7 DAYS
Application Method:	SPRAY	SPRAY	SPRAY	SPRAY
Application Timing:	PRE	V2-4	V5-6	V7-8
Application Placement:	BROADC	BROADC	BROADC	BROADC
Applied By:	Johnson	Johnson	VanGessl	Johnson
Air Temperature, Unit:	62 F	89 F	79 F	76 F
% Relative Humidity:	44	50	74	64
Wind Velocity, Unit:	4 mph	4 mph	2 mph	1 mph
Wind Direction:	NE	SW	W	N
Dew Presence (Y/N):	N no	N no	Y yes	N no
Soil Temperature, Unit:	61 F	89 F	79 F	75 F
Soil Moisture:	NORMAL	NORMAL	WET	NORMAL
% Cloud Cover:	5	40	90	15

Crop Stage At Each Application

	A	B	C	D
Crop 1 Code, BBCH Scale:	GLXMA BSOY	GLXMA BSOY	GLXMA BSOY	GLXMA BSOY
Stage Scale Used:		DESC	DESC	DESC
Stage Majority, Percent:		V3 100	V6 70	V8 80
Stage Minimum, Percent:			V5 30	V7 20
Stage Maximum, Percent:			V6 70	V8 80
Height, Unit:		8 in	15 in	18 in
Height Minimum, Maximum:		7 9	14 16	17 20

Pest Stage At Each Application

	A	B	C	D
Pest 1 Code, Type, Scale:	AMAPA W	AMAPA W	AMAPA W	AMAPA W
Stage Majority, Percent:		veg 100	veg 100	veg 100
Height, Unit:		4 in	11 in	16 in
Height Minimum, Maximum:		3 6	10 12	15 18
Density, Unit:		7 m2	7 m2	7 m2
Pest 2 Code, Type, Scale:	IPOSS W	IPOSS W	IPOSS W	IPOSS W
Stage Majority, Percent:		veg 100	run 100	run 100
Height, Unit:		4 in	7 in	14 in
Height Minimum, Maximum:		3 5	6 8	12 18
Density, Unit:		3 m2	3 m2	1 m2

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Application Equipment

	A	B	C	D
Appl. Equipment:	Tractor	Tractor	Backpack	Tractor
Equipment Type:	TRMOSP	TRMOSP	SPRBAC	TRMOSP
Operation Pressure, Unit:	40 psi	40 psi	31 psi	40 psi
Nozzle Type:	AIRMIX	AIRMIX	AIRMIX	AIRMIX
Nozzle Size:	11002	11002	11002	11002
Nozzle Spacing, Unit:	20 in	20 in	18 in	20 in
Boom Length, Unit:	10 ft	10 ft	9 ft	10 ft
Boom Height, Unit:	18 in	24 in	30 in	36 in
Ground Speed, Unit:	3 mph	3 mph	3 mph	3 mph
Carrier:	WATER	WATER	WATER	WATER
Spray Volume, Unit:	20 gal/ac	20 gal/ac	20 gal/ac	20 gal/ac
Mix Size, Unit:	0.7 Gallons	0.7 Gallons	2 Liters	0.7 Gallons
Propellant:	COMAIR	COMAIR	COMCO2	COMAIR

Trial Comments

06/12/15: Common ragweed density was low so only presence (1) or absence (0) was noted.

06/26/15: Only rating PRE herbicides, those treatments that have not recieved a POST application. So looking only a residual activity, except treatment 11 which only had Liberty applied at V5 to 6 stage.

Applications at V2-4 provided >98% control of all species, regardless of PRE treatment. However, morningglory seedlings are starting to emerge in all of the V2-4 treated plots.

Applications at V5-6 provide >98% control of all species if a PRE herbicide was used. There were no differences between the PRE treatments at this time.

Treatments with V7-8 timings were rated for only PRE activity.

Plot 308, POST control of morningglory is 80%.

07/07/15: Treatments 11 and 12 had high grass pressure. Soybeans have fully canopied and difficult to see the entire plot. Plants that were at cotyledon stage at last rating were often not visible without moving soybeans to the side; either they died or soybean canopy interfered with observing all the plants.

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PRE and POST Weed Control in Liberty Link Soybeans

Trial ID: Soy11-15 Location: Field #14 Trial Year:
Protocol ID: Soy11-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact: FMC

Pest Code									AMAPA	IPOSS	AMBEL	AMAPA
Pest Name									PalmerAm	mornglry	C.ragwd	PalmerAm
Crop Code								GLXMA				
Crop Name								Soybean				
Rating Type								Stunting	Control	Control	Present	Control
Rating Unit								%	%	%	0-1	%
Rating Date								06/16/15	06/16/15	06/16/15	06/16/15	06/26/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code					
1	Authority Maxx Premix	72	DG	0.288	lb ai/a	PRE	A	5.7 bcd	100.0 a	81.0 cd	0.0 c	
	----sulfentrazone	68		0.272								
	----chlorimuron	4		0.016								
	Liberty 280.....glufosinate	2.34	SL	0.53	lb ai/a	V2-4	B					
	Dry Ammonium Sulfate	100	D	2.04	% w/v	V2-4	B					
2	Authority Maxx Premix	72	DG	0.288	lb ai/a	PRE	A	4.7 cde	100.0 a	84.3 bc	0.0 c	
	----sulfentrazone	68		0.272								
	----chlorimuron	4		0.016								
	Liberty 280.....glufosinate	2.34	SL	0.53	lb ai/a	V5-6	C					
	Dry Ammonium Sulfate	100	D	2.04	% w/v	V5-6	C					
3	Authority Maxx Premix	72	DG	0.288	lb ai/a	PRE	A	0.0 e	100.0 a	91.0 ab	0.0 c	100.0 a
	----sulfentrazone	68		0.272								
	----chlorimuron	4		0.016								
	Liberty 280.....glufosinate	2.34	SL	0.53	lb ai/a	V7-8	D					
	Dry Ammonium Sulfate	100	D	2.04	% w/v	V7-8	D					
4	Authority MTZ Premix	45	DF	0.45	lb ai/a	PRE	A	4.7 cde	100.0 a	85.0 bc	0.0 c	
	----sulfentrazone	18		0.18								
	----metribuzin	27		0.27								
	Liberty 280.....glufosinate	2.34	SL	0.53	lb ai/a	V2-4	B					
	Dry Ammonium Sulfate	100	D	2.04	% w/v	V2-4	B					
5	Authority MTZ Premix	45	DF	0.45	lb ai/a	PRE	A	2.3 de	100.0 a	75.0 d	0.3 bc	
	----sulfentrazone	18		0.18								
	----metribuzin	27		0.27								
	Liberty 280.....glufosinate	2.34	SL	0.53	lb ai/a	V5-6	C					
	Dry Ammonium Sulfate	100	D	2.04	% w/v	V5-6	C					
6	Authority MTZ Premix	45	DF	0.45	lb ai/a	PRE	A	4.7 cde	96.7 a	84.0 bc	1.0 a	91.0 ab
	----sulfentrazone	18		0.18								
	----metribuzin	27		0.27								
	Liberty 280.....glufosinate	2.34	SL	0.53	lb ai/a	V7-8	D					
	Dry Ammonium Sulfate	100	D	2.04	% w/v	V7-8	D					
7	Canopy Premix	75	DF	0.188	lb ai/a	PRE	A	11.3 a	100.0 a	83.3 bc	0.0 c	
	----metribuzin	64.3		0.161								
	----chlorimuron	10.7		0.0268								
	Liberty 280.....glufosinate	2.34	SL	0.53	lb ai/a	V2-4	B					
	Dry Ammonium Sulfate	100	D	2.04	% w/v	V2-4	B					
8	Canopy Premix	75	DF	0.188	lb ai/a	PRE	A	10.3 ab	96.7 a	79.7 cd	0.0 c	
	----metribuzin	64.3		0.161								
	----chlorimuron	10.7		0.0268								
	Liberty 280.....glufosinate	2.34	SL	0.53	lb ai/a	V5-6	C					
	Dry Ammonium Sulfate	100	D	2.04	% w/v	V5-6	C					

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.
Missing data estimates are included in columns:Yates=4

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code					
	Pest Code								AMAPA	IPOSS	AMBEL	AMAPA
	Pest Name								PalmerAm	mornglry	C.ragwd	PalmerAm
	Crop Code							GLXMA				
	Crop Name							Soybean				
	Rating Type							Stunting	Control	Control	Present	Control
	Rating Unit							%	%	%	0-1	%
	Rating Date							06/16/15	06/16/15	06/16/15	06/16/15	06/26/15
9	Canopy Premix	75	DF	0.188	lb ai/a	PRE	A	8.7 abc	100.0 a	84.3 bc	0.0 c	78.3 b
	----metribuzin	64.3		0.161								
	----chlorimuron	10.7		0.0268								
	Liberty 280.....glufosinate	2.34	SL	0.53	lb ai/a	V7-8	D					
	Dry Ammonium Sulfate	100	D	2.04	% w/v	V7-8	D					
10	No PRE Herbicide							0.0 e	0.0 b	0.0 e	0.3 bc	
	Liberty 280.....glufosinate	2.34	SL	0.53	lb ai/a	V2-4	B					
	Dry Ammonium Sulfate	100	D	2.04	% w/v	V2-4	B					
11	No PRE Herbicide							0.0 e	0.0 b	0.0 e	0.7 ab	81.7 b
	Liberty 280.....glufosinate	2.34	SL	0.53	lb ai/a	V5-6	C					
	Dry Ammonium Sulfate	100	D	2.04	% w/v	V5-6	C					
12	No PRE Herbicide							0.0 e	0.0 b	0.0 e	0.3 bc	0.0 c
	Liberty 280.....glufosinate	2.34	SL	0.53	lb ai/a	V7-8	D					
	Dry Ammonium Sulfate	100	D	2.04	% w/v	V7-8	D					
13	Valor XLT Premix	40.3	WG	0.0756	lb ai/a	PRE	A	8.7 abc	97.3 a	93.7 a	0.0 c	91.7 ab
	----flumioxazin	30		0.056								
	----chlorimuron	10.3		0.0193								
	Liberty 280.....glufosinate	2.34	SL	0.53	lb ai/a	V7-8	D					
	Dry Ammonium Sulfate	100	D	2.04	% w/v	V7-8	D					
14	Untreated Check							0.0 e	0.0 b	0.0 e	1.0 a	0.0 c
	LSD P=.05							4.98	4.36	7.73	0.56	13.98
	Standard Deviation							2.96	2.60	4.60	0.33	7.86
	CV							68.05	3.67	7.66	125.14	12.43
	Replicate F							0.423	0.014	0.574	0.238	2.939
	Replicate Prob(F)							0.6598	0.9860	0.5702	0.7900	0.0915
	Treatment F							5.842	957.669	222.977	3.816	93.079
	Treatment Prob(F)							0.0001	0.0001	0.0001	0.0022	0.0001

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	IPOSS mornglry	DIGSA L.crbgrs	IPOSS mornglry	AMAPA PalmerAm	IPOSS mornglry
	Pest Code							IPOSS	DIGSA	IPOSS	AMAPA	IPOSS
	Pest Name							mornglry	L.crbgrs	mornglry	PalmerAm	mornglry
	Crop Code											
	Crop Name											
	Rating Type							Control	Control	SdlgPres	Control	Control
	Rating Unit							%	%	0-1	%	%
	Rating Date							06/26/15	06/26/15	06/26/15	07/07/15	07/07/15
1	Authority Maxx Premix	72	DG	0.288	lb ai/a	PRE	A			0.7 ab	100.0 a	100.0 a
	----sulfentrazone	68		0.272								
	----chlorimuron	4		0.016								
	Liberty 280.....glufosinate	2.34	SL	0.53	lb ai/a	V2-4	B					
	Dry Ammonium Sulfate	100	D	2.04	% w/v	V2-4	B					
2	Authority Maxx Premix	72	DG	0.288	lb ai/a	PRE	A			0.0 c	100.0 a	96.0 ab
	----sulfentrazone	68		0.272								
	----chlorimuron	4		0.016								
	Liberty 280.....glufosinate	2.34	SL	0.53	lb ai/a	V5-6	C					
	Dry Ammonium Sulfate	100	D	2.04	% w/v	V5-6	C					
3	Authority Maxx Premix	72	DG	0.288	lb ai/a	PRE	A	78.3 ab	81.7 a	0.0 c	100.0 a	97.7 ab
	----sulfentrazone	68		0.272								
	----chlorimuron	4		0.016								
	Liberty 280.....glufosinate	2.34	SL	0.53	lb ai/a	V7-8	D					
	Dry Ammonium Sulfate	100	D	2.04	% w/v	V7-8	D					
4	Authority MTZ Premix	45	DF	0.45	lb ai/a	PRE	A			1.0 a	100.0 a	100.0 a
	----sulfentrazone	18		0.18								
	----metribuzin	27		0.27								
	Liberty 280.....glufosinate	2.34	SL	0.53	lb ai/a	V2-4	B					
	Dry Ammonium Sulfate	100	D	2.04	% w/v	V2-4	B					
5	Authority MTZ Premix	45	DF	0.45	lb ai/a	PRE	A			0.0 c	100.0 a	100.0 a
	----sulfentrazone	18		0.18								
	----metribuzin	27		0.27								
	Liberty 280.....glufosinate	2.34	SL	0.53	lb ai/a	V5-6	C					
	Dry Ammonium Sulfate	100	D	2.04	% w/v	V5-6	C					
6	Authority MTZ Premix	45	DF	0.45	lb ai/a	PRE	A	73.3 bc	75.0 b	0.0 c	99.0 a	94.0 ab
	----sulfentrazone	18		0.18								
	----metribuzin	27		0.27								
	Liberty 280.....glufosinate	2.34	SL	0.53	lb ai/a	V7-8	D					
	Dry Ammonium Sulfate	100	D	2.04	% w/v	V7-8	D					
7	Canopy Premix	75	DF	0.188	lb ai/a	PRE	A			0.7 ab	97.3 a	100.0 a
	----metribuzin	64.3		0.161								
	----chlorimuron	10.7		0.0268								
	Liberty 280.....glufosinate	2.34	SL	0.53	lb ai/a	V2-4	B					
	Dry Ammonium Sulfate	100	D	2.04	% w/v	V2-4	B					
8	Canopy Premix	75	DF	0.188	lb ai/a	PRE	A			0.7 ab	100.0 a	99.7 a
	----metribuzin	64.3		0.161								
	----chlorimuron	10.7		0.0268								
	Liberty 280.....glufosinate	2.34	SL	0.53	lb ai/a	V5-6	C					
	Dry Ammonium Sulfate	100	D	2.04	% w/v	V5-6	C					

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	IPOSS mornglry	DIGSA L.crbgrs	IPOSS mornglry	AMAPA PalmerAm	IPOSS mornglry
	Crop Code											
	Crop Name											
	Rating Type							Control	Control	SdlgPres	Control	Control
	Rating Unit							%	%	0-1	%	%
	Rating Date							06/26/15	06/26/15	06/26/15	07/07/15	07/07/15
9	Canopy Premix	75	DF	0.188	lb ai/a	PRE	A	66.7 c	83.3 a	0.3 bc	99.0 a	91.3 bc
	----metribuzin	64.3		0.161								
	----chlorimuron	10.7		0.0268								
	Liberty 280.....glufosinate	2.34	SL	0.53	lb ai/a	V7-8	D					
	Dry Ammonium Sulfate	100	D	2.04	% w/v	V7-8	D					
10	No PRE Herbicide									1.0 a	89.0 b	86.0 cd
	Liberty 280.....glufosinate	2.34	SL	0.53	lb ai/a	V2-4	B					
	Dry Ammonium Sulfate	100	D	2.04	% w/v	V2-4	B					
11	No PRE Herbicide							77.0 b	83.7 a	0.0 c	85.0 b	65.0 e
	Liberty 280.....glufosinate	2.34	SL	0.53	lb ai/a	V5-6	C					
	Dry Ammonium Sulfate	100	D	2.04	% w/v	V5-6	C					
12	No PRE Herbicide							0.0 d	0.0 c	0.0 c	60.0 c	82.7 d
	Liberty 280.....glufosinate	2.34	SL	0.53	lb ai/a	V7-8	D					
	Dry Ammonium Sulfate	100	D	2.04	% w/v	V7-8	D					
13	Valor XLT Premix	40.3	WG	0.0756	lb ai/a	PRE	A	86.0 a	87.0 a	0.0 c	97.3 a	100.0 a
	----flumioxazin	30		0.056								
	----chlorimuron	10.3		0.0193								
	Liberty 280.....glufosinate	2.34	SL	0.53	lb ai/a	V7-8	D					
	Dry Ammonium Sulfate	100	D	2.04	% w/v	V7-8	D					
14	Untreated Check							0.0 d	0.0 c	0.0 c	0.0 d	0.0 f
	LSD P=.05							8.19	5.76	0.52	5.53	7.98
	Standard Deviation							4.60	3.24	0.31	3.30	4.75
	CV							8.45	5.52	99.7	3.76	5.49
	Replicate F							0.892	0.767	1.000	0.488	0.431
	Replicate Prob(F)							0.4352	0.4859	0.3816	0.6192	0.6543
	Treatment F							200.867	462.996	5.096	208.327	95.422
	Treatment Prob(F)							0.0001	0.0001	0.0002	0.0001	0.0001

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Pest Code	
Pest Name	
Crop Code	GLXMA
Crop Name	Soybean
Rating Type	Yield
Rating Unit	Bu/A
Rating Date	10/13/15

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	
1	Authority Maxx Premix	72	DG	0.288	lb ai/a	PRE	A	32.5 b
	----sulfentrazone	68		0.272				
	----chlorimuron	4		0.016				
	Liberty 280.....glufosinate	2.34	SL	0.53	lb ai/a	V2-4	B	
	Dry Ammonium Sulfate	100	D	2.04	% w/v	V2-4	B	
2	Authority Maxx Premix	72	DG	0.288	lb ai/a	PRE	A	33.6 ab
	----sulfentrazone	68		0.272				
	----chlorimuron	4		0.016				
	Liberty 280.....glufosinate	2.34	SL	0.53	lb ai/a	V5-6	C	
	Dry Ammonium Sulfate	100	D	2.04	% w/v	V5-6	C	
3	Authority Maxx Premix	72	DG	0.288	lb ai/a	PRE	A	35.8 ab
	----sulfentrazone	68		0.272				
	----chlorimuron	4		0.016				
	Liberty 280.....glufosinate	2.34	SL	0.53	lb ai/a	V7-8	D	
	Dry Ammonium Sulfate	100	D	2.04	% w/v	V7-8	D	
4	Authority MTZ Premix	45	DF	0.45	lb ai/a	PRE	A	33.0 b
	----sulfentrazone	18		0.18				
	----metribuzin	27		0.27				
	Liberty 280.....glufosinate	2.34	SL	0.53	lb ai/a	V2-4	B	
	Dry Ammonium Sulfate	100	D	2.04	% w/v	V2-4	B	
5	Authority MTZ Premix	45	DF	0.45	lb ai/a	PRE	A	39.5 a
	----sulfentrazone	18		0.18				
	----metribuzin	27		0.27				
	Liberty 280.....glufosinate	2.34	SL	0.53	lb ai/a	V5-6	C	
	Dry Ammonium Sulfate	100	D	2.04	% w/v	V5-6	C	
6	Authority MTZ Premix	45	DF	0.45	lb ai/a	PRE	A	34.0 ab
	----sulfentrazone	18		0.18				
	----metribuzin	27		0.27				
	Liberty 280.....glufosinate	2.34	SL	0.53	lb ai/a	V7-8	D	
	Dry Ammonium Sulfate	100	D	2.04	% w/v	V7-8	D	
7	Canopy Premix	75	DF	0.188	lb ai/a	PRE	A	35.5 ab
	----metribuzin	64.3		0.161				
	----chlorimuron	10.7		0.0268				
	Liberty 280.....glufosinate	2.34	SL	0.53	lb ai/a	V2-4	B	
	Dry Ammonium Sulfate	100	D	2.04	% w/v	V2-4	B	
8	Canopy Premix	75	DF	0.188	lb ai/a	PRE	A	31.7 b
	----metribuzin	64.3		0.161				
	----chlorimuron	10.7		0.0268				
	Liberty 280.....glufosinate	2.34	SL	0.53	lb ai/a	V5-6	C	
	Dry Ammonium Sulfate	100	D	2.04	% w/v	V5-6	C	

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Pest Code	
Pest Name	
Crop Code	GLXMA
Crop Name	Soybean
Rating Type	Yield
Rating Unit	Bu/A
Rating Date	10/13/15

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	
9	Canopy Premix	75	DF	0.188	lb ai/a	PRE	A	36.7 ab
	----metribuzin	64.3		0.161				
	----chlorimuron	10.7		0.0268				
	Liberty 280.....glufosinate	2.34	SL	0.53	lb ai/a	V7-8	D	
	Dry Ammonium Sulfate	100	D	2.04	% w/v	V7-8	D	
10	No PRE Herbicide							35.6 ab
	Liberty 280.....glufosinate	2.34	SL	0.53	lb ai/a	V2-4	B	
	Dry Ammonium Sulfate	100	D	2.04	% w/v	V2-4	B	
11	No PRE Herbicide							34.0 ab
	Liberty 280.....glufosinate	2.34	SL	0.53	lb ai/a	V5-6	C	
	Dry Ammonium Sulfate	100	D	2.04	% w/v	V5-6	C	
12	No PRE Herbicide							33.1 b
	Liberty 280.....glufosinate	2.34	SL	0.53	lb ai/a	V7-8	D	
	Dry Ammonium Sulfate	100	D	2.04	% w/v	V7-8	D	
13	Valor XLT Premix	40.3	WG	0.0756	lb ai/a	PRE	A	33.4 b
	----flumioxazin	30		0.056				
	----chlorimuron	10.3		0.0193				
	Liberty 280.....glufosinate	2.34	SL	0.53	lb ai/a	V7-8	D	
	Dry Ammonium Sulfate	100	D	2.04	% w/v	V7-8	D	
14	Untreated Check							22.7 c

LSD P=.05	6.06
Standard Deviation	3.61
CV	10.72
Replicate F	14.680
Replicate Prob(F)	0.0001
Treatment F	3.225
Treatment Prob(F)	0.0053

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PRE and POST Weed Control in Liberty Link Soybeans

Trial ID: Soy11-15 Location: Field #14 Trial Year:
Protocol ID: Soy11-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact: FMC

Pest Code							AMAPA	IPOSS	AMBEL	AMAPA
Pest Name							PalmerAm	mornglry	C.ragwd	PalmerAm
Crop Code							GLXMA			
Crop Name							Soybean			
Rating Type							Stunting	Control	Present	Control
Rating Unit							%	%	%	0-1	%
Rating Date							06/16/15	06/16/15	06/16/15	06/16/15	06/26/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate Rate	Rate Unit	Growth Stage	Appl Code					
TABLE OF R MEANS												
Replicate 1								4.8	74.2	62.0	0.3	
Replicate 2								4.0	75.0	61.2	0.2	
Replicate 3								4.3	74.2	63.8	0.3	
TABLE OF A (PRE Herbicide) MEANS												
1	Authority Maxx Premix	72	DG	0.288	lb ai/a	PRE	A	3.4 b	100.0 a	85.4 a	0.0 b	
1	----sulfentrazone	68		0.272								
1	----chlorimuron	4		0.016								
2	Authority MTZ Premix	45	DF	0.45	lb ai/a	PRE	A	3.9 b	98.9 a	81.3 a	0.4 a	
2	----sulfentrazone	18		0.18								
2	----metribuzin	27		0.27								
3	Canopy Premix	75	DF	0.188	lb ai/a	PRE	A	10.1 a	98.9 a	82.4 a	0.0 b	
3	----metribuzin	64.3		0.161								
3	----chlorimuron	10.7		0.0268								
4	No PRE Herbicide							0.0 c	0.0 b	0.0 b	0.4 a	
LSD P=.05								3.06	2.36	4.72	0.36	
Standard Deviation								3.13	2.41	4.83	0.36	
CV								71.84	3.24	7.75	160.84	
TABLE OF B (POST Timing) MEANS												
1	Liberty 280.....glufosinate	2.34	SL	0.53	lb ai/a	V2-4	B	5.4 a	75.0 a	62.3 a	0.1 a	
1	Dry Ammonium Sulfate	100	D	2.04	% w/v	V2-4	B					
2	Liberty 280.....glufosinate	2.34	SL	0.53	lb ai/a	V5-6	C	4.3 a	74.2 a	59.8 a	0.3 a	
2	Dry Ammonium Sulfate	100	D	2.04	% w/v	V5-6	C					
3	Liberty 280.....glufosinate	2.34	SL	0.53	lb ai/a	V7-8	D	3.3 a	74.2 a	64.8 a	0.3 a	
3	Dry Ammonium Sulfate	100	D	2.04	% w/v	V7-8	D					
LSD P=.05								2.65	2.04	4.09	0.31	
Standard Deviation								3.13	2.41	4.83	0.36	
CV								71.84	3.24	7.75	160.84	
TABLE OF A (PRE Herbicide) B (POST Timing) MEANS												
1	Authority Maxx Premix	72	DG	0.288	lb ai/a	PRE	A	5.7 a	100.0 a	81.0 a	0.0 a	.
1	----sulfentrazone	68		0.272								
1	----chlorimuron	4		0.016								
1	Liberty 280.....glufosinate	2.34	SL	0.53	lb ai/a	V2-4	B					
1	Dry Ammonium Sulfate	100	D	2.04	% w/v	V2-4	B					
2	Authority MTZ Premix	45	DF	0.45	lb ai/a	PRE	A	4.7 a	100.0 a	85.0 a	0.0 a	.
2	----sulfentrazone	18		0.18								
2	----metribuzin	27		0.27								
1	Liberty 280.....glufosinate	2.34	SL	0.53	lb ai/a	V2-4	B					
1	Dry Ammonium Sulfate	100	D	2.04	% w/v	V2-4	B					

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

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Pest Code								AMAPA	IPOSS	AMBEL	AMAPA
Pest Name								PalmerAm	mornglry	C.ragwd	PalmerAm
Crop Code							GLXMA				
Crop Name							Soybean				
Rating Type							Stunting	Control	Control	Present	Control
Rating Unit							%	%	%	0-1	%
Rating Date							06/16/15	06/16/15	06/16/15	06/16/15	06/26/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code				
3	Canopy Premix	75	DF	0.188	lb ai/a	PRE	A	11.3 a	100.0 a	83.3 a	0.0 a	.
3	----metribuzin	64.3		0.161							
3	----chlorimuron	10.7		0.0268							
1	Liberty 280.....glufosinate	2.34	SL	0.53	lb ai/a	V2-4	B				
1	Dry Ammonium Sulfate	100	D	2.04	% w/v	V2-4	B				
4	No PRE Herbicide							0.0 a	0.0 a	0.0 a	0.3 a	.
1	Liberty 280.....glufosinate	2.34	SL	0.53	lb ai/a	V2-4	B				
1	Dry Ammonium Sulfate	100	D	2.04	% w/v	V2-4	B				
1	Authority Maxx Premix	72	DG	0.288	lb ai/a	PRE	A	4.7 a	100.0 a	84.3 a	0.0 a	.
1	----sulfentrazone	68		0.272							
1	----chlorimuron	4		0.016							
2	Liberty 280.....glufosinate	2.34	SL	0.53	lb ai/a	V5-6	C				
2	Dry Ammonium Sulfate	100	D	2.04	% w/v	V5-6	C				
2	Authority MTZ Premix	45	DF	0.45	lb ai/a	PRE	A	2.3 a	100.0 a	75.0 a	0.3 a	.
2	----sulfentrazone	18		0.18							
2	----metribuzin	27		0.27							
2	Liberty 280.....glufosinate	2.34	SL	0.53	lb ai/a	V5-6	C				
2	Dry Ammonium Sulfate	100	D	2.04	% w/v	V5-6	C				
3	Canopy Premix	75	DF	0.188	lb ai/a	PRE	A	10.3 a	96.7 a	79.7 a	0.0 a	.
3	----metribuzin	64.3		0.161							
3	----chlorimuron	10.7		0.0268							
2	Liberty 280.....glufosinate	2.34	SL	0.53	lb ai/a	V5-6	C				
2	Dry Ammonium Sulfate	100	D	2.04	% w/v	V5-6	C				
4	No PRE Herbicide							0.0 a	0.0 a	0.0 a	0.7 a	81.7 a
2	Liberty 280.....glufosinate	2.34	SL	0.53	lb ai/a	V5-6	C				
2	Dry Ammonium Sulfate	100	D	2.04	% w/v	V5-6	C				
1	Authority Maxx Premix	72	DG	0.288	lb ai/a	PRE	A	0.0 a	100.0 a	91.0 a	0.0 a	100.0 a
1	----sulfentrazone	68		0.272							
1	----chlorimuron	4		0.016							
3	Liberty 280.....glufosinate	2.34	SL	0.53	lb ai/a	V7-8	D				
3	Dry Ammonium Sulfate	100	D	2.04	% w/v	V7-8	D				
2	Authority MTZ Premix	45	DF	0.45	lb ai/a	PRE	A	4.7 a	96.7 a	84.0 a	1.0 a	91.0 a
2	----sulfentrazone	18		0.18							
2	----metribuzin	27		0.27							
3	Liberty 280.....glufosinate	2.34	SL	0.53	lb ai/a	V7-8	D				
3	Dry Ammonium Sulfate	100	D	2.04	% w/v	V7-8	D				
3	Canopy Premix	75	DF	0.188	lb ai/a	PRE	A	8.7 a	100.0 a	84.3 a	0.0 a	78.3 a
3	----metribuzin	64.3		0.161							
3	----chlorimuron	10.7		0.0268							
3	Liberty 280.....glufosinate	2.34	SL	0.53	lb ai/a	V7-8	D				
3	Dry Ammonium Sulfate	100	D	2.04	% w/v	V7-8	D				
4	No PRE Herbicide							0.0 a	0.0 a	0.0 a	0.3 a	0.0 a
3	Liberty 280.....glufosinate	2.34	SL	0.53	lb ai/a	V7-8	D				
3	Dry Ammonium Sulfate	100	D	2.04	% w/v	V7-8	D				
LSD P=.05								5.31	4.08	8.18	0.62	13.98
Standard Deviation								3.13	2.41	4.83	0.36	7.86
CV								71.84	3.24	7.75	160.84	11.19

Pest Code							IPOSS	DIGSA	IPOSS	AMAPA	IPOSS
Pest Name							mornglry	L.crbgrs	mornglry	PalmerAm	mornglry
Crop Code											
Crop Name											
Rating Type							Control	Control	SdlgPres	Control	Control
Rating Unit							%	%	0-1	%	%
Rating Date							06/26/15	06/26/15	06/26/15	07/07/15	07/07/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code					
TABLE OF R MEANS												
Replicate 1									0.4	94.7	91.8
Replicate 2									0.4	93.9	93.8
Replicate 3									0.3	93.8	92.5
TABLE OF A (PRE Herbicide) MEANS											
1	Authority Maxx Premix	72	DG	0.288	lb ai/a	PRE	A		0.2 a	100.0 a	97.9 a
1	----sulfentrazone	68		0.272							
1	----chlorimuron	4		0.016							
2	Authority MTZ Premix	45	DF	0.45	lb ai/a	PRE	A		0.3 a	99.7 a	98.0 a
2	----sulfentrazone	18		0.18							
2	----metribuzin	27		0.27							
3	Canopy Premix	75	DF	0.188	lb ai/a	PRE	A		0.6 a	98.8 a	97.0 a
3	----metribuzin	64.3		0.161							
3	----chlorimuron	10.7		0.0268							
4	No PRE Herbicide								0.3 a	78.0 b	77.9 b
LSD P=.05									0.33	3.26	5.04
Standard Deviation									0.33	3.34	5.15
CV									92.31	3.55	5.56
TABLE OF B (POST Timing) MEANS											
1	Liberty 280.....glufosinate	2.34	SL	0.53	lb ai/a	V2-4	B		0.8 a	96.6 a	96.5 a
1	Dry Ammonium Sulfate	100	D	2.04	% w/v	V2-4	B				
2	Liberty 280.....glufosinate	2.34	SL	0.53	lb ai/a	V5-6	C		0.2 b	96.3 a	90.2 b
2	Dry Ammonium Sulfate	100	D	2.04	% w/v	V5-6	C				
3	Liberty 280.....glufosinate	2.34	SL	0.53	lb ai/a	V7-8	D		0.1 b	89.5 b	91.4 b
3	Dry Ammonium Sulfate	100	D	2.04	% w/v	V7-8	D				
LSD P=.05									0.28	2.83	4.36
Standard Deviation									0.33	3.34	5.15
CV									92.31	3.55	5.56
TABLE OF A (PRE Herbicide) B (POST Timing) MEANS											
1	Authority Maxx Premix	72	DG	0.288	lb ai/a	PRE	A	.	0.7 a	100.0 a	100.0 a
1	----sulfentrazone	68		0.272							
1	----chlorimuron	4		0.016							
1	Liberty 280.....glufosinate	2.34	SL	0.53	lb ai/a	V2-4	B				
1	Dry Ammonium Sulfate	100	D	2.04	% w/v	V2-4	B				
2	Authority MTZ Premix	45	DF	0.45	lb ai/a	PRE	A	.	1.0 a	100.0 a	100.0 a
2	----sulfentrazone	18		0.18							
2	----metribuzin	27		0.27							
1	Liberty 280.....glufosinate	2.34	SL	0.53	lb ai/a	V2-4	B				
1	Dry Ammonium Sulfate	100	D	2.04	% w/v	V2-4	B				

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Pest Code							IPOSS	DIGSA	IPOSS	AMAPA	IPOSS
Pest Name							mornglry	L.crbgrs	mornglry	PalmerAm	mornglry
Crop Code											
Crop Name											
Rating Type							Control	Control	SdlgPres	Control	Control
Rating Unit							%	%	0-1	%	%
Rating Date							06/26/15	06/26/15	06/26/15	07/07/15	07/07/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code				
3	Canopy Premix	75	DF	0.188	lb ai/a	PRE	A	.	.	0.7 a	97.3 a	100.0 a
3	----metribuzin	64.3		0.161								
3	----chlorimuron	10.7		0.0268								
1	Liberty 280.....glufosinate	2.34	SL	0.53	lb ai/a	V2-4	B					
1	Dry Ammonium Sulfate	100	D	2.04	% w/v	V2-4	B					
4	No PRE Herbicide							.	.	1.0 a	89.0 b	86.0 bc
1	Liberty 280.....glufosinate	2.34	SL	0.53	lb ai/a	V2-4	B					
1	Dry Ammonium Sulfate	100	D	2.04	% w/v	V2-4	B					
1	Authority Maxx Premix	72	DG	0.288	lb ai/a	PRE	A	.	.	0.0 a	100.0 a	96.0 a
1	----sulfentrazone	68		0.272								
1	----chlorimuron	4		0.016								
2	Liberty 280.....glufosinate	2.34	SL	0.53	lb ai/a	V5-6	C					
2	Dry Ammonium Sulfate	100	D	2.04	% w/v	V5-6	C					
2	Authority MTZ Premix	45	DF	0.45	lb ai/a	PRE	A	.	.	0.0 a	100.0 a	100.0 a
2	----sulfentrazone	18		0.18								
2	----metribuzin	27		0.27								
2	Liberty 280.....glufosinate	2.34	SL	0.53	lb ai/a	V5-6	C					
2	Dry Ammonium Sulfate	100	D	2.04	% w/v	V5-6	C					
3	Canopy Premix	75	DF	0.188	lb ai/a	PRE	A	.	.	0.7 a	100.0 a	99.7 a
3	----metribuzin	64.3		0.161								
3	----chlorimuron	10.7		0.0268								
2	Liberty 280.....glufosinate	2.34	SL	0.53	lb ai/a	V5-6	C					
2	Dry Ammonium Sulfate	100	D	2.04	% w/v	V5-6	C					
4	No PRE Herbicide							77.0 a	83.7 a	0.0 a	85.0 b	65.0 d
2	Liberty 280.....glufosinate	2.34	SL	0.53	lb ai/a	V5-6	C					
2	Dry Ammonium Sulfate	100	D	2.04	% w/v	V5-6	C					
1	Authority Maxx Premix	72	DG	0.288	lb ai/a	PRE	A	78.3 a	81.7 a	0.0 a	100.0 a	97.7 a
1	----sulfentrazone	68		0.272								
1	----chlorimuron	4		0.016								
3	Liberty 280.....glufosinate	2.34	SL	0.53	lb ai/a	V7-8	D					
3	Dry Ammonium Sulfate	100	D	2.04	% w/v	V7-8	D					
2	Authority MTZ Premix	45	DF	0.45	lb ai/a	PRE	A	73.3 a	75.0 a	0.0 a	99.0 a	94.0 ab
2	----sulfentrazone	18		0.18								
2	----metribuzin	27		0.27								
3	Liberty 280.....glufosinate	2.34	SL	0.53	lb ai/a	V7-8	D					
3	Dry Ammonium Sulfate	100	D	2.04	% w/v	V7-8	D					
3	Canopy Premix	75	DF	0.188	lb ai/a	PRE	A	66.7 a	83.3 a	0.3 a	99.0 a	91.3 abc
3	----metribuzin	64.3		0.161								
3	----chlorimuron	10.7		0.0268								
3	Liberty 280.....glufosinate	2.34	SL	0.53	lb ai/a	V7-8	D					
3	Dry Ammonium Sulfate	100	D	2.04	% w/v	V7-8	D					
4	No PRE Herbicide							0.0 a	0.0 a	0.0 a	60.0 c	82.7 c
3	Liberty 280.....glufosinate	2.34	SL	0.53	lb ai/a	V7-8	D					
3	Dry Ammonium Sulfate	100	D	2.04	% w/v	V7-8	D					
LSD P=.05								8.19	5.76	0.56	5.65	8.72
Standard Deviation								4.60	3.24	0.33	3.34	5.15
CV								7.79	5.00	92.31	3.55	5.56

Pest Code							
Pest Name							
Crop Code							GLXMA
Crop Name							Soybean
Rating Type							Yield
Rating Unit							Bu/A
Rating Date							10/13/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	
TABLE OF R MEANS								
Replicate 1								38.9
Replicate 2								32.8
Replicate 3								32.0
TABLE OF A (PRE Herbicide) MEANS								
1	Authority Maxx Premix	72	DG	0.288	lb ai/a	PRE	A	34.0 a
1	----sulfentrazone	68		0.272				
1	----chlorimuron	4		0.016				
2	Authority MTZ Premix	45	DF	0.45	lb ai/a	PRE	A	35.5 a
2	----sulfentrazone	18		0.18				
2	----metribuzin	27		0.27				
3	Canopy Premix	75	DF	0.188	lb ai/a	PRE	A	34.6 a
3	----metribuzin	64.3		0.161				
3	----chlorimuron	10.7		0.0268				
4	No PRE Herbicide							34.2 a
LSD P=.05								3.73
Standard Deviation								3.82
CV								11.04
TABLE OF B (POST Timing) MEANS								
1	Liberty 280.....glufosinate	2.34	SL	0.53	lb ai/a	V2-4	B	34.1 a
1	Dry Ammonium Sulfate	100	D	2.04	% w/v	V2-4	B	
2	Liberty 280.....glufosinate	2.34	SL	0.53	lb ai/a	V5-6	C	34.7 a
2	Dry Ammonium Sulfate	100	D	2.04	% w/v	V5-6	C	
3	Liberty 280.....glufosinate	2.34	SL	0.53	lb ai/a	V7-8	D	34.9 a
3	Dry Ammonium Sulfate	100	D	2.04	% w/v	V7-8	D	
LSD P=.05								3.23
Standard Deviation								3.82
CV								11.04
TABLE OF A (PRE Herbicide) B (POST Timing) MEANS								
1	Authority Maxx Premix	72	DG	0.288	lb ai/a	PRE	A	32.5 a
1	----sulfentrazone	68		0.272				
1	----chlorimuron	4		0.016				
1	Liberty 280.....glufosinate	2.34	SL	0.53	lb ai/a	V2-4	B	
1	Dry Ammonium Sulfate	100	D	2.04	% w/v	V2-4	B	
2	Authority MTZ Premix	45	DF	0.45	lb ai/a	PRE	A	33.0 a
2	----sulfentrazone	18		0.18				
2	----metribuzin	27		0.27				
1	Liberty 280.....glufosinate	2.34	SL	0.53	lb ai/a	V2-4	B	
1	Dry Ammonium Sulfate	100	D	2.04	% w/v	V2-4	B	

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Pest Code	
Pest Name	
Crop Code	GLXMA
Crop Name	Soybean
Rating Type	Yield
Rating Unit	Bu/A
Rating Date	10/13/15

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	
3	Canopy Premix	75	DF	0.188	lb ai/a	PRE	A	35.5 a
3	----metribuzin	64.3		0.161				
3	----chlorimuron	10.7		0.0268				
1	Liberty 280.....glufosinate	2.34	SL	0.53	lb ai/a	V2-4	B	
1	Dry Ammonium Sulfate	100	D	2.04	% w/v	V2-4	B	
4	No PRE Herbicide							35.6 a
1	Liberty 280.....glufosinate	2.34	SL	0.53	lb ai/a	V2-4	B	
1	Dry Ammonium Sulfate	100	D	2.04	% w/v	V2-4	B	
1	Authority Maxx Premix	72	DG	0.288	lb ai/a	PRE	A	33.6 a
1	----sulfentrazone	68		0.272				
1	----chlorimuron	4		0.016				
2	Liberty 280.....glufosinate	2.34	SL	0.53	lb ai/a	V5-6	C	
2	Dry Ammonium Sulfate	100	D	2.04	% w/v	V5-6	C	
2	Authority MTZ Premix	45	DF	0.45	lb ai/a	PRE	A	39.5 a
2	----sulfentrazone	18		0.18				
2	----metribuzin	27		0.27				
2	Liberty 280.....glufosinate	2.34	SL	0.53	lb ai/a	V5-6	C	
2	Dry Ammonium Sulfate	100	D	2.04	% w/v	V5-6	C	
3	Canopy Premix	75	DF	0.188	lb ai/a	PRE	A	31.7 a
3	----metribuzin	64.3		0.161				
3	----chlorimuron	10.7		0.0268				
2	Liberty 280.....glufosinate	2.34	SL	0.53	lb ai/a	V5-6	C	
2	Dry Ammonium Sulfate	100	D	2.04	% w/v	V5-6	C	
4	No PRE Herbicide							34.0 a
2	Liberty 280.....glufosinate	2.34	SL	0.53	lb ai/a	V5-6	C	
2	Dry Ammonium Sulfate	100	D	2.04	% w/v	V5-6	C	
1	Authority Maxx Premix	72	DG	0.288	lb ai/a	PRE	A	35.8 a
1	----sulfentrazone	68		0.272				
1	----chlorimuron	4		0.016				
3	Liberty 280.....glufosinate	2.34	SL	0.53	lb ai/a	V7-8	D	
3	Dry Ammonium Sulfate	100	D	2.04	% w/v	V7-8	D	
2	Authority MTZ Premix	45	DF	0.45	lb ai/a	PRE	A	34.0 a
2	----sulfentrazone	18		0.18				
2	----metribuzin	27		0.27				
3	Liberty 280.....glufosinate	2.34	SL	0.53	lb ai/a	V7-8	D	
3	Dry Ammonium Sulfate	100	D	2.04	% w/v	V7-8	D	
3	Canopy Premix	75	DF	0.188	lb ai/a	PRE	A	36.7 a
3	----metribuzin	64.3		0.161				
3	----chlorimuron	10.7		0.0268				
3	Liberty 280.....glufosinate	2.34	SL	0.53	lb ai/a	V7-8	D	
3	Dry Ammonium Sulfate	100	D	2.04	% w/v	V7-8	D	
4	No PRE Herbicide							33.1 a
3	Liberty 280.....glufosinate	2.34	SL	0.53	lb ai/a	V7-8	D	
3	Dry Ammonium Sulfate	100	D	2.04	% w/v	V7-8	D	

LSD P=.05	6.46
Standard Deviation	3.82
CV	11.04

FACTORIAL/POOLED ERROR AOV For GLXMA Soybean Stunting % 06/16/15

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	35	774.305556				
R	2	3.388889	1.694444	0.173	0.8426	
A	3	478.305556	159.435185	16.243	0.0001	3.1
B	2	26.055556	13.027778	1.327	0.2856	2.7
AB	6	50.611111	8.435185	0.859	0.5394	5.3
ERROR	22	215.944444	9.815657			

FACTORIAL/POOLED ERROR AOV For AMAPA PalmerAm Control % 06/16/15

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	35	66688.888889				
R	2	5.555556	2.777778	0.478	0.6262	
A	3	66511.111111	22170.370370	3817.160	0.0001	2.4
B	2	5.555556	2.777778	0.478	0.6262	2.0
AB	6	38.888889	6.481481	1.116	0.3851	4.1
ERROR	22	127.777778	5.808081			

FACTORIAL/POOLED ERROR AOV For IPOSS mornglry Control % 06/16/15

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	35	47593.638889				
R	2	41.722222	20.861111	0.895	0.4231	
A	3	46665.194444	15555.064815	667.151	0.0001	4.7
B	2	155.055556	77.527778	3.325	0.0547	4.1
AB	6	218.722222	36.453704	1.563	0.2048	8.2
ERROR	22	512.944444	23.315657			

FACTORIAL/POOLED ERROR AOV For AMBEL C.ragwd Present 0-1 06/16/15 Missing values in column 4 results in unbalanced data, Least Squares Analysis is preferred

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	33	6.188464				
R	2	0.060571	0.030286	0.232	0.7949	
A	3	1.741319	0.580440	4.451	0.0150	0.4
B	2	0.400559	0.200280	1.536	0.2397	0.3
AB	6	1.377604	0.229601	1.760	0.1588	0.6
ERROR	20	2.608410	0.130421			

Randomized Complete Block (RCB) AOV For AMAPA PalmerAm Control % 06/26/15 Analysis will skip factor level B1 for column 5 - all B1 treatments are missing; Missing factor A1 B2 levels prevents analyzing column 5 as Factorial design; Missing factor A2 B2 levels prevents analyzing column 5 as Factorial design; Missing factor A3 B2 levels prevents analyzing column 5 as Factorial design

Source	DF	Sum of Squares	Mean Square	F	Prob(F)
Total	20	35591.809524			
Replicate	2	362.952381	181.476190	2.939	0.0915
Treatment	6	34487.809524	5747.968254	93.079	0.0001
ERROR	12	741.047619	61.753968		

Randomized Complete Block (RCB) AOV For IPOSS mornglry Control % 06/26/15 Analysis will skip factor level B1 for column 6 - all B1 treatments are missing; Missing factor A1 B2 levels prevents analyzing column 6 as Factorial design; Missing factor A2 B2 levels prevents analyzing column 6 as Factorial design; Missing factor A3 B2 levels prevents analyzing column 6 as Factorial design

Source	DF	Sum of Squares	Mean Square	F	Prob(F)
Total	20	25821.238095			
Replicate	2	37.809524	18.904762	0.892	0.4352
Treatment	6	25529.238095	4254.873016	200.867	0.0001
ERROR	12	254.190476	21.182540		

Randomized Complete Block (RCB) AOV For DIGSA L.crbgrs Control % 06/26/15 Analysis will skip factor level B1 for column 7 - all B1 treatments are missing; Missing factor A1 B2 levels prevents analyzing column 7 as Factorial design; Missing factor A2 B2 levels prevents analyzing column 7 as Factorial design; Missing factor A3 B2 levels prevents analyzing column 7 as Factorial design

Source	DF	Sum of Squares	Mean Square	F	Prob(F)
Total	20	29288.666667			
Replicate	2	16.095238	8.047619	0.767	0.4859
Treatment	6	29146.666667	4857.777778	462.996	0.0001
ERROR	12	125.904762	10.492063		

FACTORIAL/POOLED ERROR AOV For IPOSS mornglry SdlgPres 0-1 06/26/15

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	35	8.305556				
R	2	0.222222	0.111111	1.000	0.3840	
A	3	0.527778	0.175926	1.583	0.2218	0.3
B	2	4.055556	2.027778	18.250	0.0001	0.3
AB	6	1.055556	0.175926	1.583	0.1990	0.6
ERROR	22	2.444444	0.111111			

FACTORIAL/POOLED ERROR AOV For AMAPA PalmerAm Control % 07/07/15

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	35	4867.555556				
R	2	5.722222	2.861111	0.257	0.7757	
A	3	3122.000000	1040.666667	93.469	0.0001	3.3
B	2	383.388889	191.694444	17.217	0.0001	2.8
AB	6	1111.500000	185.250000	16.638	0.0001	5.7
ERROR	22	244.944444	11.133838			

FACTORIAL/POOLED ERROR AOV For IPOSS mornglry Control % 07/07/15

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	35	4247.638889				
R	2	22.722222	11.361111	0.428	0.6571	
A	3	2635.861111	878.620370	33.102	0.0001	5.0
B	2	270.055556	135.027778	5.087	0.0153	4.4
AB	6	735.055556	122.509259	4.616	0.0035	8.7
ERROR	22	583.944444	26.542929			

FACTORIAL/POOLED ERROR AOV For GLXMA Soybean Yield Bu/A 10/13/15

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	35	821.532426				
R	2	347.108328	173.554164	11.918	0.0003	
A	3	12.370892	4.123631	0.283	0.8370	3.7
B	2	3.954523	1.977261	0.136	0.8738	3.2
AB	6	137.728510	22.954752	1.576	0.2011	6.5
ERROR	22	320.370173	14.562281			

University of Delaware

Preemergence Weed Control in Soybean

Trial ID: Soy12-15 Location: Field #3 Trial Year:
Protocol ID: Soy12-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact: Valent, Syngenta

Investigator: Mark VanGessel Title: Extension Weed Specialist
Organization: University of Delaware
Address: 16483 County Seat Hwy
City+State/Prov: Georgetown, Delaware
Postal Code: 19947 E-mail: mjv@udel.edu
Country: USA United States

Crop Description

Crop 1: GLXMA Glycine max Soybean
Variety: 4306R2/STS

Planting Rate, Unit: 180000 S/A
Depth, Unit: 1 in
Row Spacing, Unit: 15 in

Soil Temperature, Unit: 90 F
Soil Moisture: NORMAL normal, adequate
Seed Bed: MEDTRA medium/trashy

Planting Date: 06/11/15
Planting Method: PLANTD planted
Planting Equipment: FE Field Equipment
Emergence Date: 06/16/15
Harvest Date: 10/26/15
Harvested Width, Unit: 6.25 FT
Harvested Length, Unit: 25 FT
Harvest Equipment: Plot combine
% Standard Moisture: 13.0

Pest Description

Pest 1 Type: W Code: AMAPA Amaranthus palmeri
Common Name: Palmer amaranth

Pest 2 Type: W Code: IPOSS Ipomoea sp.
Common Name: Morning glory

Site and Design

Treated Plot Width: 10 FT
Treated Plot Length: 25 FT
Treated Plot Area: 250 FT2 Treatments: 10
Replications: 3

Site Type: FIELD field
Tillage Type: NOTILL no-till
Study Design: RACOBL Randomized Complete Block (RCB)

Field Prep./Maintenance:
The field received a preplant burndown treatment of glyphosate + 2,4-D on 4-28-15.

Soil Description

Description Name: 79
% Sand: 79 % OM: 1.8 Texture: SL sandy loam
% Silt: 10 pH: 5.4
% Clay: 11 CEC: 5.8 Fert. Level: E excellent
Soil Drainage: F fair

Moisture and Weather Conditions

Overall Moisture Conditions: NORMAL normal
Closest Weather Station: UDREC Distance, Unit: 0.3 mi

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Application Description

	A	B	C
Application Date:	06/11/15	07/08/15	07/08/15
Appl. Stop Time:	01:00 PM	09:00 AM	09:00 AM
Application Method:	SPRAY	SPRAY	SPRAY
Application Timing:	PRE	3" wds	3" wds
Application Placement:	BROADC	BROADC	BROADC
Applied By:	Johnson	Johnson	Johnson
Air Temperature, Unit:	89 F	81 F	81 F
% Relative Humidity:	50	82	82
Wind Velocity, Unit:	4 mph	3 mph	3 mph
Wind Direction:	SW	SW	SW
Dew Presence (Y/N):	N no	N no	N no
Soil Temperature, Unit:	89 F	80 F	80 F
Soil Moisture:	NORMAL	NORMAL	NORMAL
% Cloud Cover:	40	75	75

Crop Stage At Each Application

	A	B	C
Crop 1 Code, BBCH Scale:	GLXMA BSOY	GLXMA BSOY	GLXMA BSOY
Stage Scale Used:		DESC	DESC
Stage Majority, Percent:		V4 100	V4 100
Height, Unit:		7.5 in	7.5 in
Height Minimum, Maximum:		7 8	7 8

Pest Stage At Each Application

	A	B	C
Pest 1 Code, Type, Scale:	AMAPA W	AMAPA W	AMAPA W
Stage Majority, Percent:		veg 100	veg 100
Height, Unit:		6 in	6 in
Height Minimum, Maximum:		3 8	3 8
Density, Unit:		3 m2	3 m2
Pest 2 Code, Type, Scale:	IPOSS W	IPOSS W	IPOSS W
Stage Majority, Percent:		veg 100	veg 100
Height, Unit:		3 in	3 in
Height Minimum, Maximum:		2 3	2 3
Density, Unit:		2 m2	2 m2

Application Equipment

	A	B	C
Appl. Equipment:	Tractor	Tractor	Tractor
Equipment Type:	TRMOSP	TRMOSP	TRMOSP
Operation Pressure, Unit:	40 psi	40 psi	40 psi
Nozzle Type:	AIRMIX	AIRMIX	AIRMIX
Nozzle Size:	11002	11002	11002
Nozzle Spacing, Unit:	20 in	20 in	20 in
Boom Length, Unit:	10 ft	10 ft	10 ft
Boom Height, Unit:	18 in	24 in	24 in
Ground Speed, Unit:	3 mph	3 mph	3 mph
Carrier:	WATER	WATER	WATER
Spray Volume, Unit:	20 gal/ac	20 gal/ac	20 gal/ac
Mix Size, Unit:	0.7 Gallons	0.7 Gallons	0.7 Gallons
Propellant:	COMAIR	COMAIR	COMAIR

University of Delaware

Preemergence Weed Control in Soybean

Trial ID: Soy12-15 Location: Field #3 Trial Year:
Protocol ID: Soy12-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact: Valent, Syngenta

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	GLXMA Soybean Stunting % 06/26/15	GLXMA Soybean Stunting % 07/06/15	AMAPA PalmerAm Control % 07/06/15	IPOSS mornglry Control % 07/06/15
	Pest Code										
	Pest Name										
	Crop Code										
	Crop Name										
	Rating Type										
	Rating Unit										
	Rating Date										
1	Untreated Check							0.0 d	0.0 c	0.0 d	0.0 c
2	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a	3"weeds	B		0.0 c	0.0 d	0.0 c
	Dry Ammonium Sulfate	100	D	1.5	% w/v	3"weeds	B				
	Nonionic Surfactant	100	L	0.25	% v/v	3"weeds	B				
3	Fierce Premix	76	WG	0.143	lb ai/a	PRE	A	8.0 bc	7.3 ab	100.0 a	82.7 ab
	----flumioxazin	33.5		0.063							
	----pyroxasulfone	42.5		0.08							
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a	3"weeds	C				
	Dry Ammonium Sulfate	100	D	1.5	% w/v	3"weeds	C				
	Nonionic Surfactant	100	L	0.25	% v/v	3"weeds	C				
4	Authority Maxx Premix	72	DG	0.225	lb ai/a	PRE	A	15.7 a	11.3 a	90.0 ab	88.3 ab
	----sulfentrazone	68		0.212							
	----chlorimuron	4		0.0125							
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a	3"weeds	C				
	Dry Ammonium Sulfate	100	D	1.5	% w/v	3"weeds	C				
	Nonionic Surfactant	100	L	0.25	% v/v	3"weeds	C				
5	Boundary Premix	6.5	EC	1.22	lb ai/a	PRE	A	2.3 d	4.7 bc	82.7 b	77.7 b
	----s-metolachlor	5.25		0.99							
	----metribuzin	1.25		0.235							
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a	3"weeds	C				
	Dry Ammonium Sulfate	100	D	1.5	% w/v	3"weeds	C				
	Nonionic Surfactant	100	L	0.25	% v/v	3"weeds	C				
6	BroadAxe Premix	7	SC	1.37	lb ai/a	PRE	A	9.7 b	7.3 ab	88.3 ab	96.3 a
	----sulfentrazone	0.7		0.137							
	----s-metolachlor	6.3		1.23							
	Flexstar GT Premix	3.3	L	1.44	lb ai/a	3"weeds	C				
	----fomesafen	0.66		0.288							
	----glyphosate	2.64		1.15							
	Dry Ammonium Sulfate	100	D	1.02	% w/v	3"weeds	C				
7	BroadAxe Premix	7	SC	1.37	lb ai/a	PRE	A	9.0 b	9.7 ab	94.0 ab	89.0 ab
	----sulfentrazone	0.7		0.137							
	----s-metolachlor	6.3		1.23							
	Metribuzin.....metribuzin	75	DF	0.234	lb ai/a	PRE	A				
	Flexstar GT Premix	3.3	L	1.44	lb ai/a	3"weeds	C				
	----fomesafen	0.66		0.288							
	----glyphosate	2.64		1.15							
	Dry Ammonium Sulfate	100	D	1.02	% w/v	3"weeds	C				

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.
Missing data estimates are included in columns:Average=2,3,4

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code				
	Pest Code									AMAPA	IPOSS
	Pest Name									PalmerAm	mornglry
	Crop Code							GLXMA	GLXMA		
	Crop Name							Soybean	Soybean		
	Rating Type							Stunting	Stunting	Control	Control
	Rating Unit							%	%	%	%
	Rating Date							06/26/15	07/06/15	07/06/15	07/06/15
8	Boundary Premix	6.5	EC	1.22	lb ai/a	PRE	A	0.0 d	0.0 c	66.7 c	79.0 b
	----s-metolachlor	5.25		0.99							
	----metribuzin	1.25		0.235							
	Flexstar GT Premix	3.3	L	1.44	lb ai/a	3"weeds	C				
	----fomesafen	0.66		0.288							
	----glyphosate	2.64		1.15							
	Dry Ammonium Sulfate	100	D	1.02	% w/v	3"weeds	C				
9	Prefix Premix	5.3	E	1.33	lb ai/a	PRE	A	8.7 b	0.0 c	94.7 ab	84.0 ab
	----s-metolachlor	4.35		1.09							
	----fomesafen	0.95		0.238							
	Touchdown Total...glyphosate	4.17	SL	1.04	lb ae/a	3"weeds	C				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	3"weeds	C				
10	Valor SX.....flumioxazin	51	WG	0.064	lb ai/a	PRE	A	3.3 cd	0.0 c	93.3 ab	79.0 b
	Metribuzin.....metribuzin	75	DF	0.188	lb ai/a	PRE	A				
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a	3"weeds	C				
	Reflex.....fomesafen	2	L	0.313	lb ai/a	3"weeds	C				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	3"weeds	C				
	LSD P=.05							4.76	6.26	12.46	16.18
	Standard Deviation							2.75	3.62	7.20	9.35
	CV							43.68	89.71	10.15	13.83
	Replicate F							1.474	1.293	6.268	3.826
	Replicate Prob(F)							0.2586	0.3015	0.0098	0.0439
	Treatment F							10.845	4.801	85.692	44.672
	Treatment Prob(F)							0.0001	0.0032	0.0001	0.0001

Pest Code								AMAPA	IPOSS	
Pest Name								PalmerAm	mornglry	
Crop Code										GLXMA
Crop Name										Soybean
Rating Type								Control	Control	Yield
Rating Unit								%	%	Bu/A
Rating Date								07/16/15	07/16/15	10/26/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code			
1	Untreated Check							0.0 d	0.0 e	23.3 a
2	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a	3"weeds	B	91.7 ab	76.0 d	27.7 a
	Dry Ammonium Sulfate	100	D	1.5	% w/v	3"weeds	B			
	Nonionic Surfactant	100	L	0.25	% v/v	3"weeds	B			
3	Fierce Premix	76	WG	0.143	lb ai/a	PRE	A	98.3 a	95.0 ab	25.2 a
	----flumioxazin	33.5		0.063						
	----pyroxasulfone	42.5		0.08						
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a	3"weeds	C			
	Dry Ammonium Sulfate	100	D	1.5	% w/v	3"weeds	C			
	Nonionic Surfactant	100	L	0.25	% v/v	3"weeds	C			
4	Authority Maxx Premix	72	DG	0.225	lb ai/a	PRE	A	89.0 b	88.3 bc	25.5 a
	----sulfentrazone	68		0.212						
	----chlorimuron	4		0.0125						
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a	3"weeds	C			
	Dry Ammonium Sulfate	100	D	1.5	% w/v	3"weeds	C			
	Nonionic Surfactant	100	L	0.25	% v/v	3"weeds	C			
5	Boundary Premix	6.5	EC	1.22	lb ai/a	PRE	A	90.0 ab	76.7 d	24.5 a
	----s-metolachlor	5.25		0.99						
	----metribuzin	1.25		0.235						
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a	3"weeds	C			
	Dry Ammonium Sulfate	100	D	1.5	% w/v	3"weeds	C			
	Nonionic Surfactant	100	L	0.25	% v/v	3"weeds	C			
6	BroadAxe Premix	7	SC	1.37	lb ai/a	PRE	A	91.7 ab	99.0 ab	22.7 a
	----sulfentrazone	0.7		0.137						
	----s-metolachlor	6.3		1.23						
	Flexstar GT Premix	3.3	L	1.44	lb ai/a	3"weeds	C			
	----fomesafen	0.66		0.288						
	----glyphosate	2.64		1.15						
	Dry Ammonium Sulfate	100	D	1.02	% w/v	3"weeds	C			
7	BroadAxe Premix	7	SC	1.37	lb ai/a	PRE	A	95.0 ab	100.0 a	28.9 a
	----sulfentrazone	0.7		0.137						
	----s-metolachlor	6.3		1.23						
	Metribuzin.....metribuzin	75	DF	0.234	lb ai/a	PRE	A			
	Flexstar GT Premix	3.3	L	1.44	lb ai/a	3"weeds	C			
	----fomesafen	0.66		0.288						
	----glyphosate	2.64		1.15						
	Dry Ammonium Sulfate	100	D	1.02	% w/v	3"weeds	C			

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Pest Code							AMAPA	IPOSS	
Pest Name							PalmerAm	mornglry	
Crop Code									GLXMA
Crop Name									Soybean
Rating Type							Control	Control	Yield
Rating Unit							%	%	Bu/A
Rating Date							07/16/15	07/16/15	10/26/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code		
8	Boundary Premix	6.5	EC	1.22	lb ai/a	PRE	A	77.7 c	94.7 ab	26.3 a
	----s-metolachlor	5.25		0.99					
	----metribuzin	1.25		0.235					
	Flexstar GT Premix	3.3	L	1.44	lb ai/a	3"weeds	C		
	----fomesafen	0.66		0.288					
	----glyphosate	2.64		1.15					
	Dry Ammonium Sulfate	100	D	1.02	% w/v	3"weeds	C		
9	Prefix Premix	5.3	E	1.33	lb ai/a	PRE	A	95.0 ab	81.3 cd	26.6 a
	----s-metolachlor	4.35		1.09					
	----fomesafen	0.95		0.238					
	Touchdown Total...glyphosate	4.17	SL	1.04	lb ae/a	3"weeds	C		
	Dry Ammonium Sulfate	100	D	1.02	% w/v	3"weeds	C		
10	Valor SX.....flumioxazin	51	WG	0.064	lb ai/a	PRE	A	95.0 ab	95.0 ab	25.7 a
	Metribuzin.....metribuzin	75	DF	0.188	lb ai/a	PRE	A		
	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a	3"weeds	C		
	Reflex.....fomesafen	2	L	0.313	lb ai/a	3"weeds	C		
	Dry Ammonium Sulfate	100	D	1.02	% w/v	3"weeds	C		
LSD P=.05								9.24	10.90	4.33
Standard Deviation								5.39	6.35	2.52
CV								6.54	7.88	9.85
Replicate F								10.460	5.545	3.791
Replicate Prob(F)								0.0010	0.0133	0.0423
Treatment F								89.831	65.383	1.691
Treatment Prob(F)								0.0001	0.0001	0.1639

University of Delaware

Preemergence Weed Control with Fierce XLT in Soybean

Trial ID: Soy13-15 Location: Field #3 Trial Year:
Protocol ID: Soy13-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact: Valent

Investigator: Mark VanGessel Title: Extension Weed Specialist
Organization: University of Delaware
Address: 16483 County Seat Hwy
City+State/Prov: Georgetown, Delaware
Postal Code: 19947 E-mail: mjv@udel.edu
Country: USA United States

Crop Description

Crop 1: GLXMA Glycine max Soybean
Variety: 4306R2/STS

Planting Rate, Unit: 180000 S/A
Depth, Unit: 1 in
Row Spacing, Unit: 15 in

Soil Temperature, Unit: 90 F
Soil Moisture: NORMAL normal, adequate
Seed Bed: MEDTRA medium/trashy

Planting Date: 06/02/15
Planting Method: PLANTD planted
Planting Equipment: FE Field Equipment
Emergence Date: 06/09/15
Harvest Date: 10/26/15
Harvested Width, Unit: 6.25 FT
Harvested Length, Unit: 25 FT
Harvest Equipment: Plot combine
% Standard Moisture: 13.0

Site and Design

Treated Plot Width: 10 FT
Treated Plot Length: 25 FT
Treated Plot Area: 250 FT2 Treatments: 6
Replications: 3

Site Type: FIELD field
Tillage Type: NOTILL no-till
Study Design: RACOBL Randomized Complete Block (RCB)

Maintenance

No.	Date	Maintenance Product Name	Form Conc	Form Type	Rate	Rate Unit
1.	07/08/15	Roundup	4.5	AS	1	QT/A
2.	07/08/15	Reflex	2	EC	1.5	PT/A
3.	07/08/15	AMS	100	D	8.5	LB/100 GAL

Field Prep./Maintenance:
The field received a preplant burndown treatment of glyphosate + 2,4-D on 4-28-15.

Soil Description

Description Name: 79
% Sand: 79 % OM: 1.8 Texture: SL sandy loam
% Silt: 10 pH: 5.4
% Clay: 11 CEC: 5.8 Fert. Level: E excellent
Soil Drainage: F fair

Moisture and Weather Conditions

Overall Moisture Conditions: NORMAL normal
Closest Weather Station: UDREC Distance, Unit: 0.3 mi

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Application Description

	A
Application Date:	06/04/15
Appl. Stop Time:	09:00 AM
Application Method:	SPRAY
Application Timing:	PRE
Application Placement:	BROADC
Applied By:	VanGessl
Air Temperature, Unit:	60 F
% Relative Humidity:	90
Wind Velocity, Unit:	5 mph
Wind Direction:	NE
Dew Presence (Y/N):	Y yes
Soil Temperature, Unit:	59 F
Soil Moisture:	NORMAL
% Cloud Cover:	95

Crop Stage At Each Application

	A
Crop 1 Code, BBCH Scale:	GLXMA BSOY

Application Equipment

	A
Appl. Equipment:	Backpack
Equipment Type:	SPRBAC
Operation Pressure, Unit:	31 psi
Nozzle Type:	AIRMIX
Nozzle Size:	11002
Nozzle Spacing, Unit:	18 in
Boom Length, Unit:	9 ft
Boom Height, Unit:	18 in
Ground Speed, Unit:	3 mph
Carrier:	WATER
Spray Volume, Unit:	20 gal/ac
Mix Size, Unit:	2 Liters
Propellant:	COMCO2

Trial Comments

07/16/15 Morningglory control was excellent for all treatments. Untreated check was treated with glyphosate before ratings.

University of Delaware

Preemergence Weed Control with Fierce XLT in Soybean

Trial ID: Soy13-15 Location: Field #3 Trial Year:
Protocol ID: Soy13-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact: Valent

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code					
	Pest Code								AMAPA	IPOSS		AMAPA
	Pest Name								PalmerAm	mornglry		PalmerAm
	Crop Code							GLXMA			GLXMA	
	Crop Name							Soybean			Soybean	
	Rating Type							Stunting	Control	Control	Stunting	Control
	Rating Unit							%	%	%	%	%
	Rating Date							06/19/15	06/19/15	06/19/15	07/07/15	07/07/15
1	Untreated Check							0.0 a	0.0 b	0.0 d	0.0 a	0.0 b
2	Authority XL Premix	70	DG	0.175	lb ai/a	PRE	A	6.3 a	100.0 a	100.0 a	3.3 a	100.0 a
	----sulfentrazone	62.2		0.156								
	----chlorimuron	7.8		0.0195								
3	Authority XL Premix	70	DG	0.328	lb ai/a	PRE	A	10.7 a	100.0 a	97.3 ab	16.7 a	96.0 a
	----sulfentrazone	62.2		0.29								
	----chlorimuron	7.8		0.0365								
4	Fierce XLT Premix	62.4	WG	0.156	lb ai/a	PRE	A	5.7 a	100.0 a	94.0 abc	4.0 a	95.0 a
	----flumioxazin	24.57		0.0614								
	----pyroxasulfone	31.16		0.078								
	----chlorimuron	6.67		0.0167								
5	Fierce XLT Premix	62.4	WG	0.205	lb ai/a	PRE	A	2.3 a	100.0 a	88.3 c	0.0 a	100.0 a
	----flumioxazin	24.57		0.081								
	----pyroxasulfone	31.16		0.102								
	----chlorimuron	6.67		0.022								
6	Envive Premix	41.3	WG	0.0774	lb ai/a	PRE	A	4.7 a	100.0 a	91.7 bc	6.7 a	100.0 a
	----chlorimuron	9.199999		0.0172								
	----flumioxazin	29.2		0.0547								
	----thifensulfuron	2.9		0.00543								
	LSD P=.05							7.96	.	7.74	11.25	8.63
	Standard Deviation							4.37	0.00	4.25	6.18	4.74
	CV							88.44	0.0	5.41	120.96	5.8
	Replicate F							0.840	0.000	3.182	1.488	0.467
	Replicate Prob(F)							0.4602	1.0000	0.0852	0.2718	0.6401
	Treatment F							2.088	0.000	248.423	3.023	214.956
	Treatment Prob(F)							0.1507	1.0000	0.0001	0.0643	0.0001

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.
Could not calculate LSD (% mean diff) for columns 2 because error mean square = 0.

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	IPOSS mornglry Control % 07/07/15	AMAPA PalmerAm Control % 07/16/15	GLXMA Soybean Yield Bu/A 10/26/15
1	Untreated Check							0.0 c	83.7 b	26.4 a
2	Authority XL Premix	70	DG	0.175	lb ai/a	PRE	A	79.0 ab	100.0 a	29.8 a
	----sulfentrazone	62.2		0.156						
	----chlorimuron	7.8		0.0195						
3	Authority XL Premix	70	DG	0.328	lb ai/a	PRE	A	95.0 a	96.7 a	25.2 a
	----sulfentrazone	62.2		0.29						
	----chlorimuron	7.8		0.0365						
4	Fierce XLT Premix	62.4	WG	0.156	lb ai/a	PRE	A	78.3 ab	100.0 a	24.9 a
	----flumioxazin	24.57		0.0614						
	----pyroxasulfone	31.16		0.078						
	----chlorimuron	6.67		0.0167						
5	Fierce XLT Premix	62.4	WG	0.205	lb ai/a	PRE	A	81.0 ab	100.0 a	27.2 a
	----flumioxazin	24.57		0.081						
	----pyroxasulfone	31.16		0.102						
	----chlorimuron	6.67		0.022						
6	Envive Premix	41.3	WG	0.0774	lb ai/a	PRE	A	71.7 b	99.7 a	26.2 a
	----chlorimuron	9.199999		0.0172						
	----flumioxazin	29.2		0.0547						
	----thifensulfuron	2.9		0.00543						
LSD P=.05								17.91	4.94	5.25
Standard Deviation								9.84	2.71	2.89
CV								14.58	2.81	10.86
Replicate F								4.057	1.787	4.207
Replicate Prob(F)								0.0513	0.2169	0.0472
Treatment F								35.676	17.213	1.114
Treatment Prob(F)								0.0001	0.0001	0.4119

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Tricor and Ultra Blazer Programs for Liberty Link Soybeans

Trial ID: Soy14-15 Location: Field #32 Trial Year:
Protocol ID: Soy14-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact: UPI

Crop Description

Crop 1: GLXMA Glycine max Soybean
Variety: S45LL33 BBCH Scale: BSOY
Planting Date: 05/20/15
Planting Rate, Unit: 180000 S/A Planting Method: PLANTD planted
Depth, Unit: 1 in Planting Equipment: FE Field Equipment
Row Spacing, Unit: 15 in Emergence Date: 05/27/15
Soil Temperature, Unit: 72 F
Soil Moisture: NORMAL normal, adequate
Seed Bed: MEDTRA medium/trashy

Pest Description

Pest 1 Type: W Code: AMAPA Amaranthus palmeri
Common Name: Palmer amaranth

Pest 2 Type: W Code: IPOSS Ipomoea sp.
Common Name: Morning glory

Site and Design

Treated Plot Width: 10 FT Site Type: FIELD field
Treated Plot Length: 25 FT
Treated Plot Area: 250 FT2 Treatments: 8 Tillage Type: NOTILL no-till
Replications: 3 Study Design: RACOBL Randomized Complete Block (RCB)

Soil Description

Description Name: 79
% Sand: 79 % OM: 1.8 Texture: SL sandy loam
% Silt: 10 pH: 5.4
% Clay: 11 CEC: 5.8 Fert. Level: E excellent
Soil Drainage: F fair

Moisture and Weather Conditions

Overall Moisture Conditions: NORMAL normal
Closest Weather Station: UDREC Distance, Unit: 0.3 mi

Application Description

	A	B	C
Application Date:	04/28/15	05/21/15	06/17/15
Appl. Stop Time:	10:00 AM	08:15 AM	02:00 PM
Interval to Prev. Appl., Unit:		23 DAYS	27 DAYS
Application Method:	SPRAY	SPRAY	SPRAY
Application Timing:	28EPP	PRE	4WAP
Application Placement:	BROADC	BROADC	BROADC
Applied By:	Hearn	Johnson	VanGessl
Air Temperature, Unit:	57 F	54 F	80 F
% Relative Humidity:	53	75	52
Wind Velocity, Unit:	5 mph	0 mph	4 mph
Wind Direction:	N	N/A	E
Dew Presence (Y/N):	N no	Y yes	N no
Soil Temperature, Unit:	57 F	54 F	80 F
Soil Moisture:	NORMAL	NORMAL	NORMAL
% Cloud Cover:	70	100	35

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Crop Stage At Each Application

	A	B	C
Crop 1 Code, BBCH Scale:	GLXMA BSOY	GLXMA BSOY	GLXMA BSOY
Stage Scale Used:			DESC
Stage Majority, Percent:			2-trif 75
Stage Minimum, Percent:			2-trif 75
Stage Maximum, Percent:			3-trif 25
Height, Unit:			5 in
Height Minimum, Maximum:			5 6

Pest Stage At Each Application

	A	B	C
Pest 1 Code, Type, Scale:	AMAPA W	AMAPA W	AMAPA W
Stage Majority, Percent:			veg 100
Height, Unit:			8 in
Height Minimum, Maximum:			2 12
Density, Unit:			10 m2
Pest 2 Code, Type, Scale:	IPOSS W	IPOSS W	IPOSS W
Stage Majority, Percent:			veg 80
Stage Minimum, Percent:			veg 80
Stage Maximum, Percent:			vine 20
Height, Unit:			5 in
Height Minimum, Maximum:			2 8
Density, Unit:			2 m2

Application Equipment

	A	B	C
Appl. Equipment:	Tractor	Tractor	Backpack
Equipment Type:	TRMOSP	TRMOSP	SPRBAC
Operation Pressure, Unit:	40 psi	40 psi	31 psi
Nozzle Type:	AIRMIX	AIRMIX	AIRMIX
Nozzle Size:	11002	11002	11002
Nozzle Spacing, Unit:	20 in	20 in	18 in
Boom Length, Unit:	10 ft	10 ft	9 ft
Boom Height, Unit:	24 in	18 in	30 in
Ground Speed, Unit:	3 mph	3 mph	3 mph
Carrier:	WATER	WATER	WATER
Spray Volume, Unit:	20 gal/ac	20 gal/ac	20 gal/ac
Mix Size, Unit:	0.7 Gallons	0.7 Gallons	2 Liters
Propellant:	COMAIR	COMAIR	COMCO2

Trial Comments

06/08/15: Ratings based on small palmer plants, those that emerged since planting. Appears the PRE applications may not have provided 100% burndownl of emerged palmer plants. A few random plants that are similar in size to the untreated check are present in the plots of treatments 1, 3, 4, and 5. Control of winter annual weeds was excellent with the 28EPP burndown treatment.

06/16/15: No herbicide injury observed; severe deer feeding in last three ranges.

06/22/15: Leaf burn based on youngest two fully mature leaves; not the entire plant.

07/02/15: Treatment 6 also did not control common lambsquarters (~50% control).

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Tricor and Ultra Blazer Programs for Liberty Link Soybeans

Trial ID: Soy14-15 Location: Field #32 Trial Year:
Protocol ID: Soy14-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact: UPI

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	AMAPA PalmerAm	IPOSS mornglry	AMAPA PalmerAm	IPOSS mornglry
	Pest Code							AMAPA	IPOSS	AMAPA	IPOSS
	Pest Name							PalmerAm	mornglry	PalmerAm	mornglry
	Crop Code										
	Crop Name										
	Rating Type							Control	Control	Control	Control
	Rating Unit							%	%	%	%
	Rating Date							06/08/15	06/08/15	06/16/15	06/16/15
1	Roundup PowerMax..glyphosate	4.5	AS	0.77	lb ae/a	28EPP	A	74.5 b	79.3 b	67.3 c	66.0 cd
	2,4-D ester	3.8	L	0.95	lb ae/a	28EPP	A				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	28EPP	A				
	Tricor DF.....metribuzin	75	DF	0.188	lb ai/a	PRE	B				
	Dual II Magnum..s-metolachlor	7.64	E	1.24	lb ai/a	PRE	B				
	Crop Oil Concentrate	100	L	1	% v/v	PRE	B				
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	PRE	B				
	Storm Premix	4	EC	0.75	lb ai/a	4WAP	C				
	----bentazon	2.67		0.5							
	----acifluorfen	1.33		0.25							
	Interline.....glufosinate	2.34	SL	0.53	lb ai/a	4WAP	C				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	4WAP	C				
2	Roundup PowerMax..glyphosate	4.5	AS	0.77	lb ae/a	28EPP	A	100.0 a	89.0 a	95.0 a	81.0 a
	2,4-D ester	3.8	L	0.95	lb ae/a	28EPP	A				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	28EPP	A				
	Tricor DF.....metribuzin	75	DF	0.188	lb ai/a	PRE	B				
	Valor SX.....flumioxazin	51	WG	0.064	lb ai/a	PRE	B				
	Crop Oil Concentrate	100	L	1	% v/v	PRE	B				
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	PRE	B				
	Storm Premix	4	EC	0.75	lb ai/a	4WAP	C				
	----bentazon	2.67		0.5							
	----acifluorfen	1.33		0.25							
	Interline.....glufosinate	2.34	SL	0.53	lb ai/a	4WAP	C				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	4WAP	C				
3	Roundup PowerMax..glyphosate	4.5	AS	0.77	lb ae/a	28EPP	A	80.0 b	87.3 a	66.0 c	78.7 ab
	2,4-D ester	3.8	L	0.95	lb ae/a	28EPP	A				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	28EPP	A				
	Tricor DF.....metribuzin	75	DF	0.188	lb ai/a	PRE	B				
	Satellite Hydro.pendimethalin	3.8	CS	0.71	lb ai/a	PRE	B				
	Crop Oil Concentrate	100	L	1	% v/v	PRE	B				
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	PRE	B				
	Storm Premix	4	EC	0.75	lb ai/a	4WAP	C				
	----bentazon	2.67		0.5							
	----acifluorfen	1.33		0.25							
	Interline.....glufosinate	2.34	SL	0.53	lb ai/a	4WAP	C				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	4WAP	C				

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.
Missing data estimates are included in columns:Yates=1,5,6,7

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	AMAPA PalmerAm	IPOSS mornglry	AMAPA PalmerAm	IPOSS mornglry
	Pest Code							AMAPA	IPOSS	AMAPA	IPOSS
	Pest Name							PalmerAm	mornglry	PalmerAm	mornglry
	Crop Code										
	Crop Name										
	Rating Type							Control	Control	Control	Control
	Rating Unit							%	%	%	%
	Rating Date							06/08/15	06/08/15	06/16/15	06/16/15
4	Roundup PowerMax..glyphosate	4.5	AS	0.77	lb ae/a	28EPP	A	96.7 a	74.3 b	71.0 bc	60.0 d
	2,4-D ester	3.8	L	0.95	lb ae/a	28EPP	A				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	28EPP	A				
	Tricor DF.....metribuzin	75	DF	0.188	lb ai/a	PRE	B				
	Crop Oil Concentrate	100	L	1	% v/v	PRE	B				
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	PRE	B				
	Storm Premix	4	EC	0.75	lb ai/a	4WAP	C				
	----bentazon	2.67		0.5							
	----acifluorfen	1.33		0.25							
	Interline.....glufosinate	2.34	SL	0.53	lb ai/a	4WAP	C				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	4WAP	C				
5	Roundup PowerMax..glyphosate	4.5	AS	0.77	lb ae/a	28EPP	A	100.0 a	89.0 a	79.3 abc	77.7 ab
	2,4-D ester	3.8	L	0.95	lb ae/a	28EPP	A				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	28EPP	A				
	Tricor DF.....metribuzin	75	DF	0.248	lb ai/a	PRE	B				
	Crop Oil Concentrate	100	L	1	% v/v	PRE	B				
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	PRE	B				
	Storm Premix	4	EC	0.75	lb ai/a	4WAP	C				
	----bentazon	2.67		0.5							
	----acifluorfen	1.33		0.25							
	Interline.....glufosinate	2.34	SL	0.53	lb ai/a	4WAP	C				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	4WAP	C				
6	Roundup PowerMax..glyphosate	4.5	AS	0.77	lb ae/a	28EPP	A	0.0 c	0.0 c	0.0 d	0.0 e
	2,4-D ester	3.8	L	0.95	lb ae/a	28EPP	A				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	28EPP	A				
	Storm Premix	4	EC	0.75	lb ai/a	4WAP	C				
	----bentazon	2.67		0.5							
	----acifluorfen	1.33		0.25							
	Interline.....glufosinate	2.34	SL	0.53	lb ai/a	4WAP	C				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	4WAP	C				
7	Roundup PowerMax..glyphosate	4.5	AS	0.77	lb ae/a	28EPP	A	100.0 a	81.7 ab	89.3 ab	71.0 bc
	2,4-D ester	3.8	L	0.95	lb ae/a	28EPP	A				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	28EPP	A				
	Tricor DF.....metribuzin	75	DF	0.188	lb ai/a	PRE	B				
	Valor SX.....flumioxazin	51	WG	0.064	lb ai/a	PRE	B				
	Crop Oil Concentrate	100	L	1	% v/v	PRE	B				
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	PRE	B				
	Interline.....glufosinate	2.34	SL	0.585	lb ai/a	4WAP	C				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	4WAP	C				
8	Untreated Check							0.0 c	0.0 c	13.3 d	0.0 e
	Roundup PowerMax..glyphosate	4.5	AS	0.77	lb ae/a	28EPP	A				
	2,4-D ester	3.8	L	0.95	lb ae/a	28EPP	A				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	28EPP	A				
	LSD P=.05							7.45	7.73	19.70	7.69
	Standard Deviation							4.23	4.41	11.25	4.39
	CV							6.13	7.05	18.7	8.09
	Replicate F							1.005	1.132	0.957	0.080
	Replicate Prob(F)							0.3929	0.3502	0.4078	0.9237
	Treatment F							319.725	233.860	28.598	182.006
	Treatment Prob(F)							0.0001	0.0001	0.0001	0.0001

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	GLXMA Soybean LeafBurn % 06/22/15	AMAPA PalmerAm Control % 07/02/15	IPOSS mornglry Control % 07/02/15	AMAPA PalmerAm Control % 07/16/15
1	Roundup PowerMax..glyphosate	4.5	AS	0.77	lb ae/a	28EPP	A	20.1 a	80.0 c	87.0 a	76.7 ab
	2,4-D ester	3.8	L	0.95	lb ae/a	28EPP	A				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	28EPP	A				
	Tricor DF.....metribuzin	75	DF	0.188	lb ai/a	PRE	B				
	Dual II Magnum..s-metolachlor	7.64	E	1.24	lb ai/a	PRE	B				
	Crop Oil Concentrate	100	L	1	% v/v	PRE	B				
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	PRE	B				
	Storm Premix	4	EC	0.75	lb ai/a	4WAP	C				
	----bentazon	2.67		0.5							
	----acifluorfen	1.33		0.25							
	Interline.....glufosinate	2.34	SL	0.53	lb ai/a	4WAP	C				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	4WAP	C				
2	Roundup PowerMax..glyphosate	4.5	AS	0.77	lb ae/a	28EPP	A	21.1 a	100.0 a	90.7 a	90.0 ab
	2,4-D ester	3.8	L	0.95	lb ae/a	28EPP	A				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	28EPP	A				
	Tricor DF.....metribuzin	75	DF	0.188	lb ai/a	PRE	B				
	Valor SX.....flumioxazin	51	WG	0.064	lb ai/a	PRE	B				
	Crop Oil Concentrate	100	L	1	% v/v	PRE	B				
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	PRE	B				
	Storm Premix	4	EC	0.75	lb ai/a	4WAP	C				
	----bentazon	2.67		0.5							
	----acifluorfen	1.33		0.25							
	Interline.....glufosinate	2.34	SL	0.53	lb ai/a	4WAP	C				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	4WAP	C				
3	Roundup PowerMax..glyphosate	4.5	AS	0.77	lb ae/a	28EPP	A	17.1 a	67.1 cd	84.6 a	70.0 bc
	2,4-D ester	3.8	L	0.95	lb ae/a	28EPP	A				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	28EPP	A				
	Tricor DF.....metribuzin	75	DF	0.188	lb ai/a	PRE	B				
	Satellite Hydro.pendimethalin	3.8	CS	0.71	lb ai/a	PRE	B				
	Crop Oil Concentrate	100	L	1	% v/v	PRE	B				
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	PRE	B				
	Storm Premix	4	EC	0.75	lb ai/a	4WAP	C				
	----bentazon	2.67		0.5							
	----acifluorfen	1.33		0.25							
	Interline.....glufosinate	2.34	SL	0.53	lb ai/a	4WAP	C				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	4WAP	C				

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	GLXMA	AMAPA PalmerAm	IPOSS mornglry	AMAPA PalmerAm
	Pest Code								AMAPA	IPOSS	AMAPA
	Pest Name								PalmerAm	mornglry	PalmerAm
	Crop Code							GLXMA			
	Crop Name							Soybean			
	Rating Type							LeafBurn	Control	Control	Control
	Rating Unit							%	%	%	%
	Rating Date							06/22/15	07/02/15	07/02/15	07/16/15
4	Roundup PowerMax..glyphosate	4.5	AS	0.77	lb ae/a	28EPP	A	20.0 a	84.0 abc	89.3 a	81.7 ab
	2,4-D ester	3.8	L	0.95	lb ae/a	28EPP	A				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	28EPP	A				
	Tricor DF.....metribuzin	75	DF	0.188	lb ai/a	PRE	B				
	Crop Oil Concentrate	100	L	1	% v/v	PRE	B				
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	PRE	B				
	Storm Premix	4	EC	0.75	lb ai/a	4WAP	C				
	----bentazon	2.67		0.5							
	----acifluorfen	1.33		0.25							
	Interline.....glufosinate	2.34	SL	0.53	lb ai/a	4WAP	C				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	4WAP	C				
5	Roundup PowerMax..glyphosate	4.5	AS	0.77	lb ae/a	28EPP	A	17.6 a	81.6 bc	86.6 a	82.7 ab
	2,4-D ester	3.8	L	0.95	lb ae/a	28EPP	A				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	28EPP	A				
	Tricor DF.....metribuzin	75	DF	0.248	lb ai/a	PRE	B				
	Crop Oil Concentrate	100	L	1	% v/v	PRE	B				
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	PRE	B				
	Storm Premix	4	EC	0.75	lb ai/a	4WAP	C				
	----bentazon	2.67		0.5							
	----acifluorfen	1.33		0.25							
	Interline.....glufosinate	2.34	SL	0.53	lb ai/a	4WAP	C				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	4WAP	C				
6	Roundup PowerMax..glyphosate	4.5	AS	0.77	lb ae/a	28EPP	A	19.0 a	60.0 d	86.0 a	50.0 c
	2,4-D ester	3.8	L	0.95	lb ae/a	28EPP	A				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	28EPP	A				
	Storm Premix	4	EC	0.75	lb ai/a	4WAP	C				
	----bentazon	2.67		0.5							
	----acifluorfen	1.33		0.25							
	Interline.....glufosinate	2.34	SL	0.53	lb ai/a	4WAP	C				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	4WAP	C				
7	Roundup PowerMax..glyphosate	4.5	AS	0.77	lb ae/a	28EPP	A	0.0 b	98.3 ab	88.3 a	100.0 a
	2,4-D ester	3.8	L	0.95	lb ae/a	28EPP	A				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	28EPP	A				
	Tricor DF.....metribuzin	75	DF	0.188	lb ai/a	PRE	B				
	Valor SX.....flumioxazin	51	WG	0.064	lb ai/a	PRE	B				
	Crop Oil Concentrate	100	L	1	% v/v	PRE	B				
	30% Urea Ammonium Nitrate	100	L	2.5	% v/v	PRE	B				
	Interline.....glufosinate	2.34	SL	0.585	lb ai/a	4WAP	C				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	4WAP	C				
8	Untreated Check							0.0 b	0.0 e	0.0 b	0.0 d
	Roundup PowerMax..glyphosate	4.5	AS	0.77	lb ae/a	28EPP	A				
	2,4-D ester	3.8	L	0.95	lb ae/a	28EPP	A				
	Dry Ammonium Sulfate	100	D	1.02	% w/v	28EPP	A				
	LSD P=.05							5.73	17.66	6.57	23.45
	Standard Deviation							3.15	9.93	3.69	13.39
	CV							21.92	13.9	4.82	19.44
	Replicate F							4.115	1.515	1.239	0.574
	Replicate Prob(F)							0.0497	0.2590	0.3241	0.5761
	Treatment F							24.291	31.004	211.287	16.566
	Treatment Prob(F)							0.0001	0.0001	0.0001	0.0001

University of Delaware

Soil-Applied Herbicide Combinations for No-Till Soybeans

Trial ID: Soy15-15 Location: Field #3 Trial Year:
Protocol ID: Soy15-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact: Virginia Tech

Investigator: Mark VanGessel Title: Extension Weed Specialist
Organization: University of Delaware
Address: 16483 County Seat Hwy
City+State/Prov: Georgetown, Delaware
Postal Code: 19947 E-mail: mjv@udel.edu
Country: USA United States

Crop Description

Crop 1: GLXMA Glycine max Soybean
Variety: 4306R2/STS BBCH Scale: BSOY
Planting Date: 06/02/15
Planting Rate, Unit: 180000 S/A Planting Method: PLANTD planted
Depth, Unit: 1 in Planting Equipment: FE Field Equipment
Row Spacing, Unit: 15 in Emergence Date: 06/09/15
Harvested Width, Unit: 6.25 FT
Soil Temperature, Unit: 90 F Harvested Length, Unit: 25 FT
Soil Moisture: NORMAL normal, adequate Harvest Equipment: Plot combine
Seed Bed: MEDTRA medium/trashy % Standard Moisture: 13.0

Pest Description

Pest 1 Type: W Code: AMAPA Amaranthus palmeri
Common Name: Palmer amaranth

Pest 2 Type: W Code: IPOSS Ipomoea sp.
Common Name: Morning glory

Site and Design

Treated Plot Width: 10 FT Site Type: FIELD field
Treated Plot Length: 25 FT
Treated Plot Area: 250 FT2 Treatments: 8 Tillage Type: NOTILL no-till
Replications: 3 Study Design: RACOBL Randomized Complete Block (RCB)

Field Prep./Maintenance:
The field received a preplant burndown treatment of glyphosate + 2,4-D on 4-28-15.

Soil Description

Description Name: 79
% Sand: 79 % OM: 1.8 Texture: SL sandy loam
% Silt: 10 pH: 5.4
% Clay: 11 CEC: 5.8 Fert. Level: E excellent
Soil Drainage: F fair

Moisture and Weather Conditions

Overall Moisture Conditions: NORMAL normal
Closest Weather Station: UDREC Distance, Unit: 0.3 mi

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Application Description

	A	B
Application Date:	06/04/15	07/06/15
Appl. Stop Time:	09:00 AM	10:00 AM
Interval to Prev. Appl., Unit:		32 DAYS
Application Method:	SPRAY	SPRAY
Application Timing:	PRE	POST
Application Placement:	BROADC	BROADC
Applied By:	VanGessl	Johnson
Air Temperature, Unit:	60 F	80 F
% Relative Humidity:	90	76
Wind Velocity, Unit:	5 mph	2 mph
Wind Direction:	NE	S
Dew Presence (Y/N):	Y yes	N no
Soil Temperature, Unit:	59 F	80 F
Soil Moisture:	NORMAL	NORMAL
% Cloud Cover:	95	70

Crop Stage At Each Application

	A	B
Crop 1 Code, BBCH Scale:	GLXMA BSOY	GLXMA BSOY
Stage Scale Used:		DESC
Stage Majority, Percent:		V5 100
Height, Unit:		10 in
Height Minimum, Maximum:		9 11

Pest Stage At Each Application

	A	B
Pest 1 Code, Type, Scale:	AMAPA W	AMAPA W
Stage Majority, Percent:		veg 100
Height, Unit:		12 in
Height Minimum, Maximum:		10 14
Density, Unit:		2 m2
Pest 2 Code, Type, Scale:	IPOSS W	IPOSS W
Stage Majority, Percent:		run 100
Height, Unit:		13 in
Height Minimum, Maximum:		12 15
Density, Unit:		2 m2

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Application Equipment

	A	B
Appl. Equipment:	Backpack	Tractor
Equipment Type:	SPRBAC	TRMOSP
Operation Pressure, Unit:	31 psi	40 psi
Nozzle Type:	AIRMIX	AIRMIX
Nozzle Size:	11002	11002
Nozzle Spacing, Unit:	18 in	20 in
Boom Length, Unit:	9 ft	10 ft
Boom Height, Unit:	18 in	30 in
Ground Speed, Unit:	3 mph	3 mph
Carrier:	WATER	WATER
Spray Volume, Unit:	20 gal/ac	20 gal/ac
Mix Size, Unit:	2 Liters	0.7 Gallons
Propellant:	COMCO2	COMAIR

Trial Comments

University of Delaware

Soil-Applied Herbicide Combinations for No-Till Soybeans

Trial ID: Soy15-15 Location: Field #3 Trial Year:
Protocol ID: Soy15-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact: Virginia Tech

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code					
	Pest Code							IPOSS	AMAPA	IPOSS		AMAPA
	Pest Name							mornglry	PalmerAm	mornglry		PalmerAm
	Crop Code										GLXMA	
	Crop Name										Soybean	
	Rating Type							weed ct	Control	Control	Stunting	Control
	Rating Unit							#/25 ft	%	%	%	%
	Rating Date							07/23/15	07/06/15	07/06/15	07/06/15	07/16/15
1	Untreated Check							1.1 a	0.0 c	0.0 c	0.0 a	56.7 c
	Flexstar GT Premix	3.3	L	1.86	lb ai/a	POST	B					
	----fomesafen	0.66		0.372								
	----glyphosate	2.64		1.49								
	Dry Ammonium Sulfate	100	D	2.04	% w/v	POST	B					
2	Valor SX.....flumioxazin	51	WG	0.064	lb ai/a	PRE	A	2.9 a	80.0 ab	66.7 a	5.7 a	92.0 a
	Flexstar GT Premix	3.3	L	1.86	lb ai/a	POST	B					
	----fomesafen	0.66		0.372								
	----glyphosate	2.64		1.49								
	Dry Ammonium Sulfate	100	D	2.04	% w/v	POST	B					
3	Metribuzin.....metribuzin	75	DF	0.188	lb ai/a	PRE	A	1.9 a	78.3 ab	56.7 a	1.7 a	91.7 a
	Flexstar GT Premix	3.3	L	1.86	lb ai/a	POST	B					
	----fomesafen	0.66		0.372								
	----glyphosate	2.64		1.49								
	Dry Ammonium Sulfate	100	D	2.04	% w/v	POST	B					
4	Zidua.....pyroxasulfone	85	WG	0.106	lb ai/a	PRE	A	1.2 a	66.7 b	43.3 b	2.3 a	77.0 b
	Flexstar GT Premix	3.3	L	1.86	lb ai/a	POST	B					
	----fomesafen	0.66		0.372								
	----glyphosate	2.64		1.49								
	Dry Ammonium Sulfate	100	D	2.04	% w/v	POST	B					
5	Valor SX.....flumioxazin	51	WG	0.064	lb ai/a	PRE	A	3.6 a	93.3 a	55.0 ab	2.3 a	95.7 a
	Metribuzin.....metribuzin	75	DF	0.188	lb ai/a	PRE	A					
	Flexstar GT Premix	3.3	L	1.86	lb ai/a	POST	B					
	----fomesafen	0.66		0.372								
	----glyphosate	2.64		1.49								
	Dry Ammonium Sulfate	100	D	2.04	% w/v	POST	B					
6	Valor SX.....flumioxazin	51	WG	0.064	lb ai/a	PRE	A	1.1 a	100.0 a	66.7 a	8.3 a	100.0 a
	Zidua.....pyroxasulfone	85	WG	0.106	lb ai/a	PRE	A					
	Flexstar GT Premix	3.3	L	1.86	lb ai/a	POST	B					
	----fomesafen	0.66		0.372								
	----glyphosate	2.64		1.49								
	Dry Ammonium Sulfate	100	D	2.04	% w/v	POST	B					
7	Metribuzin.....metribuzin	75	DF	0.188	lb ai/a	PRE	A	1.2 a	100.0 a	58.3 a	5.7 a	100.0 a
	Zidua.....pyroxasulfone	85	WG	0.106	lb ai/a	PRE	A					
	Flexstar GT Premix	3.3	L	1.86	lb ai/a	POST	B					
	----fomesafen	0.66		0.372								
	----glyphosate	2.64		1.49								
	Dry Ammonium Sulfate	100	D	2.04	% w/v	POST	B					

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.
Excluded replicate 3 in column 6

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Pest Code							IPOSS	AMAPA	IPOSS		AMAPA
Pest Name							mornglry	PalmerAm	mornglry		PalmerAm
Crop Code										GLXMA	
Crop Name										Soybean	
Rating Type							weed ct	Control	Control	Stunting	Control
Rating Unit							#/25 ft	%	%	%	%
Rating Date							07/23/15	07/06/15	07/06/15	07/06/15	07/16/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code				
8	Valor SX.....flumioxazin	51	WG	0.064	lb ai/a	PRE	A	1.0 a	100.0 a	64.0 a	4.0 a	100.0 a
	Metribuzin.....metribuzin	75	DF	0.188	lb ai/a	PRE	A					
	Zidua.....pyroxasulfone	85	WG	0.106	lb ai/a	PRE	A					
	Flexstar GT Premix	3.3	L	1.86	lb ai/a	POST	B					
	----fomesafen	0.66		0.372								
	----glyphosate	2.64		1.49								
	Dry Ammonium Sulfate	100	D	2.04	% w/v	POST	B					
LSD P=.05								2.10	23.97	12.65	8.12	13.99
Standard Deviation								1.20	13.69	7.22	4.63	7.99
CV								68.98	17.71	14.07	123.6	8.96
Replicate F								7.033	0.606	0.471	2.310	0.037
Replicate Prob(F)								0.0077	0.5592	0.6342	0.1358	0.9636
Treatment F								2.048	18.071	28.105	1.014	10.834
Treatment Prob(F)								0.1202	0.0001	0.0001	0.4623	0.0001

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	AMAPA PalmerAm weed ct #/plot 10/14/15	AMAPA PalmerAm Control % 10/14/15	IPOSS mornglry Control % 10/14/15	GLXMA Soybean Yield Bu/A 10/23/15
1	Untreated Check							3.5 a	83.3 c	91.0 a	23.8 ab
	Flexstar GT Premix	3.3	L	1.86	lb ai/a	POST	B				
	----fomesafen	0.66		0.372							
	----glyphosate	2.64		1.49							
	Dry Ammonium Sulfate	100	D	2.04	% w/v	POST	B				
2	Valor SX.....flumioxazin	51	WG	0.064	lb ai/a	PRE	A	1.0 a	93.3	87.3 a	21.1 b
	Flexstar GT Premix	3.3	L	1.86	lb ai/a	POST	B				
	----fomesafen	0.66		0.372							
	----glyphosate	2.64		1.49							
	Dry Ammonium Sulfate	100	D	2.04	% w/v	POST	B				
3	Metribuzin.....metribuzin	75	DF	0.188	lb ai/a	PRE	A	2.0 a	93.3 ab	90.3 a	25.7 a
	Flexstar GT Premix	3.3	L	1.86	lb ai/a	POST	B				
	----fomesafen	0.66		0.372							
	----glyphosate	2.64		1.49							
	Dry Ammonium Sulfate	100	D	2.04	% w/v	POST	B				
4	Zidua.....pyroxasulfone	85	WG	0.106	lb ai/a	PRE	A	3.0 a	90.0 bc	89.3 a	26.1 a
	Flexstar GT Premix	3.3	L	1.86	lb ai/a	POST	B				
	----fomesafen	0.66		0.372							
	----glyphosate	2.64		1.49							
	Dry Ammonium Sulfate	100	D	2.04	% w/v	POST	B				
5	Valor SX.....flumioxazin	51	WG	0.064	lb ai/a	PRE	A	0.0 a	100.0 a	80.7 a	20.5 b
	Metribuzin.....metribuzin	75	DF	0.188	lb ai/a	PRE	A				
	Flexstar GT Premix	3.3	L	1.86	lb ai/a	POST	B				
	----fomesafen	0.66		0.372							
	----glyphosate	2.64		1.49							
	Dry Ammonium Sulfate	100	D	2.04	% w/v	POST	B				
6	Valor SX.....flumioxazin	51	WG	0.064	lb ai/a	PRE	A	0.0 a	100.0 a	76.7 a	20.4 b
	Zidua.....pyroxasulfone	85	WG	0.106	lb ai/a	PRE	A				
	Flexstar GT Premix	3.3	L	1.86	lb ai/a	POST	B				
	----fomesafen	0.66		0.372							
	----glyphosate	2.64		1.49							
	Dry Ammonium Sulfate	100	D	2.04	% w/v	POST	B				
7	Metribuzin.....metribuzin	75	DF	0.188	lb ai/a	PRE	A	0.0 a	100.0 a	58.0	21.3 b
	Zidua.....pyroxasulfone	85	WG	0.106	lb ai/a	PRE	A				
	Flexstar GT Premix	3.3	L	1.86	lb ai/a	POST	B				
	----fomesafen	0.66		0.372							
	----glyphosate	2.64		1.49							
	Dry Ammonium Sulfate	100	D	2.04	% w/v	POST	B				

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	AMAPA PalmerAm	AMAPA PalmerAm	IPOSS mornglry	GLXMA Soybean Yield
	Pest Code							AMAPA	AMAPA	IPOSS	
	Pest Name							PalmerAm	PalmerAm	mornglry	
	Crop Code										GLXMA
	Crop Name										Soybean
	Rating Type							weed ct	Control	Control	Yield
	Rating Unit							#/plot	%	%	Bu/A
	Rating Date							10/14/15	10/14/15	10/14/15	10/23/15
8	Valor SX.....flumioxazin	51	WG	0.064	lb ai/a	PRE	A	0.0 a	100.0 a	80.7 a	23.0 ab
	Metribuzin.....metribuzin	75	DF	0.188	lb ai/a	PRE	A				
	Zidua.....pyroxasulfone	85	WG	0.106	lb ai/a	PRE	A				
	Flexstar GT Premix	3.3	L	1.86	lb ai/a	POST	B				
	----fomesafen	0.66		0.372							
	----glyphosate	2.64		1.49							
	Dry Ammonium Sulfate	100	D	2.04	% w/v	POST	B				
	LSD P=.05							2.67	9.83	14.25	3.76
	Standard Deviation							1.13	5.53	8.01	2.15
	CV							95.15	5.8	9.41	9.44
	Replicate F							1.224	1.909	6.873	18.889
	Replicate Prob(F)							0.3052	0.1906	0.0103	0.0001
	Treatment F							3.350	4.312	1.524	3.379
	Treatment Prob(F)							0.0666	0.0151	0.2515	0.0250

University of Delaware

Herbicide Combinations for POST Control of Palmer amaranth

Trial ID: Soy16-15 Location: Field #3 Trial Year:
Protocol ID: Soy16-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact: Virginia Tech

Investigator: Mark VanGessel Title: Extension Weed Specialist
Organization: University of Delaware
Address: 16483 County Seat Hwy
City+State/Prov: Georgetown, Delaware
Postal Code: 19947 E-mail: mjv@udel.edu
Country: USA United States

Crop Description

Crop 1: GLXMA Glycine max Soybean
Variety: S45LL33 BBCH Scale: BSOY
Planting Date: 05/20/15
Planting Rate, Unit: 180000 S/A Planting Method: PLANTD planted
Depth, Unit: 1 in Planting Equipment: FE Field Equipment
Row Spacing, Unit: 15 in Emergence Date: 05/27/15
Harvest Date: 10/26/15
Harvested Width, Unit: 6.25 FT
Soil Temperature, Unit: 72 F Harvested Length, Unit: 25 FT
Soil Moisture: NORMAL normal, adequate Harvest Equipment: Plot combine
Seed Bed: MEDTRA medium/trashy % Standard Moisture: 13.0

Pest Description

Pest 1 Type: W Code: AMAPA Amaranthus palmeri
Common Name: Palmer amaranth

Pest 2 Type: W Code: IPOSS Ipomoea sp.
Common Name: Morning glory

Site and Design

Treated Plot Width: 10 FT Site Type: FIELD field
Treated Plot Length: 25 FT
Treated Plot Area: 250 FT2 Treatments: 12 Tillage Type: NOTILL no-till
Replications: 3 Study Design: RACOBL Randomized Complete Block (RCB)

Trial Initiation Comments:
Early preplant burndown was applied in 4-28-15.

Maintenance

No.	Date	Maintenance Product Name	Form Conc	Form Type	Rate	Rate Unit
1.	05/05/15	Metribuzin	75	DF	2	OZ WT/A

Comment: Total 14EPP treatment on 5-5-15.

Soil Description

% Sand: 79 % OM: 1.8 Texture: SL sandy loam
% Silt: 10 pH: 5.4
% Clay: 11 CEC: 5.8 Fert. Level: E excellent
Soil Drainage: F fair

Moisture and Weather Conditions

Overall Moisture Conditions: NORMAL normal
Closest Weather Station: UDREC Distance, Unit: 0.3 mi

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Application Description

	A
Application Date:	06/05/15
Appl. Stop Time:	11:00 AM
Application Method:	SPRAY
Application Timing:	2WAP
Application Placement:	BROADC
Applied By:	Johnson
Air Temperature, Unit:	62 F
% Relative Humidity:	93
Wind Velocity, Unit:	1 mph
Wind Direction:	N
Dew Presence (Y/N):	Y yes
Soil Temperature, Unit:	62 F
Soil Moisture:	WET
% Cloud Cover:	100

Crop Stage At Each Application

	A
Crop 1 Code, BBCH Scale:	GLXMA BSOY
Stage Scale Used:	DESC
Stage Majority, Percent:	unifol 100
Height, Unit:	2 in

Pest Stage At Each Application

	A
Pest 1 Code, Type, Scale:	AMAPA W
Stage Majority, Percent:	veg 100
Height, Unit:	3.5 in
Height Minimum, Maximum:	2 5
Density, Unit:	6 m2
Pest 2 Code, Type, Scale:	IPOSS W
Stage Majority, Percent:	3-leaf 50
Stage Minimum, Percent:	2-leaf 20
Stage Maximum, Percent:	5-leaf 10
Height, Unit:	2.5 in
Height Minimum, Maximum:	2 3
Density, Unit:	4 m2

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Application Equipment

	A
Appl. Equipment:	Tractor
Equipment Type:	TRMOSP
Operation Pressure, Unit:	40 psi
Nozzle Type:	AIRMIX
Nozzle Size:	11002
Nozzle Spacing, Unit:	20 in
Boom Length, Unit:	10 ft
Boom Height, Unit:	22 in
Ground Speed, Unit:	3 mph
Carrier:	WATER
Spray Volume, Unit:	20 gal/ac
Mix Size, Unit:	0.7 Gallons
Propellant:	COMAIR

Trial Comments

University of Delaware

Herbicide Combinations for POST Control of Palmer amaranth

Trial ID: Soy16-15 Location: Field #3 Trial Year:
Protocol ID: Soy16-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact: Virginia Tech

Crop Code								GLXMA
Crop Name								Soybean
Rating Type								Yield
Rating Unit								Bu/A
Rating Date								10/26/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	
1	Untreated Check							9.8 bc
	Metribuzin.....metribuzin	75	DF	0.094	lb ai/a	14EPP	A	
2	Liberty 280.....glufosinate	2.34	SL	0.585	lb ai/a	2 WAP	B	19.0 a
	Dry Ammonium Sulfate	100	D	1.2	% w/v	2 WAP	B	
3	Reflex.....fomesafen	2	L	0.313	lb ai/a	2 WAP	B	19.8 a
	Nonionic Surfactant	100	L	0.25	% v/v	2 WAP	B	
4	Outlook.....dimethenamid-p	6	L	0.656	lb ai/a	2 WAP	B	6.1 c
	Nonionic Surfactant	100	L	0.25	% v/v	2 WAP	B	
5	Liberty 280.....glufosinate	2.34	SL	0.585	lb ai/a	2 WAP	B	18.7 a
	Reflex.....fomesafen	2	L	0.313	lb ai/a	2 WAP	B	
	Nonionic Surfactant	100	L	0.25	% v/v	2 WAP	B	
	Dry Ammonium Sulfate	100	D	1.2	% w/v	2 WAP	B	
6	Liberty 280.....glufosinate	2.34	SL	0.585	lb ai/a	2 WAP	B	23.6 a
	Outlook.....dimethenamid-p	6	L	0.656	lb ai/a	2 WAP	B	
	Dry Ammonium Sulfate	100	D	1.2	% w/v	2 WAP	B	
7	Reflex.....fomesafen	2	L	0.313	lb ai/a	2 WAP	B	17.9 ab
	Outlook.....dimethenamid-p	6	L	0.656	lb ai/a	2 WAP	B	
	Nonionic Surfactant	100	L	0.25	% v/v	2 WAP	B	
8	Liberty 280.....glufosinate	2.34	SL	0.585	lb ai/a	2 WAP	B	23.3 a
	Outlook.....dimethenamid-p	6	L	0.656	lb ai/a	2 WAP	B	
	Reflex.....fomesafen	2	L	0.313	lb ai/a	2 WAP	B	
	Nonionic Surfactant	100	L	0.25	% v/v	2 WAP	B	
	Dry Ammonium Sulfate	100	D	1.2	% w/v	2 WAP	B	
9	Raptor.....imazamox	1	AS	0.039	lb ai/a	2 WAP	B	25.8 a
	Nonionic Surfactant	100	L	0.25	% v/v	2 WAP	B	
	Dry Ammonium Sulfate	100	D	1.2	% w/v	2 WAP	B	
10	Liberty 280.....glufosinate	2.34	SL	0.585	lb ai/a	2 WAP	B	25.2 a
	Raptor.....imazamox	1	AS	0.039	lb ai/a	2 WAP	B	
	Nonionic Surfactant	100	L	0.25	% v/v	2 WAP	B	
	Dry Ammonium Sulfate	100	D	1.2	% w/v	2 WAP	B	
11	Outlook.....dimethenamid-p	6	L	0.656	lb ai/a	2 WAP	B	21.0 a
	Raptor.....imazamox	1	AS	0.039	lb ai/a	2 WAP	B	
	Nonionic Surfactant	100	L	0.25	% v/v	2 WAP	B	
	Dry Ammonium Sulfate	100	D	1.2	% w/v	2 WAP	B	

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.
Missing data estimates are included in columns:Yates=3

University of Delaware

Crop Code	GLXMA
Crop Name	Soybean
Rating Type	Yield
Rating Unit	Bu/A
Rating Date	10/26/15

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	
12	Liberty 280.....glufosinate	2.34	SL	0.585	lb ai/a	2 WAP	B	25.8 a
	Outlook.....dimethenamid-p	6	L	0.656	lb ai/a	2 WAP	B	
	Raptor.....imazamox	1	AS	0.039	lb ai/a	2 WAP	B	
	Nonionic Surfactant	100	L	0.25	% v/v	2 WAP	B	
	Dry Ammonium Sulfate	100	D	1.2	% w/v	2 WAP	B	

LSD P=.05	8.68
Standard Deviation	5.10
CV	25.9
Replicate F	0.510
Replicate Prob(F)	0.6081
Treatment F	4.420
Treatment Prob(F)	0.0020

University of Delaware

Palmer Amaranth Rescue with Weed Wiper in Soybean

Trial ID: Soy17-15 Location: Field #9 Trial Year: 2015
Protocol ID: Soy17-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Investigator: Mark VanGessel Title: Extension Weed Specialist
Organization: University of Delaware
Address: 16483 County Seat Hwy
City+State/Prov: Georgetown, Delaware
Postal Code: 19947 E-mail: mjv@udel.edu
Country: USA United States

Crop Description

Crop 1: GLXMA Glycine max Soybean
Variety: NK S44-K7 BBCH Scale: BSOY

Pest Description

Pest 1 Type: W Code: AMAPA Amaranthus palmeri
Common Name: Palmer amaranth

Site and Design

Treated Plot Width: 12 FT Site Type: FIELD field
Treated Plot Length: 200 FT
Treated Plot Area: 2400 FT2 Treatments: 6 Tillage Type: CONTIL conventional-till
Replications: 2 Study Design: FACTOR Factorial

Soil Description

% Sand: 83 % OM: 1.4 Texture: LS loamy sand
% Silt: 8 pH: 5.4
% Clay: 9 CEC: 4.8 Fert. Level: G good
Soil Drainage: G good

Moisture and Weather Conditions

Overall Moisture Conditions: NORMAL normal
Closest Weather Station: UDREC Distance, Unit: 0.1 mi

Application Description

	A
Application Date:	09/03/15
Appl. Start Time:	09:00 AM
Appl. Stop Time:	11:00 AM
Application Method:	wiper
Application Timing:	wiper
Application Placement:	FOLIAR
Applied By:	Johnson
Air Temperature, Unit:	84 F
% Relative Humidity:	58
Wind Velocity, Unit:	2 mph
Wind Direction:	N
Dew Presence (Y/N):	N no
Soil Temperature, Unit:	83 F
Soil Moisture:	NORMAL
% Cloud Cover:	15

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Crop Stage At Each Application

	A
Crop 1 Code, BBCH Scale:	GLXMA BSOY
Stage Scale Used:	DESC
Stage Majority, Percent:	reprod 100
Height, Unit:	24 IN
Height Minimum, Maximum:	21 26

Pest Stage At Each Application

	A
Pest 1 Code, Type, Scale:	AMAPA W
Stage Majority, Percent:	flower 100
Height, Unit:	42 in
Height Minimum, Maximum:	21 66
Density, Unit:	8 m2

Application Equipment

	A
Appl. Equipment:	Wiper
Equipment Type:	ROLLAP
Boom Length, Unit:	12 FT
Ground Speed, Unit:	3 MPH
Carrier:	H2O
Spray Volume, Unit:	0.125 GAL/AC
Mix Size, Unit:	2 gallons

Trial Comments

09/03/15: Soybean height was fairly uniform, although roller height was varied some across the field to maintain treatment heights. Palmer density was somewhat variable across the field and ranged from 0 to 15/m2.

09/10/15; Initial impressions were that Aim was showing very little activity on Palmer amaranth, while Gramoxone had typical necrosis at the site of contact.

University of Delaware

Palmer Amaranth Rescue with Weed Wiper in Soybean

Trial ID: Soy17-15 Location: Field #9 Trial Year: 2015
Protocol ID: Soy17-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Pest Code							AMAPA
Pest Name							PalmerAm
Rating Type							Control
Rating Unit							%
Rating Date							10/16/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	
1	Gramoxone SL....paraquat	2	SL	0.125	lb ai/a	wiper	A	75.0 a
	Nonionic Surfactant	100	L	0.25	% v/v	wiper	A	
	Top of Beans							
2	Gramoxone SL....paraquat	2	SL	0.125	lb ai/a	wiper	A	55.0 b
	Nonionic Surfactant	100	L	0.25	% v/v	wiper	A	
	Above beans							
3	Aim.....carfentrazone	2	EC	0.0039	lb ai/a	wiper	A	20.0 cd
	Crop Oil Concentrate	100	L	1.5	% v/v	wiper	A	
	Top of Beans							
4	Aim.....carfentrazone	2	EC	0.0039	lb ai/a	wiper	A	2.5 de
	Crop Oil Concentrate	100	L	1.5	% v/v	wiper	A	
	Above beans							
5	Aim.....carfentrazone	2	EC	0.0039	lb ai/a	wipe 2x	A	25.0 c
	Crop Oil Concentrate	100	L	1.5	% v/v	wipe 2x	A	
6	Untreated Check							0.0 e
LSD P=.05								18.55
Standard Deviation								7.22
CV								24.4
Replicate F								1.000
Replicate Prob(F)								0.3632
Treatment F								34.024
Treatment Prob(F)								0.0007

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

University of Delaware

Impact of Adjuvant on Reflex Performance

Trial ID: Soy19-15 Location: Field #14 Trial Year: 2015
Protocol ID: Soy19-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Investigator: Mark VanGessel Title: Extension Weed Specialist
Organization: University of Delaware
Address: 16483 County Seat Hwy
City+State/Prov: Georgetown, Delaware
Postal Code: 19947 E-mail: mjv@udel.edu
Country: USA United States

Crop Description

Crop 1: GLXMA Glycine max Soybean
Variety: NK S44-K7 BBCH Scale: BSOY
Planting Date: 07/09/15
Planting Rate, Unit: 180000 S/A Planting Method: PLANTD planted
Depth, Unit: 1 in Planting Equipment: PP Plot Planter
Row Spacing, Unit: 15 in Emergence Date: 07/14/15
Harvest Date: 11/23/15
Harvested Width, Unit: 6.25 FT
Soil Temperature, Unit: 89 F Harvested Length, Unit: 24 FT
Soil Moisture: NORMAL normal, adequate
Seed Bed: SMOOTH smooth % Standard Moisture: 13.0

Pest Description

Pest 1 Type: W Code: AMAPA Amaranthus palmeri
Common Name: Palmer amaranth

Pest 2 Type: W Code: IPOSS Ipomoea sp.
Common Name: Morning glory

Site and Design

Treated Plot Width: 10 FT Site Type: FIELD field
Treated Plot Length: 25 FT
Treated Plot Area: 250 FT2 Treatments: 10 Tillage Type: NOTILL no-till
Replications: 3 Study Design: RACOBL Randomized Complete Block (RCB)

Trial Initiation Comments:
Plots were planted into wheat stubble.

Maintenance

No.	Date	Maintenance Product Name	Form Conc	Form Type	Rate	Rate Unit
1.	07/06/15	Roundup	4.5	AS	1	QT/A
2.	07/06/15	Liberty 280	2.34	SL	1	QT/A
3.	07/06/15	AMS	100	D	8.5	LB/100 GAL

Comment: Burndown on 7-6-15.

Soil Description

% Sand: 81 % OM: 1.0 Texture: LS loamy sand
% Silt: 12 pH: 6.1
% Clay: 7 CEC: 4.7 Fert. Level: E excellent
Soil Drainage: G good

Moisture and Weather Conditions

Overall Moisture Conditions: NORMAL normal
Closest Weather Station: UD REC Distance, Unit: 0.3 mi

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Application Description

	A
Application Date:	08/05/15
Appl. Stop Time:	03:00 PM
Application Method:	SPRAY
Application Timing:	POST
Application Placement:	BROADC
Applied By:	Johnson
Air Temperature, Unit:	88 F
% Relative Humidity:	40
Wind Velocity, Unit:	4 mph
Wind Direction:	W
Dew Presence (Y/N):	N no
Soil Temperature, Unit:	88 F
Soil Moisture:	NORMAL
% Cloud Cover:	15

Crop Stage At Each Application

	A
Crop 1 Code, BBCH Scale:	GLXMA BSOY
Stage Scale Used:	DESC
Stage Majority, Percent:	V4 100
Height, Unit:	12 in
Height Minimum, Maximum:	10 13

Pest Stage At Each Application

	A
Pest 1 Code, Type, Scale:	AMAPA W
Stage Majority, Percent:	veg 100
Height, Unit:	20 in
Height Minimum, Maximum:	14 24
Density, Unit:	2 m2
Pest 2 Code, Type, Scale:	IPOSS W
Stage Majority, Percent:	run 100
Height, Unit:	15 in
Height Minimum, Maximum:	12 18
Density, Unit:	2 m2

Application Equipment

	A
Appl. Equipment:	Tractor
Equipment Type:	TRMOSP
Operation Pressure, Unit:	40 psi
Nozzle Type:	AIRMIX
Nozzle Size:	11002
Nozzle Spacing, Unit:	20 in
Boom Length, Unit:	10 ft
Boom Height, Unit:	40 in
Ground Speed, Unit:	3 mph
Carrier:	WATER
Spray Volume, Unit:	20 gal/ac
Mix Size, Unit:	0.7 Gallons
Propellant:	COMAIR

Trial Comments

08/19/15: Not a lot of morningglory pressure.

University of Delaware

Impact of Adjuvant on Reflex Performance

Trial ID: Soy19-15 Location: Field #14 Trial Year: 2015
Protocol ID: Soy19-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	AMAPA PalmerAm	IPOSS mornglry	GLXMA Soybean	AMAPA PalmerAm
	Pest Code							AMAPA	IPOSS		AMAPA
	Pest Name							PalmerAm	mornglry		PalmerAm
	Crop Code									GLXMA	
	Crop Name									Soybean	
	Rating Type							Control	Control	Stunting	Control
	Rating Unit							%	%	%	%
	Rating Date							08/12/15	08/12/15	08/19/15	08/19/15
1	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a	POST	A	94.3 a	85.0 b	0.0 b	96.0 ab
	Dry Ammonium Sulfate	100	D	1.02	% w/v	POST	A				
2	Reflex.....fomesafen	2	L	0.375	lb ai/a	POST	A	81.7 a	90.0 ab	0.0 b	88.0 abc
	Nonionic Surfactant	100	L	0.25	% v/v	POST	A				
3	Reflex.....fomesafen	2	L	0.375	lb ai/a	POST	A	84.0 a	96.7 ab	0.0 b	78.3 c
	Methylated Seed Oil	100	L	0.94	% v/v	POST	A				
4	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a	POST	A	89.3 a	92.0 ab	0.0 b	100.0 a
	Reflex.....fomesafen	2	L	0.375	lb ai/a	POST	A				
	Dry Ammonium Sulfate	100	D	1.7	lb ai/a	POST	A				
5	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a	POST	A	90.0 a	90.0 ab	0.0 b	99.0 ab
	Reflex.....fomesafen	2	L	0.375	lb ai/a	POST	A				
	Nonionic Surfactant	100	L	0.25	% v/v	POST	A				
	Dry Ammonium Sulfate	100	D	1.7	lb ai/a	POST	A				
6	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a	POST	A	90.7 a	98.3 a	0.0 b	100.0 a
	Reflex.....fomesafen	2	L	0.375	lb ai/a	POST	A				
	Methylated Seed Oil	100	L	0.94	% v/v	POST	A				
	Dry Ammonium Sulfate	100	D	1.7	lb ai/a	POST	A				
7	Liberty 280.....glufosinate	2.34	SL	0.66	lb ai/a	POST	A	89.0 a	94.3 ab	0.0 b	83.3 bc
	Dry Ammonium Sulfate	100	D	3	lb ai/a	POST	A				
8	Flexstar GT Premix	3.3	L	1.86	lb ai/a	POST	A	81.7 a	85.0 b	0.0 b	93.3 abc
	----fomesafen	0.66		0.372							
	----glyphosate	2.64		1.49							
	Dry Ammonium Sulfate	100	D	1.7	lb ai/a	POST	A				
9	Flexstar GT Premix	3.3	L	1.86	lb ai/a	POST	A	93.3 a	96.7 ab	5.0 a	100.0 a
	----fomesafen	0.66		0.372							
	----glyphosate	2.64		1.49							
	Methylated Seed Oil	100	L	0.94	% ai/v	POST	A				
	Dry Ammonium Sulfate	100	D	1.7	lb ai/a	POST	A				
10	Untreated Check							0.0 b	0.0 c	0.0 b	0.0 d
	LSD P=.05							13.67	11.78	.	16.46
	Standard Deviation							7.97	6.87	0.00	9.59
	CV							10.04	8.29	0.0	11.45
	Replicate F							5.950	0.848	0.000	3.202
	Replicate Prob(F)							0.0104	0.4445	1.0000	0.0646
	Treatment F							37.680	55.235	0.000	30.164
	Treatment Prob(F)							0.0001	0.0001	1.0000	0.0001

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.
Could not calculate LSD (% mean diff) for columns 3 because error mean square = 0.

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Pest Code								IPOSS	
Pest Name								mornglry	
Crop Code									GLXMA
Crop Name									Soybean
Rating Type								Control	Yield
Rating Unit								%	Bu/A
Rating Date								08/19/15	11/23/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code		
1	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a	POST	A	94.0 b	34.2 a
	Dry Ammonium Sulfate	100	D	1.02	% w/v	POST	A		
2	Reflex.....fomesafen	2	L	0.375	lb ai/a	POST	A	99.3 a	35.2 a
	Nonionic Surfactant	100	L	0.25	% v/v	POST	A		
3	Reflex.....fomesafen	2	L	0.375	lb ai/a	POST	A	100.0 a	30.4 ab
	Methylated Seed Oil	100	L	0.94	% v/v	POST	A		
4	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a	POST	A	100.0 a	35.5 a
	Reflex.....fomesafen	2	L	0.375	lb ai/a	POST	A		
	Dry Ammonium Sulfate	100	D	1.7	lb ai/a	POST	A		
5	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a	POST	A	100.0 a	36.0 a
	Reflex.....fomesafen	2	L	0.375	lb ai/a	POST	A		
	Nonionic Surfactant	100	L	0.25	% v/v	POST	A		
	Dry Ammonium Sulfate	100	D	1.7	lb ai/a	POST	A		
6	Roundup PowerMax..glyphosate	4.5	AS	1.13	lb ae/a	POST	A	100.0 a	31.6 ab
	Reflex.....fomesafen	2	L	0.375	lb ai/a	POST	A		
	Methylated Seed Oil	100	L	0.94	% v/v	POST	A		
	Dry Ammonium Sulfate	100	D	1.7	lb ai/a	POST	A		
7	Liberty 280.....glufosinate	2.34	SL	0.66	lb ai/a	POST	A	94.0 b	0.0 c
	Dry Ammonium Sulfate	100	D	3	lb ai/a	POST	A		
8	Flexstar GT Premix	3.3	L	1.86	lb ai/a	POST	A	99.3 a	34.4 a
	----fomesafen	0.66		0.372					
	----glyphosate	2.64		1.49					
	Dry Ammonium Sulfate	100	D	1.7	lb ai/a	POST	A		
9	Flexstar GT Premix	3.3	L	1.86	lb ai/a	POST	A	100.0 a	33.2 a
	----fomesafen	0.66		0.372					
	----glyphosate	2.64		1.49					
	Methylated Seed Oil	100	L	0.94	% ai/v	POST	A		
	Dry Ammonium Sulfate	100	D	1.7	lb ai/a	POST	A		
10	Untreated Check							0.0 c	25.6 b
LSD P=.05								2.11	6.32
Standard Deviation								1.23	3.68
CV								1.39	12.44
Replicate F								2.002	0.368
Replicate Prob(F)								0.1640	0.6974
Treatment F								1933.888	26.077
Treatment Prob(F)								0.0001	0.0001

University of Delaware

Gramoxone Plus Residual Herbicides for Soybeans

Trial ID: Soy22-15 Location: Field #3 Trial Year:
Protocol ID: Soy22-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Investigator: Mark VanGessel Title: Extension Weed Specialist
Organization: University of Delaware
Address: 16483 County Seat Hwy
City+State/Prov: Georgetown, Delaware
Postal Code: 19947 E-mail: mjv@udel.edu
Country: USA United States

Crop Description

Crop 1: GLXMA Glycine max Soybean
Variety: 4306R2/STS BBCH Scale: BSOY
Planting Date: 06/02/15
Planting Rate, Unit: 180000 S/A Planting Method: PLANTD planted
Depth, Unit: 1 in Planting Equipment: FE Field Equipment
Row Spacing, Unit: 15 in Emergence Date: 06/09/15
Soil Temperature, Unit: 90 F
Soil Moisture: NORMAL normal, adequate
Seed Bed: MEDTRA medium/trashy

Pest Description

Pest 1 Type: W Code: ERICA Conyza canadensis
Common Name: Canada horseweed

Pest 2 Type: W Code: AMAPA Amaranthus palmeri
Common Name: Palmer amaranth

Pest 3 Type: W Code: IPOSS Ipomoea sp.
Common Name: Morning glory

Pest 4 Type: W Code: DIGSA Digitaria sanguinalis
Common Name: large crabgrass

Site and Design

Treated Plot Width: 10 FT Site Type: FIELD field
Treated Plot Length: 25 FT
Treated Plot Area: 250 FT2 Treatments: 10 Tillage Type: NOTILL no-till
Replications: 3 Study Design: FACTOR Factorial

Maintenance

No.	Date	Maintenance Product Name	Form Conc	Form Type	Rate	Rate Unit
1.	06/25/15	Roundup	4.5	AS	1	QT/A
2.	06/25/15	Harmony SG	50	SG	0.25	OZ WT/A
3.	06/25/15	Warrant	3	CS	2	PT/A

Comment: Total POST application for Palmer amaranth control on 6-25-15.

Field Prep./Maintenance:
The field received a preplant burndown treatment of glyphosate + 2,4-D on 4-28-15.

Soil Description

% Sand: 79 % OM: 1.8 Texture: SL sandy loam
% Silt: 10 pH: 5.4
% Clay: 11 CEC: 5.8 Fert. Level: E excellent
Soil Drainage: F fair

Moisture and Weather Conditions

Overall Moisture Conditions: NORMAL normal
Closest Weather Station: UDREC Distance, Unit: 0.3 mi

Application Description

	A
Application Date:	05/28/15
Appl. Stop Time:	01:00 PM
Application Method:	SPRAY
Application Timing:	PRE
Application Placement:	BROADC
Applied By:	VanGessl
Air Temperature, Unit:	82 F
% Relative Humidity:	65
Wind Velocity, Unit:	5 mph
Wind Direction:	SW
Dew Presence (Y/N):	N no
Soil Temperature, Unit:	82 F
Soil Moisture:	NORMAL
% Cloud Cover:	85

Crop Stage At Each Application

	A
Crop 1 Code, BBCH Scale:	GLXMA BSOY

Pest Stage At Each Application

	A
Pest 1 Code, Type, Scale:	ERICA W
Stage Majority, Percent:	bolt 100
Height, Unit:	6 in
Density, Unit:	2 m2
Pest 2 Code, Type, Scale:	AMAPA W
Stage Majority, Percent:	veg 100
Height, Unit:	1.5 in
Height Minimum, Maximum:	1 3
Density, Unit:	5 m2
Pest 3 Code, Type, Scale:	IPOSS W
Stage Majority, Percent:	2-leaf 60
Stage Minimum, Percent:	cotyld 40
Stage Maximum, Percent:	2-leaf 60
Height, Unit:	1.5 in
Height Minimum, Maximum:	1 2
Density, Unit:	4 m2
Pest 4 Code, Type, Scale:	DIGSA W
Stage Majority, Percent:	2-leaf 100
Height, Unit:	1.5 in
Height Minimum, Maximum:	1 2
Density, Unit:	20 m2

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Application Equipment

	A
Appl. Equipment:	Backpack
Equipment Type:	SPRBAC
Operation Pressure, Unit:	31 psi
Nozzle Type:	AIRMIX
Nozzle Size:	11002
Nozzle Spacing, Unit:	18 in
Boom Length, Unit:	9 ft
Boom Height, Unit:	18 in
Ground Speed, Unit:	3 mph
Carrier:	WATER
Spray Volume, Unit:	20 gal/ac
Mix Size, Unit:	2 Liters
Propellant:	COMCO2

Trial Comments

06/26/15: Authority XL treated plots = ~50% stunting.

06/17/15: Rating burndown control only - not residual. Weed pressure is light; horseweed and crabgrass is patchy and not in all untreated checks. Excellent burndown with most treatments. Most weeds were less than 1 1/2 in when sprayed (except horseweed ~ 6 in). Soy 22 demo weeds were larger, often > 2-3", and density was heavy. Soy 22 demo has more realistic and better study to consider applicability of this approach.

University of Delaware

Gramoxone Plus Residual Herbicides for Soybeans

Trial ID: Soy22-15 Location: Field #3 Trial Year:
Protocol ID: Soy22-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Pest Code Pest Name							ERICA Horsewd	AMAPA PalmerAm	IPOSS mornglry	DIGSA L.crbgrs
Crop Code Crop Name Rating Type Rating Unit Rating Date						GLXMA Soybean Stunting % 06/17/15	Control % 06/17/15	Control % 06/17/15	Control % 06/17/15	Control % 06/17/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage				
1	Canopy Premix	75	DF	0.188	lb ai/a	PRE	0.0 b	100.0 a	100.0 a	100.0 a	73.3 ab
	----metribuzin	64.3		0.161						
	----chlorimuron	10.7		0.0268						
	Crop Oil Concentrate	100	L	1.25	% v/v	PRE				
	30% Urea Ammonium Nitrate	100	L	2	% v/v	PRE				
	No Gramoxone									
2	Canopy Premix	75	DF	0.188	lb ai/a	PRE	0.0 b	100.0 a	100.0 a	100.0 a	100.0 a
	----metribuzin	64.3		0.161						
	----chlorimuron	10.7		0.0268						
	Crop Oil Concentrate	100	L	1.25	% v/v	PRE				
	30% Urea Ammonium Nitrate	100	L	2	% v/v	PRE				
	Gramoxone SL....paraquat	2	SL	0.5	lb ai/a	PRE				
3	Canopy Premix	75	DF	0.188	lb ai/a	PRE	1.7 b	100.0 a	100.0 a	100.0 a	100.0 a
	----metribuzin	64.3		0.161						
	----chlorimuron	10.7		0.0268						
	Crop Oil Concentrate	100	L	1.25	% v/v	PRE				
	30% Urea Ammonium Nitrate	100	L	2	% v/v	PRE				
	Gramoxone SL....paraquat	2	SL	0.75	lb ai/a	PRE				
4	Valor XLT Premix	40.3	WG	0.091	lb ai/a	PRE	2.3 b	100.0 a	100.0 a	100.0 a	94.0 a
	----flumioxazin	30		0.068						
	----chlorimuron	10.3		0.0233						
	Crop Oil Concentrate	100	L	1.25	% v/v	PRE				
	30% Urea Ammonium Nitrate	100	L	2	% v/v	PRE				
	No Gramoxone									
5	Valor XLT Premix	40.3	WG	0.091	lb ai/a	PRE	0.0 b	100.0 a	100.0 a	100.0 a	100.0 a
	----flumioxazin	30		0.068						
	----chlorimuron	10.3		0.0233						
	Crop Oil Concentrate	100	L	1.25	% v/v	PRE				
	30% Urea Ammonium Nitrate	100	L	2	% v/v	PRE				
	Gramoxone SL....paraquat	2	SL	0.5	lb ai/a	PRE				
6	Valor XLT Premix	40.3	WG	0.091	lb ai/a	PRE	2.3 b	100.0 a	100.0 a	100.0 a	100.0 a
	----flumioxazin	30		0.068						
	----chlorimuron	10.3		0.0233						
	Crop Oil Concentrate	100	L	1.25	% v/v	PRE				
	30% Urea Ammonium Nitrate	100	L	2	% v/v	PRE				
	Gramoxone SL....paraquat	2	SL	0.75	lb ai/a	PRE				
7	Authority XL Premix	70	DG	0.21	lb ai/a	PRE	30.0 a	100.0 a	100.0 a	98.3 b	53.3 b
	----sulfentrazone	62.2		0.187						
	----chlorimuron	7.8		0.0234						
	Crop Oil Concentrate	100	L	1.25	% v/v	PRE				
	30% Urea Ammonium Nitrate	100	L	2	% v/v	PRE				
	No Gramoxone									

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.
Could not calculate LSD (% mean diff) for columns 3 because error mean square = 0.

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	GLXMA Soybean Stunting % 06/17/15	ERICA Horsewd Control % 06/17/15	AMAPA PalmerAm Control % 06/17/15	IPOSS mornglry Control % 06/17/15	DIGSA L.crbgrs Control % 06/17/15
8	Authority XL Premix	70	DG	0.21	lb ai/a	PRE	28.3 a	90.0 b	100.0 a	100.0 a	100.0 a
	----sulfentrazone	62.2		0.187							
	----chlorimuron	7.8		0.0234							
	Crop Oil Concentrate	100	L	1.25	% v/v	PRE					
	30% Urea Ammonium Nitrate	100	L	2	% v/v	PRE					
	Gramoxone SL....paraquat	2	SL	0.5	lb ai/a	PRE					
9	Authority XL Premix	70	DG	0.21	lb ai/a	PRE	28.3 a	100.0 a	100.0 a	100.0 a	100.0 a
	----sulfentrazone	62.2		0.187							
	----chlorimuron	7.8		0.0234							
	Crop Oil Concentrate	100	L	1.25	% v/v	PRE					
	30% Urea Ammonium Nitrate	100	L	2	% v/v	PRE					
	Gramoxone SL....paraquat	2	SL	0.75	lb ai/a	PRE					
10	Untreated Check						0.0 b	0.0 c	0.0 b	0.0 c	0.0 c
	LSD P=.05						8.68	9.40	.	1.57	29.26
	Standard Deviation						5.06	5.48	0.00	0.91	17.06
	CV						54.4	6.15	0.0	1.02	20.79
	Replicate F						1.067	1.000	0.000	1.000	1.755
	Replicate Prob(F)						0.3650	0.3874	1.0000	0.3874	0.2013
	Treatment F						21.544	98.778	0.000	3587.667	11.121
	Treatment Prob(F)						0.0001	0.0001	1.0000	0.0001	0.0001

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Gramoxone Plus Residual Herbicides for Soybeans

Trial ID: Soy22-15 Location: Field #3 Trial Year:
Protocol ID: Soy22-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Pest Code							ERICA	AMAPA	IPOSS	DIGSA
Pest Name							Horsewd	PalmerAm	mornglry	L.crbgrs
Crop Code						GLXMA				
Crop Name						Soybean				
Rating Type						Stunting	Control	Control	Control	Control
Rating Unit						%	%	%	%	%
Rating Date						06/17/15	06/17/15	06/17/15	06/17/15	06/17/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage				
TABLE OF R MEANS										
Replicate 1							12.2	100.0	100.0	100.0	92.2
Replicate 2							10.2	100.0	100.0	99.4	82.8
Replicate 3							8.6	96.7	100.0	100.0	98.6
TABLE OF A (Residual Herbicide) MEANS										
1	Canopy Premix	75	DF	0.188	lb ai/a	PRE	0.6 b	100.0 a	100.0 a	100.0 a	91.1 a
1	----metribuzin	64.3		0.161						
1	----chlorimuron	10.7		0.0268						
1	Crop Oil Concentrate	100	L	1.25	% v/v	PRE				
1	30% Urea Ammonium Nitrate	100	L	2	% v/v	PRE				
2	Valor XLT Premix	40.3	WG	0.091	lb ai/a	PRE	1.6 b	100.0 a	100.0 a	100.0 a	98.0 a
2	----flumioxazin	30		0.068						
2	----chlorimuron	10.3		0.0233						
2	Crop Oil Concentrate	100	L	1.25	% v/v	PRE				
2	30% Urea Ammonium Nitrate	100	L	2	% v/v	PRE				
3	Authority XL Premix	70	DG	0.21	lb ai/a	PRE	28.9 a	96.7 a	100.0 a	99.4 a	84.4 a
3	----sulfentrazone	62.2		0.187						
3	----chlorimuron	7.8		0.0234						
3	Crop Oil Concentrate	100	L	1.25	% v/v	PRE				
3	30% Urea Ammonium Nitrate	100	L	2	% v/v	PRE				
LSD P=.05							5.33	5.77	.	0.96	17.88
Standard Deviation							5.33	5.77	0.00	0.96	17.90
CV							51.59	5.84	0.00	0.96	19.63
TABLE OF B (Gramoxone Rate) MEANS										
1	No Gramoxone						10.8 a	100.0 a	100.0 a	99.4 a	73.6 b
2	Gramoxone SL....paraquat	2	SL	0.5	lb ai/a	PRE	9.4 a	96.7 a	100.0 a	100.0 a	100.0 a
3	Gramoxone SL....paraquat	2	SL	0.75	lb ai/a	PRE	10.8 a	100.0 a	100.0 a	100.0 a	100.0 a
LSD P=.05							5.33	5.77	.	0.96	17.88
Standard Deviation							5.33	5.77	0.00	0.96	17.90
CV							51.59	5.84	0.00	0.96	19.63
TABLE OF A (Residual Herbicide) B (Gramoxone Rate) MEANS										
1	Canopy Premix	75	DF	0.188	lb ai/a	PRE	0.0 a	100.0 a	100.0 a	100.0 a	73.3 a
1	----metribuzin	64.3		0.161						
1	----chlorimuron	10.7		0.0268						
1	Crop Oil Concentrate	100	L	1.25	% v/v	PRE				
1	30% Urea Ammonium Nitrate	100	L	2	% v/v	PRE				
1	No Gramoxone									

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

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Pest Code Pest Name							GLXMA	ERICA Horsewd	AMAPA PalmerAm	IPOSS mornglry	DIGSA L.crbgrs
Crop Code							GLXMA				
Crop Name							Soybean				
Rating Type							Stunting	Control	Control	Control	Control
Rating Unit							%	%	%	%	%
Rating Date							06/17/15	06/17/15	06/17/15	06/17/15	06/17/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage					
2	Valor XLT Premix	40.3	WG	0.091	lb ai/a	PRE	2.3 a	100.0 a	100.0 a	100.0 a	94.0 a
2	----flumioxazin	30		0.068							
2	----chlorimuron	10.3		0.0233							
2	Crop Oil Concentrate	100	L	1.25	% v/v	PRE					
2	30% Urea Ammonium Nitrate	100	L	2	% v/v	PRE					
1	No Gramoxone										
3	Authority XL Premix	70	DG	0.21	lb ai/a	PRE	30.0 a	100.0 a	100.0 a	98.3 a	53.3 a
3	----sulfentrazone	62.2		0.187							
3	----chlorimuron	7.8		0.0234							
3	Crop Oil Concentrate	100	L	1.25	% v/v	PRE					
3	30% Urea Ammonium Nitrate	100	L	2	% v/v	PRE					
1	No Gramoxone										
1	Canopy Premix	75	DF	0.188	lb ai/a	PRE	0.0 a	100.0 a	100.0 a	100.0 a	100.0 a
1	----metribuzin	64.3		0.161							
1	----chlorimuron	10.7		0.0268							
1	Crop Oil Concentrate	100	L	1.25	% v/v	PRE					
1	30% Urea Ammonium Nitrate	100	L	2	% v/v	PRE					
2	Gramoxone SL....paraquat	2	SL	0.5	lb ai/a	PRE					
2	Valor XLT Premix	40.3	WG	0.091	lb ai/a	PRE	0.0 a	100.0 a	100.0 a	100.0 a	100.0 a
2	----flumioxazin	30		0.068							
2	----chlorimuron	10.3		0.0233							
2	Crop Oil Concentrate	100	L	1.25	% v/v	PRE					
2	30% Urea Ammonium Nitrate	100	L	2	% v/v	PRE					
2	Gramoxone SL....paraquat	2	SL	0.5	lb ai/a	PRE					
3	Authority XL Premix	70	DG	0.21	lb ai/a	PRE	28.3 a	90.0 a	100.0 a	100.0 a	100.0 a
3	----sulfentrazone	62.2		0.187							
3	----chlorimuron	7.8		0.0234							
3	Crop Oil Concentrate	100	L	1.25	% v/v	PRE					
3	30% Urea Ammonium Nitrate	100	L	2	% v/v	PRE					
2	Gramoxone SL....paraquat	2	SL	0.5	lb ai/a	PRE					
1	Canopy Premix	75	DF	0.188	lb ai/a	PRE	1.7 a	100.0 a	100.0 a	100.0 a	100.0 a
1	----metribuzin	64.3		0.161							
1	----chlorimuron	10.7		0.0268							
1	Crop Oil Concentrate	100	L	1.25	% v/v	PRE					
1	30% Urea Ammonium Nitrate	100	L	2	% v/v	PRE					
3	Gramoxone SL....paraquat	2	SL	0.75	lb ai/a	PRE					
2	Valor XLT Premix	40.3	WG	0.091	lb ai/a	PRE	2.3 a	100.0 a	100.0 a	100.0 a	100.0 a
2	----flumioxazin	30		0.068							
2	----chlorimuron	10.3		0.0233							
2	Crop Oil Concentrate	100	L	1.25	% v/v	PRE					
2	30% Urea Ammonium Nitrate	100	L	2	% v/v	PRE					
3	Gramoxone SL....paraquat	2	SL	0.75	lb ai/a	PRE					
3	Authority XL Premix	70	DG	0.21	lb ai/a	PRE	28.3 a	100.0 a	100.0 a	100.0 a	100.0 a
3	----sulfentrazone	62.2		0.187							
3	----chlorimuron	7.8		0.0234							
3	Crop Oil Concentrate	100	L	1.25	% v/v	PRE					
3	30% Urea Ammonium Nitrate	100	L	2	% v/v	PRE					
3	Gramoxone SL....paraquat	2	SL	0.75	lb ai/a	PRE					
LSD P=.05							9.23	9.99	.	1.67	30.98
Standard Deviation							5.33	5.77	0.00	0.96	17.90
CV							51.59	5.84	0.00	0.96	19.63

FACTORIAL/POOLED ERROR AOV For GLXMA Soybean Stunting % 06/17/15

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	26	5190.000000				
R	2	60.666667	30.333333	1.067	0.3671	
A	2	4652.666667	2326.333333	81.865	0.0001	5.3
B	2	10.666667	5.333333	0.188	0.8307	5.3
AB	4	11.333333	2.833333	0.100	0.9810	9.2
ERROR	16	454.666667	28.416667			

FACTORIAL/POOLED ERROR AOV For ERICA Horsewd Control % 06/17/15

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	26	866.666667				
R	2	66.666667	33.333333	1.000	0.3897	
A	2	66.666667	33.333333	1.000	0.3897	5.8
B	2	66.666667	33.333333	1.000	0.3897	5.8
AB	4	133.333333	33.333333	1.000	0.4362	10.0
ERROR	16	533.333333	33.333333			

FACTORIAL/POOLED ERROR AOV For AMAPA PalmerAm Control % 06/17/15

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	26	0.000000				
R	2	0.000000	0.000000	0.000	1.0000	
A	2	0.000000	0.000000	0.000	1.0000	.
B	2	0.000000	0.000000	0.000	1.0000	.
AB	4	0.000000	0.000000	0.000	1.0000	.
ERROR	16	0.000000	0.000000			

FACTORIAL/POOLED ERROR AOV For IPOSS mornglry Control % 06/17/15

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	26	24.074074				
R	2	1.851852	0.925926	1.000	0.3897	
A	2	1.851852	0.925926	1.000	0.3897	1.0
B	2	1.851852	0.925926	1.000	0.3897	1.0
AB	4	3.703704	0.925926	1.000	0.4362	1.7
ERROR	16	14.814815	0.925926			

FACTORIAL/POOLED ERROR AOV For DIGSA L.crbgrs Control % 06/17/15

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	26	12936.074074				
R	2	1134.740741	567.370370	1.771	0.2019	
A	2	826.962963	413.481481	1.291	0.3022	17.9
B	2	4195.851852	2097.925926	6.550	0.0084	17.9
AB	4	1653.925926	413.481481	1.291	0.3150	31.0
ERROR	16	5124.592593	320.287037			

University of Delaware

Residual Herbicides for Burndown in Soybeans

Trial ID: Soy22b-15 Location: Field #3 Trial Year:
Protocol ID: Soy22b-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Investigator: Mark VanGessel Title: Extension Weed Specialist
Organization: University of Delaware
Address: 16483 County Seat Hwy
City+State/Prov: Georgetown, Delaware
Postal Code: 19947 E-mail: mjv@udel.edu
Country: USA United States

Crop Description

Crop 1: GLXMA Glycine max Soybean
Variety: 4306R2/STS BBCH Scale: BSOY
Planting Date: 06/02/15
Planting Rate, Unit: 180000 S/A Planting Method: PLANTD planted
Depth, Unit: 1 in Planting Equipment: FE Field Equipment
Row Spacing, Unit: 15 in Emergence Date: 06/09/15
Soil Temperature, Unit: 90 F
Soil Moisture: NORMAL normal, adequate
Seed Bed: MEDTRA medium/trashy

Pest Description

Pest 1 Type: W Code: ERICA Conyza canadensis
Common Name: Canada horseweed

Pest 2 Type: W Code: AMAPA Amaranthus palmeri
Common Name: Palmer amaranth

Pest 3 Type: W Code: IPOSS Ipomoea sp.
Common Name: Morning glory

Pest 4 Type: W Code: DIGSA Digitaria sanguinalis
Common Name: large crabgrass

Site and Design

Treated Plot Width: 10 FT Site Type: FIELD field
Treated Plot Length: 25 FT
Treated Plot Area: 250 FT2 Treatments: 4 Tillage Type: NOTILL no-till
Replications: 3 Study Design: FACTOR Factorial

Maintenance

No.	Date	Maintenance Product Name	Form Conc	Form Type	Rate	Rate Unit
1.	06/25/15	Roundup	4.5	AS	1	QT/A
2.	06/25/15	Harmony SG	50	SG	0.25	OZ WT/A
3.	06/25/15	Warrant	3	CS	2	PT/A

Comment: Total POST application for Palmer amaranth control on 6-25-15.

Field Prep./Maintenance:
The field received a preplant burndown treatment of glyphosate + 2,4-D on 4-28-15.

Soil Description

% Sand: 79 % OM: 1.8 Texture: SL sandy loam
% Silt: 10 pH: 5.4
% Clay: 11 CEC: 5.8 Fert. Level: E excellent
Soil Drainage: F fair

Moisture and Weather Conditions

Overall Moisture Conditions: NORMAL normal
Closest Weather Station: UDREC Distance, Unit: 0.3 mi

Application Description

	A
Application Date:	05/28/15
Appl. Stop Time:	01:00 PM
Application Method:	SPRAY
Application Timing:	PRE
Application Placement:	BROADC
Applied By:	VanGessl
Air Temperature, Unit:	82 F
% Relative Humidity:	65
Wind Velocity, Unit:	5 mph
Wind Direction:	SW
Dew Presence (Y/N):	N no
Soil Temperature, Unit:	82 F
Soil Moisture:	NORMAL
% Cloud Cover:	85

Crop Stage At Each Application

	A
Crop 1 Code, BBCH Scale:	GLXMA BSOY

Pest Stage At Each Application

	A
Pest 1 Code, Type, Scale:	ERICA W
Stage Majority, Percent:	bolt 100
Height, Unit:	6 in
Density, Unit:	2 m2
Pest 2 Code, Type, Scale:	AMAPA W
Stage Majority, Percent:	veg 100
Height, Unit:	1.5 in
Height Minimum, Maximum:	1 3
Density, Unit:	5 m2
Pest 3 Code, Type, Scale:	IPOSS W
Stage Majority, Percent:	2-leaf 60
Stage Minimum, Percent:	cotyld 40
Stage Maximum, Percent:	2-leaf 60
Height, Unit:	1.5 in
Height Minimum, Maximum:	1 2
Density, Unit:	4 m2
Pest 4 Code, Type, Scale:	DIGSA W
Stage Majority, Percent:	2-leaf 100
Height, Unit:	1.5 in
Height Minimum, Maximum:	1 2
Density, Unit:	20 m2

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Application Equipment

	A
Appl. Equipment:	Backpack
Equipment Type:	SPRBAC
Operation Pressure, Unit:	31 psi
Nozzle Type:	AIRMIX
Nozzle Size:	11002
Nozzle Spacing, Unit:	18 in
Boom Length, Unit:	9 ft
Boom Height, Unit:	18 in
Ground Speed, Unit:	3 mph
Carrier:	WATER
Spray Volume, Unit:	20 gal/ac
Mix Size, Unit:	2 Liters
Propellant:	COMCO2

Trial Comments

06/17/15: See comments on Soy22; good control of emerged weeds due to smaller at the time of application. Refer to Soy22 demo for control of larger weeds >2-3 in. Linuron very poor residual control of morningglory (~30% control). Metribuzin plus Valor about 80% control of morningglory. Trt 3 had poor crabgrass burndown.

University of Delaware

Residual Herbicides for Burndown in Soybeans

Trial ID: Soy22b-15 Location: Field #3 Trial Year:
Protocol ID: Soy22b-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	GLXMA	ERICA
	Pest Code							ERICA
	Pest Name							Horsewd
	Crop Code						GLXMA	
	Crop Name						Soybean	
	Rating Type						Stunting	Control
	Rating Unit						%	%
	Rating Date						06/17/15	06/17/15
1	Tricor DF.....metribuzin	75	DF	0.188	lb ai/a	PRE	2.3 a	76.7 a
	Valor SX.....flumioxazin	51	WG	0.064	lb ai/a	PRE		
	Crop Oil Concentrate	100	L	1.25	% v/v	PRE		
	30% Urea Ammonium Nitrate	100	L	2	% v/v	PRE		
	No Gramoxone							
2	Tricor DF.....metribuzin	75	DF	0.188	lb ai/a	PRE	4.7 a	100.0 a
	Valor SX.....flumioxazin	51	WG	0.064	lb ai/a	PRE		
	Crop Oil Concentrate	100	L	1.25	% v/v	PRE		
	30% Urea Ammonium Nitrate	100	L	2	% v/v	PRE		
	Gramoxone SL....paraquat	2	SL	0.75	lb ai/a	PRE		
3	Linex.....linuron	4	L	0.5	lb ai/a	PRE	0.0 a	100.0 a
	Crop Oil Concentrate	100	L	1.25	% v/v	PRE		
	30% Urea Ammonium Nitrate	100	L	2	% v/v	PRE		
	No Gramoxone							
4	Linex.....linuron	4	L	0.5	lb ai/a	PRE	0.0 a	100.0 a
	Crop Oil Concentrate	100	L	1.25	% v/v	PRE		
	30% Urea Ammonium Nitrate	100	L	2	% v/v	PRE		
	Gramoxone SL....paraquat	2	SL	0.75	lb ai/a	PRE		
	LSD P=.05						6.59	20.79
	Standard Deviation						3.30	10.41
	CV						188.56	11.05
	Replicate F						0.000	1.000
	Replicate Prob(F)						1.0000	0.4219
	Treatment F						1.375	3.769
	Treatment Prob(F)						0.3376	0.0783

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

University of Delaware

Residual Herbicides for Burndown in Soybeans

Trial ID: Soy22b-15 Location: Field #3 Trial Year:
Protocol ID: Soy22b-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	GLXMA	ERICA
	Pest Code							ERICA
	Pest Name							Horsewd
	Crop Code						GLXMA	
	Crop Name						Soybean	
	Rating Type						Stunting	Control
	Rating Unit						%	%
	Rating Date						06/17/15	06/17/15
	TABLE OF R MEANS							
	Replicate 1						1.8	92.5
	Replicate 2						1.8	100.0
	Replicate 3						1.8	90.0
	TABLE OF A (Residual Herbicide) MEANS							
1	Tricor DF.....metribuzin	75	DF	0.188	lb ai/a	PRE	3.5 a	88.3 a
1	Valor SX.....flumioxazin	51	WG	0.064	lb ai/a	PRE		
1	Crop Oil Concentrate	100	L	1.25	% v/v	PRE		
1	30% Urea Ammonium Nitrate	100	L	2	% v/v	PRE		
2	Linex.....linuron	4	L	0.5	lb ai/a	PRE	0.0 a	100.0 a
2	Crop Oil Concentrate	100	L	1.25	% v/v	PRE		
2	30% Urea Ammonium Nitrate	100	L	2	% v/v	PRE		
	LSD P=.05						4.66	14.70
	Standard Deviation						3.30	10.41
	CV						188.56	11.05
	TABLE OF B (Gramoxone Rate) MEANS							
1	No Gramoxone						1.2 a	88.3 a
2	Gramoxone SL....paraquat	2	SL	0.75	lb ai/a	PRE	2.3 a	100.0 a
	LSD P=.05						4.66	14.70
	Standard Deviation						3.30	10.41
	CV						188.56	11.05
	TABLE OF A (Residual Herbicide) B (Gramoxone Rate) MEANS							
1	Tricor DF.....metribuzin	75	DF	0.188	lb ai/a	PRE	2.3 a	76.7 a
1	Valor SX.....flumioxazin	51	WG	0.064	lb ai/a	PRE		
1	Crop Oil Concentrate	100	L	1.25	% v/v	PRE		
1	30% Urea Ammonium Nitrate	100	L	2	% v/v	PRE		
1	No Gramoxone							
2	Linex.....linuron	4	L	0.5	lb ai/a	PRE	0.0 a	100.0 a
2	Crop Oil Concentrate	100	L	1.25	% v/v	PRE		
2	30% Urea Ammonium Nitrate	100	L	2	% v/v	PRE		
1	No Gramoxone							
1	Tricor DF.....metribuzin	75	DF	0.188	lb ai/a	PRE	4.7 a	100.0 a
1	Valor SX.....flumioxazin	51	WG	0.064	lb ai/a	PRE		
1	Crop Oil Concentrate	100	L	1.25	% v/v	PRE		
1	30% Urea Ammonium Nitrate	100	L	2	% v/v	PRE		
2	Gramoxone SL....paraquat	2	SL	0.75	lb ai/a	PRE		
2	Linex.....linuron	4	L	0.5	lb ai/a	PRE	0.0 a	100.0 a
2	Crop Oil Concentrate	100	L	1.25	% v/v	PRE		
2	30% Urea Ammonium Nitrate	100	L	2	% v/v	PRE		
2	Gramoxone SL....paraquat	2	SL	0.75	lb ai/a	PRE		
	LSD P=.05						6.59	20.79
	Standard Deviation						3.30	10.41
	CV						188.56	11.05

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

FACTORIAL/POOLED ERROR AOV For GLXMA Soybean Stunting % 06/17/15

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	11	110.250000				
R	2	0.000000	0.000000	0.000	1.0000	
A	1	36.750000	36.750000	3.375	0.1158	4.7
B	1	4.083333	4.083333	0.375	0.5628	4.7
AB	1	4.083333	4.083333	0.375	0.5628	6.6
ERROR	6	65.333333	10.888889			

FACTORIAL/POOLED ERROR AOV For ERICA Horsewd Control % 06/17/15

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	11	2091.666667				
R	2	216.666667	108.333333	1.000	0.4219	
A	1	408.333333	408.333333	3.769	0.1002	14.7
B	1	408.333333	408.333333	3.769	0.1002	14.7
AB	1	408.333333	408.333333	3.769	0.1002	20.8
ERROR	6	650.000000	108.333333			

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Residual Herbicides for Burndown in Soybeans

Trial ID: Soy22demo-15 Location: Field #3 Trial Year:
Protocol ID: Soy22demo-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Investigator: Mark VanGessel Title: Extension Weed Specialist
Organization: University of Delaware
Address: 16483 County Seat Hwy
City+State/Prov: Georgetown, Delaware
Postal Code: 19947 E-mail: mjv@udel.edu
Country: USA United States

Crop Description

Crop 1: GLXMA Glycine max Soybean
Variety: 4306R2/STS BBCH Scale: BSOY
Planting Date: 06/02/15
Planting Rate, Unit: 180000 S/A Planting Method: PLANTD planted
Depth, Unit: 1 in Planting Equipment: FE Field Equipment
Row Spacing, Unit: 15 in Emergence Date: 06/09/15
Soil Temperature, Unit: 90 F
Soil Moisture: NORMAL normal, adequate
Seed Bed: MEDTRA medium/trashy

Pest Description

Pest 1 Type: W Code: ERICA Conyza canadensis
Common Name: Canada horseweed

Pest 2 Type: W Code: AMAPA Amaranthus palmeri
Common Name: Palmer amaranth

Pest 3 Type: W Code: IPOSS Ipomoea sp.
Common Name: Morning glory

Pest 4 Type: W Code: DIGSA Digitaria sanguinalis
Common Name: large crabgrass

Site and Design

Treated Plot Width: 10 FT Site Type: FIELD field
Treated Plot Length: 25 FT
Treated Plot Area: 250 FT2 Treatments: 6 Tillage Type: NOTILL no-till
Replications: 3 Study Design: FACTOR Factorial

Maintenance

No.	Date	Maintenance Product Name	Form Conc	Form Type	Rate	Rate Unit
1.	06/25/15	Roundup	4.5	AS	1	QT/A
2.	06/25/15	Harmony SG	50	SG	0.25	OZ WT/A
3.	06/25/15	Warrant	3	CS	2	PT/A

Comment: Total POST application for Palmer amaranth control on 6-25-15.

Field Prep./Maintenance:
The field received a preplant burndown treatment of glyphosate + 2,4-D on 4-28-15.

Soil Description

% Sand: 79 % OM: 1.8 Texture: SL sandy loam
% Silt: 10 pH: 5.4
% Clay: 11 CEC: 5.8 Fert. Level: E excellent
Soil Drainage: F fair

Moisture and Weather Conditions

Overall Moisture Conditions: NORMAL normal
Closest Weather Station: UDREC Distance, Unit: 0.3 mi

Application Description

	A
Application Date:	05/28/15
Appl. Stop Time:	01:00 PM
Application Method:	SPRAY
Application Timing:	PRE
Application Placement:	BROADC
Applied By:	VanGessl
Air Temperature, Unit:	82 F
% Relative Humidity:	65
Wind Velocity, Unit:	5 mph
Wind Direction:	SW
Dew Presence (Y/N):	N no
Soil Temperature, Unit:	82 F
Soil Moisture:	NORMAL
% Cloud Cover:	85

Pest Stage At Each Application

	A
Pest 1 Code, Type, Scale:	ERICA W
Stage Majority, Percent:	bolt 100
Height, Unit:	6 in
Density, Unit:	2 m2
Pest 2 Code, Type, Scale:	AMAPA W
Stage Majority, Percent:	veg 100
Height, Unit:	2.5 in
Height Minimum, Maximum:	2 4
Density, Unit:	5 m2
Pest 3 Code, Type, Scale:	IPOSS W
Stage Majority, Percent:	2-leaf 60
Stage Minimum, Percent:	1-leaf 40
Stage Maximum, Percent:	2-leaf 60
Height, Unit:	2.5 in
Height Minimum, Maximum:	2 3
Density, Unit:	4 m2
Pest 4 Code, Type, Scale:	DIGSA W
Stage Majority, Percent:	2-leaf 100
Height, Unit:	2.5 in
Height Minimum, Maximum:	2 3
Density, Unit:	20 m2

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Application Equipment

	A
Appl. Equipment:	Backpack
Equipment Type:	SPRBAC
Operation Pressure, Unit:	31 psi
Nozzle Type:	AIRMIX
Nozzle Size:	11002
Nozzle Spacing, Unit:	18 in
Boom Length, Unit:	9 ft
Boom Height, Unit:	20 in
Ground Speed, Unit:	3 mph
Carrier:	WATER
Spray Volume, Unit:	20 gal/ac
Mix Size, Unit:	2 Liters
Propellant:	COMCO2

Trial Comments

6/17/15: Burndown control. Trt 1 did not provide 100% control of emerged common ragweed.

Residual Herbicides for Burndown in Soybeans

Trial ID: Soy22demo-15 Location: Field #3 Trial Year:
Protocol ID: Soy22demo-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	AMAPA PalmerAm Burndown % 06/17/15	ERICA Horsewd Burndown % 06/17/15	IPOSS mornglry Burndown % 06/17/15	GGGAN AnnGrass Burndown % 06/17/15
1	Tricor DF.....metribuzin	75	DF	0.188	lb ai/a	PRE	100.0 a	46.7 c	96.7 a	46.7 b
	Valor SX.....flumioxazin	51	WG	0.064	lb ai/a	PRE				
	Crop Oil Concentrate	100	L	1.25	% v/v	PRE				
	30% Urea Ammonium Nitrate	100	L	2	% v/v	PRE				
	No Gramoxone									
2	Tricor DF.....metribuzin	75	DF	0.188	lb ai/a	PRE	100.0 a	60.0 bc	100.0 a	98.0 a
	Valor SX.....flumioxazin	51	WG	0.064	lb ai/a	PRE				
	Crop Oil Concentrate	100	L	1.25	% v/v	PRE				
	30% Urea Ammonium Nitrate	100	L	2	% v/v	PRE				
	Gramoxone SL....paraquat	2	SL	0.75	lb ai/a	PRE				
3	Canopy Premix	75	DF	0.188	lb ai/a	PRE	76.0 b	70.0 ab	95.7 a	40.0 b
	----metribuzin	64.3		0.161						
	----chlorimuron	10.7		0.0268						
	Crop Oil Concentrate	100	L	1.25	% v/v	PRE				
	30% Urea Ammonium Nitrate	100	L	2	% v/v	PRE				
	No Gramoxone									
4	Canopy Premix	75	DF	0.188	lb ai/a	PRE	100.0 a	76.7 a	100.0 a	97.0 a
	----metribuzin	64.3		0.161						
	----chlorimuron	10.7		0.0268						
	Crop Oil Concentrate	100	L	1.25	% v/v	PRE				
	30% Urea Ammonium Nitrate	100	L	2	% v/v	PRE				
	Gramoxone SL....paraquat	2	SL	0.75	lb ai/a	PRE				
5	Tricor DF.....metribuzin	75	DF	0.188	lb ai/a	PRE	40.0 c	0.0 d	23.3 b	0.0 c
	Crop Oil Concentrate	100	L	1.25	% v/v	PRE				
	30% Urea Ammonium Nitrate	100	L	2	% v/v	PRE				
	No Gramoxone									
6	Tricor DF.....metribuzin	75	DF	0.188	lb ai/a	PRE	100.0 a	56.7 bc	100.0 a	96.3 a
	Crop Oil Concentrate	100	L	1.25	% v/v	PRE				
	30% Urea Ammonium Nitrate	100	L	2	% v/v	PRE				
	Gramoxone SL....paraquat	2	SL	0.75	lb ai/a	PRE				
LSD P=.05							4.87	15.67	14.82	11.52
Standard Deviation							2.68	8.61	8.15	6.33
CV							3.11	16.67	9.48	10.05
Replicate F							1.000	5.112	2.426	0.927
Replicate Prob(F)							0.4019	0.0296	0.1384	0.4273
Treatment F							251.163	30.337	42.679	123.544
Treatment Prob(F)							0.0001	0.0001	0.0001	0.0001

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

Residual Herbicides for Burndown in Soybeans

Trial ID: Soy22demo-15 Location: Field #3 Trial Year:
Protocol ID: Soy22demo-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Pest Code						AMAPA	ERICA	IPOSS	GGGAN
Pest Name						PalmerAm	Horsewd	mornglry	AnnGrass
Rating Type						Burndown	Burndown	Burndown	Burndown
Rating Unit						%	%	%	%
Rating Date						06/17/15	06/17/15	06/17/15	06/17/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage			
TABLE OF R MEANS									
Replicate 1						87.2	60.0	88.3	60.2
Replicate 2						85.0	44.2	80.0	64.8
Replicate 3						85.8	50.8	89.5	64.0
TABLE OF A (Residual Herbicide) MEANS									
1	Tricor DF.....metribuzin	75	DF	0.188	lb ai/a	PRE	100.0 a	53.3 b	98.3 a	72.3 a
1	Valor SX.....flumioxazin	51	WG	0.064	lb ai/a	PRE				
1	Crop Oil Concentrate	100	L	1.25	% v/v	PRE				
1	30% Urea Ammonium Nitrate	100	L	2	% v/v	PRE				
2	Canopy Premix	75	DF	0.188	lb ai/a	PRE	88.0 b	73.3 a	97.8 a	68.5 a
2	----metribuzin	64.3		0.161						
2	----chlorimuron	10.7		0.0268						
2	Crop Oil Concentrate	100	L	1.25	% v/v	PRE				
2	30% Urea Ammonium Nitrate	100	L	2	% v/v	PRE				
3	Tricor DF.....metribuzin	75	DF	0.188	lb ai/a	PRE	70.0 c	28.3 c	61.7 b	48.2 b
3	Crop Oil Concentrate	100	L	1.25	% v/v	PRE				
3	30% Urea Ammonium Nitrate	100	L	2	% v/v	PRE				
LSD P=.05							3.44	11.08	10.48	8.15
Standard Deviation							2.68	8.61	8.15	6.33
CV							3.11	16.67	9.48	10.05
TABLE OF B (Gramoxone Rate) MEANS									
1	No Gramoxone						72.0 b	38.9 b	71.9 b	28.9 b
2	Gramoxone SL....paraquat	2	SL	0.75	lb ai/a	PRE	100.0 a	64.4 a	100.0 a	97.1 a
LSD P=.05							2.81	9.05	8.56	6.65
Standard Deviation							2.68	8.61	8.15	6.33
CV							3.11	16.67	9.48	10.05
TABLE OF A (Residual Herbicide) B (Gramoxone Rate) MEANS									
1	Tricor DF.....metribuzin	75	DF	0.188	lb ai/a	PRE	100.0 a	46.7 c	96.7 a	46.7 b
1	Valor SX.....flumioxazin	51	WG	0.064	lb ai/a	PRE				
1	Crop Oil Concentrate	100	L	1.25	% v/v	PRE				
1	30% Urea Ammonium Nitrate	100	L	2	% v/v	PRE				
1	No Gramoxone									
2	Canopy Premix	75	DF	0.188	lb ai/a	PRE	76.0 b	70.0 ab	95.7 a	40.0 b
2	----metribuzin	64.3		0.161						
2	----chlorimuron	10.7		0.0268						
2	Crop Oil Concentrate	100	L	1.25	% v/v	PRE				
2	30% Urea Ammonium Nitrate	100	L	2	% v/v	PRE				
1	No Gramoxone									
3	Tricor DF.....metribuzin	75	DF	0.188	lb ai/a	PRE	40.0 c	0.0 d	23.3 b	0.0 c
3	Crop Oil Concentrate	100	L	1.25	% v/v	PRE				
3	30% Urea Ammonium Nitrate	100	L	2	% v/v	PRE				
1	No Gramoxone									

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

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Pest Code						AMAPA	ERICA	IPOSS	GGGAN
Pest Name						PalmerAm	Horsewd	mornglry	AnnGrass
Rating Type						Burndown	Burndown	Burndown	Burndown
Rating Unit						%	%	%	%
Rating Date						06/17/15	06/17/15	06/17/15	06/17/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage			
1	Tricor DF.....metribuzin	75	DF	0.188	lb ai/a	PRE	100.0 a	60.0 bc	100.0 a	98.0 a
1	Valor SX.....flumioxazin	51	WG	0.064	lb ai/a	PRE				
1	Crop Oil Concentrate	100	L	1.25	% v/v	PRE				
1	30% Urea Ammonium Nitrate	100	L	2	% v/v	PRE				
2	Gramoxone SL....paraquat	2	SL	0.75	lb ai/a	PRE				
2	Canopy Premix	75	DF	0.188	lb ai/a	PRE	100.0 a	76.7 a	100.0 a	97.0 a
2	----metribuzin	64.3		0.161						
2	----chlorimuron	10.7		0.0268						
2	Crop Oil Concentrate	100	L	1.25	% v/v	PRE				
2	30% Urea Ammonium Nitrate	100	L	2	% v/v	PRE				
2	Gramoxone SL....paraquat	2	SL	0.75	lb ai/a	PRE				
3	Tricor DF.....metribuzin	75	DF	0.188	lb ai/a	PRE	100.0 a	56.7 bc	100.0 a	96.3 a
3	Crop Oil Concentrate	100	L	1.25	% v/v	PRE				
3	30% Urea Ammonium Nitrate	100	L	2	% v/v	PRE				
2	Gramoxone SL....paraquat	2	SL	0.75	lb ai/a	PRE				
LSD P=.05							4.87	15.67	14.82	11.52
Standard Deviation							2.68	8.61	8.15	6.33
CV							3.11	16.67	9.48	10.05

FACTORIAL/POOLED ERROR AOV For AMAPA PalmerAm Burndown % 06/17/15

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	17	9086.000000				
R	2	14.333333	7.166667	1.000	0.4019	
A	2	2736.000000	1368.000000	190.884	0.0001	3.4
B	1	3528.000000	3528.000000	492.279	0.0001	2.8
AB	2	2736.000000	1368.000000	190.884	0.0001	4.9
ERROR	10	71.666667	7.166667			

FACTORIAL/POOLED ERROR AOV For ERICA Horsewd Burndown % 06/17/15

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	17	12750.000000				
R	2	758.333333	379.166667	5.112	0.0296	
A	2	6100.000000	3050.000000	41.124	0.0001	11.1
B	1	2938.888889	2938.888889	39.625	0.0001	9.0
AB	2	2211.111111	1105.555556	14.906	0.0010	15.7
ERROR	10	741.666667	74.166667			

FACTORIAL/POOLED ERROR AOV For IPOSS mornglry Burndown % 06/17/15

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	17	15152.944444				
R	2	322.111111	161.055556	2.426	0.1384	
A	2	5305.444444	2652.722222	39.957	0.0001	10.5
B	1	3556.055556	3556.055556	53.564	0.0001	8.6
AB	2	5305.444444	2652.722222	39.957	0.0001	14.8
ERROR	10	663.888889	66.388889			

FACTORIAL/POOLED ERROR AOV For GGGAN AnnGrass Burndown % 06/17/15

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	17	25246.000000				
R	2	74.333333	37.166667	0.927	0.4273	
A	2	2024.333333	1012.166667	25.241	0.0001	8.1
B	1	20944.222222	20944.222222	522.300	0.0001	6.7
AB	2	1802.111111	901.055556	22.470	0.0002	11.5
ERROR	10	401.000000	40.100000			

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Snap Bean Response to Zidua Herbicide

Trial ID: Bean2-15 Location: Field #22 Trial Year:
Protocol ID: Bean2-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact: PVGA and PSU

Investigator: Mark VanGessel Title: Extension Weed Specialist
Organization: University of Delaware
Address: 16483 County Seat Hwy
City+State/Prov: Georgetown, Delaware
Postal Code: 19947 E-mail: mjv@udel.edu
Country: USA United States

Crop Description

Crop 1: PHSLU Phaseolus lunatus Lima bean
Variety: C-Elite
Planting Date: 06/24/15
Planting Rate, Unit: 5 S/ROWFT Planting Method: PLANTD planted
Depth, Unit: 0.75 in Planting Equipment: FE Field Equipment
Row Spacing, Unit: 30 in Emergence Date: 06/29/15
Soil Temperature, Unit: 82 F
Soil Moisture: NORMAL normal, adequate
Seed Bed: SMOOTH smooth

Crop 2: PHSVX Phaseolus vulgaris Garden bean
Variety: Caprice, Envy, Wyatt
Planting Date: 06/24/15
Planting Rate, Unit: 5 S/ROWFT Planting Method: PLANTD planted
Depth, Unit: 0.75 in Planting Equipment: FE Field Equipment
Row Spacing, Unit: 30 in Emergence Date: 06/29/15
Soil Temperature, Unit: 82 F
Soil Moisture: NORMAL normal, adequate
Seed Bed: SMOOTH smooth

Site and Design

Treated Plot Width: 10 FT Site Type: FIELD field
Treated Plot Length: 25 FT
Treated Plot Area: 250 FT2 Treatments: 8 Tillage Type: CONTIL conventional-till
Replications: 3 Study Design: RACOBL Randomized Complete Block (RCB)

Soil Description

% Sand: 79 % OM: 0.7 Texture: SL sandy loam
% Silt: 12 pH: 6.2
% Clay: 9 CEC: 4.3 Fert. Level: G good
Soil Drainage: G good

Moisture and Weather Conditions

Overall Moisture Conditions: NORMAL normal
Closest Weather Station: UDREC Distance, Unit: 0.4 mi

University of Delaware

Application Description

	A
Application Date:	06/25/15
Appl. Stop Time:	10:00 AM
Application Method:	SPRAY
Application Timing:	PRE
Application Placement:	BROADC
Applied By:	Johnson
Air Temperature, Unit:	76 F
% Relative Humidity:	64
Wind Velocity, Unit:	1 mph
Wind Direction:	N
Dew Presence (Y/N):	N no
Soil Temperature, Unit:	75 F
Soil Moisture:	NORMAL
% Cloud Cover:	15

Crop Stage At Each Application

	A
Crop 1 Code, BBCH Scale:	PHSLU BVBE
Crop 2 Code, BBCH Scale:	PHSVX BVBE

Application Equipment

	A
Appl. Equipment:	Tractor
Equipment Type:	TRMOSP
Operation Pressure, Unit:	40 psi
Nozzle Type:	AIRMIX
Nozzle Size:	11002
Nozzle Spacing, Unit:	20 in
Boom Length, Unit:	10 ft
Boom Height, Unit:	18 in
Ground Speed, Unit:	3 mph
Carrier:	WATER
Spray Volume, Unit:	20 gal/ac
Mix Size, Unit:	0.7 Gallons
Propellant:	COMAIR

Trial Comments

07/01/15: Rating based on emergence % (visual) of unifoliate leaves.
07/08/15: Unifoliate only means unifoliate or less.
07/20/15: Plot 303, trt 8, Wyatt likely got drift or runoff from plot 304? Warrant does not control common ragweed!
08/10/15: Plot 201 ragweed so heavy - cannot see the beans.

University of Delaware

Snap Bean Response to Zidua Herbicide

Trial ID: Bean2-15 Location: Field #22 Trial Year:
Protocol ID: Bean2-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact: PVGA and PSU

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage				
	Pest Code									
	Pest Name									
	Crop Code						PHSLU	PHSVX	PHSVX	PHSVX
	Crop Name						Lima	Snap	Snap	Snap
	Crop Variety						C-elite	Caprice	Envy	Wyatt
	Rating Type						Emergnce	Emergnce	Emergnce	Emergnce
	Rating Unit						%	%	%	%
	Rating Date						07/01/15	07/01/15	07/01/15	07/01/15
1	Untreated Check						97.7 a	93.7 a	73.3 a	76.7 a
2	Zidua.....pyroxasulfone	85	WG	0.08	lb ai/a	PRE	92.7 ab	38.3 b	23.3 b	31.7 cd
3	Zidua.....pyroxasulfone	85	WG	0.133	lb ai/a	PRE	86.3 ab	28.3 bc	13.3 b	23.3 d
4	Zidua.....pyroxasulfone	85	WG	0.266	lb ai/a	PRE	66.7 c	5.0 c	3.3 b	20.0 d
5	Anthem Premix	2.153	SE	0.135	lb ai/a	PRE	83.3 b	18.3 bc	6.7 b	33.3 bcd
	----pyroxasulfone	2.09		0.131						
	----fluthiacet	0.06300001		0.00395						
6	Dual Magnum.....s-metolachlor	7.62	E	1.59	lb ai/a	PRE	96.3 a	90.0 a	56.7 a	66.7 abc
	Sandea.....halosulfuron	75	DF	0.0314	lb ai/a	PRE				
7	Warrant.....acetochlor	3	CS	0.525	lb ai/a	PRE	98.3 a	93.0 a	65.0 a	71.7 ab
8	Harness.....acetochlor	7	E	0.525	lb ai/a	PRE	95.3 ab	90.7 a	58.3 a	65.0 abc
	LSD P=.05						12.64	26.95	20.76	38.59
	Standard Deviation						7.22	15.39	11.85	22.04
	CV						8.06	26.92	31.61	45.4
	Replicate F						0.253	0.415	0.000	0.414
	Replicate Prob(F)						0.7800	0.6685	1.0000	0.6688
	Treatment F						6.624	18.519	17.525	3.435
	Treatment Prob(F)						0.0014	0.0001	0.0001	0.0236

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.
Missing data estimates are included in columns:Yates=20,28,29,30,31,23

Pest Code											
Pest Name											
Crop Code								PHSLU	PHSLU	PHSVX	PHSVX
Crop Name								Lima	Lima	Snap	Snap
Crop Variety								C-elite	C-elite	Caprice	Caprice
Rating Type								ttl #	unifOnly	ttl #	unifOnly
Rating Unit								#/25ft	#/25ft	#/25ft	#/25ft
Rating Date								07/08/15	07/08/15	07/08/15	07/08/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage					
1	Untreated Check							104.7 abc	2.3 c	86.7 a	14.7 cd
2	Zidua.....pyroxasulfone		85 WG	0.08	lb ai/a	PRE		118.0 a	3.3 c	68.7 bc	52.7 a
3	Zidua.....pyroxasulfone		85 WG	0.133	lb ai/a	PRE		97.3 c	29.7 b	63.0 c	55.0 a
4	Zidua.....pyroxasulfone		85 WG	0.266	lb ai/a	PRE		95.3 c	68.0 a	38.7 d	33.7 b
5	Anthem Premix	2.153	SE	0.135	lb ai/a	PRE		95.3 c	25.3 bc	74.0 abc	58.0 a
	----pyroxasulfone	2.09		0.131							
	----fluthiacet	0.06300001		0.00395							
6	Dual Magnum.....s-metolachlor	7.62	E	1.59	lb ai/a	PRE		115.3 ab	10.0 bc	80.7 ab	26.3 bc
	Sandea.....halosulfuron		75 DF	0.0314	lb ai/a	PRE					
7	Warrant.....acetochlor		3 CS	0.525	lb ai/a	PRE		101.7 bc	3.7 bc	82.0 ab	9.0 d
8	Harness.....acetochlor		7 E	0.525	lb ai/a	PRE		107.7 abc	2.0 c	81.0 ab	11.3 cd
LSD P=.05								14.29	26.01	15.93	15.47
Standard Deviation								8.16	14.85	9.10	8.84
CV								7.81	82.32	12.67	27.12
Replicate F								2.262	0.312	0.239	3.358
Replicate Prob(F)								0.1408	0.7370	0.7905	0.0644
Treatment F								3.459	7.143	8.687	16.034
Treatment Prob(F)								0.0230	0.0010	0.0003	0.0001

Pest Code									
Pest Name									
Crop Code							PHSVX	PHSVX	PHSVX	PHSVX
Crop Name							Snap	Snap	Snap	Snap
Crop Variety							Envy	Envy	Wyatt	Wyatt
Rating Type							ttl #	unifOnly	ttl #	unifOnly
Rating Unit							#/25ft	#/25ft	#/25ft	#/25ft
Rating Date							07/08/15	07/08/15	07/08/15	07/08/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage				
1	Untreated Check						54.0 a	5.7 d	71.7 a	14.7 cd
2	Zidua.....pyroxasulfone		85 WG	0.08	lb ai/a	PRE	48.7 a	37.3 ab	68.0 a	37.7 abc
3	Zidua.....pyroxasulfone		85 WG	0.133	lb ai/a	PRE	47.0 a	43.3 a	68.7 a	52.0 a
4	Zidua.....pyroxasulfone		85 WG	0.266	lb ai/a	PRE	27.0 a	27.0 b	56.3 a	46.7 ab
5	Anthem Premix	2.153	SE	0.135	lb ai/a	PRE	39.7 a	35.0 ab	66.7 a	52.7 a
	----pyroxasulfone	2.09		0.131						
	----fluthiacet	0.06300001		0.00395						
6	Dual Magnum.....s-metolachlor	7.62	E	1.59	lb ai/a	PRE	52.7 a	23.7 bc	75.0 a	9.3 d
	Sandea.....halosulfuron		75 DF	0.0314	lb ai/a	PRE				
7	Warrant.....acetochlor		3 CS	0.525	lb ai/a	PRE	44.3 a	5.0 d	81.3 a	4.3 d
8	Harness.....acetochlor		7 E	0.525	lb ai/a	PRE	46.3 a	10.7 cd	75.7 a	21.7 bcd
LSD P=.05							17.50	13.85	14.50	26.34
Standard Deviation							9.99	7.91	8.28	15.04
CV							22.22	33.72	11.76	50.34
Replicate F							0.108	0.268	2.135	1.977
Replicate Prob(F)							0.8983	0.7684	0.1552	0.1753
Treatment F							2.197	10.648	2.443	5.163
Treatment Prob(F)							0.0995	0.0001	0.0734	0.0045

Pest Code									
Pest Name									
Crop Code							PHSLU	PHSVX	PHSVX	PHSVX
Crop Name							Lima	Snap	Snap	Snap
Crop Variety							C-elite	Caprice	Envy	Wyatt
Rating Type							Stunting	Stunting	Stunting	Stunting
Rating Unit							%	%	%	%
Rating Date							07/10/15	07/10/15	07/10/15	07/10/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage				
1	Untreated Check						0.0 d	0.0 d	0.0 f	0.0 d
2	Zidua.....pyroxasulfone	85	WG	0.08	lb ai/a	PRE	18.7 bc	55.0 b	51.7 c	58.3 a
3	Zidua.....pyroxasulfone	85	WG	0.133	lb ai/a	PRE	30.0 b	56.7 b	65.0 b	61.7 a
4	Zidua.....pyroxasulfone	85	WG	0.266	lb ai/a	PRE	51.7 a	81.7 a	83.3 a	78.3 a
5	Anthem Premix	2.153	SE	0.135	lb ai/a	PRE	23.3 b	51.7 b	65.0 b	60.0 a
	----pyroxasulfone	2.09		0.131						
	----fluthiacet	0.06300001		0.00395						
6	Dual Magnum.....s-metolachlor	7.62	E	1.59	lb ai/a	PRE	32.7 b	21.0 c	28.3 d	27.3 b
	Sandea.....halosulfuron	75	DF	0.0314	lb ai/a	PRE				
7	Warrant.....acetochlor	3	CS	0.525	lb ai/a	PRE	3.3 cd	3.3 d	8.3 ef	3.3 cd
8	Harness.....acetochlor	7	E	0.525	lb ai/a	PRE	6.7 cd	10.7 cd	16.0 e	21.7 bc
LSD P=.05							15.88	10.77	10.19	20.08
Standard Deviation							9.07	6.15	5.82	11.47
CV							43.62	17.56	14.65	29.53
Replicate F							1.146	0.083	2.204	0.238
Replicate Prob(F)							0.3459	0.9211	0.1472	0.7914
Treatment F							11.082	71.908	83.340	19.893
Treatment Prob(F)							0.0001	0.0001	0.0001	0.0001

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage				
	Pest Code									
	Pest Name									
	Crop Code						PHSLU	PHSVX	PHSVX	PHSVX
	Crop Name						Lima	Snap	Snap	Snap
	Crop Variety						C-elite	Caprice	Envy	Wyatt
	Rating Type						Stunting	Stunting	Stunting	Stunting
	Rating Unit						%	%	%	%
	Rating Date						07/20/15	07/20/15	07/20/15	07/20/15
1	Untreated Check						0.0 c	0.0 d	0.0 f	0.0 c
2	Zidua.....pyroxasulfone	85	WG	0.08	lb ai/a	PRE	26.0 b	61.0 b	71.7 c	66.0 a
3	Zidua.....pyroxasulfone	85	WG	0.133	lb ai/a	PRE	31.7 b	66.7 b	81.7 b	71.0 a
4	Zidua.....pyroxasulfone	85	WG	0.266	lb ai/a	PRE	66.7 a	91.7 a	93.3 a	86.7 a
5	Anthem Premix	2.153	SE	0.135	lb ai/a	PRE	30.0 b	63.3 b	76.7 bc	67.7 a
	----pyroxasulfone	2.09		0.131						
	----fluthiacet	0.06300001		0.00395						
6	Dual Magnum.....s-metolachlor	7.62	E	1.59	lb ai/a	PRE	29.3 b	27.0 c	45.0 d	36.7 b
	Sandea.....halosulfuron	75	DF	0.0314	lb ai/a	PRE				
7	Warrant.....acetochlor	3	CS	0.525	lb ai/a	PRE	6.7 c	6.0 d	16.0 e	6.3 c
8	Harness.....acetochlor	7	E	0.525	lb ai/a	PRE	3.3 c	6.7 d	16.0 e	12.5 bc
	LSD P=.05						17.54	17.25	9.33	27.08
	Standard Deviation						10.01	9.85	5.33	15.35
	CV						41.37	24.45	10.64	35.41
	Replicate F						1.642	0.084	0.557	1.043
	Replicate Prob(F)						0.2288	0.9197	0.5852	0.3802
	Treatment F						13.893	37.111	134.452	14.520
	Treatment Prob(F)						0.0001	0.0001	0.0001	0.0001

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Pest Code									
Pest Name									
Crop Code							PHSLU	PHSVX	PHSVX	PHSVX
Crop Name							Lima	Snap	Snap	Snap
Crop Variety							C-elite	Caprice	Envy	Wyatt
Rating Type							Stunting	Stunting	Stunting	Stunting
Rating Unit							%	%	%	%
Rating Date							07/27/15	07/27/15	07/27/15	07/27/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage				
1	Untreated Check						0.0 d	0.0 d	0.0 f	0.0 d
2	Zidua.....pyroxasulfone	85	WG	0.08	lb ai/a	PRE	19.3 bcd	59.3 b	64.3 c	54.3 abc
3	Zidua.....pyroxasulfone	85	WG	0.133	lb ai/a	PRE	28.7 b	63.3 b	80.0 b	70.0 a
4	Zidua.....pyroxasulfone	85	WG	0.266	lb ai/a	PRE	61.0 a	91.0 a	94.3 a	87.0 a
5	Anthem Premix	2.153	SE	0.135	lb ai/a	PRE	22.3 bc	53.3 b	73.3 bc	61.7 ab
	----pyroxasulfone	2.09		0.131						
	----fluthiacet	0.06300001		0.00395						
6	Dual Magnum.....s-metolachlor	7.62	E	1.59	lb ai/a	PRE	20.3 bc	26.7 c	32.7 d	31.0 bcd
	Sandea.....halosulfuron	75	DF	0.0314	lb ai/a	PRE				
7	Warrant.....acetochlor	3	CS	0.525	lb ai/a	PRE	6.7 cd	10.7 cd	14.3 e	14.3 d
8	Harness.....acetochlor	7	E	0.525	lb ai/a	PRE	0.0 d	11.3 cd	14.3 e	21.7 cd
LSD P=.05							19.70	23.71	13.58	37.88
Standard Deviation							11.25	13.54	7.76	21.63
CV							56.85	34.32	16.62	50.89
Replicate F							1.063	0.781	1.393	0.374
Replicate Prob(F)							0.3718	0.4768	0.2808	0.6948
Treatment F							9.275	16.720	63.183	5.873
Treatment Prob(F)							0.0002	0.0001	0.0001	0.0025

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage				
	Pest Code						PHSLU	PHSVX	PHSVX	PHSVX
	Pest Name									
	Crop Code						PHSLU	PHSVX	PHSVX	PHSVX
	Crop Name						Lima	Snap	Snap	Snap
	Crop Variety						C-elite	Caprice	Envy	Wyatt
	Rating Type						Stunting	Stunting	Stunting	Stunting
	Rating Unit						%	%	%	%
	Rating Date						08/10/15	08/10/15	08/10/15	08/10/15
1	Untreated Check						0.0 c	0.0 c	0.0 d	0.0 c
2	Zidua.....pyroxasulfone		85 WG	0.08	lb ai/a	PRE	10.0 bc	42.7 b	44.3 c	40.0 abc
3	Zidua.....pyroxasulfone		85 WG	0.133	lb ai/a	PRE	11.7 bc	50.3 b	66.0 bc	58.3 ab
4	Zidua.....pyroxasulfone		85 WG	0.266	lb ai/a	PRE	39.3 a	84.3 a	91.3 a	81.7 a
5	Anthem Premix	2.153	SE	0.135	lb ai/a	PRE	13.3 b	40.0 b	71.8 ab	52.7 ab
	----pyroxasulfone	2.09		0.131						
	----fluthiacet	0.06300001		0.00395						
6	Dual Magnum.....s-metolachlor	7.62	E	1.59	lb ai/a	PRE	4.0 bc	3.3 c	16.0 d	18.3 bc
	Sandea.....halosulfuron		75 DF	0.0314	lb ai/a	PRE				
7	Warrant.....acetochlor		3 CS	0.525	lb ai/a	PRE	0.0 c	4.1 c	15.9 d	14.7 bc
8	Harness.....acetochlor		7 E	0.525	lb ai/a	PRE	0.0 c	3.3 c	15.7 d	7.8 c
	LSD P=.05						13.18	24.75	22.82	43.85
	Standard Deviation						7.47	14.03	12.83	24.65
	CV						76.3	49.21	31.97	72.1
	Replicate F						0.128	0.427	0.776	0.073
	Replicate Prob(F)						0.8806	0.6615	0.4821	0.9304
	Treatment F						9.290	14.378	20.026	4.028
	Treatment Prob(F)						0.0003	0.0001	0.0001	0.0169

Pest Code							AMAPA	AMBEL	CYPES
Pest Name							PalmerAm	C.ragwd	Y.nutsge
Crop Code									
Crop Name									
Crop Variety									
Rating Type							Control	Control	Control
Rating Unit							%	%	%
Rating Date							07/20/15	07/20/15	07/20/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage			
1	Untreated Check						0.0 d	0.0 d	0.0 b
2	Zidua.....pyroxasulfone	85	WG	0.08	lb ai/a	PRE	96.0 ab	86.0 ab	83.3 a
3	Zidua.....pyroxasulfone	85	WG	0.133	lb ai/a	PRE	100.0 a	96.7 a	86.7 a
4	Zidua.....pyroxasulfone	85	WG	0.266	lb ai/a	PRE	100.0 a	100.0 a	86.7 a
5	Anthem Premix	2.153	SE	0.135	lb ai/a	PRE	96.7 ab	96.7 a	85.0 a
	----pyroxasulfone	2.09		0.131					
	----fluthiacet	0.06300001		0.00395					
6	Dual Magnum.....s-metolachlor	7.62	E	1.59	lb ai/a	PRE	100.0 a	100.0 a	95.0 a
	Sandea.....halosulfuron	75	DF	0.0314	lb ai/a	PRE			
7	Warrant.....acetochlor	3	CS	0.525	lb ai/a	PRE	71.7 c	41.7 c	76.7 a
8	Harness.....acetochlor	7	E	0.525	lb ai/a	PRE	88.3 b	60.7 bc	93.0 a
LSD P=.05							9.61	26.39	21.91
Standard Deviation							5.49	15.07	12.42
CV							6.73	20.72	16.39
Replicate F							0.565	3.195	1.863
Replicate Prob(F)							0.5805	0.0719	0.1943
Treatment F							117.359	17.387	18.856
Treatment Prob(F)							0.0001	0.0001	0.0001

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Weed Control with Zidua in Snap Bean

Trial ID: Bean3-15 Location: Field #22 Trial Year:
Protocol ID: Bean3-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact: PVGA and PSU

Investigator: Mark VanGessel Title: Extension Weed Specialist
Organization: University of Delaware
Address: 16483 County Seat Hwy
City+State/Prov: Georgetown, Delaware
Postal Code: 19947 E-mail: mjv@udel.edu
Country: USA United States

Crop Description

Crop 1: PHSVX Phaseolus vulgaris Garden bean
Variety: Caprice
Planting Date: 06/24/15
Planting Rate, Unit: 7 S/ROWFT Planting Method: PLANTD planted
Depth, Unit: 0.75 in Planting Equipment: FE Field Equipment
Row Spacing, Unit: 30 in Emergence Date: 06/29/15
Harvest Date: 08/19/15
Harvested Width, Unit: 2.5 FT
Soil Temperature, Unit: 82 F Harvested Length, Unit: 25 FT
Soil Moisture: NORMAL normal, adequate Harvest Equipment: PixAll
Seed Bed: SMOOTH smooth

Pest Description

Pest 1 Type: W Code: IPOSS Ipomoea sp.
Common Name: Morning glory

Pest 2 Type: W Code: AMBEL Ambrosia artemisiifolia
Common Name: Common ragweed

Pest 3 Type: W Code: CYPES Cyperus esculentus
Common Name: Yellow nutsedge

Site and Design

Treated Plot Width: 10 FT Site Type: FIELD field
Treated Plot Length: 25 FT
Treated Plot Area: 250 FT2 Treatments: 14 Tillage Type: CONTIL conventional-till
Replications: 3 Study Design: RACOBL Randomized Complete Block (RCB)

Soil Description

% Sand: 79 % OM: 0.7 Texture: SL sandy loam
% Silt: 12 pH: 6.2
% Clay: 9 CEC: 4.3 Fert. Level: G good
Soil Drainage: G good

Moisture and Weather Conditions

Overall Moisture Conditions: NORMAL normal
Closest Weather Station: UDREC Distance, Unit: 0.4 mi

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Application Description

	A	B
Application Date:	06/25/15	07/31/15
Appl. Stop Time:	09:40 AM	09:00 AM
Application Method:	SPRAY	SPRAY
Application Timing:	PRE	>4"wds
Application Placement:	BROADC	BROADC
Applied By:	Johnson	Johnson
Air Temperature, Unit:	76 F	79 F
% Relative Humidity:	64	60
Wind Velocity, Unit:	1 mph	0 mph
Wind Direction:	N	N/A
Dew Presence (Y/N):	N no	N no
Soil Temperature, Unit:	76 F	79 F
Soil Moisture:	NORMAL	NORMAL
% Cloud Cover:	15	0

Crop Stage At Each Application

	A	B
Crop 1 Code, BBCH Scale:	PHSVX BVBE	PHSVX BVBE
Stage Scale Used:		DESC
Stage Majority, Percent:		Flower 100
Height, Unit:		10 in
Height Minimum, Maximum:		6 14

Pest Stage At Each Application

	A	B
Pest 1 Code, Type, Scale:	IPOSS W	IPOSS W
Stage Majority, Percent:		run 75
Stage Minimum, Percent:		veg 25
Stage Maximum, Percent:		run 75
Height, Unit:		14 in
Height Minimum, Maximum:		4 18
Density, Unit:		1 m2
Pest 2 Code, Type, Scale:	AMBEL W	AMBEL W
Stage Majority, Percent:		6-leaf 100
Height, Unit:		3 in
Density, Unit:		1 m2
Pest 3 Code, Type, Scale:	CYPES W	CYPES W
Stage Majority, Percent:		veg 100
Height, Unit:		9 in
Height Minimum, Maximum:		8 10
Density, Unit:		5 m2

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Application Equipment

	A	B
Appl. Equipment:	Tractor	Tractor
Equipment Type:	TRMOSP	TRMOSP
Operation Pressure, Unit:	40 psi	40 psi
Nozzle Type:	AIRMIX	AIRMIX
Nozzle Size:	11002	11002
Nozzle Spacing, Unit:	20 in	20 in
Boom Length, Unit:	10 ft	10 ft
Boom Height, Unit:	18 in	30 in
Ground Speed, Unit:	3 mph	3 mph
Carrier:	WATER	WATER
Spray Volume, Unit:	20 gal/ac	20 gal/ac
Mix Size, Unit:	0.7 Gallons	0.7 Gallons
Propellant:	COMAIR	COMAIR

Trial Comments

08/19/15: Weed control based on weeds seen at or above crop canopy. No Palmer ratings due to hand-weeding.

University of Delaware

Weed Control with Zidua in Snap Bean

Trial ID: Bean3-15 Location: Field #22 Trial Year:
Protocol ID: Bean3-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact: PVGA and PSU

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	PHSVX Snap Caprice Stunting % 07/10/15	PHSVX Snap Caprice Stunting % 07/20/15	PHSVX Snap Caprice Stunting % 07/30/15	AMAPA PalmerAm Control % 07/30/15
1	Untreated Check							0.0 i	0.0 g	0.0 h	0.0 c
2	Zidua.....pyroxasulfone	85	WG	0.08	lb ai/a	PRE	A	37.7 ef	53.3 cd	46.7 c-f	96.7 ab
3	Zidua.....pyroxasulfone	85	WG	0.133	lb ai/a	PRE	A	47.7 b-e	54.0 cd	45.0 def	100.0 a
4	Zidua.....pyroxasulfone	85	WG	0.08	lb ai/a	PRE	A	43.7 cde	61.7 bc	58.3 b-e	96.7 ab
	Sandea.....halosulfuron	75	DF	0.0314	lb ai/a	PRE	A				
5	Anthem Premix	2.153	SE	0.135	lb ai/a	PRE	A	30.0 fg	47.3 d	44.3 ef	100.0 a
	----pyroxasulfone	2.09		0.131							
	----fluthiacet	0.06300001		0.00395							
6	Anthem Premix	2.153	SE	0.135	lb ai/a	PRE	A	66.7 a	78.3 a	85.0 a	100.0 a
	----pyroxasulfone	2.09		0.131							
	----fluthiacet	0.06300001		0.00395							
	Sandea.....halosulfuron	75	DF	0.67	lb ai/a	PRE	A				
7	Dual Magnum.....s-metolachlor	7.62	E	1.59	lb ai/a	PRE	A	21.0 gh	33.0 e	29.3 fg	100.0 a
	Reflex.....fomesafen	2	L	0.313	lb ai/a	PRE	A				
8	Dual Magnum.....s-metolachlor	7.62	E	1.59	lb ai/a	PRE	A	42.3 def	68.3 ab	73.3 ab	100.0 a
	Sandea.....halosulfuron	75	DF	0.67	lb ai/a	PRE	A				
9	Zidua.....pyroxasulfone	85	WG	0.133	lb ai/a	PRE	A	51.7 bcd	60.0 bc	51.7 cde	100.0 a
	Sandea.....halosulfuron	75	DF	0.67	lb ai/a	>4"wds	B				
	Nonionic Surfactant	100	L	0.25	% v/v	>4"wds	B				
10	Zidua.....pyroxasulfone	85	WG	0.133	lb ai/a	PRE	A	56.7 abc	67.7 ab	65.0 a-d	100.0 a
	Reflex.....fomesafen	2	L	0.25	lb ai/a	>4"wds	B				
	Nonionic Surfactant	100	L	0.25	% v/v	>4"wds	B				
11	Zidua.....pyroxasulfone	85	WG	0.133	lb ai/a	PRE	A	45.0 cde	60.3 bc	51.7 cde	100.0 a
	Basagran.....bentazon	4	L	0.75	lb ai/a	>4"wds	B				
	Raptor.....imazamox	1	AS	0.0313	lb ai/a	>4"wds	B				
	Nonionic Surfactant	100	L	0.25	% v/v	>4"wds	B				
12	Zidua.....pyroxasulfone	85	WG	0.133	lb ai/a	PRE	A	60.0 ab	65.0 bc	65.3 abc	100.0 a
	Basagran.....bentazon	4	L	0.75	lb ai/a	>4"wds	B				
	Reflex.....fomesafen	2	L	0.188	lb ai/a	>4"wds	B				
	Nonionic Surfactant	100	L	0.25	% v/v	>4"wds	B				
13	Anthem Premix	2.153	SE	0.135	lb ai/a	PRE	A	48.3 b-e	55.3 cd	47.7 c-f	100.0 a
	----pyroxasulfone	2.09		0.131							
	----fluthiacet	0.06300001		0.00395							
	Basagran.....bentazon	4	L	0.75	lb ai/a	>4"wds	B				
	Reflex.....fomesafen	2	L	0.188	lb ai/a	>4"wds	B				
	Nonionic Surfactant	100	L	0.25	% v/v	>4"wds	B				

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

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Pest Code												AMAPA
Pest Name												PalmerAm
Crop Code									PHSVX	PHSVX	PHSVX	
Crop Name									Snap	Snap	Snap	
Crop Variety									Caprice	Caprice	Caprice	
Rating Type									Stunting	Stunting	Stunting	Control
Rating Unit									%	%	%	%
Rating Date									07/10/15	07/20/15	07/30/15	07/30/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code					
14	Dual Magnum.....s-metolachlor	7.62	E	1.59	lb ai/a	PRE	A		14.0 h	17.7 f	19.3 gh	94.3 b
	Basagran.....bentazon	4	L	0.75	lb ai/a	>4"wds	B					
	Reflex.....fomesafen	2	L	0.188	lb ai/a	>4"wds	B					
	Nonionic Surfactant	100	L	0.25	% v/v	>4"wds	B					
LSD P=.05									13.05	12.25	20.15	4.63
Standard Deviation									7.78	7.30	12.01	2.76
CV									19.28	14.15	24.62	3.0
Replicate F									0.972	3.868	1.417	0.529
Replicate Prob(F)									0.3918	0.0338	0.2605	0.5957
Treatment F									16.940	25.495	9.964	277.430
Treatment Prob(F)									0.0001	0.0001	0.0001	0.0001

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	AMBEL C.ragwd	CHEAL C.lmsqtr	CYPES Y.nutsge	PHSVX Snap Caprice
	Pest Code							AMBEL	CHEAL	CYPES	
	Pest Name							C.ragwd	C.lmsqtr	Y.nutsge	
	Crop Code										PHSVX
	Crop Name										Snap
	Crop Variety										Caprice
	Rating Type							Control	Control	Control	BiomRed
	Rating Unit							%	%	%	%
	Rating Date							07/30/15	07/30/15	07/30/15	08/07/15
1	Untreated Check							0.0 c	0.0 d	0.0 d	0.0 h
2	Zidua.....pyroxasulfone	85	WG	0.08	lb ai/a	PRE	A	89.3 a	94.0 b	60.0 c	36.0 ef
3	Zidua.....pyroxasulfone	85	WG	0.133	lb ai/a	PRE	A	100.0 a	100.0 a	71.7 bc	49.3 b-e
4	Zidua.....pyroxasulfone	85	WG	0.08	lb ai/a	PRE	A	100.0 a	100.0 a	100.0 a	48.3 cde
	Sandea.....halosulfuron	75	DF	0.0314	lb ai/a	PRE	A				
5	Anthem Premix	2.153	SE	0.135	lb ai/a	PRE	A	93.3 a	96.7 ab	78.3 bc	46.0 de
	----pyroxasulfone	2.09		0.131							
	----fluthiacet	0.06300001		0.00395							
6	Anthem Premix	2.153	SE	0.135	lb ai/a	PRE	A	100.0 a	100.0 a	100.0 a	81.7 a
	----pyroxasulfone	2.09		0.131							
	----fluthiacet	0.06300001		0.00395							
	Sandea.....halosulfuron	75	DF	0.67	lb ai/a	PRE	A				
7	Dual Magnum.....s-metolachlor	7.62	E	1.59	lb ai/a	PRE	A	100.0 a	100.0 a	100.0 a	27.7 fg
	Reflex.....fomesafen	2	L	0.313	lb ai/a	PRE	A				
8	Dual Magnum.....s-metolachlor	7.62	E	1.59	lb ai/a	PRE	A	100.0 a	100.0 a	100.0 a	65.0 b
	Sandea.....halosulfuron	75	DF	0.67	lb ai/a	PRE	A				
9	Zidua.....pyroxasulfone	85	WG	0.133	lb ai/a	PRE	A	96.7 a	100.0 a	84.3 ab	63.3 bc
	Sandea.....halosulfuron	75	DF	0.67	lb ai/a	>4"wds	B				
	Nonionic Surfactant	100	L	0.25	% v/v	>4"wds	B				
10	Zidua.....pyroxasulfone	85	WG	0.133	lb ai/a	PRE	A	100.0 a	100.0 a	75.3 bc	58.3 bcd
	Reflex.....fomesafen	2	L	0.25	lb ai/a	>4"wds	B				
	Nonionic Surfactant	100	L	0.25	% v/v	>4"wds	B				
11	Zidua.....pyroxasulfone	85	WG	0.133	lb ai/a	PRE	A	100.0 a	100.0 a	84.3 ab	55.3 bcd
	Basagran.....bentazon	4	L	0.75	lb ai/a	>4"wds	B				
	Raptor.....imazamox	1	AS	0.0313	lb ai/a	>4"wds	B				
	Nonionic Surfactant	100	L	0.25	% v/v	>4"wds	B				
12	Zidua.....pyroxasulfone	85	WG	0.133	lb ai/a	PRE	A	100.0 a	100.0 a	86.0 ab	58.3 bcd
	Basagran.....bentazon	4	L	0.75	lb ai/a	>4"wds	B				
	Reflex.....fomesafen	2	L	0.188	lb ai/a	>4"wds	B				
	Nonionic Surfactant	100	L	0.25	% v/v	>4"wds	B				
13	Anthem Premix	2.153	SE	0.135	lb ai/a	PRE	A	90.0 a	100.0 a	86.0 ab	47.7 cde
	----pyroxasulfone	2.09		0.131							
	----fluthiacet	0.06300001		0.00395							
	Basagran.....bentazon	4	L	0.75	lb ai/a	>4"wds	B				
	Reflex.....fomesafen	2	L	0.188	lb ai/a	>4"wds	B				
	Nonionic Surfactant	100	L	0.25	% v/v	>4"wds	B				

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Pest Code									AMBEL	CHEAL	CYPES	
Pest Name									C.ragwd	C.lmsqtr	Y.nutsge	
Crop Code												PHSVX
Crop Name												Snap
Crop Variety												Caprice
Rating Type									Control	Control	Control	BiomRed
Rating Unit									%	%	%	%
Rating Date									07/30/15	07/30/15	07/30/15	08/07/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code					
14	Dual Magnum.....s-metolachlor	7.62	E	1.59	lb ai/a	PRE	A		66.7 b	82.0 c	99.3 a	17.7 g
	Basagran.....bentazon	4	L	0.75	lb ai/a	>4"wds	B					
	Reflex.....fomesafen	2	L	0.188	lb ai/a	>4"wds	B					
	Nonionic Surfactant	100	L	0.25	% v/v	>4"wds	B					
LSD P=.05									12.95	5.82	18.50	16.52
Standard Deviation									7.71	3.47	11.02	9.84
CV									8.74	3.81	13.71	21.05
Replicate F									4.163	1.103	2.418	0.827
Replicate Prob(F)									0.0270	0.3471	0.1089	0.4486
Treatment F									36.682	177.065	17.050	13.558
Treatment Prob(F)									0.0001	0.0001	0.0001	0.0001

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	PHSVX Snap Caprice BiomRed	PHSVX Snap Caprice Yield	PHSVX Snap Caprice StdCount
	Pest Code									
	Pest Name									
	Crop Code							PHSVX	PHSVX	PHSVX
	Crop Name							Snap	Snap	Snap
	Crop Variety							Caprice	Caprice	Caprice
	Rating Type							BiomRed	Yield	StdCount
	Rating Unit							%	lb/A	#/1yard
	Rating Date							08/19/15	08/19/15	08/21/15
1	Untreated Check							0.0 i	1308.0 efg	9.0 a
2	Zidua.....pyroxasulfone	85	WG	0.08	lb ai/a	PRE	A	25.0 fgh	5517.6 ab	9.3 a
3	Zidua.....pyroxasulfone	85	WG	0.133	lb ai/a	PRE	A	36.0 c-f	4532.6 bc	7.7 a
4	Zidua.....pyroxasulfone	85	WG	0.08	lb ai/a	PRE	A	35.0 def	3905.3 bcd	8.0 a
	Sandea.....halosulfuron	75	DF	0.0314	lb ai/a	PRE	A			
5	Anthem Premix	2.153	SE	0.135	lb ai/a	PRE	A	32.0 efg	4634.8 bc	10.0 a
	----pyroxasulfone	2.09		0.131						
	----fluthiacet	0.06300001		0.00395						
6	Anthem Premix	2.153	SE	0.135	lb ai/a	PRE	A	76.0 a	234.6 g	7.0 a
	----pyroxasulfone	2.09		0.131						
	----fluthiacet	0.06300001		0.00395						
	Sandea.....halosulfuron	75	DF	0.67	lb ai/a	PRE	A			
7	Dual Magnum.....s-metolachlor	7.62	E	1.59	lb ai/a	PRE	A	18.3 gh	7164.7 a	10.0 a
	Reflex.....fomesafen	2	L	0.313	lb ai/a	PRE	A			
8	Dual Magnum.....s-metolachlor	7.62	E	1.59	lb ai/a	PRE	A	60.0 b	1256.9 fg	9.3 a
	Sandea.....halosulfuron	75	DF	0.67	lb ai/a	PRE	A			
9	Zidua.....pyroxasulfone	85	WG	0.133	lb ai/a	PRE	A	58.3 b	1912.0 d-g	8.7 a
	Sandea.....halosulfuron	75	DF	0.67	lb ai/a	>4"wds	B			
	Nonionic Surfactant	100	L	0.25	% v/v	>4"wds	B			
10	Zidua.....pyroxasulfone	85	WG	0.133	lb ai/a	PRE	A	51.0 bc	3147.9 c-f	6.3 a
	Reflex.....fomesafen	2	L	0.25	lb ai/a	>4"wds	B			
	Nonionic Surfactant	100	L	0.25	% v/v	>4"wds	B			
11	Zidua.....pyroxasulfone	85	WG	0.133	lb ai/a	PRE	A	46.0 b-e	4381.6 bc	8.0 a
	Basagran.....bentazon	4	L	0.75	lb ai/a	>4"wds	B			
	Raptor.....imazamox	1	AS	0.0313	lb ai/a	>4"wds	B			
	Nonionic Surfactant	100	L	0.25	% v/v	>4"wds	B			
12	Zidua.....pyroxasulfone	85	WG	0.133	lb ai/a	PRE	A	48.3 bcd	3345.4 cde	7.7 a
	Basagran.....bentazon	4	L	0.75	lb ai/a	>4"wds	B			
	Reflex.....fomesafen	2	L	0.188	lb ai/a	>4"wds	B			
	Nonionic Surfactant	100	L	0.25	% v/v	>4"wds	B			
13	Anthem Premix	2.153	SE	0.135	lb ai/a	PRE	A	31.0 efg	4802.1 bc	9.3 a
	----pyroxasulfone	2.09		0.131						
	----fluthiacet	0.06300001		0.00395						
	Basagran.....bentazon	4	L	0.75	lb ai/a	>4"wds	B			
	Reflex.....fomesafen	2	L	0.188	lb ai/a	>4"wds	B			
	Nonionic Surfactant	100	L	0.25	% v/v	>4"wds	B			

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Pest Code										
Pest Name										
Crop Code									PHSVX	PHSVX	PHSVX
Crop Name									Snap	Snap	Snap
Crop Variety									Caprice	Caprice	Caprice
Rating Type									BiomRed	Yield	StdCount
Rating Unit									%	lb/A	#/1yard
Rating Date									08/19/15	08/19/15	08/21/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code				
14	Dual Magnum.....s-metolachlor	7.62	E	1.59	lb ai/a	PRE	A		10.0 hi	7529.5 a	10.3 a
	Basagran.....bentazon	4	L	0.75	lb ai/a	>4"wds	B				
	Reflex.....fomesafen	2	L	0.188	lb ai/a	>4"wds	B				
	Nonionic Surfactant	100	L	0.25	% v/v	>4"wds	B				
LSD P=.05									15.95	2088.12	3.31
Standard Deviation									9.51	1244.16	1.97
CV									25.25	32.45	22.87
Replicate F									3.444	3.358	0.558
Replicate Prob(F)									0.0471	0.0505	0.5792
Treatment F									14.201	8.995	1.120
Treatment Prob(F)									0.0001	0.0001	0.3865

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	AMBEL C.ragwd	CHEAL C.lmsqtr	DIGSA L.crbgrs
	Pest Code							AMBEL	CHEAL	DIGSA
	Pest Name							C.ragwd	C.lmsqtr	L.crbgrs
	Crop Code									
	Crop Name									
	Crop Variety									
	Rating Type							Control	Control	Control
	Rating Unit							%	%	%
	Rating Date							08/19/15	08/19/15	08/19/15
1	Untreated Check							0.0 c	0.0 c	0.0 c
2	Zidua.....pyroxasulfone	85	WG	0.08	lb ai/a	PRE	A	66.0 b	82.7 ab	92.7 b
3	Zidua.....pyroxasulfone	85	WG	0.133	lb ai/a	PRE	A	96.7 a	95.0 a	98.3 ab
4	Zidua.....pyroxasulfone	85	WG	0.08	lb ai/a	PRE	A	99.3 a	99.3 a	93.3 b
	Sandea.....halosulfuron	75	DF	0.0314	lb ai/a	PRE	A			
5	Anthem Premix	2.153	SE	0.135	lb ai/a	PRE	A	89.7 a	93.3 ab	98.3 ab
	----pyroxasulfone	2.09		0.131						
	----fluthiacet	0.06300001		0.00395						
6	Anthem Premix	2.153	SE	0.135	lb ai/a	PRE	A	100.0 a	100.0 a	100.0 a
	----pyroxasulfone	2.09		0.131						
	----fluthiacet	0.06300001		0.00395						
	Sandea.....halosulfuron	75	DF	0.67	lb ai/a	PRE	A			
7	Dual Magnum.....s-metolachlor	7.62	E	1.59	lb ai/a	PRE	A	100.0 a	100.0 a	99.7 a
	Reflex.....fomesafen	2	L	0.313	lb ai/a	PRE	A			
8	Dual Magnum.....s-metolachlor	7.62	E	1.59	lb ai/a	PRE	A	100.0 a	100.0 a	100.0 a
	Sandea.....halosulfuron	75	DF	0.67	lb ai/a	PRE	A			
9	Zidua.....pyroxasulfone	85	WG	0.133	lb ai/a	PRE	A	100.0 a	100.0 a	100.0 a
	Sandea.....halosulfuron	75	DF	0.67	lb ai/a	>4"wds	B			
	Nonionic Surfactant	100	L	0.25	% v/v	>4"wds	B			
10	Zidua.....pyroxasulfone	85	WG	0.133	lb ai/a	PRE	A	100.0 a	100.0 a	100.0 a
	Reflex.....fomesafen	2	L	0.25	lb ai/a	>4"wds	B			
	Nonionic Surfactant	100	L	0.25	% v/v	>4"wds	B			
11	Zidua.....pyroxasulfone	85	WG	0.133	lb ai/a	PRE	A	100.0 a	66.7 b	100.0 a
	Basagran.....bentazon	4	L	0.75	lb ai/a	>4"wds	B			
	Raptor.....imazamox	1	AS	0.0313	lb ai/a	>4"wds	B			
	Nonionic Surfactant	100	L	0.25	% v/v	>4"wds	B			
12	Zidua.....pyroxasulfone	85	WG	0.133	lb ai/a	PRE	A	100.0 a	100.0 a	100.0 a
	Basagran.....bentazon	4	L	0.75	lb ai/a	>4"wds	B			
	Reflex.....fomesafen	2	L	0.188	lb ai/a	>4"wds	B			
	Nonionic Surfactant	100	L	0.25	% v/v	>4"wds	B			
13	Anthem Premix	2.153	SE	0.135	lb ai/a	PRE	A	100.0 a	96.7 a	100.0 a
	----pyroxasulfone	2.09		0.131						
	----fluthiacet	0.06300001		0.00395						
	Basagran.....bentazon	4	L	0.75	lb ai/a	>4"wds	B			
	Reflex.....fomesafen	2	L	0.188	lb ai/a	>4"wds	B			
	Nonionic Surfactant	100	L	0.25	% v/v	>4"wds	B			

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Pest Code									AMBEL	CHEAL	DIGSA
Pest Name									C.ragwd	C.lmsqtr	L.crbgrs
Crop Code											
Crop Name											
Crop Variety											
Rating Type									Control	Control	Control
Rating Unit									%	%	%
Rating Date									08/19/15	08/19/15	08/19/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code				
14	Dual Magnum.....s-metolachlor	7.62	E	1.59	lb ai/a	PRE	A		92.7 a	76.7 ab	100.0 a
	Basagran.....bentazon	4	L	0.75	lb ai/a	>4"wds	B				
	Reflex.....fomesafen	2	L	0.188	lb ai/a	>4"wds	B				
	Nonionic Surfactant	100	L	0.25	% v/v	>4"wds	B				
LSD P=.05									16.26	26.79	5.85
Standard Deviation									9.69	15.96	3.48
CV									10.9	18.47	3.8
Replicate F									1.541	2.439	2.791
Replicate Prob(F)									0.2331	0.1069	0.0798
Treatment F									23.605	8.572	173.303
Treatment Prob(F)									0.0001	0.0001	0.0001

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Weed management in Orchardgrass and Tall Fescue Establishment

Trial ID: For1-15 Location: Field #4 Trial Year:
Protocol ID: For1-15 Investigator: Mark VanGessel
Project ID: Study Director: Quintin Johnson
Sponsor Contact:

Contacts

Study Director: Quintin Johnson Title: Research Associate III

Investigator: Mark VanGessel Title: Extension Weed Specialist
Organization: University of Delaware
Address: 16483 County Seat Hwy
City+State/Prov: Georgetown, Delaware
Postal Code: 19947 E-mail: mjv@udel.edu
Country: USA United States

Crop Description

Crop 1: DACGL Dactylis glomerata Orchard grass
Variety: Benchmark Plus BBCH Scale: BGRM
Planting Date: 09/15/14
Planting Rate, Unit: 5.5 lb/A Planting Method: PLANTD planted
Depth, Unit: 0.25 in Planting Equipment: PD Plot Drilling Machine
Row Spacing, Unit: 7 in Emergence Date: 09/23/14
Soil Temperature, Unit: 74 F
Soil Moisture: NORMAL normal, adequate
Seed Bed: SMOOTH smooth

Crop 2: FESAR Festuca arundinacea Tall fescue
Variety: Jesup MaxQ BBCH Scale: BGRM
Planting Date: 09/15/14
Planting Rate, Unit: 9 lb/A Planting Method: PLANTD planted
Depth, Unit: 0.25 in Planting Equipment: PD Plot Drilling Machine
Row Spacing, Unit: 7 in Emergence Date: 09/24/14
Soil Temperature, Unit: 74 F
Soil Moisture: NORMAL normal, adequate
Seed Bed: SMOOTH smooth

Pest Description

Pest 1 Type: W Code: LAMAM Lamium amplexicaule
Common Name: Henbit

Pest 2 Type: W Code: OEOLA Oenothera laciniata
Common Name: Cutleaf eveningprimrose

Pest 3 Type: W Code: HLOUM Holosteum umbellatum
Common Name: Jagged chickweed

Pest 4 Type: W Code: VIORA Viola bicolor
Common Name: Johnny-jump-up violet
Description: Field Pansy

Pest 5 Type: W Code: CERVU Cerastium fontanum vulgare
Common Name: Mouse-ear chickweed

Site and Design

Treated Plot Width: 10 FT Site Type: FIELD field
Treated Plot Length: 25 FT
Treated Plot Area: 250 FT2 Treatments: 12 Tillage Type: CONTIL conventional-till
Replications: 3 Study Design: RACOBL Randomized Complete Block (RCB)

Field Prep./Maintenance:
The study area received 32.5 lb/A Nitrogen (10 gal/A 30% UAN) on 3-19-15.

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Soil Description

% Sand: 79 % OM: 1.2 Texture: LS loamy sand
% Silt: 13 pH: 6.6
% Clay: 8 CEC: 8.2 Fert. Level: E excellent
Soil Drainage: E excellent

Moisture and Weather Conditions

Overall Moisture Conditions: NORMAL normal
Closest Weather Station: UDREC Distance, Unit: 0.3 mi

Application Description

	A	B	C
Application Date:	09/16/14	10/17/14	11/20/14
Appl. Stop Time:	09:30 AM	12:15 PM	08:15 AM
Interval to Prev. Appl., Unit:		31 DAYS	34 DAYS
Application Method:	SPRAY	SPRAY	SPRAY
Application Timing:	PRE	4-lf grass	3-4"wds
Application Placement:	BROADC	BROADC	BROADC
Applied By:	Johnson	Johnson	Johnson
Air Temperature, Unit:	70 F	70 F	37 F
% Relative Humidity:	78	52	60
Wind Velocity, Unit:	3 mph	4 mph	2 mph
Wind Direction:	W	S	SW
Dew Presence (Y/N):	Y yes	N no	Y yes
Soil Temperature, Unit:	69 F	69 F	36 F
Soil Moisture:	NORMAL	WET	NORMAL
% Cloud Cover:	10	20	30

Crop Stage At Each Application

	A	B	C
Crop 1 Code, BBCH Scale:	DACGL BGRM	DACGL BGRM	DACGL BGRM
Stage Scale Used:		DESC	DESC
Stage Majority, Percent:		13 55	22 70
Stage Minimum, Percent:		13 55	21 10
Stage Maximum, Percent:		14 45	23 20
Height, Unit:		2 in	3 in
Height Minimum, Maximum:		1.5 2.5	2.5 3.5
Crop 2 Code, BBCH Scale:	FESAR BGRM	FESAR BGRM	FESAR BGRM
Stage Scale Used:		DESC	DESC
Stage Majority, Percent:		13 100	22 70
Stage Minimum, Percent:			21 10
Stage Maximum, Percent:			23 20
Height, Unit:		1.8 in	3 in
Height Minimum, Maximum:		1.5 2.3	2.5 4

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Pest Stage At Each Application

	A	B	C
Pest 1 Code, Type, Scale:	LAMAM W	LAMAM W	LAMAM W
Stage Majority, Percent:		4-leaf 80	veg 100
Stage Minimum, Percent:		2-leaf 10	
Stage Maximum, Percent:		6-leaf 10	
Height, Unit:		0.5 in	1.5 in
Height Minimum, Maximum:		0.3 1	1 1.8
Density, Unit:		400 m2	6 m2
Pest 2 Code, Type, Scale:	OEOLA W	OEOLA W	OEOLA W
Stage Majority, Percent:			rosett
Diameter, Unit:			2.5 in
Height Minimum, Maximum:			2 3
Density, Unit:			8 m2
Pest 3 Code, Type, Scale:	HLOUM W	HLOUM W	HLOUM W
Stage Majority, Percent:			veg 100
Height, Unit:			1.2 in
Height Minimum, Maximum:			1 1.5
Density, Unit:			2 m2
Pest 4 Code, Type, Scale:	VIORA W	VIORA W	VIORA W
Stage Majority, Percent:			veg 100
Height, Unit:			2.5 in
Height Minimum, Maximum:			2 3
Density, Unit:			3 m2
Pest 5 Code, Type, Scale:	CERVU W	CERVU W	CERVU W
Stage Majority, Percent:			veg 100
Height, Unit:			2 in
Height Minimum, Maximum:			1 3
Density, Unit:			1 m2

Application Equipment

	A	B	C
Appl. Equipment:	Backpack	Backpack	Backpack
Equipment Type:	SPRBAC	SPRBAC	SPRBAC
Operation Pressure, Unit:	31 psi	31 psi	31 psi
Nozzle Type:	AIRMIX	AIRMIX	AIRMIX
Nozzle Size:	11002	11002	11002
Nozzle Spacing, Unit:	18 in	18 in	18 in
Boom Length, Unit:	9 ft	9 ft	9 ft
Boom Height, Unit:	18 in	18 in	20 in
Ground Speed, Unit:	3 mph	3 mph	3 mph
Carrier:	WATER	WATER	WATER
Spray Volume, Unit:	20 gal/ac	20 gal/ac	20 gal/ac
Mix Size, Unit:	2 Liters	2 Liters	2 Liters
Propellant:	COMCO2	COMCO2	COMCO2

Trial Comments

10/17/14: An occasional tiller was noted for both grasses. Some cutleaf evening primrose was noted (3-5 leaf; 3" wide; 0-5/m2).

10/23/14: Orchardgrass injury from treatment #3 has increased to R1=25%, R2=20%, and R3=15%.

10/30/14: Cutleaf evening primrose (CEP) and field pansy were present but not enough to rate at this time. Mesotrione PRE at 5 oz/A is not controlling CEP or pansy. Mesotrione PRE at 6 oz/A was poor to fair on CEP and poor on pansy. Mesotrione PRE at 8 oz/A was good on both.

11/12/14: Mesotrione PRE (all rates) is not controlling cutleaf evening primrose, field pansy, mouseear chickweed, and jagged chickweed. Mesotrione POST treatments are clean except for an occasional mouseear chickweed and jagged chickweed plant. Forage grasses are 4 or 5 leaf to 2-tiler stage (most are tillered).

11-20-14: Orchardgrass and tall fescue are 1-3 tiller and 3 inches tall. All are freeze-damaged; orchardgrass approx. 50% freeze injury and tall fescue approx. 20% freeze injury (necrotic).

04-16-15: Stunting in treatments 1, 2, 3, and 8 primarily due to weed competition. Tenacity appears to be weak on jagged chickweed and corn speedwell.

Benchmark Plus Orchardgrass was $2.12 per pound.
Max Q Tall Fescue was $4.66 per pound.

University of Delaware

Weed management in Orchardgrass and Tall Fescue Establishment

Trial ID: For1-15 Location: Field #4 Trial Year:
Protocol ID: For1-15 Investigator: Mark VanGessel
Project ID: Study Director: Quintin Johnson
Sponsor Contact:

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code				
	Pest Code										
	Pest Name										
	Crop Code							DACGL	DACGL	FESAR	FESAR
	Crop Name							Orcrdgrs	Orcrdgrs	T.fescue	T.fescue
	Rating Type							Stunting	StandRed	Stunting	StandRed
	Rating Unit							%	%	%	%
	Rating Date							10/16/14	10/16/14	10/16/14	10/16/14
1	Untreated Check							0.0 b	0.0 b	0.0 b	0.0 a
2	Tenacity.....mesotrione	4	SC	0.156	lb ai/a	PRE	A	0.0 b	0.0 b	0.0 b	0.0 a
3	Tenacity.....mesotrione	4	SC	0.25	lb ai/a	PRE	A	13.3 a	25.0 a	4.0 a	0.0 a
4	Tenacity.....mesotrione	4	SC	0.156	lb ai/a	4-lf grass	B				
	Nonionic Surfactant	100	L	0.25	% v/v	4-lf grass	B				
5	Tenacity.....mesotrione	4	SC	0.25	lb ai/a	4-lf grass	B				
	Nonionic Surfactant	100	L	0.25	% v/v	4-lf grass	B				
6	Banvel.....dicamba	4	L	0.5	lb ai/a	4-lf grass	B				
	Nonionic Surfactant	100	L	0.25	% v/v	4-lf grass	B				
7	Weedmaster Premix	3.87	L	0.97	lb ae/a	4-lf grass	B				
	----dicamba	1		0.25							
	----2,4-D	2.87		0.72							
	Nonionic Surfactant	100	L	0.25	% v/v	4-lf grass	B				
8	MCPA Ester 4	3.7	EC	0.231	lb ae/a	4-lf grass	B				
9	Aim.....carfentrazone	2	EC	0.0313	lb ai/a	4-lf grass	B				
	Nonionic Surfactant	100	L	0.25	% v/v	4-lf grass	B				
10	Tenacity.....mesotrione	4	SC	0.188	lb ai/a	PRE	A				
	Tenacity.....mesotrione	4	SC	0.188	lb ai/a	3-4" wds	C				
	Nonionic Surfactant	100	L	0.25	% v/v	3-4" wds	C				
11	Tenacity.....mesotrione	4	SC	0.188	lb ai/a	PRE	A				
	Banvel.....dicamba	4	L	0.5	lb ai/a	3-4" wds	C				
	Nonionic Surfactant	100	L	0.25	% v/v	3-4" wds	C				
12	Tenacity.....mesotrione	4	SC	0.188	lb ai/a	PRE	A	0.0 b	1.7 b	0.0 b	0.0 a
	Weedmaster Premix	3.87	L	0.97	lb ae/a	3-4" wds	C				
	----dicamba	1		0.25							
	----2,4-D	2.87		0.72							
	Nonionic Surfactant	100	L	0.25	% v/v	3-4" wds	C				
	LSD P=.05							1.53	4.99	1.00	.
	Standard Deviation							0.76	2.50	0.50	0.00
	CV							22.91	37.5	50.0	0.0
	Replicate F							1.000	2.333	1.000	0.000
	Replicate Prob(F)							0.4219	0.1780	0.4219	1.0000
	Treatment F							228.571	72.000	48.000	0.000
	Treatment Prob(F)							0.0001	0.0001	0.0001	1.0000

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.
Could not calculate LSD (% mean diff) for columns 4 because error mean square = 0.

Pest Code							LAMAM			
Pest Name							Henbit			
Crop Code								DACGL	FESAR	DACGL
Crop Name								OrcrdGrs	T.rescue	Orcrdgrs
Rating Type							Control	Chlorosis	Chlorosis	Chlorosis
Rating Unit							%	%	%	%
Rating Date							10/16/14	10/23/14	10/23/14	10/30/14
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code			
1	Untreated Check							0.0 d	4.7 d	0.0 d	2.3 e
2	Tenacity.....mesotrione	4	SC	0.156	lb ai/a	PRE	A	88.7 c			0.0 f
3	Tenacity.....mesotrione	4	SC	0.25	lb ai/a	PRE	A	98.7 a			0.0 f
4	Tenacity.....mesotrione	4	SC	0.156	lb ai/a	4-lf grass	B		29.7 b	6.0 b	24.0 c
	Nonionic Surfactant	100	L	0.25	% v/v	4-lf grass	B				
5	Tenacity.....mesotrione	4	SC	0.25	lb ai/a	4-lf grass	B		30.0 b	6.0 b	38.7 a
	Nonionic Surfactant	100	L	0.25	% v/v	4-lf grass	B				
6	Banvel.....dicamba	4	L	0.5	lb ai/a	4-lf grass	B		9.7 c	0.0 d	0.0 f
	Nonionic Surfactant	100	L	0.25	% v/v	4-lf grass	B				
7	Weedmaster Premix	3.87	L	0.97	lb ae/a	4-lf grass	B		10.0 c	3.3 c	4.0 d
	----dicamba	1		0.25							
	----2,4-D	2.87		0.72							
	Nonionic Surfactant	100	L	0.25	% v/v	4-lf grass	B				
8	MCPA Ester 4	3.7	EC	0.231	lb ae/a	4-lf grass	B		6.3 d	0.0 d	0.0 f
9	Aim.....carfentrazone	2	EC	0.0313	lb ai/a	4-lf grass	B		44.7 a	29.7 a	29.3 b
	Nonionic Surfactant	100	L	0.25	% v/v	4-lf grass	B				
10	Tenacity.....mesotrione	4	SC	0.188	lb ai/a	PRE	A				
	Tenacity.....mesotrione	4	SC	0.188	lb ai/a	3-4" wds	C				
	Nonionic Surfactant	100	L	0.25	% v/v	3-4" wds	C				
11	Tenacity.....mesotrione	4	SC	0.188	lb ai/a	PRE	A				
	Banvel.....dicamba	4	L	0.5	lb ai/a	3-4" wds	C				
	Nonionic Surfactant	100	L	0.25	% v/v	3-4" wds	C				
12	Tenacity.....mesotrione	4	SC	0.188	lb ai/a	PRE	A	96.7 b			0.0 f
	Weedmaster Premix	3.87	L	0.97	lb ae/a	3-4" wds	C				
	----dicamba	1		0.25							
	----2,4-D	2.87		0.72							
	Nonionic Surfactant	100	L	0.25	% v/v	3-4" wds	C				
LSD P=.05								1.63	2.43	1.39	1.40
Standard Deviation								0.82	1.37	0.78	0.81
CV								1.15	7.1	12.16	8.28
Replicate F								1.500	0.229	1.636	4.575
Replicate Prob(F)								0.2963	0.7989	0.2353	0.0247
Treatment F								10166.001	380.932	551.403	998.576
Treatment Prob(F)								0.0001	0.0001	0.0001	0.0001

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code					
	Pest Code										LAMAM	
	Pest Name										Henbit	
	Crop Code							FESAR	DACGL	FESAR		DACGL
	Crop Name							T.fescue	Orcrdgrs	T.fescue		Orcrdgrs
	Rating Type							Chlorosis	Stunting	Stunting	Control	Stunting
	Rating Unit							%	%	%	%	%
	Rating Date							10/30/14	10/30/14	10/30/14	10/30/14	11/12/14
1	Untreated Check							0.0 c	0.0 f	0.0 d	0.0 g	0.0 f
2	Tenacity.....mesotrione	4	SC	0.156	lb ai/a	PRE	A	0.0 c	0.0 f	0.0 d	88.0 b	0.0 f
3	Tenacity.....mesotrione	4	SC	0.25	lb ai/a	PRE	A	0.0 c	13.7 c	0.0 d	98.0 a	21.7 b
4	Tenacity.....mesotrione	4	SC	0.156	lb ai/a	4-lf grass	B	0.0 c	10.3 d	8.7 b	65.0 c	9.3 de
	Nonionic Surfactant	100	L	0.25	% v/v	4-lf grass	B					
5	Tenacity.....mesotrione	4	SC	0.25	lb ai/a	4-lf grass	B	2.7 b	20.3 b	10.0 b	66.7 c	14.7 c
	Nonionic Surfactant	100	L	0.25	% v/v	4-lf grass	B					
6	Banvel.....dicamba	4	L	0.5	lb ai/a	4-lf grass	B	0.0 c	5.7 e	2.3 cd	50.7 d	6.0 e
	Nonionic Surfactant	100	L	0.25	% v/v	4-lf grass	B					
7	Weedmaster Premix	3.87	L	0.97	lb ae/a	4-lf grass	B	0.0 c	5.3 e	3.3 c	52.3 d	12.0 cd
	----dicamba	1		0.25								
	----2,4-D	2.87		0.72								
	Nonionic Surfactant	100	L	0.25	% v/v	4-lf grass	B					
8	MCPA Ester 4	3.7	EC	0.231	lb ae/a	4-lf grass	B	0.0 c	0.0 f	0.0 d	11.3 f	0.0 f
9	Aim.....carfentrazone	2	EC	0.0313	lb ai/a	4-lf grass	B	9.3 a	49.0 a	39.7 a	40.0 e	32.3 a
	Nonionic Surfactant	100	L	0.25	% v/v	4-lf grass	B					
10	Tenacity.....mesotrione	4	SC	0.188	lb ai/a	PRE	A					
	Tenacity.....mesotrione	4	SC	0.188	lb ai/a	3-4" wds	C					
	Nonionic Surfactant	100	L	0.25	% v/v	3-4" wds	C					
11	Tenacity.....mesotrione	4	SC	0.188	lb ai/a	PRE	A					
	Banvel.....dicamba	4	L	0.5	lb ai/a	3-4" wds	C					
	Nonionic Surfactant	100	L	0.25	% v/v	3-4" wds	C					
12	Tenacity.....mesotrione	4	SC	0.188	lb ai/a	PRE	A	0.0 c	0.0 f	0.0 d	95.0 ab	0.0 f
	Weedmaster Premix	3.87	L	0.97	lb ae/a	3-4" wds	C					
	----dicamba	1		0.25								
	----2,4-D	2.87		0.72								
	Nonionic Surfactant	100	L	0.25	% v/v	3-4" wds	C					
	LSD P=.05							1.51	2.29	2.89	7.71	4.58
	Standard Deviation							0.88	1.33	1.69	4.50	2.67
	CV							73.32	12.79	26.37	7.93	27.83
	Replicate F							0.904	2.040	0.246	0.806	0.855
	Replicate Prob(F)							0.4224	0.1591	0.7847	0.4622	0.4420
	Treatment F							34.373	389.191	158.642	163.616	50.231
	Treatment Prob(F)							0.0001	0.0001	0.0001	0.0001	0.0001

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code					
	Pest Code								LAMAM			LAMAM
	Pest Name								Henbit			Henbit
	Crop Code							FESAR		DACGL	FESAR	
	Crop Name							T.fescue		Orcrdgrs	T.fescue	
	Rating Type							Stunting	Control	Stunting	Stunting	Control
	Rating Unit							%	%	%	%	%
	Rating Date							11/12/14	11/12/14	04/16/15	04/16/15	04/16/15
1	Untreated Check							0.0 c	0.0 g	51.7 cde	50.0 a	0.0 e
2	Tenacity.....mesotrione	4	SC	0.156	lb ai/a	PRE	A	0.0 c	86.3 c	55.0 b-e	46.7 a	85.7 bc
3	Tenacity.....mesotrione	4	SC	0.25	lb ai/a	PRE	A	0.0 c	97.7 ab	75.0 a	43.3 ab	94.3 ab
4	Tenacity.....mesotrione	4	SC	0.156	lb ai/a	4-lf grass	B	0.0 c	100.0 a	60.0 a-d	10.0 e	98.0 ab
	Nonionic Surfactant	100	L	0.25	% v/v	4-lf grass	B					
5	Tenacity.....mesotrione	4	SC	0.25	lb ai/a	4-lf grass	B	0.0 c	100.0 a	73.3 ab	20.7 cde	99.3 a
	Nonionic Surfactant	100	L	0.25	% v/v	4-lf grass	B					
6	Banvel.....dicamba	4	L	0.5	lb ai/a	4-lf grass	B	5.0 b	28.3 e	38.3 e	16.7 de	96.0 ab
	Nonionic Surfactant	100	L	0.25	% v/v	4-lf grass	B					
7	Weedmaster Premix	3.87	L	0.97	lb ae/a	4-lf grass	B	5.0 b	45.0 d	45.0 de	19.0 cde	88.3 abc
	----dicamba	1		0.25								
	----2,4-D	2.87		0.72								
	Nonionic Surfactant	100	L	0.25	% v/v	4-lf grass	B					
8	MCPA Ester 4	3.7	EC	0.231	lb ae/a	4-lf grass	B	0.0 c	4.7 f	43.3 de	36.7 abc	76.7 c
9	Aim.....carfentrazone	2	EC	0.0313	lb ai/a	4-lf grass	B	10.3 a	30.0 e	71.7 ab	51.7 a	13.3 d
	Nonionic Surfactant	100	L	0.25	% v/v	4-lf grass	B					
10	Tenacity.....mesotrione	4	SC	0.188	lb ai/a	PRE	A			70.0 abc	40.0 ab	98.3 a
	Tenacity.....mesotrione	4	SC	0.188	lb ai/a	3-4" wds	C					
	Nonionic Surfactant	100	L	0.25	% v/v	3-4" wds	C					
11	Tenacity.....mesotrione	4	SC	0.188	lb ai/a	PRE	A			55.0 b-e	33.3 a-d	95.0 ab
	Banvel.....dicamba	4	L	0.5	lb ai/a	3-4" wds	C					
	Nonionic Surfactant	100	L	0.25	% v/v	3-4" wds	C					
12	Tenacity.....mesotrione	4	SC	0.188	lb ai/a	PRE	A	0.0 c	94.7 b	76.7 a	25.0 b-e	96.0 ab
	Weedmaster Premix	3.87	L	0.97	lb ae/a	3-4" wds	C					
	----dicamba	1		0.25								
	----2,4-D	2.87		0.72								
	Nonionic Surfactant	100	L	0.25	% v/v	3-4" wds	C					
	LSD P=.05							0.83	3.86	19.00	18.84	12.57
	Standard Deviation							0.48	2.25	11.22	11.13	7.43
	CV							23.76	3.84	18.84	33.98	9.47
	Replicate F							1.000	3.162	4.086	6.438	0.503
	Replicate Prob(F)							0.3874	0.0665	0.0310	0.0063	0.6114
	Treatment F							164.905	1004.909	4.344	4.847	63.817
	Treatment Prob(F)							0.0001	0.0001	0.0017	0.0008	0.0001

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	CERVU ME chkwd	OEOLA CEprmrse	ARBTH ME cress	VIORA FldPansy
	Pest Code							CERVU	OEOLA	ARBTH	VIORA
	Pest Name							ME chkwd	CEprmrse	ME cress	FldPansy
	Crop Code										
	Crop Name										
	Rating Type							Control	Control	Control	Control
	Rating Unit							%	%	%	%
	Rating Date							04/16/15	04/16/15	04/16/15	04/16/15
1	Untreated Check							0.0 d	0.0 c	0.0 c	0.0 c
2	Tenacity.....mesotrione	4	SC	0.156	lb ai/a	PRE	A	0.0 d	0.0 c	0.0 c	0.0 c
3	Tenacity.....mesotrione	4	SC	0.25	lb ai/a	PRE	A	0.0 d	0.0 c	0.0 c	0.0 c
4	Tenacity.....mesotrione	4	SC	0.156	lb ai/a	4-lf grass	B	97.7 a	100.0 a	96.7 a	94.7 a
	Nonionic Surfactant	100	L	0.25	% v/v	4-lf grass	B				
5	Tenacity.....mesotrione	4	SC	0.25	lb ai/a	4-lf grass	B	98.3 a	100.0 a	99.7 a	98.0 a
	Nonionic Surfactant	100	L	0.25	% v/v	4-lf grass	B				
6	Banvel.....dicamba	4	L	0.5	lb ai/a	4-lf grass	B	68.3 c	97.7 b	92.3 b	61.7 b
	Nonionic Surfactant	100	L	0.25	% v/v	4-lf grass	B				
7	Weedmaster Premix	3.87	L	0.97	lb ae/a	4-lf grass	B	71.7 c	99.3 a	99.7 a	90.0 ab
	----dicamba	1		0.25							
	----2,4-D	2.87		0.72							
	Nonionic Surfactant	100	L	0.25	% v/v	4-lf grass	B				
8	MCPA Ester 4	3.7	EC	0.231	lb ae/a	4-lf grass	B	0.0 d	100.0 a	0.0 c	0.0 c
9	Aim.....carfentrazone	2	EC	0.0313	lb ai/a	4-lf grass	B	0.0 d	0.0 c	0.0 c	0.0 c
	Nonionic Surfactant	100	L	0.25	% v/v	4-lf grass	B				
10	Tenacity.....mesotrione	4	SC	0.188	lb ai/a	PRE	A	90.7 ab	100.0 a	99.7 a	61.0 b
	Tenacity.....mesotrione	4	SC	0.188	lb ai/a	3-4" wds	C				
	Nonionic Surfactant	100	L	0.25	% v/v	3-4" wds	C				
11	Tenacity.....mesotrione	4	SC	0.188	lb ai/a	PRE	A	80.0 bc	100.0 a	99.3 a	0.0 c
	Banvel.....dicamba	4	L	0.5	lb ai/a	3-4" wds	C				
	Nonionic Surfactant	100	L	0.25	% v/v	3-4" wds	C				
12	Tenacity.....mesotrione	4	SC	0.188	lb ai/a	PRE	A	91.3 ab	100.0 a	98.0 a	96.0 a
	Weedmaster Premix	3.87	L	0.97	lb ae/a	3-4" wds	C				
	----dicamba	1		0.25							
	----2,4-D	2.87		0.72							
	Nonionic Surfactant	100	L	0.25	% v/v	3-4" wds	C				
	LSD P=.05							14.28	1.15	3.43	29.14
	Standard Deviation							8.43	0.68	2.03	17.21
	CV							16.92	1.02	3.55	41.2
	Replicate F							0.731	1.262	1.649	2.225
	Replicate Prob(F)							0.4925	0.3027	0.2152	0.1318
	Treatment F							85.073	15622.706	1857.573	20.679
	Treatment Prob(F)							0.0001	0.0001	0.0001	0.0001

University of Delaware

Lima Bean Tolerance to PPO Herbicides

Trial ID: Lima1-15 Location: Field #22 Trial Year:
Protocol ID: Lima1-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact: IR-4

Investigator: Mark VanGessel Title: Extension Weed Specialist
Organization: University of Delaware
Address: 16483 County Seat Hwy
City+State/Prov: Georgetown, Delaware
Postal Code: 19947 E-mail: mjv@udel.edu
Country: USA United States

Crop Description

Crop 1: PHSLU Phaseolus lunatus Lima bean
Variety: Cypress BBCH Scale: BVBE
Planting Date: 07/01/15
Planting Rate, Unit: 4 S/ROWFT Planting Method: PLANTD planted
Depth, Unit: 1 in Planting Equipment: FE Field Equipment
Row Spacing, Unit: 30 in Emergence Date: 07/06/15
Harvest Date: 09/10/15
Harvested Width, Unit: 2.5 FT
Soil Temperature, Unit: 85 F Harvested Length, Unit: 10 FT
Soil Moisture: NORMAL normal, adequate Harvest Equipment: By hand
Seed Bed: SMOOTH smooth

Pest Description

Pest 1 Type: W Code: AMBEL Ambrosia artemisiifolia
Common Name: Common ragweed

Pest 2 Type: W Code: IPOSS Ipomoea sp.
Common Name: Morning glory

Pest 3 Type: W Code: CHEAL Chenopodium album
Common Name: Common lambsquarters

Site and Design

Treated Plot Width: 10 FT Site Type: FIELD field
Treated Plot Length: 25 FT
Treated Plot Area: 250 FT2 Treatments: 10 Tillage Type: CONTIL conventional-till
Replications: 3 Study Design: RACOBL Randomized Complete Block (RCB)

Trial Initiation Comments:
Plot area treated with PRE application of Dual II Magnum at 1 pt/A.

Field Prep./Maintenance:
Treatment 10 (weed free check) treated with Basagran + Poast + NIS on 7-15-15.

Soil Description

% Sand: 79 % OM: 0.7 Texture: SL sandy loam
% Silt: 12 pH: 6.2
% Clay: 9 CEC: 4.3 Fert. Level: G good
Soil Drainage: G good

Moisture and Weather Conditions

Overall Moisture Conditions: NORMAL normal
Closest Weather Station: UDREC Distance, Unit: 0.4 mi

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Application Description

	A	B
Application Date:	07/15/15	08/27/15
Appl. Stop Time:	09:30 AM	12:10 PM
Interval to Prev. Appl., Unit:		43 DAYS
Application Method:	SPRAY	SPRAY
Application Timing:	1st Trifol	21 DPH
Application Placement:	BROADC	BROADC
Applied By:	Johnson	Johnson
Air Temperature, Unit:	76 F	74 F
% Relative Humidity:	79	57
Wind Velocity, Unit:	3 mph	1 mph
Wind Direction:	NW	N
Dew Presence (Y/N):	Y yes	N no
Soil Temperature, Unit:	76 F	74 F
Soil Moisture:	NORMAL	NORMAL
% Cloud Cover:	90	70

Crop Stage At Each Application

	A	B
Crop 1 Code, BBCH Scale:	PHSLU BVBE	PHSLU BVBE
Stage Scale Used:	DESC	DESC
Stage Majority, Percent:	1-trifol 90	flower 80
Stage Minimum, Percent:	1-trifol 90	pod 20
Stage Maximum, Percent:	2-trifol 10	pod 20
Height, Unit:	5 in	14 in
Height Minimum, Maximum:	4 6	12 15

Pest Stage At Each Application

	A	B
Pest 1 Code, Type, Scale:	AMBEL W	AMBEL W
Stage Majority, Percent:	4-leaf 80	flower 100
Stage Minimum, Percent:	2-leaf 20	
Stage Maximum, Percent:	4-leaf 80	
Height, Unit:	1.5 in	30 in
Height Minimum, Maximum:	1 2	24 36
Density, Unit:	3 m2	3 m2
Pest 2 Code, Type, Scale:	IPOSS W	IPOSS W
Stage Majority, Percent:	2-leaf 60	
Stage Minimum, Percent:	cotyld 20	
Stage Maximum, Percent:	3-leaf 10	
Height, Unit:	2 in	
Height Minimum, Maximum:	1 2.5	
Density, Unit:	2 m2	
Pest 3 Code, Type, Scale:	CHEAL W	CHEAL W
Stage Majority, Percent:	4-leaf 70	flower 100
Stage Minimum, Percent:	2-leaf 30	
Stage Maximum, Percent:	4-leaf 70	
Height, Unit:	1 in	30 in
Height Minimum, Maximum:		24 36
Density, Unit:	3 m2	3 m2

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Application Equipment

	A	B
Appl. Equipment:	Tractor	Backpack
Equipment Type:	TRMOSP	SPRBAC
Operation Pressure, Unit:	40 psi	31 psi
Nozzle Type:	AIRMIX	AIRMIX
Nozzle Size:	11002	11002
Nozzle Spacing, Unit:	20 in	18 in
Boom Length, Unit:	10 ft	9 ft
Boom Height, Unit:	22 in	48 in
Ground Speed, Unit:	3 mph	3 mph
Carrier:	WATER	WATER
Spray Volume, Unit:	20 gal/ac	20 gal/ac
Mix Size, Unit:	0.7 Gallons	2 Liters
Propellant:	COMAIR	COMCO2

Trial Comments

07/21/15: Injury is stunting/ lf burn/crinkling.

07/30/15: Weed control: trts 8, 9 have yet to be sprayed - zero weed control. plot 109, trt 9 has some smaller beans prior to spraying. Plots 209,109,205,210 have gaps in the row - planting or seed issue.

08/07/15: Ttrts 8 and 9; beans are really being stunted due to no weed control.

09/02/15: Weed density	trt 8 rep	1 high	2 high	3 minimal
	trt 9	1 high	2 moderate	3 minimal

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Lima Bean Tolerance to PPO Herbicides

Trial ID: Lima1-15 Location: Field #22 Trial Year:
Protocol ID: Lima1-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact: IR-4

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	PHSLU Lima LeafBrn % 07/17/15	PHSLU Lima Stunting % 07/21/15	PHSLU Lima Stunting % 07/30/15	AMBEL C.ragwd Control % 07/30/15	CHEAL C.lmsqtr Control % 07/30/15
1	Untreated Check							0.0 e	0.0 c	0.0 d	0.0 b	0.0 d
2	Ultra Blazer....acifluorfen	2	L	0.0625	lb ai/a	1st Trifol	A	26.7 c	54.3 ab	43.0 b	100.0 a	74.0 c
	Nonionic Surfactant	100	L	0.25	% v/v	1st Trifol	A					
3	Ultra Blazer....acifluorfen	2	L	0.125	lb ai/a	1st Trifol	A	43.3 b	62.7 a	53.3 ab	100.0 a	83.7 bc
	Nonionic Surfactant	100	L	0.25	% v/v	1st Trifol	A					
4	Ultra Blazer....acifluorfen	2	L	0.25	lb ai/a	1st Trifol	A	63.3 a	66.0 a	65.0 a	96.7 a	98.3 a
	Nonionic Surfactant	100	L	0.25	% v/v	1st Trifol	A					
5	Reflex.....fomesafen	2	L	0.0625	lb ai/a	1st Trifol	A	16.3 d	40.0 b	25.3 c	96.7 a	88.3 ab
	Nonionic Surfactant	100	L	0.25	% v/v	1st Trifol	A					
6	Reflex.....fomesafen	2	L	0.125	lb ai/a	1st Trifol	A	26.7 c	56.7 a	41.7 b	96.7 a	93.3 ab
	Nonionic Surfactant	100	L	0.25	% v/v	1st Trifol	A					
7	Raptor.....imazamox	1	AS	0.0313	lb ai/a	1st Trifol	A	0.0 e	6.0 c	4.0 d	100.0 a	91.7 ab
	Basagran.....bentazon	4	L	0.5	lb ai/a	1st Trifol	A					
	Nonionic Surfactant	100	L	0.25	% v/v	1st Trifol	A					
8	Ultra Blazer....acifluorfen	2	L	0.125	lb ai/a	21 DPH	B					
	Nonionic Surfactant	100	L	0.25	% v/v	21 DPH	B					
9	Ultra Blazer....acifluorfen	2	L	0.25	lb ai/a	21 DPH	B					
	Nonionic Surfactant	100	L	0.25	% v/v	21 DPH	B					
10	Weed Free Check							0.0 e	0.0 c	0.0 d	100.0 a	100.0 a
LSD P=.05								6.11	15.23	14.76	5.23	13.22
Standard Deviation								3.49	8.70	8.43	2.99	7.55
CV								15.82	24.36	29.01	3.46	9.59
Replicate F								2.018	4.727	7.494	4.200	2.248
Replicate Prob(F)								0.1698	0.0270	0.0061	0.0373	0.1423
Treatment F								130.087	33.326	27.558	409.000	56.855
Treatment Prob(F)								0.0001	0.0001	0.0001	0.0001	0.0001

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
t=Mean descriptions are reported in transformed data units, and are not de-transformed.
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.
Missing data estimates are included in columns:Yates=10,12

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	IPOSS mornglry Control % 07/30/15	PHSLU Lima Stunting % 08/07/15	PHSLU Lima Stunting % 09/01/15	AMBEL C.ragwd Control % 09/01/15	CHEAL C.lmsqtr Control % 09/01/15
1	Untreated Check							0.0 c	0.0 d	0.0 e	0.0 e	0.0 e
2	Ultra Blazer....acifluorfen	2	L	0.0625	lb ai/a	1st Trifol	A	78.3 b	34.3 bc	12.9 cd	38.3 cd	56.7 c
	Nonionic Surfactant	100	L	0.25	% v/v	1st Trifol	A					
3	Ultra Blazer....acifluorfen	2	L	0.125	lb ai/a	1st Trifol	A	80.0 b	40.3 b	19.6 bc	54.3 bc	64.3 bc
	Nonionic Surfactant	100	L	0.25	% v/v	1st Trifol	A					
4	Ultra Blazer....acifluorfen	2	L	0.25	lb ai/a	1st Trifol	A	86.7 b	55.0 a	36.8 a	76.7 ab	80.7 abc
	Nonionic Surfactant	100	L	0.25	% v/v	1st Trifol	A					
5	Reflex.....fomesafen	2	L	0.0625	lb ai/a	1st Trifol	A	82.0 b	25.3 c	14.2 bcd	84.0 a	86.0 ab
	Nonionic Surfactant	100	L	0.25	% v/v	1st Trifol	A					
6	Reflex.....fomesafen	2	L	0.125	lb ai/a	1st Trifol	A	85.7 b	40.3 b	21.5 b	88.0 a	86.0 ab
	Nonionic Surfactant	100	L	0.25	% v/v	1st Trifol	A					
7	Raptor.....imazamox	1	AS	0.0313	lb ai/a	1st Trifol	A	87.7 b	9.0 d	11.3 d	87.7 a	86.0 ab
	Basagran.....bentazon	4	L	0.5	lb ai/a	1st Trifol	A					
	Nonionic Surfactant	100	L	0.25	% v/v	1st Trifol	A					
8	Ultra Blazer....acifluorfen	2	L	0.125	lb ai/a	21 DPH	B		0.0 d	0.0 e	18.3 de	26.7 d
	Nonionic Surfactant	100	L	0.25	% v/v	21 DPH	B					
9	Ultra Blazer....acifluorfen	2	L	0.25	lb ai/a	21 DPH	B		0.0 d	0.0 e	13.0 de	11.7 de
	Nonionic Surfactant	100	L	0.25	% v/v	21 DPH	B					
10	Weed Free Check							100.0 a	0.0 d	0.0 e	100.0 a	100.0 a
LSD P=.05								10.76	10.34	6.54 - 13.12	25.65	25.33
Standard Deviation								6.14	6.03	0.11t	14.89	14.77
CV								8.19	29.49	14.09t	26.58	24.7
Replicate F								1.272	6.096	8.276	4.699	4.047
Replicate Prob(F)								0.3106	0.0095	0.0028	0.0237	0.0354
Treatment F								76.568	36.753	116.459	17.878	17.013
Treatment Prob(F)								0.0001	0.0001	0.0001	0.0001	0.0001

Pest Code Pest Name Crop Code Crop Name Rating Type Rating Unit Rating Date							IPOSS mornglry Control % 09/01/15	PHSLU Lima Plump % 09/08/15	PHSLU Lima Flat % 09/08/15	PHSLU Lima Dry % 09/08/15	PHSLU Lima Yield lb/A 09/10/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code				
1	Untreated Check							0.0 d	87.7 a	8.0 a	4.4 a	1865.6 abc
2	Ultra Blazer....acifluorfen	2	L	0.0625	lb ai/a	1st Trifol	A	53.3 c	83.9 a	10.2 a	5.9 a	1640.3 abc
	Nonionic Surfactant	100	L	0.25	% v/v	1st Trifol	A					
3	Ultra Blazer....acifluorfen	2	L	0.125	lb ai/a	1st Trifol	A	74.9 b	89.5 a	9.0 a	1.5 a	1307.3 cd
	Nonionic Surfactant	100	L	0.25	% v/v	1st Trifol	A					
4	Ultra Blazer....acifluorfen	2	L	0.25	lb ai/a	1st Trifol	A	80.7 ab	91.5 a	8.5 a	0.0 a	1459.7 bcd
	Nonionic Surfactant	100	L	0.25	% v/v	1st Trifol	A					
5	Reflex.....fomesafen	2	L	0.0625	lb ai/a	1st Trifol	A	69.3 bc	88.3 a	8.7 a	3.0 a	1577.5 a-d
	Nonionic Surfactant	100	L	0.25	% v/v	1st Trifol	A					
6	Reflex.....fomesafen	2	L	0.125	lb ai/a	1st Trifol	A	69.3 bc	90.8 a	3.0 a	6.1 a	2149.9 a
	Nonionic Surfactant	100	L	0.25	% v/v	1st Trifol	A					
7	Raptor.....imazamox	1	AS	0.0313	lb ai/a	1st Trifol	A	83.3 ab	89.9 a	3.7 a	6.4 a	1998.8 ab
	Basagran.....bentazon	4	L	0.5	lb ai/a	1st Trifol	A					
	Nonionic Surfactant	100	L	0.25	% v/v	1st Trifol	A					
8	Ultra Blazer....acifluorfen	2	L	0.125	lb ai/a	21 DPH	B	18.3 d	88.7 a	2.8 a	8.4 a	971.9 d
	Nonionic Surfactant	100	L	0.25	% v/v	21 DPH	B					
9	Ultra Blazer....acifluorfen	2	L	0.25	lb ai/a	21 DPH	B	10.0 d	90.2 a	2.4 a	7.4 a	1619.8 abc
	Nonionic Surfactant	100	L	0.25	% v/v	21 DPH	B					
10	Weed Free Check							100.0 a	81.0 a	14.7 a	4.3 a	2065.4 ab
LSD P=.05								21.32	15.06	12.80	7.26	620.33
Standard Deviation								12.38	8.78	7.46	4.23	361.63
CV								22.13	9.96	105.07	89.48	21.71
Replicate F								0.693	2.239	0.890	2.382	23.865
Replicate Prob(F)								0.5137	0.1354	0.4280	0.1209	0.0001
Treatment F								23.245	0.419	0.868	1.175	3.079
Treatment Prob(F)								0.0001	0.9082	0.5687	0.3664	0.0202

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Lima Bean Safety from Soil-Applied Herbicides

Trial ID: Lima2-15 Location: Field #22 Trial Year:
Protocol ID: Lima2-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Investigator: Mark VanGessel Title: Extension Weed Specialist
Organization: University of Delaware
Address: 16483 County Seat Hwy
City+State/Prov: Georgetown, Delaware
Postal Code: 19947 E-mail: mjv@udel.edu
Country: USA United States

Crop Description

Crop 1: PHSLU Phaseolus lunatus Lima bean
Variety: C-elite BBCH Scale: BVBE
Planting Date: 07/01/15
Planting Rate, Unit: 4 S/ROWFT Planting Method: PLANTD planted
Depth, Unit: 1 in Planting Equipment: FE Field Equipment
Row Spacing, Unit: 30 in Emergence Date: 07/06/15
Harvest Date: 09/10/15
Harvested Width, Unit: 2.5 FT
Soil Temperature, Unit: 85 F Harvested Length, Unit: 10 FT
Soil Moisture: NORMAL normal, adequate Harvest Equipment: By hand
Seed Bed: SMOOTH smooth

Site and Design

Treated Plot Width: 10 FT Site Type: FIELD field
Treated Plot Length: 25 FT
Treated Plot Area: 250 FT2 Treatments: 8 Tillage Type: CONTIL conventional-till
Replications: 3 Study Design: RACOBL Randomized Complete Block (RCB)

Trial Initiation Comments:

Soil Description

% Sand: 79 % OM: 0.7 Texture: SL sandy loam
% Silt: 12 pH: 6.2
% Clay: 9 CEC: 4.3 Fert. Level: G good
Soil Drainage: G good

Moisture and Weather Conditions

Overall Moisture Conditions: NORMAL normal
Closest Weather Station: UDREC Distance, Unit: 0.4 mi

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Application Description

	A
Application Date:	07/02/15
Appl. Stop Time:	08:30 AM
Application Method:	SPRAY
Application Timing:	PRE
Application Placement:	BROADC
Applied By:	Johnson
Air Temperature, Unit:	73 F
% Relative Humidity:	89
Wind Velocity, Unit:	0 mph
Wind Direction:	N/A
Dew Presence (Y/N):	Y yes
Soil Temperature, Unit:	72 F
Soil Moisture:	NORMAL
% Cloud Cover:	100

Crop Stage At Each Application

	A
Crop 1 Code, BBCH Scale:	PHSLU BVBE

Application Equipment

	A
Appl. Equipment:	Tractor
Equipment Type:	TRMOSP
Operation Pressure, Unit:	40 psi
Nozzle Type:	AIRMIX
Nozzle Size:	11002
Nozzle Spacing, Unit:	20 in
Boom Length, Unit:	10 ft
Boom Height, Unit:	18 in
Ground Speed, Unit:	3 mph
Carrier:	WATER
Spray Volume, Unit:	20 gal/ac
Mix Size, Unit:	0.7 Gallons
Propellant:	COMAIR

Trial Comments

07/30/15: Plot 108 has a gap in the row - planter issue.

08/19/15: Injury - slightly smaller plants (more bare ground) and less flower production.

09/16/15: Lima bean stunting: reference to herbicide damage - 0 observed for all plots.

University of Delaware

Lima Bean Safety from Soil-Applied Herbicides

Trial ID: Lima2-15 Location: Field #22 Trial Year:
Protocol ID: Lima2-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage				
	Pest Code								AMAPA	AMBEL
	Pest Name								PalmerAm	C.ragwd
	Crop Code						PHSLU	PHSLU		
	Crop Name						Lima	Lima		
	Rating Type						Stunting	Stunting	Control	Control
	Rating Unit						%	%	%	%
	Rating Date						07/17/15	07/22/15	07/22/15	07/22/15
1	Untreated Check						0.0 c	0.0 d	0.0 b	0.0 b
2	Dual Magnum.....s-metolachlor	7.62	E	0.95	lb ai/a	PRE	12.3 ab	10.0 cd	100.0 a	100.0 a
	Sandea.....halosulfuron	75	DF	0.0314	lb ai/a	PRE				
3	Dual Magnum.....s-metolachlor	7.62	E	0.95	lb ai/a	PRE	16.7 a	18.7 bc	100.0 a	100.0 a
	Command.....clomazone	3	ME	0.094	lb ai/a	PRE				
	Sandea.....halosulfuron	75	DF	0.0314	lb ai/a	PRE				
4	Dual Magnum.....s-metolachlor	7.62	E	0.95	lb ai/a	PRE	17.3 a	22.7 b	100.0 a	100.0 a
	Command.....clomazone	3	ME	0.188	lb ai/a	PRE				
	Sandea.....halosulfuron	75	DF	0.0314	lb ai/a	PRE				
5	Anthem Premix	2.153	SE	0.084	lb ai/a	PRE	10.7 b	10.0 cd	100.0 a	100.0 a
	----pyroxasulfone	2.09		0.0815						
	----fluthiacet	0.06300001		0.00246						
	Sandea.....halosulfuron	75	DF	0.0314	lb ai/a	PRE				
6	Anthem Premix	2.153	SE	0.109	lb ai/a	PRE	13.0 ab	23.3 b	100.0 a	100.0 a
	----pyroxasulfone	2.09		0.106						
	----fluthiacet	0.06300001		0.0032						
	Sandea.....halosulfuron	75	DF	0.0314	lb ai/a	PRE				
7	Anthem Premix	2.153	SE	0.168	lb ai/a	PRE	18.0 a	36.0 a	100.0 a	100.0 a
	----pyroxasulfone	2.09		0.163						
	----fluthiacet	0.06300001		0.0049						
	Sandea.....halosulfuron	75	DF	0.0314	lb ai/a	PRE				
8	Dual Magnum.....s-metolachlor	7.62	E	1.43	lb ai/a	PRE	15.7 ab	16.0 bc	100.0 a	100.0 a
	Sandea.....halosulfuron	75	DF	0.0314	lb ai/a	PRE				
	LSD P=.05						5.84	11.07	.	.
	Standard Deviation						3.34	6.32	0.00	0.00
	CV						25.74	37.02	0.0	0.0
	Replicate F						1.509	2.801	0.000	0.000
	Replicate Prob(F)						0.2549	0.0948	1.0000	1.0000
	Treatment F						9.215	8.829	0.000	0.000
	Treatment Prob(F)						0.0003	0.0003	1.0000	1.0000

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
t=Mean descriptions are reported in transformed data units, and are not de-transformed.
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.
Could not calculate LSD (% mean diff) for columns 3,4,5,23,25 because error mean square = 0.

Pest Code							MOLVE			
Pest Name							Carpetwd			
Crop Code								PHSLU	PHSLU	PHSLU
Crop Name								Lima	Lima	Lima
Rating Type							Control	Stunting	Stunting	Stunting
Rating Unit							%	%	%	%
Rating Date							07/22/15	07/30/15	08/07/15	08/19/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage				
1	Untreated Check						0.0 b	0.0 d	0.0 b	0.0 a
2	Dual Magnum.....s-metolachlor	7.62	E	0.95	lb ai/a	PRE	100.0 a	15.7 bc	21.0 a	11.0 a
	Sandea.....halosulfuron	75	DF	0.0314	lb ai/a	PRE				
3	Dual Magnum.....s-metolachlor	7.62	E	0.95	lb ai/a	PRE	100.0 a	17.3 bc	22.3 a	7.3 a
	Command.....clomazone	3	ME	0.094	lb ai/a	PRE				
	Sandea.....halosulfuron	75	DF	0.0314	lb ai/a	PRE				
4	Dual Magnum.....s-metolachlor	7.62	E	0.95	lb ai/a	PRE	100.0 a	23.3 abc	27.7 a	16.0 a
	Command.....clomazone	3	ME	0.188	lb ai/a	PRE				
	Sandea.....halosulfuron	75	DF	0.0314	lb ai/a	PRE				
5	Anthem Premix	2.153	SE	0.084	lb ai/a	PRE	100.0 a	15.7 bc	18.3 a	10.0 a
	----pyroxasulfone	2.09		0.0815						
	----fluthiacet	0.06300001		0.00246						
	Sandea.....halosulfuron	75	DF	0.0314	lb ai/a	PRE				
6	Anthem Premix	2.153	SE	0.109	lb ai/a	PRE	100.0 a	26.0 ab	28.3 a	18.3 a
	----pyroxasulfone	2.09		0.106						
	----fluthiacet	0.06300001		0.0032						
	Sandea.....halosulfuron	75	DF	0.0314	lb ai/a	PRE				
7	Anthem Premix	2.153	SE	0.168	lb ai/a	PRE	100.0 a	35.0 a	31.7 a	19.3 a
	----pyroxasulfone	2.09		0.163						
	----fluthiacet	0.06300001		0.0049						
	Sandea.....halosulfuron	75	DF	0.0314	lb ai/a	PRE				
8	Dual Magnum.....s-metolachlor	7.62	E	1.43	lb ai/a	PRE	100.0 a	11.0 cd	17.3 a	8.7 a
	Sandea.....halosulfuron	75	DF	0.0314	lb ai/a	PRE				
LSD P=.05							.	14.67	14.36	11.71
Standard Deviation							0.00	8.37	8.20	6.69
CV							0.0	46.53	39.35	59.02
Replicate F							0.000	2.942	5.528	8.453
Replicate Prob(F)							1.0000	0.0857	0.0170	0.0039
Treatment F							0.000	4.679	4.305	2.761
Treatment Prob(F)							1.0000	0.0069	0.0097	0.0502

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	AMAPA PalmerAm	AMBEL C.ragwd	IPOSS mornglry	PHSLU Lima plump
	Crop Code									
	Crop Name									
	Rating Type						Control	Control	Control	
	Rating Unit						%	%	%	%
	Rating Date						08/19/15	08/19/15	08/19/15	09/15/15
1	Untreated Check						0.0 b	0.0 b	0.0 c	59.2 a
2	Dual Magnum.....s-metolachlor	7.62	E	0.95	lb ai/a	PRE	100.0 a	100.0 a	90.0 ab	79.2 a
	Sandea.....halosulfuron	75	DF	0.0314	lb ai/a	PRE				
3	Dual Magnum.....s-metolachlor	7.62	E	0.95	lb ai/a	PRE	100.0 a	100.0 a	86.0 b	77.5 a
	Command.....clomazone	3	ME	0.094	lb ai/a	PRE				
	Sandea.....halosulfuron	75	DF	0.0314	lb ai/a	PRE				
4	Dual Magnum.....s-metolachlor	7.62	E	0.95	lb ai/a	PRE	100.0 a	97.3 a	93.3 ab	80.3 a
	Command.....clomazone	3	ME	0.188	lb ai/a	PRE				
	Sandea.....halosulfuron	75	DF	0.0314	lb ai/a	PRE				
5	Anthem Premix	2.153	SE	0.084	lb ai/a	PRE	100.0 a	100.0 a	96.7 a	72.4 a
	----pyroxasulfone	2.09		0.0815						
	----fluthiacet	0.06300001		0.00246						
	Sandea.....halosulfuron	75	DF	0.0314	lb ai/a	PRE				
6	Anthem Premix	2.153	SE	0.109	lb ai/a	PRE	100.0 a	100.0 a	96.7 a	74.4 a
	----pyroxasulfone	2.09		0.106						
	----fluthiacet	0.06300001		0.0032						
	Sandea.....halosulfuron	75	DF	0.0314	lb ai/a	PRE				
7	Anthem Premix	2.153	SE	0.168	lb ai/a	PRE	100.0 a	100.0 a	96.7 a	76.7 a
	----pyroxasulfone	2.09		0.163						
	----fluthiacet	0.06300001		0.0049						
	Sandea.....halosulfuron	75	DF	0.0314	lb ai/a	PRE				
8	Dual Magnum.....s-metolachlor	7.62	E	1.43	lb ai/a	PRE	98.3 a	100.0 a	96.0 ab	83.9 a
	Sandea.....halosulfuron	75	DF	0.0314	lb ai/a	PRE				
	LSD P=.05						1.79	2.86	10.28	18.29 - 19.55
	Standard Deviation						1.02	1.63	5.87	7.00t
	CV						1.17	1.87	7.17	11.57t
	Replicate F						1.000	1.000	5.462	1.254
	Replicate Prob(F)						0.3927	0.3927	0.0176	0.3156
	Treatment F						3583.858	1396.536	96.701	1.409
	Treatment Prob(F)						0.0001	0.0001	0.0001	0.2765

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Pest Code											AMAPA
Pest Name											PalmerAm
Crop Code									PHSLU	PHSLU	PHSLU	
Crop Name									Lima	Lima	Lima	
Rating Type									flat	dry	Yield	Control
Rating Unit									%	%	lb/A	%
Rating Date									09/15/15	09/15/15	09/16/15	09/16/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage						
1	Untreated Check								37.1 a	0.9 a	625 b	0.0 b
2	Dual Magnum.....s-metolachlor	7.62	E	0.95	lb ai/a	PRE			16.6 a	4.0 a	1715 a	99.3 a
	Sandea.....halosulfuron	75	DF	0.0314	lb ai/a	PRE						
3	Dual Magnum.....s-metolachlor	7.62	E	0.95	lb ai/a	PRE			18.2 a	3.9 a	1492 a	100.0 a
	Command.....clomazone	3	ME	0.094	lb ai/a	PRE						
	Sandea.....halosulfuron	75	DF	0.0314	lb ai/a	PRE						
4	Dual Magnum.....s-metolachlor	7.62	E	0.95	lb ai/a	PRE			14.7 a	4.3 a	1563 a	97.3 a
	Command.....clomazone	3	ME	0.188	lb ai/a	PRE						
	Sandea.....halosulfuron	75	DF	0.0314	lb ai/a	PRE						
5	Anthem Premix	2.153	SE	0.084	lb ai/a	PRE			19.0 a	8.4 a	1456 a	100.0 a
	----pyroxasulfone	2.09		0.0815								
	----fluthiacet	0.06300001		0.00246								
	Sandea.....halosulfuron	75	DF	0.0314	lb ai/a	PRE						
6	Anthem Premix	2.153	SE	0.109	lb ai/a	PRE			19.3 a	5.2 a	1974 a	100.0 a
	----pyroxasulfone	2.09		0.106								
	----fluthiacet	0.06300001		0.0032								
	Sandea.....halosulfuron	75	DF	0.0314	lb ai/a	PRE						
7	Anthem Premix	2.153	SE	0.168	lb ai/a	PRE			16.0 a	7.1 a	1767 a	100.0 a
	----pyroxasulfone	2.09		0.163								
	----fluthiacet	0.06300001		0.0049								
	Sandea.....halosulfuron	75	DF	0.0314	lb ai/a	PRE						
8	Dual Magnum.....s-metolachlor	7.62	E	1.43	lb ai/a	PRE			10.7 a	4.9 a	1613 a	100.0 a
	Sandea.....halosulfuron	75	DF	0.0314	lb ai/a	PRE						
LSD P=.05									12.69 - 19.84	6.17	547.0	2.85
Standard Deviation									0.18t	3.52	312.4	1.63
CV									14.31t	73.16	20.48	1.87
Replicate F									1.419	0.084	0.750	1.577
Replicate Prob(F)									0.2746	0.9197	0.4902	0.2413
Treatment F									1.900	1.228	4.927	1406.406
Treatment Prob(F)									0.1452	0.3510	0.0055	0.0001

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	AMBEL C.ragwd	CHEAL C.lmsqtr	IPOSS mornglry	DIGSA L.crbgrs
	Pest Code						AMBEL	CHEAL	IPOSS	DIGSA
	Pest Name						C.ragwd	C.lmsqtr	mornglry	L.crbgrs
	Crop Code									
	Crop Name									
	Rating Type						Control	Control	Control	Control
	Rating Unit						%	%	%	%
	Rating Date						09/16/15	09/16/15	09/16/15	09/16/15
1	Untreated Check						0.0 b	0.0 b	0.0 c	0.0 b
2	Dual Magnum.....s-metolachlor	7.62	E	0.95	lb ai/a	PRE	100.0 a	100.0 a	90.0 ab	100.0 a
	Sandea.....halosulfuron	75	DF	0.0314	lb ai/a	PRE				
3	Dual Magnum.....s-metolachlor	7.62	E	0.95	lb ai/a	PRE	100.0 a	100.0 a	86.0 ab	100.0 a
	Command.....clomazone	3	ME	0.094	lb ai/a	PRE				
	Sandea.....halosulfuron	75	DF	0.0314	lb ai/a	PRE				
4	Dual Magnum.....s-metolachlor	7.62	E	0.95	lb ai/a	PRE	97.3 a	100.0 a	83.3 b	100.0 a
	Command.....clomazone	3	ME	0.188	lb ai/a	PRE				
	Sandea.....halosulfuron	75	DF	0.0314	lb ai/a	PRE				
5	Anthem Premix	2.153	SE	0.084	lb ai/a	PRE	100.0 a	100.0 a	91.7 ab	100.0 a
	----pyroxasulfone	2.09		0.0815						
	----fluthiacet	0.06300001		0.00246						
	Sandea.....halosulfuron	75	DF	0.0314	lb ai/a	PRE				
6	Anthem Premix	2.153	SE	0.109	lb ai/a	PRE	100.0 a	100.0 a	90.0 ab	100.0 a
	----pyroxasulfone	2.09		0.106						
	----fluthiacet	0.06300001		0.0032						
	Sandea.....halosulfuron	75	DF	0.0314	lb ai/a	PRE				
7	Anthem Premix	2.153	SE	0.168	lb ai/a	PRE	100.0 a	100.0 a	95.0 a	100.0 a
	----pyroxasulfone	2.09		0.163						
	----fluthiacet	0.06300001		0.0049						
	Sandea.....halosulfuron	75	DF	0.0314	lb ai/a	PRE				
8	Dual Magnum.....s-metolachlor	7.62	E	1.43	lb ai/a	PRE	100.0 a	100.0 a	88.3 ab	100.0 a
	Sandea.....halosulfuron	75	DF	0.0314	lb ai/a	PRE				
	LSD P=.05						2.86	.	10.29	.
	Standard Deviation						1.63	0.00	5.88	0.00
	CV						1.87	0.0	7.53	0.0
	Replicate F						1.000	0.000	0.439	0.000
	Replicate Prob(F)						0.3927	1.0000	0.6533	1.0000
	Treatment F						1396.536	0.000	87.420	0.000
	Treatment Prob(F)						0.0001	1.0000	0.0001	1.0000

University of Delaware

Herbicides for Watermelons and Cantalopes - Under Plastic Application

Trial ID: MELN1-15 Location: Field # Trial Year:
Protocol ID: MELN1-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Investigator: Mark VanGessel Title: Extension Weed Specialist
Organization: University of Delaware
Address: 16483 County Seat Hwy
City+State/Prov: Georgetown, Delaware
Postal Code: 19947 E-mail: mjv@udel.edu
Country: USA United States

Crop Description

Crop 1: CITLA Citrullus lanatus Watermelon
Variety: 7187 BBCH Scale: BVVT
Planting Date: 05/19/15
Planting Rate, Unit: 8 P/PLOT Planting Method: PLANTD planted
Planting Equipment: HA By Hand
Row Spacing, Unit: 7 ft
Spacing Within Row, Unit: 3 ft
Harvested Width, Unit: 7 ft
Soil Temperature, Unit: 83 F Harvested Length, Unit: 24 ft
Soil Moisture: NORMAL normal, adequate Harvest Equipment: by hand
Seed Bed: SMOOTH smooth

Crop 2: CUMMC Cucumis melo cantaloupensis Cantaloup melon
Variety: Aphrodite BBCH Scale: BVVT
Planting Date: 05/19/15
Planting Rate, Unit: 8 P/PLOT Planting Method: PLANTD planted
Planting Equipment: HA By Hand
Row Spacing, Unit: 7 ft
Spacing Within Row, Unit: 3 ft
Harvested Width, Unit: 7 FT
Soil Temperature, Unit: 83 F Harvested Length, Unit: 24 FT
Soil Moisture: NORMAL normal, adequate Harvest Equipment: by hand
Seed Bed: SMOOTH smooth

Site and Design

Treated Plot Width: 6 FT Site Type: FIELD field
Treated Plot Length: 55 FT
Treated Plot Area: 330 FT2 Treatments: 10 Tillage Type: CONTIL conventional-till
Replications: 3 Study Design: RACOBL Randomized Complete Block (RCB)

Trial Initiation Comments:
Beds were formed prior to herbicide application; Plastic laid after herbicide application (same day).

Field Prep./Maintenance:
Row middles sprayed with Gramoxone + NIS on 6-10-15.

Soil Description

% Sand: 79 % OM: 0.7 Texture: SL sandy loam
% Silt: 12 pH: 6.2
% Clay: 9 CEC: 4.3 Fert. Level: G good
Soil Drainage: G good

Moisture and Weather Conditions

Overall Moisture Conditions: NORMAL normal
Closest Weather Station: UDREC Distance, Unit: 0.4 mi

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Application Description

	A
Application Date:	05/14/15
Appl. Stop Time:	08:15 AM
Application Method:	SPRAY
Application Timing:	UndrPlas
Application Placement:	BROADC
Applied By:	Johnson
Air Temperature, Unit:	56 F
% Relative Humidity:	59
Wind Velocity, Unit:	3 mph
Wind Direction:	N
Dew Presence (Y/N):	N no
Soil Temperature, Unit:	55 F
Soil Moisture:	NORMAL
% Cloud Cover:	30

Crop Stage At Each Application

	A
Crop 1 Code, BBCH Scale:	CITLA BVVT
Crop 2 Code, BBCH Scale:	CUMMC BVVT

Application Equipment

	A
Appl. Equipment:	Tractor
Equipment Type:	TRMOSP
Operation Pressure, Unit:	40 psi
Nozzle Type:	AIRMIX
Nozzle Size:	11002
Nozzle Spacing, Unit:	20 in
Boom Length, Unit:	6.7 ft
Boom Height, Unit:	18 in
Ground Speed, Unit:	3 mph
Carrier:	WATER
Spray Volume, Unit:	20 gal/ac
Mix Size, Unit:	0.7 Gallons
Propellant:	COMAIR

Trial Comments

06/03/15: Missing 1 melon plant in plot 205 and 1 lope plant in 104. (fox?). Meln 1 has 8 plants per plot.

06/04/15: Reflex injury is stunting plus chlorotic/necrotic tissue but all other trts are % stunting.

08/05/15: Watermelon stunting difficult to rate with weeds present - but seems like most have recovered from early injury.

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Herbicides for Watermelons and Cantalopes - Under Plastic Application

Trial ID: MELN1-15 Location: Field # Trial Year:
Protocol ID: MELN1-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Crop Code						CITLA	CUMMC	CITLA	CUMMC	CITLA
Crop Name						Watrmeln	Cantlope	Watrmeln	Cantlope	Watrmeln
Rating Type						Injury	Injury	Injury	Injury	Injury
Rating Unit						%	%	%	%	%
Rating Date						05/28/15	05/28/15	06/04/15	06/04/15	06/09/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage					
1	Untreated Check						0.0 a	0.0 b	0.0 a	0.0 d	0.0 a
2	Reflex.....fomesafen	2	L	0.188	lb ai/a	UndrPlas	0.0 a	0.0 b	2.3 a	9.7 bc	0.0 a
3	Reflex.....fomesafen	2	L	0.25	lb ai/a	UndrPlas	0.0 a	14.0 a	0.0 a	20.3 a	0.0 a
4	Reflex.....fomesafen	2	L	0.375	lb ai/a	UndrPlas	0.0 a	2.3 b	0.0 a	18.3 ab	0.0 a
5	Dual Magnum.....s-metolachlor	7.62	E	0.714	lb ai/a	UndrPlas	0.0 a	0.0 b	3.3 a	3.3 cd	7.3 a
6	Dual Magnum.....s-metolachlor	7.62	E	0.95	lb ai/a	UndrPlas	0.0 a	2.3 b	2.3 a	7.3 cd	6.0 a
7	Dual Magnum.....s-metolachlor	7.62	E	1.43	lb ai/a	UndrPlas	0.0 a	4.7 b	6.0 a	8.7 cd	9.0 a
8	Sandea.....halosulfuron	75	DF	0.0234	lb ai/a	UndrPlas	0.0 a	0.0 b	2.3 a	4.7 cd	3.3 a
9	Sinbar.....terbacil	80	W	0.2	lb ai/a	UndrPlas	0.0 a	11.3 a	2.7 a	7.0 cd	2.3 a
10	Prefar.....bensulide	4	E	6	lb ai/a	UndrPlas	0.0 a	0.0 b	0.0 a	0.0 d	0.0 a
LSD P=.05							.	5.80	5.58	8.88	8.74
Standard Deviation							0.00	3.38	3.26	5.18	5.10
CV							0.0	97.54	171.33	65.24	181.99
Replicate F							0.000	0.475	3.426	1.278	1.668
Replicate Prob(F)							1.0000	0.6293	0.0549	0.3027	0.2166
Treatment F							0.000	6.908	1.084	5.281	1.398
Treatment Prob(F)							1.0000	0.0003	0.4199	0.0013	0.2598

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
t=Mean descriptions are reported in transformed data units, and are not de-transformed.
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.
Could not calculate LSD (% mean diff) for columns 1 because error mean square = 0.

Crop Code Crop Name						CUMMC Cantlope	CITLA Watrmeln	CUMMC Cantlope	CUMMC Cantlope
Rating Type Rating Unit Rating Date						Injury % 06/09/15	Injury % 06/17/15	Injury % 06/17/15	Stunting % 07/23/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage				
1	Untreated Check						0.0 c	0.0 a	0.0 d	0.0 c
2	Reflex.....fomesafen	2	L	0.188	lb ai/a	UndrPlas	16.0 abc	0.0 a	33.3 ab	16.3 b
3	Reflex.....fomesafen	2	L	0.25	lb ai/a	UndrPlas	32.0 a	0.0 a	51.0 a	22.1 ab
4	Reflex.....fomesafen	2	L	0.375	lb ai/a	UndrPlas	27.7 ab	1.7 a	47.0 a	43.3 a
5	Dual Magnum.....s-metolachlor	7.62	E	0.714	lb ai/a	UndrPlas	7.3 c	5.0 a	6.0 cd	10.6 b
6	Dual Magnum.....s-metolachlor	7.62	E	0.95	lb ai/a	UndrPlas	17.7 abc	7.7 a	15.0 bcd	12.3 b
7	Dual Magnum.....s-metolachlor	7.62	E	1.43	lb ai/a	UndrPlas	11.7 bc	10.0 a	16.7 bcd	12.9 b
8	Sandea.....halosulfuron	75	DF	0.0234	lb ai/a	UndrPlas	10.0 bc	6.7 a	11.0 cd	0.0 c
9	Sinbar.....terbacil	80	W	0.2	lb ai/a	UndrPlas	14.0 bc	2.3 a	21.3 bc	24.2 ab
10	Prefar.....bensulide	4	E	6	lb ai/a	UndrPlas	0.0 c	0.0 a	0.0 d	0.0 c
LSD P=.05							17.88	8.60	20.35	8.29 - 24.79
Standard Deviation							10.42	5.01	11.86	1.32t
CV							76.45	150.37	58.92	39.74t
Replicate F							0.061	1.522	0.331	0.210
Replicate Prob(F)							0.9410	0.2451	0.7227	0.8127
Treatment F							3.022	1.663	7.065	7.100
Treatment Prob(F)							0.0219	0.1713	0.0002	0.0002

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Crop Code Crop Name						CITLA Watrmeln	CUMMC Cantlope	CUMMC Cantlope	CUMMC Cantlope	CITLA Watrmeln
Rating Type Rating Unit Rating Date						Stunting % 08/05/15	YldTtl #/plot	Yield Ton/A	AvgWt lb/melon	YldTtl #/plot
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage				
1	Untreated Check						0.0 a	18 a	17.7 ab	7.8 a	12 a
2	Reflex.....fomesafen	2	L	0.188	lb ai/a	UndrPlas	0.0 a	14 a	14.0 b	7.5 a	14 a
3	Reflex.....fomesafen	2	L	0.25	lb ai/a	UndrPlas	0.0 a	8 b	6.9 c	7.0 a	13 a
4	Reflex.....fomesafen	2	L	0.375	lb ai/a	UndrPlas	0.0 a	8 b	6.9 c	6.8 a	17 a
5	Dual Magnum.....s-metolachlor	7.62	E	0.714	lb ai/a	UndrPlas	0.0 a	16 a	15.4 ab	7.5 a	13 a
6	Dual Magnum.....s-metolachlor	7.62	E	0.95	lb ai/a	UndrPlas	0.0 a	14 a	15.1 ab	8.3 a	14 a
7	Dual Magnum.....s-metolachlor	7.62	E	1.43	lb ai/a	UndrPlas	3.3 a	14 a	14.9 ab	8.3 a	10 a
8	Sandea.....halosulfuron	75	DF	0.0234	lb ai/a	UndrPlas	0.0 a	17 a	18.4 ab	8.5 a	17 a
9	Sinbar.....terbacil	80	W	0.2	lb ai/a	UndrPlas	0.0 a	16 a	18.6 ab	8.8 a	11 a
10	Prefar.....bensulide	4	E	6	lb ai/a	UndrPlas	0.0 a	19 a	19.7 a	8.2 a	11 a
LSD P=.05							3.13	5.8	5.49	1.33	6.8
Standard Deviation							1.83	3.4	3.20	0.77	3.9
CV							547.72	23.75	21.67	9.83	30.12
Replicate F							1.000	1.531	3.431	1.340	0.719
Replicate Prob(F)							0.3874	0.2433	0.0547	0.2867	0.5006
Treatment F							1.000	3.651	6.049	2.128	1.028
Treatment Prob(F)							0.4742	0.0093	0.0006	0.0825	0.4556

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Crop Code Crop Name Rating Type Rating Unit Rating Date						CITLA Watrmeln Yield Ton/A	CITLA Watrmeln AvgWt lb/melon
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage		
1	Untreated Check						30.2 a	18.9 a
2	Reflex.....fomesafen	2	L	0.188	lb ai/a	UndrPlas	32.1 a	17.8 a
3	Reflex.....fomesafen	2	L	0.25	lb ai/a	UndrPlas	33.7 a	19.5 a
4	Reflex.....fomesafen	2	L	0.375	lb ai/a	UndrPlas	40.6 a	19.0 a
5	Dual Magnum.....s-metolachlor	7.62	E	0.714	lb ai/a	UndrPlas	32.1 a	19.2 a
6	Dual Magnum.....s-metolachlor	7.62	E	0.95	lb ai/a	UndrPlas	32.1 a	18.1 a
7	Dual Magnum.....s-metolachlor	7.62	E	1.43	lb ai/a	UndrPlas	23.1 a	19.8 a
8	Sandea.....halosulfuron	75	DF	0.0234	lb ai/a	UndrPlas	38.6 a	17.8 a
9	Sinbar.....terbacil	80	W	0.2	lb ai/a	UndrPlas	25.4 a	17.8 a
10	Prefar.....bensulide	4	E	6	lb ai/a	UndrPlas	26.8 a	18.7 a
LSD P=.05							16.14	2.40
Standard Deviation							9.41	1.40
CV							29.92	7.48
Replicate F							0.661	1.822
Replicate Prob(F)							0.5285	0.1902
Treatment F							1.022	0.862
Treatment Prob(F)							0.4597	0.5736

University of Delaware

Experimental PPO Herbicides for Watermelons and Cantalopes

Trial ID: MELN2rev-15 Location: Field #22 Trial Year:
Protocol ID: MELN2-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Investigator: Mark VanGessel Title: Extension Weed Specialist
Organization: University of Delaware
Address: 16483 County Seat Hwy
City+State/Prov: Georgetown, Delaware
Postal Code: 19947 E-mail: mjv@udel.edu
Country: USA United States

Crop Description

Crop 1: CITLA Citrullus lanatus Watermelon
Variety: 7187 BBCH Scale: BVVT
Planting Date: 05/19/15
Planting Rate, Unit: 9 P/POT Planting Method: TRAHAN transplanted - hand
Row Spacing, Unit: 7 ft
Spacing Within Row, Unit: 3 ft
Harvested Width, Unit: 7 FT
Soil Temperature, Unit: 83 F Harvested Length, Unit: 27 FT
Soil Moisture: NORMAL normal, adequate Harvest Equipment: by hand
Seed Bed: SMOOTH smooth

Pest Description

Pest 1 Type: W Code: AMAPA Amaranthus palmeri
Common Name: Palmer amaranth

Pest 2 Type: W Code: AMBEL Ambrosia artemisiifolia
Common Name: Common ragweed

Pest 3 Type: W Code: DIGSA Digitaria sanguinalis
Common Name: large crabgrass

Pest 4 Type: W Code: ELEIN Eleusine indica
Common Name: Goosegrass

Pest 5 Type: W Code: CYPES Cyperus esculentus
Common Name: Yellow nutsedge

Pest 6 Type: W Code: IPOSS Ipomoea sp.
Common Name: Morning glory

Site and Design

Treated Plot Width: 7 FT Site Type: FIELD field
Treated Plot Length: 35 FT
Treated Plot Area: 245 FT2 Treatments: 10 Tillage Type: CONTIL conventional-till
Replications: 3 Study Design: RACOBL Randomized Complete Block (RCB)

Soil Description

% Sand: 79 % OM: 0.7 Texture: SL sandy loam
% Silt: 12 pH: 6.2
% Clay: 9 CEC: 4.3 Fert. Level: G good
Soil Drainage: G good

Moisture and Weather Conditions

Overall Moisture Conditions: NORMAL normal
Closest Weather Station: UDREC Distance, Unit: 0.4 mi

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Application Description

	A
Application Date:	06/10/15
Appl. Stop Time:	10:00 AM
Application Method:	SPRAY
Application Timing:	Dir-POST
Application Placement:	RowMiddle
Applied By:	VanGessel
Air Temperature, Unit:	77 F
% Relative Humidity:	49
Wind Velocity, Unit:	1 mph
Wind Direction:	E
Dew Presence (Y/N):	N no
Soil Temperature, Unit:	77 F
Soil Moisture:	NORMAL
% Cloud Cover:	30

Crop Stage At Each Application

	A
Crop 1 Code, BBCH Scale:	CITLA BVVT
Stage Scale Used:	DESC
Stage Majority, Percent:	vining 100
Height, Unit:	20 in
Height Minimum, Maximum:	15 24

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Pest Stage At Each Application

	A
Pest 1 Code, Type, Scale:	AMAPA W
Stage Majority, Percent:	veg 100
Height, Unit:	6 in
Height Minimum, Maximum:	2 14
Density, Unit:	100 m2
Pest 2 Code, Type, Scale:	AMBEL W
Stage Majority, Percent:	veg 100
Height, Unit:	6 in
Height Minimum, Maximum:	3 10
Density, Unit:	10 m2
Pest 3 Code, Type, Scale:	DIGSA W
Stage Majority, Percent:	2-tilr 60
Stage Minimum, Percent:	1-tilr 20
Stage Maximum, Percent:	3-tilr 20
Height, Unit:	6 in
Height Minimum, Maximum:	4 8
Density, Unit:	20 m2
Pest 4 Code, Type, Scale:	ELEIN W
Stage Majority, Percent:	2-tilr 70
Stage Minimum, Percent:	1-tilr 30
Stage Maximum, Percent:	2-tilr 70
Height, Unit:	4 in
Height Minimum, Maximum:	2 6
Density, Unit:	30 m2
Pest 5 Code, Type, Scale:	CYPES W
Stage Majority, Percent:	veg 100
Height, Unit:	6 in
Height Minimum, Maximum:	3 14
Density, Unit:	40 m2
Pest 6 Code, Type, Scale:	IPOSS W
Stage Majority, Percent:	run 100
Height, Unit:	7 in
Height Minimum, Maximum:	6 8
Density, Unit:	4 m2

Application Equipment

	A
Appl. Equipment:	Backpack
Operation Pressure, Unit:	18 PSI
Nozzle Type:	XRTEEJET
Nozzle Size:	11002
Nozzle Spacing, Unit:	16 IN
Boom Length, Unit:	1.5 ft
Boom Height, Unit:	30 IN
Ground Speed, Unit:	3 MPH
Carrier:	WATER
Spray Volume, Unit:	20 GAL/AC
Propellant:	COMCO2
Tank Mix (Y/N):	Y yes

University of Delaware

Experimental PPO Herbicides for Watermelons and Cantalopes

Trial ID: MELN2rev-15 Location: Field #22 Trial Year:
Protocol ID: MELN2-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Trial Comments

06/03/15: Plot 308 - one melon plant missing - pulled out by fox? Meln 2 has 9 plants per plot.

Note that trt 2 was sprayed in 107 and trt 7 was sprayed in 207.

06/12/15 and 06/17/15: Ratings on 3 plants per plot with most injury from row middle spray.

University of Delaware

Experimental PPO Herbicides for Watermelons and Cantalopes

Trial ID: MELN2rev-15 Location: Field #22 Trial Year:
Protocol ID: MELN2-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	CITLA Watrmeln	CITLA Watrmeln	CITLA Watrmeln	CITLA Watrmeln
	Pest Code									
	Pest Name									
	Crop Code						CITLA	CITLA	CITLA	CITLA
	Crop Name						Watrmeln	Watrmeln	Watrmeln	Watrmeln
	Rating Type						Leafbrn	Injury	Injury	Injury
	Rating Unit						%	%	%	%
	Part Rated						3worst C	3worst C	Plot C	Plot C
	Rating Date						06/12/15	06/17/15	06/17/15	06/24/15
1	Untreated Check						0.0 b	0.0 b	0.0 c	0.0 b
2	Chateau.....flumioxazin	51	WG	0.096	lb ai/a	Dir-POST	14.7 a	10.9 a	15.7 a	15.5 a
	Dual Magnum.....s-metolachlor	7.62	E	1.43	lb ai/a	Dir-POST				
	Gramoxone SL....paraquat	2	SL	0.6	lb ai/a	Dir-POST				
	Nonionic Surfactant	100	L	0.25	% v/v	Dir-POST				
3	Chateau.....flumioxazin	51	WG	0.128	lb ai/a	Dir-POST	19.3 a	11.4 a	15.7 a	16.6 a
	Dual Magnum.....s-metolachlor	7.62	E	1.43	lb ai/a	Dir-POST				
	Gramoxone SL....paraquat	2	SL	0.6	lb ai/a	Dir-POST				
	Nonionic Surfactant	100	L	0.25	% v/v	Dir-POST				
4	Reflex.....fomesafen	2	L	0.25	lb ai/a	Dir-POST	13.2 a	6.6 a	7.0 b	0.0 b
	Dual Magnum.....s-metolachlor	7.62	E	1.43	lb ai/a	Dir-POST				
	Gramoxone SL....paraquat	2	SL	0.6	lb ai/a	Dir-POST				
	Nonionic Surfactant	100	L	0.25	% v/v	Dir-POST				
5	Reflex.....fomesafen	2	L	0.375	lb ai/a	Dir-POST	15.9 a	10.4 a	9.0 b	0.0 b
	Dual Magnum.....s-metolachlor	7.62	E	1.43	lb ai/a	Dir-POST				
	Gramoxone SL....paraquat	2	SL	0.6	lb ai/a	Dir-POST				
	Nonionic Surfactant	100	L	0.25	% v/v	Dir-POST				
6	Sharpen.....saflufenacil	2.85	SC	0.111	lb ai/a	Dir-POST	15.2 a	8.1 a	11.0 ab	1.7 b
	Dual Magnum.....s-metolachlor	7.62	E	1.43	lb ai/a	Dir-POST				
	Gramoxone SL....paraquat	2	SL	0.6	lb ai/a	Dir-POST				
	Nonionic Surfactant	100	L	0.25	% v/v	Dir-POST				
7	Spartan Charge Premix	3.5	F	0.137	lb ai/a	Dir-POST	16.2 a	10.0 a	10.0 b	3.4 b
	----carfentrazone	0.35		0.0137						
	----sulfentrazone	3.15		0.123						
	Dual Magnum.....s-metolachlor	7.62	E	1.43	lb ai/a	Dir-POST				
	Gramoxone SL....paraquat	2	SL	0.6	lb ai/a	Dir-POST				
	Nonionic Surfactant	100	L	0.25	% v/v	Dir-POST				
8	Spartan Charge Premix	3.5	F	0.219	lb ai/a	Dir-POST	19.7 a	9.0 a	9.0 b	0.6 b
	----carfentrazone	0.35		0.022						
	----sulfentrazone	3.15		0.197						
	Dual Magnum.....s-metolachlor	7.62	E	1.43	lb ai/a	Dir-POST				
	Gramoxone SL....paraquat	2	SL	0.6	lb ai/a	Dir-POST				
	Nonionic Surfactant	100	L	0.25	% v/v	Dir-POST				
9	Strategy Premix	2.1	E	0.79	lb ai/a	Dir-POST	18.3 a	6.6 a	6.7 b	0.9 b
	----clomazone	0.5		0.188						
	----ethalfluralin	1.6		0.6						
	Curbit.....ethalfluralin	3	E	0.188	lb ai/a	Dir-POST				
	Sandea.....halosulfuron	75	DF	0.035	lb ai/a	Dir-POST				
	Gramoxone SL....paraquat	2	SL	0.6	lb ai/a	Dir-POST				
	Nonionic Surfactant	100	L	0.25	% v/v	Dir-POST				

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
t=Mean descriptions are reported in transformed data units, and are not de-transformed.
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

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Pest Code									
Pest Name									
Crop Code						CITLA	CITLA	CITLA	CITLA
Crop Name						Watrmeln	Watrmeln	Watrmeln	Watrmeln
Rating Type						Leafbrn	Injury	Injury	Injury
Rating Unit						%	%	%	%
Part Rated						3worst C	3worst C	Plot C	Plot C
Rating Date						06/12/15	06/17/15	06/17/15	06/24/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage			
10	No Residual						17.0 a	9.0 a	6.0 b	0.0 b
	Gramoxone SL....paraquat	2	SL	0.6	lb ai/a	Dir-POST				
	Nonionic Surfactant	100	L	0.25	% v/v	Dir-POST				
LSD P=.05							7.03	4.94	5.46	6.85 - 11.88
Standard Deviation							4.10	2.88	3.18	6.70t
CV							27.41	35.14	35.35	89.05t
Replicate F							6.145	0.379	0.089	0.315
Replicate Prob(F)							0.0092	0.6901	0.9153	0.7339
Treatment F							5.676	4.012	6.367	5.715
Treatment Prob(F)							0.0009	0.0059	0.0004	0.0008

Pest Code						AMAPA	CHEAL	GGGAN	CHEAL	DIGSA
Pest Name						PalmerAm	C.lmsqtr	AnnGrass	C.lmsqtr	L.crbgrs
Crop Code										
Crop Name										
Rating Type						Control	Control	Control	Control	Control
Rating Unit						%	%	%	%	%
Part Rated										
Rating Date						06/24/15	06/24/15	06/24/15	08/12/15	08/12/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage				
1	Untreated Check						0.0 c	0.0 c	0.0 b	0.0 c	0.0 c
2	Chateau.....flumioxazin	51	WG	0.096	lb ai/a	Dir-POST	100.0 a	100.0 a	85.0 a	100.0 a	79.0 ab
	Dual Magnum.....s-metolachlor	7.62	E	1.43	lb ai/a	Dir-POST					
	Gramoxone SL....paraquat	2	SL	0.6	lb ai/a	Dir-POST					
	Nonionic Surfactant	100	L	0.25	% v/v	Dir-POST					
3	Chateau.....flumioxazin	51	WG	0.128	lb ai/a	Dir-POST	100.0 a	100.0 a	84.3 a	86.7 b	82.3 ab
	Dual Magnum.....s-metolachlor	7.62	E	1.43	lb ai/a	Dir-POST					
	Gramoxone SL....paraquat	2	SL	0.6	lb ai/a	Dir-POST					
	Nonionic Surfactant	100	L	0.25	% v/v	Dir-POST					
4	Reflex.....fomesafen	2	L	0.25	lb ai/a	Dir-POST	93.3 ab	100.0 a	86.0 a	100.0 a	81.7 ab
	Dual Magnum.....s-metolachlor	7.62	E	1.43	lb ai/a	Dir-POST					
	Gramoxone SL....paraquat	2	SL	0.6	lb ai/a	Dir-POST					
	Nonionic Surfactant	100	L	0.25	% v/v	Dir-POST					
5	Reflex.....fomesafen	2	L	0.375	lb ai/a	Dir-POST	100.0 a	91.7 ab	76.7 a	89.3 ab	81.7 ab
	Dual Magnum.....s-metolachlor	7.62	E	1.43	lb ai/a	Dir-POST					
	Gramoxone SL....paraquat	2	SL	0.6	lb ai/a	Dir-POST					
	Nonionic Surfactant	100	L	0.25	% v/v	Dir-POST					
6	Sharpen.....saflufenacil	2.85	SC	0.111	lb ai/a	Dir-POST	98.3 a	100.0 a	84.3 a	100.0 a	70.0 b
	Dual Magnum.....s-metolachlor	7.62	E	1.43	lb ai/a	Dir-POST					
	Gramoxone SL....paraquat	2	SL	0.6	lb ai/a	Dir-POST					
	Nonionic Surfactant	100	L	0.25	% v/v	Dir-POST					
7	Spartan Charge Premix	3.5	F	0.137	lb ai/a	Dir-POST	100.0 a	100.0 a	78.3 a	100.0 a	75.0 ab
	----carfentrazone	0.35		0.0137							
	----sulfentrazone	3.15		0.123							
	Dual Magnum.....s-metolachlor	7.62	E	1.43	lb ai/a	Dir-POST					
	Gramoxone SL....paraquat	2	SL	0.6	lb ai/a	Dir-POST					
	Nonionic Surfactant	100	L	0.25	% v/v	Dir-POST					
8	Spartan Charge Premix	3.5	F	0.219	lb ai/a	Dir-POST	100.0 a	100.0 a	74.0 a	96.7 ab	70.0 b
	----carfentrazone	0.35		0.022							
	----sulfentrazone	3.15		0.197							
	Dual Magnum.....s-metolachlor	7.62	E	1.43	lb ai/a	Dir-POST					
	Gramoxone SL....paraquat	2	SL	0.6	lb ai/a	Dir-POST					
	Nonionic Surfactant	100	L	0.25	% v/v	Dir-POST					
9	Strategy Premix	2.1	E	0.79	lb ai/a	Dir-POST	89.3 b	90.0 b	79.3 a	91.7 ab	82.7 a
	----clomazone	0.5		0.188							
	----ethalfluralin	1.6		0.6							
	Curbit.....ethalfluralin	3	E	0.188	lb ai/a	Dir-POST					
	Sandea.....halosulfuron	75	DF	0.035	lb ai/a	Dir-POST					
	Gramoxone SL....paraquat	2	SL	0.6	lb ai/a	Dir-POST					
	Nonionic Surfactant	100	L	0.25	% v/v	Dir-POST					

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Pest Code					AMAPA	CHEAL	GGGAN	CHEAL	DIGSA
Pest Name					PalmerAm	C.lmsqtr	AnnGrass	C.lmsqtr	L.crbgrs
Crop Code									
Crop Name									
Rating Type					Control	Control	Control	Control	Control
Rating Unit					%	%	%	%	%
Part Rated									
Rating Date					06/24/15	06/24/15	06/24/15	08/12/15	08/12/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate Unit	Growth Stage				
10	No Residual					98.3 a	99.7 a	82.3 a	85.0 b	73.3 ab
	Gramoxone SL....paraquat	2	SL	0.6 lb ai/a	Dir-POST					
	Nonionic Surfactant	100	L	0.25 % v/v	Dir-POST					
LSD P=.05						7.96	9.11	19.44	13.08	12.55
Standard Deviation						4.64	5.31	11.33	7.62	7.32
CV						5.28	6.02	15.52	8.98	10.52
Replicate F						2.446	1.953	0.125	0.484	2.037
Replicate Prob(F)						0.1149	0.1708	0.8834	0.6241	0.1594
Treatment F						134.864	103.630	15.750	47.747	34.881
Treatment Prob(F)						0.0001	0.0001	0.0001	0.0001	0.0001

Pest Code Pest Name Crop Code Crop Name						CITLA Watrmeln	CITLA Watrmeln	CITLA Watrmeln
Rating Type Rating Unit Part Rated Rating Date						YldTtl #/plot total - 08/12/15	Yield Ton/A total - 08/12/15	AvgWt lb/melon total - 08/12/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage			
1	Untreated Check						8 d	16.4 bc	17.8 a
2	Chateau.....flumioxazin	51	WG	0.096	lb ai/a	Dir-POST	11 bcd	21.7 abc	17.1 a
	Dual Magnum.....s-metolachlor	7.62	E	1.43	lb ai/a	Dir-POST			
	Gramoxone SL....paraquat	2	SL	0.6	lb ai/a	Dir-POST			
	Nonionic Surfactant	100	L	0.25	% v/v	Dir-POST			
3	Chateau.....flumioxazin	51	WG	0.128	lb ai/a	Dir-POST	13 ab	26.1 a	17.6 a
	Dual Magnum.....s-metolachlor	7.62	E	1.43	lb ai/a	Dir-POST			
	Gramoxone SL....paraquat	2	SL	0.6	lb ai/a	Dir-POST			
	Nonionic Surfactant	100	L	0.25	% v/v	Dir-POST			
4	Reflex.....fomesafen	2	L	0.25	lb ai/a	Dir-POST	14 ab	27.2 a	17.4 a
	Dual Magnum.....s-metolachlor	7.62	E	1.43	lb ai/a	Dir-POST			
	Gramoxone SL....paraquat	2	SL	0.6	lb ai/a	Dir-POST			
	Nonionic Surfactant	100	L	0.25	% v/v	Dir-POST			
5	Reflex.....fomesafen	2	L	0.375	lb ai/a	Dir-POST	12 abc	24.8 a	18.1 a
	Dual Magnum.....s-metolachlor	7.62	E	1.43	lb ai/a	Dir-POST			
	Gramoxone SL....paraquat	2	SL	0.6	lb ai/a	Dir-POST			
	Nonionic Surfactant	100	L	0.25	% v/v	Dir-POST			
6	Sharpen.....saflufenacil	2.85	SC	0.111	lb ai/a	Dir-POST	9 cd	15.9 c	15.3 a
	Dual Magnum.....s-metolachlor	7.62	E	1.43	lb ai/a	Dir-POST			
	Gramoxone SL....paraquat	2	SL	0.6	lb ai/a	Dir-POST			
	Nonionic Surfactant	100	L	0.25	% v/v	Dir-POST			
7	Spartan Charge Premix	3.5	F	0.137	lb ai/a	Dir-POST	12 abc	22.9 ab	16.6 a
	----carfentrazone	0.35		0.0137					
	----sulfentrazone	3.15		0.123					
	Dual Magnum.....s-metolachlor	7.62	E	1.43	lb ai/a	Dir-POST			
	Gramoxone SL....paraquat	2	SL	0.6	lb ai/a	Dir-POST			
	Nonionic Surfactant	100	L	0.25	% v/v	Dir-POST			
8	Spartan Charge Premix	3.5	F	0.219	lb ai/a	Dir-POST	14 ab	26.4 a	16.8 a
	----carfentrazone	0.35		0.022					
	----sulfentrazone	3.15		0.197					
	Dual Magnum.....s-metolachlor	7.62	E	1.43	lb ai/a	Dir-POST			
	Gramoxone SL....paraquat	2	SL	0.6	lb ai/a	Dir-POST			
	Nonionic Surfactant	100	L	0.25	% v/v	Dir-POST			
9	Strategy Premix	2.1	E	0.79	lb ai/a	Dir-POST	13 ab	23.9 a	15.6 a
	----clomazone	0.5		0.188					
	----ethalfluralin	1.6		0.6					
	Curbit.....ethalfluralin	3	E	0.188	lb ai/a	Dir-POST			
	Sandea.....halosulfuron	75	DF	0.035	lb ai/a	Dir-POST			
	Gramoxone SL....paraquat	2	SL	0.6	lb ai/a	Dir-POST			
	Nonionic Surfactant	100	L	0.25	% v/v	Dir-POST			

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Pest Code								
Pest Name								
Crop Code						CITLA	CITLA	CITLA
Crop Name						Watrmeln	Watrmeln	Watrmeln
Rating Type						YldTtl	Yield	AvgWt
Rating Unit						#/plot	Ton/A	lb/melon
Part Rated						total -	total -	total -
Rating Date						08/12/15	08/12/15	08/12/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage		
10	No Residual						15 a	27.7 a	16.1 a
	Gramoxone SL....paraquat	2	SL	0.6	lb ai/a	Dir-POST			
	Nonionic Surfactant	100	L	0.25	% v/v	Dir-POST			
LSD P=.05							3.0	6.76	2.94
Standard Deviation							1.8	3.94	1.71
CV							14.66	16.93	10.17
Replicate F							9.852	4.786	3.059
Replicate Prob(F)							0.0013	0.0215	0.0719
Treatment F							4.611	3.436	0.880
Treatment Prob(F)							0.0028	0.0124	0.5599

University of Delaware

Experimental PPO Herbicides for Watermelons and Cantalopes Weed Control Evaluation

Trial ID: MELN2-15_demo Location: Field #6 Trial Year:
Protocol ID: MELN2-15_demo Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Investigator: Mark VanGessel Title: Extension Weed Specialist
Organization: University of Delaware
Address: 16483 County Seat Hwy
City+State/Prov: Georgetown, Delaware
Postal Code: 19947 E-mail: mjv@udel.edu
Country: USA United States

Crop Description

Crop 1: GLXMA Glycine max Soybean
Variety: 4306R2/STS BBCH Scale: BSOY
Planting Date: 06/11/15
Planting Rate, Unit: 180000 S/A Planting Method: PLANTD planted
Depth, Unit: 1 in Planting Equipment: FE Field Equipment
Row Spacing, Unit: 15 in Emergence Date: 06/15/15
Soil Temperature, Unit: 90 F
Soil Moisture: NORMAL normal, adequate
Seed Bed: MEDIUM medium

Site and Design

Treated Plot Width: 10 FT Site Type: FIELD field
Treated Plot Length: 25 FT
Treated Plot Area: 250 FT2 Treatments: 8 Tillage Type: CONTIL conventional-till
Replications: 3 Study Design: RACOBL Randomized Complete Block (RCB)

Maintenance

No.	Date	Maintenance Product Name	Form Conc	Form Type	Rate	Rate Unit
1.	07/08/15	Roundup	4.5	AS	1	QT/A
2.	07/08/15	Reflex	2	EC	1.5	PT/A
3.	07/08/15	AMS	100	D	8.5	LB/100 GAL

Comment: Total POST application on 7-8-15.

Soil Description

% Sand: 82 % OM: 0.9 Texture: LS loamy sand
% Silt: 9 pH: 5.8
% Clay: 9 CEC: 5.3 Fert. Level: G good
Soil Drainage: E excellent

Moisture and Weather Conditions

Overall Moisture Conditions: NORMAL normal
Closest Weather Station: UDREC Distance, Unit: 0.3 mi

University of Delaware

Application Description

	A
Application Date:	06/12/15
Appl. Stop Time:	09:40 AM
Application Method:	SPRAY
Application Timing:	PRE
Application Placement:	BROADC
Applied By:	Johnson
Air Temperature, Unit:	84 F
% Relative Humidity:	69
Wind Velocity, Unit:	2 mph
Wind Direction:	SW
Dew Presence (Y/N):	N no
Soil Temperature, Unit:	84 F
Soil Moisture:	NORMAL
% Cloud Cover:	10

Crop Stage At Each Application

	A
Crop 1 Code, BBCH Scale:	GLXMA BSOY

Application Equipment

	A
Appl. Equipment:	Tractor
Equipment Type:	TRMOSP
Operation Pressure, Unit:	40 psi
Nozzle Type:	AIRMIX
Nozzle Size:	11002
Nozzle Spacing, Unit:	20 in
Boom Length, Unit:	10 ft
Boom Height, Unit:	18 in
Ground Speed, Unit:	3 mph
Carrier:	WATER
Spray Volume, Unit:	20 gal/ac
Mix Size, Unit:	0.7 Gallons
Propellant:	COMAIR

Trial Comments

07/08/15: Annual grasses = goosegrass and large crabgrass.

University of Delaware

Experimental PPO Herbicides for Watermelons and Cantalopes Weed Control Evaluation

Trial ID: MELN2-15_demo Location: Field #6 Trial Year:
Protocol ID: MELN2-15_demo Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	AMAPA PalmerAm Control % 07/08/15	CHEAL C.lmsqtr Control % 07/08/15	POROL C.pursln Control % 07/08/15	GGGAN AnnGrass Control % 07/08/15	CYPES Y.nutsge Control % 07/08/15
1	Untreated Check						0.0 c	0.0 b	0.0 b	0.0 b	0.0 d
2	Chateau.....flumioxazin	51	WG	0.096	lb ai/a	PRE	100.0 a	100.0 a	100.0 a	100.0 a	97.3 ab
	Dual Magnum.....s-metolachlor	7.62	E	1.43	lb ai/a	PRE					
3	Chateau.....flumioxazin	51	WG	0.128	lb ai/a	PRE	100.0 a	100.0 a	100.0 a	99.0 a	100.0 a
	Dual Magnum.....s-metolachlor	7.62	E	1.43	lb ai/a	PRE					
4	Reflex.....fomesafen	2	L	0.25	lb ai/a	PRE	100.0 a	100.0 a	100.0 a	99.7 a	100.0 a
	Dual Magnum.....s-metolachlor	7.62	E	1.43	lb ai/a	PRE					
5	Reflex.....fomesafen	2	L	0.375	lb ai/a	PRE	100.0 a	100.0 a	99.3 a	100.0 a	98.3 ab
	Dual Magnum.....s-metolachlor	7.62	E	1.43	lb ai/a	PRE					
6	Sharpen.....saflufenacil	2.85	SC	0.067	lb ai/a	PRE	97.3 a	100.0 a	96.7 a	97.3 a	91.0 bc
	Dual Magnum.....s-metolachlor	7.62	E	1.43	lb ai/a	PRE					
7	Sharpen.....saflufenacil	2.85	SC	0.111	lb ai/a	PRE	98.3 a	100.0 a	98.3 a	100.0 a	98.3 ab
	Dual Magnum.....s-metolachlor	7.62	E	1.43	lb ai/a	PRE					
8	Strategy Premix	2.1	E	0.79	lb ai/a	PRE	88.3 b	100.0 a	100.0 a	96.7 a	88.7 c
	----clomazone	0.5		0.188							
	----ethalfluralin	1.6		0.6							
	Curbit.....ethalfluralin	3	E	0.188	lb ai/a	PRE					
	Sandea.....halosulfuron	75	DF	0.035	lb ai/a	PRE					
LSD P=.05							7.06	.	4.24	4.87	7.45
Standard Deviation							4.03	0.00	2.42	2.78	4.25
CV							4.72	0.0	2.79	3.21	5.05
Replicate F							1.483	0.000	0.349	0.490	2.533
Replicate Prob(F)							0.2605	1.0000	0.7114	0.6230	0.1151
Treatment F							222.981	0.000	631.275	474.795	195.045
Treatment Prob(F)							0.0001	1.0000	0.0001	0.0001	0.0001

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.
Could not calculate LSD (% mean diff) for columns 2 because error mean square = 0.

University of Delaware

Pumpkin Sensitivity to Clomazone

Trial ID: Pmkn2-15 Location: Field #14 Trial Year:
Protocol ID: Pmkn2-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact: FMC

Investigator: Mark VanGessel Title: Extension Weed Specialist
Organization: University of Delaware
Address: 16483 County Seat Hwy
City+State/Prov: Georgetown, Delaware
Postal Code: 19947 E-mail: mjv@udel.edu
Country: USA United States

Crop Description

Crop 1: CUUPE Cucurbita pepo Pumpkin, acorn/spaghetti/summer squash
Variety: See treatment list BBCH Scale: BVVT
Planting Date: 06/08/15
Planting Rate, Unit: 0.3 P/FT Planting Method: SEEDED seeded
Planting Equipment: HA By Hand
Row Spacing, Unit: 5 FT Emergence Date: 06/14/15
Harvest Date: 08/25/15
Harvested Width, Unit: 7.5 ft
Soil Temperature, Unit: 85 F Harvested Length, Unit: 25 ft
Soil Moisture: NORMAL normal, adequate

Site and Design

Treated Plot Width: 8 FT Site Type: FIELD field
Treated Plot Length: 25 FT
Treated Plot Area: 200 FT2 Treatments: 8 Tillage Type: CONTIL conventional-till
Replications: 3 Study Design: FACTOR Factorial

Soil Description

% Sand: 81 % OM: 1.0 Texture: LS loamy sand
% Silt: 12 pH: 6.1
% Clay: 7 CEC: 4.7 Fert. Level: E excellent
Soil Drainage: G good

Moisture and Weather Conditions

Overall Moisture Conditions: NORMAL normal
Closest Weather Station: UD REC Distance, Unit: 0.3 mi

Application Description

	A
Application Date:	06/10/15
Appl. Stop Time:	11:00 AM
Application Method:	SPRAY
Application Timing:	PRE
Application Placement:	BROADC
Applied By:	VanGessel
Air Temperature, Unit:	79 F
% Relative Humidity:	47
Wind Velocity, Unit:	1 MPH
Wind Direction:	e
Dew Presence (Y/N):	N no
Soil Temperature, Unit:	79 F
Soil Moisture:	NORMAL
% Cloud Cover:	30

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Crop Stage At Each Application

	A
Crop 1 Code, BBCH Scale:	CUUPE BVVT

Application Equipment

	A
Appl. Equipment:	Backpack
Equipment Type:	SPRBAC
Operation Pressure, Unit:	31 psi
Nozzle Type:	AIRMIX
Nozzle Size:	11002
Nozzle Spacing, Unit:	18 in
Boom Length, Unit:	6 ft
Boom Height, Unit:	18 in
Ground Speed, Unit:	3 mph
Carrier:	WATER
Spray Volume, Unit:	20 gal/ac
Mix Size, Unit:	2 Liters
Propellant:	COMCO2

Trial Comments

University of Delaware

Pumpkin Sensitivity to Clomazone

Trial ID: Pmkn2-15 Location: Field #14 Trial Year:
Protocol ID: Pmkn2-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact: FMC

Crop Code Crop Name Rating Type Rating Unit Rating Date						CUUPM pumpkin StandCt #/25' 06/17/15	CUUPM pumpkin Injury % 06/19/15	CUUPM pumpkin Injury % 06/25/15	CUUPM pumpkin Stunting % 07/06/15	CUUPM pumpkin Stunting % 07/14/15	CUUPM pumpkin small #/25'row 08/25/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage					
1	Apollo						14.3 bc	0.0 a	0.0 a	0.0 a	0.0 a	2.9 ab
	Command.....clomazone	3	ME	0	lb ai/a	PRE					
	Curbit.....ethalfluralin	3	E	0.56	lb ai/a	PRE					
2	Apollo						19.0 b	0.0 a	0.0 a	0.0 a	0.0 a	2.6 ab
	Command.....clomazone	3	ME	0.49	lb ai/a	PRE					
	Curbit.....ethalfluralin	3	E	0.56	lb ai/a	PRE					
3	Gladiator						20.3 b	0.0 a	0.0 a	0.0 a	0.0 a	3.2 ab
	Command.....clomazone	3	ME	0	lb ai/a	PRE					
	Curbit.....ethalfluralin	3	E	0.56	lb ai/a	PRE					
4	Gladiator						19.7 b	0.0 a	0.0 a	0.0 a	0.0 a	1.1 bc
	Command.....clomazone	3	ME	0.49	lb ai/a	PRE					
	Curbit.....ethalfluralin	3	E	0.56	lb ai/a	PRE					
5	Howden Biggie						8.0 c	0.0 a	0.0 a	0.0 a	0.0 a	0.4 c
	Command.....clomazone	3	ME	0	lb ai/a	PRE					
	Curbit.....ethalfluralin	3	E	0.56	lb ai/a	PRE					
6	Howden Biggie						7.7 c	0.0 a	3.3 a	5.0 a	2.7 a	0.4 c
	Command.....clomazone	3	ME	0.49	lb ai/a	PRE					
	Curbit.....ethalfluralin	3	E	0.56	lb ai/a	PRE					
7	Field Trip						30.7 a	0.0 a	0.0 a	0.0 a	0.0 a	4.0 a
	Command.....clomazone	3	ME	0	lb ai/a	PRE					
	Curbit.....ethalfluralin	3	E	0.56	lb ai/a	PRE					
8	Field Trip						29.0 a	0.0 a	0.0 a	0.0 a	0.0 a	4.9 a
	Command.....clomazone	3	ME	0.49	lb ai/a	PRE					
	Curbit.....ethalfluralin	3	E	0.56	lb ai/a	PRE					
LSD P=.05							7.44	.	3.57	5.36	2.86	1.73 - 3.24
Standard Deviation							4.25	0.00	2.04	3.06	1.63	0.20t
CV							22.88	0.0	489.9	489.9	489.9	40.35t
Replicate F							1.448	0.000	1.000	1.000	1.000	1.449
Replicate Prob(F)							0.2682	1.0000	0.3927	0.3927	0.3927	0.2679
Treatment F							12.051	0.000	1.000	1.000	1.000	4.536
Treatment Prob(F)							0.0001	1.0000	0.4706	0.4706	0.4706	0.0078

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
t=Mean descriptions are reported in transformed data units, and are not de-transformed.
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.
Could not calculate LSD (% mean diff) for columns 2 because error mean square = 0.

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Crop Code Crop Name Rating Type Rating Unit Rating Date						CUUPM pumpkin med #/25'row 08/25/15	CUUPM pumpkin large #/25'row 08/25/15	CUUPM pumpkin xLg #/25'row 08/25/15	CUUPM pumpkin green #/25'row 08/25/15	CUUPM pumpkin yellow #/25'row 08/25/15	CUUPM pumpkin orange #/25'row 08/25/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage					
1	Apollo						8.0 b	6.7 a	0.7 a	1.5 ab	0.0 b	16.3 b
	Command.....clomazone	3	ME	0	lb ai/a	PRE					
	Curbit.....ethalfluralin	3	E	0.56	lb ai/a	PRE					
2	Apollo						8.7 b	6.3 ab	0.0 a	1.3 ab	0.0 b	16.3 b
	Command.....clomazone	3	ME	0.49	lb ai/a	PRE					
	Curbit.....ethalfluralin	3	E	0.56	lb ai/a	PRE					
3	Gladiator						9.3 b	2.7 c	0.0 a	2.0 a	0.0 b	13.7 b
	Command.....clomazone	3	ME	0	lb ai/a	PRE					
	Curbit.....ethalfluralin	3	E	0.56	lb ai/a	PRE					
4	Gladiator						10.3 b	3.7 bc	0.0 a	0.6 bc	0.0 b	14.7 b
	Command.....clomazone	3	ME	0.49	lb ai/a	PRE					
	Curbit.....ethalfluralin	3	E	0.56	lb ai/a	PRE					
5	Howden Biggie						1.7 c	2.7 c	0.7 a	0.3 c	0.0 b	5.3 c
	Command.....clomazone	3	ME	0	lb ai/a	PRE					
	Curbit.....ethalfluralin	3	E	0.56	lb ai/a	PRE					
6	Howden Biggie						2.3 c	2.0 c	0.7 a	0.0 c	0.0 b	5.7 c
	Command.....clomazone	3	ME	0.49	lb ai/a	PRE					
	Curbit.....ethalfluralin	3	E	0.56	lb ai/a	PRE					
7	Field Trip						21.7 a	7.0 a	0.0 a	0.0 c	4.0 a	28.0 a
	Command.....clomazone	3	ME	0	lb ai/a	PRE					
	Curbit.....ethalfluralin	3	E	0.56	lb ai/a	PRE					
8	Field Trip						24.0 a	6.0 ab	0.0 a	0.0 c	6.3 a	28.0 a
	Command.....clomazone	3	ME	0.49	lb ai/a	PRE					
	Curbit.....ethalfluralin	3	E	0.56	lb ai/a	PRE					
LSD P=.05							4.62	2.87	0.91	0.95 - 1.29	2.71	6.71
Standard Deviation							2.64	1.64	0.52	0.14t	1.55	3.83
CV							24.52	35.43	207.02	72.65t	119.91	23.96
Replicate F							1.350	5.169	0.467	2.804	1.893	4.159
Replicate Prob(F)							0.2911	0.0208	0.6365	0.0946	0.1872	0.0382
Treatment F							28.514	4.805	1.333	5.973	7.640	15.047
Treatment Prob(F)							0.0001	0.0061	0.3056	0.0023	0.0007	0.0001

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Crop Code							CUUPM
Crop Name							pumpkin
Rating Type							total
Rating Unit							#/25'row
Rating Date							08/25/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	
1	Apollo						18.3 b
	Command.....clomazone	3	ME	0	lb ai/a	PRE	
	Curbit.....ethalfluralin	3	E	0.56	lb ai/a	PRE	
2	Apollo						17.7 b
	Command.....clomazone	3	ME	0.49	lb ai/a	PRE	
	Curbit.....ethalfluralin	3	E	0.56	lb ai/a	PRE	
3	Gladiator						15.7 b
	Command.....clomazone	3	ME	0	lb ai/a	PRE	
	Curbit.....ethalfluralin	3	E	0.56	lb ai/a	PRE	
4	Gladiator						15.3 b
	Command.....clomazone	3	ME	0.49	lb ai/a	PRE	
	Curbit.....ethalfluralin	3	E	0.56	lb ai/a	PRE	
5	Howden Biggie						5.7 c
	Command.....clomazone	3	ME	0	lb ai/a	PRE	
	Curbit.....ethalfluralin	3	E	0.56	lb ai/a	PRE	
6	Howden Biggie						5.7 c
	Command.....clomazone	3	ME	0.49	lb ai/a	PRE	
	Curbit.....ethalfluralin	3	E	0.56	lb ai/a	PRE	
7	Field Trip						32.0 a
	Command.....clomazone	3	ME	0	lb ai/a	PRE	
	Curbit.....ethalfluralin	3	E	0.56	lb ai/a	PRE	
8	Field Trip						34.3 a
	Command.....clomazone	3	ME	0.49	lb ai/a	PRE	
	Curbit.....ethalfluralin	3	E	0.56	lb ai/a	PRE	
LSD P=.05							5.47
Standard Deviation							3.12
CV							17.27
Replicate F							3.387
Replicate Prob(F)							0.0631
Treatment F							34.253
Treatment Prob(F)							0.0001

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Pumpkin Sensitivity to Clomazone

Trial ID: Pmkn2-15 Location: Field #14 Trial Year:
Protocol ID: Pmkn2-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact: FMC

Crop Code Crop Name Rating Type Rating Unit Rating Date					CUUPM pumpkin StandCt #/25' 06/17/15	CUUPM pumpkin Injury % 06/19/15	CUUPM pumpkin Injury % 06/25/15	CUUPM pumpkin Stunting % 07/06/15	CUUPM pumpkin Stunting % 07/14/15	CUUPM pumpkin small #/25'row 08/25/15
Trt Treatment No. Name	Form Form Conc Type	Rate Rate Unit	Growth Stage							
TABLE OF R MEANS Replicate 1					19.5	0.0	0.0	0.0	0.0	2.8
Replicate 2					19.8	0.0	0.0	0.0	0.0	1.8
Replicate 3					16.5	0.0	1.3	1.9	1.0	1.6
TABLE OF A (Variety) MEANS 1 Apollo					16.7 b	0.0 a	0.0 a	0.0 a	0.0 a	2.7 ab
2 Gladiator					20.0 b	0.0 a	0.0 a	0.0 a	0.0 a	1.9 b
3 Howden Biggie					7.8 c	0.0 a	1.7 a	2.5 a	1.3 a	0.4 c
4 Field Trip					29.8 a	0.0 a	0.0 a	0.0 a	0.0 a	4.5 a
LSD P=.05 Standard Deviation CV					5.26 4.25 22.88	. 0.00 0.00	2.53 2.04 489.90	3.79 3.06 489.90	2.02 1.63 489.90	1.07 - 2.33 0.20t 40.35t
TABLE OF B (Herbicide) MEANS 1 Command.....clomazone 1 Curbit.....ethalfluralin	3 ME 3 E	0 lb ai/a PRE 0.56 lb ai/a PRE			18.3 a	0.0 a	0.0 a	0.0 a	0.0 a	2.3 a
2 Command.....clomazone 2 Curbit.....ethalfluralin	3 ME 3 E	0.49 lb ai/a PRE 0.56 lb ai/a PRE			18.8 a	0.0 a	0.8 a	1.3 a	0.7 a	1.8 a
LSD P=.05 Standard Deviation CV					3.72 4.25 22.88	. 0.00 0.00	1.79 2.04 489.90	2.68 3.06 489.90	1.43 1.63 489.90	1.07 - 1.36 0.20t 40.35t
TABLE OF A (Variety) B (Herbicide) MEANS 1 Apollo 1 Command.....clomazone 1 Curbit.....ethalfluralin	3 ME 3 E	0 lb ai/a PRE 0.56 lb ai/a PRE			14.3 a	0.0 a	0.0 a	0.0 a	0.0 a	2.9 a
2 Gladiator 1 Command.....clomazone 1 Curbit.....ethalfluralin	3 ME 3 E	0 lb ai/a PRE 0.56 lb ai/a PRE			20.3 a	0.0 a	0.0 a	0.0 a	0.0 a	3.2 a
3 Howden Biggie 1 Command.....clomazone 1 Curbit.....ethalfluralin	3 ME 3 E	0 lb ai/a PRE 0.56 lb ai/a PRE			8.0 a	0.0 a	0.0 a	0.0 a	0.0 a	0.4 a
4 Field Trip 1 Command.....clomazone 1 Curbit.....ethalfluralin	3 ME 3 E	0 lb ai/a PRE 0.56 lb ai/a PRE			30.7 a	0.0 a	0.0 a	0.0 a	0.0 a	4.0 a
1 Apollo 2 Command.....clomazone 2 Curbit.....ethalfluralin	3 ME 3 E	0.49 lb ai/a PRE 0.56 lb ai/a PRE			19.0 a	0.0 a	0.0 a	0.0 a	0.0 a	2.6 a
2 Gladiator 2 Command.....clomazone 2 Curbit.....ethalfluralin	3 ME 3 E	0.49 lb ai/a PRE 0.56 lb ai/a PRE			19.7 a	0.0 a	0.0 a	0.0 a	0.0 a	1.1 a

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.
t=Mean descriptions are reported in transformed data units, and are not de-transformed.

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Crop Code Crop Name Rating Type Rating Unit Rating Date						CUUPM pumpkin StandCt #/25' 06/17/15	CUUPM pumpkin Injury % 06/19/15	CUUPM pumpkin Injury % 06/25/15	CUUPM pumpkin Stunting % 07/06/15	CUUPM pumpkin Stunting % 07/14/15	CUUPM pumpkin small #/25'row 08/25/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage					
3	Howden Biggie						7.7 a	0.0 a	3.3 a	5.0 a	2.7 a	0.4 a
2	Command.....clomazone	3	ME	0.49	lb ai/a	PRE						
2	Curbit.....ethalfluralin	3	E	0.56	lb ai/a	PRE						
4	Field Trip						29.0 a	0.0 a	0.0 a	0.0 a	0.0 a	4.9 a
2	Command.....clomazone	3	ME	0.49	lb ai/a	PRE						
2	Curbit.....ethalfluralin	3	E	0.56	lb ai/a	PRE						
LSD P=.05							7.44	.	3.57	5.36	2.86	1.73 - 3.24
Standard Deviation							4.25	0.00	2.04	3.06	1.63	0.20t
CV							22.88	0.00	489.90	489.90	489.90	40.35t

Crop Code Crop Name Rating Type Rating Unit Rating Date					CUUPM pumpkin med #/25'row 08/25/15	CUUPM pumpkin large #/25'row 08/25/15	CUUPM pumpkin xLg #/25'row 08/25/15	CUUPM pumpkin green #/25'row 08/25/15	CUUPM pumpkin yellow #/25'row 08/25/15	CUUPM pumpkin orange #/25'row 08/25/15
Trt Treatment No. Name	Form Form Conc Type	Rate Rate Unit	Growth Stage							
TABLE OF R MEANS Replicate 1					9.5	3.4	0.1	0.8	2.0	12.9
Replicate 2					11.4	6.0	0.3	0.3	1.4	18.1
Replicate 3					11.4	4.5	0.4	0.7	0.5	17.0
TABLE OF A (Variety) MEANS 1 Apollo					8.3 b	6.5 a	0.3 a	1.4 a	0.0 b	16.3 b
2 Gladiator					9.8 b	3.2 b	0.0 a	1.2 a	0.0 b	14.2 b
3 Howden Biggie					2.0 c	2.3 b	0.7 a	0.1 b	0.0 b	5.5 c
4 Field Trip					22.8 a	6.5 a	0.0 a	0.0 b	5.2 a	28.0 a
LSD P=.05					3.26	2.03	0.64	0.55 - 0.79	1.92	4.75
Standard Deviation					2.64	1.64	0.52	0.14t	1.55	3.83
CV					24.52	35.43	207.02	72.65t	119.91	23.96
TABLE OF B (Herbicide) MEANS 1 Command.....clomazone 1 Curbit.....ethalfluralin	3 ME 3 E	0 lb ai/a 0.56 lb ai/a	PRE PRE		10.2 a	4.8 a	0.3 a	0.8 a	1.0 a	15.8 a
2 Command.....clomazone 2 Curbit.....ethalfluralin	3 ME 3 E	0.49 lb ai/a 0.56 lb ai/a	PRE PRE		11.3 a	4.5 a	0.2 a	0.4 a	1.6 a	16.2 a
LSD P=.05					2.31	1.43	0.45	0.43 - 0.45	1.36	3.36
Standard Deviation					2.64	1.64	0.52	0.14t	1.55	3.83
CV					24.52	35.43	207.02	72.65t	119.91	23.96
TABLE OF A (Variety) B (Herbicide) MEANS 1 Apollo 1 Command.....clomazone 1 Curbit.....ethalfluralin	3 ME 3 E	0 lb ai/a 0.56 lb ai/a	PRE PRE		8.0 a	6.7 a	0.7 a	1.5 a	0.0 a	16.3 a
2 Gladiator 1 Command.....clomazone 1 Curbit.....ethalfluralin	3 ME 3 E	0 lb ai/a 0.56 lb ai/a	PRE PRE		9.3 a	2.7 a	0.0 a	2.0 a	0.0 a	13.7 a
3 Howden Biggie 1 Command.....clomazone 1 Curbit.....ethalfluralin	3 ME 3 E	0 lb ai/a 0.56 lb ai/a	PRE PRE		1.7 a	2.7 a	0.7 a	0.3 a	0.0 a	5.3 a
4 Field Trip 1 Command.....clomazone 1 Curbit.....ethalfluralin	3 ME 3 E	0 lb ai/a 0.56 lb ai/a	PRE PRE		21.7 a	7.0 a	0.0 a	0.0 a	4.0 a	28.0 a
1 Apollo 2 Command.....clomazone 2 Curbit.....ethalfluralin	3 ME 3 E	0.49 lb ai/a 0.56 lb ai/a	PRE PRE		8.7 a	6.3 a	0.0 a	1.3 a	0.0 a	16.3 a
2 Gladiator 2 Command.....clomazone 2 Curbit.....ethalfluralin	3 ME 3 E	0.49 lb ai/a 0.56 lb ai/a	PRE PRE		10.3 a	3.7 a	0.0 a	0.6 a	0.0 a	14.7 a

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Crop Code Crop Name Rating Type Rating Unit Rating Date						CUUPM pumpkin med #/25'row 08/25/15	CUUPM pumpkin large #/25'row 08/25/15	CUUPM pumpkin xLg #/25'row 08/25/15	CUUPM pumpkin green #/25'row 08/25/15	CUUPM pumpkin yellow #/25'row 08/25/15	CUUPM pumpkin orange #/25'row 08/25/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage					
3	Howden Biggie						2.3 a	2.0 a	0.7 a	0.0 a	0.0 a	5.7 a
2	Command.....clomazone	3	ME	0.49	lb ai/a	PRE					
2	Curbit.....ethalfluralin	3	E	0.56	lb ai/a	PRE					
4	Field Trip						24.0 a	6.0 a	0.0 a	0.0 a	6.3 a	28.0 a
2	Command.....clomazone	3	ME	0.49	lb ai/a	PRE					
2	Curbit.....ethalfluralin	3	E	0.56	lb ai/a	PRE					
LSD P=.05							4.62	2.87	0.91	0.95 - 1.29	2.71	6.71
Standard Deviation							2.64	1.64	0.52	0.14t	1.55	3.83
CV							24.52	35.43	207.02	72.65t	119.91	23.96

Crop Code					CUUPM
Crop Name					pumpkin
Rating Type					total
Rating Unit					#/25'row
Rating Date					08/25/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate Rate	Rate Unit	Growth Stage	
TABLE OF R MEANS							
Replicate 1							15.9
Replicate 2							19.9
Replicate 3							18.5
TABLE OF A (Variety) MEANS							
1	Apollo						18.0 b
2	Gladiator						15.5 b
3	Howden Biggie						5.7 c
4	Field Trip						33.2 a
LSD P=.05							3.87
Standard Deviation							3.12
CV							17.27
TABLE OF B (Herbicide) MEANS							
1	Command.....clomazone	3	ME	0	lb ai/a	PRE	17.9 a
1	Curbit.....ethalfluralin	3	E	0.56	lb ai/a	PRE	
2	Command.....clomazone	3	ME	0.49	lb ai/a	PRE	18.3 a
2	Curbit.....ethalfluralin	3	E	0.56	lb ai/a	PRE	
LSD P=.05							2.73
Standard Deviation							3.12
CV							17.27
TABLE OF A (Variety) B (Herbicide) MEANS							
1	Apollo						18.3 a
1	Command.....clomazone	3	ME	0	lb ai/a	PRE	
1	Curbit.....ethalfluralin	3	E	0.56	lb ai/a	PRE	
2	Gladiator						15.7 a
1	Command.....clomazone	3	ME	0	lb ai/a	PRE	
1	Curbit.....ethalfluralin	3	E	0.56	lb ai/a	PRE	
3	Howden Biggie						5.7 a
1	Command.....clomazone	3	ME	0	lb ai/a	PRE	
1	Curbit.....ethalfluralin	3	E	0.56	lb ai/a	PRE	
4	Field Trip						32.0 a
1	Command.....clomazone	3	ME	0	lb ai/a	PRE	
1	Curbit.....ethalfluralin	3	E	0.56	lb ai/a	PRE	
1	Apollo						17.7 a
2	Command.....clomazone	3	ME	0.49	lb ai/a	PRE	
2	Curbit.....ethalfluralin	3	E	0.56	lb ai/a	PRE	
2	Gladiator						15.3 a
2	Command.....clomazone	3	ME	0.49	lb ai/a	PRE	
2	Curbit.....ethalfluralin	3	E	0.56	lb ai/a	PRE	

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Crop Code	CUUPM
Crop Name	pumpkin
Rating Type	total
Rating Unit	#/25'row
Rating Date	08/25/15

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	
3	Howden Biggie						5.7 a
2	Command.....clomazone	3	ME	0.49	lb ai/a	PRE	
2	Curbit.....ethalfluralin	3	E	0.56	lb ai/a	PRE	
4	Field Trip						34.3 a
2	Command.....clomazone	3	ME	0.49	lb ai/a	PRE	
2	Curbit.....ethalfluralin	3	E	0.56	lb ai/a	PRE	

LSD P=.05	5.47
Standard Deviation	3.12
CV	17.27

FACTORIAL/POOLED ERROR AOV For CUUPM pumpkin StandCt #/25' 06/17/15

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	23	1829.833333				
R	2	52.333333	26.166667	1.448	0.2682	
A	3	1486.833333	495.611111	27.425	0.0001	5.3
B	1	1.500000	1.500000	0.083	0.7775	3.7
AB	3	36.166667	12.055556	0.667	0.5861	7.4
ERROR	14	253.000000	18.071429			

FACTORIAL/POOLED ERROR AOV For CUUPM pumpkin Injury % 06/19/15

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	23	0.000000				
R	2	0.000000	0.000000	0.000	1.0000	
A	3	0.000000	0.000000	0.000	1.0000	.
B	1	0.000000	0.000000	0.000	1.0000	.
AB	3	0.000000	0.000000	0.000	1.0000	.
ERROR	14	0.000000	0.000000			

FACTORIAL/POOLED ERROR AOV For CUUPM pumpkin Injury % 06/25/15

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	23	95.833333				
R	2	8.333333	4.166667	1.000	0.3927	
A	3	12.500000	4.166667	1.000	0.4217	2.5
B	1	4.166667	4.166667	1.000	0.3343	1.8
AB	3	12.500000	4.166667	1.000	0.4217	3.6
ERROR	14	58.333333	4.166667			

FACTORIAL/POOLED ERROR AOV For CUUPM pumpkin Stunting % 07/06/15

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	23	215.625000				
R	2	18.750000	9.375000	1.000	0.3927	
A	3	28.125000	9.375000	1.000	0.4217	3.8
B	1	9.375000	9.375000	1.000	0.3343	2.7
AB	3	28.125000	9.375000	1.000	0.4217	5.4
ERROR	14	131.250000	9.375000			

FACTORIAL/POOLED ERROR AOV For CUUPM pumpkin Stunting % 07/14/15

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	23	61.333333				
R	2	5.333333	2.666667	1.000	0.3927	
A	3	8.000000	2.666667	1.000	0.4217	2.0
B	1	2.666667	2.666667	1.000	0.3343	1.4
AB	3	8.000000	2.666667	1.000	0.4217	2.9
ERROR	14	37.333333	2.666667			

FACTORIAL/POOLED ERROR AOV For CUUPM pumpkin small #/25'row 08/25/15

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	23	1.855470				
R	2	0.110544	0.055272	1.449	0.2679	
A	3	1.063971	0.354657	9.299	0.0012	1.1 - 2.3
B	1	0.026848	0.026848	0.704	0.4156	1.1 - 1.4
AB	3	0.120143	0.040048	1.050	0.4013	1.7 - 3.2
ERROR	14	0.533964	0.038140			

FACTORIAL/POOLED ERROR AOV For CUUPM pumpkin med #/25'row 08/25/15

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	23	1502.500000				
R	2	18.750000	9.375000	1.350	0.2911	
A	3	1375.500000	458.500000	66.005	0.0001	3.3
B	1	8.166667	8.166667	1.176	0.2966	2.3
AB	3	2.833333	0.944444	0.136	0.9369	4.6
ERROR	14	97.250000	6.946429			

FACTORIAL/POOLED ERROR AOV For CUUPM pumpkin large #/25'row 08/25/15

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	23	155.625000				
R	2	27.750000	13.875000	5.169	0.0208	
A	3	86.458333	28.819444	10.735	0.0006	2.0
B	1	0.375000	0.375000	0.140	0.7142	1.4
AB	3	3.458333	1.152778	0.429	0.7351	2.9
ERROR	14	37.583333	2.684524			

FACTORIAL/POOLED ERROR AOV For CUUPM pumpkin xLg #/25'row 08/25/15

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	23	6.500000				
R	2	0.250000	0.125000	0.467	0.6365	
A	3	1.833333	0.611111	2.281	0.1239	0.6
B	1	0.166667	0.166667	0.622	0.4434	0.5
AB	3	0.500000	0.166667	0.622	0.6122	0.9
ERROR	14	3.750000	0.267857			

FACTORIAL/POOLED ERROR AOV For CUUPM pumpkin green #/25'row 08/25/15

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	23	1.200141				
R	2	0.109589	0.054795	2.804	0.0946	
A	3	0.684663	0.228221	11.680	0.0004	0.5 - 0.8
B	1	0.065655	0.065655	3.360	0.0881	0.4 - 0.4
AB	3	0.066674	0.022225	1.137	0.3680	1.0 - 1.3
ERROR	14	0.273559	0.019540			

FACTORIAL/POOLED ERROR AOV For CUUPM pumpkin yellow #/25'row 08/25/15

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	23	170.958333				
R	2	9.083333	4.541667	1.893	0.1872	
A	3	120.125000	40.041667	16.692	0.0001	1.9
B	1	2.041667	2.041667	0.851	0.3719	1.4
AB	3	6.125000	2.041667	0.851	0.4889	2.7
ERROR	14	33.583333	2.398810			

FACTORIAL/POOLED ERROR AOV For CUUPM pumpkin orange #/25'row 08/25/15

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	23	1876.000000				
R	2	122.250000	61.125000	4.159	0.0382	
A	3	1546.333333	515.444444	35.073	0.0001	4.7
B	1	0.666667	0.666667	0.045	0.8344	3.4
AB	3	1.000000	0.333333	0.023	0.9952	6.7
ERROR	14	205.750000	14.696429			

FACTORIAL/POOLED ERROR AOV For CUUPM pumpkin total #/25'row 08/25/15

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	23	2541.833333				
R	2	66.083333	33.041667	3.387	0.0631	
A	3	2330.166667	776.722222	79.615	0.0001	3.9
B	1	0.666667	0.666667	0.068	0.7976	2.7
AB	3	8.333333	2.777778	0.285	0.8356	5.5
ERROR	14	136.583333	9.755952			

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Pumpkin Variety Response to Recommended Rate of Reflex

Trial ID: Pumpk3-15 Location: Field 25 Trial Year: 2015
Protocol ID: Pumpk3-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Investigator: Mark VanGessel Title: Extension Weed Specialist
Organization: University of Delaware
Address: 16483 County Seat Hwy
City+State/Prov: Georgetown, Delaware
Postal Code: 19947 E-mail: mjv@udel.edu
Country: USA United States

Crop Description

Crop 1: CUUSS Cucurbita sp. Pumpkin
Variety: See treatments BBCH Scale: BVVT
Planting Date: 07/09/15
Planting Rate, Unit: 1 18 in Planting Method: SEEDHA seeded by hand
Depth, Unit: 1 in
Row Spacing, Unit: 6 ft Emergence Date: 07/14/15
Soil Temperature, Unit: 89 F
Soil Moisture: NORMAL normal, adequate
Seed Bed: MEDIUM medium

Site and Design

Treated Plot Width: 6 FT Site Type: FIELD field
Treated Plot Length: 30 FT
Treated Plot Area: 180 FT2 Treatments: 14 Tillage Type: CONTIL conventional-till
Replications: 3 Study Design: FACTOR Factorial

Soil Description

% Sand: 72 % OM: 1.3 Texture: SL sandy loam
% Silt: 17 pH: 5.7
% Clay: 11 CEC: 4.7 Fert. Level: E excellent
Soil Drainage: G good

Moisture and Weather Conditions

Overall Moisture Conditions: NORMAL normal
Closest Weather Station: UDREC Distance, Unit: 0.05 mi

Application Description

	A
Application Date:	07/09/15
Appl. Stop Time:	09:30 AM
Application Method:	SPRAY
Application Timing:	PRE
Application Placement:	BROADC
Applied By:	VanGessl
Air Temperature, Unit:	81 F
% Relative Humidity:	74
Wind Velocity, Unit:	4 mph
Wind Direction:	NW
Dew Presence (Y/N):	N no
Soil Temperature, Unit:	80 F
Soil Moisture:	NORMAL
% Cloud Cover:	50

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Crop Stage At Each Application

	A
Crop 1 Code, BBCH Scale:	CUUSS BVVT

Application Equipment

	A
Appl. Equipment:	Backpack
Equipment Type:	SPRBAC
Operation Pressure, Unit:	31 psi
Nozzle Type:	AIRMIX
Nozzle Size:	11002
Nozzle Spacing, Unit:	18 in
Boom Length, Unit:	9 ft
Boom Height, Unit:	18 in
Ground Speed, Unit:	3 mph
Carrier:	WATER
Spray Volume, Unit:	20 gal/ac
Mix Size, Unit:	2 Liters
Propellant:	COMCO2

Trial Comments

Varieties planted: apollo, field trip, gladiator, howden biggie, sugar pie, jack b little, jackO lantern

7/24/15: 2x rates stunting:	Apollo	Field	Glad	Howd	Sugar	JackB	JackO
reps1,2	30	50	25	60	50	70	60
rep 3	40	20	45	60	25	100	70

Sugar pie has missing plants in all plots - sensitivity to curbit? All varieties 2x rates have greater # of missing plants.

7/30/15: 2x rates stunting:							
reps 1,2	50	55	25	55	65	65	48
rep 3	100	38	45	45	25	100	65

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Pumpkin Variety Response to Recommended Rate of Reflex

Trial ID: Pumpk3-15 Location: Field 25 Trial Year: 2015
Protocol ID: Pumpk3-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Pest Code Pest Name									
Crop Code Crop Name Rating Type				CUUSS Pumpkin StandCts	CUUSS Pumpkin StandCts	CUUSS Pumpkin Stunting	CUUSS Pumpkin MisngPlt	CUUSS Pumpkin Stunting	CUUSS Pumpkin BiomRed	CUUSS Pumpkin Stunting
Rating Unit				#/25 ft	#/25 ft	%	%	%	%	%
Rating Date				07/14/15	07/21/15	07/20/15	07/24/15	07/29/15	08/04/15	08/10/15
Trt No.	Treatment Name	Form Conc	Form Type	Growth Stage						
1	Apollo Curbit.....ethalfluralin	3	E	PRE	19.7 a	19.7 a	0.0 c	0.0 e	0.0 d	0.0 d	0.0 e
2	Apollo Curbit.....ethalfluralin Reflex.....fomesafen	3 2	E L	PRE PRE	17.3 a	17.3 ab	13.3 b	17.3 cd	30.0 c	20.0 c	16.7 c
3	Field Trip Curbit.....ethalfluralin	3	E	PRE	9.7 de	9.7 d	0.0 c	0.0 e	0.0 d	0.0 d	0.0 e
4	Field Trip Curbit.....ethalfluralin Reflex.....fomesafen	3 2	E L	PRE PRE	10.0 de	10.0 d	11.7 b	14.3 cd	23.3 c	22.3 bc	16.0 cd
5	Gladiator Curbit.....ethalfluralin	3	E	PRE	19.7 a	19.7 a	0.0 c	0.0 e	0.0 d	0.0 d	0.0 e
6	Gladiator Curbit.....ethalfluralin Reflex.....fomesafen	3 2	E L	PRE PRE	18.7 a	18.7 a	10.7 b	15.7 cd	22.7 c	24.3 bc	16.7 c
7	Howden Biggie Curbit.....ethalfluralin	3	E	PRE	12.3 bcd	19.7 a	0.0 c	0.0 e	0.0 d	0.0 d	0.0 e
8	Howden Biggie Curbit.....ethalfluralin Reflex.....fomesafen	3 2	E L	PRE PRE	12.0 bcd	13.3 c	14.0 b	22.0 c	31.7 c	32.3 b	23.0 bc
9	Sugar Pie Curbit.....ethalfluralin	3	E	PRE	14.0 b	14.7 bc	0.0 c	0.0 e	0.0 d	0.0 d	0.0 e
10	Sugar Pie Curbit.....ethalfluralin Reflex.....fomesafen	3 2	E L	PRE PRE	13.7 bc	14.0 c	7.3 b	14.0 d	32.3 bc	25.3 bc	4.0 de
11	Jack B Little Curbit.....ethalfluralin	3	E	PRE	12.3 bcd	15.0 bc	0.0 c	0.0 e	0.0 d	0.0 d	0.0 e
12	Jack B Little Curbit.....ethalfluralin Reflex.....fomesafen	3 2	E L	PRE PRE	7.7 ef	8.3 d	24.3 a	56.0 a	46.7 a	66.7 a	53.3 a
13	Jack O Lantern Curbit.....ethalfluralin	3	E	PRE	11.0 cd	15.7 bc	0.0 c	0.0 e	0.0 d	0.0 d	0.0 e

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.
Could not calculate LSD (% mean diff) for columns 6,8 because error mean square = 0.

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Pest Code									
Pest Name									
Crop Code			CUUSS	CUUSS	CUUSS	CUUSS	CUUSS	CUUSS	CUUSS
Crop Name			Pumpkin	Pumpkin	Pumpkin	Pumpkin	Pumpkin	Pumpkin	Pumpkin
Rating Type			StandCts	StandCts	Stunting	MisngPlt	Stunting	BiomRed	Stunting
Rating Unit			#/25 ft	#/25 ft	%	%	%	%	%
Rating Date			07/14/15	07/21/15	07/20/15	07/24/15	07/29/15	08/04/15	08/10/15
Trt No.	Treatment Name	Form Conc	Form Type	Growth Stage					
14	Jack O Lantern				6.0 f	8.0 d	22.3 a	46.7 b	42.7 ab	65.0 a	31.7 b
	Curbit.....ethalfluralin	3	E	PRE							
	Reflex.....fomesafen	2	L	PRE							
LSD P=.05					2.98	2.88	7.32	7.83	10.66	10.98	12.63
Standard Deviation					1.77	1.71	4.36	4.67	6.35	6.54	7.52
CV					13.5	11.78	58.9	35.13	38.76	35.77	65.29
Replicate F					3.834	4.485	0.407	2.895	1.088	4.829	4.530
Replicate Prob(F)					0.0347	0.0212	0.6699	0.0733	0.3516	0.0165	0.0205
Treatment F					17.913	18.281	12.141	45.265	24.315	38.661	13.635
Treatment Prob(F)					0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001

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Pest Code Pest Name Crop Code Crop Name Rating Type Rating Unit Rating Date				AMASS Amaranth Control % 08/03/15	GASCI H.glnsga Control % 08/03/15	POROL C.prsln Control % 08/03/15
Trt No.	Treatment Name	Form Conc	Form Type	Growth Stage		
1	Apollo Curbit.....ethalfluralin	3	E	PRE	0.0 b	0.0 c	0.0 b
2	Apollo Curbit.....ethalfluralin Reflex.....fomesafen	3 2	E L	PRE PRE	100.0 a	100.0 a	100.0 a
3	Field Trip Curbit.....ethalfluralin	3	E	PRE	0.0 b	0.0 c	0.0 b
4	Field Trip Curbit.....ethalfluralin Reflex.....fomesafen	3 2	E L	PRE PRE	100.0 a	100.0 a	100.0 a
5	Gladiator Curbit.....ethalfluralin	3	E	PRE	0.0 b	0.0 c	0.0 b
6	Gladiator Curbit.....ethalfluralin Reflex.....fomesafen	3 2	E L	PRE PRE	100.0 a	100.0 a	100.0 a
7	Howden Biggie Curbit.....ethalfluralin	3	E	PRE	0.0 b	0.0 c	0.0 b
8	Howden Biggie Curbit.....ethalfluralin Reflex.....fomesafen	3 2	E L	PRE PRE	100.0 a	100.0 a	100.0 a
9	Sugar Pie Curbit.....ethalfluralin	3	E	PRE	0.0 b	0.0 c	0.0 b
10	Sugar Pie Curbit.....ethalfluralin Reflex.....fomesafen	3 2	E L	PRE PRE	100.0 a	100.0 a	100.0 a
11	Jack B Little Curbit.....ethalfluralin	3	E	PRE	0.0 b	0.0 c	0.0 b
12	Jack B Little Curbit.....ethalfluralin Reflex.....fomesafen	3 2	E L	PRE PRE	100.0 a	100.0 a	100.0 a
13	Jack O Lantern Curbit.....ethalfluralin	3	E	PRE	0.0 b	0.0 c	0.0 b

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Pest Code				AMASS	GASCI	POROL
Pest Name				Amaranth	H.glnsga	C.prsln
Crop Code						
Crop Name						
Rating Type				Control	Control	Control
Rating Unit				%	%	%
Rating Date				08/03/15	08/03/15	08/03/15
Trt No.	Treatment Name	Form Conc	Form Type	Growth Stage		
14	Jack O Lantern				100.0 a	99.3 b	100.0 a
	Curbit.....ethalfluralin	3	E	PRE			
	Reflex.....fomesafen	2	L	PRE			
LSD P=.05					.	0.52	.
Standard Deviation					0.00	0.31	0.00
CV					0.0	0.62	0.0
Replicate F					0.000	1.000	0.000
Replicate Prob(F)					1.0000	0.3816	1.0000
Treatment F					0.000	84647.162	0.000
Treatment Prob(F)					1.0000	0.0001	1.0000

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Pumpkin Variety Response to Recommended Rate of Reflex

Trial ID: Pumpk3-15 Location: Field 25 Trial Year: 2015
Protocol ID: Pumpk3-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Pest Code Pest Name Crop Code Crop Name Rating Type Rating Unit Rating Date				CUUSS Pumpkin StandCts #/25 ft 07/14/15	CUUSS Pumpkin StandCts #/25 ft 07/21/15	CUUSS Pumpkin Stunting % 07/20/15	CUUSS Pumpkin MisngPlt % 07/24/15	CUUSS Pumpkin Stunting % 07/29/15	CUUSS Pumpkin BiomRed % 08/04/15
Trt Treatment No. Name	Form Form Growth Conc Type Stage								
TABLE OF R MEANS Replicate 1				14.1	15.6	6.6	11.8	14.4	15.9
Replicate 2				13.1	14.4	7.6	12.4	17.1	16.3
Replicate 3				12.2	13.6	8.0	15.7	17.6	22.7
TABLE OF A (pumpkin variety) MEANS 1 Apollo				18.5 a	18.5 ab	6.7 bc	8.7 b	15.0 bc	10.0 b
2 Field Trip				9.8 c	9.8 d	5.8 c	7.2 b	11.7 c	11.2 b
3 Gladiator				19.2 a	19.2 a	5.3 c	7.8 b	11.3 c	12.2 b
4 Howden Biggie				12.2 b	16.5 b	7.0 abc	11.0 b	15.8 abc	16.2 b
5 Sugar Pie				13.8 b	14.3 c	3.7 c	7.0 b	16.2 abc	12.7 b
6 Jack B Little				10.0 c	11.7 d	12.2 a	28.0 a	23.3 a	33.3 a
7 Jack O Lantern				8.5 c	11.8 d	11.2 ab	23.3 a	21.3 ab	32.5 a
LSD P=.05 Standard Deviation CV				2.11 1.77 13.50	2.03 1.71 11.78	5.18 4.36 58.90	5.54 4.67 35.13	7.54 6.35 38.76	7.76 6.54 35.77
TABLE OF B (treatment) MEANS 1 Curbit.....ethalfluralin	3 E	PRE		14.1 a	16.3 a	0.0 b	0.0 b	0.0 b	0.0 b
2 Curbit.....ethalfluralin 2 Reflex.....fomesafen	3 E 2 L	PRE PRE		12.2 b	12.8 b	14.8 a	26.6 a	32.8 a	36.6 a
LSD P=.05 Standard Deviation CV				1.13 1.77 13.50	1.09 1.71 11.78	2.77 4.36 58.90	2.96 4.67 35.13	4.03 6.35 38.76	4.15 6.54 35.77
TABLE OF A (pumpkin variety) B (treatment) MEANS 1 Apollo 1 Curbit.....ethalfluralin	3 E	PRE		19.7 a	19.7 a	0.0 c	0.0 e	0.0 d	0.0 d
2 Field Trip 1 Curbit.....ethalfluralin	3 E	PRE		9.7 a	9.7 d	0.0 c	0.0 e	0.0 d	0.0 d
3 Gladiator 1 Curbit.....ethalfluralin	3 E	PRE		19.7 a	19.7 a	0.0 c	0.0 e	0.0 d	0.0 d
4 Howden Biggie 1 Curbit.....ethalfluralin	3 E	PRE		12.3 a	19.7 a	0.0 c	0.0 e	0.0 d	0.0 d
5 Sugar Pie 1 Curbit.....ethalfluralin	3 E	PRE		14.0 a	14.7 bc	0.0 c	0.0 e	0.0 d	0.0 d
6 Jack B Little 1 Curbit.....ethalfluralin	3 E	PRE		12.3 a	15.0 bc	0.0 c	0.0 e	0.0 d	0.0 d
7 Jack O Lantern 1 Curbit.....ethalfluralin	3 E	PRE		11.0 a	15.7 bc	0.0 c	0.0 e	0.0 d	0.0 d

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

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Pest Code Pest Name Crop Code Crop Name Rating Type Rating Unit Rating Date				CUUSS Pumpkin StandCts #/25 ft 07/14/15	CUUSS Pumpkin StandCts #/25 ft 07/21/15	CUUSS Pumpkin Stunting % 07/20/15	CUUSS Pumpkin MisngPlt % 07/24/15	CUUSS Pumpkin Stunting % 07/29/15	CUUSS Pumpkin BiomRed % 08/04/15
Trt No.	Treatment Name	Form Conc	Form Type	Growth Stage					
1	Apollo				17.3 a	17.3 ab	13.3 b	17.3 cd	30.0 c	20.0 c
2	Curbit.....ethalfluralin	3	E	PRE						
2	Reflex.....fomesafen	2	L	PRE						
2	Field Trip				10.0 a	10.0 d	11.7 b	14.3 cd	23.3 c	22.3 bc
2	Curbit.....ethalfluralin	3	E	PRE						
2	Reflex.....fomesafen	2	L	PRE						
3	Gladiator				18.7 a	18.7 a	10.7 b	15.7 cd	22.7 c	24.3 bc
2	Curbit.....ethalfluralin	3	E	PRE						
2	Reflex.....fomesafen	2	L	PRE						
4	Howden Biggie				12.0 a	13.3 c	14.0 b	22.0 c	31.7 c	32.3 b
2	Curbit.....ethalfluralin	3	E	PRE						
2	Reflex.....fomesafen	2	L	PRE						
5	Sugar Pie				13.7 a	14.0 c	7.3 b	14.0 d	32.3 bc	25.3 bc
2	Curbit.....ethalfluralin	3	E	PRE						
2	Reflex.....fomesafen	2	L	PRE						
6	Jack B Little				7.7 a	8.3 d	24.3 a	56.0 a	46.7 a	66.7 a
2	Curbit.....ethalfluralin	3	E	PRE						
2	Reflex.....fomesafen	2	L	PRE						
7	Jack O Lantern				6.0 a	8.0 d	22.3 a	46.7 b	42.7 ab	65.0 a
2	Curbit.....ethalfluralin	3	E	PRE						
2	Reflex.....fomesafen	2	L	PRE						
LSD P=.05					2.98	2.88	7.32	7.83	10.66	10.98
Standard Deviation					1.77	1.71	4.36	4.67	6.35	6.54
CV					13.50	11.78	58.90	35.13	38.76	35.77

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Pest Code Pest Name					AMASS Amaranth	GASCI H.glnsga	POROL C.prsln
Crop Code Crop Name Rating Type Rating Unit Rating Date					CUUSS Pumpkin Stunting % 08/10/15	Control % 08/03/15	Control % 08/03/15	Control % 08/03/15
Trt Treatment No. Name	Form Form Growth Conc Type Stage						
TABLE OF R MEANS Replicate 1					8.2	50.0	49.9	50.0
Replicate 2					10.0	50.0	50.0	50.0
Replicate 3					16.4	50.0	50.0	50.0
TABLE OF A (pumpkin variety) MEANS 1 Apollo					8.3 bc	50.0 a	50.0 a	50.0 a
2 Field Trip					8.0 bc	50.0 a	50.0 a	50.0 a
3 Gladiator					8.3 bc	50.0 a	50.0 a	50.0 a
4 Howden Biggie					11.5 b	50.0 a	50.0 a	50.0 a
5 Sugar Pie					2.0 c	50.0 a	50.0 a	50.0 a
6 Jack B Little					26.7 a	50.0 a	50.0 a	50.0 a
7 Jack O Lantern					15.8 b	50.0 a	49.7 a	50.0 a
LSD P=.05 Standard Deviation CV					8.93 7.52 65.29	. 0.00 0.00	0.37 0.31 0.62	. 0.00 0.00
TABLE OF B (treatment) MEANS 1 Curbit.....ethalfluralin		3 E	PRE		0.0 b	0.0 b	0.0 b	0.0 b
2 Curbit.....ethalfluralin 2 Reflex.....fomesafen		3 E 2 L	PRE PRE		23.0 a	100.0 a	99.9 a	100.0 a
LSD P=.05 Standard Deviation CV					4.77 7.52 65.29	. 0.00 0.00	0.20 0.31 0.62	. 0.00 0.00
TABLE OF A (pumpkin variety) B (treatment) MEANS 1 Apollo 1 Curbit.....ethalfluralin		3 E	PRE		0.0 e	0.0 b	0.0 a	0.0 b
2 Field Trip 1 Curbit.....ethalfluralin		3 E	PRE		0.0 e	0.0 b	0.0 a	0.0 b
3 Gladiator 1 Curbit.....ethalfluralin		3 E	PRE		0.0 e	0.0 b	0.0 a	0.0 b
4 Howden Biggie 1 Curbit.....ethalfluralin		3 E	PRE		0.0 e	0.0 b	0.0 a	0.0 b
5 Sugar Pie 1 Curbit.....ethalfluralin		3 E	PRE		0.0 e	0.0 b	0.0 a	0.0 b
6 Jack B Little 1 Curbit.....ethalfluralin		3 E	PRE		0.0 e	0.0 b	0.0 a	0.0 b
7 Jack O Lantern 1 Curbit.....ethalfluralin		3 E	PRE		0.0 e	0.0 b	0.0 a	0.0 b

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Pest Code					AMASS	GASCI	POROL
Pest Name					Amaranth	H.glnsga	C.prsln
Crop Code				CUUSS			
Crop Name				Pumpkin			
Rating Type				Stunting	Control	Control	Control
Rating Unit				%	%	%	%
Rating Date				08/10/15	08/03/15	08/03/15	08/03/15
Trt No.	Treatment Name	Form Conc	Form Type	Growth Stage			
1	Apollo				16.7 c	100.0 a	100.0 a	100.0 a
2	Curbit.....ethalfluralin	3	E	PRE			
2	Reflex.....fomesafen	2	L	PRE			
2	Field Trip				16.0 cd	100.0 a	100.0 a	100.0 a
2	Curbit.....ethalfluralin	3	E	PRE			
2	Reflex.....fomesafen	2	L	PRE			
3	Gladiator				16.7 c	100.0 a	100.0 a	100.0 a
2	Curbit.....ethalfluralin	3	E	PRE			
2	Reflex.....fomesafen	2	L	PRE			
4	Howden Biggie				23.0 bc	100.0 a	100.0 a	100.0 a
2	Curbit.....ethalfluralin	3	E	PRE			
2	Reflex.....fomesafen	2	L	PRE			
5	Sugar Pie				4.0 de	100.0 a	100.0 a	100.0 a
2	Curbit.....ethalfluralin	3	E	PRE			
2	Reflex.....fomesafen	2	L	PRE			
6	Jack B Little				53.3 a	100.0 a	100.0 a	100.0 a
2	Curbit.....ethalfluralin	3	E	PRE			
2	Reflex.....fomesafen	2	L	PRE			
7	Jack O Lantern				31.7 b	100.0 a	99.3 a	100.0 a
2	Curbit.....ethalfluralin	3	E	PRE			
2	Reflex.....fomesafen	2	L	PRE			
LSD P=.05					12.63	.	0.52	.
Standard Deviation					7.52	0.00	0.31	0.00
CV					65.29	0.00	0.62	0.00

FACTORIAL/POOLED ERROR AOV For CUUSS Pumpkin StandCts #/25 ft 07/14/15

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	41	839.142857				
R	2	24.142857	12.071429	3.834	0.0347	
A	6	652.809524	108.801587	34.558	0.0001	2.1
B	1	38.095238	38.095238	12.100	0.0018	1.1
AB	6	42.238095	7.039683	2.236	0.0715	3.0
ERROR	26	81.857143	3.148352			

FACTORIAL/POOLED ERROR AOV For CUUSS Pumpkin StandCts #/25 ft 07/21/15

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	41	800.404762				
R	2	26.333333	13.166667	4.485	0.0212	
A	6	472.238095	78.706349	26.808	0.0001	2.0
B	1	126.880952	126.880952	43.217	0.0001	1.1
AB	6	98.619048	16.436508	5.598	0.0008	2.9
ERROR	26	76.333333	2.935897			

FACTORIAL/POOLED ERROR AOV For CUUSS Pumpkin Stunting % 07/20/15

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	41	3512.119048				
R	2	15.476190	7.738095	0.407	0.6699	
A	6	349.619048	58.269841	3.064	0.0211	5.2
B	1	2302.880952	2302.880952	121.076	0.0001	2.8
AB	6	349.619048	58.269841	3.064	0.0211	7.3
ERROR	26	494.523810	19.020147			

FACTORIAL/POOLED ERROR AOV For CUUSS Pumpkin MisngPlt % 07/24/15

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	41	13514.571429				
R	2	126.142857	63.071429	2.895	0.0733	
A	6	2704.238095	450.706349	20.685	0.0001	5.5
B	1	7413.428571	7413.428571	340.231	0.0001	3.0
AB	6	2704.238095	450.706349	20.685	0.0001	7.8
ERROR	26	566.523810	21.789377			

FACTORIAL/POOLED ERROR AOV For CUUSS Pumpkin Stunting % 07/29/15

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	41	13879.904762				
R	2	87.761905	43.880952	1.088	0.3516	
A	6	736.904762	122.817460	3.046	0.0216	7.5
B	1	11270.095238	11270.095238	279.538	0.0001	4.0
AB	6	736.904762	122.817460	3.046	0.0216	10.7
ERROR	26	1048.238095	40.316850			

FACTORIAL/POOLED ERROR AOV For CUUSS Pumpkin BiomRed % 08/04/15

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	41	23024.571429				
R	2	413.142857	206.571429	4.829	0.0165	
A	6	3727.904762	621.317460	14.525	0.0001	7.8
B	1	14043.428571	14043.428571	328.297	0.0001	4.1
AB	6	3727.904762	621.317460	14.525	0.0001	11.0
ERROR	26	1112.190476	42.776557			

FACTORIAL/POOLED ERROR AOV For CUUSS Pumpkin Stunting % 08/10/15

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	41	12018.476190				
R	2	512.904762	256.452381	4.530	0.0205	
A	6	2228.142857	371.357143	6.560	0.0003	8.9
B	1	5577.523810	5577.523810	98.532	0.0001	4.8
AB	6	2228.142857	371.357143	6.560	0.0003	12.6
ERROR	26	1471.761905	56.606227			

FACTORIAL/POOLED ERROR AOV For AMASS Amaranth Control % 08/03/15

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	41	105000.000000				
R	2	0.000000	0.000000	0.000	1.0000	
A	6	0.000000	0.000000	0.000	1.0000	.
B	1	105000.000000	105000.000000	0.000	1.0000	.
AB	6	0.000000	0.000000	0.000	1.0000	.
ERROR	26	0.000000	0.000000			

FACTORIAL/POOLED ERROR AOV For GASCI H.glnsga Control % 08/03/15

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	41	104803.904762				
R	2	0.190476	0.095238	1.000	0.3816	
A	6	0.571429	0.095238	1.000	0.4463	0.4
B	1	104800.095238	104800.095238	1100401.110	0.0001	0.2
AB	6	0.571429	0.095238	1.000	0.4463	0.5
ERROR	26	2.476190	0.095238			

FACTORIAL/POOLED ERROR AOV For POROL C.prsln Control % 08/03/15

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	41	105000.000000				
R	2	0.000000	0.000000	0.000	1.0000	
A	6	0.000000	0.000000	0.000	1.0000	.
B	1	105000.000000	105000.000000	0.000	1.0000	.
AB	6	0.000000	0.000000	0.000	1.0000	.
ERROR	26	0.000000	0.000000			

University of Delaware

Sweet Potato Tolerance and Weed Control with Linuron and Fomesafen

Trial ID: SwPot-15 Location: Field #22 Trial Year:
Protocol ID: SwPot-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact: IR-4, Syngenta

Investigator: Mark VanGessel Title: Extension Weed Specialist
Organization: University of Delaware
Address: 16483 County Seat Hwy
City+State/Prov: Georgetown, Delaware
Postal Code: 19947 E-mail: mjv@udel.edu
Country: USA United States

Crop Description

Crop 1: IPOBA Ipomoea batatas Sweet potato
Variety: Beauregard
Planting Date: 05/28/15
Planting Rate, Unit: 1 P/ROWFT Planting Method: TRANSP transplanted
Planting Equipment: HA By Hand
Row Spacing, Unit: 5 ft
Harvest Date: 09/22/15
Harvested Width, Unit: 5 ft
Soil Temperature, Unit: 85 F Harvested Length, Unit: 20 ft
Soil Moisture: NORMAL normal, adequate Harvest Equipment: Potato digger
Seed Bed: SMOOTH smooth

Site and Design

Treated Plot Width: 10 FT Site Type: FIELD field
Treated Plot Length: 25 FT
Treated Plot Area: 250 FT2 Treatments: 10 Tillage Type: CONTIL conventional-till
Replications: 3 Study Design: RACOBL Randomized Complete Block (RCB)

Soil Description

% Sand: 79 % OM: 0.7 Texture: SL sandy loam
% Silt: 12 pH: 6.2
% Clay: 9 CEC: 4.3 Fert. Level: G good
Soil Drainage: G good

Moisture and Weather Conditions

Overall Moisture Conditions: NORMAL normal
Closest Weather Station: UDREC Distance, Unit: 0.4 mi

Application Description

	A	B	C	D
Application Date:	05/26/15	05/29/15	06/10/15	06/24/15
Appl. Stop Time:	09:00 AM	02:00 PM	11:00 AM	10:30 AM
Application Method:	SPRAY	SPRAY	SPRAY	SPRAY
Application Timing:	PreTrns	PostTrns	14DATrn	75DBHar
Application Placement:	BROADC	BROADC	BROADC	BROADC
Applied By:	VanGessl	VanGessl	VanGessl	VanGessl
Air Temperature, Unit:	74 F	81 F	79 F	76 F
% Relative Humidity:	68	60	47	67
Wind Velocity, Unit:	4 mph	3 mph	1 mph	2 mph
Wind Direction:	SW	E	E	N
Dew Presence (Y/N):	Y yes	N no	N no	N no
Soil Temperature, Unit:	74 F	81 F	79 F	76 F
Soil Moisture:	NORMAL	NORMAL	NORMAL	NORMAL
% Cloud Cover:	15	20	30	25

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Crop Stage At Each Application

	A	B	C	D
Crop 1 Code, BBCH Scale:	IPOBA BVPP	IPOBA BVPP	IPOBA BVPP	IPOBA BVPP
Stage Scale Used:		DESC	DESC	DESC
Stage Majority, Percent:		6-leaf 60	veg 100	vining 100
Stage Minimum, Percent:		4-leaf 20		
Stage Maximum, Percent:		8-leaf 20		
Height, Unit:		7 in	12 in	18 in
Height Minimum, Maximum:		6 8	9 14	14 20

Application Equipment

	A	B	C	D
Appl. Equipment:	Backpack	Backpack	Backpack	Backpack
Equipment Type:	SPRBAC	SPRBAC	SPRBAC	SPRBAC
Operation Pressure, Unit:	31 psi	31 psi	31 psi	31 psi
Nozzle Type:	AIRMIX	AIRMIX	AIRMIX	AIRMIX
Nozzle Size:	11002	11002	11002	11002
Nozzle Spacing, Unit:	18 in	18 in	18 in	18 in
Boom Length, Unit:	9 ft	9 ft	9 ft	9 ft
Boom Height, Unit:	26 in	26 in	28 in	30 in
Ground Speed, Unit:	3 mph	3 mph	3 mph	3 mph
Carrier:	WATER	WATER	WATER	WATER
Spray Volume, Unit:	20 gal/ac	20 gal/ac	20 gal/ac	20 gal/ac
Mix Size, Unit:	2 Liters	2 Liters	2 Liters	2 Liters
Propellant:	COMCO2	COMCO2	COMCO2	COMCO2

Trial Comments

06/05/15: Injury was necrotic / limp leaves.

06/11/15: Injury was stunting and dead plants.

06/25/15: Last range - plots 307, 308, 309 - low spot and wetter.

09/21/15: Vines between the rows were cut with coulters spaced ~ 15 " apart on 9/17. Biomass reduction here is based on the vine cover over the mound and predominately the # of plants present/established. Plot 101 had a high yellow woodsorrel density. Some cutleaf evening primrose in plots 208 and 310 - low to moderate densities.

University of Delaware

Sweet Potato Tolerance and Weed Control with Linuron and Fomesafen

Trial ID: SwPot-15 Location: Field #22 Trial Year:
Protocol ID: SwPot-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact: IR-4, Syngenta

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code				
	Pest Code										
	Pest Name										
	Crop Code							IPOBA	IPOBA	IPOBA	IPOBA
	Crop Name							SwPotato	SwPotato	SwPotato	SwPotato
	Rating Type							Replaced	Stunting	Stunting	Stunting
	Rating Unit							#	%	%	%
	Rating Date							06/01/15	06/05/15	06/11/15	06/18/15
1	Untreated Weed-Free Check							2.7 a	0.0 b	0.0 b	0.0 e
2	Lorox.....linuron	50	DF	0.5	lb ai/a	75 DBHar	D	3.0 a	0.0 b	0.0 b	0.0 e
3	Lorox.....linuron	50	DF	1.0	lb ai/a	75 DBHar	D	5.0 a	0.0 b	0.0 b	0.0 e
4	Lorox.....linuron	50	DF	0.5	lb ai/a	14 DATrn	C	4.0 a	0.0 b	0.0 b	3.3 e
	Lorox.....linuron	50	DF	0.5	lb ai/a	75 DBHar	D				
5	Lorox.....linuron	50	DF	1.0	lb ai/a	14 DATrn	C	2.0 a	0.0 b	0.0 b	15.7 cd
	Lorox.....linuron	50	DF	1.0	lb ai/a	75 DBHar	D				
6	Lorox.....linuron	50	DF	1	lb ai/a	75 DBHar	D	4.0 a	0.0 b	0.0 b	0.0 e
	Select Max.....clethodim	1	EC	0.125	lb ai/a	75 DBHar	D				
7	Reflex.....fomesafen	2	L	0.5	lb ai/a	PreTrns	A	4.3 a	11.3 a	14.0 a	14.0 d
8	Valor SX.....flumioxazin	51	WG	0.08	lb ai/a	PreTrns	A	4.7 a	13.0 a	15.0 a	23.7 bc
	Dual Magnum.....s-metolachlor	7.62	E	0.95	lb ai/a	PostTrns	B				
9	Valor SX.....flumioxazin	51	WG	0.096	lb ai/a	PreTrns	A	5.3 a	11.7 a	18.7 a	42.7 a
	Dual Magnum.....s-metolachlor	7.62	E	1.24	lb ai/a	14DATrn	C				
	A16003	1.67	SL	0.0446	lb ai/a	75DBHar	D				
10	Valor SX.....flumioxazin	51	WG	0.096	lb ai/a	PreTrns	A	5.3 a	13.3 a	17.7 a	30.3 b
	Dual Magnum.....s-metolachlor	7.62	E	1.24	lb ai/a	14DATrn	C				
	LSD P=.05							2.47	4.10	5.62	9.42
	Standard Deviation							1.44	2.39	3.28	5.49
	CV							35.77	48.43	50.15	42.34
	Replicate F							0.448	1.513	1.773	0.678
	Replicate Prob(F)							0.6456	0.2470	0.1983	0.5201
	Treatment F							1.902	21.490	20.326	22.916
	Treatment Prob(F)							0.1174	0.0001	0.0001	0.0001

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
t=Mean descriptions are reported in transformed data units, and are not de-transformed.
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.
Missing data estimates are included in columns:Yates=7,18
Could not calculate LSD (% mean diff) for columns 13 because error mean square = 0.

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code				
	Pest Code									AMBEL	AMAPA
	Pest Name									C.ragwd	PalmerAm
	Crop Code							IPOBA	IPOBA		
	Crop Name							SwPotato	SwPotato		
	Rating Type							Necrosis	Stunting	Control	Control
	Rating Unit							%	%	%	%
	Rating Date							06/18/15	06/25/15	06/25/15	06/25/15
1	Untreated Weed-Free Check							0.0 e	0.0 e	0.0 c	0.0 d
2	Lorox.....linuron	50	DF	0.5	lb ai/a	75 DBHar	D	0.0 e	0.0 e	30.0 b	37.7 c
3	Lorox.....linuron	50	DF	1.0	lb ai/a	75 DBHar	D	0.0 e	0.0 e	25.7 b	51.7 b
4	Lorox.....linuron	50	DF	0.5	lb ai/a	14 DATrn	C	2.1 de	12.3 d	100.0 a	96.7 a
	Lorox.....linuron	50	DF	0.5	lb ai/a	75 DBHar	D				
5	Lorox.....linuron	50	DF	1.0	lb ai/a	14 DATrn	C	14.9 bc	18.3 cd	100.0 a	100.0 a
	Lorox.....linuron	50	DF	1.0	lb ai/a	75 DBHar	D				
6	Lorox.....linuron	50	DF	1	lb ai/a	75 DBHar	D	0.0 e	0.0 e		
	Select Max.....clethodim	1	EC	0.125	lb ai/a	75 DBHar	D				
7	Reflex.....fomesafen	2	L	0.5	lb ai/a	PreTrns	A	7.8 cd	12.3 d	99.3 a	100.0 a
8	Valor SX.....flumioxazin	51	WG	0.08	lb ai/a	PreTrns	A	11.6 bcd	23.0 c	100.0 a	100.0 a
	Dual Magnum.....s-metolachlor	7.62	E	0.95	lb ai/a	PostTrns	B				
9	Valor SX.....flumioxazin	51	WG	0.096	lb ai/a	PreTrns	A	44.5 a	56.7 a	99.7 a	100.0 a
	Dual Magnum.....s-metolachlor	7.62	E	1.24	lb ai/a	14DATrn	C				
	A16003	1.67	SL	0.0446	lb ai/a	75DBHar	D				
10	Valor SX.....flumioxazin	51	WG	0.096	lb ai/a	PreTrns	A	23.9 b	36.3 b	100.0 a	100.0 a
	Dual Magnum.....s-metolachlor	7.62	E	1.24	lb ai/a	14DATrn	C				
	LSD P=.05							10.15 - 19.94	9.99	6.79	10.73
	Standard Deviation							7.08t	5.83	3.88	6.20
	CV							51.19t	36.64	5.33	8.14
	Replicate F							2.774	0.860	1.532	0.269
	Replicate Prob(F)							0.0891	0.4397	0.2503	0.7678
	Treatment F							12.900	31.157	342.271	108.665
	Treatment Prob(F)							0.0001	0.0001	0.0001	0.0001

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code				
	Pest Code							IPOSS			
	Pest Name							mornglry			
	Crop Code								IPOBA	IPOBA	IPOBA
	Crop Name								SwPotato	SwPotato	SwPotato
	Rating Type							Control	Stunting	Chloros	Necrosis
	Rating Unit							%	%	%	%
	Rating Date							06/25/15	07/01/15	07/01/15	07/01/15
1	Untreated Weed-Free Check							0.0 d	0.0 f	0.0 c	0.0 c
2	Lorox.....linuron	50	DF	0.5	lb ai/a	75 DBHar	D	32.0 c	12.5 de	18.3 b	2.7 c
3	Lorox.....linuron	50	DF	1.0	lb ai/a	75 DBHar	D	38.3 c	8.0 e	20.0 b	7.3 b
4	Lorox.....linuron	50	DF	0.5	lb ai/a	14 DATrn	C	83.3 b	6.3 e	16.7 b	14.0 a
	Lorox.....linuron	50	DF	0.5	lb ai/a	75 DBHar	D				
5	Lorox.....linuron	50	DF	1.0	lb ai/a	14 DATrn	C	85.0 b	44.3 ab	16.7 b	16.7 a
	Lorox.....linuron	50	DF	1.0	lb ai/a	75 DBHar	D				
6	Lorox.....linuron	50	DF	1	lb ai/a	75 DBHar	D		17.6 cde	23.3 b	16.0 a
	Select Max.....clethodim	1	EC	0.125	lb ai/a	75 DBHar	D				
7	Reflex.....fomesafen	2	L	0.5	lb ai/a	PreTrns	A	84.3 b	10.6 de	0.0 c	0.0 c
8	Valor SX.....flumioxazin	51	WG	0.08	lb ai/a	PreTrns	A	99.3 a	27.6 bcd	0.0 c	0.0 c
	Dual Magnum.....s-metolachlor	7.62	E	0.95	lb ai/a	PostTrns	B				
9	Valor SX.....flumioxazin	51	WG	0.096	lb ai/a	PreTrns	A	100.0 a	63.6 a	48.3 a	7.3 b
	Dual Magnum.....s-metolachlor	7.62	E	1.24	lb ai/a	14DATrn	C				
	A16003	1.67	SL	0.0446	lb ai/a	75DBHar	D				
10	Valor SX.....flumioxazin	51	WG	0.096	lb ai/a	PreTrns	A	98.3 a	38.0 bc	0.0 c	1.0 c
	Dual Magnum.....s-metolachlor	7.62	E	1.24	lb ai/a	14DATrn	C				
	LSD P=.05							10.54	16.91 - 24.65	7.36	4.33
	Standard Deviation							6.09	8.32t	4.29	2.52
	CV							8.83	32.02t	29.95	38.8
	Replicate F							0.783	0.653	0.045	0.487
	Replicate Prob(F)							0.4737	0.5324	0.9559	0.6221
	Treatment F							106.279	10.232	38.312	22.169
	Treatment Prob(F)							0.0001	0.0001	0.0001	0.0001

Pest Code							AMBEL	AMAPA	
Pest Name							C.ragwd	PalmerAm	
Crop Code									IPOBA
Crop Name									SwPotato
Rating Type							Control	Control	Stunting
Rating Unit							%	%	%
Rating Date							07/01/15	07/01/15	07/08/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code		
1	Untreated Weed-Free Check							0.0 b	0.0 c	0.0 d
2	Lorox.....linuron	50	DF	0.5	lb ai/a	75 DBHar	D	100.0 a	75.0 b	7.6 c
3	Lorox.....linuron	50	DF	1.0	lb ai/a	75 DBHar	D	100.0 a	80.0 b	18.2 bc
4	Lorox.....linuron	50	DF	0.5	lb ai/a	14 DATrn	C	100.0 a	98.3 a	6.8 c
	Lorox.....linuron	50	DF	0.5	lb ai/a	75 DBHar	D			
5	Lorox.....linuron	50	DF	1.0	lb ai/a	14 DATrn	C	100.0 a	100.0 a	29.7 b
	Lorox.....linuron	50	DF	1.0	lb ai/a	75 DBHar	D			
6	Lorox.....linuron	50	DF	1	lb ai/a	75 DBHar	D	100.0 a	79.0 b	18.3 bc
	Select Max.....clethodim	1	EC	0.125	lb ai/a	75 DBHar	D			
7	Reflex.....fomesafen	2	L	0.5	lb ai/a	PreTrns	A	100.0 a	100.0 a	10.0 c
8	Valor SX.....flumioxazin	51	WG	0.08	lb ai/a	PreTrns	A	100.0 a	100.0 a	13.2 bc
	Dual Magnum.....s-metolachlor	7.62	E	0.95	lb ai/a	PostTrns	B			
9	Valor SX.....flumioxazin	51	WG	0.096	lb ai/a	PreTrns	A	100.0 a	100.0 a	70.1 a
	Dual Magnum.....s-metolachlor	7.62	E	1.24	lb ai/a	14DATrn	C			
	A16003	1.67	SL	0.0446	lb ai/a	75DBHar	D			
10	Valor SX.....flumioxazin	51	WG	0.096	lb ai/a	PreTrns	A	100.0 a	100.0 a	27.2 b
	Dual Magnum.....s-metolachlor	7.62	E	1.24	lb ai/a	14DATrn	C			
LSD P=.05								.	6.32	15.28 - 21.95
Standard Deviation								0.00	3.68	7.53t
CV								0.0	4.43	31.0t
Replicate F								0.000	1.777	1.222
Replicate Prob(F)								1.0000	0.1975	0.3180
Treatment F								0.000	212.543	11.624
Treatment Prob(F)								1.0000	0.0001	0.0001

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code			
	Pest Code									
	Pest Name									
	Crop Code							IPOBA	IPOBA	IPOBA
	Crop Name							SwPotato	SwPotato	SwPotato
	Rating Type							Stunting	gaps/row	>50%inj
	Rating Unit							%	feet	#plts/pl
	Rating Date							07/14/15	07/14/15	07/14/15
1	Untreated Weed-Free Check							0.0 f	1.42 e	0.9 c
2	Lorox.....linuron	50	DF	0.5	lb ai/a	75 DBHar	D	14.1 de	3.66 cde	1.3 bc
3	Lorox.....linuron	50	DF	1.0	lb ai/a	75 DBHar	D	19.1 bcd	5.71 bcd	3.2 bc
4	Lorox.....linuron	50	DF	0.5	lb ai/a	14 DATrn	C	15.1 cde	4.76 b-e	3.3 bc
	Lorox.....linuron	50	DF	0.5	lb ai/a	75 DBHar	D			
5	Lorox.....linuron	50	DF	1.0	lb ai/a	14 DATrn	C	27.2 bc	9.47 b	3.8 bc
	Lorox.....linuron	50	DF	1.0	lb ai/a	75 DBHar	D			
6	Lorox.....linuron	50	DF	1	lb ai/a	75 DBHar	D	23.3 bcd	5.75 bcd	5.9 b
	Select Max.....clethodim	1	EC	0.125	lb ai/a	75 DBHar	D			
7	Reflex.....fomesafen	2	L	0.5	lb ai/a	PreTrns	A	6.4 e	2.09 de	1.4 bc
8	Valor SX.....flumioxazin	51	WG	0.08	lb ai/a	PreTrns	A	15.0 cde	4.02 cde	1.8 bc
	Dual Magnum.....s-metolachlor	7.62	E	0.95	lb ai/a	PostTrns	B			
9	Valor SX.....flumioxazin	51	WG	0.096	lb ai/a	PreTrns	A	68.3 a	19.59 a	20.7 a
	Dual Magnum.....s-metolachlor	7.62	E	1.24	lb ai/a	14DATrn	C			
	A16003	1.67	SL	0.0446	lb ai/a	75DBHar	D			
10	Valor SX.....flumioxazin	51	WG	0.096	lb ai/a	PreTrns	A	31.3 b	7.48 bc	4.1 bc
	Dual Magnum.....s-metolachlor	7.62	E	1.24	lb ai/a	14DATrn	C			
	LSD P=.05							3.70 - 20.46	3.645 - 7.776	4.75 - 10.32
	Standard Deviation							0.78t	0.567t	0.76t
	CV							17.96t	22.77t	36.65t
	Replicate F							1.973	1.296	0.038
	Replicate Prob(F)							0.1680	0.2978	0.9630
	Treatment F							19.171	7.142	5.122
	Treatment Prob(F)							0.0001	0.0002	0.0019

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code				
	Pest Code										
	Pest Name										
	Crop Code							IPOBA	IPOBA	IPOBA	IPOBA
	Crop Name							SwPotato	SwPotato	SwPotato	SwPotato
	Rating Type							>80%inj	BiomRed	BiomRed	BareGrnd
	Rating Unit							#plts/pl	%	%	%
	Rating Date							07/14/15	07/15/15	07/22/15	07/30/15
1	Untreated Weed-Free Check							0.3 c	0.0 d	0.0 e	14.0 d
2	Lorox.....linuron	50	DF	0.5	lb ai/a	75 DBHar	D	1.0 c	21.7 c	24.7 d	19.0 cd
3	Lorox.....linuron	50	DF	1.0	lb ai/a	75 DBHar	D	0.3 c	34.3 bc	34.3 bcd	31.7 bcd
4	Lorox.....linuron	50	DF	0.5	lb ai/a	14 DATrn	C	1.0 c	26.7 c	30.0 cd	21.7 cd
	Lorox.....linuron	50	DF	0.5	lb ai/a	75 DBHar	D				
5	Lorox.....linuron	50	DF	1.0	lb ai/a	14 DATrn	C	5.3 b	46.7 b	43.3 bc	36.0 bc
	Lorox.....linuron	50	DF	1.0	lb ai/a	75 DBHar	D				
6	Lorox.....linuron	50	DF	1	lb ai/a	75 DBHar	D	1.3 c	36.7 bc	44.3 bc	38.3 bc
	Select Max.....clethodim	1	EC	0.125	lb ai/a	75 DBHar	D				
7	Reflex.....fomesafen	2	L	0.5	lb ai/a	PreTrns	A	2.0 bc	20.3 c	21.7 d	29.3 bcd
8	Valor SX.....flumioxazin	51	WG	0.08	lb ai/a	PreTrns	A	1.7 bc	27.7 bc	31.7 cd	28.3 bcd
	Dual Magnum.....s-metolachlor	7.62	E	0.95	lb ai/a	PostTrns	B				
9	Valor SX.....flumioxazin	51	WG	0.096	lb ai/a	PreTrns	A	10.7 a	78.3 a	75.0 a	66.0 a
	Dual Magnum.....s-metolachlor	7.62	E	1.24	lb ai/a	14DATrn	C				
	A16003	1.67	SL	0.0446	lb ai/a	75DBHar	D				
10	Valor SX.....flumioxazin	51	WG	0.096	lb ai/a	PreTrns	A	3.3 bc	39.3 bc	51.7 b	45.3 b
	Dual Magnum.....s-metolachlor	7.62	E	1.24	lb ai/a	14DATrn	C				
	LSD P=.05							3.73	19.44	17.93	20.64
	Standard Deviation							2.18	11.33	10.45	12.03
	CV							80.61	34.17	29.31	36.49
	Replicate F							0.148	0.278	0.971	0.543
	Replicate Prob(F)							0.8637	0.7604	0.3979	0.5900
	Treatment F							6.418	9.712	10.910	4.609
	Treatment Prob(F)							0.0004	0.0001	0.0001	0.0029

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	IPOBA SwPotato BiomRed % 09/21/15	IPOBA SwPotato Canners % 09/22/15	IPOBA SwPotato # ones % 09/22/15	IPOBA SwPotato Jumbos % 09/22/15
1	Untreated Weed-Free Check							0.0 c	5.4 a	49.7 bc	44.9 bcd
2	Lorox.....linuron	50	DF	0.5	lb ai/a	75 DBHar	D	0.0 c	6.9 a	64.2 a	28.9 e
3	Lorox.....linuron	50	DF	1.0	lb ai/a	75 DBHar	D	3.3 bc	7.1 a	58.5 ab	34.4 de
4	Lorox.....linuron	50	DF	0.5	lb ai/a	14 DATrn	C	5.0 bc	10.4 a	58.6 ab	31.1 e
	Lorox.....linuron	50	DF	0.5	lb ai/a	75 DBHar	D				
5	Lorox.....linuron	50	DF	1.0	lb ai/a	14 DATrn	C	5.3 bc	8.4 a	61.8 a	29.8 e
	Lorox.....linuron	50	DF	1.0	lb ai/a	75 DBHar	D				
6	Lorox.....linuron	50	DF	1	lb ai/a	75 DBHar	D	3.3 bc	6.6 a	55.5 ab	38.9 cde
	Select Max.....clethodim	1	EC	0.125	lb ai/a	75 DBHar	D				
7	Reflex.....fomesafen	2	L	0.5	lb ai/a	PreTrns	A	16.7 a	9.4 a	59.8 ab	30.8 e
8	Valor SX.....flumioxazin	51	WG	0.08	lb ai/a	PreTrns	A	0.0 c	4.9 a	48.8 bc	46.3 abc
	Dual Magnum.....s-metolachlor	7.62	E	0.95	lb ai/a	PostTrns	B				
9	Valor SX.....flumioxazin	51	WG	0.096	lb ai/a	PreTrns	A	14.3 a	4.8 a	41.0 cd	54.2 ab
	Dual Magnum.....s-metolachlor	7.62	E	1.24	lb ai/a	14DATrn	C				
	A16003	1.67	SL	0.0446	lb ai/a	75DBHar	D				
10	Valor SX.....flumioxazin	51	WG	0.096	lb ai/a	PreTrns	A	10.0 ab	6.0 a	37.4 d	56.6 a
	Dual Magnum.....s-metolachlor	7.62	E	1.24	lb ai/a	14DATrn	C				
LSD P=.05								8.52	4.58	11.24	11.47
Standard Deviation								4.97	2.67	6.55	6.69
CV								85.6	38.24	12.24	16.89
Replicate F								0.925	0.293	1.440	1.682
Replicate Prob(F)								0.4146	0.7498	0.2629	0.2139
Treatment F								4.361	1.511	5.668	7.190
Treatment Prob(F)								0.0038	0.2176	0.0009	0.0002

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	IPOBA SwPotato MarktYld kg/20ft 09/22/15	IPOBA SwPotato Yield %WF chck 09/22/15
	Pest Code								
	Pest Name								
	Crop Code								
	Crop Name								
	Rating Type								
	Rating Unit								
	Rating Date								
1	Untreated Weed-Free Check							45.217 a	100.00 a
2	Lorox.....linuron	50	DF	0.5	lb ai/a	75 DBHar	D	41.430 ab	91.43 ab
3	Lorox.....linuron	50	DF	1.0	lb ai/a	75 DBHar	D	40.920 ab	90.93 ab
4	Lorox.....linuron	50	DF	0.5	lb ai/a	14 DATrn	C	39.743 ab	88.00 ab
	Lorox.....linuron	50	DF	0.5	lb ai/a	75 DBHar	D		
5	Lorox.....linuron	50	DF	1.0	lb ai/a	14 DATrn	C	36.483 bc	81.17 bc
	Lorox.....linuron	50	DF	1.0	lb ai/a	75 DBHar	D		
6	Lorox.....linuron	50	DF	1	lb ai/a	75 DBHar	D	38.043 bc	84.37 bc
	Select Max.....clethodim	1	EC	0.125	lb ai/a	75 DBHar	D		
7	Reflex.....fomesafen	2	L	0.5	lb ai/a	PreTrns	A	38.373 abc	84.73 bc
8	Valor SX.....flumioxazin	51	WG	0.08	lb ai/a	PreTrns	A	39.333 ab	86.90 ab
	Dual Magnum.....s-metolachlor	7.62	E	0.95	lb ai/a	PostTrns	B		
9	Valor SX.....flumioxazin	51	WG	0.096	lb ai/a	PreTrns	A	29.110 d	64.63 d
	Dual Magnum.....s-metolachlor	7.62	E	1.24	lb ai/a	14DATrn	C		
	A16003	1.67	SL	0.0446	lb ai/a	75DBHar	D		
10	Valor SX.....flumioxazin	51	WG	0.096	lb ai/a	PreTrns	A	32.020 cd	70.70 cd
	Dual Magnum.....s-metolachlor	7.62	E	1.24	lb ai/a	14DATrn	C		
	LSD P=.05							6.8442	14.625
	Standard Deviation							3.9899	8.526
	CV							10.48	10.12
	Replicate F							8.423	0.579
	Replicate Prob(F)							0.0026	0.5704
	Treatment F							4.070	4.327
	Treatment Prob(F)							0.0055	0.0040

University of Delaware

Winter Squash Tolerance to Reflex

Trial ID: Veg05-15 Location: Field #14 Trial Year:
Protocol ID: Veg05-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Investigator: Mark VanGessel Title: Extension Weed Specialist
Organization: University of Delaware
Address: 16483 County Seat Hwy
City+State/Prov: Georgetown, Delaware
Postal Code: 19947 E-mail: mjv@udel.edu
Country: USA United States

Crop Description

Crop 1: CUUSS Cucurbita sp. Pumpkin
Description: Winter squash - See Treatments
Planting Date: 06/08/15
Planting Method: PLANTD planted
Depth, Unit: .075 in
Planting Equipment: PP Plot Planter
Row Spacing, Unit: 6 FT
Emergence Date: 06/14/15
Soil Temperature, Unit: 83 F
Soil Moisture: NORMAL normal, adequate
Seed Bed: MEDIUM medium

Site and Design

Treated Plot Width: 6 FT
Site Type: FIELD field
Treated Plot Length: 25 FT
Treated Plot Area: 150 FT2 Treatments: 10
Tillage Type: CONTIL conventional-till
Replications: 3
Study Design: FACTOR Factorial

Trial Initiation Comments:
The preemergence treatments were sprayed in a UAN mixture (9 gal 30% UAN in 20 gal/A to get 28 lb N/A).

Soil Description

% Sand: 81 % OM: 1.0 Texture: LS loamy sand
% Silt: 12 pH: 6.1
% Clay: 7 CEC: 4.7 Fert. Level: E excellent
Soil Drainage: G good

Moisture and Weather Conditions

Overall Moisture Conditions: NORMAL normal
Closest Weather Station: UD REC Distance, Unit: 0.3 mi

Application Description

	A
Application Date:	06/10/15
Appl. Stop Time:	11:00 AM
Application Method:	SPRAY
Application Timing:	PRE
Application Placement:	BROADC
Applied By:	VanGessl
Air Temperature, Unit:	79 F
% Relative Humidity:	48
Wind Velocity, Unit:	0 mph
Wind Direction:	N/A
Dew Presence (Y/N):	Y yes
Soil Temperature, Unit:	78 F
Soil Moisture:	NORMAL
% Cloud Cover:	10

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Crop Stage At Each Application

	A
Crop 1 Code, BBCH Scale:	CUUSS BVVT

Application Equipment

	A
Equipment Type:	SPRBAC
Operation Pressure, Unit:	31 psi
Nozzle Type:	AIRMIX
Nozzle Size:	11002
Nozzle Spacing, Unit:	18 in
Boom Length, Unit:	9 ft
Boom Height, Unit:	18 in
Ground Speed, Unit:	3 mph
Carrier:	WATER
Spray Volume, Unit:	20 gal/ac
Mix Size, Unit:	2 Liters
Propellant:	COMCO2

Trial Comments

07/24/15: missing plants in 101,103,104, 206, 207, 208, 209, 301, 304.
rated at flower/fruit production.

University of Delaware

Winter Squash Tolerance to Reflex

Trial ID: Veg05-15 Location: Field #14 Trial Year:
Protocol ID: Veg05-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Crop Code Crop Name Rating Type Rating Unit Rating Date						CUUSS Pumpkin StandCts # 06/19/15	CUUSS Pumpkin Injury % 06/19/15	CUUSS Pumpkin Injury % 06/25/15	CUUSS Pumpkin Stunting % 07/02/15	CUUSS Pumpkin BiomRed % 07/24/15
Trt No.	Treatment Name	Form Conc	Form Type	Rate Rate	Rate Unit	Growth Stage				
1	Acorn squash Reflex.....fomesafen	2	L	0.25	lb ai/a	PRE	4.8 c	20.0 c	27.7 bc	33.3 bc	28.9 b
2	Acorn squash Untreated Check						10.3 b	0.0 d	0.0 d	0.0 d	0.0 c
3	Birdhouse gourd Reflex.....fomesafen	2	L	0.25	lb ai/a	PRE	11.0 b	26.7 b	36.7 ab	39.3 abc	67.1 a
4	Birdhouse gourd Untreated Check						13.0 ab	0.0 d	0.0 d	0.0 d	0.0 c
5	Pumpkin Reflex.....fomesafen	2	L	0.25	lb ai/a	PRE	7.7 bc	25.0 bc	21.7 c	31.0 c	16.5 b
6	Pumpkin Untreated Check						13.0 ab	0.0 d	0.0 d	0.0 d	0.0 c
7	Butternut Reflex.....fomesafen	2	L	0.25	lb ai/a	PRE	5.0 c	35.0 a	43.3 a	52.7 a	31.0 b
8	Butternut Untreated Check						9.8 b	0.0 d	0.0 d	0.0 d	0.0 c
9	Spaghetti squash Reflex.....fomesafen	2	L	0.25	lb ai/a	PRE	20.3 a	20.7 bc	23.7 c	47.0 ab	40.2 ab
10	Spaghetti squash Untreated Check						22.1 a	0.0 d	0.0 d	0.0 d	0.0 c
LSD P=.05							3.77 - 9.12	6.49	12.78	15.63	26.14 - 28.86
Standard Deviation							0.13t	3.78	7.45	9.11	9.79t
CV							11.98t	29.69	48.68	44.82	53.04t
Replicate F							1.991	0.702	2.750	1.260	0.303
Replicate Prob(F)							0.1655	0.5087	0.0908	0.3075	0.7422
Treatment F							7.437	41.207	16.085	17.933	13.687
Treatment Prob(F)							0.0002	0.0001	0.0001	0.0001	0.0001

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
t=Mean descriptions are reported in transformed data units, and are not de-transformed.
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

University of Delaware

Summer SquashTolerance to Reflex

Trial ID: Veg05b-15 Location: Field #14 Trial Year:
Protocol ID: Veg05b-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Investigator: Mark VanGessel Title: Extension Weed Specialist
Organization: University of Delaware
Address: 16483 County Seat Hwy
City+State/Prov: Georgetown, Delaware
Postal Code: 19947 E-mail: mjv@udel.edu
Country: USA United States

Crop Description

Crop 1: CUUPE Cucurbita pepo summer squash
Variety: Gold Satr
Description: For seeded treatments
Planting Date: 05/12/15
Planting Method: PLANTD planted
Depth, Unit: 0.75 in Planting Equipment: PP Plot Planter
Row Spacing, Unit: 6 ft Emergence Date: 05/19/15
Soil Temperature, Unit: 89 F
Soil Moisture: NORMAL normal, adequate Harvest Equipment: Hand
Seed Bed: MEDIUM medium

Crop 2: CUUPG Cucurbita pepo giromontiina Zucchini
Variety: Raven
Description: For seeded treatments
Planting Date: 05/12/15
Planting Method: PLANTD planted
Depth, Unit: 0.75 in Planting Equipment: PP Plot Planter
Row Spacing, Unit: 6 ft Emergence Date: 05/19/15
Soil Temperature, Unit: 89 F
Soil Moisture: NORMAL normal, adequate Harvest Equipment: Hand
Seed Bed: MEDIUM medium

Site and Design

Treated Plot Width: 10 FT Site Type: FIELD field
Treated Plot Length: 25 FT
Treated Plot Area: 250 FT2 Treatments: 8 Tillage Type: CONTIL conventional-till
Replications: 3 Study Design: FACTOR Factorial

Trial Initiation Comments:
Total PRE application of Prefar at 6 qt/A on 05-13-15.
Transplants were hand-planted on 5-14-15.

Field Prep./Maintenance:
6/1/15: 50 lb/A of Urea applied by hand.

Soil Description

% Sand: 81 % OM: 1.0 Texture: LS loamy sand
% Silt: 12 pH: 6.1
% Clay: 7 CEC: 4.7 Fert. Level: E excellent
Soil Drainage: G good

Moisture and Weather Conditions

Overall Moisture Conditions: NORMAL normal
Closest Weather Station: UD REC Distance, Unit: 0.3 mi

University of Delaware

Application Description

	A
Application Date:	05/13/15
Appl. Stop Time:	10:00 AM
Application Method:	SPRAY
Application Timing:	PRETRNS
Application Placement:	BROADC
Applied By:	VanGessel
Air Temperature, Unit:	66 F
% Relative Humidity:	40
Wind Velocity, Unit:	4 mph
Wind Direction:	N
Dew Presence (Y/N):	N no
Soil Temperature, Unit:	65 F
Soil Moisture:	NORMAL
% Cloud Cover:	25

Crop Stage At Each Application

	A
Crop 1 Code, BBCH Scale:	CUUPE BVVT
Crop 2 Code, BBCH Scale:	CUUPG BVVT

Application Equipment

	A
Appl. Equipment:	Backpack
Equipment Type:	SPRBAC
Operation Pressure, Unit:	30 psi
Nozzle Type:	AIRMIX
Nozzle Size:	11002
Nozzle Spacing, Unit:	18 in
Boom Length, Unit:	9 ft
Boom Height, Unit:	18 in
Ground Speed, Unit:	3 mph
Carrier:	WATER
Spray Volume, Unit:	20 gal/ac
Mix Size, Unit:	2 Liters
Propellant:	COMCO2

Trial Comments

Both squash varieties seeded on 05/12/15. Transplants went in on 05/14/15, 24 hours after application.
06/01/15: 3rd rep is wetter - low spot especially at 301, 302.

University of Delaware

Summer SquashTolerance to Reflex

Trial ID: Veg05b-15 Location: Field #14 Trial Year:
Protocol ID: Veg05b-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Crop Code Crop Name Rating Type Rating Unit Rating Date						CUUSS Squ/Zucc Injury % 06/05/15	CUUSS Squ/Zucc Stunting % 06/11/15	CUUSS Squ/Zucc Stunting % 06/18/15	CUUSS Squ/Zucc StdCount #/plot 06/18/15	CUUSS Squ/Zucc StdCount #/plot 06/26/15	CUUSS Squ/Zucc Yld Ttl # fruit
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage					
1	Yellow squash Seeded Reflex.....fomesafen	2	L	0.188	lb ai/a	PRE	3.3 a	7.3 a	4.0 a	7.3 a	7.0 a	36 a
2	Yellow squash Seeded Untreated Check						0.0 a	0.0 b	0.0 a	7.7 a	7.7 a	34 a
3	Yellow squash Transplanted Reflex.....fomesafen	2	L	0.188	lb ai/a	PRE	0.0 a	0.0 b	2.3 a	7.0 a	6.3 a	43 a
4	Yellow squash Transplanted Untreated Check						0.0 a	0.0 b	0.0 a	6.3 a	5.3 a	38 a
5	Zucchini Seeded Reflex.....fomesafen	2	L	0.188	lb ai/a	PRE	6.3 a	10.0 a	10.0 a	7.7 a	7.3 a	34 a
6	Zucchini Seeded Untreated Check						0.0 a	0.0 b	0.0 a	6.3 a	6.3 a	36 a
7	Zucchini Transplanted Reflex.....fomesafen	2	L	0.188	lb ai/a	PRE	2.3 a	0.0 b	0.0 a	7.0 a	6.3 a	31 a
8	Zucchini Transplanted Untreated Check						0.0 a	0.0 b	0.0 a	6.7 a	6.3 a	25 a
LSD P=.05							5.01	7.15	7.04	2.21	1.96	9.9
Standard Deviation							2.86	4.08	4.02	1.26	1.12	5.6
CV							190.86	188.32	196.83	18.01	17.02	16.26
Replicate F							3.492	1.429	3.176	0.551	1.227	0.206
Replicate Prob(F)							0.0588	0.2724	0.0729	0.5886	0.3227	0.8164
Treatment F							2.022	2.992	2.338	0.539	1.270	2.577
Treatment Prob(F)							0.1242	0.0384	0.0835	0.7912	0.3320	0.0624

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

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Crop Code Crop Name Rating Type Rating Unit Rating Date						CUUSS Squ/Zucc Yld Ttl wt/kg	CUUSS Squ/Zucc Ttl fruit #/plant	CUUSS Squ/Zucc Yld Ttl kg/plant
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage			
1	Yellow squash Seeded Reflex.....fomesafen	2	L	0.188	lb ai/a	PRE	13.6 e	5.5 a	1.98 cd
2	Yellow squash Seeded Untreated Check						14.2 e	4.4 a	1.89 d
3	Yellow squash Transplanted Reflex.....fomesafen	2	L	0.188	lb ai/a	PRE	19.3 bcd	6.9 a	3.07 abc
4	Yellow squash Transplanted Untreated Check						15.6 cde	7.2 a	2.91 bcd
5	Zucchini Seeded Reflex.....fomesafen	2	L	0.188	lb ai/a	PRE	23.5 ab	4.6 a	3.23 ab
6	Zucchini Seeded Untreated Check						24.7 a	5.9 a	4.07 a
7	Zucchini Transplanted Reflex.....fomesafen	2	L	0.188	lb ai/a	PRE	19.8 abc	5.0 a	3.10 ab
8	Zucchini Transplanted Untreated Check						14.4 de	4.0 a	2.31 bcd
LSD P=.05							5.03	2.47	1.101
Standard Deviation							2.87	1.41	0.629
CV							15.83	25.93	22.29
Replicate F							1.603	0.247	0.313
Replicate Prob(F)							0.2361	0.7844	0.7361
Treatment F							6.868	2.011	4.010
Treatment Prob(F)							0.0012	0.1259	0.0130

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Summer SquashTolerance to Reflex

Trial ID: Veg05b-15 Location: Field #14 Trial Year:
Protocol ID: Veg05b-15 Investigator: Mark VanGessel
Project ID: Study Director:
Sponsor Contact:

Crop Code Crop Name								CUUSS Squ/Zucc	CUUSS Squ/Zucc	CUUSS Squ/Zucc	CUUSS Squ/Zucc	CUUSS Squ/Zucc	CUUSS Squ/Zucc
Rating Type Rating Unit Rating Date								Injury % 06/05/15	Stunting % 06/11/15	Stunting % 06/18/15	StdCount #/plot 06/18/15	StdCount #/plot 06/26/15	Yld Ttl # fruit
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage							
TABLE OF R MEANS Replicate 1								0.0	0.9	0.0	6.8	6.1	34
Replicate 2								0.9	1.5	1.3	6.9	6.6	35
Replicate 3								3.6	4.1	4.9	7.4	7.0	35
TABLE OF A (Crop) MEANS 1 Yellow squash								0.8 a	1.8 a	1.6 a	7.1 a	6.6 a	38 a
2 Zucchini								2.2 a	2.5 a	2.5 a	6.9 a	6.6 a	32 b
LSD P=.05 Standard Deviation CV								2.51 2.86 190.86	3.57 4.08 188.32	3.52 4.02 196.83	1.10 1.26 18.01	0.98 1.12 17.02	4.9 5.6 16.3
TABLE OF B (Planting) MEANS 1 Seeded								2.4 a	4.3 a	3.5 a	7.3 a	7.1 a	35 a
2 Transplanted								0.6 a	0.0 b	0.6 a	6.8 a	6.1 b	34 a
LSD P=.05 Standard Deviation CV								2.51 2.86 190.86	3.57 4.08 188.32	3.52 4.02 196.83	1.10 1.26 18.01	0.98 1.12 17.02	4.9 5.6 16.3
TABLE OF C (Herbicide) MEANS 1 Reflex.....fomesafen		2 L		0.188	lb ai/a	PRE		3.0 a	4.3 a	4.1 a	7.3 a	6.8 a	36 a
2 Untreated Check								0.0 b	0.0 b	0.0 b	6.8 a	6.4 a	33 a
LSD P=.05 Standard Deviation CV								2.51 2.86 190.86	3.57 4.08 188.32	3.52 4.02 196.83	1.10 1.26 18.01	0.98 1.12 17.02	4.9 5.6 16.3
TABLE OF A (Crop) B (Planting) MEANS 1 Yellow squash 1 Seeded								1.7 a	3.7 a	2.0 a	7.5 a	7.3 a	35 ab
2 Zucchini 1 Seeded								3.2 a	5.0 a	5.0 a	7.0 a	6.8 a	35 a
1 Yellow squash 2 Transplanted								0.0 a	0.0 a	1.2 a	6.7 a	5.8 a	41 a
2 Zucchini 2 Transplanted								1.2 a	0.0 a	0.0 a	6.8 a	6.3 a	28 b
LSD P=.05 Standard Deviation CV								3.55 2.86 190.86	5.05 4.08 188.32	4.98 4.02 196.83	1.56 1.26 18.01	1.39 1.12 17.02	7.0 5.6 16.3
TABLE OF A (Crop) C (Herbicide) MEANS 1 Yellow squash 1 Reflex.....fomesafen		2 L		0.188	lb ai/a	PRE		1.7 a	3.7 a	3.2 a	7.2 a	6.7 a	40 a
2 Zucchini 1 Reflex.....fomesafen		2 L		0.188	lb ai/a	PRE		4.3 a	5.0 a	5.0 a	7.3 a	6.8 a	33 a
1 Yellow squash 2 Untreated Check								0.0 a	0.0 a	0.0 a	7.0 a	6.5 a	36 a

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

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Crop Code Crop Name Rating Type Rating Unit Rating Date	CUUSS Squ/Zucc Injury % 06/05/15	CUUSS Squ/Zucc Stunting % 06/11/15	CUUSS Squ/Zucc Stunting % 06/18/15	CUUSS Squ/Zucc StdCount #/plot 06/18/15	CUUSS Squ/Zucc StdCount #/plot 06/26/15	CUUSS Squ/Zucc Yld Ttl # fruit
Trt Treatment Form Form Rate Growth No. Name Conc Type Rate Unit Stage						
2 Zucchini 2 Untreated Check	0.0 a	0.0 a	0.0 a	6.5 a	6.3 a	31 a
LSD P=.05 Standard Deviation CV	3.55 2.86 190.86	5.05 4.08 188.32	4.98 4.02 196.83	1.56 1.26 18.01	1.39 1.12 17.02	7.0 5.6 16.3
TABLE OF B (Planting) C (Herbicide) MEANS 1 Seeded 1 Reflex.....fomesafen 2 L 0.188 lb ai/a PRE	4.8 a	8.7 a	7.0 a	7.5 a	7.2 a	35 a
2 Transplanted 1 Reflex.....fomesafen 2 L 0.188 lb ai/a PRE	1.2 a	0.0 b	1.2 a	7.0 a	6.3 a	37 a
1 Seeded 2 Untreated Check	0.0 a	0.0 b	0.0 a	7.0 a	7.0 a	35 a
2 Transplanted 2 Untreated Check	0.0 a	0.0 b	0.0 a	6.5 a	5.8 a	32 a
LSD P=.05 Standard Deviation CV	3.55 2.86 190.86	5.05 4.08 188.32	4.98 4.02 196.83	1.56 1.26 18.01	1.39 1.12 17.02	7.0 5.6 16.3
TABLE OF A (Crop) B (Planting) C (Herbicide) MEANS 1 Yellow squash 1 Seeded 1 Reflex.....fomesafen 2 L 0.188 lb ai/a PRE	3.3 a	7.3 a	4.0 a	7.3 a	7.0 a	36 a
2 Zucchini 1 Seeded 1 Reflex.....fomesafen 2 L 0.188 lb ai/a PRE	6.3 a	10.0 a	10.0 a	7.7 a	7.3 a	34 a
1 Yellow squash 2 Transplanted 1 Reflex.....fomesafen 2 L 0.188 lb ai/a PRE	0.0 a	0.0 a	2.3 a	7.0 a	6.3 a	43 a
2 Zucchini 2 Transplanted 1 Reflex.....fomesafen 2 L 0.188 lb ai/a PRE	2.3 a	0.0 a	0.0 a	7.0 a	6.3 a	31 a
1 Yellow squash 1 Seeded 2 Untreated Check	0.0 a	0.0 a	0.0 a	7.7 a	7.7 a	34 a
2 Zucchini 1 Seeded 2 Untreated Check	0.0 a	0.0 a	0.0 a	6.3 a	6.3 a	36 a
1 Yellow squash 2 Transplanted 2 Untreated Check	0.0 a	0.0 a	0.0 a	6.3 a	5.3 a	38 a
2 Zucchini 2 Transplanted 2 Untreated Check	0.0 a	0.0 a	0.0 a	6.7 a	6.3 a	25 a
LSD P=.05 Standard Deviation CV	5.01 2.86 190.86	7.15 4.08 188.32	7.04 4.02 196.83	2.21 1.26 18.01	1.96 1.12 17.02	9.9 5.6 16.3

Crop Code Crop Name Rating Type Rating Unit Rating Date					CUUSS Squ/Zucc Yld Ttl wt/kg	CUUSS Squ/Zucc Ttl fruit #/plant	CUUSS Squ/Zucc Yld Ttl kg/plant
Trt Treatment No. Name	Form Form Conc Type	Rate	Rate Unit	Growth Stage			
TABLE OF R MEANS Replicate 1					16.7	5.6	2.71
Replicate 2					18.6	5.5	2.95
Replicate 3					19.1	5.2	2.81
TABLE OF A (Crop) MEANS 1 Yellow squash					15.7 b	6.0 a	2.46 b
2 Zucchini					20.6 a	4.9 a	3.18 a
LSD P=.05 Standard Deviation CV					2.51 2.87 15.83	1.24 1.41 25.93	0.551 0.629 22.286
TABLE OF B (Planting) MEANS 1 Seeded					19.0 a	5.1 a	2.79 a
2 Transplanted					17.3 a	5.8 a	2.85 a
LSD P=.05 Standard Deviation CV					2.51 2.87 15.83	1.24 1.41 25.93	0.551 0.629 22.286
TABLE OF C (Herbicide) MEANS 1 Reflex.....fomesafen	2 L		0.188 lb ai/a PRE		19.0 a	5.5 a	2.85 a
2 Untreated Check					17.2 a	5.4 a	2.79 a
LSD P=.05 Standard Deviation CV					2.51 2.87 15.83	1.24 1.41 25.93	0.551 0.629 22.286
TABLE OF A (Crop) B (Planting) MEANS 1 Yellow squash 1 Seeded					13.9 b	5.0 b	1.94 c
2 Zucchini 1 Seeded					24.1 a	5.3 b	3.65 a
1 Yellow squash 2 Transplanted					17.4 b	7.0 a	2.99 ab
2 Zucchini 2 Transplanted					17.1 b	4.5 b	2.71 bc
LSD P=.05 Standard Deviation CV					3.56 2.87 15.83	1.75 1.41 25.93	0.779 0.629 22.286
TABLE OF A (Crop) C (Herbicide) MEANS 1 Yellow squash 1 Reflex.....fomesafen	2 L		0.188 lb ai/a PRE		16.5 a	6.2 a	2.53 a
2 Zucchini 1 Reflex.....fomesafen	2 L		0.188 lb ai/a PRE		21.6 a	4.8 a	3.17 a
1 Yellow squash 2 Untreated Check					14.9 a	5.8 a	2.40 a

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Crop Code Crop Name Rating Type Rating Unit Rating Date	CUUSS Squ/Zucc Yld Ttl wt/kg	CUUSS Squ/Zucc Ttl fruit #/plant	CUUSS Squ/Zucc Yld Ttl kg/plant
Trt Treatment Form Form Rate Growth No. Name Conc Type Rate Unit Stage			
2 Zucchini 2 Untreated Check	19.6 a	4.9 a	3.19 a
LSD P=.05 Standard Deviation CV	3.56 2.87 15.83	1.75 1.41 25.93	0.779 0.629 22.286
TABLE OF B (Planting) C (Herbicide) MEANS 1 Seeded 1 Reflex.....fomesafen 2 L 0.188 lb ai/a PRE	18.6 ab	5.1 a	2.61 a
2 Transplanted 1 Reflex.....fomesafen 2 L 0.188 lb ai/a PRE	19.5 a	5.9 a	3.09 a
1 Seeded 2 Untreated Check	19.5 a	5.2 a	2.98 a
2 Transplanted 2 Untreated Check	15.0 b	5.6 a	2.61 a
LSD P=.05 Standard Deviation CV	3.56 2.87 15.83	1.75 1.41 25.93	0.779 0.629 22.286
TABLE OF A (Crop) B (Planting) C (Herbicide) MEANS 1 Yellow squash 1 Seeded 1 Reflex.....fomesafen 2 L 0.188 lb ai/a PRE	13.6 a	5.5 a	1.98 a
2 Zucchini 1 Seeded 1 Reflex.....fomesafen 2 L 0.188 lb ai/a PRE	23.5 a	4.6 a	3.23 a
1 Yellow squash 2 Transplanted 1 Reflex.....fomesafen 2 L 0.188 lb ai/a PRE	19.3 a	6.9 a	3.07 a
2 Zucchini 2 Transplanted 1 Reflex.....fomesafen 2 L 0.188 lb ai/a PRE	19.8 a	5.0 a	3.10 a
1 Yellow squash 1 Seeded 2 Untreated Check	14.2 a	4.4 a	1.89 a
2 Zucchini 1 Seeded 2 Untreated Check	24.7 a	5.9 a	4.07 a
1 Yellow squash 2 Transplanted 2 Untreated Check	15.6 a	7.2 a	2.91 a
2 Zucchini 2 Transplanted 2 Untreated Check	14.4 a	4.0 a	2.31 a
LSD P=.05 Standard Deviation CV	5.03 2.87 15.83	2.47 1.41 25.93	1.101 0.629 22.286

FACTORIAL/POOLED ERROR AOV For CUUSS Squ/Zucc Injury % 06/05/15

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	23	288.000000				
R	2	57.250000	28.625000	3.492	0.0588	
A	1	10.666667	10.666667	1.301	0.2731	2.5
B	1	20.166667	20.166667	2.460	0.1391	2.5
AB	1	0.166667	0.166667	0.020	0.8886	3.5
C	1	54.000000	54.000000	6.588	0.0224	2.5
AC	1	10.666667	10.666667	1.301	0.2731	3.5
BC	1	20.166667	20.166667	2.460	0.1391	3.5
ABC	1	0.166667	0.166667	0.020	0.8886	5.0
ERROR	14	114.750000	8.196429			

FACTORIAL/POOLED ERROR AOV For CUUSS Squ/Zucc Stunting % 06/11/15

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	23	629.333333				
R	2	47.583333	23.791667	1.429	0.2724	
A	1	2.666667	2.666667	0.160	0.6950	3.6
B	1	112.666667	112.666667	6.767	0.0209	3.6
AB	1	2.666667	2.666667	0.160	0.6950	5.1
C	1	112.666667	112.666667	6.767	0.0209	3.6
AC	1	2.666667	2.666667	0.160	0.6950	5.1
BC	1	112.666667	112.666667	6.767	0.0209	5.1
ABC	1	2.666667	2.666667	0.160	0.6950	7.1
ERROR	14	233.083333	16.648810			

FACTORIAL/POOLED ERROR AOV For CUUSS Squ/Zucc Stunting % 06/18/15

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	23	592.958333				
R	2	102.583333	51.291667	3.176	0.0729	
A	1	5.041667	5.041667	0.312	0.5852	3.5
B	1	51.041667	51.041667	3.161	0.0971	3.5
AB	1	26.041667	26.041667	1.613	0.2248	5.0
C	1	100.041667	100.041667	6.195	0.0260	3.5
AC	1	5.041667	5.041667	0.312	0.5852	5.0
BC	1	51.041667	51.041667	3.161	0.0971	5.0
ABC	1	26.041667	26.041667	1.613	0.2248	7.0
ERROR	14	226.083333	16.148810			

FACTORIAL/POOLED ERROR AOV For CUUSS Squ/Zucc StdCount #/plot 06/18/15

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	23	30.000000				
R	2	1.750000	0.875000	0.551	0.5886	
A	1	0.166667	0.166667	0.105	0.7509	1.1
B	1	1.500000	1.500000	0.944	0.3478	1.1
AB	1	0.666667	0.666667	0.419	0.5277	1.6
C	1	1.500000	1.500000	0.944	0.3478	1.1
AC	1	0.666667	0.666667	0.419	0.5277	1.6
BC	1	0.000000	0.000000	0.000	1.0000	1.6
ABC	1	1.500000	1.500000	0.944	0.3478	2.2
ERROR	14	22.250000	1.589286			

FACTORIAL/POOLED ERROR AOV For CUUSS Squ/Zucc StdCount #/plot 06/26/15

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	23	31.833333				
R	2	3.083333	1.541667	1.227	0.3227	
A	1	0.000000	0.000000	0.000	1.0000	1.0
B	1	6.000000	6.000000	4.777	0.0463	1.0
AB	1	1.500000	1.500000	1.194	0.2929	1.4
C	1	0.666667	0.666667	0.531	0.4783	1.0
AC	1	0.166667	0.166667	0.133	0.7211	1.4
BC	1	0.166667	0.166667	0.133	0.7211	1.4
ABC	1	2.666667	2.666667	2.123	0.1671	2.0
ERROR	14	17.583333	1.255952			

FACTORIAL/POOLED ERROR AOV For CUUSS Squ/Zucc Yld Ttl # fruit

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	23	1031.333333				
R	2	13.083333	6.541667	0.206	0.8164	
A	1	216.000000	216.000000	6.797	0.0207	5
B	1	2.666667	2.666667	0.084	0.7763	5
AB	1	240.666667	240.666667	7.573	0.0156	7
C	1	48.166667	48.166667	1.516	0.2386	5
AC	1	4.166667	4.166667	0.131	0.7227	7
BC	1	48.166667	48.166667	1.516	0.2386	7
ABC	1	13.500000	13.500000	0.425	0.5251	10
ERROR	14	444.916667	31.779762			

FACTORIAL/POOLED ERROR AOV For CUUSS Squ/Zucc Yld Ttl wt/kg

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	23	538.362850				
R	2	26.440675	13.220338	1.603	0.2361	
A	1	145.435267	145.435267	17.636	0.0009	2.5
B	1	18.445067	18.445067	2.237	0.1570	2.5
AB	1	165.900417	165.900417	20.118	0.0005	3.6
C	1	19.440000	19.440000	2.357	0.1470	2.5
AC	1	0.350417	0.350417	0.042	0.8397	3.6
BC	1	44.881350	44.881350	5.442	0.0351	3.6
ABC	1	2.018400	2.018400	0.245	0.6285	5.0
ERROR	14	115.451258	8.246518			

FACTORIAL/POOLED ERROR AOV For CUUSS Squ/Zucc Ttl fruit #/plant

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	23	56.890763				
R	2	0.984070	0.492035	0.247	0.7844	
A	1	7.742237	7.742237	3.889	0.0687	1.2
B	1	2.418493	2.418493	1.215	0.2890	1.2
AB	1	12.173008	12.173008	6.114	0.0268	1.7
C	1	0.077689	0.077689	0.039	0.8462	1.2
AC	1	0.359975	0.359975	0.181	0.6772	1.7
BC	1	0.222475	0.222475	0.112	0.7431	1.7
ABC	1	5.038393	5.038393	2.531	0.1340	2.5
ERROR	14	27.874422	1.991030			

FACTORIAL/POOLED ERROR AOV For CUUSS Squ/Zucc Yld Ttl kg/plant

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	23	16.880223				
R	2	0.247599	0.123799	0.313	0.7361	
A	1	3.053760	3.053760	7.724	0.0148	0.55
B	1	0.017881	0.017881	0.045	0.8347	0.55
AB	1	5.981653	5.981653	15.130	0.0016	0.78
C	1	0.017004	0.017004	0.043	0.8387	0.55
AC	1	0.031182	0.031182	0.079	0.7829	0.78
BC	1	1.091997	1.091997	2.762	0.1187	0.78
ABC	1	0.904091	0.904091	2.287	0.1527	1.10
ERROR	14	5.535056	0.395361			