

Insect Management Reports

2015 Season

University of Delaware
Cooperative Extension -- IPM Program

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Field Crops

Control of Seed Corn Maggot in Field Corn with Seed Treatments

Location	University of Delaware Research and Education Center, Georgetown, DE
Variety	P0993XR
Planting Date	May 5 , 2015
Plant Population	26,000 plants/A
Experimental Design	11 treatments arranged in a RCB design with 4 reps, four rows wide (30-inch centers) x 25 foot long
Treatment Method	Seed treatments were applied by a commercial seed treatment operation
Harvest Date	September 9, 2015

Trt #	Seed Treatment	Stand Count (# Plants per 40 ft of row) ¹				Yield ¹
		May 13	May 21	May 28	June 4	BU/A Sept 9
1	IST-250	41.50a	47.75b	46.75a	47.50a	161.57a
2	IST-250 + Lumivia 250	43.25a	49.00ab	48.25a	47.75a	160.55a
3	Lumivia 250	46.25a	55.25a	53.25a	53.25a	163.96a
4	Lumivia 500	46.75a	50.00ab	50.75a	49.50a	160.22a
5	Lumivia 750	45.75a	51.50ab	50.75a	50.50a	159.56a
6	Lumivia 250 + Bifenthrin 125	46.75a	51.75ab	51.00a	50.75a	158.41a
7	Lumivia 500 + Bifenthrin 125	43.50a	50.00ab	48.25a	47.75a	161.37a
8	Lumivia 750 + Bifenthrin 125	45.25a	50.50ab	50.25a	49.75a	158.66a
9	Poncho Votivo 1250	49.50a	52.00ab	51.75a	52.25a	159.82a
10	Poncho 500	47.75a	51.00ab	50.25a	50.00a	159.33a
11	Check	48.75a	53.25ab	52.50a	52.25a	161.54a

¹ Means in the same columns followed by the same letter are not significantly different (Tukey's; P=0.05).

The Impact of Cover Crops on Slug Damage in Field Corn

Location	Commercial Farm, Middletown, DE
Variety	DKC6297
Cover Crop Planting Date	October 19, 2014
Field Corn Planting Date	April 28, 2015
Experimental Design	31 treatments arranged in a RCB design with 4 reps, 4 row wide X 20 foot long on 30 inch centers

Cover Crop	Average Number of Slugs/Shingle Trap ¹ (predominately Grey Garden Slugs)						% Slug Damaged Plants ¹	
	3-Nov-14	10-Nov-14	19-Nov-14	25-Nov-14	1-Dec-14	31-Mar-15	11-May-15	18-May-15
Control	0.0a	0.0a	0.0a	0.25a	0.25a	0.0a	17.5a	15.0a
Forage Radish	0.25a	0.0a	0.5a	0.75a	1.0a	0.0a	12.5a	10.0a
Forage Radish	0.0a	0.0a	0.0a	0.25a	0.5a	0.0a	0.0a	17.5a
Crimson Clover	0.25a	0.5a	0.0a	1.0a	0.5a	0.0a	10.0a	37.5a
Crimson Clover	0.0a	0.25a	0.0a	0.25a	0.5a	0.5a	17.5a	10.0a
Rye	0.0a	0.5a	0.0a	0.25a	0.5a	0.0a	2.5a	17.5a
Rye	0.0a	0.0a	0.0a	0.5a	0.25a	0.0a	2.5a	5.0a
Wheat	0.0a	0.25a	0.0a	0.25a	0.75a	0.0a	5.0a	7.5a
Wheat	0.0a	0.0a	0.25a	1.25a	2.0a	0.25a	7.5a	7.5a
Barley	0.0a	0.0a	0.0a	1.25a	0.5a	0.0a	7.5a	2.5a
Barley	0.5a	0.0a	0.0a	0.5a	1.5a	0.0a	2.5a	25.0a
Spring Oats	0.0a	0.5a	0.0a	0.75a	0.25a	0.25a	0.0a	20.0a
Spring Oats	0.0a	0.25a	0.0a	1.0a	0.5a	0.0a	7.5a	10.0a
Rape	0.0a	1.0a	0.0a	0.75a	0.5a	0.0a	5.0a	5.0a

¹ Means in the same columns followed by the same letter are not significantly different (Tukey's; P=0.05).

Cover Crop	Average Number of Slugs/Shingle Trap (predominately Grey Garden Slugs)						% Slug Damaged Plants	
	3- Nov- 14	10- Nov- 14	19- Nov- 14	25- Nov- 14	1-Dec- 14	31- Mar-15	11-May-15	18-May- 15
Rape	0.0a	0.0a	0.0a	0.5a	0.75a	0.0a	0.0a	25.0a
Wheat (tilled)	0.0a	0.25a	0.0a	1.0a	0.75a	0.0a	2.5a	5.0a
Wheat (tilled)	0.0a	0.75a	0.25a	0.75a	1.0a	0.0a	5.0a	17.5a
Barley (tilled)	0.25a	0.0a	0.0a	1.0a	0.75a	0.0a	0.0a	7.5a
Barley (tilled)	0.5a	0.0a	0.5a	1.25a	1.0a	0.0a	5.0a	5.0a
Wheat / Forage Radish	0.0a	0.5a	0.0a	0.25a	0.75a	0.0a	5.0a	15.0a
Wheat / Forage Radish	0.0a	0.75a	0.5a	1.75a	1.0a	0.25a	5.0a	15.0a
Wheat / Crimson Clover	0.0aa	0.0a	0.25a	0.75a	0.75a	0.0a	2.5a	20.0a
Wheat / Crimson Clover	0.25	0.25a	0.0a	2.25a	1.5a	0.0a	2.5a	12.5a
Austrian Peas / Radish	0.0a	0.25a	0.0a	0.75a	0.5a	0.0a	0.0a	7.5a
Austrian Peas / Radish	0.25a	0.0a	0.0a	1.0a	1.5a	0.0a	2.5a	2.5a
Rye /Crimson	0.0a	0.25a	0.0a	0.25a	0.5a	0.25a	2.5a	0.0a
Rye/Crimson	0.0a	1.0a	0.25a	0.25a	1.0a	0.0a	5.0a	7.5a
Rye / Radish	0.0a	0.25a	0.0a	0.5a	0.75a	0.25a	5.0a	7.5a
Rye / Radish	0.0a	0.25a	0.0a	0.75a	1.5a	0.0a	15.0a	5a
Spring Oats/Radish	0.0a	0.0a	0.0a	1.0a	0.25a	0.0a	10.0a	15a
Spring Oats/Radish	0.0a	0.25a	0.25a	0.0a	0.75a	0.0a	0.0a	15a

¹ Means in the same columns followed by the same letter are not significantly different (Tukey's; P=0.05).

Control of Green Cloverworm and Soybean Looper in Soybeans

Location	Commercial Farm , Laurel, DE
Variety	Channel 4806 R2/STS Brand (5-6 SD/FT)
Planting Date	July 1, 2015
Experimental Design	5 treatments arranged in a RCB design with 4 reps, 12 rows wide (30-inch centers) x 500 foot long
Treatment Method	All foliar treatments were applied with a commercial sprayer delivering 25 gpa at 60 psi
Treatment Date	Aug 17, 2015

Trt #	Treatment	Rate/A	# Soybean Loopers per 100 Sweeps ¹					Cumulative Soybean Looper Units (all dates)
			Pre 10Aug	4DAT 21Aug	8DAT 25Aug	16DAT 2Sep	23DAT 9Sep	
1	Belt 4SC	2 oz	14.0a	2.7a	0.0a	0.7a	0.3b	3.67c
2	Belt 4SC	4 oz	5.3a	0.7a	0.0a	0.7a	0.0b	1.33c
3	Besiege	9 oz	5.7a	1.3a	4.0a	4.3a	1.0b	10.67bc
4	Justice	3 oz + NIS	5.7a	8.0a	13.7a	4.0a	11.3a	37.00a
5	Untreated	----	6.7a	6.3a	9.0a	5.0a	3.3b	23.68ab

¹ Means in the same columns followed by the same letter are not significantly different (Tukey's; P=0.05).

Trt #	Treatment	Rate/A	# Green Cloverworm per 100 Sweeps ¹			Cumulative Green Cloverworm Units (all dates)
			Pre 10Aug	4DAT 21Aug	8DAT 25Aug	
1	Belt 4SC	2 oz	5.7a	0.3bc	0.7a	1.00b
2	Belt 4SC	4 oz	3.3a	0.0c	0.0a	0.00b
3	Besiege	9 oz	6.7a	1.0bc	0.0a	1.00b
4	Justice	3 oz + NIS	4.3a	5.0ab	0.0a	5.00ab
5	Untreated	----	2.7a	6.7a	1.33a	8.00a

¹ Means in the same columns followed by the same letter are not significantly different (Tukey's; P=0.05).

Control of Two Spotted Spider Mite in Soybeans

Location	University of Delaware Research and Education Center, Georgetown, DE
Variety	Northern King- S-42-W9
Planting Date	May 20, 2015
Experimental Design	7 treatments arranged in a RCB design with 4 reps, four rows wide (30-inch centers) x 25 foot long
Treatment Method	All foliar treatments applied with a 6-nozzle boom sprayer equipped with 8002 flat fan spray tips spaced 20" apart and powered by a CO ₂ backpack sprayer at 40psi delivering 17.6 GPA.
Foliar Treatment Date	July 17, 2015

Treatment ¹	Rate/Acre	Mites per 20 leaflets ²			
		Pre- Trt July 13	4 DAT July 21	10 DAT July 27	17 DAT Aug 3
1. Zeal SC	2 fl oz	26.75a	17.25a	4.00b	0.50a
2. Zeal SC	4 fl oz	26.75a	21.75a	1.25b	0.25a
3. GWN-10290	12 fl oz	29.00a	25.25a	16.50ab	0.75a
4. GWN- 10385	12 fl oz	8.50a	29.00a	39.75ab	0.50a
5. Agrimek 0.7SC	3.0 fl oz	22.75a	40.75a	7.00ab	0.75a
6. Bifenture 2EC	6.4 fl oz	4.75a	29.75a	33.25ab	0.00a
7. Untreated	----	24.25a	51.50a	46.00a	5.25a

¹ NIS 0.25% (Induce) used with all treatments

² Means in the same columns followed by the same letter are not significantly different (Tukey's; P=0.05).

Vegetables

Control of Green Peach Aphid in Peppers in Peppers

Location	Un of DE Research and Education Center, Georgetown, DE
Variety	Aristotle
Planting Date	June 12, 2015
Experimental Design	7 treatments arranged in a RCB design with 4 reps, one row wide X 20 foot long on 7 foot centers
Treatment Method	All foliar treatments applied with a CO ₂ pressurized backpack sprayer with a single-row boom, equipped with 3 hollow cone nozzles with D2 tips (one nozzle over the top and one drop nozzle on each side) delivering 54.3 GPA at 40psi. The drench application was applied as 2 oz. of solution per plant
Foliar and Drench Treatment Date	Aug 18 , 2015

Treatment	Rate/A	Application Method	Average Number of aphids per 50 leaves ¹		
			Pretreatment Aug 17	3 DAT Aug 21	7DAT Aug 25
Sivanto 200SL	21.0 fl. oz.	Drench	18.50a	3.00b	1.00ab
Sivanto 200 SL	10.0 fl. oz.	Foliar	21.25a	0.50b	0.00b
Endigo ZC	4.5 fl.oz.	Foliar	13.50a	3.00b	1.75ab
Movento 240SC + NIS	5.0 fl.oz. 0.025% v/v	Foliar	17.75a	2.00b	0.00b
Assail 30SG	4.0 oz.	Foliar	10.75a	1.00b	0.75ab
Fulfill WDG	2.75 oz.	Foliar	12.75a	1.00b	0.25b
Untreated	-----	----	26.75a	14.75a	2.50a

¹ Means in the same columns followed by the same letter are not significantly different (Tukey's; P=0.05).

Control of Insects on Sweet Corn – Early Season

Location	Un of Delaware Research and Education Center, Georgetown, DE
Variety	Xtra Tender 2171
Planting Date	April 28, 2015
Experimental Design	7 treatments arranged in a RCB design with 4 reps, two rows wide X 25 foot long on 30 inch centers
Treatment Method	All foliar treatments applied with a CO ₂ pressurized backpack sprayer with a single-row boom, equipped with 2 hollow cone nozzles with D2 tips delivering 37.4 GPA at 40psi.
Foliar Treatment Dates	See Treatment Table
Harvest Date	July 6, 2015

Trt #	Treatment	Application Date	Rate/A
1	A,B,C,D Besiege	A- 6/19, B – 6/23, C – 6/26, D- 6/29	7.5 fl oz
2	A,B,C - Besiege D, E - Warrior II	A- 6/19, B – 6/23, C – 6/26 D - 6/ 29, E – Jul 2	Besiege - 10 fl oz Warrior II - 1.92 fl oz
3	A, B – Warrior II C,D,E-- Blackhawk 36WG	A- 6/19, B – 6/23 C – 6/26, D - 6/ 29, E – Jul 2	Warrior 1.92 fl oz Blackhawk – 3.3 oz
4	A,B– Warrior II C,D,E Radiant SC	A- 6/19, B-6/23 C – 6/26, D - 6/ 29, E – Jul 2	Warrior – 1.92 fl oz Radiant – 6 fl oz
5	A – E Hero EC	A -6/19, B – 6/23, C- 6/26, D – 6/29, E- 7/2	4 fl oz
6	A – E -Warrior II	A -6/19, B – 6/23, C- 6/26, D – 6/29, E- 7/2	1.92 fl oz
7	Untreated	-----	-----

Trt #	% Clean Ears (Fresh Market) ¹	% Clean + Tip Damaged Ears (Processing) ¹	Percent Damaged Ears ¹	
			CEW	Sap Beetles
1	100.00a	100.00a	0.00b	0.00a
2	99.53a	100.00a	0.48b	0.00a
3	98.91a	100.00a	0.00b	0.46a
4	98.11a	100.00a	0.68b	1.22a
5	98.96a	99.39a	1.04b	0.43a
6	99.14a	100.00a	0.86b	0.00a
7	86.47b	91.18a	13.08a	0.45a

¹Means in the same columns followed by the same letter are not significantly different (Tukey's; P=0.05).

Control of Insects on Sweet Corn – Late Season

Location	Un of Delaware Research and Education Center, Georgetown, DE
Variety	Xtra Tender 3473
Planting Date	July 1, 2015
Experimental Design	6 treatments arranged in a RCB design with 4 reps, two rows wide X 25 foot long on 30 inch centers
Treatment Method	All foliar treatments applied with a CO ₂ pressurized backpack sprayer with a single-row boom, equipped with 2 hollow cone nozzles with D2 tips delivering 37.4 GPA at 40psi.
Foliar Treatment Dates	See Treatment Table
Harvest Date	Aug 31, 2015

Trt #	Treatment	Application Date	Rate/A
1	A,B,C – Besiege D,E - Lannate LV + Warrior	A – 8/13, B-8/17, C- 8/20 D- 8/24, E- 8/27	10 fl. oz. 24 fl. oz. + 1.92 fl. oz.
2	A,B,C – Besiege D, E – Warrior II	A – 8/13, B-8/17, C- 8/20 D- 8/24, E- 8/27	10 fl. oz. 1.92 fl.oz.
3	A, B, – Hero EC C,D,E –Blackhawk 36WG	A – 8/13, B-8/17 C- 8/20, D- 8/24, E- 8/27	4.5 fl. oz. 3.3 oz.
4	A,B – Hero C,D,E – Radiant SC	A – 8/13, B-8/17 C- 8/20, D- 8/24, E- 8/27	4.5 fl. oz. 6 fl oz.
5	A- E- Hero EC	A – 8/13, B-8/17, C- 8/20, D- 8/24, E- 8/27	4.5 fl. oz.
6	Untreated	-----	-----
Trt #	% Clean Ears (Fresh Market) ¹	% Clean + Tip Damaged Ears (Processing)	Percent Corn Earworm Damaged Ears ¹
1	89.00a	94.50a	11.00d
2	86.88a	89.38a	13.13d
3	30.00c	41.88c	69.38b
4	52.50b	62.50b	43.75c
5	41.88bc	48.13bc	56.88bc
6	0.00d	0.00d	100.00a

¹Means in the same columns followed by the same letter are not significantly different (Tukey's; P=0.05).

Control of Stink Bugs in Sweet Corn – Early Season

Location	Un of Delaware Research Farm, Newark, DE
Variety	Passion II (Bt corn)
Planting Date	June 12
Experimental Design	5 treatments arranged in a RCB design with 4 reps, two rows wide X 25 foot long on 30 inch centers
Treatment Method	All foliar treatments applied with a CO ₂ pressurized backpack sprayer with a single-row boom, equipped with 2 hollow cone nozzles equipped with D2 tips delivering 37.4 GPA at 40psi.
Foliar Treatment Dates	See Treatment Table 1
Harvest Date	Aug 14, 2015

Table 1 . Stink Bug and Sap Beetle Ear Damage Data

Treatment	Rate/Acre	Timing	Application Dates	% Sap Beetle Damaged Ears Aug 14 ¹	% Stink Bug Damaged Ears Aug 14 ¹	Average Number Stink Bug Damaged Kernels/Ear Aug 14 ¹
Hero EC	4.5 fl oz	Start at ear shank, 3-4 day schedule	7/24,7/27, 7/30 8/3 , 8/6 and 8/10	0.00a	0.00a	0.00a
Hero EC	7 oz	Silk, blister and milk	7/27,8/3,8/10	0,00a	0.00a	0.00a
Hero EC	7 oz	Blister and Milk	8/3, 8/10	1.60a	0.00a	0.00a
Hero EC	7 oz	Milk	8/10	0.00a	0.75a	0.03a
Untreated	--	--	--	3.68a	3.50a	0.21a

¹ Means in the same columns followed by the same letter are not significantly different (Tukey's; P=0.05).

Table 2 .BMSB and BSB Population Data

Treatment	Average Number BMSB per 2 Minute Count ¹			Average Number BSB per 2 Minute Count ¹		
	Jul 20	Jul 27	Aug 3	Jul 20	Jul 27	Aug 3
Hero EC	0.00a	0.00a	0.00a	0.00a	0.00a	0.00a
Hero EC	0.00a	0.00a	0.00a	0.00a	0.00a	0.00a
Hero EC	0.00a	0.00a	0.25a	0.00a	0.25a	0.00a
Hero EC	0.00a	0.00a	0.00a	0.25a	0.00a	0.00a
Untreated	0.00a	0.00a	0.00a	0.75a	0.00a	0.00a

¹ Means in the same columns followed by the same letter are not significantly different (Tukey's; P=0.05).

Control of Melon Aphids in Watermelon

Location	Un of Delaware Research and Education Center, Georgetown, DE
Variety	Sugar Red
Transplanting Date	May 21, 2015
Experimental Design	3 treatments arranged in a RCB design with 4 reps, one row wide X 20 foot long on 7 foot centers
Drench Treatment Method	Both drench treatments were applied as 2 oz. of solution per plant
Drench Treatment Date	June 11, 2015

Treatment	Rate/A	Application Method	Pretreatment June 9 ¹		Post Treatment 4DAT – June 15	
			# Aphids/25 leaves	% Infested Plants	# Aphids/25 leaves	% Infested Plants
Sivanto 200 SL	21.0 fl. oz.	Drench	0.25a	5.00a	0.00a	0.00a
Admire Pro	7.0 oz.	Drench	3.00a	5.00a	0.00a	0.00a
Untreated	-----	----	0.00a	0.00a	0.00a	0.00a

¹ Means in the same columns followed by the same letter are not significantly different (Tukey's; P=0.05).