

# HERBICIDE CLASSIFICATION

REPEATED USE OF HERBICIDES WITH THE SAME SITE OF ACTION CAN RESULT IN THE DEVELOPMENT OF HERBICIDE-RESISTANT WEED POPULATIONS.

## MODE OF ACTION by ACTION (effect on plant growth)

This chart groups herbicides by their modes of action to assist you in selecting herbicides 1) to maintain greater diversity in herbicide use and 2) to rotate among effective herbicides with different sites of action to delay the development of herbicide resistance.

SITE-OF-ACTION GROUP	NUMBER OF RESISTANT WEED SPECIES IN U.S.	CHEMICAL FAMILY	ACTIVE INGREDIENT	PRODUCT EXAMPLES (TRADE NAME) <sup>1</sup>
<b>1</b> ACCASE INHIBITORS (acetyl CoA carboxylase)	15	Aryloxyphenoxypropionate (fops)	diclofop fenoxaprop fluzifop quinclorac sethoxydim	<i>Hoelon</i> <i>Puma, Tecoma, others</i> <i>Fusilade</i> <i>Assure II, Targa</i> <i>Select Max</i> <i>Poast</i>
<b>2</b> ALS INHIBITORS (acetolactate synthase)	48	Cyclohexanedione (dims)	glyphosate	<i>Axial XL</i>
<b>9</b> EPSP SYNTHASE INHIBITOR (5-enolpyruvyl-shikimate-3-phosphate)	15	Organophosphorus	glyphosate	<i>Roundup, Touchdown, several</i>
<b>4</b> TIRI AUXIN RECEPTORS (synthetic auxins)	8	Benzoic acid	dicamba	<i>Banvel, Clarity, others</i>
<b>19</b> AUXIN TRANSPORT INHIBITOR	0	Semicarbazone	diffenopyr	<i>component of Status</i>
<b>5</b> PHOTOSYSTEM II INHIBITORS (mobile) (different binding than 6 & 7)	26	Triazine	atrazine prometon	<i>Spin-Aid</i> <i>Aatrex, others</i> <i>Pramitol</i>
<b>6</b> PHOTOSYSTEM II INHIBITORS (non-mobile) (different binding than 5 & 7)	1	Triazinone	simazine	<i>Princep</i>
<b>7</b> PHOTOSYSTEM II INHIBITORS (mobile) (different binding than 5 & 6)	11	Urea	hexazinone metribuzin terbacil	<i>Velpar</i> <i>Glory, Metribuzin, TriCor</i> <i>Sinbar</i>
<b>10</b> NITROGEN METABOLISM INHIBITOR	1	Amino acid derivative	glufosinate	<i>Finale, Liberty, Rely</i>
<b>12</b> PHYTOENE DESATURASE (PDS) INHIBITOR	1	Pyridazinone	norflurazon	<i>Solicam</i>
<b>13</b> DOXP SYNTHASE INHIBITOR (1-DEOXY-D-XYLULOSE 5-PHOSPHATE)	1	Isoxazolidinone	clomazone	<i>Command</i>
<b>27</b> HPPD INHIBITORS (4-HYDROXY-PHENYL-PYRUVATE-DIOXYGENASE)	6	Pyrazole	isoxaflutole pyrasulfotole	<i>Balance Flexx</i> <i>component of Huskie</i>
<b>14</b> PPO INHIBITORS (protoporphyrinogen oxidase)	9	Pyrazolone	topramezone	<i>Armeson, Impact</i>
<b>22</b> PHOTOSYSTEM I ELECTRON DIVERTER	5	Triketone	mesotrione tembotrione	<i>Callisto</i> <i>Laudis</i>
<b>3</b> MICROTUBULE INHIBITORS	6	Aryl triazinone	carfentrazone fluthiacet sulfentrazone	<i>Aim</i> <i>Cadet</i> <i>Authority, Spartan</i>
<b>8</b> LIPID SYNTHESIS INHIBITORS (not ACCase)	5	Dinitroaniline	acifluorfen prodiamine trifluralin	<i>Ultra Blazer</i> <i>Reflex, others</i> <i>Cobra, Phoenix</i> <i>Goal</i>
<b>15</b> LONG-CHAIN FATTY ACID INHIBITORS	1	Phthalic acid	flumiclorac flumioxazin	<i>Resource</i> <i>Château, Valor, others</i>
<b>16</b> SPECIFIC SITE UNKNOWN	0	Pyridazine	oxadiazon	<i>Ronstar</i>
<b>20</b> CELLULOSE INHIBITOR (SITE A)	0	Pyrimidinedione	safinacil	<i>Kixor, Sharpen</i>
<b>21</b> CELLULOSE INHIBITOR (SITE B)	0	Bipyridylum	diquat paraquat	<i>Reglone</i> <i>Gramoxone</i>
<b>29</b> CELLULOSE INHIBITOR (UNSPECIFIED SITE)	0	Benzamide	pronamide ethafluralin oryzalin	<i>Kerb</i> <i>Curbit, Sonalan</i> <i>Surflan</i>
			pendimethalin proflumiclorac trifluralin	<i>Pendulum, Prowl, others</i> <i>Barricade</i> <i>Treflan, others</i>
			DCPA	<i>Dacthal</i>
			pyridazine	<i>Dimension</i>
			Phosphorodithioate	<i>Prefar</i>
			butylate	<i>Sutan +</i>
			Thiocarbamate	<i>Ro-Weed</i> <i>Eptam, Eradicane</i>
			Acetamide	<i>Devrinol</i>
			Chloroacetamide	<i>Breakfree, Degree, Harness, TopNotch, Warrant, others</i>
			alachlor	<i>Intro, Micro-Tech</i>
			dimethenamid-P	<i>Outlook</i>
			s-metolachlor	<i>Dual, Cinch, others</i>
			Oryacetamide	<i>Define</i>
			Pyrazole	<i>Zidua</i>
			Benzofurane	<i>ethofumesate</i> <i>Norton</i>

## SPECIFIC FOR:

DELAWARE  
MARYLAND  
PENNSYLVANIA  
NEW JERSEY  
VIRGINIA  
WEST VIRGINIA

## by PREMIX

This chart lists premix herbicides alphabetically by their trade names so you can identify the premix's component herbicides and their respective site-of-action groups. Refer to the Site-of-Action chart on the left for more information. However, there may be differences in formulations between the premix herbicides and the respective trade names of the components.

PREMIX	ACTIVE INGREDIENT	TRADE NAME <sup>2</sup>	SITE-OF-ACTION GROUP
ACURON	bicyclopyrone	-----	27
	mesotrione	Callisto	27
	atrazine	atrazine	5
	s-metolachlor	Dual II Magnum	15
AFFORIA	thifensulfuron	Harmony	2
	tribenuron	Express	2
	flumioxazin	Valor	14
	pyoxasulfone	Zidua	15
	fluthiacet	Cadet	14
ANTHEM	pyoxasulfone	Zidua	15
ANTHEM ATZ	fluthiacet	Cadet	14
	atrazine	atrazine	5
ANTHEM FLEX	pyoxasulfone	Zidua	15
	carfentrazone	Aim	14
AUTHORITY ASSIST	sulfentrazone	Spartan	14
	imazethapyr	Pursuit	2
AUTHORITY ELITE	sulfentrazone	Spartan	14
	s-metolachlor	Dual Magnum	15
AUTHORITY FIRST	sulfentrazone	Spartan	14
	cloransulam	FirstRate	2
AUTHORITY MTZ	sulfentrazone	Spartan	14
	metribuzin	metribuzin	5
AUTHORITY XL (Authority Maxx)	sulfentrazone	Spartan	14
	chlorimuron	Classic	2
	iodosulfuron	Autumn	2
AUTUMN SUPER	iodosulfuron	Autumn	2
	thiencarbazone	-----	2
AXIAL STAR	pinoxaden	Axial XL	1
	fluroxypyr	Starane	4
AXIOM	flufenacet	Define	15
	metribuzin	metribuzin	5
	rimsulfuron	Resolve	2
BASIS BLEND	thifensulfuron	Harmony	2
	s-metolachlor	Dual II Magnum	15
BICEP II MAGNUM (Bicep Lite II Magnum)	atrazine	atrazine	5
BOUNDARY	s-metolachlor	Dual Magnum	15
	metribuzin	metribuzin	5
BREAKFREE NXT ATZ (Breakfree NXT Lite)	acetochlor	Breakfree	15
	atrazine	atrazine	5
BROADAXE	s-metolachlor	Dual Magnum	15
	sulfentrazone	Spartan	14
BULLET	alachlor	Micro-Tech	15
	atrazine	atrazine	5
CALLISTO GT	mesotrione	Callisto	27
	glyphosate	Touchdown	9
CALLISTO XTRA	mesotrione	Callisto	27
	atrazine	atrazine	5
CANOPY	chlorimuron	Classic	2
	metribuzin	metribuzin	5
CANOPY EX	chlorimuron	Classic	2
	tribenuron	Express	2
CAPRENO	thiencarbazone	-----	2
	tembotrione	Laudis	27
CHAPARRAL	metribuzin	Ally	2
	aminopyralid	Milestone	4
CIMARRON MAX	metribuzin	Ally	2
	dicamba	Banvel	4
	2,4-D	2,4-D	4
CIMARRON PLUS	metribuzin	Ally	2
	chlorimuron	Glean	2
CINCH ATZ (Cinch ATZ Lite)	s-metolachlor	Dual II Magnum	15
	atrazine	atrazine	5
CORVUS	thiencarbazone	-----	2
	isoxaflutole	Balance Flexx	27
CROSSBOW	trifluroxypyr	Remedy	4
	2,4-D	2,4-D	4
CURTAIL	clopyralid	Stinger	2
	2,4-D	2,4-D	4
DEGREE XTRA	acetochlor	Degree	15
	atrazine	atrazine	5
DISTINCT	dicamba	Clarity	4
	diffenopyr	-----	19
ENVIVE	chlorimuron	Classic	2
	thifensulfuron	Harmony	2
	flumioxazin	Valor	14
EXTREME	imazethapyr	Pursuit	2
	glyphosate	glyphosate	9
FIERCE	flumioxazin	Valor	14
	pyoxasulfone	Zidua	15
FIERCE XLT	flumioxazin	Valor	14
	pyoxasulfone	Zidua	15
	chlorimuron	Classic	2
FINESSE	chlorimuron	Glean	2
	metribuzin	Ally	2
FLEXSTAR GT	fomesafen	Flexstar	14
	glyphosate	glyphosate	9
FULTIME NXT	acetochlor	TopNotch	15
	atrazine	atrazine	5
FUSION	fluzifop	Fuzilade	1
	fenoxaprop	Puma	1
GANGSTER	flumioxazin	Valor	14
	cloransulam	FirstRate	2
GUARDSMAN MAX (G-Max Lite)	dimethenamid-P	Outlook	15
	atrazine	atrazine	5
GRAZON P-D	picloram	Tordon	4
	2,4-D	2,4-D	4
GRAZON NEXT HL	aminopyralid	Milestone	4
	2,4-D	2,4-D	4
HALEX GT	s-metolachlor	Dual Magnum	15
	mesotrione	Callisto	27
	glyphosate	glyphosate	9
HARMONY EXTRA	thifensulfuron	Harmony	2
	tribenuron	Express	2
HARNESXTRA	acetochlor	Harness	15
	atrazine	atrazine	5
HORNET	clopyralid	Stinger	4
	flumetsulam	Python	2
HUSKIE	pyrasulfotole	-----	27
	bromoxynil	Buctril	6
	pyrasulfotole	-----	27
HUSKIE COMPLETE	bromoxynil	Buctril	6
	thiencarbazone	-----	2
INSTIGATE	rimsulfuron	Resolve	2
	mesotrione	Callisto	27
JOURNEY	imazapic	Plateau	2
	glyphosate	glyphosate	9
KEYSTONE NXT (Keystone LA NXT)	acetochlor	Surpass	15
	atrazine	atrazine	5
	mesotrione	Callisto	27
LEXAR EZ	s-metolachlor	Dual II Magnum	15
	atrazine	atrazine	5
	mesotrione	Callisto	27
LUMAX EZ	s-metolachlor	Dual II Magnum	15
	atrazine	atrazine	5
MARKSMAN	dicamba	Clarity	4
	atrazine	atrazine	5
MARVEL	fluthiacet	Cadet	14
	fomesafen	Flexstar	14
MILESTONE VM PLUS	aminopyralid	Milestone	4
	trifluroxypyr	Remedy	4
NORTHSTAR	primisulfuron	Beacon	2
	dicamba	Clarity	4
OLYMPUS FLEX	propoxycarbazone	Olympus	2
	mesosulfuron	Osprey	2
OPTILL	safinacil	Sharpen	14
	imazethapyr	Pursuit	2
	safinacil	Sharpen	14
OPTILL PRO	imazethapyr	Pursuit	2
	dimethenamid-P	Outlook	15
PANOFLEX	thifensulfuron	Harmony	2
	tribenuron	Express	2
PASTUREGARD	trifluroxypyr	Remedy	4
	fluroxypyr	Starane	4
PERMIT PLUS	thifensulfuron	Harmony	2
	halosulfuron	Permit	2
PREFIX	s-metolachlor	Dual Magnum	15
	fomesafen	Reflex	14
PREQUEL	rimsulfuron	Resolve	2
	isoxaflutole	Balance	27
PULSAR	dicamba	Clarity	4
	fluroxypyr	Starane	4
REALM O	rimsulfuron	Resolve	2
	mesotrione	Callisto	27
REQUIRE O	rimsulfuron	Resolve	2
	dicamba	Clarity	4
RESOLVE O	rimsulfuron	Resolve	2
	thifensulfuron	Harmony	2
SEQUENCE	s-metolachlor	Dual Magnum	15
	glyphosate	glyphosate	9
SOLSTICE	mesotrione	Callisto	27
	fluthiacet	Cadet	14
SONIC	sulfentrazone	Spartan	14
	cloransulam	FirstRate	2
SPARTAN ADVANCE	sulfentrazone	Spartan	14
	glyphosate	glyphosate	9
SPARTAN CHARGE	sulfentrazone	Spartan	14
	carfentrazone	Aim	14
SPIRIT	proflumiclorac	Peak	2
	primisulfuron	Beacon	2
STATUS	diffenopyr	-----	19
	dicamba	Clarity	4
STEADFAST O	nicosulfuron	Accent Q	2
	rimsulfuron	Resolve	2
STORM	bentazon	Basagran	6
	acifluorfen	Ultra Blazer	14
STRATEGY	clomazone	Command	15
	ethafluralin	Curbit	3
	acetochlor	Surpass	15
SURESTART II	clopyralid	Stinger	4
	flumetsulam	Python	2
SURVEIL	flumioxazin	Valor	14
	cloransulam	FirstRate	2
SYNCHRONY	chlorimuron	Classic	2
	thifensulfuron	Harmony	2
TRIPLEFLEX II	acetochlor	Harness	15
	clopyralid	Stinger	4
	flumetsulam	Python	2
TRIVENCE	chlorimuron	Classic	2
	flumioxazin	Valor	14
	metribuzin	metribuzin	5
VALOR XLT	flumioxazin	Valor	14
	chlorimuron	Classic	2
VERDICT	safinacil	Sharpen	14
	dimethenamid-P	Outlook	15
	dicamba	Clarity	4
YUKON	halosulfuron	Permit	2
	mesotrione	Callisto	27
ZEMAX	s-metolachlor	Dual II Magnum	15



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