

HERBICIDE CLASSIFICATION

Repeated use of herbicides with the same site of action can result in the development of herbicide-resistant weed populations.



by MODE OF 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	SITE OF ACTION	CHEMICAL FAMILY	ACTIVE INGREDIENT	PRODUCT EXAMPLES (TRADE NAME*)	NUMBER OF RESISTANT WEED SPECIES IN U.S.	
1	LIPID SYNTHESIS INHIBITORS	Arlyloxyphenoxypropionate (fops)	clodinafop cyhalofop fenoxaprop fluzifop quizalofop	<i>Discover NG</i> <i>Clincher</i> <i>Ricestar, Tecoma, others</i> <i>Fusilade DX</i> <i>Assure II, Targa</i>	15	
2	ALS INHIBITORS (acetolactate synthase)	Cyclohexanedione (dims)	cletodim sethoxydim	<i>Select Max, others</i> <i>Poast, Poast Plus</i>	47	
3	EPSP SYNTHASE INHIBITOR (5-enolpyruvate-shikimate-3-phosphate)	Phenylpyrazolin	pinoxaden	<i>Axial XL</i>	15	
4	GROWTH REGULATORS	Arylpicolinate	halauxifen	<i>Arylex*, Elevore*</i>	8	
5	T1R1 AUXIN RECEPTORS (synthetic auxins)	Benzoic acid	dicamba	<i>Banvel, Clarity, DiFlexx, Engenia, Felixxan*, XtendiMax, others</i>	0	
6	AUXIN TRANSPORT INHIBITOR	Organophosphorus	glyphosate	<i>Roundup, Touchdown, several</i>	0	
7	PHOTOSYNTHESIS INHIBITORS	Phenylcarbamate	desmedipham phenmedipham	<i>BeteneX</i> <i>component of Betamix</i>	26	
8	PHOTOSYSTEM II INHIBITORS (different binding than 6 & 7)	Triazine	atrazine prometryn simazine	<i>AAtrex, others</i> <i>Caporal</i> <i>Princep</i>	1	
9	PHOTOSYSTEM II INHIBITORS (different binding than 5 & 7)	Triazinone	hexazinone	<i>Velpar</i>	1	
10	PHOTOSYSTEM II INHIBITORS (different binding than 5 & 6)	Uracil	terbacil	<i>Sinbar</i>	9	
11	PHOTOSYSTEM II INHIBITORS (different binding than 5 & 6)	Benzothiadiazole	benzazon	<i>Basagran, others</i>	1	
12	PHOTOSYSTEM II INHIBITORS (different binding than 5 & 6)	Nitrile	bromoxynil	<i>Buctril, others</i>	9	
13	PHOTOSYSTEM II INHIBITORS (different binding than 5 & 6)	Amide	propanil	<i>SuperWham</i>	9	
14	PHOTOSYSTEM II INHIBITORS (different binding than 5 & 6)	Urea	diuron flumetruon linuron	<i>Direx, Karmex</i> <i>Cotoran</i> <i>Lorex, Linex</i>	9	
15	NITROGEN METABOLISM INHIBITOR	Glutamine synthetase inhibitor	Organophosphorus	glufosinate	<i>Liberty, Cheetha</i>	1
16	PIGMENT INHIBITORS	Phytoene desaturase (PDS) inhibitor	none recognized	fluridone	<i>Sonar</i>	1
17	DOXP SYNTHASE INHIBITOR (1-DEOXY-D-XYLULOSE 5-PHOSPHATE)	Isoxazolidinone	clomazone	<i>Command</i>	1	
18	HPPD INHIBITORS	Pyrazole	pyrasulfotole	<i>component of Huskie</i>	2	
19	HPPD INHIBITORS	Pyrazolone	topramezone	<i>Armezon, Impact</i>	2	
20	HPPD INHIBITORS	Triketone	mesotrione tembotrione bicyclopyrone	<i>Callisto</i> <i>Laudis</i> <i>component of Acuron</i>	2	
21	CELL MEMBRANE DISRUPTERS	Aryl triazinone	sulfentrazone carfentrazone fluthiacet	<i>Spartan</i> <i>Aim</i> <i>Cadet</i>	3	
22	PPO INHIBITORS	Diphenylether	acifluorfen fomesafen lactofen	<i>Ultra Blazer</i> <i>Flexstar, Reflex, others</i> <i>Cobra, Phoenix</i>	3	
23	PPO INHIBITORS	N-phenylphthalimide	flumiclorac	<i>Resource</i>	5	
24	PPO INHIBITORS	Pyrimidinone	flumioxazin saflufenacil	<i>Valor, Rowel</i> <i>Sharpen</i>	5	
25	PHOTOSYSTEM I ELECTRON DIVERTER	Bipyridylum	diquat paraquat	<i>Reglone</i> <i>Gramoxone SL</i>	5	
26	SEEDLING ROOT GROWTH INHIBITORS	Microtubule inhibitors	Benzamide	pronamide	<i>Kerb</i>	6
27	SEEDLING ROOT GROWTH INHIBITORS	Microtubule inhibitors	Dimitroaniline	ethalfuralin pendimethalin trifluralin	<i>Sonalan</i> <i>Prowl H2, others</i> <i>Treflan, others</i>	6
28	SEEDLING SHOOT GROWTH INHIBITORS	Lipid synthesis inhibitor (not ACCase)	Thiocarbamate	butylate cycloate EPTC thiobencarb triallate	<i>Sutan +</i> <i>Ro-Neet</i> <i>Eradicane, Eptam</i> <i>Bolero</i> <i>Far-Go</i>	5
29	LONG-CHAIN FATTY ACID INHIBITORS	Chloroacetamide	acetochlor	<i>Degree, Harness, Surpass NXT, Topnotch, Warrant, others</i>	1	
30	LONG-CHAIN FATTY ACID INHIBITORS	Oxacetamide	atolachlor s-metolachlor dimethenamid-P	<i>Intra, Micro-Tech</i> <i>Dual Magnum, others</i> <i>Outlook</i>	1	
31	LONG-CHAIN FATTY ACID INHIBITORS	Pyrazole	flufenacet pyroxasulfone	<i>Define</i> <i>Zidua</i>	1	
32	SPECIFIC SITE UNKNOWN	Benzofurane	ethofumesate	<i>Nortron</i>	0	
33	UNDEFINED	Nucleic acid inhibitor	Arsenical	MSMA	<i>MSMA</i>	1

For more information and links to additional resources, visit TakeActionOnWeeds.com

TAKE ACTION IS ENDORSED BY THE FOLLOWING ORGANIZATIONS:



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.

PREMIX	COMPONENT		SITE-OF-ACTION GROUP
	ACTIVE INGREDIENT	TRADE NAME*	
ACURON	bicyclopyrone	-----	27
	mesotrione	<i>Callisto</i>	27
	atrazine	<i>AAtrex</i>	5
	s-metolachlor	<i>Dual II Magnum</i>	15
Acuron Flexi	bicyclopyrone	-----	27
	mesotrione	<i>Callisto</i>	27
	s-metolachlor	<i>Dual II Magnum</i>	15
AFFINITY BROADSPEC (Affinity Tankmix)	thifensulfuron	<i>Harmony</i>	2
	tribenuron	<i>Express</i>	2
AFFORIA	thifensulfuron	<i>Harmony</i>	2
	tribenuron	<i>Express</i>	2
	flumioxazin	<i>Valor</i>	14
	dicamba	<i>Clarity</i>	4
AGILITY SG	thifensulfuron	<i>Harmony</i>	2
	tribenuron	<i>Express</i>	2
	metsulfuron	<i>Ally</i>	2
ALLY EXTRA	thifensulfuron	<i>Harmony</i>	2
	tribenuron	<i>Express</i>	2
	metsulfuron	<i>Ally</i>	2
	pyroxasulfone	<i>Zidua</i>	15
ANTHEM ATZ	fluthiacet	<i>Cadet</i>	14
	atrazine	<i>AAtrex</i>	5
ANTHEM FLEX	pyroxasulfone	<i>Zidua</i>	15
	carfentrazone	<i>Aim</i>	14
	pyroxasulfone	<i>Zidua</i>	15
ANTHEM MAXX	fluthiacet	<i>Cadet</i>	14
ARMEZON PRO	tropramezone	<i>Armezon</i>	27
	dimethenamid-P	<i>Outlook</i>	15
AUTHORITY ASSIST	sulfentrazone	<i>Spartan</i>	14
	imazethapyr	<i>Pursuit</i>	2
AUTHORITY ELITE	sulfentrazone	<i>Spartan</i>	14
	s-metolachlor	<i>Dual Magnum</i>	15
	sulfentrazone	<i>Spartan</i>	14
AUTHORITY FIRST	cloransulam	<i>FirstRate</i>	2
AUTHORITY MTZ	sulfentrazone	<i>Spartan</i>	14
	metribuzin	<i>Metribuzin</i>	5
AUTHORITY XL (Authority Maxx)	sulfentrazone	<i>Spartan</i>	14
	chlorimuron	<i>Classic</i>	2
	iodosulfuron	<i>Autumn</i>	2
AUTUMN SUPER	thiencarbazone	<i>Varro</i>	2
	pinoxaden	<i>Axial XL</i>	1
AXIAL STAR	fluroxypyr	<i>Starane</i>	4
	flufenacet	<i>Define</i>	15
	metribuzin	<i>Metribuzin</i>	5
BASIS BLEND	rimsulfuron	<i>Resolve</i>	2
	thifensulfuron	<i>Harmony</i>	2
	desmedipham	<i>BeteneX</i>	5
	phenmedipham	-----	5
BICEP II MAGNUM (Bicep Lite II Magnum)	s-metolachlor	<i>Dual II Magnum</i>	15
	atrazine	<i>AAtrex</i>	5
BOUNDARY	s-metolachlor	<i>Dual Magnum</i>	15
	metribuzin	<i>Metribuzin</i>	5
BRAKE F2	fomesafen	<i>Flexstar</i>	14
	fluridone	<i>Sonar</i>	4
BREAKFREE NXT ATZ (Breakfree NXT Lite)	acetochlor	<i>Breakfree NXT</i>	12
	atrazine	<i>AAtrex</i>	5
BROADAXE XC	s-metolachlor	<i>Dual Magnum</i>	15
	sulfentrazone	<i>Spartan</i>	14
BROADHEAD	carfentrazone	<i>Aim</i>	14
	quinclorac	<i>Facet</i>	4
	bromoxynil	<i>Buctril</i>	6
BRONATE	MCPA	<i>MCPA</i>	4
CALLISTO GT	mesotrione	<i>Callisto</i>	27
	glyphosate	<i>glyphosate</i>	9
CALLISTO XTRA	mesotrione	<i>Callisto</i>	27
	atrazine	<i>AAtrex</i>	5
	chlorimuron	<i>Classic</i>	2
CANOPY	metribuzin	<i>Metribuzin</i>	5
CANOPY EX	chlorimuron	<i>Classic</i>	2
	tribenuron	<i>Express</i>	2
CAPRENO	thiencarbazone	<i>Varro</i>	2
	tembotrione	<i>Laudis</i>	27
CARNIVORE	MCPA	<i>MCPA</i>	4
	clopyralid	<i>Stinger</i>	4
	bromoxynil	<i>Buctril</i>	6
	glufosinate	<i>Cheetah</i>	10
CHEETAH MAX	fomesafen	<i>Reflex</i>	14
CINCH ATZ (Cinch ATZ Lite)	s-metolachlor	<i>Dual II Magnum</i>	15
	atrazine	<i>AAtrex</i>	5
CLEARPATH	quinclorac	<i>Facet</i>	4
	imazethapyr	<i>Newpath</i>	2
COLT + SALVO (Trump Card)	2,4-D	<i>2,4-D</i>	4
	fluroxypyr	<i>Starane</i>	4
	MCPA	<i>MCPA</i>	4
COLT + SWORD	fluroxypyr	<i>Starane</i>	4
	thiencarbazone	<i>Varro</i>	2
CORVUS	isoxaflutole	<i>Balance Flexx</i>	27
CURTAL	clopyralid	<i>Stinger</i>	4
	2,4-D	<i>2,4-D</i>	4
CURTAL M	clopyralid	<i>Stinger</i>	4
	MCPA	<i>MCPA</i>	4
DEGREE XTRA	acetochlor	<i>Degree</i>	15
	atrazine	<i>AAtrex</i>	5
DIFLEX DUO	dicamba	<i>DiFlexx</i>	4
	tembotrione	<i>Laudis</i>	27
DILIGENT*	chlorimuron	<i>Classic</i>	2
	rimsulfuron	<i>Resolve</i>	2
	flumioxazin	<i>Valor</i>	14
ENLIST DUO	2,4-D	<i>2,4-D</i>	4
	glyphosate	<i>glyphosate</i>	9
ENLITE	chlorimuron	<i>Classic</i>	2
	thifensulfuron	<i>Harmony</i>	2
	flumioxazin	<i>Valor</i>	14
	chlorimuron	<i>Classic</i>	2
ENVIVE	thifensulfuron	<i>Harmony</i>	2
	flumioxazin	<i>Valor</i>	14
	s-metolachlor	<i>Dual Magnum</i>	15
EXPERT	atrazine	<i>AAtrex</i>	5
	glyphosate	<i>glyphosate</i>	9
EXTREME	imazethapyr	<i>Pursuit</i>	2
	glyphosate	<i>glyphosate</i>	9
	acetochlor	<i>Harness</i>	15
FIELD MASTER	atrazine	<i>AAtrex</i>	5
	glyphosate	<i>glyphosate</i>	9
	flumioxazin	<i>Valor</i>	14
FIERCE	pyroxasulfone	<i>Zidua</i>	15
	flumioxazin	<i>Valor</i>	14
FIERCE XLT	pyroxasulfone	<i>Zidua</i>	15
	chlorimuron	<i>Classic</i>	2
	chlorsulfuron	<i>Glean</i>	2
FINESSE	metsulfuron	<i>Ally</i>	2
	chlorsulfuron	<i>Glean</i>	2
FINESSE GRASS AND BROADLEAF	flucarbazone	<i>Everest</i>	2
	fomesafen	<i>Flexstar</i>	14
FLEXSTAR GT	glyphosate	<i>glyphosate</i>	9
	aminopyralid	<i>Milestone</i>	4
FOREFRONT HL	2,4-D	<i>2,4-D</i>	4
FOXFIRE	fenoxaprop	<i>Tecoma</i>	1
	pinoxaden	<i>Axial XL</i>	1
FULTIME NXT	acetochlor	<i>TopNotch</i>	15
	atrazine	<i>AAtrex</i>	5
FUSION	fluzifop	<i>Fusilade DX</i>	1
	fenoxaprop	<i>Puma</i>	1
	flumioxazin	<i>Valor</i>	14
GANGSTER	cloransulam	<i>FirstRate</i>	2
	pyrosulam	<i>PowerFlex HL</i>	2
GOLDSKY	florasulam	-----	2
	fluroxypyr	<i>Starane</i>	4
HALEX GT	s-metolachlor	<i>Dual Magnum</i>	15
	mesotrione	<i>Callisto</i>	27
	glyphosate	<i>glyphosate</i>	9
HARNESX XTRA	acetochlor	<i>Harness</i>	15
	atrazine	<i>AAtrex</i>	5
HORNET	clopyralid	<i>Stinger</i>	4
	flumetsulam	<i>Python</i>	2
HUSKIE	pyrasulfotole	-----	27
	bromoxynil	<i>Buctril</i>	6
	pyrasulfotole	-----	27
HUSKIE COMPLETE	bromoxynil	<i>Buctril</i>	6
	thiencarbazone	<i>Varro</i>	2
INSTIGATE	rimsulfuron	<i>Resolve, Matrix</i>	2
	mesotrione	<i>Callisto</i>	27
KEYSTONE NXT (Keystone LA NXT)	acetochlor	<i>Surpass NXT</i>	15
	atrazine	<i>AAtrex</i>	5
	2,4-D	<i>2,4-D, others</i>	4
KOCHIABORE	fluroxypyr	<i>Starane</i>	4
	bromoxynil	<i>Buctril, others</i>	6
LEADOFF	rimsulfuron	<i>Resolve</i>	2
	thifensulfuron	<i>Harmony</i>	2
	mesotrione	<i>Callisto</i>	27
LEXAR EZ	s-metolachlor	<i>Dual II Magnum</i>	15
	atrazine	<i>AAtrex</i>	5
LUMAX EZ	mesotrione	<i>Callisto</i>	27
	s-metolachlor	<i>Dual II Magnum</i>	15
MARVEL	fluthiacet	<i>Cadet</i>	14
	fomesafen	<i>Flexstar</i>	14
OBEY	clomazone	<i>Command</i>	13
	quinclorac	<i>Facet</i>	4
OPTILL	saflufenacil	<i>Sharpen</i>	14
	imazethapyr	<i>Pursuit</i>	2
OPTILL PRO	saflufenacil	<i>Sharpen</i>	14
	imazethapyr	<i>Pursuit</i>	2
	dimethenamid-P	<i>Outlook</i>	15
ORION	florasulam	-----	2
	MCPA	<i>MCPA</i>	4
PANDFLEX	thifensulfuron	<i>Harmony</i>	2
	tribenuron	<i>Express</i>	2
PERMIT PLUS	thifensulfuron	<i>Harmony</i>	2
	halosulfuron	<i>Permit</i>	2
PREFIX	s-metolachlor	<i>Dual Magnum</i>	15
	fomesafen	<i>Reflex</i>	14
PREQUEL	rimsulfuron	<i>Resolve</i>	2
	isoxaflutole	<i>Balance</i>	27
	desmedipham	<i>BeteneX</i>	5