

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	NUMBER OF RESISTANT WEED SPECIES IN U.S.	CHEMICAL FAMILY	ACTIVE INGREDIENT	PRODUCT EXAMPLES (TRADE NAME)
1 ACCASE INHIBITORS (acetyl CoA carboxylase)	15	Aryloxyphenoxypropionate (fops)	clodinafop cyhalofop fenoxaprop fluaizlofop quizalofop	<i>Discover NG</i> <i>Clincher</i> <i>Ricestar, Tecoma, others</i> <i>Fusilade DX</i> <i>Assure II, Targa</i>
		Cyclohexanedione (dims)	clethodim sethoxydim	<i>Select Max, others</i> <i>Poast Plus</i>
		Phenylpyrazolin	pinoxaden	<i>Axial XL</i>
2 ALS INHIBITORS (acetolactate synthase)	47	Imidazolinone	imazamox imazapic imazaquin imazethapyr	<i>Raptor, Beyond, Clearmax</i> <i>Plateau</i> <i>Scepter</i> <i>Pursuit, Newpath</i>
		Pyrimidinylthiobenzamide	bispyribac pyrithiobac	<i>Regiment</i> <i>Staple</i>
		Sulfonylaminocarbonyl-triazolinones	flucarbazone propoxycarbazon thiencarbazon bensulfuron chlorimuron chlorsulfuron halosulfuron iodosulfuron mesosulfuron metsulfuron nicosulfuron orthosulfuron primisulfuron prosulfuron rimsulfuron sulfosulfuron thifensulfuron triasulfuron tribenuron trifloxysulfuron triflurosulfuron cloransulam florasulam	<i>Everest, Pre-Pare, Sierra</i> <i>Olympus</i> <i>Varro</i> <i>Londax</i> <i>Classic</i> <i>Glean</i> <i>Permit</i> <i>Autumn</i> <i>Osprey</i> <i>Ally</i> <i>Accent Q, Zest*</i> <i>Strada</i> <i>Beacon</i> <i>Peak</i> <i>Resolve, Matrix</i> <i>Maverick</i> <i>Harmony</i> <i>Amber</i> <i>Express</i> <i>Envoke</i> <i>UpBeet</i> <i>FirstRate</i> <i>component of Orion</i>
		Triazolopyrimidine	flumetsulam penoxsulam pyroxulam	<i>Python, Accolade</i> <i>Grasp</i> <i>PowerFlex HL</i>
9 EPSP SYNTHASE INHIBITOR (5-enolpyruvyl-shikimate-3-phosphate)	15	Organophosphorus	glyphosate	<i>Roundup, Touchdown, several</i>
4 TIRI AUXIN RECEPTORS (synthetic auxins)	8	Aryloxypropionate Carboxylic acid Phenoxy	halauxifen dicamba aminopyralid clopyralid fluroxypyr triclopyr quinclorac 2,4-D MCPA	<i>Arylex*</i> <i>Banvel, Clarity, DIFlex, Engenia*, XtendiMax*, others</i> <i>Milestone</i> <i>Stinger</i> <i>Starane</i> <i>Grandstand</i> <i>Facet</i> <i>2,4-D, others</i> <i>MCPA, others</i>
19 AUXIN TRANSPORT INHIBITOR	0	Semicarbazone	diffenozopyr	<i>component of Status</i>
5 PHOTOSYSTEM II INHIBITORS (different binding than 6 & 7)	26	Phenylcarbamate Triazine Triazinone Uracil	desmedipham phenmedipham atrazine prometryn simazine hexazinone metribuzin terbacil	<i>Betenex</i> <i>component of Betamix</i> <i>AAtrex, others</i> <i>Caparol</i> <i>Princap</i> <i>Velpar</i> <i>Metribuzin, others</i> <i>Sinbar</i>
6 PHOTOSYSTEM II INHIBITORS (different binding than 5 & 7)	1	Benzothiadiazole	benfazon	<i>Basagran, others</i>
7 PHOTOSYSTEM II INHIBITORS (different binding than 5 & 6)	9	Nitrile Amide Urea	bromoxynil propanil diuron fluometuron linuron	<i>Buctril, others</i> <i>SuperWham</i> <i>Direx, Karmex</i> <i>Cotoran</i> <i>Lorox, Linex</i>
10 NITROGEN METABOLISM INHIBITOR	1	Organophosphorus	glufosinate	<i>Liberty</i>
12 PHYTOENE DESATURASE (PDS) INHIBITOR	1	none recognized	fluridone	<i>Sonar</i>
13 DOXP SYNTHASE INHIBITOR (1-DEOXY-D-XYLULOSE 5-PHOSPHATE)	1	Isoxalidione	clomazone	<i>Command</i>
27 HPPD INHIBITORS	2	Isoxazole Pyrazole Pyrazolone Triketone	isoxaflutole pyrasulfotole topramezone mesotrione bicyclopyrone	<i>Balance Flexx</i> <i>component of Huskie</i> <i>Armezon, Impact</i> <i>Callisto</i> <i>component of Acuron</i>
14 PPO INHIBITORS	3	Aryl triazinone Diphenylether N-phenylphthalimide Pyrimidinedione	sulfentrazone carfentrazone fluthiacet acifluorfen fomesafen lactofen flumiclorac flumioxazin saflufenacil	<i>Spartan</i> <i>Ultra Blazer</i> <i>Flexstar, Reflex, others</i> <i>Cobra, Phoenix</i> <i>Resource</i> <i>Valor, Rowel</i> <i>Sharpen</i>
22 PHOTOSYSTEM I ELECTRON DIVERTER	5	Bipyridylium	diquat paraquat	<i>Reglone</i> <i>Gramoxone SL</i>
3 MICROTUBULE INHIBITORS	6	Benzamide Dinitroaniline	pronamide ethalfuralin pendimethalin trifluralin	<i>Herb</i> <i>Sonalan</i> <i>Prowl H₂O, others</i> <i>Treflan, others</i>
8 LIPID SYNTHESIS INHIBITOR (not ACCase)	5	Thiocarbamate	butylate cycloate EPTC thiobencarb triallate	<i>Sutan +</i> <i>Ro-Neet</i> <i>Eradicane, Eptam</i> <i>Bolero</i> <i>Far-Go</i>
15 LONG-CHAIN FATTY ACID INHIBITORS	1	Chloroacetamide	acetochlor alachlor s-metolachlor dimethenamid-P	<i>Degree, Harness, Surpass NXT, Topnotch, Warrant, others</i> <i>Intro, Micro-Tech</i> <i>Dual Magnum, others</i> <i>Outlook</i>
16 SPECIFIC SITE UNKNOWN	0	Oxyacetamide Pyrazole	flufenacet pyroxasulfone	<i>Define</i> <i>Zidua</i>
17 NUCLEIC ACID INHIBITOR	1	Benzofuran	ethofumesate	<i>Nortron</i>
UNDEFINED				
17 NUCLEIC ACID INHIBITOR	1	Arsenical	MSMA	<i>MSMA</i>

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	ACTIVE INGREDIENT	TRADE NAME	SITE-OF-ACTION GROUP
ACURON	bicyclopyrone	-----	27
	mesotrione	Callisto	27
	atrazine	AAtrex	5
	s-metolachlor	Dual II Magnum	15
Acuron Flexi*	bicyclopyrone	-----	27
	mesotrione	Callisto	27
	s-metolachlor	Dual II Magnum	15
AFFINITY BROADSPEC (Affinity Tankmix)	thifensulfuron	Harmony	2
	tribenuron	Express	2
AFFORIA	thifensulfuron	Harmony	2
	tribenuron	Express	2
	flumioxazin	Valor	14
	dicamba	Clarity	4
AGILITY SG	thifensulfuron	Harmony	2
	tribenuron	Express	2
	metsulfuron	Ally	2
ALLY EXTRA	thifensulfuron	Harmony	2
	tribenuron	Express	2
	metsulfuron	Ally	2
ANTHEM ATZ	pyroxasulfone	Zidua	15
	fluthiacet	Cadet	14
	atrazine	AAtrex	5
ANTHEM FLEX	pyroxasulfone	Zidua	15
	carfentrazone	Aim	14
ANTHEM MAXX	pyroxasulfone	Zidua	15
	fluthiacet	Cadet	14
ARMEZON PRO	tropamezone	Armezon	27
	dimethenamid-P	Outlook	15
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
AUTUMN SUPER	iodosulfuron	Autumn	2
	thiencarbazon	Varro	2
AXIAL STAR	pinoxaden	Axial XL	1
	fluroxypyr	Starane	4
BASIS BLEND	rimsulfuron	Resolve	2
	thifensulfuron	Harmony	2
	desmedipham	Betenex	5
BETAMIX	phenmedipham	-----	5
BICEP II MAGNUM (Bicep Lite II Magnum)	s-metolachlor	Dual II Magnum	15
	atrazine	AAtrex	5
	s-metolachlor	Dual Magnum	15
BOUNDARY	metribuzin	Metribuzin	5
	fomesafen	Flexstar	14
	fluridone	Sonar	12
BRAKE F2	fomesafen	Flexstar	14
BREAKFREE NXT ATZ (Breakfree NXT Lite)	atrazine	AAtrex	5
BROADAXE	s-metolachlor	Dual Magnum	15
	sulfentrazone	Spartan	14
BROADHEAD	carfentrazone	Aim	14
	quinclorac	Facet	4
BRONATE	bromoxynil	Buctril	6
	MCPA	MCPA	4
BULLET	alachlor	Micro-Tech	15
	atrazine	AAtrex	5
CALLISTO GT	mesotrione	Callisto	27
	glyphosate	glyphosate	9
CALLISTO XTRA	mesotrione	Callisto	27
	atrazine	AAtrex	5
	chlorimuron	Classic	2
	metribuzin	Metribuzin	5
CANOPY	chlorimuron	Classic	2
	tribenuron	Express	2
	thiencarbazon	Varro	2
CAPRENO	tembotrione	Laudis	27
	MCPA	MCPA	4
CARNIVORE	clopyralid	Stinger	4
	bromoxynil	Buctril	6
CINCH ATZ (Cinch ATZ Lite)	s-metolachlor	Dual II Magnum	15
	atrazine	AAtrex	5
CLEARPATH	quinclorac	Facet	4
	imazethapyr	Newpath	2
COLT + SALVO (Trump Card)	2,4-D	2,4-D	4
	fluroxypyr	Starane	4
	MCPA	MCPA	4
COLT + SWORD	fluroxypyr	Starane	4
CORVUS	thiencarbazon	Varro	2
	isoxaflutole	Balance Flexx	27
CURTAIL	clopyralid	Stinger	4
	2,4-D	2,4-D	4
CURTAIL M	clopyralid	Stinger	4
	MCPA	MCPA	4
DEGREE XTRA	acetochlor	Degree	15
	atrazine	AAtrex	5
DIFLEX DUO*	dicamba	DIFlexx	4
	tembotrione	Laudis	27
	chlorimuron	Classic	2
DILIGENT*	rimsulfuron	Resolve	2
	flumioxazin	Valor	14
ENLIST DUO	2,4-D	2,4-D	4
	glyphosate	glyphosate	9
ENLITE	chlorimuron	Classic	2
	thifensulfuron	Harmony	2
ENVIVE	flumioxazin	Valor	14
	s-metolachlor	Dual Magnum	15
EXPERT	atrazine	AAtrex	5
	glyphosate	glyphosate	9
	imazethapyr	Pursuit	2
EXTREME	glyphosate	glyphosate	9
	acetochlor	Harness	15
	atrazine	AAtrex	5
FIELD MASTER	glyphosate	glyphosate	9
	flumioxazin	Valor	14
FIERCE	pyroxasulfone	Zidua	15
	flumioxazin	Valor	14
FIERCE XLT	pyroxasulfone	Zidua	15
	chlorimuron	Classic	2
	chlorsulfuron	Glean	2
FINESSE	metsulfuron	Ally	2
	chlorsulfuron	Glean	2
FINESSE GRASS AND BROADLEAF	flucarbazone	Everest	2
	fomesafen	Flexstar	14
FLEXSTAR GT	glyphosate	glyphosate	9
	aminopyralid	Milestone	4
FOREFRONT HL	2,4-D	2,4-D	4
	fenoxaprop	Tecoma	1
	pinoxaden	Axial XL	1
FOXFIRE	acetochlor	TopNotch	15
	atrazine	AAtrex	5
	fluaizlofop	Fusilade DX	1
FUSION	fenoxaprop	Puma	1
	flumioxazin	Valor	14
	cloransulam	FirstRate	2
GANGSTER	pyroxasulfone	PowerFlex HL	2
	florasulam	-----	2
	fluroxypyr	Starane	4
GUARDSMAN MAX (G-Max Lite)	dimethenamid-P	Outlook	15
	atrazine	AAtrex	5
HALEX GT	s-metolachlor	Dual Magnum	15
	mesotrione	Callisto	27
	glyphosate	glyphosate	9
HARNES XTRA	acetochlor	Harness	15
	atrazine	AAtrex	5
HORNET	clopyralid	Stinger	4
	flumetsulam	Python	2
HUSKIE	pyrasulfotole	-----	27
	bromoxynil	Buctril	6
	pyrasulfotole	-----	27
HUSKIE COMPLETE	bromoxynil	Buctril	6
	thiencarbazon	Varro	2
INSTIGATE	rimsulfuron	Resolve, Matrix	2
	mesotrione	Callisto	27
KEYSTONE NXT (Keystone LA NXT)	acetochlor	Surpass NXT	15
	atrazine	AAtrex	5
	2,4-D	2,4-D, others	4
KOCHIABOVE	fluroxypyr	Starane	4
	bromoxynil	Buctril, others	6
LEADOFF	rimsulfuron	Resolve	2
	thifensulfuron	Harmony	2
	mesotrione	Callisto	27
LEXAR EZ	s-metolachlor	Dual II Magnum	15
	atrazine	AAtrex	5
	mesotrione	Callisto	27
LUMAX EZ	s-metolachlor	Dual II Magnum	15
	atrazine	AAtrex	5
MARKSMAN	dicamba	Clarity	4
	atrazine	AAtrex	5
MARVEL	fluthiacet	Cadet	14
	fomesafen	Flexstar	14
NORTHSTAR	primisulfuron	Beacon	2
	dicamba	Clarity	4
OBEY	clomazone	Command	13
	quinclorac	Facet	4
OPTILL	saflufenacil	Sharpen	14
	imazethapyr	Pursuit	2
OPTILL PRO	saflufenacil	Sharpen	14
	imazethapyr	Pursuit	2
	dimethenamid-P	Outlook	15
	florasulam	-----	2
ORION	MCPA	MCPA	4
PANOFLEX	thifensulfuron	Harmony	2
	tribenuron	Express	2
PERMIT PLUS	thifensulfuron	Harmony	2
	halosulfuron	Permit	2
PREFIX	s-metolachlor	Dual Magnum	15
	fomesafen	Reflex	14
PREQUEL	rimsulfuron	Resolve	2
	isoxaflutole	Balance	27
PRIORITY	carfentrazone	Aim	14
	halosulfuron	Permit	2
PROGRESS	desmedipham	Betenex	5
	phenmedipham	-----	5
	ethofumesate	Nortron	16
PULSAR	dicamba	Clarity	4
	fluroxypyr	Starane	4
QUELEX*	halauxifen	Arylex	4
	florasulam	-----	2
RAVE	triasulfuron	Amber	2
	dicamba	Clarity	4
RAZE	flucarbazone	Everest	2
	fluroxypyr	Starane	4
REALM Q	rimsulfuron	Resolve	2
	mesotrione	Callisto	27
REBLEX	cyhalofop	Clincher	1
	penoxsulam	Grasp	2
REQUIRE Q	rimsulfuron	Resolve	2
	dicamba	Clarity	4
RESICORE*	clopyralid	Stinger	4
	acetochlor	Surpass NXT	15
	mesotrione	Callisto	27
RESOLVE Q	rimsulfuron	Resolve	2
	thifensulfuron	Harmony	2
REVULIN Q	nicosulfuron	Accent Q	2
	mesotrione	Callisto	27
RIMFIRE MAX	propoxycarbazon	Olympus	2
	mesosulfuron	Osprey	2
ROUNDUP XTEND*	dicamba	XtendiMax	4
	glyphosate	glyphosate	9
ROWEL FX	flumioxazin	Valor	14