

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*)
1 ACCASE INHIBITORS (acetyl CoA carboxylase)	15	Aryloxyphenoxypropionate (fops)	clodinafop cyhalofop fenoxaprop fluzifop quizalofop	Discover NG Clincher RiceStar, Tecoma, others Fusilade DX Assure II, Targa
2 ALS INHIBITORS (acetolactate synthase)	45	Cyclohexanedione (dims)	clethodim sethoxydim	Select Max, others Poast, Poast Plus
		Phenylpyrazolin	pinoxaden	Axial XL
9 EPSP SYNTHASE INHIBITOR (5-enolpyruvyl-shikimate-3-phosphate)	14	None accepted	glyphosate	Roundup, Touchdown, several
4 T1R1 AUXIN RECEPTORS (synthetic auxins)	10	Benzoic acid	dicamba	Banvel, Clarity, others
		Carboxylic acid	clopyralid fluroxypyr triclopyr	Stinger Starane Grandstand
		Phenoxy	2,4-D MCPA	2,4-D, others MCPA, others
19 AUXIN TRANSPORT INHIBITOR	0	Semicarbazone	diflufenzopyr	component of Status
5 PHOTOSYSTEM II INHIBITORS (different binding than 6 & 7)	26	Phenylcarbamate	desmedipham phenmedipham	Betenex component of Betamix
		Triazine	atrazine prometryn simazine	AAtrex, others Caparol Princep
		Triazinone	hexazinone	Velpar
		Uracil	metribuzin terbacil	Sencor, others Sinbar
6 PHOTOSYSTEM II INHIBITORS (different binding than 5 & 7)	1	Benzothiadiazole	bentazon	Basagran
		Nitrile	bromoxynil	Buctril, others
		Amide	propanil	SuperWham
7 PHOTOSYSTEM II INHIBITORS (different binding than 5 & 6)	8	Urea	diuron fluometuron linuron	Direx, Karmex Cotoran Lorox, Linex
10 GLUTAMINE SYNTHETASE INHIBITOR	1	Organophosphorus	glufosinate	Liberty
13 DITERPENE SYNTHESIS INHIBITOR	1	Isoxazolidinone	clomazone	Command
27 HPPD INHIBITORS	2	Isoxazole	isoxaflutole	Balance Flexx
		Pyrazole	pyrasulfotole	component of Huskie
		Pyrazolone	topramezone	Armezon, Impact
		Triketone	mesotrione tembotrione	Callisto Laudis
14 PPO INHIBITORS	2	Aryl triazinone	sulfentrazone carfentrazone fluthiacet	Spartan Aim Cadet
		Diphenylether	acifluorfen fomesafen	Ultra Blazer Flexstar, Reflex, others
		N-phenylphthalimide	lactofen flumiclorac	Cobra, Phoenix Resource
		Pyrimidinone	flumioxazin saflufenacil	Valor Sharpen
22 PHOTOSYSTEM I ELECTRON DIVERTER	5	Bipyridylium	diquat paraquat	Reglone Gramoxone SL
3 MICROTUBULE INHIBITORS	6	Amide	pronamide	Kerb
		Dinitroaniline	ethalfuralin pendimethalin trifluralin	Sonalan Prowl H ₂ O, others Treflan, others
8 LIPID SYNTHESIS INHIBITORS (not ACCase)	5	Thiocarbamate	butylate cycloate EPTC	Sutan + Ro-Neet Eradicane, Eptam
			thiobencarb triallate	Bolero Far-Go
15 LONG-CHAIN FATTY ACID INHIBITORS	1	Chloroacetamide	alachlor s-metolachlor dimethenamid-P	Degree, Harness, Surpass, Topnotch, Warrant, others Dual Magnum, others Outlook
		Oxyacetamide	flufenacet	Define
		Pyrazole	pyroxasulfone	Zidua
16 SPECIFIC SITE UNKNOWN	0	Benzo-furan	ethofumesate	Nortron
17 NUCLEIC ACID INHIBITORS	1	Arsenical	MSMA	MSMA

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
AFFINITY BROADSPEC (Affinity Tankmix)	thifensulfuron tribenuron	Harmony Express	2 2
AGILITY SG	dicamba thifensulfuron tribenuron metsulfuron	Clarity Harmony Express Ally	4 2 2 2
ALLY EXTRA	thifensulfuron tribenuron metsulfuron	Harmony Express Ally	2 2 2
ANTHEM	pyroxasulfone fluthiacet	Zidua Cadet	15 14
ANTHEM ATZ	pyroxasulfone fluthiacet atrazine	Zidua Cadet AAtrex	15 14 5
AUTHORITY ASSIST	sulfentrazone imazethapyr	Spartan Pursuit	14 2
AUTHORITY ELITE	sulfentrazone s-metolachlor	Spartan Dual Magnum	14 15
AUTHORITY FIRST	sulfentrazone cloransulam	Spartan FirstRate	14 2
AUTHORITY MTZ	sulfentrazone metribuzin	Spartan Sencor	14 5
AUTHORITY XL (Authority Maxx)	sulfentrazone chlorimuron iodosulfuron	Spartan Classic Autumn	14 2 2
AUTUMN SUPER	thiocarbazon	-----	2
AXIAL STAR	pinoxaden fluroxypyr	Axial XL Starane	1 4
BASIS BLEND	rimsulfuron thifensulfuron	Resolve Harmony	2 2
BETAMIX	desmedipham phenmedipham	Betenex -----	5 5
BICEP II MAGNUM (Bicep Lite II Magnum)	s-metolachlor atrazine	Dual II Magnum AAtrex	15 5
BOUNDARY	s-metolachlor metribuzin	Dual Magnum Sencor	15 5
BREAKFREE ATZ (Breakfree ATZ Lite)	acetochlor atrazine	Breakfree AAtrex	15 5
BROADAXE	s-metolachlor sulfentrazone	Dual Magnum Spartan	15 4
BROADHEAD	carfentrazone quinclorac	Aim Facet	14 4
BRONATE	bromoxynil MCPA	Buctril MCPA	6 4
BULLET	alachlor atrazine	Micro-Tech AAtrex	15 5
CALLISTO XTRA	mesotrione atrazine	Callisto AAtrex	27 5
CANOPY	chlorimuron tribenuron metribuzin	Classic Express Sencor	2 2 5
CANOPY EX	chlorimuron tribenuron	Classic Express	2 2
CAPRENO	thiocarbazon	-----	2
CINCH ATZ (Cinch ATZ Lite)	tembotrione s-metolachlor atrazine	Laudis Dual II Magnum AAtrex	27 15 5
CLEARPATH	quinclorac imazethapyr	Facet Newpath	4 2
CORVUS	thiocarbazon isoxaflutole	----- Balance Flexx	2 27
CURTAL	clopyralid 2,4-D	Stinger 2,4-D	4 4
CURTAL M	clopyralid MCPA	Stinger MCPA	4 4
DEGREE XTRA	acetochlor atrazine	Degree AAtrex	15 5
ENLITE	chlorimuron thifensulfuron flumioxazin	Classic Harmony Valor	2 2 14
ENVIVE	chlorimuron thifensulfuron flumioxazin	Classic Harmony Valor	2 2 14
EXPERT	s-metolachlor atrazine glyphosate	Dual Magnum AAtrex glyphosate	15 5 9
EXTEME	imazethapyr glyphosate	Pursuit glyphosate	2 9
FIELD MASTER	acetochlor atrazine glyphosate	Harness AAtrex glyphosate	15 5 9
FIERCE	flumioxazin pyroxasulfone	Valor Zidua	14 15
FIERCE XLT*	flumioxazin pyroxasulfone	Valor Zidua	14 15
FINESSE	chlorimuron metsulfuron	Classic Ally	2 2
FINESSE GRASS AND BROADLEAF	chlorimuron flucarbazone	Glean Everest	2 2
FLEXSTAR GT	fomesafen glyphosate	Flexstar glyphosate	14 9
FOXFIRE	fenoxaprop pinoxaden	Tecoma Axial XL	1 1
FULTIME	acetochlor atrazine	TopNotch AAtrex	15 5
FUSION	fluzifop fenoxaprop	Fusilade DX Puma	1 1
GANGSTER	flumioxazin cloransulam	Valor FirstRate	14 2
GOLDSKY	pyroxasulam florasulam fluroxypyr	PowerFlex HL ----- Starane	2 2 4
GUARDSMAN MAX (G-Max Lite)	dimethenamid-P atrazine s-metolachlor	Outlook AAtrex Dual Magnum	15 5 15
HALEX GT	mesotrione glyphosate	Callisto glyphosate	27 9
HARNESS XTRA	acetochlor atrazine	Harness AAtrex	15 5
HORNET	clopyralid flumetsulam	Stinger Python	4 2
HUSKIE	pyrasulfotole bromoxynil	----- Buctril	27 6
HUSKIE COMPLETE	pyrasulfotole bromoxynil thiocarbazon	----- Buctril -----	27 6 2
INSTIGATE	rimsulfuron mesotrione	Resolve, Matrix Callisto	2 27
KEYSTONE (Keystone LA)	acetochlor atrazine	Surpass AAtrex	15 5
LEXAR EZ	mesotrione s-metolachlor atrazine	Callisto Dual II Magnum AAtrex	27 15 5
LUMAX EZ	mesotrione s-metolachlor atrazine	Callisto Dual II Magnum AAtrex	27 15 5
MARKSMAN	dicamba atrazine	Clarity AAtrex	4 5
MARVEL	fluthiacet	Cadet	14
MARVEL	fomesafen	Flexstar	14
NORTHSTAR	primisulfuron dicamba	Beacon Clarity	2 4
OBEY	clomazone quinclorac	Command Facet	13 4
OPTILL	saflufenacil	Sharpen	14
OPTILL	imazethapyr	Pursuit	2
OPTILL PRO	imazethapyr dimethenamid-P	Pursuit Outlook	2 15
ORION	florasulam MCPA	----- MCPA	2 4
PERMIT PLUS	thifensulfuron halosulfuron	Harmony Permit	2 2
PRIORITY	carfentrazone halosulfuron	Aim Permit	14 2
PREFIX	s-metolachlor	Dual Magnum	15
PREQUEL	fomesafen rimsulfuron isoxaflutole	Reflex Resolve Balance Flexx	14 2 27
PROGRESS	desmedipham phenmedipham	Betenex -----	5 5
PULSAR	ethofumesate	Nortron	16
PULSAR	dicamba fluroxypyr	Clarity Starane	4 4
PURSUIT PLUS	imazethapyr pendimethalin	Pursuit Prowl	2 3
RAVE	triasulfuron	Amber	2
RAZE	dicamba fluroxypyr	Clarity Starane	4 4
REALM O	rimsulfuron mesotrione	Resolve Callisto	2 27
REBELEX	cyhalofop penoxsulam	Clincher Grasp	1 2
REQUIRE O	rimsulfuron dicamba	Resolve Clarity	2 4
RESOLVE O	rimsulfuron thifensulfuron	Resolve Harmony	2 2
REZULT	bentazon sethoxydim	Basagran Poast	6 1
RIMFIRE MAX	propoxyacarbazon	Olympus	2
SEQUENCE	mesosulfuron s-metolachlor glyphosate	Osprey Dual Magnum glyphosate	2 15 9
SHOTGUN	atrazine 2,4-D	AAtrex 2,4-D	5 4
SONIC	sulfentrazone cloransulam	Spartan FirstRate	14 2
SPARTAN CHARGE	sulfentrazone carfentrazone	Spartan Aim	14 14
SPIRIT	prosofuron primisulfuron	Peak Beacon	2 2
STARANE FLEX	florasulam	-----	2
STARANE NEXT	fluroxypyr	Starane	4
STARANE NEXT	fluroxypyr	Starane	4
STATUS	bromoxynil diflufenzopyr dicamba	Buctril ----- Clarity	6 19 4
STEADFAST Q	nicosulfuron rimsulfuron	Accent Q Resolve	2 2
SUPREMACY	fluroxypyr thifensulfuron tribenuron	Starane Harmony Express	4 2 2
SUPREND	prometryn trifloxysulfuron	Caparol Envoke	5 2
STORM	bentazon acifluorfen	Basagran Ultra Blazer	6 14
SURESTART	acetochlor clopyralid	Surpass Stinger	15 4
SYNCHRONY	flumetsulam chlorimuron thifensulfuron	Python Classic Harmony	2 2 2
TRIPLEFLEX	acetochlor clopyralid	Harness Stinger	15 4
TRUMP CARD	flumetsulam	Python	2
VALOR XLT	2,4-D fluroxypyr	2,4-D Starane	4 4
VELPAR ALFAMAX	flumioxazin chlorimuron	Valor Classic	14 2
VERDICT	hexazinone diuron saflufenacil dimethenamid-P	Velpar Karmex Sharpen Outlook	5 7 14 15
WELD	MCPA fluroxypyr	MCPA Starane	4 4
WIDEMATCH	fluroxypyr clopyralid	Starane Stinger	4 4
WOLVERINE	fenoxaprop pyrasulfotole	Tecoma -----	1 27
YUKON	bromoxynil dicamba	Buctril Banvel	6 4
ZEMAX	halosulfuron mesotrione	Permit Callisto	2 27
	s-metolachlor	Dual II Magnum	15

*Indicates product is not registered for use at the time of printing. Check for a label and Material Safety Data Sheet at www.cdms.net to confirm status.

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