

# Using Herbicide Site of Action Bulletin to Combat Weed Resistance to Herbicides Bulletin

REVISED~

Color-coded classification of herbicides by site of action  
 • Includes WSSA group number

Corn and soybean herbicide premix tables showing active ingredients

Updated with new chemical families

**HERBICIDE CLASSIFICATION BY SITE OF ACTION**

SITE OF ACTION	WSSA GROUP	CHEMICAL FAMILY	ACTIVE INGREDIENT	HERBICIDE
Inhibition of acetyl CoA carboxylase (ACCase)	1	Aryloxyphenoxy propionate	fluroxypyr, flazakobop	FluoroXypyr, FluoroXypyr
Inhibition of acetolactate synthase (ALS)	2	Sulfonurea	chlorsulfuron, bensulfuron, sulfentrazone, proflumicafone, sulfamocarbonyl, sulfamocarbonyl, sulfamocarbonyl, sulfamocarbonyl	ChlorSulf, Bensulf, Sulfentra, Proflum, Sulfamocarbonyl
		Imidazolinone	imazamox, imazapyr, imazamox, imazapyr	Imaza, Imaza, Imaza, Imaza
Inhibition of microtubule assembly	3	Triazolopyrimidine	flumetsulam, chloransulam	Flumetsulam, Chloransulam
Synthetic auxins	4	Phenoxy	2,4-D, MCPA, MCPA	2,4-D, MCPA, MCPA
		Benzoic acid	dicamba	Dicamba
Inhibition of indoleacetic acid transport	19	Carboxylic acid	chlorsulfuron, fluroxypyr, proflumicafone, proflumicafone	ChlorSulf, FluoroXypyr, Proflum, Proflum
Inhibition of photosynthesis at photosystem II site A	5	Semicarbazone	atrazine, atrazine, bromoxynil, bromoxynil	Atrazine, Atrazine, Bromoxynil, Bromoxynil
		Triazine	atrazine, atrazine, bromoxynil, bromoxynil	Atrazine, Atrazine, Bromoxynil, Bromoxynil
Inhibition of photosynthesis at photosystem II site B	6	Uraclol	hexachloroacetone, hexachloroacetone	Hexachloroacetone, Hexachloroacetone
		Thiobenzothiazole	bromoxynil, bromoxynil	Bromoxynil, Bromoxynil
Photosystem I - electron donor	Urea	glyphosate, glyphosate	Glyphosate, Glyphosate	
Inhibition of EPSP synthase		glyphosate, glyphosate	Glyphosate, Glyphosate	
Inhibition of glutamine synthetase		glyphosate, glyphosate	Glyphosate, Glyphosate	
Inhibition of tyrosine decarboxylase and ACCase inhibition		glyphosate, glyphosate	Glyphosate, Glyphosate	
Bleaching: Inhibition of chlorophyll synthesis		glyphosate, glyphosate	Glyphosate, Glyphosate	
Bleaching: Inhibition of chlorophyll synthesis		glyphosate, glyphosate	Glyphosate, Glyphosate	
Inhibition of protoporphyrinogen oxidase (Protox or PPO)		glyphosate, glyphosate	Glyphosate, Glyphosate	
Inhibition of synthesis of very long-chain fatty acids (VLCFA)	15	Chloroacetamide	acetochlor, acetochlor, acetochlor, acetochlor	Acetochlor, Acetochlor, Acetochlor, Acetochlor

**\$2.00**

**CORN HERBICIDE PREMIXES**

PREMIX	ACTIVE INGREDIENTS	WSSA GROUPS	TRADE NAME
Aspen 2500	glyphosate, atrazine, bromoxynil	1, 5, 6	Aspen 2500
Aspen 3000	glyphosate, atrazine, bromoxynil, 2,4-D	1, 5, 6, 4	Aspen 3000
Aspen 3500	glyphosate, atrazine, bromoxynil, 2,4-D, MCPA	1, 5, 6, 4, 19	Aspen 3500
Aspen 4000	glyphosate, atrazine, bromoxynil, 2,4-D, MCPA, dicamba	1, 5, 6, 4, 19, 4	Aspen 4000
Aspen 4500	glyphosate, atrazine, bromoxynil, 2,4-D, MCPA, dicamba, imazamox	1, 5, 6, 4, 19, 4, 2	Aspen 4500
Aspen 5000	glyphosate, atrazine, bromoxynil, 2,4-D, MCPA, dicamba, imazamox, imazapyr	1, 5, 6, 4, 19, 4, 2, 2	Aspen 5000

**UTILIZING HERBICIDE Site of Action TO COMBAT WEED RESISTANCE TO HERBICIDES**

Herbicides can be grouped or classified into herbicide resistance categories. For example, herbicides that inhibit acetyl CoA carboxylase (ACCase) are classified as site of action 1 herbicides. Herbicides that inhibit acetolactate synthase (ALS) are classified as site of action 2 herbicides. Herbicides that inhibit microtubule assembly are classified as site of action 3 herbicides. Herbicides that inhibit photosynthesis at photosystem II site A are classified as site of action 5 herbicides. Herbicides that inhibit photosynthesis at photosystem II site B are classified as site of action 6 herbicides. Herbicides that inhibit protoporphyrinogen oxidase (Protox or PPO) are classified as site of action 15 herbicides. Herbicides that inhibit synthesis of very long-chain fatty acids (VLCFA) are classified as site of action 15 herbicides.

The Weed Science Society of America (WSSA) and the Herbicide Resistance Action Committee (HRAC) have developed classification schemes based on herbicide site of action. While there are some similarities between the two schemes, they both cover essentially the same information. The two schemes have been merged into a single classification scheme (shown in Figure 1) which herbicide resistance scientists use to identify herbicide resistance. The common "Site of Action" label which herbicide resistance scientists use to identify herbicide resistance is shown in Figure 1. These chemical families, modes of action, and mode of action labels are shown in Figure 1. The chemical families, modes of action, and mode of action labels are shown in Figure 1.

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