

QUICK START GUIDE

HOW TO USE THE HERBICIDE CLASSIFICATION CHART

The Herbicide Classification Chart is your most important tool for taking action against your worst weeds. By knowing herbicide groups by their site of action (SOA), you can diversify your herbicide applications to reduce your risk of herbicide resistance.

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
 (MOA) (see chart legend)

The chart groups herbicides by their mode of action (MOA) and lists the chemical name, active ingredient, and product name for each herbicide. The chart is divided into 14 MOA groups, each with a unique color and a corresponding icon. The groups are: 1. Amino Acid Synthesis Inhibitors (red), 2. ALS Inhibitors (orange), 3. EPSPS Inhibitors (green), 4. Growth Regulators (purple), 5. HPPD Inhibitors (blue), 6. Microtubule Inhibitors (yellow), 7. Photosynthesis Inhibitors (brown), 8. Protein Synthesis Inhibitors (pink), 9. Vitis Inhibitors (grey), 10. Cellulose Synthesis Inhibitors (light blue), 11. Cell Wall Inhibitors (light green), 12. Cellulose Synthase Inhibitors (light orange), 13. Cellulose Synthase Inhibitors (light purple), 14. Cellulose Synthase Inhibitors (light yellow).

Take ACTION
 TAKE ACTION ON WEEDS

by PREMIX

The right half of the chart lists specific herbicides and premixes by their sites of action (SOA). The chart is organized into columns for different SOA groups, with each herbicide listed with its trade name and active ingredients. The SOA groups are: 1. ALS Inhibitors, 2. EPSPS Inhibitors, 3. Growth Regulators, 4. HPPD Inhibitors, 5. Microtubule Inhibitors, 6. Photosynthesis Inhibitors, 7. Protein Synthesis Inhibitors, 8. Vitis Inhibitors, 9. Cellulose Synthesis Inhibitors, 10. Cell Wall Inhibitors, 11. Cellulose Synthase Inhibitors, 12. Cellulose Synthase Inhibitors, 13. Cellulose Synthase Inhibitors, 14. Cellulose Synthase Inhibitors.

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The left half of the chart classifies herbicides by their mode of action (MOA).

For example, Groups 2 and 9 are both Amino Acid Synthesis Inhibitors, which means their MOA is to shut down amino acid production necessary for protein synthesis.

But Groups 2 and 9 are also broken into their SOA. Group 2 are ALS inhibitors, which inhibits the enzyme acetolactate synthase (ALS) as their SOA, while Group 9 includes glyphosate, which inhibits the chloroplast enolpyruvyl shikimate-3-phosphate synthase (EPSPS) as the SOA.

The right half of the chart lists specific herbicides or premixes by their sites of action (SOA).

Premixes on this chart are listed by the most common brand names. If you use a generic brand, you will need to look up the common brand equivalent or the active ingredients.



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HOW TO USE THE HERBICIDE CLASSIFICATION CHART

Let's Get Started:

Use the chart to outline your site of action (SOA) rotation.

Find the products you use on the chart, then write down each SOA group number.

What you're looking for:

- The group number of sites of action used
- The number of effective sites of action used
- Selection pressure placed on a site of action (used more than two times)

Your goal is to have more than one effective mode of action on your worst weeds.

EXAMPLE 1:

In this example, our biggest problem weed is common waterhemp. Common waterhemp has known resistance to ALS inhibitors (Group 2) and glyphosate (Group 9).

Waterhemp (ALS + glyphosate resistant)

TIMING	HERBICIDE	ACTIVE INGREDIENT(S)	SOA GROUP(S)
EARLY POST	Extreme	imazethapyr	2
		glyphosate	9
LATE POST	Flexstar GT	fomesafen	14
		glyphosate	9

Let's say we're using a program of Extreme early post and Flexstar GT late post.

Using the premix side of the chart, we would find that Extreme uses the active ingredients of imazethapyr (Group 2) and glyphosate (Group 9), while Flexstar GT has fomesafen (Group 14) and glyphosate (Group 9). So we're using a Group 9 twice.

Waterhemp (ALS + glyphosate resistant)

TIMING	HERBICIDE	ACTIVE INGREDIENT(S)	SOA GROUP(S)
EARLY POST	Extreme	imazethapyr	2
		glyphosate	9
LATE POST	Flexstar GT	fomesafen	14
		glyphosate	9


ENVIVE	chlorimuron	Classic	2
	thifensulfuron	Harmony	2
	flumioxazin	Valor	14
EXPERT	s-metolachlor	Dual Magnum	15
	atrazine	AAtrex	5
	glyphosate	glyphosate	9
EXAMPLE 1			
EXTREME	imazethapyr	Pursuit	2
	glyphosate	glyphosate	9
FIELD MASTER	acetochlor	Harness	15
	atrazine	AAtrex	5
	glyphosate	glyphosate	9
FIERCE	flumioxazin	Valor	14
	pyroxasulfone	Zidua	15
FIERCE XLT	flumioxazin	Valor	14
	pyroxasulfone	Zidua	15
FINESSE	chlorimuron	Classic	2
	chlorsulfuron	Glean	2
	metsulfuron	Ally	2
FINESSE GRASS AND BROADLEAF	chlorsulfuron	Glean	2
	glyphosate	glyphosate	9
EXAMPLE 1			
FLEXSTAR GT	fomesafen	Flexstar	14
	glyphosate	glyphosate	9
FOXFIRE	fenoxaprop	Tecoma	1
	pinoxaden	Axial XL	1
FULLTIME NXT	acetochlor	TopNotch	15
	atrazine	AAtrex	5
FUSION	fluazifop	Fusilade DX	1
	fenoxaprop	Puma	1
GANGSTER	flumioxazin	Valor	14
	cloransulam	FirstRate	2

However, if we look at effective sites of action (SOAs with no known resistance), we are actually only using one effective site of action: Group 14. This would be cause for concern as selection pressure is being placed on Group 14. In this case, an adjustment of the program would be needed to include additional effective sites of action and reduce the selection pressure on Group 14.

It is recommended to go through this same exercise with each resistant weed you have.



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

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