

Herbicide Classification

REPEATED USE OF HERBICIDES WITH THE SAME SITE OF ACTION CAN RESULT IN THE DEVELOPMENT OF HERBICIDE-RESISTANT *POA ANNUA* POPULATIONS.



Resist Poa

USDA-SCRI ANNUAL BLUEGRASS COLLECTIVE

MODE OF ACTION (effect on plant growth)

NUMBER OF WEED SPECIES WITH REPORTED RESISTANCE*

SITE-OF-ACTION GROUP	SITE OF ACTION	CHEMICAL FAMILY	ACTIVE INGREDIENT	PRODUCT EXAMPLES (TRADE NAMES)	APPLICATION TIMING	NUMBER OF WEED SPECIES WITH REPORTED RESISTANCE*		REPORTED RESISTANT <i>POA ANNUA</i> POPULATIONS (USA)	STATES WITH REPORTED RESISTANT POPULATIONS (USA)
						Worldwide	USA		
AMINO ACID SYNTHESIS INHIBITORS									
2	ALS INHIBITORS (Acetolactate synthase)	Sulfonylurea	chlorsulfuron	<i>Chlorsulfuron 75</i>	Post	165	53	3	AL - MS - TN
			flazasulfuron	<i>Katana</i>	Post				
			foramsulfuron	<i>Revolver</i>	Post				
			rimsulfuron	<i>TranXit</i>	Post				
			sulfosulfuron	<i>Certainty</i>	Post				
			trifloxysulfuron	<i>Monument</i>	Post				
Imidazolinone	imazaquin	<i>Image</i>	Post	1	AL				
Pyrimidinyl(thio)benzoate	bispyribac-sodium	<i>Velocity</i>	Post	1	AL				
SEEDLING ROOT GROWTH INHIBITORS									
3	Microtubule inhibitors	Dinitroaniline	benfenin	<i>Balan, Benefin</i>	Pre	12	6	3	AL - NC - TN
			oryzalin	<i>Surflan</i>	Pre				
			pendimethalin	<i>Pendulum</i>	Pre				
			proflumicet	<i>Barricade</i>	Pre/Post				
			trifluralin	<i>Treflan</i>	Pre				
			Pyridine	dithiopyr	<i>Dimension</i>				
Benzamide	pronamide	<i>Kerb</i>	Pre/Post						
Benzoic acid	DCPA	<i>Dacthal</i>	Pre						
PHOTOSYNTHESIS INHIBITORS									
5	PHOTOSYSTEM II INHIBITORS (different binding than 7)	Triazine	atrazine	<i>AAtrex</i>	Pre/Post	103	37	2	MS - OR
			simazine	<i>Princep</i>	Pre/Post				
			Triazinone	metribuzin	<i>Sencor</i>				
7	PHOTOSYSTEM II INHIBITORS (different binding than 5)	Triazinone	amicarbazone	<i>Xonerate</i>	Pre/Post				
			Urea	siduron	<i>Tupersan</i>	Pre/Post			
SEEDLING SHOOT GROWTH INHIBITORS									
8	LIPID BIOSYNTHESIS INHIBITORS	Phosphorodithioate	bensulide	<i>Bensumec</i>	Pre	10	5	1	OR
		Benzofuran	ethofumesate	<i>Prograss</i>	Pre/Post				
AMINO ACID SYNTHESIS INHIBITORS									
9	EPSP SYNTHASE INHIBITORS (5-enolpyruvyl-shikimate-3-phosphate)	Glycine	glyphosate	<i>Roundup</i>	Post	47	17	3	CA - MO - TN
NITROGEN METABOLISM INHIBITORS									
10	GLUTAMINE SYNTHETASE INHIBITORS	Phosphinic acid	glufosinate	<i>Finale</i>	Post	4	1		
CELL MEMBRANE DISRUPTERS									
14	PROTOX OR PPO INHIBITION (Protoporphyrinogen oxidase)	N-phenylphthalimide	flumioxazin	<i>Sureguard</i>	Pre/Post	13	4		
SEEDLING SHOOT GROWTH INHIBITORS									
15	LONG CHAIN FATTY ACID INHIBITORS	Chloroacetamide	dimethenamid	<i>Tower</i>	Pre	7	3		
			S-metolachlor	<i>Pennant Magnum</i>	Pre				
			Acetamide	napropamide	<i>Devrinol</i>				
20	INHIBIT CELL WALL SYNTHESIS SITE A	Nitrile	dichlobenil	<i>Casoron</i>	Pre	3	2		
29	INHIBIT CELL WALL SYNTHESIS SITE C	Alkylazine	indaziflam	<i>Specticle</i>	Pre/Post				
CELL MEMBRANE DISRUPTERS									
22	PHOTOSYSTEM I ELECTRON DIVERTER	Bipyridylum	diquat	<i>Reward</i>	Post	32	6		
PIGMENT INHIBITORS									
27	CAROTENOID BIOSYNTHESIS INHIBITORS	Triketone	mesotrione	<i>Tenacity</i>	Pre/Post	4	1		
TYROSINE AMINOTRANSFERASE									
30	TYROSINE AMINOTRANSFERASE	Isoxazoline	methiozolin	<i>Poacure</i>	Pre/Post				

PREMIX	ACTIVE INGREDIENT	TRADE NAME	SITE-OF-ACTION GROUP
COASTAL	simazine	<i>Princep</i>	5
	proflumicet	<i>Barricade</i>	3
	imazaquin	<i>Image</i>	2
CRABGRASS PREVENTER WITH TEAM / TEAM PRO	benfenin	<i>Balan, Benefin</i>	3
	trifluralin	<i>Treflan</i>	3
ECHELON	sulfentrazone	<i>Dismiss</i>	14
	proflumicet	<i>Barricade</i>	3
FREEHAND	dimethenamid	<i>Tower</i>	15
	pendimethalin	<i>Pendulum</i>	3
GEMINI	proflumicet	<i>Barricade</i>	3
	isoxaben	<i>Gallery</i>	21
JEWEL, KANSEL	oxadiazon	<i>Ronstar</i>	14
	pendimethalin	<i>Pendulum</i>	3
NEGATE	metsulfuron	<i>Manor, MSM-Turf</i>	2
	rimsulfuron	<i>TranXit</i>	2

PREMIX	ACTIVE INGREDIENT	TRADE NAME	SITE-OF-ACTION GROUP
QUICKPRO	glyphosate	<i>Roundup</i>	9
	diquat	<i>Reward</i>	22
REGALSTAR G	oxadiazon	<i>Ronstar</i>	14
	proflumicet	<i>Barricade</i>	3
SNAPSHOT	trifluralin	<i>Treflan</i>	3
	isoxaben	<i>Gallery</i>	21
SPECTICLE TOTAL	indaziflam	<i>Specticle</i>	29
	diquat	<i>Reward</i>	22
ANDERSON'S GOOSE AND CRAB	glyphosate	<i>Roundup</i>	9
	bensulide	<i>Bensumec</i>	8
TRIBUTE TOTAL	oxadiazon	<i>Ronstar</i>	14
	thiencarbazone	-	2
XL	foramsulfuron	<i>Revolver</i>	2
	halosulfuron	<i>Sedgehammer</i>	2
	oryzalin	<i>Surflan</i>	3
	benfenin	<i>Balan, Benefin</i>	3

For more information and links to additional resources, visit ResistPoa.org.
 *Resistance cases are based upon those reported by the International Survey of Herbicide Resistant Weeds. Available at WeedScience.org.

Technical editing for this publication was led by **Edicarlos B. de Castro**, PhD, and **James D. McCurdy**, PhD, Mississippi State University, in partnership with other universities in the USDA-SCRI Resist Poa Project. Mississippi State University is an equal opportunity institution. Discrimination in university employment, programs, or activities based on race, color, ethnicity, sex, pregnancy, religion, national origin, disability, age, sexual orientation, genetic information, status as a U.S. veteran, or any other status protected by applicable law is prohibited. Questions about equal opportunity programs or compliance should be directed to the Office of Compliance and Integrity, 56 Morgan Avenue, P.O. 6044, Mississippi State, MS 39762, (662) 325-5839.

