



2023
Weed Management
Suggestions for
Mississippi Row Crops



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EXTENSION

2023 Weed Management Suggestions for Mississippi Row Crops

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2023 Weed Management Suggestions for Mississippi Row Crops

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Introduction

This guide contains the 2023 management suggestions for weed control in corn, cotton, grain sorghum, peanut, rice, small grain crops, and soybean grown in Mississippi. Additionally, it includes options for preplant burndown weed management and control of herbicide-resistant weeds common in Mississippi. Information on weed management outside row crops (forages, turfgrass, vegetables, etc.) can be found in Mississippi State Extension Publication 1532 entitled Weed Control Guidelines for Mississippi. The management suggestions in this publication are based on results of research and demonstrations conducted by the Mississippi Agriculture and Forestry Experiment Station and the Mississippi State University Extension Service. Decisions regarding management suggestions are made by the contributing authors listed above and are based on at least 2 years of replicated data at different research sites in Mississippi.

The information given here is for educational purposes only. References to commercial products, trade names, or suppliers are made with the understanding that no endorsement is implied and that no discrimination against other products or suppliers is intended. References to commercial products do not guarantee or warrant the standards of those products.

This publication contains weed management suggestions that are subject to change; therefore, these management suggestions are offered only as a guide. It is always the applicator's responsibility, by law, to read and follow all current label directions for the specific herbicide being used. The label always takes precedence over management suggestions found in this publication. For additional information, please see these websites: www.agrian.com, www.cdms.net, or www.greenbook.net.

Herbicide Modes of Action

	HRAC site group of action	Chemical family	Active ingredient	WSSA group
A	Inhibition of acetyl CoA carboxylase (ACCase)	Aryloxyphenoxy-propionate "FOPs" Cyclohexanedione "DIMS" Phenylpyrazoline "DEN"	clodinafop-propargyl cyhalofop-butyl diclofop-methyl fluazifop-P-butyl clethodim sethoxydim tralkoxydim pinoxaden	1
B	Inhibition of acetolactate synthase ALS (acetohydroxy acid synthase AHAS)	Sulfonylurea Imidazolinone Triazolopyrimidine Pyrimidinyl(thio)benzoate	chlorimuron-ethyl chlorsulfuron foramsulfuron halosulfuron-methyl iodosulfuron mesosulfuron metsulfuron-methyl nicosulfuron orthosulfamuron primisulfuron-methyl prosulfuron rimsulfuron sulfosulfuron thifensulfuron-methyl tribenuron-methyl trifloxysulfuron imazapic imazamox imazapyr imazaquin imazethapyr cloransulam-methyl diclosulam florasulam flumetsulam penoxsulam pyroxsulam bispyribac-sodium pyriithiobac	2

Herbicide Modes of Action

	HRAC site group of action	Chemical family	Active ingredient	WSSA group
C1	Inhibition of photosynthesis at photosystem II	Triazine Triazinone Uracil Urea Amide	atrazine prometon propazine simazine hexazinone metribuzin bromacil terbacil diuron fluometuron linuron siduron tebuthiuron propanil	5
C3	Inhibition of photosynthesis at photosystem II	Nitrile Benzothiadiazinone	bromoxynil bentazon	6
D	Photosystem-I-electron diversion	Bipyridylium	diquat paraquat	22
E	Inhibition of protoporphyrinogen oxidase (PPO)	Diphenylether N-phenylphthalimide Thiadiazole Oxadiazole Triazolinone	acifluorfen-Na fomesafen lactofen oxyfluorfen flumioxazin flumiclorac-pentyl fluthiacet-methyl oxadiazon carfentrazone-ethyl sulfentrazone	14
F1	Bleaching: Inhibition of carotenoid biosynthesis at the phytoene desaturase step (PDS)	Pyridazinone Other	norflurazon fluridone	12
F2	Bleaching: Inhibition of 4-hydroxyphenyl-pyruvate-dioxygenase (4-HPPD)	Triketone Isoxazole	mesotrione isoxaflutole	27
F4	Bleaching: Inhibition of carotenoid biosynthesis (unknown target)	Isoxazolidinone	clomazone	13
G	Inhibition of EPSP synthase	Glycine	glyphosate	9
H	Inhibition of glutamine synthetase	Phosphinic acid	glufosinate-ammonium	10
I	Inhibition of DHP (dihydropteroate) synthase	Carbamate	asulam	18

Herbicide Modes of Action

HRAC site group of action		Chemical family	Active ingredient	WSSA group
K1	Microtubule assembly inhibition	Dinitroaniline	benefin ethalfuralin oryzalin pendimethalin trifluralin	3
		Pyridine	dithiopyr thiazopyr	
		Benzamide	propyzamide = pronamide	
		Benzoic acid	DCPA = chlorthal-dimethyl	
K3	Inhibition of VLCFAs (see Remarks) (Inhibition of cell division)	Chloroacetamide	acetochlor butachlor dimethanamid metolachlor <i>s</i> -metolachlor	15
		Isoxazoline	pyroxasulfone	
		Acetamide	napropamide	
		Oxyacetamide	flufenacet	
L	Inhibition of cell wall (cellulose) synthesis	Nitrile	dichlobenil	20
		Benzamide	isoxaben	21
N	Inhibition of lipid synthesis (not ACCase inhibition)	Thiocarbamate	EPTC thiobencarb	8
		Phosphorodithioate	bensulide	
		Benzofuran	ethofumesate	
O	Action like indole acetic acid (synthetic auxins)	Phenoxy-carboxylic-acid	2,4-D 2,4-DB MCPA	4
		Benzoic acid	dicamba	
		Pyridine carboxylic acid	clopyralid fluroxypyr picloram triclopyr	
		Quinoline carboxylic acid	quinclorac	
P	Inhibition of auxin transport	Phthalamate	naptalam	19
		Semicarbazone	diflufenzopyr	
Z	Unknown herbicide mode of action	Organoarsenical	DSMA MSMA	17
		Other	dazomet fosamine metam oleic acid pelargonic acid	

Herbicide-Resistant Weed Management

Repeated applications of the same herbicide or a different herbicide with similar mode of action on the same field growing season after growing season has contributed to the widespread occurrence of resistance to herbicides in several weed species around the world, in the U.S., and in Mississippi (see list below). Weed management programs must not depend solely on herbicides to be economically sustainable in the long term. In general, a combination of the following strategies is recommended:

1. Use residual herbicides
2. Practice crop rotation
3. Rotate herbicides with different modes of action
4. Tank-mix herbicides with different modes of action at full recommended rates
5. Avoid sequential applications of the same herbicide continually
6. Utilize tillage, cultivation, and other cultural practices wherever and whenever feasible
7. Clean equipment thoroughly before and after each use
8. Control weeds postharvest to reduce soil seedbank

Herbicide-Resistant Weeds in Mississippi

Species	WSSA group	Herbicide active ingredient
Annual bluegrass	5	simazine
Barnyardgrass/junglerice	1	cyhalofop, fenoxaprop
	2	bispyribac-sodium, imazamox, imazethapyr, penoxsulam
	4	quinclorac
	7	propanil
	9	glyphosate
Common cocklebur	2	imazaquin, imazethapyr
	17	DSMA, MSMA
Common ragweed	9	glyphosate
Goosegrass	3	pendimethalin, trifluralin
	9	glyphosate
	17	DSMA, MSMA
Horseweed (marestail)	9	glyphosate
	22	paraquat
Italian ryegrass	1	diclofop, clethodim
	2	imazapic, imazapyr, mesosulfuron, metsulfuron, pyroxsulam, sulfometuron
	9	glyphosate
Johnsongrass	1	fenoxaprop, fluazifop, quizalofop
	3	pendimethalin, trifluralin
	9	glyphosate
Palmer amaranth	2	pyrithiobac
	9	glyphosate
	14	acifluorfen, carfentrazone, fomesafen, lactofen
Pigweed species	2	sulfometuron
Rice flatsedge	2	bispyribac-sodium, halosulfuron, imazethapyr
Spiny amaranth	9	glyphosate
Tall waterhemp	9	glyphosate

Herbicide-Resistant Weed Management

Management Options for Herbicide-Resistant Weeds

These are suggested options for managing herbicide-resistant weeds in the major agronomic crops of Mississippi. These are not the only options, but they have proven effective at managing herbicide-resistant weeds in Mississippi. See overall herbicide resistance summary in this section for details on existing herbicide-resistant weeds in Mississippi.

NOTE: Consult individual crop sections in this publication or product labels for specific information on application rates, timings of application, preplant intervals, rainfall intervals, and rotational crop restrictions.

Crop	Herbicide(s)	Rate	Timing of application	Special instructions
Barnyardgrass (ACCase-, ALS-, propanil-, and quinclorac-resistant)				
Rice	clomazone	0.8–2.1 pt/A, depending on soil texture	Preemergence after planting but before rice emergence; postemergence to rice with up to five leaves	Use the higher rate on heavier-textured soils. Clomazone provides no postemergence control. Apply with glyphosate if barnyardgrass is emerged at preemergence application.
Rice	pendimethalin	Formulation and soil texture dependent	Delayed preemergence after rice seed have imbibed water for germination	Use higher rate on heavier-textured soils. Provides no postemergence control.
Rice	pendimethalin + Bolero	0.75–1 lb ai/A + 4 pt/A	Delayed preemergence after rice seed have imbibed water for germination	Seedbed should be sealed by rain or flushing. Do not allow soil to crack after application. Application to rice stressed by high salt and/or high pH soil may cause excessive rice injury.
Barnyardgrass (ALS-resistant)				
Rice	Clincher SF	15 oz/A	Postemergence from one-leaf rice to early tillering stage to barnyardgrass with fewer than four leaves	Soil moisture is critical for good activity. Weed foliage must not be covered with water at application. Add clomazone, quinclorac, or pendimethalin for residual control. Add crop oil concentrate or methylated seed oil (MSO) at 1 quart per acre. May be applied as an emergency salvage treatment.
Rice	clomazone	0.8–2.1 pt/A; depending on soil texture	Preemergence after planting but before rice emergence; postemergence to rice with up to five leaves	Use the higher rate on heavier-textured soils. Clomazone provides no postemergence control. Apply with glyphosate if barnyardgrass is emerged at preemergence application. Apply with propanil, Clincher SF, or Ricestar HT if barnyardgrass is emerged at postemergence application.
Rice	Highcard	15.5 oz/A	Postemergence from two-leaf rice to panicle initiation	Use on MaxAce rice varieties and hybrids only. A residual herbicide should be included in first application to assist control of annual grasses. The initial application should be followed by second application approximately 14 days later.
Rice	pendimethalin	Formulation and soil texture dependent	Delayed preemergence after rice seed have imbibed water for germination	Use higher rate on heavier-textured soils. Provides no postemergence control. Include Clincher SF, Ricestar HT, propanil, or quinclorac to control emerged barnyardgrass.
Rice	pendimethalin + Bolero	0.75–1 lb ai/A + 4 pt/A	Delayed preemergence after rice seed have imbibed water for germination	Seedbed should be sealed by rain or flushing. Do not allow soil to crack after application. Application to rice stressed by high salt and/or high pH soil may cause excessive rice injury.
Rice	propanil	3–6 lb ai/A; depending on barnyardgrass size	Postemergence to barnyardgrass with less than four leaves	Add crop oil concentrate at 1% v/v if using an SC propanil formulation. Sequential applications may be needed for complete control. Add clomazone, pendimethalin, or quinclorac for residual control after application.
Rice	Provisia	13–16 oz/A	Postemergence from one-leaf rice until panicle initiation	Use on Provisia rice varieties only. A residual herbicide should be included in first application to assist control of annual grasses. The initial application should be followed by second application approximately 14 days later.
Rice	quinclorac	0.25–0.5 lb ai/A, depending on barnyardgrass size	Preemergence or postemergence until 40 days before harvest	Add crop oil concentrate at 1 quart per acre for postemergence applications. Apply with clomazone or pendimethalin for additional residual control. Apply with propanil, Ricestar HT, or Clincher SF for additional postemergence control. May be applied postflood as an emergency salvage treatment.
Rice	RiceBeaux	4 qt/A	Postemergence to barnyardgrass with one to three leaves	Soil should be moist at time of application and not allowed to crack after application. RiceBeaux works best as a component of a barnyardgrass program including preemergence and postemergence applications of other herbicides.

Herbicide-Resistant Weed Management

Crop	Herbicide(s)	Rate	Timing of application	Special instructions
Rice	Ricestar HT	24 oz/A	Postemergence from two-leaf rice to early tillering stage and to barnyardgrass with fewer than four leaves	Soil moisture is critical for good activity. Flush the field before application if soil is dry. Weed foliage must not be covered with water at time of application. Add clomazone or pendimethalin for residual control after application.
Barnyardgrass (ALS-, propanil-, and quinclorac-resistant)				
Rice	Clincher SF	15 oz/A	Postemergence from one-leaf rice to early tillering stage to barnyardgrass with fewer than four leaves	Soil moisture is critical for good activity. Weed foliage must not be covered with water at application. Add clomazone or pendimethalin for residual control. Add crop oil concentrate or methylated seed oil (MSO) at 1 quart per acre. May be applied as an emergency salvage treatment.
Rice	clomazone	0.8–2.1 pt/A, depending on soil texture	Preemergence after planting but before rice emergence; postemergence to rice with up to five leaves	Use the higher rate on heavier-textured soils. Clomazone provides no postemergence control. Apply with glyphosate if barnyardgrass is emerged at preemergence application. Apply with Clincher SF or Ricestar HT if barnyardgrass is emerged at postemergence application.
Rice	Highcard	15.5 oz/A	Postemergence from two-leaf rice to panicle initiation	Use on MaxAce rice varieties and hybrids only. A residual herbicide should be included in first application to assist control of annual grasses. The initial application should be followed by second application approximately 14 days later.
Rice	pendimethalin	Formulation and soil texture dependent	Delayed preemergence after rice seed have imbibed water for germination	Use higher rate on heavier-textured soils. Provides no postemergence control. Include Clincher SF or Ricestar HT to control emerged barnyardgrass.
Rice	pendimethalin + Bolero	0.75–1 lb ai/A + 4 pt/A	Delayed preemergence	Seedbed should be sealed by rain or flushing. Do not allow soil to crack after application. Application to rice stressed by high salt and/or high pH soil may cause excessive rice injury.
Rice	Provisia	3–16 oz/A	Postemergence from one-leaf rice until panicle initiation	Use on Provisia rice varieties only. A residual herbicide should be included in first application to assist control of annual grasses. The initial application should followed by second application approximately 14 days later.
Rice	Ricestar HT	24 oz/A	Postemergence from two-leaf rice to early tillering stage and to barnyardgrass with fewer than four leaves	Soil moisture is critical for good activity. Flush the field before application if soil is dry. Weed foliage must not be covered with water at time of application. Add clomazone or pendimethalin for residual control after application.
Barnyardgrass (glyphosate-resistant)				
Cotton, soybean	clethodim	0.07–0.125 lb ai/A	Postemergence to grass 2–6 inches in height	Add nonionic surfactant at 0.25% v/v or crop oil concentrate at 1% v/v if applying alone or with a glyphosate formulation not preloaded with an adjuvant.
Cotton, soybean	Fusilade DX	8 oz/A	Postemergence to grass less than 5 inches with fewer than six leaves	Add nonionic surfactant at 0.25% v/v or crop oil concentrate at 1% v/v if applying alone or with a glyphosate formulation not preloaded with an adjuvant.
Cotton, soybean	quizalofop	0.048–0.055 lb ai/A	Postemergence to grass 2–6 inches in height	Add nonionic surfactant at 0.25% v/v or crop oil concentrate at 1% v/v if applying alone or with a glyphosate formulation not preloaded with an adjuvant.
Cotton, soybean	sethoxydim	0.188 lb ai/A	Postemergence to grass less than 6 inches	Add nonionic surfactant at 0.25% v/v or crop oil concentrate at 1% v/v if applying alone or with a glyphosate formulation not preloaded with an adjuvant.
Barnyardgrass (propanil- and quinclorac-resistant)				
Rice	Beyond/Postscript	5–6 oz/A	Postemergence from four-leaf rice until 14 days after panicle initiation on varieties; from four- leaf rice to panicle initiation on hybrids	Use on Clearfield rice varieties and FullPage hybrids only. Add crop oil concentrate at 1 quart per acre. Beyond/Postscript may be substituted for Newpath/Preface, but two applications are required before flooding.
Rice	Clearpath	0.5 lb/A	Preplant incorporated, preemergence, or postemergence until one-leaf rice	Use on Clearfield rice varieties and hybrids only. Add crop oil concentrate at 1 quart per acre. Clearpath must be followed by an application of Newpath or Beyond before flooding.

Herbicide-Resistant Weed Management

Crop	Herbicide(s)	Rate	Timing of application	Special instructions
Rice	clomazone	0.8–2.1 pt/A, depending on soil texture	Preemergence after planting but before rice emergence; postemergence to rice with up to five leaves	Use the higher rate on heavier-textured soils. Clomazone provides no postemergence control. Apply with glyphosate if barnyardgrass is emerged at preemergence application. Apply with Clincher SF or Ricestar HT if barnyardgrass is emerged at postemergence application.
Rice	Grasp	2–2.8 oz/A, depending on application timing	Postemergence until 60 days before harvest	Add crop oil concentrate or methylated seed oil (MSO) at 1 quart per acre. Add clomazone or pendimethalin for residual control after application. This treatment may be applied as an emergency salvage treatment.
Rice	Highcard	15.5 oz/A	Postemergence from two-leaf rice to panicle initiation	Use on MaxAce rice varieties and hybrids only. A residual herbicide should be included in first application to assist control of annual grasses. The initial application should be followed by second application approximately 14 days later.
Rice	Newpath/Preface	4–6 oz/A	Preplant incorporated, preemergence, or postemergence until flooding	Use on Clearfield rice varieties and FullPage hybrids only. Add crop oil concentrate at 1 quart per acre. Applications made preplant incorporated, preemergence, or to one- to two-leaf rice should be followed by a second application of Newpath/Preface or Beyond/Postscript before flooding.
Rice	pendimethalin + Bolero	0.75 to 1 lb ai/A + 4 pt/A	Delayed preemergence	Seedbed should be sealed by rain or flushing. Do not allow soil to crack after application. Application to rice stressed by high salt and/or high pH soil may cause excessive rice injury.
Rice	Provisia	13–16 oz/A	Postemergence from one-leaf rice until panicle initiation	Use on Provisia rice varieties only. A residual herbicide should be included in first application to assist control of annual grasses. The initial application should followed by second application approximately 14 days later.
Rice	Regiment	0.4–0.67 oz/A; depending on barnyardgrass size	Postemergence from three-leaf rice to 0.5-inch internode elongation	See the Regiment label for a list of approved adjuvants. Add clomazone or pendimethalin for residual control after application. This treatment may be applied post-flood, as an emergency salvage treatment.
Goosegrass (glyphosate-resistant)				
Cotton, soybean	clethodim	0.07–0.125 lb ai/A	Postemergence to goosegrass with 2–6 inches of lateral growth	Add nonionic surfactant at 0.25% v/v or crop oil concentrate at 1% v/v if applying alone or with a glyphosate formulation not preloaded with an adjuvant.
Cotton, soybean	Fusilade DX	8 oz/A	Postemergence to goosegrass less than 5 inches with fewer than six leaves	Add nonionic surfactant at 0.25% v/v or crop oil concentrate at 1% v/v if applying alone or with a glyphosate formulation not preloaded with an adjuvant.
Cotton, soybean	quizalofop	0.048–0.055 lb ai/A	Postemergence to goosegrass with 2–6 inches of lateral growth	Add nonionic surfactant at 0.25% v/v or crop oil concentrate at 1% v/v if applying alone or with a glyphosate formulation not preloaded with an adjuvant.
Cotton, soybean	sethoxydim	0.188 lb ai/A	Postemergence to goosegrass less than 6 inches	Add nonionic surfactant at 0.25% v/v or crop oil concentrate at 1% v/v if applying alone or with a glyphosate formulation not preloaded with an adjuvant.
Horseweed (glyphosate- and paraquat-resistant)				
Corn, cotton, rice, soybean	2,4-D	Formulation dependent	Postemergence during fall to spring burndown	Apply alone or with residual herbicide listed in this section. 2,4-D provides no residual control. It is often applied with glyphosate or glyphosate plus residual herbicide in a spring burndown program.
Corn	2,4-D	Formulation dependent	Postemergence to corn only less than 8 inches	Postemergence applications of 2,4-D may cause injury such as lodging, bending, and brittle stalks.
Corn	Acuron	2.5–3 qt/A	Preemergence or postemergence until corn reaches 12 inches	Do not make postemergence applications in mixture with organophosphate or carbamate insecticides. May be mixed with glyphosate or glufosinate (depending on hybrid).

Herbicide-Resistant Weed Management

Crop	Herbicide(s)	Rate	Timing of application	Special instructions
Corn	atrazine	1.5–2.5 lb ai/A	Preplant, preemergence, or post-emergence from 14 days before planting until corn reaches 12 inches	Atrazine may be applied with glyphosate, paraquat, or glufosinate to improve grass and broadleaf weed control before corn emergence. Add crop oil concentrate at 1% v/v if applying alone or with a glyphosate formulation not preloaded with an adjuvant.
Soybean	Canopy	4–6 oz/A	Preemergence during fall to spring burndown up to planting	Apply before horseweed emerges. Add 2,4-D or dicamba to control emerged horseweed. If applied with 2,4-D or dicamba, add 1% crop oil or 0.25% nonionic surfactant.
Soybean	Canopy EX	2 oz/A	Preemergence during fall to spring burndown up to 7 days before planting	Apply before horseweed emerges. Add 2,4-D or dicamba to control emerged horseweed. If applied with 2,4-D or dicamba, add 1% crop oil or 0.25% nonionic surfactant.
Corn, cotton, soybean	dicamba	Formulation dependent	Postemergence during fall to spring burndown	Apply alone or with residual product listed in this section. Dicamba provides no residual horseweed control. It is often applied with glyphosate or glyphosate plus residual herbicide in a spring burndown program.
Corn	dicamba	Formulation dependent	Postemergence to corn only less than 36 inches	Do not add crop oil concentrate to dicamba applied after corn emergence to avoid injury.
Cotton	diuron	0.5–1.6 lb ai/A; depending on soil texture	Preemergence during fall to spring burndown	Apply before horseweed emerges. Add 2,4-D, dicamba, or glufosinate to control emerged horseweed. Add nonionic surfactant at 0.25% v/v or crop oil concentrate at 1% v/v when tank-mixing with 2,4-D or dicamba. A postemergence application will likely be required for spring-emerged horseweed.
Corn, cotton, soybean, rice	Eleveore	1 oz/A	Postemergence to horseweed during spring burndown	Apply before horseweed reaches 8 inches. May be mixed with other herbicides to improve weed control spectrum. Add methylated seed oil or crop oil concentrate at 1% v/v.
Soybean	Envive	3 oz/A	Preemergence during fall to spring burndown up to planting	Apply before horseweed emerges. Add 2,4-D or dicamba to control emerged horseweed. If applied with 2,4-D or dicamba, add 1% crop oil or 0.25% nonionic surfactant.
Cotton	Envoke	0.15 oz/A	Preemergence during fall to spring burndown but 3 months before planting	Apply before horseweed emerges. Add 2,4-D, dicamba, or glufosinate to control emerged horseweed. Add nonionic surfactant at 0.25% v/v or crop oil concentrate at 1% v/v when tank-mixing with 2,4-D or dicamba.
Corn, cotton, soybean	Fierce or Fierce EZ	0.14–0.18 lb ai/A	Preemergence during fall to spring burndown	Apply before horseweed emerges. If horseweed has emerged, add 2,4-D or dicamba. Add nonionic surfactant at 0.25% v/v or crop oil concentrate at 1% v/v when tank-mixing with 2,4-D or dicamba.
Soybean	Fierce XLT	3.75–5.25 oz/A	Preemergence during fall to spring burndown	Apply before horseweed emerges. If horseweed has emerged, add 2,4-D or dicamba. Add nonionic surfactant at 0.25% v/v or crop oil concentrate at 1% v/v when tank-mixing with 2,4-D or dicamba.
Soybean	FirstRate	0.75 oz/A	Preemergence during fall to spring burndown but before soybean emergence	Apply before horseweed emerges. Add 2,4-D, dicamba, or glufosinate to control emerged horseweed. If applied with 2,4-D or dicamba, add 1% crop oil or 0.25% nonionic surfactant.
Soybean	FirstRate	0.3–0.6 oz/A	Preemergence or postemergence up to 50% flowering soybean	FirstRate may be applied postemergence to soybean and horseweed at 0.3 ounce per acre. A second application of 0.3 ounce may be applied 10 to 14 days later to control regrowth and provide longer residual activity. A single application of 0.6 ounce per acre may be applied under high weed pressure.
Soybean	FirstRate + glyphosate	0.3–0.6 oz/A + formulation dependent	Preemergence or postemergence up to 50% flowering soybean	If applied with glyphosate formulation preloaded with an adjuvant, no additional adjuvant is required. However, improved control has been observed when an additional adjuvant is used in the preloaded glyphosate formulation.
Corn, cotton, rice, soybean	flumioxazin	0.064 lb ai/A	Preemergence during fall to spring burndown	Apply before horseweed emerges. If horseweed has emerged, add 2,4-D or dicamba. Add nonionic surfactant at 0.25% v/v or crop oil concentrate at 1% v/v when tank-mixing with 2,4-D or dicamba.

Herbicide-Resistant Weed Management

Crop	Herbicide(s)	Rate	Timing of application	Special instructions
Corn, cotton, rice, soybean	glufosinate	0.4–0.66 lb ai/A	Postemergence during fall to spring burndown but before crop emergence	Glufosinate is often applied at planting as a salvage treatment. Control is dependent on size and age of horseweed, spray coverage, and air temperature. Daytime temperatures should be at least 70°F at application and for 3 to 4 days after application.
Corn, cotton, soybean	glufosinate	0.4–0.79 lb ai/A; depending on crop	Postemergence; see individual crop sections for specific application timings	Use only on crops with tolerance to glufosinate. Sequential applications should be made 10 to 14 days apart.
Rice	Grasp	2.3 oz/A	Postemergence to horseweed less than 6 inches	Add crop oil concentrate or methylated seed oil (MSO) at 1 quart per acre. Grasp will not completely control horseweed until after flooding.
Corn	Halex GT + atrazine	3.6–4 pt/A + 1.5 lb ai/A	Postemergence until corn reaches 12 inches	Add nonionic surfactant at 0.25% v/v.
Corn	Lexar EZ	2.25–3 qt/A; depending on soil texture	Preplant, preemergence, or postemergence from 14 days before planting until corn reaches 12 inches	Add glyphosate, paraquat, or glufosinate to improve grass and broadleaf weed control before corn emergence. Add nonionic surfactant at 0.25% v/v or crop oil concentrate at 1% v/v if applying alone or with a glyphosate formulation not preloaded with an adjuvant.
Rice	propanil + quinclorac	4 lb ai/A + 0.375 lb ai/A	Postemergence to horseweed less than 6 inches	Add crop oil concentrate at 1% v/v if using an SC propanil formulation. Propanil plus quinclorac will not completely control horseweed until after flooding.
Soybean	Python	1–1.33 oz/A	Preemergence up to 30 days before planting but before soybean emergence	Apply before horseweed emerges. Add 2,4-D, dicamba, or glufosinate to control emerged horseweed. If applied with 2,4-D or dicamba, add 1% crop oil or 0.25% nonionic surfactant.
Corn, cotton, rice, soybean	Sharpen	1–3 oz/A; depending on crop and soil texture	Preemergence or postemergence during fall to spring burndown	Horseweed should be less than 4 to 6 inches in height or diameter, depending on rate. Add glyphosate, paraquat, or glufosinate to improve grass and broadleaf weed control. Add methylated seed oil (MSO) at 1% v/v and ammonium sulfate at 1% to 2% v/v.
Soybean	Synchrony XP	1.125 oz/A	Preemergence to early postemergence	This treatment is for use on BOLT and STS soybean varieties only when applying 1.125 ounces per acre postemergence. Control with Synchrony XP may be incomplete or inconsistent.
Soybean	Synchrony XP + glyphosate	1.125 oz/A + formulation dependent	Preemergence to early postemergence	This treatment is for use on BOLT and STS soybean varieties only when applying 1.125 ounces per acre postemergence. Improved control has been observed when additional adjuvant is used with preloaded glyphosate formulation.
Soybean	Valor XLT	3 oz/A	Preemergence during fall to spring burndown but before soybean emergence	Apply before horseweed emerges. Add 2,4-D or dicamba to control emerged horseweed. If applied with 2,4-D or dicamba, add 1% crop oil or 0.25% nonionic surfactant.
Italian ryegrass (glyphosate- and ALS-resistant)				
Corn, soybean	Anthem Flex	2.75–6.4 oz/A	Preemergence from mid-October to mid-November	Use the higher rate on heavier-textured soils. Apply with paraquat at 0.75 pound of active ingredient per acre if Italian ryegrass is emerged at application. Paraquat should be applied in at least 15 gallons of water by ground and with nonionic surfactant at 0.25% v/v or crop oil concentrate at 1% v/v.
Soybean	Authority Supreme	6.5–12 oz/A; depending on soil texture	Preemergence from mid-October to mid-November	Use the higher rate on heavier-textured soils. Apply with paraquat at 0.75 pound of active ingredient per acre if Italian ryegrass is emerged at application. Paraquat should be applied in at least 15 gallons of water by ground and with nonionic surfactant at 0.25% v/v or crop oil concentrate at 1% v/v.
Soybean	Authority Edge	5.9–15.7 oz/A	Preemergence from mid-October to mid-November	Use the higher rate on heavier-textured soils. Apply with paraquat at 0.75 pound of active ingredient per acre if Italian ryegrass is emerged at application. Paraquat should be applied in at least 15 gallons of water by ground and with nonionic surfactant at 0.25% v/v or crop oil concentrate at 1% v/v.

Herbicide-Resistant Weed Management

Crop	Herbicide(s)	Rate	Timing of application	Special instructions
Corn, soybean	Anthem Maxx	3.25–6.5 oz/A; depending on soil texture	Preemergence from mid-October to mid-November	Use the higher rate on heavier-textured soils. Apply with paraquat at 0.75 pound of active ingredient per acre if Italian ryegrass is emerged at application. Paraquat should be applied in at least 15 gallons of water by ground and with nonionic surfactant at 0.25% v/v or crop oil concentrate at 1% v/v.
Corn, soybean	Boundary	2 pt/A	Preemergence from mid-October to mid-November	Apply with paraquat at 0.75 pound of active ingredient per acre if Italian ryegrass is emerged at application. Paraquat should be applied in at least 15 gallons of water by ground and with nonionic surfactant at 0.25% v/v or crop oil concentrate at 1% v/v.
Corn, cotton, soybean, rice	clethodim	0.094–0.125 lb ai/A	Postemergence from late January to early February to Italian ryegrass less than 6 inches	Multiple applications of clethodim are not recommended. Add ammonium sulfate and a crop oil concentrate at 1% v/v with 2 and 3 lb/gal formulations and nonionic surfactant with Select Max formulations. Sequential application of paraquat will be required if no fall residual was applied.
Rice, soybean	clomazone	0.75 lb ai/A	Preemergence from mid-October to mid-November	Apply with paraquat at 0.75 pound of active ingredient per acre if Italian ryegrass is emerged at application. Paraquat should be applied in at least 15 gallons of water by ground and with nonionic surfactant at 0.25% v/v or crop oil concentrate at 1% v/v.
Corn, cotton, soybean	Fierce or Fierce EZ	0.14–0.18 lb ai/A	Preemergence during fall to spring burndown	Apply with paraquat at 0.75 pound of active ingredient per acre if Italian ryegrass is emerged at application. Paraquat should be applied in at least 15 gallons of water by ground and with nonionic surfactant at 0.25% v/v or crop oil concentrate at 1% v/v.
Corn, cotton, soybean	metolachlor or <i>s</i> -metolachlor	1.27–1.58 lb ai/A; depending on soil texture	Preemergence from mid-October to mid-November	Use the higher rate on heavier-textured soils. Apply with paraquat at 0.75 pound of active ingredient per acre if Italian ryegrass is emerged at application. Paraquat should be applied in at least 15 gallons of water by ground and with nonionic surfactant at 0.25% v/v or crop oil concentrate at 1% v/v.
Corn, cotton, soybean, rice	paraquat	0.75–1 lb ai/A	Postemergence from mid-February to early-March to Italian ryegrass less than 12–14 inches	Paraquat should be applied in at least 15 gallons of water and with nonionic surfactant at 0.25% v/v or crop oil concentrate at 1% v/v. Avoid air induction nozzles. Apply with PSII herbicide to improve postemergence control. Paraquat should be applied 2 to 4 weeks after clethodim if no fall residual was applied.
Cotton, soybean	trifluralin	0.75–1 lb ai/A	Preemergence from mid-October to mid-November	Use the higher rate on heavier-textured soils. Incorporate 1 to 2 inches deep immediately after application for best results. A 30% loss can occur if incorporation is delayed 24 hours.
Corn, cotton, soybean, wheat	Zidua or Zidua SC	0.11–0.21 lb ai/A; depending on soil texture	Preemergence from mid-October to mid-November	Use the higher rate on heavier-textured soils. Apply with paraquat at 0.75 pound of active ingredient per acre if Italian ryegrass is emerged at application. Paraquat should be applied in at least 15 gallons of water by ground and with nonionic surfactant at 0.25% v/v or crop oil concentrate at 1% v/v.
Wheat	Axial Bold	15 oz/A	Postemergence from emergence to preboot stage	Do not apply to crop stressed by frost, low fertility, or flooding.
Wheat	Axial XL	16.4 oz/A	Postemergence to wheat from two-leaf to preboot and to Italian ryegrass from one-leaf to two-tiller	Only one application is allowed per growing season. Do not mix with other postemergence herbicides, such as Harmony Extra or 2,4-D.
Wheat	Axiom	5–10 oz/A	Early postemergence from wheat germination up to two-leaf stage but before weed emergence	This product contains metribuzin. Some wheat varieties are sensitive to metribuzin.
Wheat	metribuzin	0.094–0.125 lb ai/A	Postemergence after wheat has reached two-leaf stage until jointing	Some wheat varieties are sensitive to metribuzin. Metribuzin rate depends on wheat growth stage. Multiple applications are allowed per season, but a minimum of 21 days between applications is required.

Herbicide-Resistant Weed Management

Crop	Herbicide(s)	Rate	Timing of application	Special instructions
Italian ryegrass (glyphosate-, ALS-, and ACCase-resistant)				
Corn, soybean	Anthem Maxx	3.25–6.5 oz/A; depending on soil texture	Preemergence from mid-October to mid-November	Use the higher rate on heavier-textured soils. Apply with paraquat at 0.75 pound of active ingredient per acre if Italian ryegrass is emerged at application. Paraquat should be applied in at least 15 gallons of water by ground and with nonionic surfactant at 0.25% v/v or crop oil concentrate at 1% v/v.
Soybean	Authority Edge	5.9-15.7 oz/A	Preemergence from mid-October to mid-November	Use the higher rate on heavier-textured soils. Apply with paraquat at 0.75 pound of active ingredient per acre if Italian ryegrass is emerged at application. Paraquat should be applied in at least 15 gallons of water by ground and with nonionic surfactant at 0.25% v/v or crop oil concentrate at 1% v/v.
Soybean	Authority Supreme	6.5–12 oz/A; depending on soil texture	Preemergence from mid-October to mid-November	Use the higher rate on heavier-textured soils. Apply with paraquat at 0.75 pound of active ingredient per acre if Italian ryegrass is emerged at application. Paraquat should be applied in at least 15 gallons of water by ground and with nonionic surfactant at 0.25% v/v or crop oil concentrate at 1% v/v.
Corn, soybean	Boundary	2 pt/A	Preemergence from mid-October to mid-November	Apply with paraquat at 0.75 pound of active ingredient per acre if Italian ryegrass is emerged at application. Paraquat should be applied in at least 15 gallons of water by ground and with nonionic surfactant at 0.25% v/v or crop oil concentrate at 1% v/v.
Rice, soybean	clomazone	0.75 lb ai/A	Preemergence from mid-October to mid-November	Apply with paraquat at 0.75 pound of active ingredient per acre if Italian ryegrass is emerged at application. Paraquat should be applied in at least 15 gallons of water by ground and with nonionic surfactant at 0.25% v/v or crop oil concentrate at 1% v/v.
Corn, cotton, soybean	Fierce or Fierce EZ	0.14 –0.18 lb ai/A	See individual crop sections for specific application timings	See individual crop sections for specific application timings apply with paraquat at 0.75 pound of active ingredient per acre if Italian ryegrass is emerged at application. Paraquat should be applied in at least 15 gallons of water by ground and with nonionic surfactant at 0.25% v/v or crop oil concentrate at 1% v/v.
Corn, cotton, soybean	metolachlor or <i>s</i> -metolachlor	1.27–1.58 lb ai/A; depending on soil texture	Preemergence from mid-October to mid-November	Use the higher rate on heavier-textured soils. Apply with paraquat at 0.75 pound of active ingredient per acre if Italian ryegrass is emerged at application. Paraquat should be applied in at least 15 gallons of water by ground and with nonionic surfactant at 0.25% v/v or crop oil concentrate at 1% v/v.
Corn, cotton, soybean, rice	paraquat	0.75–1 lb ai/A	Postemergence from mid-February to early-March to Italian ryegrass less than 12–14 inches	Paraquat should be applied in at least 15 gallons of water and with nonionic surfactant at 0.25% v/v or crop oil concentrate at 1% v/v. Avoid air induction nozzles. Apply with PSII herbicide to improve postemergence control. Paraquat should be applied 2 to 4 weeks after clethodim if no fall residual was applied.
Cotton, soybean	trifluralin	0.75–1 lb ai/A	Preemergence from mid-October to mid-November	Use the higher rate on heavier-textured soils. Incorporate 1 to 2 inches deep immediately after application for best results. A 30% loss can occur if incorporation is delayed 24 hours.
Corn, cotton, soybean	Zidua or Zidua SC	0.11–0.21 lb ai/A; depending on soil texture	Preemergence from mid-October to mid-November	Use the higher rate on heavier-textured soils. Apply with paraquat at 0.75 pound of active ingredient per acre if Italian ryegrass is emerged at application. Paraquat should be applied in at least 15 gallons of water by ground and with nonionic surfactant at 0.25% v/v or crop oil concentrate at 1% v/v.
Wheat	Axiom	5–10 oz/A	Early postemergence from wheat germination up to two-leaf stage but before weed emergence	This product contains metribuzin. Some wheat varieties are sensitive to metribuzin.
Wheat	metribuzin	0.094–0.125 lb ai/A	Postemergence after wheat has reached two-leaf stage until jointing	Some wheat varieties are sensitive to metribuzin. Metribuzin rate depends on wheat growth stage. Multiple applications are allowed per season, but a minimum of 21 days between applications is required.

Herbicide-Resistant Weed Management

Crop	Herbicide(s)	Rate	Timing of application	Special instructions
Palmer amaranth (glyphosate- and ALS-resistant)				
Corn	2,4-D	Formulation dependent	Postemergence to corn less than 8 inches	Postemergence applications of 2,4-D may cause some injury, such as lodging, bending, and brittleness. Stalks remain brittle for 5 to 7 days after application, during which time they are susceptible to breaking.
Corn	Acuron	2.5-3 qt/A	Preemergence or postemergence until corn reaches 12 inches	Do not make postemergence applications in mixture with organophosphate or carbamate insecticides. May be mixed with glyphosate or glufosinate (depending on hybrid).
Corn	Armezon PRO	20 oz/A	Postemergence until corn reaches V8 growth stage or 30 inches	May be mixed with glyphosate or glufosinate (depending on hybrid) and atrazine. Acetochlor or metolachlor/s-metolachlor may be added to extend residual control.
Corn, cotton	Anthem Flex	depending on crop	Preplant, preemergence, or post-directed; see individual crop sections for specific application timings	Apply with paraquat at 0.75 pound of active ingredient per acre if Palmer amaranth is emerged at time of preplant or preemergence application to corn.
Corn, soybean	Anthem Maxx	2.5–6.5 oz/A	Preplant, preemergence, or postemergence from 14 days before planting up to V4 corn and V3 soybean stages	Apply with paraquat at 0.75 pound of active ingredient per acre if Palmer amaranth is emerged at application.
Corn	Armezon or Impact + atrazine	0.75 oz/A + 0.5–1 lb ai/A	Postemergence until corn reaches 12 inches and to Palmer amaranth less than 4 inches	Add ammonium sulfate and 1% methylated seed oil. May be mixed with glyphosate or glufosinate (depending on hybrid).
Corn	atrazine + acetochlor	Formulation dependent	Preplant, preemergence, or postemergence from 14 days before planting until corn reaches 12 inches	Control is dependent on activation of herbicide and level of weed infestation. Use the higher rate on heavier-textured soils. May be mixed with glyphosate or glufosinate (depending on hybrid).
Corn	atrazine + metolachlor or s-metolachlor	Formulation dependent	Preplant, preemergence, or postemergence from 14 days before planting until corn reaches 12 inches	Control is dependent on activation of herbicide and level of weed infestation. Use the higher rate on heavier-textured soils. May be mixed with glyphosate or glufosinate (depending on hybrid).
Soybean	Authority Edge	5.9-15.7 oz/A	Preplant up to 7 days before planting or preemergence	Apply with paraquat at 0.75 pound of active ingredient per acre if Palmer amaranth is emerged at application.
Soybean	Authority Elite	19–32 oz/A; depending on soil texture	Preplant after final bed preparation or preemergence	Apply with paraquat at 0.75 pound of active ingredient per acre if Palmer amaranth is emerged at application.
Soybean	Authority MTZ + Group 15 herbicide	8–18 oz/A + appropriate rate for Group 15 herbicide	Preplant up to 7 days before planting or preemergence	Group 15 herbicides for soybean include Anthem Flex, Anthem Maxx, metolachlor or s-metolachlor, Outlook, Warrant, Zidua/Zidua SC. Lower temperatures may reduce Warrant activity. Injury may occur if rain falls soon after crop emergence. Apply with paraquat at 0.75 pound of active ingredient per acre if Palmer amaranth is emerged at application.
Soybean	Authority Supreme	6–11.5 oz/A; depending on soil texture	Preemergence up to 7 days before planting	Apply with paraquat at 0.75 pound of active ingredient per acre if Palmer amaranth is emerged at application.
Soybean	Boundary	1.2–2.5 pt/A; depending on soil texture	Preemergence up to 7 days before planting	Injury may occur if rain falls soon after crop emergence, especially on sand or silt-loam soils. Apply with paraquat at 0.75 pound of active ingredient per acre if Palmer amaranth is emerged at application.
Soybean	Canopy + Group 15 herbicide	4–6 oz/A + appropriate rate for Group 15 herbicide	Preemergence up to 7 days before planting	Group 15 herbicides for soybean include Anthem Flex, Anthem Maxx, metolachlor or s-metolachlor, Outlook, Warrant, Zidua/Zidua SC. Lower temperatures may reduce Warrant activity. Injury may occur if rain falls soon after crop emergence. Apply with paraquat at 0.75 pound of active ingredient per acre if Palmer amaranth is emerged at application.
Corn	Capreno + atrazine	3 oz/A + 0.5–1 lb ai/A	Postemergence until corn reaches 12 inches and to Palmer amaranth less than 4 inches	May be mixed with glyphosate or glufosinate (depending on hybrid). Add crop oil concentrate at 1% v/v if applying alone or with a glyphosate formulation not preloaded with an adjuvant.

Herbicide-Resistant Weed Management

Crop	Herbicide(s)	Rate	Timing of application	Special instructions
Corn	Corvus + atrazine	5.6 oz/A + 0.5–1 lb ai/A	Preplant, preemergence, or early post-emergence from 14 days before planting until V2 corn stage	Add glyphosate, paraquat, or glufosinate to improve grass and broadleaf weed control before corn emergence. Add nonionic surfactant at 0.25% v/v or crop oil concentrate at 1% v/v if applying alone or with a glyphosate formulation not preloaded with an adjuvant.
Corn	dicamba	Formulation dependent	Postemergence to corn less than 36 inches and to Palmer amaranth less than 4 inches	Do not add crop oil concentrate to dicamba applied after crop emergence as crop injury may result. Dicamba may be applied with glyphosate to improve grass and broadleaf weed control.
Cotton	diuron	0.8 lb ai/A	Post-directed when cotton is at least 12 inches tall and after last cultivation	Apply with glyphosate and MSMA (1 pound of active ingredient per acre) to improve control of emerged Palmer amaranth and other weeds. Add nonionic surfactant at 0.25% v/v or crop oil concentrate at 1% v/v if applying alone or with a glyphosate and/or MSMA formulations not preloaded with an adjuvant.
Cotton, soybean	Engenia	12.8 oz/A	See individual crop sections	See www.engeniaherbicide.com/stewardship/application-checklist.html and the product label for instructions related to Engenia.
Cotton, soybean	Enlist Duo	3.5–4.75 pt/A	See individual crop sections	See www.enlisttankmix.com and the product label for instructions related to Enlist Duo.
Cotton, soybean	Enlist One	1.5–2 pt/A	See individual crop sections	See www.enlisttankmix.com and the product label for instructions related to Enlist One.
Soybean	Envive + Group 15 herbicide	3 oz/A + appropriate rate for Group 15 herbicide	Preplant 14 to 21 days before planting and after final bed preparation	Group 15 herbicides for soybean include Anthem Flex, Anthem Maxx, metolachlor or <i>s</i> -metolachlor, Outlook, Warrant, Zidua/Zidua SC. Warrant should be applied when the weather is warm; lower temperatures may reduce activity. Apply with paraquat at 0.75 pound of active ingredient per acre if Palmer amaranth is emerged at application.
Cotton, soybean	Fierce or Fierce EZ	0.14–0.18 lb ai/A	See individual crop sections for specific application timings	See individual crop sections for specific application timings apply with paraquat at 0.75 pound of active ingredient per acre if Palmer amaranth is emerged at application. Use only as post-directed treatment in cotton.
Corn, soybean	Fierce MTZ or Kyber	1–1.5 pt/A	See individual crop sections for specific application timings	Apply with paraquat at 0.75 pound of active ingredient per acre if Palmer amaranth is emerged at application. Do not apply more than 1.5 pints per acre per year. Corn may be planted not less than 30 days after Fierce MTZ application.
Soybean	Fierce XLT	3.75–5.25 oz/A	Preplant 14 to 21 days before planting and after final bed preparation	Apply with paraquat at 0.75 pound of active ingredient per acre if Palmer amaranth is emerged at application.
Soybean	Flexstar GT + Group 15 herbicide	3.5–5 pt/A + appropriate rate for Group 15 herbicide	Postemergence until 45 days before soybean harvest	Group 15 herbicides for soybean include Anthem Flex, Anthem Maxx, metolachlor or <i>s</i> -metolachlor, Outlook, Warrant, Zidua/Zidua SC. Lower temperatures may reduce Warrant activity. Injury may occur if rain falls soon after crop emergence. Spray coverage is critical; apply in at least 15 gallons of water per acre.
Cotton	fluometuron	1–2 lb ai/A, depending on soil texture	Preplant or preemergence but before cotton emergence	Use the higher rate on heavier-textured soils. Fluometuron provides only residual control, and control is dependent on herbicide activation and level of infestation. Apply with paraquat at 0.5–0.75 pound of active ingredient per acre if Palmer amaranth is emerged at application.
Cotton	fomesafen	0.25 lb ai/A	Preplant with at least 0.5 inch of rain on medium- or fine-textured soils; pre-emergence on coarse-textured soils	Apply with paraquat at 0.5 pound of active ingredient per acre if Palmer amaranth is emerged at application. An at-planting application of residual herbicide will be required for in-season Palmer amaranth control if beds are disturbed before planting.
Cotton	fomesafen	0.25 lb ai/A	Post-directed when cotton has at least 4 inches of bark and after last cultivation	Application should be directed at the bottom 2 inches of cotton. Apply with glyphosate and MSMA to improve postemergence control. Add nonionic surfactant at 0.25% v/v or crop oil concentrate at 1% v/v if applying alone or with a glyphosate and/or MSMA formulations not preloaded with an adjuvant.
Corn, cotton, rice, soybean	flumioxazin	0.064 lb ai/A	See individual crop sections for specific application timings	Flumioxazin provides only residual control, and control is dependent on herbicide activation and level of infestation.

Herbicide-Resistant Weed Management

Crop	Herbicide(s)	Rate	Timing of application	Special instructions
Corn, cotton	glufosinate	0.4–0.79 lb ai/A; depending on crop	Postemergence; see individual crop sections for specific application timings	Use only on crops with tolerance to glufosinate. Sequential applications should be made 10 to 14 days apart. Apply in at least 10 gallons of water. Avoid application with air induction nozzles. Add residual herbicide in first application for residual control.
Soybean	glufosinate + fomesafen + Group 15 herbicide	0.53 lb ai/A + 0.375 lb ai/A + appropriate rate for Group 15 herbicide	Postemergence 7 to 21 days after soybean planting	Group 15 herbicides for soybean include Anthem Flex, Anthem Maxx, metolachlor or s-metolachlor, Outlook, Warrant, Zidua/Zidua SC. Use only on crops with tolerance to glufosinate. Sequential applications should be made 10 to 14 days apart. Apply in at least 10 gallons of water.
Corn	Halex GT + atrazine	3.6–4 pt/A + 1.5 lb ai/A	Postemergence until corn reaches 12 inches and to Palmer amaranth less than 4 inches	Add nonionic surfactant at 0.25% v/v.
Corn	Lexar EZ	2.25–3 qt/A; depending on soil texture	Preplant, preemergence, or postemergence from 14 days before planting until corn reaches 12 inches	May be mixed with glyphosate or glufosinate (depending on hybrid). Add methylated seed oil at 1% v/v if applying alone or with a glyphosate formulation not preloaded with an adjuvant.
Rice	Loyant	0.5–0.75 pt/A	Postemergence from two-leaf rice to 60 days prior to harvest	Soil moisture is critical for good activity. Weed foliage must not be covered with water at application. Add methylated seed oil (MSO) at 0.5 pint per acre. Loyant should not be mixed with other herbicides containing propanil.
Corn, cotton, soybean	metolachlor or s-metolachlor	Formulation dependent	Preemergence or postemergence; see individual crop sections for specific application timings	This herbicide only provides residual control and does not control emerged weeds. Residual control is dependent on activation of herbicide and level of weed infestation. Apply with glyphosate or Sequence (premixure of glyphosate and s-metolachlor) alone.
Soybean	metribuzin + Group 15 herbicide	5.33–10.67 oz/A; depending on soil texture + appropriate rate of Group 15 herbicide	Preemergence up to 7 days before planting	Group 15 herbicides for soybean include Anthem Flex, Anthem Maxx, metolachlor or s-metolachlor, Outlook, Warrant, Zidua/Zidua SC. Lower temperatures may reduce Warrant activity. Apply with paraquat at 0.75 pound of active ingredient per acre if Palmer amaranth is emerged at application.
Corn, cotton, soybean	Outlook	10–21 oz/A; depending on crop	See individual crop sections for specific application timings	Outlook provides only residual control, and control is dependent on herbicide activation and level of infestation. May be mixed with glyphosate or glufosinate, depending on hybrid/variety.
Cotton	paraquat	2 pt/A	Postemergence as late-season salvage application under hooded sprayer	Apply by directing spray between rows using a hooded sprayer. Add nonionic surfactant at 0.25% v/v or crop oil concentrate at 1% v/v. Apply with diuron to improve postemergence Palmer amaranth activity and provide residual control. Not all formulations of paraquat are labeled for this use.
Corn, cotton, soybean	pendimethalin	Formulation and soil texture dependent	Preemergence or postemergence; see individual crop sections for specific application timings	This herbicide only provides residual control and does not control emerged weeds. Residual control is dependent on activation of herbicide and level of weed infestation. Apply with paraquat at 0.5–0.75 pound of active ingredient per acre during preemergence application if Palmer amaranth is emerged at application.
Soybean	Prefix + glyphosate	2 pt/A + formulation dependent	Postemergence when soybean has one to two trifoliolate leaves	Prefix provides partial control of emerged Palmer amaranth, with level of control dependent on weed size (no more than four leaves).
Cotton	prometryn	0.5 lb ai/A	Post-directed once or twice after cotton is 3 inches tall	Avoid contact with cotton foliage. Prometryn provides some residual control in addition to controlling emerged weeds. Apply with MSMA at 1 pound of active ingredient per acre to improve control of emerged Palmer amaranth.
Corn	Realm Q	4 oz/A	Postemergence	May be mixed with glyphosate or glufosinate (depending on hybrid) and atrazine. Do not apply to corn treated with Counter or organophosphate insecticides.
Corn	Resicore	2.25–2.75 pt/A	Postemergence	May be mixed with glyphosate or glufosinate (depending on hybrid) and atrazine. Do not apply carbamate or organophosphate insecticide within 7 days of application.

Herbicide-Resistant Weed Management

Crop	Herbicide(s)	Rate	Timing of application	Special instructions
Soybean	Sharpen + Group 15 herbicide	1–1.5 oz/A + appropriate rate for Group 15 herbicide	Preplant 14 to 21 days before planting and after final bed preparation	Group 15 herbicides for soybean include Anthem Flex, Anthem Maxx, metolachlor or s-metolachlor, Outlook, Warrant, Zidua/Zidua SC. Lower temperatures may reduce Warrant activity. Apply with paraquat at 0.75 pound of active ingredient per acre if Palmer amaranth is emerged at application.
Soybean	Sonic or Authority First + Group 15 herbicide	6.45–8 oz/A + appropriate rate for Group 15 herbicide	Preplant after final bed preparation or preemergence	Group 15 herbicides for soybean include Anthem Flex, Anthem Maxx, metolachlor or s-metolachlor, Outlook, Warrant, Zidua/Zidua SC. Lower temperatures may reduce Warrant activity. Apply with paraquat at 0.75 pound of active ingredient per acre if Palmer amaranth is emerged at application.
Corn	Status	5–10 oz/A	Postemergence to corn from 4 to 36 inches or until 15 days before tasseling	Avoid drift to soybean. Do not make more than one application per season. Use the low rate if corn is greater than 8 inches tall.
Soybean	Surveil + Group 15 herbicide	3.5–4.2 oz/A + appropriate rate for Group 15 herbicide	Preplant 14 to 21 days before planting and after final bed preparation	Group 15 herbicides for soybean include Anthem Flex, Anthem Maxx, metolachlor or s-metolachlor, Outlook, Warrant, Zidua/Zidua SC. Lower temperatures may reduce Warrant activity. Apply with paraquat at 0.75 pound of active ingredient per acre if Palmer amaranth is emerged at application.
Cotton, soybean	Tavium plus VaporGrip	57 oz/A	See individual crop sections	See www.syngenta-us.com/herbicides/tavium-application-stewardship and the product label for instructions related to Tavium plus VaporGrip.
Cotton, soybean	trifluralin	0.5–0.75 lb ai/A	Preplant incorporated; in-season control optimized with applications immediately before planting	Control is dependent on activation of herbicide and level of weed infestation. Use the higher rate on heavier-textured soils. Incorporate 1 to 2 inches deep immediately after application for best results. A 30% loss can occur if incorporation is delayed 24 hours.
Soybean	Trivence	6–9 oz/A	Preplant 14 to 21 days before planting and after final bed preparation	Apply with paraquat at 0.75 pound of active ingredient per acre if Palmer amaranth is emerged at application. Do not apply > 9 ounces per acre in a single season.
Soybean	Valor XLT + Group 15 herbicide	3 oz/A + appropriate rate for Group 15 herbicide	Preplant 14 to 21 days before planting and after final bed preparation	Group 15 herbicides for soybean include Anthem Flex, Anthem Maxx, metolachlor or s-metolachlor, Outlook, Warrant, Zidua/Zidua SC. Lower temperatures may reduce Warrant activity. Apply with paraquat at 0.75 pound of active ingredient per acre if Palmer amaranth is emerged at application.
Soybean	Verdict + Group 15 herbicide	5–7.5 oz/A + appropriate rate for Group 15 herbicide	Preplant 14 to 21 days before planting and after final bed preparation	Group 15 herbicides for soybean include Anthem Flex, Anthem Maxx, metolachlor or s-metolachlor, Outlook, Warrant, Zidua/Zidua SC. Lower temperatures may reduce activity Warrant. Apply with paraquat at 0.75 pound of active ingredient per acre if Palmer amaranth is emerged at application.
Corn, cotton, soybean	Warrant	0.8–2.4 lb ai/A; depending on crop	See individual crop sections for specific application timings	Acetochlor provides only residual control, and control is dependent on herbicide activation and level of infestation. May be mixed with glyphosate or glufosinate, depending on hybrid/variety.
Cotton, soybean	Xtendimax with VaporGrip	22 oz/A	See individual crop sections	See www.xtendimaxapplicationrequirements.com and the product label for instructions related to Xtendimax plus VaporGrip.
Corn, cotton, soybean	Zidua or Zidua SC	0.04–0.21 lb ai/A; depending on crop	See individual crop sections for specific application timings	Zidua/Zidua SC provides only residual control, and control is dependent on herbicide activation and level of infestation. May be mixed with glyphosate or glufosinate, depending on hybrid/variety.
Rhizome johnsongrass (glyphosate-resistant)				
Cotton, soybean	clethodim	0.094–0.25 lb ai/A or 0.07–0.188 lb ai/A	Postemergence to emerged johnsongrass	Apply to johnsongrass before it reaches 25 inches. Reduced level of control can be expected on larger johnsongrass. Apply a sequential application if needed, but apply to johnsongrass no larger than 18 inches. Add nonionic surfactant at 0.25% v/v or crop oil concentrate at 1% v/v if applying alone or with a glyphosate formulation not preloaded with an adjuvant.

Herbicide-Resistant Weed Management

Crop	Herbicide(s)	Rate	Timing of application	Special instructions
Corn	nicosulfuron	Dependent on formulation and johnsongrass size at application	Postemergence to johnsongrass from 12 to 18 inches	Add nonionic surfactant at 0.25% v/v or crop oil concentrate at 1% v/v if applying alone or with a glyphosate formulation not preloaded with an adjuvant. If applied with glyphosate formulation preloaded with an adjuvant, no additional adjuvant is required.
Cotton, soybean	quizalofop	0.0688 lb ai/A for single application followed by 0.048 lb ai/A to control regrowth	Postemergence to johnsongrass from 10–24 inches and from 6–10 inches for sequential application	Add nonionic surfactant at 0.25% v/v or crop oil concentrate at 1% v/v if applying alone or with a glyphosate formulation not preloaded with an adjuvant.
Cotton, soybean	sethoxydim	0.188 lb ai/A followed by 0.188 lb ai/A to control regrowth	Postemergence to johnsongrass less than 20 inches with 24 oz/A rate and less than 10 inches with sequential application	Add nonionic surfactant at 0.25% v/v or crop oil concentrate at 1% v/v if applying alone or with a glyphosate formulation not preloaded with an adjuvant.
Rice flatsedge (ALS-resistant)				
Rice	bentazon	1.5–2 pt/A; depending on rice flatsedge size	Postemergence to emerged rice flatsedge and at least 24 hours before flooding	Add crop oil concentrate at 1% v/v. Do not apply to submerged weeds. The addition of propanil may improve rice flatsedge control. A sequential application may be utilized, but the total bentazon rate should not exceed 4 pints per acre in a single season.
Rice	Bolero	3 pt/A	Delayed preemergence	Seedbed should be sealed by rain or flushing. Do not allow soil to crack after application. Application to rice stressed by high salt and/or high pH soil may cause excessive injury.
Rice	Loyant	1 pt/A	Postemergence from two-leaf rice to 60 days prior to harvest	Soil moisture is critical for good activity. Weed foliage must not be covered with water at application. Add methylated seed oil (MSO) at 0.5 pint per acre. Loyant should not be mixed with other herbicides containing propanil.
Rice	propanil	3–6 lb ai/A; depending on rice flatsedge size	Postemergence to emerged rice flatsedge	Add crop oil concentrate at 1% v/v if using an SC propanil formulation. Sequential applications may be needed for complete control. The addition of bentazon may improve rice flatsedge control.
Rice	RiceBeaux	4 qt/A	Postemergence to emerged rice flatsedge	Soil should be moist at the time of application and not allowed to crack after application. Sequential applications with bentazon and/or propanil may be needed for complete control.

Rainfast Intervals and Rotational Crop Restrictions

Many herbicides used in various crops have planting restrictions. When considering a rotational crop, the following table will help you choose the proper herbicide for the current year. If a rotational crop is planted within the interval stated, or before the interval has expired, unacceptable injury to the rotational crop can occur. Consult individual product labels for more specific information regarding rotational crop restrictions.

Herbicide	Rainfast Interval	Rotation Interval ¹							
		Corn	Cotton	Grain sorghum	Peanut	Rice	Soybean	Wheat	Other grains
2,4-D	6 h	14 d	30 d	29 d	—	30 d	15 d	7 d	1 m
2,4-DB		—	—	—	none	—	none	—	—
Acifluorfen	4 h	100 d	100 d	100 d	none	none	none	40 d	40 d
Acuron ²	—	none	10 m	10 m	10 m	10 m	10 m	4 m	4 m
Acuron GT	—	none	10 m	10 m	10 m	10 m	10 m	4.5 m	4.5 m
Aim	6-8 h	none	none	none	none	none	none	none	none
Alachlor	—	none	ns	none ³ -spring	ns	spring	spring	4 m	spring
Anthem Flex ⁴	1 h	none	1-4 m	6 m-1 y	1-4 m	10 m-2 y	0-4 m	0-6 m	11 m-1.5 y
Anthem Maxx ⁴	1 h	none	1-4 m	6-10 m	1-4 m	10 m-2 y	0-4 m	1-6 m	11 m-1.5 y
Armezon Pro	1 h	none	9 m	9 m	9 m	9 m	9 m	4 m	4 m
Armezon/Impact	1 h	none	9 m	9 m	9 m	3 m	9 m	3 m	3 m
Atrazine ⁵	—	none	ns	none	1 y	2 y	ns	1 y	1 y
Authority Edge ⁴	—	4 m	1 y	10 m-1.5 y	4 m	10m - 2 y	0-4 m	4-10 m	10 m-1.5 y
Authority Elite	—	4 m	1-1.5 y	10 m	4 m	10 m	none	4.5 m	1 y
Authority First ⁴	—	10 m -1.5 y	1-1.5 y	1 y	1 y	10 m	none	4 m	1 y
Authority MTZ ⁴	—	4-10 m	1-1.5 y	1-1.5 y	1 y	10 m	none	4 m	4 m
Authority Supreme ⁴	—	4 m	1 y ⁶	10 m-1 y	4 m	10 m-2 y	0-4 m	4-6 m	10 m-1.5 y
Authority XL ⁴	—	10 m -1.5 y	1-1.5 y	10 m-1.5 y	1-1.5 y	10 m-1.5 y	none	4 m	4 m
Axial Bold	30 min	3 m	3 m	3 m	3 m	3 m	3 m	none	3 m
Axial XL	30 min	3 m	3 m	3 m	3 m	3 m	3 m	none	3 m
Axiom	—	none	8 m	1 y	1.5 y	1 y	none	7 d	1 y
Bentazon	4 h	none	none	none	none	none	none	none	none
Beyond or Postscript	1 h	8.5 m	9 m	9 m	9 m	9 m	none	3 m	9 m
Bolero	—	6 m	6 m	6 m	6 m	none	6 m	6 m	6 m
Boundary	—	4 m	1 y	1 y	1 y	8 m	none	4.5 m	1 y
Brake ⁴	—	10 m-1.5 y	none	10 m-1.5 y	8 m	8 m-1 y	2 m-1 y	8 m-1 y	8 m-1 y
Broadhead	6-8 h	1 y	1 y	1 y	1 y	none	1 y	1 y	1 y
Cadre	3 h	9 m	1.5 y	1.5 y	none	26 m	9 m	4 m	18-26 m
Canopy ⁴	1 h	10 m-1.5 y	10 m-1.5 y	10 m-1.5 y	8 m-1.5 y	10 m-1.5 y	none	4 m	4 m
Canopy EX ⁴	2 h	8-10 m	8-10 m	9 m-1 y	6-15 m	9-15 m	none	3-4 m	3-4 m
Capreno	1 h	none	10 m	10 m	11 m	10 m	10 m	4 m	1.5 y ⁴
Chlorimuron	1 h	7 m	8 m	9 m	6 m	9 m	none	3 m	3 m
Clearpath	1 h	10 m	1.5 y	1.5 y	10 m	1.5 y	10 m	10 m	10 m
Clethodim	1 h	1 m	none	1 m	none	1 m	none	1 m	1 m
Clincher SF	2 h	3 m	3 m	none	3 m	3 m	3 m	3 m	3 m
Clomazone	—	9 m	none	9 m	9 m	9 m	none	1 y	1 y
Cobra	30 min	none	none	none	none	none	none	none	none
Corvus ⁴	—	none	10 m	17 m	11 m	10 m	9 m	4 m	17 m

Rainfast Intervals and Rotational Crop Restrictions

Herbicide	Rainfast Interval	Rotation Interval ¹							
		Corn	Cotton	Grain sorghum	Peanut	Rice	Soybean	Wheat	Other grains
Dicamba ⁴	4 h	none	21 d	15 d	—	15 d	15-28 d	15 d	15 d
Diruon ⁴	—	none	none	spring	1 y	1 y	spring	1 y	1 y
Duet	6-8 h	4 m	4 m	4 m	4 m	none	4 m	4 m	4 m
Elevore	1 h	3-14 d	30 d	14 d	9 m	14 d	14 d	14 d	14 d
Envive ⁴	1 h	10 m-1.5 y	10 m-2.5 y	1-1.5 y	8 m	10 m-1.5 y	none	4 m	4 m
Envoke	3 h	7 m	7 m	7 m	7 m	7 m	7 m	3 m	1.5 y
Ethalfuralin	—	1 y	—	1 y	none	—	none	—	8 m
Fierce or Fierce EZ	1 h	1 m ⁴	2 m	1 y	2 m	1 y	none	2 m	1 y
Fierce MTZ or Kyber	—	1 m	1.5 y	1.5 y	1.5 y	1 y	none	8 m	1 y
Fierce XLT ⁴	1 h	10m-1.5 y	1.5-2.5 y	1.5 y	1.5-2.5 y	1.5 y	none	4 m	1.5 y
Finesse Cereal & Fallow ⁴	6 h	1.5 y	1.5 y	4 m	—	1.5 y	1.5 y	4 m	10-16 m
FirstRate	2 h	9 m	9 m	9 m	9 m	9 m	none	4 m	9 m-1 y
FirstShot	—	14 d	14 d	14 d	30 d ⁶	none	7 d	none	none
Flexstar GT	4 h	10 m	none	1.5 y	10 m	10 m	none	4 m	1 y
Flumioxazin ⁴	1 h	30 d	30 d	30 d	none	30 d	none	1 m	3-8 m
Fluometuron	—	8 m	none	9 m	8 m	9 m	9 m	3 m	9 m
Fomesafen	1 h	10 m	none ⁴	1.5 y	4 m	10 m	none	4 m	4 m
Fusilade DX	1 h	2 m	none	2 m	none	2 m	none	2 m	2 m
Gambit ⁴	4 h	1 m	10 m	2 m	10 m	none	10 m	2 m	2 m
Glufosinate	4 h	none	none	6 m	6 m	none	none	2 m	2 m
Glyphosate	n/a	none	none	none	none	none	none	none	none
Goal 2XL	—	10 m	none	10 m	none	10 m	none	10 m	10 m
Grandstand R	—	4 m	4 m	4 m	4 m	none	4 m	4 m	4 m
Grasp	1 h	3 m	3 m	3 m	3 m	none	3 m	3 m	3 m
Grasp XTRA	1 h	3 m	3 m	3 m	3 m	none	3 m	3 m	3 m
Halex GT	—	none	10 m	none ³	10 m	10 m-1.5 y	10 m	4.5 m	4.5 m
Halosulfuron	4 h	1 m	4 m	2 m	6 m	none	9 m	2 m	2 m
Harmony Extra	—	14 d	14 d	14 d	1.5 m	none	7 d	none	2 m
Huskie	1 h	4 m	—	7 d	—	—	4 m	7 d	9 m
Imazethapyr	1 h	8.5 m	1.5 y	1.5 y	none	n/a	none	4 m	9 m
Impact Core	1 h	none	10 m	9 m	10 m	1.5 y	10 m	4 m	9 m
Intimidator	—	10 m	8 m	1.5 y	1.5 y	10 m	none	4.5 m	8 m-1.5 y
Latigo ⁴	4 h	7 d-4 m	21 d-4 m	14 d-4 m	4 m	4 m	15 d-4 m	14 d-4 m	14 d-4 m
Laudis	1 h	none	10 m	10 m	11 m	10 m	8 m	4 m	4 m
Layby Pro ⁴	—	8 m	1 y	4 m	8 m	1 y	1 y	4 m	4 m
LeadOff ⁶	—	none	1-10 m	10 m-1.5 y	1.5 m-1.5 y	10 m-1.5 y	none ⁷ -1 m	3-4 m	1.5 y
League	6 h	1 y	8 m	1 y	2 y	none	1 y	1 y	2 y
Lexar EZ ²	—	none	spring	spring	spring	1.5 y	spring	spring	spring
Linuron (DF formulation)	—	none	4 m	none	—	1 y	none	4 m	4 m
Londax	4 h	4 m	4 m	4 m	4 m	none	4 m	4 m	4 m
Loyant	2 h	3 m	3 m	3 m	3 m	none	3 m	3 m	3 m

Rainfast Intervals and Rotational Crop Restrictions

Herbicide	Rainfast Interval	Rotation Interval ¹							
		Corn	Cotton	Grain sorghum	Peanut	Rice	Soybean	Wheat	Other grains
Metolachlor/s-metolachlor	—	1 y	1 y	1 y ³	1 y	1 y	1 y	4.5 m	4.5 m
Mesotrione	—	none	10 m	none	10 m	10 m	10 m	4 m	4 m
Metribuzin	6 h	4 m	1.5 y	1.5 y	11 m	1 y	4 m	4 m	1.5 y
MSMA	—	none	none	none	none	none	none	none	4 m
Newpath or Preface ⁸	1 h	8.5 m	1.5 y	1.5 y	none	1.5 y	none	4 m	1.5 y
Nicosulfuron ⁴	4 h	none	10 m	10 m-1.5 y	1.5 y	1.5 y	15 d	4 m	4 m
Obey	—	10 m	10 m	10 m	10 m	none	10 m	10 m	10 m
Osprey	4 h	3 m	3 m	3 m	3 m	3 m	3 m	7 d	7-30 d
Osprey Xtra ⁹	4 h	9 m	4 m	9 m	4 m	3 m	3 m	3 m	3-9 m
Outlook ⁴	—	none	4 m	none	none	6-9 m	none	4 m	4 m
Paraquat	30 min	none	none	none	none	none	none	none	none
Peak ⁴	4 h	1 m	10 m	1 m	10 m	none	10 m	none	none
Pendimethalin	—	none	none	10 m-1 y	none	none	none	4 m	ns
Perpetuo ⁴	1 h	none	2-4 m	6-8 m	2-4 m	1-15 y	none	1-4 m	11 m
Permit Plus ⁴	4 h	1 m	4 m	2 m	6 m	none	2 m	2 m	2 m
Poast	1 h	—	—	—	—	—	—	—	—
PowerFlex	4 h	9 m	3 m	3 m	9 m	1 y	3 m	1 m	9 m
Prefix	—	10 m	1 m	10 m	4 m	10 m	none	4.5 m	4.5 m
Prometryn	—	5 m	5 m	1 y	1 y	1 y	1 y	1 y	1 y
Propanil	8 h	2 m	2 m	2 m	2 m	none	2 m	2 m	2 m
Provisia	1 h	4 m	none	4 m	4 m	4 m	none	none	4 m
Pyriithiobac	4 h	10 m ⁴	none	2 y	10 m	9 m	10 m	4 m	10 m
Python	6 h	none	9 m ⁴	1 y	4 m	6 m	none	4 m	4 m
Quelex	4 h	3 m	3 m	3 m	9 m	3 m	3 m	none	0-3 m
Quinclorac (L formulation)	6 h	10 m	10 m	none	10 m	none	10 m	none	10 m
Quizalofop	1 h	4 m	none	4 m	4 m	4 m	none	4 m	4 m
Realm Q	4 h	none	10 m	10 m	10 m	10 m	10 m	9 m	9 m
Regiment	8 h	ns	ns	ns	ns	none	ns	ns	none
Resicore	—	none	1 y	10.5 m	1.5 y	10.5 m	10.5 m	4 m	10.5 m-1.5 y
RiceBeaux	6 h	2 m	2 m	2 m	—	none	2 m	2 m	—
RiceOne	—	1 y	none	1 y	1 y	1 y	none	12-14 m	12-14 m
Ricestar HT	1 h	—	—	—	—	none	9 m	—	—
Scepter	—	9.5 m	1.5 y	11 m	11 m	ns	none	3 m	11 m
Sentrallas	1 h	none	4 m	none	4 m	4 m	4 m	none	none
Sequence	—	none	none	none	none	spring	none	4.5 m	4.5 m
Sharpen ⁴	1 h	none	1.5-9 m	0-1 m	4-9 m	0-4 m	0-6 m	0-3 m	0-3 m
Simazine	—	—	—	—	—	—	—	—	—
Sinate	4 h	none	9 m	9 m	9 m	3 m	9 m	3 m	3 m
Solicam	—	2 y	30 d	2 y	30 d	2 y	1.5 m	2 y	2 y
Sonic ⁴	—	10 m	1-1.5 y	1 y	1 y	10 m	none	4 m	1 y
Spartan Charge ⁴	—	none	1-1.5 y	10 m-1.5 y	none	10 m	none	4 m	4 m-1 y

Rainfast Intervals and Rotational Crop Restrictions

Herbicide	Rainfast Interval	Rotation Interval ¹							
		Corn	Cotton	Grain sorghum	Peanut	Rice	Soybean	Wheat	Other grains
Status	4 h	7 d	30 d	30 d	3 m	3 m	30 d	30 d	30 d
Steadfast Q	4 h	none	10 m	10 m - 1.5 y ⁴	1.5 y	1.5 y	15 d	4 m	4 m
Storm	4 h	100 d	100 d	100 d	none	none	none	40 d	40 d
Strada	6 h	3 m	6 m	1 y	1 y	none	6 m	3 m	3 m
Strada PRO	6 h	3 m	6 m	3 y	3 y	none	9 m	3 m	3 m
Strada XT2	6 h	11 m	11 m	11 m	11 m	none	11 m	11 m	11 m
Strongarm	—	1.5 y	10 m	1.5 y	none	1.5 y	none	4 m	6 m
Suprend	3 h	7 m	7 m	7 m	7 m	7 m	7 m	3 m	1.5 y
SureStart II	—	none	26 m	1 y	26 m	26 m	spring	4 m	26 m
Synchrony XP ⁴	1 h	8-10 m	8-10 m	6-8 m	6-8 m	9-10 m	none	3-4 m	3-4 m
Trifluralin	—	1 y	none	1 y	none	1 y	none	1 y	1 y
Trivence ⁴	1 h	10 m	1.5 y	10 m	8 m-1.5 y	1 y	none	4 m	1.5 y
Valor XLT ⁴	1 h	10 m-1.5 y	10 m-2.5 y	10 m-1.5 y	1.5-2.5 y	9 m-1.5 y	none	4 m	4 m
Verdict ⁴	1 h	none	6 m	0-1 m	7-9 m	4 m	4-6 m	4 m	4 m
Warrant	—	ns	ns	ns	ns	ns	none	4 m	ns
Warrant Ultra	—	10 m	1 m	1.5 y	10 m	10 m	none	4 m	ns
Yukon ⁴	4 h	1 m	4 m	2 m	6 m	2 m	9 m	2 m	2-9 m
Zidua or Zidua SC ⁴	—	none	1-4 m	6 m-1 y	1-4 m	10 m-2 y	0-4 m	1-6 m	11 m-1.5 y
Zone Defense	1 h	10 m	1.5 y	10 m	none	10 m	none	4 m	1 y

¹Abbreviations: (—) = consult the label for specific instructions; h = hour; min = minute; d = days after application; m = months after application; y = years after application; spring = spring following application; ns = next season; PRE = preemergence application; POST = postemergence application.

²If applied after June 1, rotating to crops other than corn (all types) may result in crop injury.

³Replant only with grain sorghum seed safened for applications of Group 15 herbicides.

⁴Rotational crop restrictions are dependent on herbicide application rate, soil pH, rainfall following application, soil texture, or application technique (PRE, POST, etc.). Consult the product label for specific information.

⁵If applied after June 10, injury may occur if any crop other than corn or grain sorghum is planted the year after application.

⁶Rotation interval applies only for peanut grown in Alabama and Georgia only; no specification for MS.

⁷Rotation interval applies to soybean with Bolt technology.

⁸For Newpath or Preface use rates greater than 8 ounces per acre per season up to 12 ounces per acre per season, only soybean may be planted the following year.

⁹Rotational crop restriction requires bioassay and no less than 4 months for cotton and peanut, bioassay and no less than 3 months for rice

Burndown Weed Management

Weed Response Ratings for Herbicides Applied in Burndown Prior to Planting¹

	Herbicide group number	Crop ^{2,3}	Soil Activity	Annual bluegrass	Italian ryegrass	Bittercress	Buttercup	Carolina geranium	Chickweed	Curly dock (seedling)	Cultleaf evening-primrose	Henbit	Horseweed	Prickly lettuce	Shepherds-purse	Vetch	Virginia pepperweed
2,4-D	4	C, CT, R, S	yes	0	0	8	9	7	8	7	9	5	8	9	8	6	9
Dicamba	4	C, CT, GS, SG, S	yes	0	0	8	9	8	8	9	9	7	9	9	8	9	9
Fomesafen	14	CT, S	yes	0	0	-	-	-	-	-	-	-	3	-	-	-	-
Glufosinate	10	C, CT, S	no	3	7	-	-	8	9	6	7	6	9	-	-	8	9
Glyphosate	9	C, CT, GS, P, R, SG, S	no	8	5	9	9	7	9	6	6	7	5	8	9	5	8
Glyphosate + 2,4-D	9, 4	C, CT, R, S	yes	9	5	9	9	9	9	8	9	8	9	9	9	6	9
Glyphosate + Aim	9, 14	C, CT, GS, P, R, SG, S	no	9	5	9	9	8	9	8	7	7	5	8	9	5	9
Glyphosate + Canopy EX	9, 2, 2	S	yes	9	5	9	8	7	8	8	7	8	7	-	8	8	-
Glyphosate + clethodim	9, 1	C, CT, GS, P, R, SG, S	yes	9	8	9	9	7	9	6	6	7	5	8	9	5	9
Glyphosate + clomazone	9, 13	R, S	yes	9	5	9	9	7	9	6	6	7	5	8	9	5	8
Glyphosate + clomazone + Gambit	9, 13, 2	R	yes	9	5	9	9	7	9	8	7	8	7	8	9	8	8
Glyphosate + clomazone + Sharpen	9, 13, 14	R, S	yes	9	5	9	9	7	9	9	7	7	8	9	9	5	8
Glyphosate + dicamba	9, 4	C, CT, GS, SG, S	yes	9	5	9	9	9	9	9	8	8	9	9	9	9	9
Glyphosate + dicamba + 2,4-D	9, 4, 4	C, CT, S	yes	9	5	9	9	9	9	9	9	9	9	9	9	9	9
Glyphosate + Elevore	9, 4	C, CT, GS, R, SG, S	no	-	-	-	-	-	9	-	5	8	9	-	-	-	-
Glyphosate + Envive	9, 2, 2, 14	S	yes	9	6	9	9	8	9	-	8	9	9	-	9	-	-
Glyphosate + Fierce or Fierce EZ	9, 14, 15	C, S	yes	9	6	9	9	8	9	-	8	9	8	-	9	-	-
Glyphosate + Firstshot SG	9, 2, 2	C, CT, GS, R, SG, S	yes	9	5	9	9	8	9	9	7	8	5	9	9	9	9
Glyphosate + flumioxazin	9, 14	C, CT, GS, P, R, S	yes	9	5	9	9	8	9	-	8	9	8	9	9	-	8
Glyphosate + Goal 2XL	9, 14	CT, S	yes	9	5	9	9	8	9	7	7	9	8	9	9	7	9
Glyphosate + LeadOff	9, 2, 2	C, CT, P, S	yes	9	6	7	9	9	9	9	6	7	7	-	9	-	-
Glyphosate + metolachlor/s-metolachlor	9, 15	C, CT, GS, P, S	yes	9	5	9	9	7	9	6	6	7	5	8	9	5	8
Glyphosate + Sharpen	9, 14	C, CT, GS, R, SG, S	yes	9	6	9	9	7	9	9	7	7	8	9	9	8	8
Glyphosate + Synchrony XP	9, 2, 2	S	yes	9	5	9	9	7	9	8	7	7	7	9	9	5	8
Glyphosate + Verdict	9, 14, 15	C, GS, S	yes	9	6	9	9	7	9	9	7	7	8	9	9	5	8
Metribuzin	5	S	yes	9	6	9	9	7	9	-	6	8	5	8	9	6	6
Paraquat	22	C, CT, GS, P, R, SG, S	no	9	8	9	9	7	9	4	7	9	6	7	9	8	7
Paraquat + 2,4-D	22, 4	C, CT, R, S	yes	9	8	9	9	7	9	7	8	9	8	-	9	8	8
Paraquat + atrazine	22, 5	C, GS	yes	9	8	9	9	8	9	-	8	9	9	8	9	8	8
Paraquat + diuron	22, 5	CT	yes	9	8	9	9	8	9	5	8	9	9	8	9	7	8
Paraquat + Goal 2XL	22, 14	CT, S	yes	9	8	9	9	9	9	5	7	9	6	-	9	8	7
Paraquat + metribuzin	22, 5	S	yes	9	8	9	9	8	9	-	8	9	9	8	9	8	8
Paraquat + prometryn	22, 5	CT	yes	9	8	9	9	7	9	5	7	9	9	8	9	8	7

Rating Scale: 0-3 = none to slight; 4-6 = fair; 7-8 = good; 9-10 = excellent.

¹Control expected under optimum conditions. Mississippi State University does not guarantee these estimates since many factors influence herbicide performance. Resistance to recommended use rates of some herbicides has been identified in certain weed species in Mississippi (See Herbicide-Resistant Weed Management Section). Ratings reflect expected control of herbicide-susceptible populations.

²Abbreviations: C, corn; CT, cotton; GS, grain sorghum; P, peanut; R, rice; SG, small grains; S, soybean.

³See Rotational Crop Restrictions for additional information about labeling for each crop.

Burndown Weed Management

Situation and active ingredient rate per broadcast acre	Formulated product per broadcast acre	Time of application	Weeds controlled	Special instructions and remarks
2,4-D amine – 0.5 to 1 lb/A	Various formulations (See product label for specific rates)	Varies by crop, rate, and/or product (See product label for specific information)	Annual, biennial, and perennial broadleaf weeds	Mix with glyphosate, glufosinate, or paraquat to improve weed control spectrum. Ester formulations are usually more effective than amine formulations in controlling curly dock and wild garlic. Apply esters when temperatures are less than 60° and amines when more than 60°. Do not apply by air after March 31.
dicamba – 0.25 lb/A	Various formulations (See product label for specific rates)	Varies by crop, rate, and/or product (See product label for specific information)	Horseweed, clovers; other annual, biennial, and perennial broadleaf weeds	Mix with glyphosate to improve weed control spectrum. Add a nonionic surfactant at 0.25% v/v. Do not apply this product near emerged soybean. Apply in 10 to 20 gallons water by ground or 5 gallons water by air. Do not apply by air after March 31.
fomesafen – 0.25 to 0.38 lb/A	fomesafen 2 or 1.88 lb/gal formulations — 1 to 1.5 pt/A	Varies by crop and/or rate (See product label for specific information)	Small-seeded broadleaf weeds, especially pigweed and prickly sida	Mix with glyphosate, glufosinate, or paraquat to broaden weed control spectrum. Rainfall within 7 days of application is necessary for activation. Some cotton injury can occur if rainfall occurs during or soon after cotton emergence. See label for crop specific instructions.
glufosinate – 0.53 to 0.66 lb/A	glufosinate 2.34 lb/gal formulation — 29 to 36 oz/A	Preplant or preemergence	Annual grasses and broadleaf weeds; horseweed, morningglory, pigweed (less than 4 inches)	Apply when temperatures are warm, as colder weather may reduce activity. Do not use nozzles and pressure that result in coarse spray droplets. Glufosinate may be mixed with soil-applied herbicides for residual activity.
glyphosate – 1 to 1.5 lb/A	Various formulations (See product label for specific rates)	Preplant or preemergence	Annual and perennial grasses and broadleaf weeds	Apply to actively growing weeds < 6 inches tall. Use higher rate for weeds > 6 inches tall. If tillage is intended after treatment, wait at least 3 days (7 days for perennial weeds) after application. Avoid drift to nontarget areas. Glyphosate may be mixed with soil-applied herbicides for residual activity.
glyphosate + 2,4-D – 1 to 1.5 lb/A + 0.5 to 1.0 lb/A	Various formulations (See product labels for specific rates)	Varies by crop, rate, and/or product (See product label for specific information)	Annual and perennial grasses and broadleaf weeds	See <i>Special Instructions and Remarks</i> for glyphosate and 2,4-D. Use the full rate of glyphosate.
glyphosate + Aim – 1 to 1.5 lb/A + 0.0195 to 0.05 lb/A	Various formulations (See product label for specific rates) + Aim 2 EC — 1.25 to 3.2 oz/A	Varies by crop, rate, and/or product (See product label for specific information)	Annual and perennial grasses and broadleaf weeds	See <i>Special Instructions and Remarks</i> for glyphosate. Use the full rate of glyphosate. Application rate for Aim varies with crop. Coverage is essential for good control.
glyphosate + clethodim – 1 to 1.5 lb/A + 0.063 to 0.13 lb/A	Various formulations (See product labels for specific rates)	Small, actively growing weeds	Annual grasses, johnson-grass, bermudagrass	Do not apply within 1 hour of anticipated rainfall. Do not apply to stressed grasses. Add ammonium sulfate and a nonphytotoxic crop oil concentrate at 1% v/v with 2 and 3 lb/gal formulations and nonionic surfactant with Select Max formulation.
glyphosate + chlorimuron + tribenuron – 1 to 1.5 lb/A + 0.02 to 0.04 lb/A	Various formulations (See product label for specific rates) + Canopy EX 29.5 WDG — 1.1 to 2.2 oz/A	Preplant or preemergence	Annual and perennial grasses and broadleaf weeds	See <i>Special Instructions and Remarks</i> for glyphosate. Do not apply to Black Belt soils with a pH greater than 7 or a history of nutrient deficiency. Add nonionic surfactant at 0.25% v/v or nonphytotoxic crop oil concentrate at 1% v/v if applied with a glyphosate formulation not preloaded with a surfactant.
glyphosate + clomazone – 1 to 1.5 lb/A + 0.3 to 0.6 lb/A	Various formulations (See product label for specific rates) + clomazone 3 lb/gal formulation — 0.8 to 1.6 pt/A	Preplant or preemergence	Annual and perennial grasses and broadleaf weeds plus residual control of annual grasses	See <i>Special Instructions and Remarks</i> for glyphosate. Antagonism may occur in some situations. Use the full rate of glyphosate. Sequential postemergence grass herbicide application will be needed. Do not apply to recently land-formed fields. See table at beginning of rice section for specific clomazone rates by soil texture.

Burndown Weed Management

Situation and active ingredient rate per broadcast acre	Formulated product per broadcast acre	Time of application	Weeds controlled	Special instructions and remarks
glyphosate + clomazone + halosulfuron + prosulfuron – 1 to 1.5 lb/A + 0.3 to 0.6 + 0.049 to 0.099 lb/A	Various formulations (See product label for specific rates) + clomazone 3 lb/gal formulation — 0.8 to 1.6 pt/A + Gambit 79 WG — 1 to 2 oz/A	Preplant or preemergence	Annual grasses and broadleaf weeds, Pennsylvania smartweed, yellow nutsedge	See <i>Special Instruction and Remarks</i> for glyphosate and glyphosate plus clomazone. Avoid drift to non STS soybean. Do not exceed 2 ounces per acre per year for Gambit.
glyphosate + clomazone + saflufenacil – 1 to 1.5 lb/A + 0.3 to 0.6 lb/A + 0.022 to 0.067 lb/A	Various formulations (See product label for specific rates) + clomazone 3 lb/gal formulation — 0.8 to 1.6 pt/A + Sharpen 2.85 SC — 1 to 2 oz/A	Varies by crop and/or rate (See product label for specific information)	Annual and perennial grasses and broadleaf weeds plus residual control of annual grasses	See <i>Special Instructions and Remarks</i> for glyphosate, glyphosate plus clomazone, and glyphosate plus Sharpen.
glyphosate + dicamba – 1 to 1.5 lb/A + 0.25 lb/A	Various formulations (See product labels for specific rates)	Varies by crop, rate, and/or product (See product label for specific information)	Annual and perennial grasses and broadleaf weeds	See <i>Special Instructions and Remarks</i> for glyphosate and dicamba. Use the full rate of glyphosate.
glyphosate + dicamba + 2,4-D – 1 to 1.5 lb/A + 0.25 lb/A + 0.5 to 1 lb/A	Various formulations (See product labels for specific rates) + dicamba (4 lb/gal formulation) — 8 oz/A	Varies by crop, rate, and/or product (See product label for specific information)	Annual and perennial grasses and broadleaf weeds	See <i>Special Instructions and Remarks</i> for glyphosate, 2,4-D, and dicamba. Use the full rate of glyphosate.
glyphosate + flumioxazin + chlorimuron + thifensulfuron – 1 to 1.5 lb/A + 0.065 to 0.1 lb/A	Various formulations (See product label for specific rates) + Envive 41.3 WDG — 2.5 to 4 oz/A	Preplant or preemergence	Annual and perennial grasses and broadleaf weeds	See <i>Special Instructions and Remarks</i> for glyphosate. Do not apply preemergence to coarse soils or to Black Belt soils with a pH greater than 7. Do not apply more than 4 ounces per season.
glyphosate + flumioxazin + pyroxasulfone – 1 to 1.5 lb/A + 0.14 to 0.18 lb/A	Various formulations (See product label for specific rates) + Fierce 76 WDG — 3 to 3.75 oz/A or Fierce EZ 3 SC – 6 to 7.7 oz/A	Varies by crop and/or rate (See product label for specific information)	Annual and perennial grasses and broadleaf weeds	See <i>Special Instructions and Remarks</i> for glyphosate and glyphosate plus flumioxazin. See label for crop specific instructions. Soybean injury may occur if Fierce is used in the same field where flufenacet, metolachlor/s-metolachlor, or dimethenamid-P will be used preemergence.
glyphosate + saflufenacil – 1 to 1.5 lb/A + 0.022 to 0.067 lb/A	Various formulations (See product labels for specific rates) + Sharpen 2.85 SC – 1 to 3 oz/A	Varies by crop and/or rate (See product label for specific information)	Annual and perennial grasses and broadleaf weeds plus residual control of some broadleaf weeds	See <i>Special Instructions and Remarks</i> for glyphosate. Sharpen application rate varies with crop. Add methylated seed oil at 1% v/v plus ammonium sulfate.
glyphosate + thifensulfuron + tribenuron – 1 to 1.5 lb/A + 0.016 to 0.025 lb/A	Various formulations (See product label for specific rates) + FirstShot 50 SG — 0.5 to 0.8 oz/A	Varies by crop (See product label for specific information)	Winter annual and some perennial broadleaf weeds, including curly dock and Pennsylvania smartweed	See <i>Special Instructions and Remarks</i> for glyphosate. Sequential applications allowed as long as total applied during a single season does not exceed 1 ounce per acre. Add nonionic surfactant at 0.25% v/v or nonphytotoxic crop oil concentrate at 1% v/v if applied with a glyphosate formulation not preloaded with a surfactant.
glyphosate + flumioxazin – 1 to 1.5 lb/A + 0.032 to 0.096 lb/A	Various formulations (See product label for specific rates) + flumioxazin 51% formulation — 1 to 3 oz/A or 4 lb/gal formulation — 1 to 3 oz/A	Varies by crop and/or rate (See product label for specific information)	Annual and perennial grasses and broadleaf weeds	See <i>Special Instructions and Remarks</i> for glyphosate. Soybean injury may occur if flumioxazin is used in the same field where flufenacet, metolachlor/s-metolachlor, or dimethenamid-P will be used preemergence. Add nonionic surfactant at 0.25% v/v or nonphytotoxic crop oil concentrate at 1% v/v if applied with a glyphosate formulation not preloaded with a surfactant.

Burndown Weed Management

Situation and active ingredient rate per broadcast acre	Formulated product per broadcast acre	Time of application	Weeds controlled	Special instructions and remarks
glyphosate + halauxifen – 1 to 1.5 lb/A + 0.0045 lb/A	Various formulations (See product label for specific rates) + Elevore 0.572 SC — 1 oz/A	Postemergence during spring burndown	Horseweed, henbit, and other winter annual broadleaf weeds	See <i>Special Instructions and Remarks</i> for glyphosate. Do not make more than two preplant applications per year. Add methylated seed oil or nonphytotoxic crop oil concentrate at 1% v/v.
glyphosate + oxyfluorfen – 1 to 1.5 lb/A + 0.25 to 0.5 lb/A	Various formulations (See product label for specific rates) + Goal 2XL 2 EC — 1 to 2 pt/A	Varies by crop and/or rate (See product label for specific information)	Annual and perennial grasses and broadleaf weeds	See <i>Special Instructions and Remarks</i> for glyphosate. Use the lower rate for late winter and early spring application. Use the higher rate for fall and early winter applications. See label for crop specific instructions. Add nonionic surfactant at 0.25% v/v or nonphytotoxic crop oil concentrate at 1% v/v if applied with a glyphosate formulation not preloaded with a surfactant.
glyphosate + rimsulfuron + thifensulfuron – 1 to 1.5 lb/A + 0.031 + 0.056 lb/A	Various formulations (See product label for specific rates) + LeadOff 33.4 WDG — 1.5 to 2.7 oz/A	Varies by crop and/or rate (See product label for specific information)	Annual and perennial grasses and broadleaf weeds	See <i>Special Instructions and Remarks</i> for glyphosate. Labeling recommends 1.5 ounces per acre for most applications. See label for crop specific instructions. Add nonionic surfactant at 0.25% v/v or nonphytotoxic crop oil concentrate at 1% v/v if applied with a glyphosate formulation not preloaded with a surfactant.
glyphosate + metolachlor – 1 to 1.5 lb/A + 1.5 to 2.5 lb/A or <i>s</i> -metolachlor – 0.95 to 1.6 lb/A	Various formulations (See product labels for specific rates)	Preplant or preemergence	Annual grasses and some small-seeded broadleaf weeds	See <i>Special Instructions and Remarks</i> for glyphosate. Sufficient weed control depends on adequate rainfall for incorporation. See label for crop specific instructions. See table at beginning of soybean section for specific rates of metolachlor and <i>s</i> -metolachlor by soil texture.
glyphosate + chlorimuron + thifensulfuron – 1 to 1.5 lb/A + 0.0176 to 0.053 lb/A	Various formulations (See product label for specific rates) + Synchrony XP 28.4 DG — 1 to 3 oz/A	From 45 days before planting until just before soybean emergence	Hemp sesbania, morning-glory, yellow nutsedge, sicklepod	See <i>Special Instructions and Remarks</i> for glyphosate. Application rate is dependent on soil pH. Add nonionic surfactant at 0.25% v/v or nonphytotoxic crop oil concentrate at 1% v/v if applied with a glyphosate formulation not preloaded with a surfactant.
glyphosate + dimethenamid-P + saflufenacil – 1 to 1.5 lb/A + 0.22 to 0.44 lb/A	Various formulations (See product label for specific rates) + Verdict 5.67 EC — 5 to 10 oz/A	Varies by crop and/or rate (See product label for specific information)	Annual grasses and broadleaf weeds	See <i>Special Instructions and Remarks</i> for glyphosate. Application rate for Verdict varies with crop. Add methylated seed oil at 1% v/v plus ammonium sulfate.
metribuzin – 0.25 to 0.63 lb/A	metribuzin (75% formulation — 5.33 to 13.4 oz/A or 4 lb/gal formulation — 8 to 20 oz/A	Preplant or preemergence	Hemp sesbania, prickly sida, early sicklepod; annual grasses and small-seeded broadleaf weeds	See table at beginning of soybean section for specific rates by soil texture. Mix with glyphosate, paraquat, or glufosinate to control emerged vegetation. Soybean injury may occur (1) on soils with calcareous surface or pH 7.5 and above, (2) to certain varieties, (3) on soil with < 0.5% organic matter, (4) when soybean are planted < 1.5 inches deep, and (5) when heavy rains follow application.
paraquat – 0.5 to 1 lb/A	paraquat 2 lb/gal formulation — 2 to 4 pt/A or 3 lb/gal formulation — 1.33 to 2.67 pt/A	Preplant or preemergence	Annual and perennial grasses and broadleaf weeds	Avoid drift to emerged vegetation. May be mixed with most preemergence herbicides. Apply in a minimum of 10 gallons of water by ground or 5 gallons by air. Add a nonionic surfactant at 0.25% v/v or a crop oil concentrate at 1% v/v.
paraquat + 2,4-D – 0.5 to 1 lb/A + 0.5 to 1 lb/A	paraquat 2 lb/gal formulation — 2 to 4 pt/A or 3 lb/gal formulation — 1.33 to 2.67 pt/A + Various formulations (See product labels for specific rates)	Varies by crop, rate, and/or product (See product label for specific information)	Annual and perennial grasses and broadleaf weeds	See <i>Special Instructions and Remarks</i> for paraquat and 2,4-D.

Burndown Weed Management

Situation and active ingredient rate per broadcast acre	Formulated product per broadcast acre	Time of application	Weeds controlled	Special instructions and remarks
paraquat + atrazine – 0.5 to 1 lb/A + 1.5 lb/A	paraquat 2 lb/gal formulation — 2 to 4 pt/A or 3 lb/gal formulation — 1.33 to 2.67 pt/A + atrazine 4 lb/gal formulation — 1.5 qt/A or 90% formulation — 1.67 lb/A	Preplant or preemergence	Annual grasses and broadleaf weeds	See <i>Special Instructions and Remarks</i> for paraquat. Do not use on sand, loamy sand, or sandy loam or any soil with less than 1% organic matter. Do not plant crops other than corn or sorghum until the year after treatment. If treatment is made after June 10, crops other than corn or sorghum should not be planted the following year.
paraquat + diuron – 0.5 to 1 lb/A + 0.5 to 1 to 1.6 lb/A	paraquat 2 lb/gal formulation — 2 to 4 pt/A or 3 lb/gal formulation — 1.33 to 2.67 pt/A + diuron 4 lb/gal formulation — 1 to 2 to 3.2 pt/A or 80% formulation — 0.63 to 1.25 to 2 lb/A	Preplant or preemergence	Annual grasses and broadleaf weeds	See <i>Special Instructions and Remarks</i> for paraquat. If stand failure occurs, cotton may be replanted with minimum disturbance of the treated soil. In a single season, do not exceed 0.8 pound of active ingredient on loamy sand, 1.2 pounds on sandy loam, 1.6 pounds on clay loam, or 2.2 pounds on clay. Rebed only after thorough tillage.
paraquat + oxyfluorfen – 0.5 to 1 lb/A + 0.25 to 0.5 lb/A	paraquat 2 lb/gal formulation — 2 to 4 pt/A or 3 lb/gal formulation — 1.33 to 2.67 pt/A + Goal 2XL 2 EC — 1 to 2 pt/A	Varies by crop and/or rate (See product label for specific information)	Annual and perennial grasses and broadleaf weeds	See <i>Special Instructions and Remarks</i> for paraquat and glyphosate plus Goal 2XL.
paraquat + metribuzin – 0.5 to 1 lb/A + 0.25 to 0.63 lb/A	paraquat 2 lb/gal formulation — 2 to 4 pt/A or 3 lb/gal formulation — 1.33 to 2.67 pt/A + metribuzin 75% formulation — 5.33 to 13.4 oz/A or 4 lb/gal formulation — 8 to 20 oz/A	Preplant or preemergence	Annual and perennial grasses and broadleaf weeds	See <i>Special Instructions and Remarks</i> for metribuzin and paraquat. See table at beginning of soybean section for metribuzin rates by soil texture.
paraquat + prometryn – 0.5 to 1 lb/A + 0.75 to 1 lb/A	paraquat 2 lb/gal formulation — 2 to 4 pt/A or 3 lb/gal formulation — 1.33 to 2.67 pt/A + prometryn 4 lb/gal formulation — 1.5 to 2 pt/A	November 1 up to 14 before cotton planting	Annual broadleaf weeds	See <i>Special Instructions and Remarks</i> for paraquat. Use the high rate for early applications and low rate for applications closer to planting.

Corn Weed Management

Weed Response Ratings for Corn Herbicides Applied Preemergence¹

	Herbicide group numbers	Barnyardgrass	Broadleaf signalgrass	Crabgrass	Fall panicum	Goosegrass	Italian ryegrass	Johnsongrass—rhizome	Johnsongrass—seedling	Annual sedge	Purple nutsedge	Annual morningglory species	Cocklebur	Common lambsquarters	Hemp sesbania	Horseweed	Palmer, spiny amaranth, water-hemp	Prickly sida	Sicklepod	Smooth, redroot pigweed
Preemergence																				
Acuron	5, 15, 27	9	8	9	9	9	7	2	8	8	7	9	10	9	8	8	9	9	8	9
Anthem Maxx or Flex	14, 15	9	8	9	8	9	9	4	7	-	0	7	2	4	3	6	9	7	-	9
Atrazine	5	6	6	7	4	6	8	0	4	4	2	8	9	9	7	-	9	8	8	9
Atrazine + metolachlor/s-metolachlor + safener	5, 15	8	8	9	9	9	8	0	7	7	3	8	8	9	6	-	9	8	6	9
Corvus	2, 27	9	8	9	8	9	6	7	8	-	-	7	7	8	9	-	9	8	-	9
Lexar EZ	5, 15, 27	9	8	9	9	9	7	2	8	8	7	9	10	9	8	8	9	9	8	9
Pendimethalin	3	8	6	8	8	8	5	4	7	0	0	6	8	-	0	0	7	7	0	8
Resicore	4, 15, 27	9	9	9	9	9	0	0	8	4	4	9	9	9	9	9	9	9	7	9
Sharpen	14	1	1	1	1	1	1	-	1	-	-	6	6	7	6	8	9	7	5	9
Simazine	5	6	5	8	6	7	-	0	4	2	0	7	9	9	-	3	9	9	8	9
SureStart II	2, 4, 15	9	7	9	9	9	6	1	7	-	-	9	-	9	-	-	8	9	8	9
Verdict	14, 15	8	6	8	7	8	7	0	7	-	-	6	6	7	6	8	9	7	5	9
Zidua or Zidua SC	15	9	8	9	8	9	9	4	6	-	-	7	-	4	3	6	8	7	-	9

Rating Scale: 0–3 = none to slight; 4–6 = fair; 7–8 = good; 9–10 = excellent.

¹Control expected under optimum conditions. Mississippi State University does not guarantee these estimates since many factors influence herbicide performance. Resistance to recommended use rates of some herbicides has been identified in certain weed species in Mississippi (See Herbicide-Resistant Weed Management Section). Ratings reflect expected control of herbicide-susceptible populations.

Corn Weed Management

2023 Weed Management Suggestions for Mississippi Row Crops

Weed Response Ratings for Corn Herbicides Applied Postemergence¹

	Herbicide group numbers	Barnyardgrass	Broadleaf signalgrass	Crabgrass	Fall panicum	Goosegrass	Italian ryegrass	Johnsongrass—rhizome	Johnsongrass—seedling	Annual sedge	Purple nutsedge	Annual morningglory species	Cocklebur	Common lambsquarters	Hemp sesbania	Horseweed	Palmer, spiny amaranth, water-hemp	Prickly sida	Sicklepod	Smooth, redroot pigweed
2,4-D	4	1	0	0	2	1	0	0	0	4	2	9	8	9	8	8	8	8	8	8
Acuron	5, 15, 27	7	9	9	8	9	7	2	7	8	7	9	10	9	8	8	9	9	8	9
Acuron GT	9, 15, 27	9	9	9	9	9	5	8	8	8	8	8	9	8	8	7	9	9	9	9
Armezon or Impact	27	7	6	8	6	7	0	4	7	0	0	7	9	9	7	-	8	9	6	9
Atrazine + oil	5	6	7	8	5	6	5	0	3	6	2	8	9	9	7	-	9	9	8	9
Atrazine + metolachlor/s-metolachlor + safener	5, 15	6	5	6	4	6	-	0	4	5	2	8	8	8	6	-	8	7	8	8
Bentazon	6	0	0	0	0	1	0	0	0	6	2	3	9	0	4	-	3	8	1	3
Capreno	2, 27	8	8	8	-	-	-	5	7	-	-	8	8	9	-	-	9	7	7	9
Dicamba	4	1	1	1	1	1	0	0	0	3	1	9	9	9	9	8	8	8	8	8
Dicamba + 2,4-D	4, 4	1	1	1	0	1	0	0	0	3	1	8	9	8	8	8	8	7	7	8
Gambit	2, 2	0	0	0	0	0	0	0	0	9	7	7	8	6	8	7	5	6	8	7
Glufosinate	10	8	8	9	9	5	6	7	8	8	4	9	9	-	9	8	8	9	9	8
Glyphosate	9	9	9	9	9	9	6	7	9	9	7	7	8	9	6	9	9	7	8	9
Halex GT	9, 15, 27	9	9	9	9	9	6	9	8	8	8	8	10	8	8	7	9	9	9	9
Halosulfuron	2	2	2	2	2	2	-	1	2	9	8	6	9	5	8	5	6	7	5	8
Impact Core	15, 27	7	6	8	6	7	0	4	7	0	0	7	9	9	7	-	8	9	6	9
Laudis	27	7	8	8	-	7	-	5	6	-	-	8	8	9	-	-	9	7	7	9
Lexar EZ	5, 15, 27	7	9	9	8	9	7	2	8	8	7	9	10	9	8	8	9	9	8	9
Mesotrione	27	7	7	9	7	-	-	0	0	-	-	9	8	9	-	-	9	9	5	9
Nicosulfuron	2	8	8	5	7	-	6	8	9	3	-	6	5	5	7	-	6	4	5	8
Realm Q	2, 27	8	7	8	8	8	4	7	9	8	6	8	9	8	-	-	8	9	7	8
Resicore	4, 15, 27	7	7	7	7	7	0	0	6	4	4	9	9	9	9	9	9	9	7	9
Sinate	10, 27	8	8	9	9	7	6	7	8	8	4	9	9	9	9	8	9	9	9	9
Status	4, 19	3	4	3	4	3	0	3	5	0	0	9	9	9	9	8	9	9	9	9
Postemergence - Directed																				
Linuron	5	9	8	8	8	7	-	0	6	5	2	8	7	9	8	-	8	8	8	8
Paraquat	22	8	8	8	8	8	7	3	8	9	0	6	7	9	6	5	9	6	8	9
Preharvest																				
2,4-D	4	0	0	0	2	1	0	0	0	4	2	9	9	9	9	-	9	8	8	9
Aim	14	1	0	0	0	0	0	0	0	0	0	8	6	7	8	-	8	-	0	8
Glyphosate	9	8	9	9	9	8	9	8	9	9	7	8	9	9	6	8	9	8	9	9

Rating Scale: 0–3 = none to slight; 4–6 = fair; 7–8 = good; 9–10 = excellent.

¹Control expected under optimum conditions. Mississippi State University does not guarantee these estimates since many factors influence herbicide performance to vary. Resistance to recommended use rates of some herbicides has been identified in certain weed species in Mississippi (See Herbicide-Resistant Weed Management Section). Ratings reflect expected control of herbicide-susceptible populations.

For additional information, please see these websites: www.agrian.com, www.cdms.net, or www.greenbook.net

Corn Weed Management

Situation and active ingredient rate per broadcast acre	Formulated product per broadcast acre	Time of application	Weeds controlled	Special instructions and remarks
Removal of Partial Corn Stands for Replanting				
clethodim – 0.045 lb/A	Various formulations (see product label for specific rates)	Failed stands up to 12 inches tall	Roundup Ready 2 or glufosinate-resistant corn hybrids	Do not replant within 6 days of application. Avoid off-site movement to emerged, non-target corn. Adjuvant requirements vary by product. See product label for specific adjuvant information.
paraquat + atrazine – 0.63 to 0.75 lb/A + 0.5 lb/A	paraquat 2 lb/gal formulation — 2.5 to 3 pt/A or 3 lb/gal formulation — 1.68 to 2 pt/A + atrazine 4 lb/gal formulations — 0.5 qt/A or 90% formulation — 0.55 lb/A	When corn is small enough to achieve adequate coverage	Roundup Ready 2 or glufosinate-resistant corn hybrids	Corn may be replanted immediately. Avoid off-site movement to emerged vegetation. Add a nonionic surfactant at 0.25% v/v or a crop oil concentrate at 1% v/v.
paraquat + diuron – 0.63 to 0.75 lb/A + 0.5 lb/A	paraquat 2 lb/gal formulation — 2.5 to 3 pt/A or 3 lb/gal formulation — 1.68 to 2 pt/A + diuron 4 lb/gal formulation — 0.5 qt/A or 80% formulation — 0.63 lb/A	When corn is small enough to achieve adequate coverage	Roundup Ready 2 or glufosinate-resistant corn hybrids	Corn may be replanted immediately. Avoid off-site movement to emerged vegetation. Add a nonionic surfactant at 0.25% v/v or a crop oil concentrate at 1% v/v.
Preemergence				
acetochlor – 0.8 to 2.4 lb/A	acetochlor 7 lb/gal formulation — 1 to 2.75 pt/A	Preplant up to 30 days before planting, preplant incorporated, or preemergence	Annual grasses and small-seeded broadleaf weeds	Mix with glyphosate, paraquat, or glufosinate to control emerged vegetation. Sufficient weed control depends on adequate rainfall for incorporation. Use higher rates on reduced tillage systems. Do not use on sweet corn. If stand failure occurs, replant corn but do not make second application of acetochlor.
acetochlor + atrazine – 1.1 to 2 + 1 to 1.5 lb/A	Various formulations (see product label for specific rates)	Preplant or preemergence	Annual grasses and broadleaf weeds	See <i>Special Instructions and Remarks</i> for acetochlor and atrazine. Mix with glyphosate, paraquat, or glufosinate to control emerged vegetation. Do not use on sweet corn.
acetochlor + flumetsulam + clopyralid – 0.8 to 1.33 lb/A	SureStart II 4.25 EC — 1.5 to 2.5 pt/A	Preplant or preemergence	Annual grasses and broadleaf weeds	Mix with glyphosate, paraquat, or glufosinate to control emerged vegetation. Weed control optimized when applications are as close as possible to planting but before weeds emerge. Applications may be made from 30 days prior to planting until 11-inch corn.
acetochlor + mesotrione + clopyralid – 0.93 to 1.13 lb/A	Resicore 3.29 SC — 2.25 to 2.75 pt/A	Preplant or preemergence	Henbit, morningglory, pigweed, and other broadleaf weeds	Mix with glyphosate, paraquat, or glufosinate to control emerged vegetation. Split applications with 50% of the total rate applied preemergence and the remaining 50% of the total rate applied postemergence are beneficial with some weed species.
atrazine – 2 lb/A	atrazine 4 lb/gal formulation — 2 qt/A or 90% formulation — 2.22 lb/A	Preplant or preemergence	Annual grasses and broadleaf weeds	Mix with glyphosate, paraquat, or glufosinate to control emerged vegetation. Atrazine is a restricted-use pesticide. Do not plant fall cover crops. Do not exceed 2.5 pounds of active ingredient per year. See label for additional restrictions. Broadleaf signalgrass control poor.
atrazine + s-metolachlor + safener – 1 to 2 lb/A + 0.8 to 1.6 lb/A	Various formulations (see product label for specific rates)	Preplant or preemergence	Annual grasses and broadleaf weeds	See <i>Special Instructions and Remarks</i> for atrazine and metolachlor/s-metolachlor. Mix with glyphosate, paraquat, or glufosinate to control emerged vegetation.

Corn Weed Management

Situation and active ingredient rate per broadcast acre	Formulated product per broadcast acre	Time of application	Weeds controlled	Special instructions and remarks
dicamba – 0.25 lb/A	Various formulations (see product label for specific rates)	Preplant or preemergence	Horseweed, clovers; other annual, biennial, and perennial broadleaf weeds	Apply only to medium- or fine-textured soils that contain 2% or greater organic matter. Do not apply to coarse-textured soils after crop emergence.
dimethenamid-P – 0.56 to 0.84 lb/A	Outlook 6 EC — 12 to 18 oz/A	Preplant or preemergence	Annual grasses and broadleaf weeds	Mix with glyphosate, paraquat, or glufosinate to control emerged vegetation. Sufficient weed control depends on adequate rainfall for incorporation. This treatment provides poor control of most large-seeded broadleaf weeds. See label for mixtures.
dimethenamid-P + saflufenacil – 0.44 to 0.8 lb/A	Verdict 5.67 EC — 10 to 18 oz/A	Preplant, preplant incorporated, or preemergence	Annual grasses and broadleaf weeds	Mix with glyphosate, paraquat, or glufosinate to control emerged vegetation. Use lower rates on coarse soils. Do not apply after corn emerges or severe crop injury will occur. Do not apply where at-planting application of an organophosphate or carbamate insecticide is planned.
isoxaflutole + thiencazone-methyl – 0.115 lb/A	Corvus 2.63 SC — 5.6 oz/A	Preplant, preplant incorporated, or preemergence	Annual grasses and broadleaf weeds	Decrease rate to 3.33 ounces per acre on coarse-textured soils with less than 2% organic matter. To avoid reduced crop stand or injury, plant seed at least 1.5 inches deep and completely cover with soil and firm up the furrow. May be applied early postemergence from spiking to V2 corn stage.
mesotrione + atrazine + s-metolachlor – 2.08 to 2.78 lb/A	Lexar EZ 3.7 SC — 2.25 to 3 qt/A	Preemergence	Annual grasses and broadleaf weeds	See <i>Special Instructions and Remarks</i> for atrazine. Mix with glyphosate, paraquat, or glufosinate to control emerged vegetation. Do not apply postemergence within 7 days of any organophosphate or carbamate insecticide application.
S-metolachlor + atrazine + mesotrione + bicyclopyrone – 1.9 to 2.6 lb/A	Acuron 3.44 SC — 2.5 to 3 qt/A	Preemergence	Annual grasses and broadleaf weeds	See <i>Special Instructions and Remarks</i> for atrazine. Mix with glyphosate, paraquat, or glufosinate to control emerged vegetation. The use rate of Acuron is based more on organic matter than soil texture.
S-metolachlor or metolachlor + safener – 0.8 to 1.6 lb/A	Various formulations (See product label for specific rates)	Preplant or preemergence	Annual grasses and small-seeded broadleaf weeds	Mix with glyphosate, paraquat, or glufosinate to control emerged vegetation. Sufficient weed control depends on adequate rainfall for incorporation. For soils with 3% or more organic matter, increase rate by 0.5 pint per acre. This treatment provides poor control of most large-seeded broadleaf weeds.
pendimethalin – 0.75 to 1.5 lb/A	pendimethalin 3.8 lb/gal formulation — 1.6 to 3.2 pt/A or 3.3 lb/gal formulation — 1.8 to 3.6 pt/A	Preemergence	Annual grasses and small-seeded broadleaf weeds	Mix with glyphosate, paraquat, or glufosinate to control emerged vegetation. Sufficient weed control depends on adequate rainfall for incorporation. See label for mixtures. This treatment provides poor control of broadleaf signalgrass and most large-seeded broadleaf weeds.
pyroxasulfone – 0.08 to 0.21 lb/A	Zidua 85 WDG — 1.5 to 4 oz/A or 4 SC — 2.5 to 6.5 oz/A	Preplant, preplant incorporated, or preemergence	Annual grasses and small-seeded broadleaf weeds	Mix with glyphosate, paraquat, or glufosinate to control emerged vegetation. Sufficient weed control depends on adequate rainfall for incorporation. Do not apply more than 0.15 pounds active ingredient per acre per year on coarse soils. Do not apply more than 0.27 pounds active ingredient per acre per year on medium or fine soils. Weed control optimized when applications are made to seedbeds free of residue.
pyroxasulfone + fluthiacet-methyl – 0.12 to 0.19 lb/A	Anthem Maxx 4.3 SC — 3 to 6.5 oz/A	Preplant up to 45 days before planting, preplant incorporated, or pre emergence	Annual grasses and small-seeded broadleaf weeds	Mix with glyphosate, paraquat, or glufosinate to control emerged vegetation. Use the lower rate on coarse-textured soils. Sufficient weed control depends on adequate rainfall for incorporation. Weed control optimized when applications are made to seedbeds free of residue.

Corn Weed Management

Situation and active ingredient rate per broadcast acre	Formulated product per broadcast acre	Time of application	Weeds controlled	Special instructions and remarks
pyrooxasulfone + carfentrazone – 0.109 to 0.227 lb/A	Anthem Flex 4 SC — 3.5 to 7.28 oz/A	Preplant up to 45 days before planting, preplant incorporated, or preemergence	Annual grasses and small-seeded broadleaf weeds	See <i>Special Instructions and Remarks</i> for Anthem Maxx. Mix with glyphosate, paraquat, or glufosinate to control emerged vegetation..
safllufenacil – 0.045 to 0.067 lb/A	Sharpen 2.85 SC — 2 to 3 oz/A	Preplant, preplant incorporated, or preemergence	Broadleaf weeds	Mix with glyphosate, paraquat, or glufosinate to control emerged vegetation. Use lower rates on coarse soils. Do not apply after corn emerges or severe crop injury will occur. Do not apply where at planting application of an organophosphate or carbamate insecticide is planned. Do not apply more than 6 ounces per acre per year.
simazine – 2 to 3 lb/A	Simazine 4 L — 4 to 8 pt/A or 90 DF — 2.2 to 4.4 lb/A	Preplant or preemergence	Annual grasses and small-seeded broadleaf weeds	Mix with glyphosate, paraquat, or glufosinate to control emerged vegetation. Till soil in fall to minimize carryover potential to rotational crops. See label for additional restrictions.
Postemergence (glufosinate-resistant hybrids) See Postemergence (All hybrids) list in this section for information on mixtures with glyphosate or glufosinate.				
glufosinate – 0.53 to 0.79 lb/A	glufosinate 2.34 lb/gal formulation 29 to 43 oz/A	From corn emergence until V7 growth stage	Annual grasses and broadleaf weeds	Sequential applications should be at least 10–14 days apart. Do not exceed 87 ounces per growing season from preplant and postemergence applications. Do not apply within 70 days of harvest. Do not add surfactant. Do not use nitrogen solutions as spray carriers. See label for approved mixtures. Apply when temperatures are warm, as colder weather may reduce activity.
glyphosate – 0.75 to 1 lb/A	Various formulations (See product label for specific rates)	Postemergence until corn reaches V8 growth stage or 30 inches	Annual grasses and broadleaf weeds	Mix with a residual herbicide for optimum control. Single applications must not exceed 0.77 pounds acid equivalent per acre. Allow minimum of 10 days between applications. May be mixed with atrazine up to 12-inch-tall corn. Avoid drift to desirable vegetation.
mesotrione + glyphosate + s-metolachlor + atrazine – 1.98 to 2.22 lb/A + 1 to 2 lb/A	Halex GT 4.4 L — 3.6 to 4 pt/A + atrazine 4 lb/gal formulation — 1 to 2 qt/A or 90% formulation — 1.11 to 2.22 lb/A	Small, actively growing weeds before corn reaches 12 inches	Annual grasses and broadleaf weeds	See <i>Special Instructions and Remarks</i> for atrazine. Do not apply postemergence within 7 days of any organophosphate or carbamate insecticide application. Add a nonionic surfactant at 0.25% v/v.
s-metolachlor + glyphosate + mesotrione + bicyclopyrone + atrazine – 2.02 lb/A + 1 to 2 lb/A	Acuron GT 4.3 ZC — 3.75 pt/A + atrazine 4 lb/gal formulation — 1 to 2 qt/A or 90% formulation — 1.11 to 2.22 lb/A	Small, actively growing weeds before corn reaches 12 inches	Annual grasses and broadleaf weeds	See <i>Special Instructions and Remarks</i> for atrazine. Do not make more than one application per year. Do not mix with emulsifiable concentrate (EC) products. Add nonionic surfactant at 1% v/v and ammonium sulfate at 17 pounds per 100 gallons of water.
topramezone + glufosinate – 0.42 to 0.56 lb/A	Sinate 2.57 SC — 21 to 28 oz/A	From corn emergence until V7 growth stage	Annual grasses and broadleaf weeds	See <i>Special Instructions and Remarks</i> for glufosinate. Mix with atrazine to improve weed control spectrum. Add methylated seed oil at 1% v/v and ammonium sulfate at 3 pounds per acre.
Postemergence (Roundup Ready 2 hybrids) See Postemergence (All hybrids) list in this section for information on mixtures with glyphosate.				
glyphosate – 0.75 to 1 lb/A	Various formulations (See product label for specific rates)	Postemergence until corn reaches V8 growth stage or 30 inches	Annual grasses and broadleaf weeds	See <i>Special Instructions and Remarks</i> for glyphosate in Postemergence (glufosinate-resistant hybrids) section.

Corn Weed Management

Situation and active ingredient rate per broadcast acre	Formulated product per broadcast acre	Time of application	Weeds controlled	Special instructions and remarks
mesotrione + glyphosate + s-metolachlor + atrazine – 1.98 to 2.22 lb/A + 1 to 2 lb/A	Halex GT 4.4 L — 3.6 to 4 pt/A + atrazine 4 lb/gal formulation — 1 to 2 qt/A or 90% formulation — 1.11 to 2.22 lb/A	Small, actively growing weeds before corn reaches 12 inches	Annual grasses and broadleaf weeds	See <i>Special Instructions and Remarks</i> for Halex GT in Postemergence (glufosinate-resistant hybrids) section.
Postemergence (All hybrids)				
2,4-D amine – 0.24 to 0.72 lb/A	Various formulations (see product label for specific rates)	See special instructions	Broadleaf weeds	Direct spray below whorl of corn plants taller than 8 inches. Mix with glyphosate or glufosinate to improve weed control spectrum.
acetochlor + mesotrione + clopyralid – 0.93 to 1.13 lb/A	Resicore 3.29 SC — 2.25 to 2.75 pt/A	Small, actively growing weeds less than 3 inches tall	Henbit, morningglory, pigweed, other broadleaf weeds	Mix with glyphosate or glufosinate (depending on hybrid) and atrazine to improve weed control spectrum. Do not apply carbamate or organophosphate insecticide within 7 days before or 7 days after application. Add a nonionic surfactant at 0.25% v/v or a nonphytotoxic crop oil concentrate at 1% v/v.
atrazine – 2 lb/A	atrazine 4 lb/gal formulation — 2 qt/A or 90% formulation — 2.22 lb/A	Small, actively growing weeds before corn reaches 12 inches	Annual grasses and broadleaf weeds	Mix with glyphosate or glufosinate (depending on hybrid) to improve weed control spectrum. Atrazine is a restricted-use pesticide. Do not exceed 2.5 pounds of active ingredient per acre per year. Do not apply when corn is stressed from cold or excess rain. Application with insecticides, liquid fertilizers, or other materials is not recommended due to compatibility problems or crop injury. Add nonphytotoxic crop oil concentrate at 1 quart per acre when applied alone.
atrazine + s-metolachlor – 1 to 2 lb/A + 0.8 to 1.6 lb/A	Various formulations (see product label for specific rates)	Small, actively growing weeds before corn reaches 12 inches	Annual grasses and broadleaf weeds	See <i>Special Instructions and Remarks</i> for atrazine. Mix with glyphosate or glufosinate (depending on hybrid) to improve weed control spectrum.
bentazon – 0.75 to 1 lb/A	bentazon 4 lb/gal formulation — 1.5 to 2 pt/A or 5 lb/gal formulation — 1.2 to 1.6 pt/A	Small, actively growing weeds	Cocklebur, prickly sida (2 to 3 inches), smartweed	Mix with glyphosate or glufosinate (depending on hybrid) and atrazine to improve weed control spectrum. Use the low rate for small cocklebur and the high rate for 6- to 10-leaf cocklebur. Control may be poor if applied under drought conditions. Rainfall within 8 hours may reduce efficacy. Add a nonionic surfactant at 0.25% v/v or a nonphytotoxic crop oil concentrate at 1% v/v.
carfentrazone – 0.008 lb/A	Aim 2 EC — 0.5 oz/A	Small, actively growing weeds up to V8 corn stage	Morningglory, pigweed (less than 2 inches)	Mix with glyphosate or glufosinate (depending on hybrid) and atrazine to improve weed control spectrum. Do not apply more than 1.9 ounces per acre per season. Weeds should be less than 4 inches at application. Add a nonionic surfactant at 0.25% v/v. Under dry conditions, a crop oil concentrate may improve weed control but increase crop injury.
dicamba – 0.25 to 0.5 lb/A	Various formulations (see product label for specific rates)	Before corn is 36 inches tall or until 15 days before tassels emerge	Broadleaf weeds	Mix with glyphosate or glufosinate (depending on hybrid) and atrazine to improve weed control spectrum. Avoid drift to soybean. Do not make more than one application per season. Use the high rate before corn reaches 8 inches tall or exceeds the 5-leaf stage. Application when corn exceeds 8 inches can cause stalks to lean, become temporarily brittle and prone to break from wind or other physical disturbance.
dicamba + diflufenzopyr – 0.175 to 0.35 lb/A	Status 56 WG — 5 to 10 oz/A	Postemergence to corn from 4 to 36 inches tall or until 15 days before tassels emerge	Broadleaf weeds	Mix with glyphosate or glufosinate (depending on hybrid) and atrazine to improve weed control spectrum. Avoid drift to soybean. Do not exceed 12.5 ounces per acre per season. Mixtures with growth regulator herbicides such as 2,4-D or emulsifiable concentrate formulations of chloroacetamide herbicides are not recommended.
dicamba + 2,4-D – 0.1 to 0.25 + 0.25 to 0.50 lb/A	Various formulations (see product labels for specific rates)	See special instructions	Broadleaf weeds	See <i>Special Instructions and Remarks</i> for dicamba and 2,4-D. Mix with glyphosate or glufosinate (depending on hybrid) and atrazine to improve weed control spectrum. May be applied overhead before corn is 8 inches high. Application when corn exceeds 8 inches can cause stalks to lean, become temporarily brittle and prone to break from wind or other physical disturbance.

Corn Weed Management

Situation and active ingredient rate per broadcast acre	Formulated product per broadcast acre	Time of application	Weeds controlled	Special instructions and remarks
halosulfuron – 0.032 to 0.063 lb/A	halosulfuron 75% formulation — 0.67 to 1.33 oz/A	Postemergence between spike and layby, but at least 30 days before harvest	Nutsedge, cocklebur, hemp sesbania	Mix with glyphosate or glufosinate (depending on hybrid) and atrazine to improve weed control spectrum. Avoid drift to non STS soybean. A minimum of 14 days is required between sequential applications. This treatment may be applied with liquid fertilizer, but fertilizer should not be total carrier. Do not make more than two applications per season or exceed 2.67 ounces per acre per season. Add nonionic surfactant at 0.25% v/v or nonphytotoxic crop oil concentrate at 1% v/v.
halosulfuron + dicamba – 0.25 lb/A	Yukon 67.5 WG — 6 oz/A	Postemergence until corn reaches 30 inches	Horseweed, nutsedge, ragweed, broadleaf weeds	See <i>Special Instructions and Remarks</i> for dicamba and halosulfuron. Mix with glyphosate or glufosinate (depending on hybrid) and atrazine to improve weed control spectrum.
halosulfuron + prosulfuron – 0.049 to 0.099 lb/A	Gambit 79 WG — 1 to 2 oz/A	Postemergence to corn with 1 to 5 collars	Common ragweed, hemp sesbania, Pennsylvania smartweed, yellow nutsedge	Mix with glyphosate or glufosinate (depending on hybrid) and atrazine to improve weed control spectrum. Avoid drift to non STS soybean. Two applications are allowed but total should not exceed 2 ounces per acre per year. A minimum of 14 days is required between sequential applications.
mesotrione + atrazine – 0.094 + 1 to 2 lb/A	mesotrione 4 lb/gal formulation — 3 oz/A + atrazine 4 lb/gal formulation — 1 to 2 qt/A or 90% formulation — 1.11 to 2.22 lb/A	Small, actively growing weeds before corn reaches 12 inches	Morningglory, cocklebur, pigweed, other broadleaf weeds	See <i>Special Instructions and Remarks</i> for atrazine. Mix with glyphosate or glufosinate (depending on hybrid) to improve weed control spectrum. Severe corn injury may occur if any organophosphate or carbamate insecticide is applied within 7 days before or after mesotrione. Do not use methylated seed oil or methylated seed oil blends. Without atrazine, mesotrione may be applied to corn up to 30 inches tall.
mesotrione + atrazine + s-metolachlor – 2.08 to 2.78 lb/A	Lexar EZ 3.7 SC — 2.25 to 3 qt/A	Small, actively growing weeds before corn reaches 12 inches	Annual grasses and broadleaf weeds	See <i>Special Instructions and Remarks</i> for atrazine. Mix with glyphosate or glufosinate (depending on hybrid) to improve weed control spectrum. Do not apply postemergence within 7 days of any organophosphate or carbamate insecticide application. Add a nonionic surfactant at 0.25% v/v.
s-metolachlor + atrazine + mesotrione + bicyclopyrone – 1.9 to 2.6 lb/A	Acuron 3.44 SC — 2.5 to 3 qt/A	Small, actively growing weeds before corn reaches 12 inches	Annual grasses and broadleaf weeds	See <i>Special Instructions and Remarks</i> for atrazine. Mix with glyphosate or glufosinate (depending on hybrid) and atrazine to improve weed control spectrum. Two applications are allowed but total should not exceed 2 ounces per acre per year. A minimum of 14 days is required between sequential applications. Do not make postemergence applications in mixture with organophosphate or carbamate insecticide. The use rate of Acuron is based more on organic matter than soil texture.
nicosulfuron – 0.03 lb/A	Various formulations (See product label for specific rates)	Postemergence from V2 to V6 corn stage	Johnsongrass and other annual weeds	Mix with glyphosate or glufosinate (depending on hybrid) and atrazine to improve weed control spectrum. Avoid drift to non STS soybean. Do not apply to corn treated with Counter or soil- or foliar- applied organophosphate insecticides. Add a nonionic surfactant at 0.25% v/v or a nonphytotoxic crop oil concentrate at 1% v/v.
nicosulfuron + rimsulfuron – 0.036 lb/A	Steadfast Q 38 WG — 1.5 oz/A	Postemergence to corn up to 20 inches tall and with up to 6 leaf collars	Annual grass and broadleaf weeds	Mix with glyphosate or glufosinate (depending on hybrid) and atrazine to improve weed control spectrum. Do not make more than one application of Steadfast Q per cropping season. Do not use Steadfast Q in the same year as Counter 15G, Counter 20CR, Dyfonate, Lorsban, and Thimet. Add a nonionic surfactant at 0.25% v/v or a nonphytotoxic crop oil concentrate at 1% v/v.
pyroxasulfone + flumiclorac – 0.11 to 0.18 lb/A	Perpetuo 2.3 SC — 6 to 10 oz/A	Postemergence from V2 to V6 corn stage	Annual grasses and broadleaf weeds	Mix with glyphosate or glufosinate (depending on hybrid) and atrazine to improve weed control spectrum. Do not apply to sweet or popcorn. Do not apply more than 10 ounces per acre in a single season. Add nonphytotoxic crop oil concentrate or methylated seed oil at 1% v/v. Ammonium sulfate at 2 pounds per acre or urea-ammonium nitrate at 2 quarts per acre may also be included.

Corn Weed Management

Situation and active ingredient rate per broadcast acre	Formulated product per broadcast acre	Time of application	Weeds controlled	Special instructions and remarks
pyrooxasulfone + fluthiacet-methyl – 0.101 to 0.202 lb/A	Anthem Maxx 4.3 SC — 3 to 6.5 oz/A	Postemergence until the V4 corn stage	Annual grasses and small-seeded broadleaf weeds	Mix with glyphosate or glufosinate (depending on hybrid) and atrazine to improve weed control spectrum. Use the lower rate on coarse-textured soils. For heavy weed densities and longer residual, use the higher labeled rate. Add a nonionic surfactant at 0.25% v/v or a nonphytotoxic crop oil concentrate at 1% v/v.
rimsulfuron + mesotrione + atrazine – 0.098 lb/A + 1 to 2 lb/A lb/A	Realm Q 39 SG — 4 oz/A + atrazine 4 lb/gal formulation — 1 to 2 qt/A or 90% formulation — 1.11 to 2.22 lb/A	Small, actively growing weeds before corn reaches 12 inches	Annual grasses and broadleaf weeds	See <i>Special Instructions and Remarks</i> for atrazine. Mix with glyphosate or glufosinate (depending on hybrid) and atrazine to improve weed control spectrum. Do not apply to corn treated with Counter or soil- or foliar-applied organophosphate insecticides. Crop injury may occur if there is a prolonged period of cold weather and/or in conjunction with wet soils. Add a nonionic surfactant at 0.25% v/v or a nonphytotoxic crop oil concentrate at 1% v/v.
tembotrione + atrazine – 0.082 lb/A + to 2 lb/A	Laudis 3.5 SC — 3 oz/A + atrazine 4 lb/gal formulation — 1 to 2 qt/A or 90% formulation — 1.11 to 2.22 lb/A	Small, actively growing weeds before corn reaches 12 inches	Annual grasses and broadleaf weeds	See <i>Special Instructions and Remarks</i> for atrazine. Without atrazine, Laudis may be applied up to the eight-leaf collar stage. Mix with glyphosate or glufosinate (depending on hybrid) to improve weed control spectrum. Add methylated seed oil at 1% v/v and ammonium sulfate at 1.5 pounds per acre.
tembotrione + thiencazone-methyl + atrazine – 0.081 lb/A + 1 to 2 lb/A	Capreno 3.45 SC — 3 oz/A + atrazine 4 lb/gal formulation — 1 to 2 qt/A or 90% formulation — 1.11 to 2.22 lb/A	Small, actively growing weeds before corn reaches 12 inches	Annual grasses and broadleaf weeds	See <i>Special Instructions and Remarks</i> for atrazine. Mix with glyphosate or glufosinate (depending on hybrid) and atrazine to improve weed control spectrum. Do not exceed 6 ounces per acre per growing season. Add crop oil concentrate at 1% v/v and ammonium sulfate at 1.5 pounds per acre.
topramezone + atrazine – 0.044 lb/A + 1 to 2 lb/A	Armezon 2.8 SL or Impact 2.8 SC — 2 oz/A + atrazine 4 lb/gal formulation — 1 to 2 qt/A or 90% formulation — 1.11 to 2.22 lb/A	Small, actively growing weeds before corn reaches 12 inches	Annual grasses and broadleaf weeds	See <i>Special Instructions and Remarks</i> for atrazine. Mix with glyphosate or glufosinate (depending on hybrid) and atrazine to improve weed control spectrum. Without atrazine, Armezon or Impact may be applied after corn reaches 12 inches. Add methylated seed oil at 1% v/v and ammonium sulfate.
topramezone + acetochlor – 1.12 to 2.23 lb/A	Impact Core 7.15 SC — 20 to 40 oz/A	Postemergence until corn reaches 11 inches	Annual grasses and broadleaf weeds	See product label for specific application rates based on soil texture. Mix with glyphosate or glufosinate (depending on hybrid) and atrazine to improve weed control spectrum. Add nonionic surfactant at 0.25% v/v and ammonium sulfate at 1.5 pounds per acre or urea-ammonium nitrate at 2.5% v/v. Crop oil concentrate or methylated seed oil may be substituted for nonionic surfactant but may cause injury.
topramezone + dimethenamid-P – 0.98 lb/A	Armezon PRO 6.25 SL — 20 oz/A	Postemergence until corn reaches V8 growth stage or 30 inches	Annual grasses and broadleaf weeds	Mix with glyphosate or glufosinate (depending on hybrid) and atrazine to improve weed control spectrum. Add methylated seed oil at 1% v/v.
Directed or Hooded Sprayers				
linuron – 0.63 to 1.5 lb/A	linuron 4 lb/gal formulation — 1.25 to 3 pt/A or 50% formulation — 1.25 to 3 lb/A	After corn is at least 15 inches tall and before weeds are 5 inches tall	Annual broadleaf weeds and grasses	Apply as a directed spray to cover weeds. Do not use on loamy sand or sand. May be applied in N solutions. Use the low rate when weeds are less than 2 inches tall and on light soils. Use the high rates on weeds up to 5 inches or on heavy soils. Add a nonionic surfactant at 0.5% v/v.

Corn Weed Management

Situation and active ingredient rate per broadcast acre	Formulated product per broadcast acre	Time of application	Weeds controlled	Special instructions and remarks
paraquat – 0.25 to 0.47 lb/A	paraquat 2 lb/gal formulation — 1 to 1.88 pt/A or 3 lb/gal formulation — 0.67 to 1.25 pt/A	After corn is 6 inches tall	Annual grasses and broadleaf weeds less than 6 inches tall	Application only with hooded sprayer. Keep the bottom of the hood in contact with soil surface. Avoid crop contact with spray solution. Avoid use of spray tips that produce fine spray droplets. Best results are achieved when mixed with residual broadleaf herbicides. Consult label for specific mixtures. Add nonionic surfactant at 0.25% v/v.
Preharvest				
2,4-D amine – 0.48 to 0.95 lb/A	Various formulations (see product label for specific rates)	After corn is in dent or hard dough stage	Broadleaf weeds	Apply to broadleaf weeds such as morningglory, cocklebur, and sicklepod to facilitate harvest. Wait 5 to 7 days before harvesting.
carfentrazone – 0.031 lb/A	Aim 2 EC — 2 oz/A	After corn grain is physiologically mature and at least 3 days before grain harvest	Morningglory, pigweed, hemp sesbania	Spray volume must be sufficient to provide complete coverage of undesired foliage. A minimum of 10 gallons per acre is suggested for ground application and 5 gallons per acre for aerial application. Add a crop oil concentrate at 1% v/v.
paraquat – 0.3 to 0.5 lb/A	paraquat 2 lb/gal formulation — 1.2 to 2 pt/A or 3 lb/gal formulation — 0.8 to 1.33 pt/A	After black layer has formed at the base of the kernels	Annual and perennial grasses and broadleaf weeds	Make one application at least 7 days before harvest. Drought-stressed weeds will not be desiccated. Add nonionic surfactant at 0.25% v/v.
paraquat + sodium chlorate – 0.3 to 0.5 lb/A + 3 lb/A	Various formulations for each (see product labels for specific rates)	After corn grain is physiologically mature and at least 14 days before harvest	Annual and perennial grasses and broadleaf weeds	See <i>Special Instructions and Remarks</i> for paraquat and sodium chlorate.
sodium chlorate – 6 lb/A	Various formulations (see product label for specific rates)	After corn grain is physiologically mature and at least 14 days before harvest	Desiccation of most annual grasses and broadleaf weeds	Apply where grasses such as johnsongrass make harvesting difficult. Apply at least 14 days before anticipated harvest date on clear days when temperatures are expected to go above 70 ° F. Do not graze treated fields or feed fodder, forage, or residual seeds within 14 days of application.
glyphosate – 0.77 lb/A	Various formulations (see product label for specific rates)	After corn grain is physiologically mature and grain moisture is 35% or less and at least 7 days before harvest	Johnsongrass and other annual weeds	Do not exceed 1 quart per acre by aerial or 3 quarts per acre by ground equipment. Do not apply to corn grown for seed.

Cotton Weed Management
Weed Response Ratings for Cotton Herbicides Applied Preemergence¹

	Herbicide group numbers	Barnyardgrass	Bermudagrass	Broadleaf signalgrass	Crabgrass	Fall panicum	Goosegrass	Johnsongrass—rhizome	Johnsongrass—seedling	Annual sedge	Nutsedge—purple	Nutsedge—yellow	Annual morningglory	Cocklebur	Hemp sesbania	Honeyvine milkweed	Nodding spurge	Palmer, spiny amaranth, waterhemp	Pennsylvania smartweed	Prickly sida	Purslane	Sicklepod	Smooth, redroot pigweed	Spurred anoda	Velvetleaf	Crop tolerance (G = good, F = Fair)
Preplant²																										
Fomesafen	14	4	0	3	4	-	4	0	4	7	3	7	4	7	3	0	2	9	-	7	7	4	9	1	1	G
Pendimethalin	3	9	0	9	9	9	9	5	9	0	0	0	3	0	0	0	1	7	2	0	9	1	8	0	0	G
Trifluralin	3	9	0	9	9	9	9	6	9	0	0	0	3	0	0	0	1	8	2	0	9	1	8	0	0	G
Preemergence																										
Brake + fluometuron	12, 5	8	0	9	9	9	9	2	9	9	-	2	8	8	8	-	5	9	7	9	9	6	9	7	6	G
Clomazone	13	9	-	9	9	8	9	7	9	-	-	-	2	6	4	-	8	2	8	9	9	0	2	9	10	F
Diuron	5	7	0	8	8	8	8	0	6	9	0	0	7	7	4	0	6	9	7	6	9	5	9	5	7	F
Fluometuron	5	7	0	8	9	7	8	0	6	9	0	0	7	8	6	0	3	7	7	9	9	6	8	3	6	G
Prometryn	5	7	-	7	7	7	7	0	7	-	1	1	8	7	6	-	-	7	8	8	9	7	9	3	7	G
Pyriithiobac	2	6	-	5	5	-	5	2	5	-	-	-	8	8	4	-	9	6	6	9	-	6	8	9	8	G
Solicam DF	12	8	2	8	9	7	8	2	7	9	4	4	5	3	3	0	7	7	7	9	9	4	7	8	7	G
Warrant	15	8	0	8	8	-	8	0	8	7	5	7	0	2	0	0	6	8	-	2	-	2	8	0	2	-

Rating Scale: 0-3 = none to slight; 4-6 = fair; 7-8 = good; 9-10 = excellent.

¹Control expected under optimum conditions. Mississippi State University does not guarantee these estimates since many factors influence herbicide performance. Resistance to recommended use rates of some herbicides has been identified in certain weed species in Mississippi (See Herbicide-Resistant Weed Management Section). Ratings reflect expected control of herbicide-susceptible populations.

²An overlay treatment with the preemergence herbicides will control a broader spectrum of weeds, but the control of a given species may be no better than that for the best herbicide in the specific combination selected.

Cotton Weed Management

Weed Response Ratings for Cotton Herbicides Applied Postemergence¹

	Herbicide group numbers	Barnyardgrass	Bermudagrass	Broadleaf signalgrass	Crabgrass	Fall panicum	Goosegrass	Johnsongrass—rhizome	Johnsongrass—seedling	Annual sedge	Nutsedge—purple	Nutsedge—yellow	Annual morningglory	Cocklebur	Hemp sesbania	Honeyvine milkweed	Nodding spurge	Palmer, spiny amaranth, waterhemp	Pennsylvania smartweed	Prickly sida	Purslane	Sicklepod	Smooth, redroot pigweed	Spurred anoda	Velvetleaf	Crop tolerance (G = good, F = Fair)
Postemergence directed																										
Aim	14	0	0	0	0	0	0	0	0	0	0	8	7	6	0	7	6	-	6	-	4	6	-	10	G	
MSMA	17	7	0	8	8	7	4	5	8	6	6	6	3	9	2	1	0	5	1	2	3	3	6	0	0	G
Cobra	14	3	0	3	3	3	3	2	3	2	-	2	6	8	-	5	8	8	7	8	8	-	8	7	8	G
+ MSMA	17	8	0	8	8	7	8	5	9	6	6	6	9	9	7	5	8	9	7	8	9	5	9	7	8	F
Fluometuron	5	6	-	6	6	6	6	-	6	-	1	1	7	5	4	-	-	6	-	5	-	-	6	-	-	G
+ MSMA	17	8	0	9	9	8	8	5	8	8	6	6	8	9	5	2	4	9	4	7	6	8	9	3	6	F
Goal 2XL	14	4	0	4	4	4	4	2	4	2	2	2	9	8	-	2	7	7	9	8	9	-	7	-	8	G
+ MSMA	17	8	0	8	8	7	8	5	9	6	6	6	9	9	7	2	7	9	9	8	9	8	9	5	8	F
Prometryn	5	7	-	7	7	7	7	-	7	-	1	1	8	6	6	-	-	7	-	7	-	-	7	-	-	G
+ MSMA	17	8	0	9	9	8	8	5	9	8	6	6	8	9	6	2	5	9	4	8	8	8	9	5	7	F
Suprend	2, 5	8	-	8	8	7	7	0	7	-	1	1	9	9	9	-	7	7	7	8	8	9	8	7	7	G
Postemergence over-the-top																										
Clethodim	1	9	9	9	9	8	9	9	9	0	0	0	0	0	0	0	0	0	0	0	0	0	9	0	0	E
Envoke	2	6	0	2	2	-	2	5	7	9	7	8	9	9	9	-	-	7	-	2	-	9	8	-	9	F
Fusilade DX	1	9	9	9	9	9	9	9	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	E
Glufosinate	10	8	-	8	8	-	5	8	8	-	4	4	9	8	9	-	-	8	8	7	-	8	8	9	7	E
Glyphosate	9	8	5	9	9	8	8	7	9	9	7	6	6	8	6	3	-	9	9	8	6	7	9	8	7	G
Outlook ²	15	8	0	7	8	8	8	0	8	7	3	5	2	2	2	0	7	8	-	2	8	2	8	0	2	G
Pyriithiobac	2	0	0	0	0	0	0	3	6	-	5	5	9	7	9	-	7	6	9	7	6	5	7	9	9	G
Sequence	15, 9	9	6	9	9	9	8	8	9	10	8	7	8	8	6	4	9	9	7	7	9	8	9	9	7	G
S-metolachlor/metolachlor ²	15	8	0	8	8	-	8	0	8	7	5	7	0	2	0	-	6	8	-	2	-	2	9	0	0	G
Warrant ²	15	8	0	8	8	-	8	0	8	7	5	7	0	2	0	0	6	8	-	2	-	2	8	0	2	-
Layby – preemergence only																										
Anthem Flex	14, 15	9	-	9	9	8	8	4	7	-	-	4	6	3	6	-	9	9	-	8	9	7	9	-	7	G
Diuron	5	5	0	5	6	5	5	2	5	4	0	0	7	4	4	1	4	9	3	4	5	8	9	3	3	G
+ MSMA	17	8	0	9	9	8	8	5	9	8	6	6	8	9	5	2	4	9	4	7	7	8	9	4	4	F
Fierce or Fierce EZ	14, 15	9	9	9	8	9	8	4	8	7	-	-	4	8	4	8	-	9	8	8	8	7	9	8	8	F
Flumioxazin	14	8	0	4	4	4	4	2	4	4	4	4	8	9	-	-	8	8	8	10	8	9	8	8	8	F
Layby Pro	5, 5	6	0	6	6	6	6	1	6	0	0	0	7	5	5	0	5	7	5	6	7	8	8	4	5	G
Linuron	5	6	0	6	6	6	6	1	5	0	0	0	6	4	4	0	6	7	6	6	8	4	7	2	5	G
Zidua or Zidua SC	15	9	-	9	9	8	8	4	7	-	-	4	6	3	6	-	9	9	-	8	9	7	9	-	7	G

Rating Scale: 0-3 = none to slight; 4-6 = fair; 7-8 = good; 9-10 = excellent.

¹Control expected under optimum conditions. Mississippi State University does not guarantee these estimates since many factors influence herbicide performance. Resistance to recommended use rates of some herbicides has been identified in certain weed species in Mississippi (See Herbicide-Resistant Weed Management Section). Ratings reflect expected control of herbicide-susceptible populations.

²Outlook, s-metolachlor/metolachlor and Warrant will not control emerged weed species. Control ratings given are for residual control of species listed.

Cotton Weed Management

Herbicide Rates for Controlling Grasses with Postemergence Herbicide Applications

Grass species	Fusilade DX		Quizalofop		Poast	
	Grass size (in)	Rate (oz/A)	Grass size (in)	Rate (oz/A)	Grass size (in)	Rate (oz/A)
Barnyardgrass	1 to 2	12	2 to 6	8	1 to 8	24
Bermudagrass	4 to 8	12	3	10	1 to 6	36
Second application	4 to 8	8	3	7	1 to 4	24
Broadleaf signalgrass	2 to 4	12	2 to 6	8	1 to 8	24
Crabgrass	1 to 2	12	2 to 6	8	1 to 6	24
Goosegrass	2 to 4	8	2 to 6	8	1 to 6	24
Red rice	1	16	1 to 4	9	1 to 4	48
Rhizome johnsongrass	8 to 18	12	10 to 24	10	15 to 20	24
Second application	6 to 12	8	6 to 10	7	6 to 10	24
Seedling johnsongrass	2 to 8	6	2 to 8	5	1 to 8	24
Volunteer corn	12 to 24	6	8 to 18	5	12 to 20	24 to 36

Situation and active ingredient rate per broadcast acre	Formulated product per broadcast acre	Time of application	Weeds controlled	Special instructions and remarks
Preplant Incorporated				
norflurazon – 1 to 2 lb/A	Solicam 80 DF — 1.25 to 2.5 lb/A	Within 30 days of planting	Annual grasses and small-seeded broadleaf weeds	Incorporate no deeper than 2 to 3 inches after final seedbed preparation. Do not use where johnsongrass or morningglory are a major problem. The application also may be split with half the rate preplant incorporated and the other half applied on the surface after planting. Provides good to excellent control of prickly sida and good control of spurred anoda.
pendimethalin – 0.48 to 1.9 lb/A	pendimethalin 3.8 lb/gal formulation — 1 to 4 pt/A or 3.3 lb/gal formulation — 1.2 to 4.6 pt/A	Preplant incorporated — up to 60 days before planting; Preplant surface — up to 15 days before planting	Annual grasses and some small-seeded broadleaf weeds such as pigweeds and purslane	See product label for specific application rates based on soil texture and tillage system. Incorporate 1 to 2 inches deep immediately after application for best results.
trifluralin – 0.5 to 0.75 to 1 lb/A	trifluralin 4 lb/gal formulation — 1 to 2 pt/A	Any time after Jan. 1 to immediately before planting	Annual grasses and some small-seeded broadleaf weeds such as pigweeds and purslane	Immediately incorporate 1 to 2 inches deep. Loss of 30% can be expected if incorporation is delayed 24 hours. Do not apply to wet soils or soils subject to prolonged flooding.
Preemergence				
Preemergence applications should be made after planting but before weed or crop emergence. Avoid planting cotton less than 0.5 inch deep to avoid injury during periods of heavy rainfall. Substituted-urea herbicides such as fluometuron or diuron may interact with organophosphate insecticides at planting, resulting in cotton injury.				
acetochlor – 0.94 to 1.5 lb/A	Warrant 3 CS — 1.25 to 2 qt/A	Preemergence	Annual grasses and small-seeded broadleaf weeds	Mix with glyphosate, paraquat, or glufosinate to control emerged vegetation. Sufficient weed control depends on adequate rainfall for incorporation.
clomazone – 0.5 to 1 lb/A	clomazone 3 lb/gal formulations — 1.33 to 2.67 pt/A	Preemergence	Annual grasses, purslane, spotted spurge, velvet-leaf, wild poinsettia	Mix with glyphosate, paraquat, or glufosinate to control emerged vegetation. Use of organophosphate insecticide in-furrow is required to prevent cotton injury. These insecticides may cause injury when used with fluometuron or diuron. Provides no control of pigweed. Addition of fluometuron improves morningglory and cocklebur control.

Cotton Weed Management

Situation and active ingredient rate per broadcast acre	Formulated product per broadcast acre	Time of application	Weeds controlled	Special instructions and remarks
diuron – 0.5 to 1.6 lb/A	diuron 4 lb/gal formulation — 0.5 to 1 to 1.6 qt/A or 80% formulation — 0.63 to 1.25 to 2 lb/A	Preemergence	Annual grasses and small-seeded broadleaf weeds	Mix with glyphosate, paraquat, or glufosinate to control emerged vegetation. If stand failure occurs, cotton may be replanted with minimum disturbance of the treated soil. In a single season, do not exceed 0.8 pound of active ingredient on loamy sand, 1.2 pounds on sandy loam, 1.6 pounds on clay loam, or 2.2 pounds on clay. Rebed only after thorough tillage.
fluometuron – 0.75 to 2 lb/A	fluometuron 4 lb/gal formulations — 0.75 to 1.5 to 2 qt/A	Preemergence	Annual grasses and small-seeded broadleaf weeds	Mix with glyphosate, paraquat, or glufosinate to control emerged vegetation. If stand failure occurs, cotton may be replanted with minimum disturbance of the treated soil. Rebed only after thorough tillage.
fluridone + fluometuron – 0.15 to 0.3 + 0.75 to 2 lb/A	Brake 1.2 L 16 to 32 oz/A + fluometuron 4 lb/gal formulation — 0.75 to 2 qt/A	Preemergence	Annual grasses and pigweed	Mix with glyphosate, paraquat, or glufosinate to control emerged vegetation. Additional moisture may be required for activation compared with other residual herbicides. Do not apply to the same field more than 2 years in a row. Do not apply to emerged cotton.
norflurazon – 1 to 2 lb/A	Solicam 80 DF — 1.25 to 2.5 lb/A	Preemergence	Annual grasses and small-seeded broadleaf weeds	See <i>Special Instructions and Remarks</i> for Solicam. Mix with glyphosate, paraquat, or glufosinate to control emerged vegetation. If stand failure occurs, cotton, soybean, or peanut may be with minimum disturbance of the treated soil, or the area may be reworked. Rebed only after thorough tillage.
pendimethalin – 0.5 to 1 lb/A	pendimethalin 3.8 lb/gal formulation — 1 to 2 pt/A or 3.3 lb/gal formulation — 1.2 to 2.4 pt/A	Preemergence	Annual grasses and some small-seeded broadleaf weeds	See <i>Special Instructions and Remarks</i> for pendimethalin. Mix with glyphosate, paraquat, or glufosinate to control emerged vegetation. Seedling diseases, cold weather, excessive moisture, shallow or deep planting, low or high soil pH, high soil salt concentration, or drought can weaken seedlings and increase the possibility of crop damage.
prometryn – 1 to 2 lb/A	prometryn 4 lb/gal formulation — 1 to 2 qt/A	Preemergence	Annual grasses and small-seeded broadleaf weeds	Mix with glyphosate, paraquat, or glufosinate to control emerged vegetation. Do not use on Sharkey clay soil in Mississippi Delta.
pyrithiobac – 0.033 to 0.053 lb/A	pyrithiobac 3.2 lb/gal formulation — 1.3 to 2.1 oz/A	Preemergence	Spurge, prickly sida, broadleaf weeds	Mix with glyphosate, paraquat, or glufosinate to control emerged vegetation. Do not use on coarse soils such as sands or loamy sands.
Cultivation – Utilize so that soil moved will not interfere with subsequent use of postemergence herbicides. Deep cultivation (> 2 inches) usually is not necessary and may damage the crop.				
Postemergence – Directed (Cotton at least 3 inches tall)				
MSMA – 2 lb/A	Various formulations (see product label for specific rates)	After smallest cotton is at least 3 inches tall	Annual grasses, susceptible cocklebur, nutsedge, small johnsongrass	Do not apply after first bloom. Mix with glyphosate or glufosinate to control emerged vegetation. Addition of fluometuron or prometryn will broaden spectrum of weeds controlled. This treatment is more effective during hot, dry periods than in cool, wet periods. Limit to two applications. Add a nonionic surfactant at 0.25% v/v if formulation does not contain adjuvant.
fluometuron – 0.8 lb/A	fluometuron 4 lb/gal formulation — 0.8 qt/A	After smallest cotton is at least 3 to 6 inches tall	Annual grasses and broadleaf weeds	Mix with glyphosate, glufosinate (depending on variety), or MSMA to improve weed control spectrum. See <i>Special Instructions and Remarks</i> for MSMA. This treatment is relatively safe on young cotton and also provides residual preemergence weed control.
prometryn – 0.5 lb/A	prometryn 4 lb/gal formulation — 1 pt/A	After smallest cotton is at least 3 inches tall	Annual grasses and broadleaf weeds	Mix with glyphosate, glufosinate (depending on variety), or MSMA to improve weed control spectrum. See <i>Special Instructions and Remarks</i> for MSMA. Do not apply at the 3-inch stage if cotton is stressed. Provides some residual control in addition to killing emerged weeds.
Postemergence – Directed (Cotton at least 6 inches tall)				
acetochlor + fomesafen – 1.29 to 1.75 lb/A	Warrant Ultra 3.45 CS — 48 to 65 oz/A	After smallest cotton is at least 6 inches tall	Annual grasses and broadleaf weeds	Mix with glyphosate or glufosinate (depending on variety) to control emerged vegetation. Do not use Warrant Ultra as post-directed treatment if it was used preplant or preemergence. Do not apply later than 70 days before harvest.

Cotton Weed Management

Situation and active ingredient rate per broadcast acre	Formulated product per broadcast acre	Time of application	Weeds controlled	Special instructions and remarks
carfentrazone – 0.012 to 0.024 lb/A	Aim 2 EC — 0.8 to 1.6 oz/A	After smallest cotton is at least 6 inches tall with 5 to 6 nodes	Morningglory, pigweed, velvetleaf	Mix with glyphosate or glufosinate (depending on variety) to improve weed control spectrum. Applications to cotton < 6 inches must be made with hooded or shielded sprayer. Coverage is essential for good control. Do not apply more than 3.2 ounces per season in post-directed and layby applications. Add a crop oil concentrate at 1% v/v.
diuron – 0.2 to 0.5 lb/A	Diuron 4 lb/gal formulation — 0.4 to 1 pt/A or 80% formulation — 0.25 to 0.63 lb/A	After smallest cotton is at least 6 inches tall	Annual grasses and broadleaf weeds	Mix with glyphosate, glufosinate (depending on variety), or MSMA to improve weed control spectrum. See <i>Special Instructions and Remarks</i> for MSMA. Add a nonionic surfactant at 0.25% v/v if MSMA formulation does not contain adjuvant.
fomesafen – 0.25 to 0.38 lb/A	fomesafen 2 or 1.88 lb/gal formulation — 1 to 1.5 pt/A	After smallest cotton is at least 6 inches tall	Hemp sesbania, morningglory, Pennsylvania smartweed, pigweed	Mix with glyphosate or glufosinate (depending on variety) to improve weed control spectrum. Use shielded or hooded applications on 6- to 12-inch cotton. Contact with cotton foliage can cause significant injury. Do not apply within 70 days of cotton harvest. Do not apply more than 1.5 pints per acre per season. Add a nonionic surfactant at 0.25% v/v or a crop oil concentrate at 1% v/v.
lactofen – 0.2 lb/A	Cobra 2 EC — 0.8 pt/A	After smallest cotton is at least 6 inches tall	Hemp sesbania, morningglory, prickly sida, common ragweed, pigweed	Mix with glyphosate, glufosinate (depending on variety), or MSMA to improve weed control spectrum. See <i>Special Instructions and Remarks</i> for MSMA. Add crop oil concentrate at 0.5 to 1 pint per acre for cotton 6 to 8 inches tall or 1 to 2 pints per acre for cotton taller than 12 inches.
linuron – 0.5 to 0.75 lb/A	linuron 4 lb/gal formulation — 1 to 1.5 pt/A or 50% formulation — 1 to 1.5 lb/A	After smallest cotton is at least 8 inches tall	Annual grasses and broadleaf weeds	Mix with glyphosate, glufosinate (depending on variety), or MSMA to improve weed control spectrum. See <i>Special Instructions and Remarks</i> for MSMA. If a second application is needed, use same rate and apply 1 week or more after first treatment. Add a nonionic surfactant at 0.25% v/v if MSMA formulation does not contain spray adjuvant.
linuron + diuron – 0.5 to 0.75 lb/A	Layby Pro 4 L — 1 to 1.5 pt/A	After smallest cotton is at least 6 to 8 inches tall	Annual grass and broadleaf weeds	Mix with glyphosate, glufosinate (depending on variety), or MSMA to improve weed control spectrum. See <i>Special Instructions and Remarks</i> for MSMA. Use the lower rate on 6-inch cotton and the higher rate on 8-inch cotton or taller. Do not use a crop oil concentrate on cotton less than 12 inches tall.
pyroxasulfone – 0.04 to 0.11 lb/A	Zidua 85 WG — 0.75 to 2.1 oz/A or 4 SC — 1.25 to 3.5 oz/A	Between the 5-leaf to bloom stages	Annual grasses and pigweed	Mix with glyphosate or glufosinate (depending on variety) to improve weed control spectrum or control emerged vegetation.
oxyfluorfen – 0.25 or 0.5 lb/A	Goal 2 XL 2 EC — 1 or 2 pt/A	After smallest cotton is at least 6 inches tall	Prickly sida, morningglory, hemp sesbania	Mix with glyphosate, glufosinate (depending on variety), or MSMA to improve weed control spectrum. See <i>Special Instructions and Remarks</i> for MSMA. Good spray coverage is essential for control. Use the higher rate on larger weeds or under drought conditions. Add a nonionic surfactant at 0.25% v/v if MSMA formulation does not contain spray adjuvant.
prometryn + trifloxysulfuron – 0.8 to 1.2 lb/A	Suprend 80 DF — 1 to 1.5 lb/A	After smallest cotton is at least 6 inches tall	Morningglory, velvetleaf, pigweeds, sicklepod, cocklebur, hemp sesbania	Mix with glyphosate or glufosinate (depending on variety) to improve weed control spectrum. Apply to weeds less than 6 inches tall. Do not apply within 60 days of harvest. Injury may occur if mixed with malathion, or emamectin-benzoate-containing insecticides (Denim), acephate, Bidrin, Capture, or Karate. Add a nonionic surfactant at 0.25% v/v or a crop oil concentrate at 1% v/v.
Postemergence (Enlist varieties)				
2,4-D – 0.71 to 0.95 lb/A	Enlist One 3.8 SL — 1.5 to 2 pt/A	Preemergence or postemergence up to mid bloom	Annual grasses and broadleaf weeds	See www.enlisttankmix.com and the product label for instructions related to Enlist One.
glyphosate + 2,4-D – 1.46 to 1.98 lb/A	Enlist Duo 3.33 SL — 3.5 to 4.75 pt/A	Preemergence or postemergence up to mid bloom	Annual grasses and broadleaf weeds	See www.enlisttankmix.com and the product label for instructions related to Enlist Duo.

Cotton Weed Management

Situation and active ingredient rate per broadcast acre	Formulated product per broadcast acre	Time of application	Weeds controlled	Special instructions and remarks
Postemergence (Enlist, Glytol + LibertyLink, XtendFlex, and Widestrike varieties) See Postemergence – (All varieties) list in this section for information on mixtures with glyphosate or glufosinate.				
glufosinate – 0.53 to 0.78 lb/A	glufosinate 2.34 lb/gal formulation — 29 to 43 oz/A	Between cotton emergence to early-bloom	Annual grasses and broadleaf weeds; horseweed, morningglory, pigweed (less than 4 inches)	Ground application should be applied in a minimum of 15 gallons of spray mix. Do not apply more than 72 to 87 fluid ounces per acre in a single growing season. Single application rate can be as high as 43 ounces per acre. Maximum total application rate is dependent upon whether glufosinate was applied at burndown and application rate at that time. Do not apply within 70 days of harvest. Avoid use of air induction spray tips.
glyphosate – 1 to 1.5 lb/A	Various formulations (see product label for specific rates)	Small, actively growing weeds until 7 days prior to harvest	Annual and perennial grass and broadleaf weeds	Sequential applications should be made 10 to 14 days apart to improve control of larger weeds. See individual product label for specific information on mixtures and rates. Glyphosate-resistant weeds are prevalent throughout Mississippi. See Herbicide Resistant Weed section for additional control options.
glyphosate + s-metolachlor 1.6 to 2.3 lb/A	Sequence — 2.5 to 3.5 pt/A	When cotton is 3 to 12 inches tall	Annual grasses and pigweeds	Do not exceed 2.5 pints of Sequence per acre in a single application. Do not exceed 3.5 pints per acre in a season. Do not apply within 100 days of harvest.
Postemergence (XtendFlex varieties)				
dicamba – 0.5 lb/A	XtendiMax with VaporGrip 2.91 SL or Engenia 5 SL — 12.8 oz/A	Preemergence or postemergence through July 30	Broadleaf weeds	See www.xtendimaxapplicationrequirements.com and the product label for instructions related to XtendiMax. See www.engeniaherbicide.com/stewardship/application-checklist.html and the product label for instructions related to Engenia.
dicamba + s-metolachlor – 1.5 lb/A	Tavium plus VaporGrip 3.39 CS — 57 oz/A	Preemergence or postemergence up to 6-leaf cotton or 60 days after planting	Annual grasses and broadleaf weeds	See https://www.syngenta-us.com/herbicides/tavium-application-stewardship and the product label for instructions related to Tavium plus VaporGrip.
Postemergence (All varieties)				
acetochlor – 0.94 to 1.5 lb/A	Warrant 3 CS — 1.25 to 2 qt/A	Between cotton emergence and first bloom	Annual grasses and pigweed	Mix with glyphosate or glufosinate (depending on variety) to improve weed control spectrum. Warrant will not control emerged weeds. Apply postemergence to cotton but before weed seedling emergence.
clethodim – 0.063 to 0.13 lb/A	Various formulations (see product label for specific rates)	Small, actively growing weeds	Annual grasses, johnsongrass, bermudagrass	Adjust spray volume and pressure to ensure thorough coverage of grass. Do not apply within 1 hour of anticipated rainfall. Do not apply to stressed grasses. Do not cultivate within 7 days of application. Add ammonium sulfate and a nonphytotoxic crop oil concentrate at 1% v/v with 2 and 3 lb/gal formulations and nonionic surfactant with Select Max formulation.
dimethenamid-P – 0.6 to 0.75 lb/A	Outlook 6 EC — 12.8 to 16 oz/A	From 1-true-leaf cotton up to mid-bloom stage	Annual grasses and small-seeded broadleaf weeds	Mix with glyphosate or glufosinate (depending on variety) to improve weed control spectrum. Outlook will not control emerged weeds. Apply postemergence to cotton but before weed seedling emergence. Do not apply preplant incorporated, preplant surface, or preemergence. Split applications are labeled but do not apply more than 21 ounces per acre per season.
MSMA – 0.75 to 1 lb/A	Various formulations (see product label for specific rates)	When cotton is 3 to 6 inches tall	Annual grasses, susceptible cocklebur, nutsedge, small johnsongrass	Use as a salvage treatment only. Possible burning and reddish color of foliage may appear. May delay cotton maturity. Do not tank mix with other herbicides. Apply only to healthy cotton under favorable growing conditions. Do not apply after first square or when cotton is more than 6 inches tall. Add nonionic surfactant at 0.25% v/v unless formulation contains surfactant.
fluometuron – 0.5 to 1 lb/A	fluometuron 4 lb/gal formulation — 1 to 2 pt/A	After smallest cotton is at least 6 inches tall	Annual grass and broadleaf weeds	Use as a salvage treatment only. Crop injury may occur. Apply only to healthy cotton under favorable growing conditions. Use the higher rate on vigorously growing cotton and bigger weeds. Controls or suppresses wide spectrum of annual weed seedlings to allow more effective directed sprays later. Add nonionic surfactant at 0.25% v/v.

Cotton Weed Management

Situation and active ingredient rate per broadcast acre	Formulated product per broadcast acre	Time of application	Weeds controlled	Special instructions and remarks
fluzifop – 0.094 to 0.19 lb/A	Fusilade DX 2 EC — 6 to 16 oz/A (see table at beginning of section for specific rates by species)	Small, actively growing weeds	Annual grasses, rhizome johnsongrass, bermudagrass	For annual grasses, re-treat if needed for late emerging grasses. Do not apply more than 48 ounces per acre per season. Do not apply after boll set or within 90 days of harvest. Add a nonionic surfactant at 0.25% v/v or a crop oil concentrate at 1% v/v.
metolachlor – 0.75 to 1.33 lb/A or s-metolachlor – 0.48 to 1.27 lb/A	Various formulations (see product label for specific rates)	When cotton is 3 to 12 inches tall	Annual grasses and pigweeds	Mix with glyphosate or glufosinate to improve weed control spectrum. Metolachlor/s-metolachlor will not control emerged weeds. Apply postemergence to cotton but before weed seedling emergence. Do not apply within 100 days of harvest.
pendimethalin – 0.26 to 0.53 lb/A	pendimethalin 3.8 lb/gal formulation — 1.1 to 3.2 pt/A or 3.3 lb/gal formulation — 1.2 to 3.6 pt/A	Between the 5- and 8-leaf stages	Annual grasses and small-seeded broadleaf weeds	This treatment will not control emerged weeds. When mixed with Roundup PowerMax or Roundup WeatherMax, ammonium sulfate is required.
pyrithiobac – 0.065 to 0.095 lb/A	pyrithiobac 3.2 lb/gal formulation — 2.6 to 3.8 oz/A	From 1-true-leaf cotton up to 60 days before harvest	Broadleaf weeds	Mix with glyphosate or glufosinate (depending on variety) to improve weed control spectrum. Do not mix with insecticides containing malathion. Do not mix with metolachlor/s-metolachlor as a postemergence treatment. Do not exceed 3.8 ounces per acre in a single application or 5.1 ounces per acre per season. Add nonionic surfactant at 0.25% v/v.
quizalofop – at 0.031 to 0.063 lb/A	quizalofop 0.88 lb/gal formulation — 4.5 to 9.16 oz/A (see table at beginning of section for specific rates by species)	Small, actively growing weeds up to 80 days before harvest	Annual grasses, seedling and rhizome johnsongrass, bermudagrass, volunteer grain sorghum, red rice	Do not apply using crop-origin (vegetable) oils as an adjuvant or carrier. Do not apply more than 18 fluid ounces per acre per season. Do not apply within 24 hours of a postemergence broadleaf herbicide. Do not cultivate within 7 days of application. Add a nonionic surfactant at 0.25% v/v or a crop oil concentrate at 1% v/v.
sethoxydim – 0.19 to 0.28 lb/A	Poast 1 EC — 24 to 36 oz/A (see table at beginning of section for specific rates by species)	Small, actively growing weeds	Annual grasses, seedling and rhizome johnsongrass, bermudagrass, red rice	A second application can be made to control new emergence or regrowth of johnsongrass and bermudagrass. Do not apply within 40 days of harvest. Add a crop oil concentrate at 1% v/v.
trifloxysulfuron – 0.08 to 0.11 lb/A	Envoke 75 DG — 0.1 to 0.15 oz/A	When cotton has at least 5 true leaves	Morningglory, sicklepod, pigweed, and nutsedge	Mix with glyphosate or glufosinate (depending on variety) to improve weed control spectrum. Envoke may cause temporary yellowing or stunting of cotton plants. Envoke may be mixed with other products when applied as a post-directed spray (See label for specifics). Do not mix with insecticides containing malathion, or emamectin-benzoate. Add a nonionic surfactant at 0.25% v/v.
Layby – Directed or hooded sprayer				
carfentrazone – 0.012 to 0.024 lb/A	Aim 2 EC — 0.8 to 1.6 oz/A	When cotton is at least 12 inches tall with sufficient bark development	Morningglory, pigweeds, velvetleaf	Mix with glyphosate or glufosinate (depending on variety) to improve weed control spectrum. Coverage is essential for good control. Do not apply more than 3.2 ounces per season by post-directed and layby applications. Add a crop oil concentrate at 1% v/v.
diuron – 0.5 to 1.2 lb/A	diuron 4 lb/gal formulation — 1 to 2.4 pt/A or 80% formulation — 0.63 to 1.5 lb/A	When cotton is at least 12 inches tall	Annual grasses and broadleaf weeds	Mix with glyphosate, glufosinate (depending on variety), or MSMA to improve weed control spectrum. See <i>Special Instructions and Remarks</i> for MSMA. Add a nonionic surfactant at 0.25% v/v if MSMA formulation does not contain spray adjuvant.
flumioxazin – 0.064 lb/A	flumioxazin 51% formulation — 2 oz/A or 4 lb/gal formulation — 2 oz/A	When cotton is at least 16 inches tall	Annual broadleaf weeds	Mix with glyphosate or glufosinate (depending on variety) to improve weed control spectrum. Severe crop injury may result if application is made to green or unbarked stem. Use a nonionic surfactant at 0.25% v/v. Do not use crop oil concentrate, methylated seed oils, organosilicon surfactants, or products containing these ingredients as severe crop injury may occur.

Cotton Weed Management

Situation and active ingredient rate per broadcast acre	Formulated product per broadcast acre	Time of application	Weeds controlled	Special instructions and remarks
fomesafen – 0.25 to 0.38 lb/A	fomesafen 2 or 1.88 lb/gal formulation — 1 to 1.5 pt/A	When cotton has at least 4 inches of brown bark	Small-seeded broadleaf weeds, especially pigweeds and prickly sida	Mix with glyphosate or glufosinate (depending on variety) to improve weed control spectrum. Avoid contact with any nonbarked portions of plants. Adjust nozzles to provide complete coverage of weeds. Do not apply within 70 days of cotton harvest. Do not apply more than 1.5 pints per acre per season. Add a nonionic surfactant at 0.25% v/v or a crop oil concentrate at 1% v/v.
linuron – 1 to 1.5 lb/A	linuron 4 lb/gal formulation — 2 to 3 pt/A or 50% formulation — 2 to 3 lb/A	When cotton is at least 20 inches tall	Annual grasses and small-seeded broadleaf weeds	Mix with glyphosate or glufosinate (depending on variety) to improve weed control spectrum. Apply as a directed spray with nozzles adjusted to minimize contact to cotton. Omit surfactant if no emerged weeds are present at time of treatment.
linuron + diuron – 0.8 1.2 lb/A	Layby Pro 4 L — 1.6 to 2.4 pt/A	When cotton is at least 15 inches tall	Annual grasses and broadleaf weeds	Mix with glyphosate or glufosinate (depending on variety) to improve weed control spectrum. For control of emerged weeds, add a nonionic surfactant at 0.25% v/v or a crop oil concentrate at 1% v/v.
pendimethalin – 0.5 to 1.5 lb/A	pendimethalin 3.8 lb/gal formulation — 1.1 to 3.2 pt/A or 3.3 lb/gal formulation — 1.2 to 3.6 pt/A	After last cultivation	Annual grasses and small-seeded broadleaf weeds	Mix with glyphosate or glufosinate (depending on variety) to improve weed control spectrum. Apply to the soil between rows as a directed spray following last cultivation. Destroy existing weeds prior to application. Avoid spray contact with nonbarked portion of cotton stems and foliage or serious crop injury may occur. Apply at least 60 days before harvest.
pyroxasulfone – 0.04 to 0.11 lb/A	Zidua 85 WG — 0.75 to 2.1 oz/A or 4 SC — 1.25 to 3.5 oz/A	Between the 5-leaf and bloom stages	Annual grasses and pigweed	Mix with glyphosate or glufosinate (depending on variety) to improve weed control spectrum. See <i>Special Instructions and Remarks</i> for Zidua.
pyroxasulfone + carfentrazone – 0.043 to 0.119 lb/A	Anthem Flex 4 SC — 1.4 to 3.8 oz/A	When cotton is at least 6 inches tall	Annual grasses and small-seeded broadleaf weeds	Mix with glyphosate or glufosinate (depending on variety) to improve weed control spectrum. Applications to cotton with less than 5 to 6 nodes must be applied with hooded or shielded sprayer.
pyroxasulfone + flumioxazin – 0.14 lb/A	Fierce 76 WDG — 3 oz/A or Fierce EZ 3 SC — 6 oz/A	When cotton is at least 16 inches tall	Prickly sida, morningglory, pigweed, crabgrass, barnyardgrass; other annual grass and broadleaf weeds	Mix with glyphosate or glufosinate (depending on variety) to improve weed control spectrum. See <i>Special Instructions and Remarks</i> for flumioxazin and Zidua.
Hooded Sprayers				
Use of nonselective herbicides applied with hooded sprayers to avoid contact with the crop may be desirable for weed control in row middles, especially in no-till or conservation tillage systems. Addition of a residual herbicide will extend weed control and may negate the need for a layby application made to 12-inch tall or greater cotton.				
flumioxazin – 0.064 lb/A	flumioxazin 51% formulation — 2 oz/A or 4 lb/gal formulation — 2 oz/A	After cotton is at least 6 inches tall	Annual broadleaf weeds	Mix with glyphosate or glufosinate (depending on variety) to improve weed control spectrum. Use only hooded sprayer equipment designed to minimize exposure of the spray to cotton foliage. Hoods must be operated on the ground or skidding along the ground to minimize spray contact with desirable vegetation. See <i>Special Instructions and Remarks</i> for flumioxazin in Layby section.
paraquat – 0.31 to 0.63 lb/A	paraquat 2 lb/gal formulation — 1.2 to 2.5 pt/A or 3 lb/gal formulation — 0.8 to 1.7 pt/A	After cotton is at least 6 inches tall	Annual grasses and broadleaf weeds	Use a hooded sprayer ONLY. Keep the bottom edge of the hood in contact with the soil surface. Avoid crop contact with spray solution. Avoid use of spray tips that produce fine spray droplets. Not all formulations of paraquat are labeled for this use. Add a nonionic surfactant at 0.25% v/v or a crop oil concentrate at 1% v/v.

Grain Sorghum Weed Management

Weed Response Ratings for Grain Sorghum Herbicides¹

	Herbicide group numbers	Barnyardgrass	Broadleaf signalgrass	Crabgrass	Fall panicum	Goosegrass	Johnsongrass—rhizome	Johnsongrass — seedling	Annual morningglory species	Cocklebur	Common lambsquarters	Hemp sesbania	Palmer, spiny amaranth, waterhemp	Prickly sida	Sicklepod	Smooth, redroot pigweed	Crop tolerance (G= good, F= fair)
Preemergence																	
Atrazine	5	6	5	7	4	6	0	3	8	8	9	7	9	8	8	9	F
Atrazine + metolachlor/s-metolachlor + safener	5, 15	8	8	9	8	9	0	6	8	8	9	7	9	8	8	9	G
Atrazine + Outlook	5, 15	8	8	9	8	9	0	6	8	8	9	7	9	8	8	9	G
Halex GT + atrazine	5, 9, 15, 27	8	8	9	8	9	0	6	9	9	9	8	8	8	8	9	G
Lexar EZ	5, 15, 27	9	9	9	8	8	0	5	9	9	9	9	9	9	9	9	G
Metolachlor/s-metolachlor + safener	15	8	8	9	9	9	0	6	3	0	6	2	8	4	5	8	G
Outlook	15	8	8	9	8	9	0	6	5	0	7	2	8	6	4	8	G
Sharpen	14	1	1	1	1	1	1	1	7	6	7	7	9	7	5	9	G
Verdict	14, 15	8	7	8	7	8	0	5	8	-	7	6	9	7	5	9	G
Warrant	15	8	8	7	8	7	0	4	4	0	-	0	7	5	-	8	G
Postemergence																	
2,4-D	4	0	0	0	2	1	0	0	9	9	9	9	9	8	8	9	F
Atrazine	5	6	6	6	4	5	0	3	8	9	8	6	8	8	7	8	G
Atrazine + crop oil concentrate	5	7	7	7	5	6	2	3	8	9	9	7	9	9	8	9	F
Atrazine + s-metolachlor	5, 15	6	5	6	4	6	0	4	8	8	8	6	8	7	8	8	G
Bentazon	6	0	0	0	0	0	0	0	4	9	5	2	0	7	0	0	G
Dicamba	4	0	0	0	0	0	0	0	9	8	9	9	9	-	8	9	G
Gambit	2, 2	0	0	0	0	-	0	0	7	7	6	8	5	6	7	8	F
Huskie + atrazine	5, 6, 27	6	6	6	5	6	0	0	9	9	9	-	9	9	8	9	G
Halosulfuron	2	0	3	3	3	3	3	3	5	9	5	4	6	7	6	8	G
Linuron	5	8	8	8	8	7	0	6	8	7	9	8	8	8	8	8	F
Paraquat (directed/hooded sprayer only)	22	8	8	8	8	8	3	7	5	5	7	2	8	6	9	8	F
Peak	2	0	0	0	0	0	0	0	8	6	8	8	7	9	8	9	G
Quinclorac	4	8	8	7	6	6	0	0	8	-	6	8	3	-	-	3	G
Quinclorac + atrazine	4, 5	8	9	8	6	7	0	4	9	9	8	9	8	8	7	8	G
Yukon	2, 4	0	3	3	3	3	3	3	9	8	9	9	9	8	8	9	G
Zest (INZEN sorghum only)	2	8	8	7	7	7	8	9	6	5	5	7	5	4	5	5	G

Rating Scale: 0-3 = none to slight; 4-6 = fair; 7-8 = good; 9-10 = excellent.

¹Control expected under optimum conditions. Mississippi State University does not guarantee these estimates since many factors influence herbicide performance. Resistance to recommended use rates of some herbicides has been identified in certain weed species in Mississippi (See Herbicide-Resistant Weed Management Section). Ratings reflect expected control of herbicide-susceptible populations.

Grain Sorghum Weed Management

Situation and active ingredient rate per broadcast acre	Formulated product per broadcast acre	Time of application	Weeds controlled	Special instructions and remarks
Preplant/Preemergence				
acetochlor – 1.13 to 2.25 lb/A	Warrant 3 CS — 3 to 6 pt/A	Preemergence	Annual grasses and small-seeded broadleaf weeds	Mix with glyphosate or paraquat to control emerged vegetation. Sorghum seed must be treated with an approved chloroacetamide herbicide safener. Do not use more than 8 pints per acre per cropping season. Use the lower rate on coarse-textured soils with low organic matter.
atrazine – 1.6 lb/A	atrazine 4 lb/gal formulation — 1.6 qt/A or 90% formulation — 1.8 lb/A	Preplant or preemergence	Annual grasses and broadleaf weeds	Mix with glyphosate or paraquat to control emerged vegetation. Do not use on sand, loamy sand, or sandy loam or any soil with less than 1% organic matter. Do not plant crops other than corn or sorghum until the year after treatment. If treatment is made after June 10, crops other than corn or sorghum should not be planted the following year. Do not exceed 2 pounds of active ingredient per acre per year.
atrazine + s-metolachlor + safener – 1 to 2 lb/A + 0.8 to 1.6 lb/A	Various formulations (See product label for specific rates)	Preplant or preemergence	Annual grasses and broadleaf weeds	See <i>Special Instructions and Remarks</i> for atrazine. Grain sorghum growing under stress may exhibit injury symptoms.
dimethenamid-P – 0.75 to 0.94 lb/A	Outlook 6 EC — 16 to 20 oz/A	Preemergence	Annual grasses and small-seeded broadleaf weeds	Mix with glyphosate or paraquat to control emerged vegetation. Sorghum seed must be treated with an approved chloroacetamide herbicide safener. See label for tank mix applications and for restrictions. Do not use on forage sorghum.
glyphosate – 1 to 1.5 lb/A	Various formulations (see product label for specific rates)	Preplant or preemergence	Annual, biennial, and perennial grasses and broadleaf weeds	Use of flood-jets is not suggested. If tillage is intended after treatment, wait at least 3 days (7 days for perennial weeds) after application. Avoid drift to nontarget species or areas. Glyphosate may be mixed with soil-applied herbicides for residual activity.
mesotrione + atrazine + s-metolachlor – 2.08 to 2.78 lb/A	Lexar EZ 3.7 SC — 2.25 to 3 qt/A	Preemergence	Annual grasses and broadleaf weeds	Mix with glyphosate or paraquat to control emerged vegetation. Sorghum seed must be treated with an approved chloroacetamide herbicide safener. Applying Lexar EZ more than 7 days before planting reduces risk of crop injury. A split application of 50% applied 7 to 21 days before planting and 50% applied preemergence may be used. Do not apply more than 3 quarts per growing season. Do not apply to emerged sorghum.
mesotrione + glyphosate + s-metolachlor + atrazine – 2.2 to 3.3 lb/A + 1 to 2 lb/A	Halex GT 4.4 L — 4 to 6 pt/A + atrazine 4 lb/gal formulation — 1 to 2 qt/A or 90% formulation — 1.11 to 2.22 lb/A	Preplant or preemergence	Annual grasses and broadleaf weeds	See <i>Special Instructions and Remarks</i> for atrazine. Herbicide must be applied prior to crop emergence. Sorghum seed must be treated with an approved chloroacetamide herbicide safener. Add a nonionic surfactant at 0.5% v/v.
paraquat – 0.63 to 1 lb/A	paraquat 2 lb/gal formulation — 2.5 to 4 pt/A or 3 lb/gal formulation — 1.68 to 2.67 pt/A	Preplant or preemergence	Annual and perennial grasses and broadleaf weeds	Avoid drift to desirable vegetation. May be mixed with most residual herbicides. Apply in a minimum of 10 gallons of water by ground or 5 gallons by air. Add a nonionic surfactant at 0.25% v/v or a crop oil concentrate at 1% v/v.
saffluenacil – 0.022 to 0.044 lb/A	Sharpen 2.85 SC — 1 to 1.5 oz/A	Preplant or preemergence	Horseweed; other broadleaf weeds	Mix with glyphosate or paraquat to improve control of emerged weeds. Do not apply after grain sorghum emergence or severe injury may occur. Do not apply to coarse soils or those with < 1.5% organic matter. Add methylated seed oil at 1% v/v plus ammonium sulfate.

Grain Sorghum Weed Management

Situation and active ingredient rate per broadcast acre	Formulated product per broadcast acre	Time of application	Weeds controlled	Special instructions and remarks
saflufenacil + dimethenamid-P – 0.44 to 0.80 lb/A	Verdict 5.67 EC — 10 to 18 oz/A	Preplant up to 14 days before planting or preemergence	Annual grasses and broadleaf weeds	Mix with glyphosate or paraquat to control emerged vegetation. Sorghum seed must be treated with an approved chloroacetamide herbicide safener. Herbicide must be applied before sorghum emergence or severe crop injury will occur. Do not use on soil with less than 1.5% organic matter. Use the lower rate on coarse-textured soils.
s-metolachlor/metolachlor + safener – 0.96 to 1.6 lb/A	Various formulations (see product label for specific rates)	Preemergence	Annual grasses and small-seeded broadleaf weeds	Mix with glyphosate or paraquat to control emerged vegetation. Sorghum seed must be treated with an approved chloroacetamide herbicide safener. See label for tank mix applications and rotation restrictions.
s-metolachlor/metolachlor + atrazine + safener – 0.8 to 1 to 1.6 lb/A + 1 to 1.3 to 1.6 lb/A	Various formulations (see product label for specific rates)	Preplant or preemergence	Annual grasses and broadleaf weeds	Mix with glyphosate or paraquat to control emerged vegetation. See <i>Special Instructions and Remarks</i> for atrazine and s-metolachlor/metolachlor.
Postemergence (INZEN hybrids)				
nicosulfuron – 0.031 to 0.062 lb/A	Zest 75 WDG— 0.67 to 1.33 oz/A	Postemergence to sorghum up to 20 inches tall	Annual grasses	Use only on INZEN grain sorghum hybrids. Do not make more than two applications per year. Do not apply more than 1.8 ounces per acre per year. Temporary injury may be observed. Add a nonionic surfactant at 0.25% v/v or a crop oil concentrate at 1% v/v.
Postemergence (All hybrids)				
2,4-D amine – 0.3 to 0.5 lb/A	Various formulations (see product label for specific rates)	See special instructions	Broadleaf weeds	Do not treat during boot, flower, or dough stage. One application per season. Do not feed or harvest within 30 days of application.
acetochlor – 1.13 to 2.25 lb/A	Warrant 3 CS — 3 to 6 pt/A	Postemergence to sorghum up to 11 inches tall and with up to (5 to 6 leaves)	Annual grasses and small-seeded broadleaf weeds	This treatment will not control emerged weeds. Do not use more than 8 pints per cropping season. Use the lower rate on coarse-textured soils and low organic matter.
atrazine – 2 lb/A	atrazine (4 lb/gal formulation) — 2 qt/A or 90% formulation — 2.2 lb/A	Small, actively growing weeds before sorghum reaches 12 inches	Annual grasses and broadleaf weeds	Do not exceed 2 pounds of active ingredient per acre per year. Do not use on sand or sandy loam soils. Do not use when sorghum is under stress or crop is wet from recent rainfall. If applied after June 10, do not plant with crops other than corn or sorghum the following year. See label for other restrictions.
atrazine – 1.2 lb/A + crop oil concentrate	atrazine 4 lb/gal formulation — 1.2 qt/A or 90% formulation — 1.3 lb/A + crop oil concentrate — 1 qt/A	Small, actively growing weeds to sorghum 4 to 12 inches tall	Annual grasses and broadleaf weeds	See <i>Special Instructions and Remarks</i> for atrazine. Be sure crop oil concentrate is not contaminated or crop injury may result.
atrazine + s-metolachlor – 1 to 2 lb/A + 0.8 to 1.6 lb/A	Various formulations (See product label for specific rates)	Small, actively growing weeds with sorghum 3-12 inches	Annual grasses and broadleaf weeds	See <i>Special Instructions and Remarks</i> for atrazine. Add ammonium sulfate and a nonphytotoxic crop oil concentrate at 1% v/v.
bentazon – 0.75 to 1 lb/A	bentazon 4 lb/gal formulation — 1.5 to 2 pt/A or 5 lb/gal formulation — 1.2 to 1.6 pt/A	Small, actively growing weeds before sorghum heading	Cocklebur, prickly sida (2 to 3 inches), smartweed	Rainfall within 4 hours after application will reduce effectiveness. Do not graze treated sorghum for at least 12 days after the last treatment. Do not apply more than 1 pound of active ingredient per season. Add a nonionic surfactant at 0.25% v/v or a nonphytotoxic crop oil concentrate at 1% v/v.

Grain Sorghum Weed Management

Situation and active ingredient rate per broadcast acre	Formulated product per broadcast acre	Time of application	Weeds controlled	Special instructions and remarks
dicamba – 0.25 lb/A	Various formulations (see product label for specific rates)	Small, actively growing weeds before sorghum is 8 inches tall	Morningglory, sicklepod, other broadleaf weeds	Ground application only. Injury may be severe following applications to grain sorghum greater than 8 inches in height.
halosulfuron – 0.032 to 0.047 lb/A	halosulfuron 75% formulation — 0.67 to 1 oz/A	Small, actively growing weeds between 2-leaf sorghum and head emergence	Nutsedge, cocklebur, hemp sesbania	See the label for tank mixture with atrazine, dicamba, or 2,4-D and for restrictions. Do not use more than 1 ounce per season. Add a nonionic surfactant at 0.25% v/v or a nonphytotoxic crop oil concentrate at 1% v/v.
halosulfuron + dicamba – 0.25 lb/A	Yukon 67.5 WG — 6 oz/A	Small, actively growing weeds between 2-leaf stage and when sorghum is 15 inches-tall	Horseweed, nutsedge, ragweed, broadleaf weeds	See <i>Special Instructions and Remarks</i> for dicamba and halosulfuron. Apply as a single application with the total application rate not to exceed 6 ounces per season. Do not graze or feed treated sorghum forage or silage for 30 days after treatment. Add a nonionic surfactant at 0.25% v/v or a nonphytotoxic crop oil concentrate at 1% v/v.
halosulfuron + prosulfuron – 0.049 to 0.074 lb/A	Gambit 79 WG — 1 to 1.5 oz/A	Postemergence from two-leaf stage to before head emergence	Common ragweed, hemp sesbania, Pennsylvania smartweed, yellow nutsedge	Mix with atrazine to improve weed control spectrum. Do not make more than one application with rate not exceed 1.5 ounces per acre per year. Avoid drift to non BOLT or STS soybean.
linuron – 0.5 to 1.0 lb/A	linuron 50% formulation — 1 to 2 lb/A or 4 lb/gal formulation — 1 to 2 pt/A	Directed spray to sorghum 12 to 15 inches tall	Annual grasses and broadleaf weeds	Use shields and/or gauge wheels to direct the spray to base of the sorghum. Keep spray off the upper leaves and whorl of sorghum. Keep spray pressure low to prevent injury to sorghum. Do not apply within 15 days of harvest. Add a nonionic surfactant at 0.5% v/v.
prosulfuron – 0.43 to 0.57 lb/A	Peak 57 WDG — 0.75 to 1 oz/A	Small, actively growing weeds when sorghum is 5 to 30 inches tall	Broadleaf weeds	Do not use on forage sorghum. See label for mixtures with atrazine, dicamba, or 2,4-D. Plant only STS soybean the year following application; apply only the low rate if cotton will be planted the following year; allow 10 months between application and planting for both cotton and soybean. Add a nonionic surfactant at 0.25% v/v.
pyrasulfotole + bromoxynil – 0.21 to 0.26 lb/A	Huskie 2.06 EC — 12.8 to 16 oz/A	Small, actively growing weeds between 3-leaf stage and when sorghum is 30 inches and/or before flag-leaf emergence	Waterhemp, Palmer amaranth, redroot pigweed, other broadleaf weeds	Do not apply more than 36 ounces per acre per year. Forage sorghum may be cut or grazed 7 days after application. Aerial or chemigation is prohibited. Do not use flood-jet or air-induction nozzles. Injury may occur if Huskie is applied where acreage has been treated previously with mesotrione. Add nonionic surfactant at 0.25% v/v plus AMS at 1 lb/A.
pyrasulfotole + bromoxynil + atrazine – 0.21 to 0.26 lb/A + 0.5 to 1 lb/A	Huskie 2.06 EC — 12.8 to 16 oz/A + atrazine 4 lb/gal formulation — 0.5 to 1 qt/A or 90% formulation — 0.56 to 1.1 lb/A	Small, actively growing weeds before sorghum reaches 12 inches	Waterhemp, Palmer amaranth, redroot pigweed, other broadleaf weeds	See <i>Special Instructions and Remarks</i> for atrazine and Huskie.
quinclorac – 0.34 to 0.5 lb/A	Various formulations (see product label for specific rates)	Small, actively growing weeds before sorghum reaches 12 inches	Barnyardgrass, morningglory, hemp sesbania, other grass and broadleaf weeds	Annual grass should be less than 2 inches tall for effective control. Do not use liquid fertilizer as a carrier or apply more than 64 ounces of Facet L per year. Add a nonphytotoxic crop oil concentrate or methylated seed oil at 1% v/v.

Grain Sorghum Weed Management

Situation and active ingredient rate per broadcast acre	Formulated product per broadcast acre	Time of application	Weeds controlled	Special instructions and remarks
quinclorac + atrazine – 0.34 to 0.5 lb/A + 0.5 to 1 lb/A	Various formulations (see product label for specific rates) + atrazine 4 lb/gal formulation — 0.5 to 1 qt/A or 90% formulation — 0.56 to 1.1 lb/A)	Small, actively growing weeds before sorghum reaches 12 inches	Barnyardgrass, foxtail, broadleaf signalgrass, morningglory, hemp sesbania, other grass and broadleaf weeds	See <i>Special Instructions and Remarks</i> for atrazine and quinclorac. Mixing quinclorac with atrazine should improve annual grass control.
Directed or Hooded Sprayer				
carfentrazone – 0.008 to 0.016 lb/A	Aim 2 EC — 0.5 to 1 oz/A	See special instructions	Morningglory, pigweed, waterhemp, velvetleaf	Apply to row middles of emerged crop with a hooded sprayer. Hooded sprayers must be designed and adjusted to prevent spray deposition on green tissue or foliage of crop. Base application rate on weed size. Add nonionic surfactant at 0.25% v/v.
paraquat – 0.25 to 0.5 lb/A	paraquat 2 lb/gal formulation — 1 to 2 pt/A or 3 lb/gal formulation — 0.67 to 1.33 pt/A	After sorghum is 12 inches tall	Annual grasses and broadleaf weeds	For hooded or shielded sprayers: Use sprayer with skirts and direct between rows and prevent spray contact with plant. Without hooded or shielded sprayers: Do not exceed 30 psi. Use precision equipment adjusted to spray no more than lower 3 inches. Do not spray during windy conditions. Add a nonionic surfactant at 0.25% v/v or a crop oil concentrate at 1% v/v.
Preharvest				
carfentrazone – 0.016 to 0.031 lb/A	Aim 2 EC — 1 oz/A	After grain is fully mature, when black layer has formed and kernels hard	Morningglory and other broadleaf weed desiccation	Do not apply within three days of harvest. Add nonionic surfactant at 0.25% v/v.
glyphosate – 0.75 to 1.5 lb/A	Various formulations (see product label for specific rates)	After grain reaches 30% moisture or less and kernel black layer has formed	Johnsongrass, desiccation of green vegetation	Allow a minimum of 7 days before harvest or grazing.
sodium chlorate – 6 lb/A	Various formulations (see product label for specific rates)	After sorghum grain has 25% or less moisture	Desiccation of most annual grasses and broadleaf weeds	Apply on a bright sunny day when air temperature is above 85 degrees and relative humidity is below 65%. Broadleaf weeds may be defoliated but there will be little desiccation. Add nonionic surfactant at 0.5% v/v for aerial and 0.25% v/v for ground application.

Peanut Weed Management

Weed Response Ratings for Peanut Herbicides Applied Preplant or Preemergence¹

	Herbicide group numbers	Barnyardgrass	Broadleaf signalgrass	Crabgrass	Fall panicum	Goosegrass	Johnsongrass—rhizome	Johnsongrass—seedling	Yellow nutsedge	Purple Nutsedge	Cocklebur	Common ragweed	Cutleaf groundcherry	Eclipta	Hemp sesbania	Hornbeam copperleaf	Jimsonweed	Morningglory—entireleaf	Morningglory—palmleaf	Morningglory—pitted	Morningglory—smallflower	Palmer, spiny amaranth, waterhemp	Pennsylvania smartweed	Prickly sida	Sicklepod	Smooth, redroot pigweed	Spurge	Spurred anoda	Velvetleaf	Wild poinsettia	Crop tolerance (G = good, F = Fair)	
Preplant or Preemergence																																
Flumioxazin	14	6	7	7	6	5	0	5	7	5	0	9	5	9	9	9	8	8	8	8	8	8	9	7	8	8	8	8	5	-	F	
Glyphosate	9	9	9	9	9	9	9	10	7	6	10	9	9	8	7	8	8	7	8	8	9	8	8	7	8	9	8	7	7	7	F	
Metolachlor/s-metolachlor	15	8	8	9	9	9	0	6	9	5	0	6	6	6	4	2	8	6	6	6	6	7	4	7	4	9	5	0	4	5	G	
Outlook	15	8	8	9	9	9	0	6	5	4	0	9	4	6	0	3	3	6	6	6	6	6	4	4	5	9	8	0	4	5	F	
Paraquat	22	9	9	9	8	8	0	8	5	5	4	8	7	6	1	7	7	5	6	4	7	8	5	4	8	8	5	3	6	8	G	
Pendimethalin	3	8	8	8	8	8	3	7	2	3	0	3	0	5	5	0	3	5	2	5	2	6	2	7	2	8	2	0	2	0	G	
Pursuit	2	7	5	7	7	7	5	8	8	9	9	5	5	6	5	6	8	8	8	8	8	6	8	9	5	7	-	9	6	9	G	
Sonalan	3	9	8	9	9	9	6	9	5	4	4	4	5	6	7	-	5	7	7	8	6	9	9	-	7	9	9	9	9	6	G	
Spartan Charge	14,14	7	7	7	5	5	2	7	8	8	9	7	-	-	7	8	6	8	8	8	6	9	9	5	5	10	6	7	6	7	G	
Strongarm	2	7	7	7	7	7	5	6	6	6	9	9	8	9	8	7	9	7	7	7	7	5	8	8	7	9	-	8	9	8	G	
Warrant	15	8	8	7	8	7	3	5	7	6	0	5	9	5	5	-	4	6	6	6	6	7	4	7	3	8	3	2	3	3	G	

Rating Scale: 0-3 = none to slight; 4-6 = fair; 7-8 = good; 9-10 = excellent.

¹Control expected under optimum conditions. Mississippi State University does not guarantee these estimates since many factors influence herbicide performance. Resistance to recommended use rates of some herbicides has been identified in certain weed species in Mississippi (See Herbicide-Resistant Weed Management Section). Ratings reflect expected control of herbicide-susceptible populations.

Peanut Weed Management

Weed Response Ratings for Peanut Herbicides Applied At-cracking or Postemergence¹

	Herbicide group numbers	Barnyardgrass	Broadleaf signalgrass	Crabgrass	Fall panicum	Goosegrass	Johnsongrass—rhizome	Johnsongrass—seedling	Yellow nutsedge	Purple Nutsedge	Cocklebur	Common ragweed	Cutleaf groundcherry	Eclipta	Hemp sesbania	Hophornbeam copperleaf	Jimsonweed	Momingglory—entireleaf	Momingglory—palmleaf	Momingglory—pitted	Momingglory—smallflower	Palmer, spiny amaranth, waterhemp	Pennsylvania smartweed	Prickly sida	Sicklepod	Smooth, redroot pigweed	Spurge	Spurred amoda	Velvetleaf	Wild poinsettia	Crop tolerance (G = good, F = Fair)	
At Cracking or Postemergence																																
2,4-DB	4	1	1	1	1	1	1	1	1	1	9	7	7	6	6	8	8	8	8	8	8	7	5	6	7	7	5	5	7	6	G	
Acifluorfen	14	8	5	5	8	5	4	5	4	5	8	10	9	8	10	8	10	9	9	9	9	9	8	6	5	9	8	5	7	8	F	
Anthem Flex	14, 15	9	9	9	9	8	4	8	6	5	0	-	8	7	7	9	7	8	8	8	8	6	8	6	8	6	9	6	-	7	G	
Bentazon	6	3	3	3	3	3	2	3	7	5	9	7	7	8	5	6	9	7	7	7	7	5	9	8	6	6	5	8	8	6	G	
Cadre	2	9	9	9	8	7	8	8	9	9	10	7	7	7	5	7	10	9	9	9	9	7	8	8	9	8	8	9	9	10	G	
Chlorimuron	2	3	3	3	3	3	2	3	8	7	10	9	8	5	10	7	9	9	9	9	9	7	5	4	8	7	7	6	9	5	G	
Clethodim	1	9	9	9	10	8	8	9	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	G	
Cobra	14	9	6	5	5	5	3	5	4	4	9	10	8	8	9	8	9	8	8	8	8	9	8	8	5	9	6	7	8	9	F	
Fusilade DX	1	9	8	8	9	8	8	9	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	G	
Metolachlor/s-metolachlor	15	8	8	9	8	9	0	6	9	5	0	6	6	6	0	2	8	0	0	0	0	7	4	4	2	9	5	0	4	5	G	
Paraquat	22	9	9	9	9	9	3	9	0	0	4	7	0	0	0	3	2	2	2	2	6	7	4	1	9	0	2	8	8	0	F	
Paraquat + Bentazon	22, 6	8	8	7	8	7	5	8	7	6	9	7	8	7	8	8	10	7	7	7	7	8	9	9	9	8	8	7	9	10	G	
Poast	1	9	9	9	9	8	6	8	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	G	
Pursuit	2	7	7	7	5	5	2	7	4	5	9	7	7	0	7	8	6	8	8	8	8	6	7	9	5	9	7	5	10	6	7	G
Storm	6, 14	9	5	5	7	5	3	5	7	5	9	9	7	8	10	7	10	8	8	8	8	9	9	8	7	9	7	7	7	8	G	
Strongarm	2	5	5	5	5	5	5	6	6	6	9	9	8	9	7	7	9	8	8	8	8	7	8	7	5	9	-	8	9	8	G	
Warrant	15	8	8	7	9	7	3	5	7	6	0	5	9	5	0	-	4	0	0	0	0	6	4	5	3	8	3	2	3	3	G	
Zidua or Zidua SC	15	9	9	9	9	8	4	8	6	5	0	-	8	7	7	9	7	8	8	8	8	6	8	6	8	6	9	6	-	7	G	

Rating Scale: 0-3 = none to slight; 4-6 = fair; 7-8 = good; 9-10 = excellent.

¹Control expected under optimum conditions. Mississippi State University does not guarantee these estimates since many factors influence herbicide performance. Resistance to recommended use rates of some herbicides has been identified in certain weed species in Mississippi (See Herbicide-Resistant Weed Management Section). Ratings reflect expected control of herbicide-susceptible populations.

Peanut Weed Management

Situation and active ingredient rate per broadcast acre	Formulated product per broadcast acre	Time of application	Weeds controlled	Special instructions and remarks
Preplant/Preemergence				
For a broad spectrum of grasses and broadleaf weeds, use of a combination of herbicides may provide greater control than single materials. This may be accomplished through tank mixtures or overlays of a preemergence over a preplant herbicide. Where overlays or combinations are used, they should be applied according to prescribed rate and manner indicated on the respective labels.				
acetochlor – 0.94 to 1.5 lb/A	Warrant 3 CS — 1.25 to 2 qt/A	Preplant or preemergence	Annual grasses, carpetweed, pigweeds, purslane, Florida pusley, lambsquarters, nightshade	Mix with glyphosate or paraquat to control emerged vegetation. Preplant treatments must have cultivation or 0.5 to 0.75 inch of precipitation or overhead irrigation for activation. Do not apply more than 4 quarts per season. Do not exceed three applications per season. Allow at least 7 days between sequential applications.
diclosulam – 0.024 lb/A	Strongarm 84 WG — 0.45 oz/A	Preplant, preplant incorporated, or preemergence	Broadleaf weeds	Mix with glyphosate or paraquat to control emerged vegetation. Incorporate into the top 1 to 3 inches of the final seedbed. If surface-applied, at least 0.25 to 0.5 inch of supplemental moisture is needed for activation. Mix with other residual herbicide to improve weed control spectrum. It offers poor control of sicklepod. Nutsedge control is inconsistent.
ethalfuralin – 0.56 to 1.13 lb/A	ethalfuralin 3 lb/gal formulation — 1.5 to 3 pt/A or 10% formulation — 5.6 to 11.3 lb/A	Up to 3 weeks before planting	Annual grasses and small-seeded annual broadleaf weeds	Mix uniformly in the top 2 to 3 inches of soil soon after application. Bedding must not expose untreated soil. Use low rate for coarse soils and high rate for clay soils.
flumioxazin – 0.064 to 0.096 lb/A	flumioxazin 51% formulation — 2 to 3 oz/A or 4 lb/gal formulation — 3 oz/A	Preemergence no later than 2 days after planting	Prickly sida, morningglory, pigweeds, horseweed; other annual broadleaf weeds	Mix with glyphosate or paraquat to control emerged vegetation. Do not irrigate when peanut are cracking. Rainfall or irrigation at cracking will cause temporary crop injury that should not result in reduced yields if applied according to the label. Apply within 6 hours of mixing.
glyphosate – 1 to 1.5 lb/A	Various formulations (see product label for specific rates)	Preplant or preemergence	Annual, biennial, and perennial grasses and broadleaf weeds	Use of flood-jet nozzles is not suggested. If tillage is intended after treatment, wait at least 3 days (7 days for perennial weeds) after application. Avoid drift to nontarget species or areas. Glyphosate may be mixed with soil-applied herbicides for residual activity.
imazethapyr – 0.063 lb/A	imazethapyr 2 lb/gal formulation — 4 oz/A	Preplant incorporated, preemergence, or split with postemergence application	Annual grasses and broadleaf weeds; yellow and purple nutsedge suppression	Mix with glyphosate or paraquat to control emerged vegetation. Do not apply more than 4 ounces per season, but rate may be split with 2 ounces applied preplant incorporated or preemergence and 2 ounces applied postemergence. Do not graze or feed treated forage to livestock. Add nonionic surfactant at 0.25% v/v.
metolachlor – 2 to 2.5 lb/A or <i>s</i> -metolachlor – 1.3 to 1.6 lb/A	Various formulations (see product label for specific rates)	Preplant incorporated within 14 days of planting or preemergence	Annual grasses and small-seeded broadleaf weeds; yellow nutsedge suppression	Mix with glyphosate or paraquat to control emerged vegetation. Incorporation should place the herbicide no deeper than 2 inches. If a dry period follows surface application, a shallow incorporation may be beneficial before peanut emerge. Rainfall is required to activate surface application. Optimum control when rainfall occurs within 10 days after application.
paraquat – 0.63 to 1 lb/A	paraquat 2 lb/gal formulation — 2.5 to 4 pt/A or 3 lb/gal formulation — 1.68 to 2.67 pt/A	Preplant or preemergence	Annual and perennial grasses and broadleaf weeds	Avoid drift to emerged vegetation. May be mixed with most preemergence herbicides. Apply in a minimum of 10 gallons of water by ground or 5 gallons by air. Add a nonionic surfactant at 0.25% v/v or a crop oil concentrate at 1% v/v.
pendimethalin – 1 lb/A	pendimethalin 3.8 lb/gal formulation — 2 pt/A or 3.3 lb/gal formulation — 2.4 pt/A	Preplant up to 60 days before planting or preemergence	Annual grasses and small-seeded broadleaf weeds	Mix with glyphosate or paraquat to control emerged vegetation. Incorporate 1 to 2 inches deep. To prevent decreased pegging, adequate incorporation via equipment, overhead irrigation, or rainfall must occur within 48 hours of application.

Peanut Weed Management

Situation and active ingredient rate per broadcast acre	Formulated product per broadcast acre	Time of application	Weeds controlled	Special instructions and remarks
sulfentrazone + carfentrazone – 0.081 to 0.19 lb/A	Spartan Charge 3.45 SL — 3 to 7 oz/A	Preplant and preemergence up to 3 days after planting	Pigweed, morningglory; other annual broadleaf weeds	Mix with glyphosate or paraquat to control emerged vegetation. Do not apply more than 7 fluid ounces per 12-month period. Peanut chlorosis and stunting may occur at pH 7.0 and above, as well as under cold and wet growing conditions. Do not use on soils classified as sand, which have less than 1% organic matter. Do not irrigate when peanut are cracking.
Postemergence Cultivation is often justified as a supplement to chemical weed control. However, haphazard cultivation that disturbs developing pegs or throws soil on the plant will reduce yield and quality. Southern blight (stem rot, <i>Sclerotium rolfsii</i>) is often more severe following such practices. Precision cultivation is recommended using flat sweeps set to run shallow in the middle. The use of fenders or shields to prevent soil movement onto plants is a good practice. Rolling cultivators also can be used effectively, but gangs should be set for minimum soil shifting. Positive depth and lateral control of all cultivating equipment is recommended.				
2,4-DB – 0.2 to 0.4 lb/A	2,4-DB 1.75 lb/gal formulation — 0.9 to 1.8 pt/A or 2 lb/gal formulation 0.8 to 1.6 pt/A	2 to 12 weeks after planting. Do not apply within 30 days of harvest	Cocklebur, annual morningglory, common ragweed, and sicklepod	Do not make more than two applications per season. Do not feed treated vines or peanut hay to livestock. Do not apply to peanut if suffering from lack of water. Check individual 2,4-DB labels for different use rates and restrictions.
acetochlor – 0.94 to 1.5 lb/A	Warrant 3 CS — 1.25 to 2 qt/A	Postemergence through R1 (beginning bloom) growth stage.	Annual grasses, carpetweed, pigweed, purslane, Florida pusley, lambsquarters, nightshade, and waterhemp	Preplant treatments must have cultivation or 0.5 to 0.75 inch of precipitation or overhead irrigation for activation. Do not apply more than 4 quarts per season. Do not exceed three applications per season. Allow at least 7 days between sequential applications. Apply before weeds emerge, as this product will not control emerged weeds.
acifluorfen – 0.125 to 0.375 lb/A	acifluorfen 2 lb/gal formulation — 0.5 to 1.5 pt/A	Small, actively growing weeds	Hemp sesbania, morningglory, pigweeds (less than 2 inches)	Do not apply to crop or weeds under stress from weather, pests, or other herbicides. Do not apply within 75 days of harvest. Do not apply more than 2 pints during the growing season. Rainfall received within 6 hours of application may reduce control. Do not use treated plants for feed or forage. Add nonionic surfactant at 0.25 to 0.5% v/v.
bentazon – 0.5 to 1 lb/A	bentazon 4 lb/gal formulation — 1 to 2 pt/A or 5 lb/gal formulation — 0.8 to 1.6 pt/A	Small, actively growing weeds	Cocklebur, prickly sida (2 to 3 inches), smartweed, yellow nutsedge	Do not apply if peanut show prior herbicide damage or during periods of drought or cold weather. Do not apply more than 2 quarts per season. As a late rescue treatment for cocklebur suppression, apply 1.5 pints per acre before blooming up to 24 inches tall and repeat in 10 to 14 days. Add a nonionic surfactant at 0.25% v/v or a nonphytotoxic crop oil concentrate at 1% v/v.
bentazon + acifluorfen – 0.75 lb/A	Storm 4 L — 1.5 pt/A	Small, actively growing weeds	Broadleaf weeds, yellow nutsedge	Do not apply Storm to peanut that have been subject to stress conditions. Do not apply more than a total of 1.5 pints of Storm within 75 days of peanut harvest. Add crop oil concentrate at 1 pint per acre or substitute nonionic surfactant at 0.125% v/v.
carfentrazone – 0.032 lb/A	Aim 2 EC — 2 oz/A	At least 7 days before harvest	Morningglory, pigweed, velvetleaf	Do not apply more than 2 ounces per acre as a harvest aid. Only rotate field to a carfentrazone-registered crop. Add a nonionic surfactant at 0.25% v/v or a nonphytotoxic crop oil concentrate at 1% v/v.
chlorimuron – 0.0078 lb/A	chlorimuron 25% formulation — 0.5 oz/A	Postemergence from 60 days after emergence until 45 days before harvest.	Florida beggarweed, cocklebur, jimsonweed, hemp sesbania, sicklepod, velvetleaf, yellow nutsedge	Do not apply to GA-06G or early bunch/Spanish varieties. Do not make more than one application per season or when peanut are stressed. Applications can result in greater tomato spotted wilt virus symptoms. Add nonionic surfactant at 0.25% v/v.
clethodim – 0.063 to 0.13 lb/A	Various formulations (see product label for specific rates)	Small, actively growing weeds	Annual grasses, johnsongrass, bermudagrass	Do not apply (1) within 40 days of harvest, (2) more than 32 ounces per acre per season, (3) if rainfall is expected within 1 hour, or (4) to stressed plants. Add ammonium sulfate and a nonphytotoxic crop oil concentrate at 1% v/v with 2 and 3 lb/gal formulations and nonionic surfactant with Select Max formulation.

Peanut Weed Management

Situation and active ingredient rate per broadcast acre	Formulated product per broadcast acre	Time of application	Weeds controlled	Special instructions and remarks
diclosulam – 0.024 lb/A	Strongarm 84 WG — 0.45 oz/A	Postemergence up to 28 days after planting	Benghal dayflower, common ragweed, cocklebur, eclipta, bristly starbur, wild radish	See <i>Special Instructions and Remarks</i> for Strongarm in Preplant/Preemergence list in this section. Strongarm has a 24C label for control of Benghal dayflower in peanut. Apply when tropical spiderwort plants are small. Larger plants will be stunted, but will rarely die.
fluazifop – 0.13 to 0.38 lb/A	Fusilade DX 2 EC — 8 to 24 oz/A	Postemergence until 40 days before harvest	Annual and perennial grasses	Do not apply more than 24 ounces in a single application and 48 ounces per season. Allow a minimum of 14 days between applications. Add nonionic surfactant at 0.25% v/v or nonphytotoxic crop oil concentrate at 1% v/v.
imazapic – 0.5 to 1 lb/A	Cadre 2 AS — 4 oz/A	At cracking to within 90 days of harvest	Sicklepod, morningglory, Florida beggarweed, common cocklebur, nutsedge	Shallow cultivation may improve control of some species. Rainfall within 3 hours of application may reduce control. Add nonionic surfactant at 0.25% v/v.
imazethapyr – 0.063 lb/A	imazethapyr 2 lb/gal formulation — 4 oz/A	At cracking or postemergence	Annual grasses and broadleaf weeds; yellow and purple nutsedge suppression	See <i>Special Instructions and Remarks</i> for imazethapyr in Preplant/Preemergence list in this section.
lactofen – 0.2 lb/A	Cobra 2 EC — 12.5 oz/A	After peanut reach the 6-leaf stage	Hemp sesbania, morningglory, prickly sida, common ragweed, pigweed	Preharvest interval is 90 days. Add a nonphytotoxic crop oil concentrate at 1% v/v.
metolachlor – 2 to 2.5 lb/A or <i>s</i> -metolachlor – 1.3 to 1.6 lb/A	Various formulations (see product label for specific rates)	Postemergence to 90 days before harvest	Annual grasses and small-seeded broadleaf weeds; yellow nutsedge suppression	Rainfall is required to activate surface application. Optimum control when rainfall occurs within 10 days after application. See specific product labels for preharvest intervals and maximum use rates. Do not use Dual II Magnum formulation after peanut emergence.
paraquat – 0.13 lb/A	Various formulations (see product label for specific rates)	At cracking or early postemergence up to 28 days after ground cracking	Sicklepod, Florida beggarweed, Texas panicum; broadleaf weeds	Peanut foliage injury is usually temporary. Conditions of high humidity, wet foliage, and/or wet soils result in greater foliage burn. Thrips injury retards crop recovery. Mix with bentazon or Storm on larger weeds. When used alone, paraquat is not effective on smallflower morningglory, prickly sida, wild radish, or tropic croton.
paraquat + bentazon – 0.13 lb/A + 0.25 to 0.5 lb/A	paraquat 2 lb/gal formulation — 0.52 pt/A or 3 lb/gal formulation — 0.35 pt/A + bentazon 4 lb/gal formulation — 0.5 to 1 pt/A or 5 lb/gal formulation — 0.4 to 0.8 pt/A	At cracking through 28 days after ground cracking	Annual grasses and broadleaf weeds	See <i>Special Instructions and Remarks</i> for paraquat and bentazon. Do not apply after flower initiation. Do not make more than two applications per crop. One pint of bentazon is needed for nutsedge control. Use 0.5 pint of bentazon if it is added only as a safener.
pyroxasulfone – 0.08 to 0.11 lb/A	Zidua 0.85 WG — 1.5 to 2.1 oz/A or 4 SC — 2.5 to 3.5 oz/A	After cracking	Annual grasses and small-seeded broadleaf weeds	Zidua may not be used preemergence in peanut. There is no established preharvest interval between application and peanut harvest. This product is a postemergence residual herbicide and will not control emerged weeds. May be mixed with other postemergence products; see label.
pyroxasulfone + carfentrazone – 0.08 to 0.13 lb/A	Anthem Flex 4 SC — 2.7 to 4 oz/A	After cracking	Annual grasses and small-seeded broadleaf weeds	Anthem Flex may not be used preemergence in peanut. There is no established preharvest interval between application and peanut harvest. This product is a postemergence residual herbicide and will not control emerged weeds. May be mixed with other postemergence products. See label.

Peanut Weed Management

Situation and active ingredient rate per broadcast acre	Formulated product per broadcast acre	Time of application	Weeds controlled	Special instructions and remarks
sethoxydim – 0.19 to 0.38 lb/A	Poast 1.5 EC — 16 to 24 oz/A	Small, actively growing weeds	Annual grasses, seedling and rhizome johnson-grass, bermudagrass, red rice	Apply over the top of peanut or as a semi-directed spray to the grasses. Do not apply (1) to grasses under drought stress or herbicide injury; (2) if rainfall is expected within one hour after application; (3) within 40 days of harvest. Add a nonphytotoxic crop oil concentrate at 1% v/v.
Rope Wick				
paraquat – 0.2 to 0.25 lb/A	Gramoxone SL 2 SL — mix 1 part Gramoxone to 1.5 parts water for a 40–50% solution.	When height differential is achieved between target weeds and peanut canopy	Glyphosate-resistant Palmer amaranth; prevents or minimizes seed production	Calibrate to apply up to 2 pt/A of herbicide water mixture. Position applicator at least 6 inches above peanut canopy. Apply through a recirculating rope or carpet roller wicking applicator. Set to avoid dripping onto peanut canopy. Use low ground speed (less than 5 mph). If possible, treat in late afternoon or early evening to enhance control of large weeds. NOTE (State Label 24c) . Add nonionic surfactant at 0.25% v/v.

Rice Weed Management

Weed Response Ratings for Rice Herbicides Applied Preemergence or Delayed Preemergence¹

	Herbicide group numbers	Barnyardgrass	Broadleaf signalgrass	Crabgrass	Fall panicum	Red rice	Sprangletop—Amazon	Sprangletop—bearded	Rice flatsedge	Yellow nutsedge	Annual morningglory species	Duckweed	Eclipta	Glyphosate-resistant horseweed	Gooseweed	Hemp sesbania (coffeebean)	Northern jointvetch	Palmer amaranth	Pennsylvania smartweed	Purple ammannia (redstem)	Spikerush	Spreading dayflower	Texasweed	Volunteer glyphosate resistant soybean ²
Bolero (delayed pre)	8	8	4	7	7	0	9	9	7	4	4	7	8	-	6	4	5	-	5	7	7	8	5	-
Clomazone	13	9	9	9	9	0	8	8	0	0	3	0	0	-	0	2	3	0	2	0	0	0	0	0
Gambit	2, 2	0	0	0	0	0	0	0	9	8	7	9	8	7	-	8	8	5	8	7	-	7	8	7
League	2	0	0	0	0	0	0	0	9	8	5	8	8	-	-	8	7	5	-	7	-	7	8	0
Obey	13, 4	9	9	9	9	0	8	8	5	0	7	7	8	-	3	6	7	0	2	0	0	5	0	-
Pendimethalin (delayed pre)	3	9	8	8	8	0	8	7	0	0	0	4	0	-	0	0	0	7	2	1	0	0	0	0
Quinclorac	4	9	9	9	8	0	0	0	5	0	7	2	8	-	3	6	7	4	0	0	-	5	-	-
Quinclorac + Bolero (delayed pre)	4, 8	9	9	9	9	0	8	8	8	0	8	7	9	-	5	8	8	5	5	7	7	7	-	-
Quinclorac + pendimethalin (delayed pre)	4, 3	9	9	9	9	0	8	8	5	0	8	0	8	-	3	6	7	7	1	3	-	3	5	-
RiceOne (delayed pre)	13, 3	9	9	9	9	0	8	8	0	0	2	7	0	-	0	1	5	7	2	1	0	7	0	0
Sharpen	14	0	0	0	0	0	0	0	8	4	8	-	-	8	-	7	-	9	8	-	-	-	7	4

Rating Scale: 0-3 = none to slight; 4-6 = fair; 7-8 = good; 9-10 = excellent.

¹Control expected under optimum conditions. Mississippi State University does not guarantee these estimates since many factors influence herbicide performance. Resistance to recommended use rates of some herbicides has been identified in certain weed species in Mississippi (See Herbicide-Resistant Weed Management Section). Ratings reflect expected control of herbicide-susceptible populations.

²Control ratings do not apply to BOLT or sulfonylurea-tolerant soybean (STS).

Rice Weed Management

2023 Weed Management Suggestions for Mississippi Row Crops

Weed Response Ratings for Rice Herbicides Applied Postemergence¹

	Herbicide group numbers	Barnyardgrass	Broadleaf signalgrass	Crabgrass	Fall panicum	Red rice	Sprangletop—Amazon	Sprangletop—bearded	Rice flatsedge	Yellow nutsedge	Annual morningglory species	Ducksalad	Eclipta	Glyphosate-resistant horseweed	Gooseweed	Hemp sesbania (coffeebean)	Northern jointvetch	Palmer amaranth	Pennsylvania smartweed	Purple ammannia (redstem)	Spikerush	Spreading dayflower	Texasweed	Volunteer glyphosate resistant soybean ²
Clearfield/FullPage Rice																								
Beyond or Postscript	2	8	9	-	7	9	5	5	8	-	8	2	6	-	-	3	3	6	5	8	-	6	5	0
Clearpath (Clearfield only)	2, 4	9	9	9	6	8	6	6	9	8	8	6	8	-	0	7	7	5	6	8	-	6	7	-
Newpath or Preface (2 applications)	2	9	9	9	9	9	6	8	9	8	7	7	0	-	5	0	0	6	7	8	9	5	5	0
MaxAce Rice																								
Highcard (2 applications)	1	9	9	9	9	9	9	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Provisia Rice System																								
Provisia (2 applications)	1	9	9	9	9	9	9	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Postemergence (Before Flood)																								
Aim	14	0	0	0	0	0	0	0	0	0	9	5	7	-	-	9	7	7	9	6	0	7	6	2
Clincher SF	1	8	9	6	9	0	8	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gambit	2, 2	0	0	0	0	0	0	0	9	8	8	9	9	4	6	8	7	5	8	7	-	8	8	7
Grandstand	4	0	0	0	0	0	0	0	6	0	9	4	9	6	5	9	8	8	6	8	6	6	8	9
Grasp	2	8	0	0	2	0	0	0	9	6	5	9	8	8	-	8	8	6	7	7	9	8	6	9
Grasp Xtra	2, 4	8	0	0	2	0	0	0	9	3	8	9	9	8	-	9	9	8	7	7	9	9	8	9
Halosulfuron	2	0	0	0	0	0	0	0	8	9	4	4	5	6	-	8	7	6	4	7	8	8	6	8
League	2	0	0	0	0	0	0	0	8	8	8	7	8	-	-	9	8	5	7	8	8	8	8	8
Loyant	4	7	9	2	-	0	6	4	9	9	6	9	9	8	-	9	9	9	7	9	-	9	3	9
Permit Plus	2	0	0	0	0	0	0	0	8	8	7	7	9	6	-	9	7	6	8	9	8	8	7	8
Propanil	5	9	9	7	8	0	5	4	9	4	5	7	8	1	5	9	5	8	6	6	9	5	6	8
Propanil + bentazon	5, 6	9	9	7	9	0	5	4	9	6	7	7	9	1	7	9	9	8	8	9	9	9	6	8
Propanil + Bolero (or RiceBeaux)	5, 8	9	9	7	9	0	9	9	9	5	6	8	9	2	6	9	5	8	6	8	9	8	7	8
Propanil + Londax (or Duet)	5, 2	9	9	7	9	0	5	4	9	8	9	7	9	-	9	9	9	8	8	9	9	8	7	8
Propanil + quinclorac	7, 5	9	9	7	9	0	5	4	9	5	8	6	8	8	5	9	9	8	5	6	9	5	6	8
Quinclorac	4	9	9	7	6	0	0	0	5	0	8	3	9	6	3	8	8	3	0	3	5	3	3	2
Quinclorac + Aim (or Broadhead)	4, 14	9	9	7	6	0	0	0	5	0	9	5	9	6	-	9	8	8	8	7	5	7	6	2
Regiment	2	9	3	0	0	0	2	2	8	5	6	9	7	5	0	8	7	6	9	6	8	8	8	9
Ricestar HT	1	9	9	8	7	0	8	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sharpen	14	0	0	0	0	0	0	0	0	0	9	4	8	8	7	8	8	9	8	8	0	6	8	6
Storm	6, 14	3	3	3	2	0	2	2	8	7	8	8	7	-	-	9	6	7	8	9	8	7	8	0
Strada	2	0	0	0	0	0	0	0	9	7	7	6	8	5	-	9	9	5	6	8	9	7	6	8
Strada PRO	2	0	0	0	0	0	0	0	9	9	7	7	8	6	-	9	9	6	6	8	9	8	6	8
Strada XT2	2, 4	9	9	7	6	0	0	0	9	7	8	6	9	6	-	9	9	5	6	8	9	7	6	8
Postemergence (After Flood)																								
Acifluorfen	14	0	0	0	0	0	0	0	0	0	8	0	0	-	0	9	6	6	0	0	0	0	4	0
Propanil	5	4	4	4	4	0	0	0	5	3	0	3	4	-	0	8	0	7	5	4	5	0	4	-
Propanil + Grandstand	5, 4	2	2	2	2	0	0	0	6	2	8	5	6	-	7	9	8	6	4	9	6	4	4	-

Rating Scale: 0-3 = none to slight; 4-6 = fair; 7-8 = good; 9-10 = excellent.

¹Control expected under optimum conditions. Mississippi State University does not guarantee these estimates since many factors influence herbicide performance. Resistance to recommended use rates of some herbicides has been identified in certain weed species in Mississippi (See Herbicide-Resistant Weed Management Section). Ratings reflect expected control of herbicide-susceptible populations.

²Control ratings do not apply to BOLT or sulfonylurea-tolerant soybean (STS).

For additional information, please see these websites: www.agrian.com, www.cdms.net, or www.greenbook.net

Rice Weed Management

Herbicide Rates for Preemergence Application in Drill-Seeded Rice

Herbicide	Formulation	Sand, loamy sand	Sandy loam	Loam, silt, silt loam, sandy clay, sandy clay loam	Silty clay, clay loam, silty clay loam, clay
Clomazone	3 ME	0.69 pt/A	0.69 to 0.88 pt/A	1.1 to 1.3 pt/A	1.33 to 2 pt/A
Quinclorac	75 DF	Do not use	0.33 to 0.44 lb/A	0.44 to 0.5 lb/A	0.5 to 0.67 lb/A
	4 L	Do not use	0.5 to 0.67 pt/A	0.67 to 0.75 pt/A	0.75 to 1 pt/A
	1.5 L	Do not use	21 to 28 oz/A	28 to 32 oz/A	32 to 42 oz/A

Situation and active ingredient rate per broadcast acre	Formulated product per broadcast acre	Time of application	Weeds controlled	Special instructions and remarks
Clearfield or FullPage Rice				
imazethapyr – 0.063 to 0.094 lb/A	Newpath 2 AS or Preface 2 AS — 4 to 6 oz/A	Preplant-incorporated; sequential application to 3- to 5-leaf rice required	Red rice, annual grasses, yellow nutsedge	Use Newpath only on Clearfield rice varieties and Preface only on FullPage hybrids. Flush for activation if rainfall does not occur within a few days of planting. This application must be followed by one postemergence application of Newpath/Preface or Beyond/Postscript. Avoid drift onto conventional rice varieties and hybrids. See label for approved mixtures.
imazethapyr – 0.063 to 0.094 lb/A	Newpath 2 AS or Preface 2 AS — 4 to 6 oz/A	Preemergence; sequential application to 3- to 5-leaf rice required	Red rice, annual grasses, yellow nutsedge	See <i>Special Instructions and Remarks</i> for Newpath/Preface. Use Newpath only on Clearfield rice varieties and Preface only on FullPage hybrids.
imazethapyr – 0.063 to 0.094 lb/A	Newpath 2 AS or Preface 2 AS — 4 to 6 oz/A	Postemergence to 3-leaf through 5-leaf rice before flooding	Red rice, annual grasses, yellow nutsedge	See <i>Special Instructions and Remarks</i> for Newpath/Preface. Use Newpath only on Clearfield rice varieties and Preface only on FullPage hybrids. Mixing with other herbicides will be required for control of broadleaf weeds. This application must be preceded by one preplant-incorporated or preemergence application of Newpath/Preface. Add a nonphytotoxic crop oil concentrate at 1 to 2 pints per acre.
imazethapyr – 0.063 to 0.094 lb/A followed by imazethapyr – 0.063 to 0.094 lb/A	Newpath 2 AS or Preface 2 AS — 4 to 6 oz/A followed by Newpath 2 AS or Preface 2 AS — 4 to 6 oz/A	First postemergence application at spike to 1-leaf rice followed by second postemergence application approximately 14 days later	Red rice, annual grasses, yellow nutsedge	See <i>Special Instructions and Remarks</i> for Newpath/Preface. Use Newpath only on Clearfield rice varieties and Preface only on FullPage hybrids. A soil-applied herbicide should be included in first application to aid in residual control of annual grasses. Mixing with other herbicides will be required for control of broadleaf weeds. Add a nonphytotoxic crop oil concentrate at 1 to 2 pints per acre.
imazethapyr + quinclorac – 0.063 + 0.312 lb/A followed by imazethapyr – 0.063 to 0.094 lb/A	Clearpath 75 DF — 0.5 lb/A followed by Newpath 2 AS — 4 to 6 oz/A	Preplant-incorporated, preemergence, or postemergence from spike to 1-leaf rice followed by application of Newpath approximately 14 days later	Red rice, annual grasses; improved control of some grasses and broadleaf weeds over Newpath alone	See <i>Special Instructions and Remarks</i> for Newpath. Use Clearpath only on Clearfield rice varieties. Mixing with other herbicides will be required for control of broadleaf weeds. Clearpath at 0.5 pound per acre provides 4 ounces of Newpath and 0.3 pounds active ingredient of quinclorac. Add a nonphytotoxic crop oil concentrate at 1 to 2 pints per acre.
imazamox – 0.039 to 0.047 lb/A	Beyond 1 AS or Postscript 1 AS — 5 to 6 oz/A	After at least one application of Newpath/Preface. Apply from 4-leaf rice until 14 days after panicle initiation on varieties and 4-leaf rice to panicle initiation on hybrids	Barneygrass, broadleaf signalgrass, fall panicum, morningglory, red rice	Use Beyond only on Clearfield rice varieties and Postscript only on FullPage hybrids. May be substituted for second application of Newpath/Preface, but two applications are required before flooding. An emergency salvage application may be applied for late-season suppression of red rice. Avoid drift of Beyond/Postscript onto conventional rice varieties and hybrids. Add a nonphytotoxic crop oil concentrate at 1 to 2 pints per acre.

Rice Weed Management

Situation and active ingredient rate per broadcast acre	Formulated product per broadcast acre	Time of application	Weeds controlled	Special instructions and remarks
MaxAce Rice				
quizalofop + safener – 0.089 to 0.11 lb/A followed by quizalofop + safener– 0.089 to 0.11 lb/A	Highcard 0.88 EC – 13 to 15.5 oz/A followed by Highcard 0.88 EC – 13 to 15.5 oz/A	First postemergence application at 2-leaf rice followed by second postemergence application approximately 14 days later	Red rice, annual grasses, volunteer rice	Use on MaxAce rice varieties and hybrids only. A soil-applied herbicide should be included in first application to aid in residual control of annual grasses. Do not apply more than 31 fluid ounces per acre per season or 15.5 fluid ounces per acre in a single application. Do not apply any other quizalofop product to MaxAce rice. Injury has been observed during periods of cloudy weather. Add a nonphytotoxic crop oil concentrate at 1% v/v.
Provisia Rice System				
quizalofop – 0.089 to 0.11 lb/A followed by quizalofop – 0.089 to 0.11 lb/A	Provisia 0.88 EC – 13 to 15.5 oz/A followed by Provisia 0.88 EC – 13 to 15.5 oz/A	First postemergence application at 1-leaf rice followed by second postemergence application approximately 14 days later	Red rice, annual grasses, volunteer rice	Use on Provisia rice varieties only. A soil-applied herbicide should be included in first application to aid in residual control of annual grasses. Do not apply more than 31 fluid ounces per acre per season or 15.5 fluid ounces per acre in a single application. Mixing with broadleaf or sedge herbicides can result in loss of grass control. See label for approved mixtures. Add a nonphytotoxic crop oil concentrate at 1% v/v.
Preemergence/Delayed Preemergence				
clomazone – 0.3 to 0.8 lb/A	clomazone 3 lb/gal formulation – 0.8 to 2.1 pt/A	Preemergence	Annual grasses	Clomazone may be applied from planting to rice emergence but before weed emergence. Do not apply to recently land-formed fields. If grasses emerge after application, rainfall or flushing may be needed for activation or reactivation. Follow label when tank-mixing. See table at beginning of section for specific clomazone rates by soil texture.
clomazone plus pendimethalin – 0.99 to 1.42 lb/A	RiceOne 3.63 CS — 35 to 50 oz/A –	Delayed preemergence; Do not apply if rice is beginning to emerge	Annual grasses and broadleaf weeds	See <i>Special Instructions and Remarks</i> for clomazone and pendimethalin.
clomazone + quinclorac – 0.3 to 0.5 lb/A + 0.3 to 0.5 lb/A	clomazone 3 lb/gal formulation – 0.8 to 1.33 pt/A + Various formulations (see product label for specific rates)	Preemergence or delayed preemergence	Annual grasses, eclipta	See <i>Special Instructions and Remarks</i> for clomazone and quinclorac. If grasses emerge after application, rainfall or flushing will be required for activation or reactivation of the herbicide. See table at beginning of section for specific clomazone and quinclorac rates by soil texture.
glyphosate plus clomazone – 1 to 1.5 lb/A + 0.3 to 0.6 lb/A	Various formulations (See product label for specific rates) + clomazone 3 lb/gal formulation – 0.8 to 1.6 pt/A	Prior to rice emergence; Do not apply if rice is beginning to emerge	Annual and perennial grasses and broadleaf weeds plus residual control of annual grasses	See <i>Special Instructions and Remarks</i> for glyphosate and clomazone. The field must be free of standing water at application. Antagonism may occur in some situations. Sequential postemergence grass herbicide application will be needed. See table at beginning of section for specific clomazone rates by soil texture.
glyphosate + clomazone + saflufenacil – 1 to 1.5 + 0.3 to 0.6 + 0.045 to 0.067 lb/A	Various formulations (see product label for specific rates) + clomazone 3 lb/gal formulation – 0.8 to 1.6 pt/A + Sharpen 2.85 SC – 2 to 3 oz/A	Prior to rice emergence; Do not apply if rice is beginning to emerge	Annual and perennial grasses and broadleaf weeds plus residual control of annual grasses and broadleaf weeds	See <i>Special Instructions and Remarks</i> for clomazone, glyphosate plus clomazone, and glyphosate plus Sharpen.

Rice Weed Management

Situation and active ingredient rate per broadcast acre	Formulated product per broadcast acre	Time of application	Weeds controlled	Special instructions and remarks
glyphosate + pendimethalin – 1 to 1.5 lb/A + 0.75 to 1 lb/A	Various formulations (see product label for specific rates) + pendimethalin 3.8 lb/gal formulation – 1.6 to 2.1 pt/A or 3.3 lb/gal formulation – 1.8 to 2.4 pt/A	Delayed preemergence; Do not apply if rice is beginning to emerge	Annual and perennial grasses and broadleaf weeds plus residual control of annual grasses	See <i>Special Instructions and Remarks</i> for glyphosate plus clomazone and for pendimethalin.
glyphosate + saflufenacil – 1 to 1.5 lb/A + 0.045 to 0.067 lb/A	Various formulations (See product labels for specific rates) + Sharpen 2.85 SC – 2 to 3 oz/A	Prior to rice emergence; Do not apply if rice is beginning to emerge.	Annual and perennial grasses and broadleaf weeds plus residual control of some broadleaf weeds	See <i>Special Instructions and Remarks</i> for glyphosate plus clomazone. Add methylated seed oil at 1% v/v plus ammonium sulfate.
halosulfuron + prosulfuron – 0.049 to 0.099 lb/A	Gambit 79 WG – 1 to 2 oz/A	Preplant or preemergence	Pennsylvania smartweed, yellow nutsedge, annual weeds	Do not apply within 48 days of harvest. Avoid drift to non BOLT or STS soybean. Do not exceed 2 ounces per acre per year. Add a nonionic surfactant at 0.25% v/v or a crop oil concentrate or methylated seed oil at 1% v/v.
imazosulfuron – 0.19 to 0.3 lb/A	League 75 WG – 4 to 6 oz/A	Preemergence	Annual grasses except sprangletop; eclipia, hemp sesbania, joint-veitch, morningglory	Rice injury may occur if League is applied at more than 3.2 ounces per acre on clay soil with a pH greater than 8. Yield reductions have not been observed. Soybean may not be planted for 12 months after League application. A half-mile buffer to emerged non BOLT or STS soybean is required for aerial applications.
orthosulfamuron + quinclorac – 0.28 to 0.44 lb/A	Strada XT2 70 WG – 6.5 to 10 oz/A	Preemergence or delayed preemergence	Hemp sesbania, Texasweed, rice flatsedge, yellow nutsedge	See <i>Special Instructions and Remarks</i> for quinclorac. Do not use on sand or loamy sand soils.
pendimethalin – 0.75 to 1 lb/A	pendimethalin 3.8 lb/gal formulation – 1.6 to 2.1 pt/A or 3.3 lb/gal formulation – 1.8 to 2.4 pt/A	Delayed preemergence	Annual grasses	Apply after rice seed has imbibed water and germinated and after soil has been sealed by at least 1 inch of rainfall or irrigation (flush). If soil has not been sealed, apply when 80% of germinated seeds have the radicle at least 0.5 inch long. Under some conditions, use of gibberellic-acid-treated seed, heavy rainfall, or flushing after application may result in herbicide injury.
quinclorac – 0.25 to 0.5 lb/A	Various formulations (see product label for specific rates, see table at beginning of section for specific rates by soil texture)	Preemergence or delayed preemergence	Annual grasses except sprangletop; eclipia	Do not use on sand or loamy sand soils. Do not allow quinclorac to drift onto sensitive crops such as cotton, soybean, corn, or vegetables. Do not use on precision-cut fields until the second rice crop. Rice seed exposed to the spray may be severely injured. See product labels for yearly maximum use rates. See table at beginning of section for specific rates by soil texture.
quinclorac + pendimethalin – 0.25 to 0.5 lb/A + 0.75 to 1 lb/A	Various formulations (see product label for specific rates) + pendimethalin 3.8 lb/gal formulation — 1.6 to 2.1 pt/A or 3.3 lb/gal formulation — 1.8 to 2.4 pt/A	Delayed preemergence	Annual grasses, including sprangletop; eclipia	See <i>Special Instructions and Remarks</i> for quinclorac and pendimethalin. Rice seed exposed to the spray may be severely injured. See table at beginning of section for specific quinclorac rates by soil texture.

Rice Weed Management

Situation and active ingredient rate per broadcast acre	Formulated product per broadcast acre	Time of application	Weeds controlled	Special instructions and remarks
quinclorac + thiobencarb – 0.25 to 0.5 lb/A + 3 to 4 lb/A	Various formulations (see product label for specific rates) + Bolero 8 EC — 3 to 4 pt/A	Preemergence or delayed preemergence	Annual grasses, including sprangletop; eclepta	See <i>Special Instructions and Remarks</i> for quinclorac and thiobencarb. Rice seed exposed to the spray may be severely injured. See table at beginning of section for specific quinclorac rates by soil texture.
thiobencarb – 4 lb/A	Bolero 8 EC — 4 pt/A	Delayed preemergence	Barnyardgrass, sprangletop, aquatic weeds	Seedbed should be sealed by rain or flushing. Do not allow soil to crack after application. Application to rice stressed by high salt and/or high pH soil may cause excessive rice injury.
thiobencarb + pendimethalin – 4 lb/A + 0.75 to 1lb/A	Bolero 8 EC — 4 pt/A + pendimethalin 3.8 lb/gal formulation — 1.6 to 2.1 pt/A or 3.3 lb/gal formulation — 1.8 to 2.4 pt/A	Delayed preemergence	Barnyardgrass, broadleaf signalgrass, sprangletop, aquatic weeds	See <i>Special Instructions and Remarks</i> for pendimethalin and thiobencarb. Seedbed should be sealed by rain or flushing. Do not allow soil to crack after application.
Postemergence (Before Flood)				
acifluorfen + bentazon – 0.25 to 0.5 lb/A + 0.25 to 0.5 lb/A	Storm 4 L — 1.5 pt/A	After rice tillering to boot	Dayflower, flatsedge, hemp sesbania, morningglory, redstem, smartweed, yellow nutsedge	Add a nonionic surfactant at 0.25% v/v.
bentazon – 0.75 to 1 lb/A	bentazon 4 lb/gal formulation — 1.5 to 2 pt/A or 5 lb/gal formulation — 1.2 to 1.6 pt/A	At least 24 hours before flooding	Dayflower, flatsedge, smartweed, redstem, yellow nutsedge	Apply to actively growing weeds. Do not apply to submerged weeds. Do not apply more than 2 pounds per acre per season. Mix with propanil to increase weed spectrum. Add a nonphytotoxic crop oil concentrate at 1.25% v/v.
bispyribac-sodium – 0.02 to 0.033 lb/A	Regiment 80 WP — 0.4 to 0.67 oz/A	3-leaf rice up to green ring	Barnyardgrass, junglerice, johnsongrass, hemp sesbania, ducksalad, Pennsylvania smartweed	See Regiment label for a list of approved adjuvants. Apply in at least 10 gallons per acre and do not exceed 1.06 ounces per acre per year. Avoid drift to soybean. It provides little or no control of sprangletop. Medium-grain varieties may be more sensitive to Regiment under stressed conditions.
carfentrazone – 0.025 to 0.05 lb/A	Aim 2 EC — 1.6 to 3.2 oz/A	At least 2-leaf rice and weeds up to 4 inches tall	Cocklebur, hemp sesbania, morningglory, smartweed	Do not apply more than 8.6 ounces per season. If flood is lowered, return to normal 24 hours following treatment. Avoid applications from flag leaf emergence through harvest-aid application. Add a nonionic surfactant at 0.25% v/v or a nonphytotoxic crop oil concentrate at 1% v/v.
carfentrazone + halosulfuron – 0.025 to 0.05 lb/A + 0.032 to 0.063 lb/A	Aim 2 EC — 1.6 to 3.2 oz/A + halosulfuron (75% formulation) — 0.67 to 1.33 oz/A	At least 2-leaf rice and weeds up to 4 inches tall	Flatsedge, hemp sesbania, morningglory, smartweed (1- to 2-leaf), yellow nutsedge	See <i>Special Instructions and Remarks</i> for Aim and halosulfuron. Add nonionic surfactant at 0.25% v/v.
carfentrazone + quinclorac – 0.015 to 0.03 + 0.19 to 0.375 lb/A	Aim 2 EC — 1 to 2 oz/A + Various formulations (see product label for specific rates) or Broadhead 70 DF — 6 to 12 oz/A	From 2-leaf rice stage and before flooding	Barnyardgrass, morningglory, hemp sesbania, other annual grass and broadleaf weeds	See <i>Special Instructions and Remarks</i> for Aim and quinclorac. Add nonionic surfactant at 0.25% v/v or a nonphytotoxic crop oil concentrate at 1% v/v.
clomazone – 0.3 to 0.6 lb/A	clomazone 3 lb/gal formulation — 0.8 to 1.6 pt/A	1- to 2-leaf rice	Residual control of annual grasses	See <i>Special Instructions and Remarks</i> for clomazone. For control of grass weeds emerged at application, include a postemergence grass herbicide such as Clincher SF, propanil, quinclorac, or Ricestar HT.

Rice Weed Management

Situation and active ingredient rate per broadcast acre	Formulated product per broadcast acre	Time of application	Weeds controlled	Special instructions and remarks
clomazone plus pendimethalin – 0.99 to 1.42 lb/A	RiceOne 3.63 CS — 35 to 50 oz/A	1- to 2-leaf rice	Residual control of annual grasses and broadleaf weeds	See <i>Special Instructions and Remarks</i> for clomazone and pendimethalin. For control of grass weeds emerged at application, include a postemergence grass herbicide such as Clincher SF, propanil, or Ricestar HT.
clomazone + quinclorac – 0.3 to 0.5 lb/A + 0.3 to 0.5 lb/A	clomazone 3 lb/gal formulation — 0.8 to 1.33 pt/A + Various formulations (see product label for specific rates) or Obey 2.5 ZC — 32 to 52 oz/A	1- to 5-leaf rice	Residual control of annual grasses; barnyardgrass (1- to 2-leaf), broadleaf signalgrass, hemp sesbania, eclipta; morningglory (2- to 6-leaf)	See <i>Special Instructions and Remarks</i> for clomazone and quinclorac. Mix with other herbicides to broaden spectrum. Add a nonphytotoxic crop oil concentrate at 1 quart per acre.
cyhalofop-butyl – 0.25 to 0.28 lb/A	Clincher SF 2.38 EC — 13.5 to 15 oz/A	1-leaf rice up to 60 days before harvest	Barnyardgrass, broadleaf signalgrass, fall panicum, seedling johnsongrass, sprangletop	Apply in at least 10 gallons per acre by air or ground. Soil moisture is critical for good activity. Mixing with broadleaf or sedge herbicides can result in loss of grass control. Do not exceed 25 ounces per acre per year. Add a nonphytotoxic crop oil concentrate or methylated seed oil at 1 quart per acre.
fenoxaprop + safener – 0.077 to 0.1088 lb/A	Ricestar HT 0.58 EC — 17 to 24 oz/A	1-leaf rice to tillering but before panicle initiation	Barnyardgrass, sprangletop, broadleaf signalgrass, seedling johnsongrass, fall panicum	Do not apply within 48 hours of an application of methyl parathion. Soil moisture is critical for good activity. Mix only with approved herbicides on Ricestar HT label.
florpyrauxifen-benzyl – 0.026 lb ai/A	Loyant 0.21 EC — 1 pt/A	2-leaf rice until 60 days prior to harvest	Rice flatsedge, hemp sesbania, Palmer amaranth	Greatest efficacy will be achieved with applications within 5 days before flooding. No more than two applications can be made in a single season. Loyant should not be mixed with other herbicides containing propanil. Cotton, soybean, vegetables, flowers, and ornamental trees and shrubs are extremely sensitive to Loyant. Add methylated seed oil at 0.5 pint per acre.
halosulfuron – 0.032 to 0.063 lb/A	halosulfuron 75% formulation — 0.67 to 1.33 oz/A	Prior to rice emergence until after flooding	Yellow or purple nutsedge (1- to 6-inch, 0.67 oz/A; 6- to 12-inch sedges, 1 to 1.33 oz/A)	Do not apply within 48 days of harvest. Avoid drift to non BOLT or STS soybean. Add a nonionic surfactant at 0.25% v/v or a crop oil concentrate at 1% v/v.
halosulfuron + prosulfuron – 0.049 to 0.099 lb/A	Gambit 79 WG — 1 to 2 oz/A	Prior to rice emergence until after flooding	Pennsylvania smartweed, yellow nutsedge, annual weeds	Do not apply within 48 days of harvest. Avoid drift to non BOLT or STS soybean. Soybean may not be planted for 10 months after Gambit application. Add a nonionic surfactant at 0.25% v/v or a crop oil concentrate or methylated seed oil at 1% v/v.
halosulfuron + thifensulfuron – 0.024 + 0.0028 lb/A	Permit Plus 75 WG — 0.75 oz/A	Before rice emergence until 48 days before harvest	Pennsylvania smartweed, yellow nutsedge, annual weeds	Do not apply within 48 days of harvest. Avoid drift to non BOLT or STS soybean. Do not exceed 1.5 ounces per acre in a season. Add a nonionic surfactant at 0.25% v/v or a crop oil concentrate at 1% v/v.
imazosulfuron – 0.15 to 0.19 lb/A	League 75 WDG — 3.2 to 4 oz/A	2-leaf rice but before 2-inch internode elongation	Hemp sesbania, morningglory, annual weeds	See League label for a list of approved adjuvants and mixtures. Soybean may not be planted for 12 months after League application. A half-mile buffer to emerged non-STs soybean is required for aerial applications.
orthosulfamuron – 0.053 to 0.065 lb/A	Strada 50 WG — 1.7 to 2.1 oz/A	Early postemergence to 0.5-inch internode elongation	Flatsedge, hemp sesbania, northern jointvetch	Mix with other herbicides to broaden spectrum. See label for surfactant requirements.
orthosulfamuron + halosulfuron – 0.07 to 0.084 lb/A	Strada PRO 54 WG — 2.08 to 2.5 oz/A	Early postemergence to 0.5-inch internode elongation	Hemp sesbania, northern jointvetch, yellow nutsedge	Mix with other herbicides to broaden spectrum. See label for surfactant requirements. Only one application is allowed per year.

Rice Weed Management

Situation and active ingredient rate per broadcast acre	Formulated product per broadcast acre	Time of application	Weeds controlled	Special instructions and remarks
orthosulfamuron + quinclorac – 0.28 to 0.44 lb/A	Strada XT2 70 WG — 6.5 to 10 oz/A	Early postemergence to 0.5-inch internode elongation	Barnyardgrass, broadleaf signalgrass, hemp sesbania, morningglory, northern jointvetch, flatsedge	See <i>Special Instructions and Remarks</i> for quinclorac and Strada. See the label for surfactant requirements. Only one application is allowed per year.
penoxsulam – 0.031 to 0.036 lb/A	Grasp 2 SC — 2 to 2.3 oz/A	Emergence to 60 days before harvest	Eclipta (up to 7-leaf), hemp sesbania, northern jointvetch, flatsedge, duck salad (up to 4-leaf), and barnyardgrass	Little to no control of sprangletop, broadleaf signalgrass, and fall panicum. May cause stunting and root pruning, especially if higher than labeled rates are applied. Avoid use on high pH soils (>7.8) . Add a nonphytotoxic crop oil concentrate or methylated seed oil adjuvant at 1 quart per acre.
penoxsulam + triclopyr – 0.22 to 0.30 lb/A	Grasp Xtra 1.74 SC — 16 to 22 oz/A	2- to 3-leaf rice to 0.5-inch internode elongation	Barnyardgrass and broadleaf weeds	See <i>Special Instructions and Remarks</i> for Grasp and Grandstand. Add nonphytotoxic crop oil concentrate or methylated seed oil at 1 quart per acre.
propanil – 3 to 6 lb/A	Various formulations (see product label for specific rates)	1- to 4-leaf barnyardgrass	Barnyardgrass and other annual grasses and broadleaf weeds	Apply in 10 gallons of water for aerial application and 15 to 20 gallons of water for ground application. If grass is in the 4- to 5-leaf stage, apply 4 to 5 pounds of active ingredient per acre. To prevent reinfestation, flood 1 or 2 days after application. Complete spray coverage is necessary. Weed foliage must not be covered with water at time of application. Avoid drift to susceptible crops. Consult label concerning adjuvant use.
propanil – 6 to 8 lb/A (For split application where flooding is delayed)	Various formulations (see product label for specific rates)	3 to 4 lb/A when weeds are in 1- to 3-leaf stage and second 3 to 4 lb/A treatment when needed	Barnyardgrass, sprangletop, and other annual grasses and broadleaf weeds	See <i>Special Instructions and Remarks</i> for propanil. Flood 1 or 2 days after final application. This treatment may not provide satisfactory control of sprangletop species.
propanil + bensulfuron – 3 to 5 lb/A + 0.038 to 0.063 lb/A	Various formulations (see product label for specific rates) + Londax 60 DF — 0.75 to 1 oz/A or Duet 4.03 F — 3 to 5 qt/A	1 to 7 days before flood	Annual grasses and broadleaf weeds; yellow nutsedge	See <i>Special Instructions and Remarks</i> for propanil. For best results, maintain flood and keep water as static as possible.
propanil + halosulfuron – 3 to 4 lb/A + 0.032 to 0.063 lb/A	Various formulations (see product label for specific rates) + halosulfuron (75% formulation)	Emerged weeds	Eclipta, flatsedge, hemp sesbania, northern jointvetch, morningglory, yellow nutsedge	See <i>Special Instructions and Remarks</i> for propanil and halosulfuron.
propanil + pendimethalin – 3 to 4 lb/A + 0.75 to 1 lb/A	Various formulations (see product label for specific rates) + pendimethalin 3.8 lb/gal formulation — 1.6 to 2.1 pt/A or 3.3 lb/gal formulation — 1.8 to 2.4 pt/A	After rice emerges and barnyardgrass is in 1- to 3-leaf stage	Postemergence control of barnyardgrass and other annual grasses and broadleaf weeds; residual control of barnyardgrass and annual grasses	See <i>Special Instructions and Remarks</i> for pendimethalin and propanil. The seedbed should be firm and free of large clods, trash, and surface water at application. Fields should be flushed if adequate rainfall does not occur within 7 days. Do not make more than one application of pendimethalin per season.

Rice Weed Management

Situation and active ingredient rate per broadcast acre	Formulated product per broadcast acre	Time of application	Weeds controlled	Special instructions and remarks
propanil + quinclorac – 3 to 5 lb/A + 0.25 to 0.5 lb/A	Various formulations for each product (see product labels for specific rates)	Early postemergence	Annual grasses and broadleaf weeds	See <i>Special Instructions and Remarks</i> for quinclorac and propanil. See labels for instructions on mixing and use of adjuvants.
propanil + thiobencarb – 3 to 4 lb/A + 3 to 4 lb/A	Bolero 8 EC — 3 to 4 pt/A + Various formulations (see product label for specific rates) or RiceBeaux 6 EC — 4 qt/A	Annual grasses in 1- to 3-leaf stage, aquatics less than 0.5 inch, and broadleaf weeds less than 2 inches	Annual grasses and broadleaf weeds	See <i>Special Instructions and Remarks</i> for thiobencarb and propanil. Soil should be moist at application and not allowed to crack after application. Do not apply to stressed rice. RiceBeaux at 4 quarts per acre provides 3 pints of Bolero and 3 quarts of propanil per acre.
propanil + triclopyr – 3 to 4 lb/A + 0.125 to 0.25 lb/A	Various formulations (see product label for specific rates) + Grandstand 3 SL — 0.5 to 0.67 pt/A	After rice reaches 2-leaf stage and before weeds exceed 6 inches	Barnyardgrass, morningglory, hemp sesbania, northern jointvetch, eclipta	See <i>Special Instructions and Remarks</i> for propanil and Grandstand. Flood should be delayed for 72 hours after application. Do not exceed Grandstand at 0.5 pint per acre before 4-leaf rice and utilize up to 0.67 pints per acre after 4-leaf stage.
quinclorac – 0.25 to 0.5 lb/A	Various formulations (see product label for specific rates, see table at beginning of section for specific rates by soil texture)	Early postemergence	Barnyardgrass (1- to 2-leaf), broadleaf signalgrass, hemp sesbania, eclipta, morningglory (2- to 6-leaf)	See <i>Special Instructions and Remarks</i> for quinclorac. Does not control sprangletop. Soil moisture is critical for good activity. Rainfall or flush will be required for residual grass control from quinclorac after application. Add a nonphytotoxic crop oil concentrate at 1 quart per acre to maximize weed control.
quinclorac + acifluorfen – 0.25 to 0.5 lb/A + 0.125 to 0.25 lb/A	Various formulations (see product label for specific rates) + acifluorfen 2 lb/gal formulation — 0.5 to 1 pt/A	After rice reaches 3-leaf stage	Annual grasses and broadleaf weeds	See <i>Special Instructions and Remarks</i> for quinclorac. See label for mixing instructions. Add a nonionic surfactant at 0.25% v/v.
quinclorac + acifluorfen + bentazon – 0.25 to 0.5 lb/A + 0.75 lb/A	Various formulations (see product label for specific rates) + Storm 4 L — 1.5 pt/A	After rice reaches 3-leaf stage	Annual grasses and broadleaf weeds	See <i>Special Instructions and Remarks</i> for quinclorac and Storm. See labels for mixing instructions. Add a nonionic surfactant at 0.25% v/v.
quinclorac + fenoxaprop + safener – 0.25 to 0.5 lb/A + 0.077 to 0.1088 lb/A	Various formulations (see product label for specific rates) + Ricestar HT 0.58 EC — 17 to 24 oz/A	Small, actively growing weeds	Annual grasses and broadleaf weeds, including eclipta hemp sesbania, morningglory	See <i>Special Instructions and Remarks</i> for quinclorac and Ricestar HT. Soil moisture is critical for good activity.
saflufenacil – 0.0223 lb/A	Sharpen 2.85 SC — 1 oz/A	3-leaf to 0.5-inch internode elongation	Hemp sesbania, morningglory, Palmer amaranth	Do not apply to rice in the spiking to 1-leaf stage. Do not use methylated seed oil or nonionic surfactant in postemergence applications. Sequential applications are allowed, but do not apply more than 2 ounces per acre per season after rice emergence. Do not mix with emulsifiable concentrate herbicides. Add a nonphytotoxic crop oil concentrate at 1 to 2 pints per acre.

Rice Weed Management

Situation and active ingredient rate per broadcast acre	Formulated product per broadcast acre	Time of application	Weeds controlled	Special instructions and remarks
triclopyr – 0.25 to 0.375 lb/A	Grandstand 3 SL — 0.5 to 1 pt/A	3-leaf to 0.5-inch internode elongation	Hemp sesbania, eclipa, morningglory, northern jointvetch, redstem	Flood must be delayed 72 hours to prevent rice injury for applications made prior to flood. If flood is lowered for application, do not expose the crown of rice plants and wait 48 hours before raising the flood level. Do not use on precision-leveled land until the second rice crop. Add a nonionic surfactant at 0.25% or nonphytotoxic crop oil concentrate at 1% v/v.
triclopyr + halosulfuron – 0.25 to 0.375 lb/A + 0.032 to 0.063 lb/A	Grandstand 3 SL — 0.67 to 1 pt/A + halosulfuron 75% formulation — 0.67 to 1.33 oz/A	3-leaf to 0.5-inch internode elongation	Hemp sesbania, morningglory, northern jointvetch, yellow nutsedge	See <i>Special Instructions and Remarks</i> for Grandstand and halosulfuron. Add a nonionic surfactant at 0.25% v/v.
Postemergence (After Flood)				
2,4-D amine – 1 to 1.5 lb/A	Various formulations (see product label for specific rates)	Late tillering stage but before 0.5-inch internode elongation	Hemp sesbania redstem, ducksalad, smartweed, spikerush, water hyacinth, morningglory, dayflower	Follow Mississippi Department of Agriculture Bureau of Plant Industry regulations for phenoxy herbicides. Fields should have shallow flood at treatment. Do not apply nitrogen within 5 to 21 days before treatment. Avoid drift to susceptible crops. Add a nonionic surfactant at 0.25% v/v.
acifluorfen – 0.125 to 0.25 lb/A	acifluorfen 2 lb/gal formulation — 0.5 to 1 pt/A	When hemp sesbania is flowering and prior to early boot stage of rice	Hemp sesbania	Do not mix acifluorfen with oils, drift control agents, liquid fertilizers or other pesticides. Apply in 5 to 10 gallons water. See label for other restrictions. Add a nonionic surfactant at 0.25% v/v.
bensulfuron – 0.038 to 0.06 lb/A	Londax 60 DF — 1 to 1.6 oz/A	Apply to flooded field with submerged weeds	Aquatic weeds	Apply after flood but before weeds reach 3-leaf stage. Hold water static for at least 7 days after application. Add a nonphytotoxic crop oil concentrate at 1% v/v or nonionic surfactant at 0.25% v/v.
bispyribac-sodium – 0.034 lb/A	Regiment 80 WP — 0.67 oz/A	Postflood but before green ring	Barnyardgrass, junglerice (4 tiller up to booting)	See label for list of approved adjuvants. Avoid drift to soybean.
cyhalofop-butyl – 0.25 to 0.28 lb/A	Clincher SF 2.38 EC — 13.5 to 15 oz/A	Postflood	Annual grasses	Mixing with broadleaf or sedge herbicides can result in loss of grass control. Do not exceed 25 ounces per acre per year. Add a nonphytotoxic crop oil concentrate or methylated seed oil at 1 quart per acre.
halosulfuron – 0.47 to 0.63 lb/A	halosulfuron 75% formulation — 1 to 1.33 oz/A	Postflood to 48 days before harvest	Hemp sesbania, jointvetch, flatsedge	Avoid drift to soybean. Do not apply more than 1.3 ounces per acre in a season. Add a nonionic surfactant at 0.25% v/v or a crop oil concentrate at 1% v/v.
halosulfuron + prosulfuron – 0.049 to 0.099 lb/A	Gambit 79 WG — 1 to 2 oz/A	Postflood to 48 days before harvest	Pennsylvania smartweed, yellow nutsedge, annual weeds	Do not apply within 48 days of harvest. Avoid drift to soybean. Do not exceed 2 ounces per acre per year. Soybean may not be planted for 10 months after Gambit application. Add a nonionic surfactant at 0.25% v/v or a crop oil concentrate or methylated seed oil at 1% v/v.
orthosulfamuron – 0.065 lb/A	Strada 50 WG — 2.1 oz/A	Postflood before 0.5-inch internode elongation	Hemp sesbania, northern jointvetch	See label for surfactant requirements. This product is used to prevent black seed production by hemp sesbania and northern jointvetch.
orthosulfamuron + halosulfuron – 0.084 + lb/A	Strada PRO 54 WG — 2.5 oz/A	Postflood before 0.5-inch internode elongation	Hemp sesbania, northern jointvetch	See label for surfactant requirements. This product is used to prevent black seed production by hemp sesbania and northern jointvetch.

RED/WEEDY RICE CONTROL. Take steps to prevent the introduction of this weed into rice fields. These steps include use of rice seed free of red/weedy rice, cleaning equipment before entering uninfested fields, and hand-roguing of light infestations. Where severe infestations occur, several cycles of a 2-year soybean rotation with rice are suggested. During the years out of rice, strive for 100% red/weedy rice control. Use a combination of preemergence and postemergence herbicides. A combination of shallow spring and fall disking in conjunction with clod disruption also should be used to reduce the soil seedbank. When rice is planted, an early-season variety should be used. It should be planted late to allow for additional spring tillage and seeded at a rate that allows a good competitive stand. The early-season varieties mature earlier, thereby limiting the amount of red/weedy rice that shatters before harvesting, as well as extending the time interval for additional fall tillage.

orthosulfamuron + quinclorac – 0.28 to 0.44 lb/A	Strada XT2 70 WG — 6.5 to 10 oz/A	Postflood before 0.5-inch internode elongation	Barnyardgrass, broadleaf signalgrass, hemp sesbania, morningglory, northern jointvetch	See <i>Special Instructions and Remarks</i> for quinclorac. See label for surfactant requirements. Only one application is allowed per year. Do not apply on precision-leveled land until the second rice crop.
penoxsulam – 0.036 to 0.044 lb/A	Grasp 2 SC — 2.3 to 2.8 oz/A	Postflood to 60 days before harvest but before heading if targeting barnyardgrass	Barnyardgrass (prior to heading), hemp sesbania, jointvetch, ducksalad	Emergency salvage treatment. Regrowth of treated weeds may occur. Add a nonphytotoxic crop oil concentrate or methylated seed oil adjuvant at 1 quart per acre.
propanil + triclopyr – 2 to 3 lb/A + 0.25 to 0.38 lb/A	Various formulations (see product label for specific rates) — 2 to 3 qt/A + Grandstand 3 SL — 0.5 to 1 pt/A	Postflood before 0.5-inch internode elongation	Broadleaf weeds, including hemp sesbania less than 5 feet tall	See <i>Special Instructions and Remarks</i> for propanil and Grandstand. Consult propanil label concerning adjuvant use. Floodwater should cover the soil surface and root area of treated plants.
Preharvest				
carfentrazone – 0.025 lb/A	Aim 2 EC — 1.5 oz/A	Rice moisture content is ≤ 25%	Morningglory	Aim labeling requires application at least 3 days before harvest. Add a nonionic surfactant at 0.25% v/v or a nonphytotoxic crop oil concentrate at 1% v/v.
sodium chlorate – 4.5 lb/A	Various formulations (see product label for specific rates)	7 days before harvest	Desiccation of weeds and lodged rice	Allow 7 days between application and harvest. Apply in 10 gallons water per acre.

Small Grain Weed Management

Weed Response Ratings for Herbicides Applied in Small Grains¹

	Herbicide group numbers	Annual bluegrass	Carolina foxtail	Cheat	Italian ryegrass	Little barley	Buttercup	Chickweed	Coreopsis	Curly dock	Cutleaf evening-primrose	Henbit	Horseweed	Mayweed	Mustard species	Shepherds-purse	Vetch	Virginia pepperweed	Wild garlic
2,4-D	4	0	0	0	0	0	9	7	8	8	9	7	9	6	8	7	9	9	7
Anthem Flex	14, 15	9	9	9	9	9	7	7	-	-	-	8	7	-	-	7	0	-	2
Axial Bold	1, 1	6	7	8	8	-	0	0	0	0	0	0	0	0	0	0	0	0	0
Axial XL	1	1	3	4	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Axiom	5, 15	9	0	5	6	2	8	8	-	2	2	8	9	-	9	8	5	-	0
Dicamba	4	0	0	0	0	0	9	8	-	9	6	7	9	-	-	8	9	9	-
Finesse Cereal and Fallow	2, 2	9	-	-	7	3	9	9	-	8	9	9	-	-	-	9	3	-	5
Harmony Extra	2	0	0	0	0	0	9	8	8	9	8	6	7	9	9	9	9	6	8
Huskie	6, 27	0	-	0	-	-	-	9	-	8	8	8	9	9	9	8	-	9	0
MCPA	4	0	0	0	0	0	9	6	8	5	9	9	7	6	7	7	9	9	7
Metribuzin	5	9	6	7	3	7	8	9	6	0	0	7	8	5	7	4	0	9	0
Osprey	2	9	9	3	9	5	7	6	-	7	6	8	4	3	5	7	5	-	5
Osprey Xtra	2, 2	9	9	3	8	5	7	6	-	0	0	5	4	3	5	7	7	-	0
Peak	2	4	0	0	0	0	8	8	-	8	8	8	7	8	6	7	8	-	8
PowerFlex HL	2	5	8	8	9	5	8	9	8	7	7	9	3	9	9	8	8	8	5
Prowl H ₂ O	3	8	6	3	6	3	6	6	2	0	4	8	5	0	8	6	0	-	0
Quelex	2, 4	0	0	0	0	0	9	7	6	-	9	9	9	8	7	8	7	8	6
Sentrallas	2, 4	7	7	7	8	7	3	-	-	-	-	-	-	-	-	-	-	-	-
Zidua or Zidua SC	15	9	9	9	9	9	7	8	-	-	-	8	7	-	-	7	0	-	2

Rating Scale: 0–3 = none to slight; 4–6 = fair; 7–8 = good; 9–10 = excellent.

¹Control expected under optimum conditions. Mississippi State University does not guarantee these estimates since many factors influence herbicide performance. Resistance to recommended use rates of some herbicides has been identified in certain weed species in Mississippi (See Herbicide-Resistant Weed Management Section). Ratings reflect expected control of herbicide-susceptible populations.

Small Grain Weed Management

Situation and active ingredient rate per broadcast acre	Formulated product per broadcast acre	Time of application	Weeds controlled	Special instructions and remarks
Preplant/Preemergence (Wheat or Barley)				
chlorsulfuron + metsulfuron – 0.0094 to 0.023 lb/A	Finesse Cereal and Fallow 75 DF — 0.2 to 0.5 oz/A	Preplant or preemergence	Broadleaf weeds, annual bluegrass, volunteer corn, non-ALS resistant Italian ryegrass	Do not apply to soils with a pH above 7.9. Minimum rotational cropping interval for STS soybean is 6 months; non-STs soybean, corn, sorghum, and cotton require 18 months. Annual bluegrass and Italian ryegrass activity may be improved with sequential application of metribuzin. Wheat planted less than 1 inch deep (broadcast seeding) is more susceptible to crop injury.
Delayed Preemergence to Early Postemergence (Wheat)				
pyroxasulfone – 0.05 to 0.08 lb/A	Zidua 85 WG — 1 to 1.5 oz/A or 4 SC — 1.75 to 4 oz/A	Delayed preemergence after wheat seeds have germinated and have shoots longer than 0.5 inch, up until the 4th tiller stage	Italian ryegrass, annual bluegrass, annual weeds	Wheat must be planted with a drill to ensure complete seed coverage and sufficient seeding depth (0.5 to 1.5 inches) to minimize crop injury. Crop residue covering more than 25% of the soil surface may reduce herbicide effectiveness. This herbicide will not control germinated or emerged weeds.
pyroxasulfone + carfentrazone – 0.063 to 0.141 lb/A	Anthem Flex 4 SC — 2 to 4.5 oz/A	Delayed preemergence after wheat seeds have germinated and have shoots longer than 0.5 inch, up until the 4th tiller stage	Italian ryegrass, annual bluegrass, annual weeds	Wheat must be planted with a drill to ensure complete seed coverage and sufficient seeding depth (0.5 to 1.5 inches) to minimize crop injury. Crop residue covering more than 25% of the soil surface may reduce herbicide effectiveness. This herbicide will not control germinated or emerged weeds.
Postemergence (Wheat, Oats, Barley, Rye)				
2,4-D amine – 0.48 to 0.96 lb/A; 2,4-D LV esters – 0.21 to 0.5 lb/A; or 2,4-D acid formulation – 0.21 to 0.7 lb/A	Various formulations (see product label for specific rates)	From full tillering until stem elongation	Wild mustard, vetch, but-tercup, and pepperweed	Apply to emerged and actively growing weeds. This treatment may be applied in combination with liquid nitrogen fertilizer. Oats are less tolerant to 2,4-D than wheat. Do not apply when grains are in boot to dough stage. The low-volatile ester formulation should be used where wild garlic and/or onions are a problem. Provides poor control of henbit and curly dock.
2,4-D + dicamba – 0.50 + 0.13 lb/A	Various formulations (see product labels for specific rates)	From full tillering until stem elongation	Wild mustard, vetch, but-tercup, and pepperweed	See <i>Special Instructions and Remarks</i> for 2,4-D. See the label for injury precautions and grazing restrictions for lactating dairy cows. Add nonionic surfactant at 0.25% v/v. Provides poor control of wild garlic, henbit, and curly dock.
2,4-D acid + dicamba acid – 0.13 + 0.3 lb/A	Latigo 4.2 L — 1 pt/A	From full tillering until stem elongation	Wild mustard, vetch, but-tercup, and pepperweed	Consult label for application instructions, injury precautions, and grazing restrictions.
MCPA – 0.23 to 0.77 lb/A	Various formulations (see product label for specific rates)	From 3- to 4-leaf stage up to early boot stage	Wild mustard, vetch, but-tercup, and pepperweed	Apply to emerged and actively growing weeds. Do not apply from boot to dough stage.
Early Postemergence (Wheat, Barley, Rye, Triticale)				
pyrasulfotole + bromoxynil – 0.18 to 0.24 lb/A	Huskie 2.06 EC — 11 to 15 oz/A	From 1-leaf up to flag leaf stage	Broadleaf weeds	Check the label for weeds that are controlled and those that are only partially controlled. Use 80- to 110-degree flat-fan nozzles that deliver medium spray droplets and 50-mesh or larger screens. Do not use flood-jet or cone nozzles. Check the label for aerial application instructions.
Postemergence (Wheat)				
flufenacet + metribuzin – 0.17 to 0.43 lb/A	Axiom 68 DF — 4 to 10 oz/A	From spiking to 2-leaf wheat stage	Broadleaf weeds, annual bluegrass, and ryegrass	Wheat seed must be planted 1 to 2 inches deep (generally best achieved by drill-planting, rather than broadcast seeding). Axiom rate varies with soil texture and must be applied preemergence to weeds. Apply as a broadcast spray by ground equipment at 10 or more gal per acre. Do not add crop oil concentrate or other oil-based adjuvants with mixtures. Do not allow animal grazing for 30 days after application.

Small Grain Weed Management

Situation and active ingredient rate per broadcast acre	Formulated product per broadcast acre	Time of application	Weeds controlled	Special instructions and remarks
mesosulfuron – 0.013 lb/A	Osprey 4.5 WDG — 4.75 oz/A	From wheat emergence through jointing	Non-ALS resistant Italian ryegrass, annual bluegrass	Wheat injury may occur if nitrogen is applied within 14 days of application. Do not apply within 30 days of forage harvest or within 60 days of hay, grain, and straw harvest. Application must include (1) methylated seed oil at 1.3 to 1.5 pints of per acre; or (2) a nonionic surfactant at 0.5% v/v plus either ammonium sulfate (1.5 to 3 pounds per acre) or urea-ammonium nitrate (1 to 2 quarts per acre).
metribuzin – 0.094 to 0.14 lb/A	metribuzin 75% formulation — 2 to 3 oz/A or 4 lb/gal formulation — 3 to 4.5 oz/A	During fall when wheat is actively growing and has at least 2 leaves and 1-inch secondary roots	Annual bluegrass and annual broadleaf species	Crop tolerance to metribuzin may vary depending upon variety, wheat health, and root development. Seed planted less than 1 inch deep (broadcast seeding) are more susceptible to crop injury. Do not use on soils with less than 0.75% organic matter. Do not use crop oil concentrate or any adjuvant containing vegetable or petroleum oils. Do not apply in combination with fluid fertilizer.
pendimethalin – 0.71 to 1.43 lb/A	pendimethalin 3.8 lb/gal formulation — 1.5 to 3 pt/A or 3.3 lb/gal formulation — 1.7 to 3.5 pt/A	From 1-leaf wheat stage up to before flag leaf is visible	Italian ryegrass, annual grasses and broadleaf weeds	Seed should be planted at least 0.5 to 1 inch deep to avoid crop injury. Pendimethalin may be mixed with postemergence herbicides because it only provides residual control. Plant residue may inhibit weed control, so only use in tilled seedbeds. Rate is dependent upon soil texture. Apply no more than 2 pints per acre on coarse-textured soils.
pyroxsulam – 0.26 lb/A	PowerFlex HL 13 DG — 2 oz/A	From 3-leaf wheat stage up to joint	Italian ryegrass, annual grasses and broadleaf weeds	Do not mix with dicamba, 2,4-D amine, MCPA, or organophosphate insecticides. Do not apply organophosphate products for 5 days before or 5 days after application. Do not use on wheat varieties sensitive to ALS herbicides. Consult label for specific instructions on crop rotation restrictions, tank mix compatibility, tank cleanout, application with liquid N fertilizer, and harvest and grazing intervals. Add nonionic surfactant at 0.25% v/v.
Postemergence (Wheat, Barley)				
pinoxaden – 0.053 lb/A	Axial XL 0.42 EC — 16.4 oz/A	From 2-leaf stage up to pre-boot	Italian ryegrass, annual bluegrass	Additional surfactant is not required. Apply to small, actively growing Italian ryegrass. Axial XL may be mixed in spray solution containing up to 50% nitrogen fertilizer. Only one application is allowed per crop season. Do not graze or harvest forage for hay for 30 days after application. Do not harvest for grain or straw for livestock feed within 60 days of application.
pinoxaden + fenoxaprop – 0.08 lb/A	Axial Bold 0.69 EC — 15 oz/A	Postemergence; see <i>Special Instructions and Remarks</i>	Annual bluegrass, Italian ryegrass, and other annual grasses	Do not apply to crop stressed by frost, low fertility, flooding, or damage. For winter wheat, apply from emergence to preboot stage. For barley, apply from emergence to until prior to jointing. Do not apply to barley after jointing.
Postemergence (Wheat, Oats, Barley)				
thifensulfuron + fluroxypyr – 0.084 – 0.17 lb/A	Sentrallas 1.55 SC — 7 to 14 oz/A for wheat and barley or 7.9 oz/A for oats	Postemergence after two-leaf stage but prior to flag leaf emergence	Curly dock, Carolina geranium, smartweed	Do not apply more than 14 ounces per acre in a single application to wheat and barley and more than 9 ounces per acre in a single application to oats. Add nonionic surfactant at 0.25% v/v or nonphytotoxic crop oil concentrate or methylated seed oil at 1% v/v.
Postemergence (Wheat, Barley, Triticale)				
halauxifen + florasulam – 0.0096 lb/A	Quelex 20 WDG — 0.75 oz/A	Postemergence to weeds less than 4 inches tall and with 2 to 4 leaves	Horseweed, henbit, purple deadnettle, buttercup, Carolina geranium, wild mustard, shepherd's-purse	Do not apply more than 0.75 ounces per acre per season. Do not apply in more than two consecutive seasons. When applied alone, add nonionic surfactant at 0.2 to 0.5% v/v or nonphytotoxic crop oil concentrate or methylated seed oil at 1% v/v.
Postemergence (Wheat, Oats, Rye)				
prosulfuron – 0.018 lb/A	Peak 57 WDG — 0.5 oz/A	From 3-leaf stage until stem elongation	Broadleaf weeds, wild garlic	See label concerning mixtures with dicamba and restrictions. Do not plant cotton or non-STs soybean for 10 months after application. Do not graze or feed forage for 30 days after application. Do not harvest for grain and silage for 60 and 40 days after application, respectively. Add nonionic surfactant at 0.25% v/v.

Small Grain Weed Management

Situation and active ingredient rate per broadcast acre	Formulated product per broadcast acre	Time of application	Weeds controlled	Special instructions and remarks
Postemergence (Wheat, Oats, Triticale, Barley)				
thifensulfuron + tribenuron – 0.014 to 0.028 lb/A	Harmony Extra 50 SG with TotalSol — 0.45 to 0.9 oz/A	From 2-leaf wheat stage up to before flag leaf is visible	Broadleaf weeds, wild garlic, curly dock	Apply to actively growing annual broadleaf weeds less than 4 inches tall. For wild garlic control, use 0.75 to 0.9 ounces per acre when weeds are less than 12 inches tall with 2 to 4 inches of new growth. Two applications may be made per crop season if total does not exceed 1.5 ounces per acre. For oats, use 0.45 to 0.6 ounces per acre. Add nonionic surfactant at 0.25% v/v unless liquid N comprises at least 50% of the spray volume.
Postemergence (Wheat, Triticale)				
mesosulfuron + thiencarbazone – 0.018 lb/A	Osprey Xtra 6 WDG — 4.75 oz/A	Postemergence from emergence to jointing	Annual bluegrass, wild oat, wild mustard, wild raddish	Use only on winter wheat or fall-sown triticale. Do not apply within 30 days of harvesting or grazing wheat or triticale forage and 60 days for hay, grain, or straw. Wheat injury may occur if nitrogen fertilizer is applied with 14 days of application. Add nonionic surfactant at 0.5% v/v and urea-ammonium nitrate at 1 to 2 quarts per acre or ammonium sulfate at 1.5 to 3 pounds per acre.
Preharvest (Wheat)				
carfentrazone – 0.016 to 0.032 lb/A	Aim 2 EC — 1 to 2 oz/A	After wheat has reached 30% grain moisture and at least 3 days before harvest	Broadleaf weeds	Thorough spray coverage is essential for satisfactory performance. Do not apply more than 2 ounces per season. Aim may be mixed with glyphosate to improve control of grasses and other weeds. Add a nonionic surfactant at 0.25% v/v or a crop oil concentrate at 1% v/v.
glyphosate – 1 lb/A	Various formulations (see product label for specific rates)	After wheat has reached 30% grain moisture and at least 7 days before harvest	Annual grasses and broadleaf weeds	Do not use on wheat grown for seed. Avoid drift to nearby crops that are not glyphosate tolerant.
Preharvest (Wheat, Barley, or Triticale)				
saflufenacil – 0.022 to 0.044 lb/A	Sharpen 2.85 SC — 1 to 2 oz/A	After wheat has reached 30% grain moisture and at least 3 days before harvest	Broadleaf weeds	Do not apply on labeled crops grown for seed production. Thorough spray coverage is essential for satisfactory performance. Allow up to 7 days for optimum desiccation, depending upon environmental conditions. May be mixed with glyphosate to improve control of grasses and other weeds. Add methylated seed oil at 1% v/v plus ammonium sulfate.

Soybean Weed Management

Weed Response Ratings for Soybean Herbicides Applied Postemergence¹

	Herbicide group numbers	Barnyardgrass	Broadleaf signalgrass	Crabgrass	Fall panicum	Goosegrass	Johnsongrass—rhizome	Johnsongrass—seedling	Volunteer glyphosate-resistant corn	Yellow nutsedge	Balloonevine	Cocklebur	Common ragweed	Cutleaf groundcherry	Hemp sesbania	Hophornbeam copperleaf	Jimsonweed	Morningglory—entireleaf	Morningglory—palmleaf	Morningglory—pitted	Morningglory—small-flower	Palmer, spiny amaranth, waterhemp	Pennsylvania smartweed	Prickly sida	Purple moonflower	Purslane	Showy crotonaria	Sicklepod	Smooth, redroot pigweed	Spurge	Spurred anoda	Velvetleaf	Wild poinsettia	Crop tolerance (G = good, F = Fair)	
Acifluorfen	14	3	4	3	2	3	2	3	-	3	8	5	8	9	9	8	8	8	9	9	8	7	7	1	9	8	9	3	8	7	2	-	7	G	
Acifluorfen + 2,4-DB	14, 4	3	4	3	2	3	2	3	-	-	8	7	8	9	9	8	8	8	9	9	8	7	7	1	9	8	9	3	8	7	-	-	8	F	
Bentazon	6	0	0	0	0	0	0	0	-	6	8	9	9	6	4	0	8	2	7	6	9	4	9	8	3	7	0	0	5	0	8	9	7	G	
Bentazon + 2,4-DB	6, 4	0	0	0	0	0	0	0	-	6	8	9	9	6	5	0	8	5	9	8	9	4	9	8	5	7	0	0	5	0	8	9	6	F	
Chlorimuron	2	0	0	0	0	0	0	0	-	6	5	10	8	-	8	4	9	9	9	8	8	6	9	2	9	5	-	7	10	0	4	8	8	G	
Clethodim	1	9	9	9	8	9	7	9	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	G
Cobra	14	4	4	4	3	3	2	3	-	3	9	8	8	9	9	8	9	8	8	9	8	8	6	8	9	9	9	5	9	8	6	8	8	F	
FirstRate	2	0	0	0	0	0	0	0	-	6	-	9	8	-	3	4	-	8	8	9	9	2	-	2	-	-	-	7	2	4	-	7	-	G	
Fomesafen	14	3	3	3	2	3	3	3	-	6	8	8	8	9	9	8	9	8	8	9	8	8	7	2	9	8	9	3	9	5	2	-	8	G	
Fusilade DX	1	8	8	8	8	9	9	9	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	G
Glufosinate ²	10	7	7	7	7	5	7	8	9	4	9	9	9	6	8	8	8	9	9	9	8	7	9	7	-	6	-	8	8	8	7	7	-	G	
Glyphosate ³	9	9	9	9	9	8	8	9	-	6	8	10	9	9	7	8	8	7	8	8	9	8	8	7	8	8	8	8	9	8	7	7	9	G	
Permit Plus ⁴	2	0	0	0	0	0	0	0	0	9	-	8	8	-	9	-	-	-	-	-	-	-	8	-	-	-	-	-	-	-	-	8	-	G	
Perpetuo	14, 15	9	8	9	9	8	4	6	2	0	-	-	6	-	8	5	7	-	-	-	-	8	7	7	-	9	3	7	9	4	3	3	5	G	
Poast	1	8	9	9	9	9	7	9	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	G
Prefix	14, 15	3	3	3	2	3	3	3	-	7	8	8	6	8	9	9	0	8	8	9	8	8	7	2	9	8	8	9	9	8	2	9	6	G	
Quizalofop	1	9	9	9	9	8	8	9	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	G
Scepter	2	2	2	3	5	3	5	6	-	5	0	10	6	-	2	3	0	5	6	6	7	6	7	3	5	9	0	3	10	3	2	3	7	G	
Storm	6, 14	3	4	3	2	3	3	0	-	6	8	9	9	9	9	7	8	8	9	9	9	7	8	7	7	8	9	2	8	6	7	8	6	G	
Sequence	9, 15	9	9	9	9	8	8	9	-	7	8	10	9	9	7	8	8	7	8	8	9	9	8	7	8	8	8	8	9	8	7	7	9	G	
Synchrony XP ⁴	2	8	8	8	9	7	0	6	-	7	-	9	-	0	8	7	7	9	9	9	9	8	8	6	7	8	-	-	8	8	-	8	0	G	
Warrant Ultra	14, 15	8	8	7	9	7	3	5	3	0	7	-	7	7	8	5	-	4	5	8	5	8	7	7	4	9	3	7	9	3	2	2	6	G	
Postemergence-Directed																																			
2,4-DB	4	0	0	0	0	0	0	0	-	0	1	9	1	0	3	2	4	9	9	9	9	2	0	3	9	3	-	0	2	0	2	3	3	G	
Linuron	7	7	7	8	7	7	0	7	-	-	8	7	8	8	8	7	7	8	8	8	8	8	7	8	7	8	-	7	8	7	8	6	7	G	
Linuron + 2,4-DB	7, 4	7	7	8	7	7	0	7	-	2	9	9	9	10	8	9	8	10	9	9	10	9	7	8	9	9	-	9	9	7	8	7	8	G	
Metribuzin	5	7	7	8	-	7	0	7	-	0	8	8	7	7	7	-	-	7	7	7	7	8	7	8	7	-	-	8	8	4	8	8	5	G	
Metribuzin + 2,4-DB	5, 4	7	7	8	-	7	0	7	-	0	9	9	8	8	7	8	7	9	9	9	9	8	7	8	8	3	-	9	8	4	8	8	7	G	
Paraquat (2 applications)	22	9	9	9	8	8	0	8	-	3	2	4	8	7	1	7	7	5	6	4	7	8	5	4	4	8	-	8	8	5	3	6	8	G	

Rating Scale: 0-3 = none to slight; 4-6 = fair; 7-8 = good; 9-10 = excellent.

¹Control expected under optimum conditions. Mississippi State University does not guarantee these estimates since many factors influence herbicide performance. Resistance to recommended use rates of some herbicides has been identified in certain weed species in Mississippi (See Herbicide-Resistant Weed Management Section). Ratings reflect expected control of herbicide-susceptible populations

²Enlist, LibertyLink, or LibertyLink GT27 soybean varieties only.

³Enlist, LibertyLink GT27, Roundup Ready 2, Roundup Ready 2 Xtend, and Roundup Ready 2 XtendFlex soybean varieties only.

⁴BOLT or STS soybean cultivars only.

Soybean Weed Management

Herbicide Rates for Preemergence Application in Soybean

Herbicide	Formulation	Sandy loam, sandy loam	Loam, silt, silt loam, sandy clay, sandy clay loam	Silty clay, clay loam, silty clay loam, clay
Metolachlor	8 EC	1.5 to 2 pt/A	2 to 2.5 pt/A	2 to 2.5 pt/A
S-metolachlor	7.62 EC	1 to 1.33 pt/A	1.33 to 1.67 pt/A	1.33 to 1.67 pt/A
Metribuzin	75 DF	0.33 to 0.5 lb/A	0.5 to 0.67 lb/A	0.67 to 0.83 lb/A
	4 L	0.5 to 0.75 pt/A	0.75 to 1 pt/A	1 to 1.25 pt/A

Herbicide Rates for Controlling Grasses with Postemergence Herbicide Applications

Grass species	Fusilade DX		Quizalofop		Poast	
	Grass size (in)	Rate (oz/A)	Grass size (in)	Rate (oz/A)	Grass size (in)	Rate (oz/A)
Barnyardgrass	1 to 2	12	2 to 6	8	1 to 8	24
Bermudagrass Second application	4 to 8	12	3	10	1 to 6	36
	4 to 8	8	3	7	1 to 4	24
Broadleaf signalgrass	2 to 4	12	2 to 6	8	1 to 8	24
Crabgrass	1 to 2	12	2 to 6	8	1 to 6	24
Goosegrass	2 to 4	8	2 to 6	8	1 to 6	24
Red rice	1	16	1 to 4	9	1 to 4	48
Rhizome johnsongrass Second application	8 to 18	12	10 to 24	10	15 to 20	24
	6 to 12	8	6 to 10	7	6 to 10	24
Seedling johnsongrass	2 to 8	6	2 to 8	5	1 to 8	24
Volunteer corn	12 to 24	6	8 to 18	5	12 to 20	24 to 36

Soybean Weed Management

Situation and active ingredient rate per broadcast acre	Formulated product per broadcast acre	Time of application	Weeds controlled	Special instructions and remarks
Preplant Incorporated				
pendimethalin – 0.5 to 0.75 to 1.0 lb/A	pendimethalin 3.8 lb/gal formulation — 1 to 1.5 to 2 pt/A or 3.3 lb/gal formulation — 1.2 to 1.8 to 2.4 pt/A	Preplant or preemergence	Annual grasses and some small-seeded broadleaf weeds such as pigweeds and purslane	Immediately incorporate 1 to 2 inches deep. Loss of 15% can be expected if incorporation is delayed 24 hours. If stand failure occurs, replant soybean, but do not re-treat. Increase rate by 0.5 pint on medium-textured soils and 1 pint on fine-textured soils if heavy weed populations are anticipated.
trifluralin – 0.5 to 0.75 to 1 lb/A	trifluralin 4 lb/gal formulation — 1 to 1.5 to 2 pt/A	Preplant or preemergence	Annual grasses and some small-seeded broadleaf weeds such as pigweeds and purslane	Immediate incorporate 1 to 2 inches deep. Loss of 30% can be expected if incorporation is delayed 24 hours. If stand failure occurs, replant soybean, but do not re-treat.
Preplant or Preemergence				
acetochlor + fomesafen – 1.29 to 1.89 lb/A	Warrant Ultra 3.45 CS – 48 to 70 oz/A	Preplant or preemergence	Annual grasses and broadleaf weeds	Mix with glyphosate, paraquat, or glufosinate to control emerged vegetation. Mechanical incorporation is not recommended. Application with other herbicides or during periods of cold, wet weather may increase potential for crop injury.
clomazone – 1.0 to 1.25 lb/A	clomazone 3 lb/gal formulation — 2.6 to 3.3 pt/A	Preemergence	Annual grasses, prickly sida, purslane, spotted spurge, velvetleaf, wild poinsettia	Mix with glyphosate, paraquat, or glufosinate to control emerged vegetation. Do not (1) apply within 1,500 feet of towns, subdivisions, commercial vegetables, greenhouses, or nurseries; (2) graze or feed forage, hay, or straw from treated fields to livestock. Select rates according to soil texture and weed pressure.
cloransulam – 0.032 to 0.039 lb/A	FirstRate 84 DG — 0.6 to 0.75 oz/A	Within 2 weeks of planting for preplant applications or within 2 days after planting for PRE applications	Horseweed, morningglory, prickly sida, common ragweed, giant ragweed, smartweed, velvetleaf	At least 0.5 inch rainfall needed for incorporation. Mix with glyphosate or other nonselective herbicides to improve control of emerged vegetation. Mix with soil-applied herbicides to improve residual weed control.
dimethenamid-P – 0.47 to 0.98 lb/A	Outlook 6 EC — 10 to 21 oz/A	Preplant or preemergence	Annual grasses and some small-seeded broadleaf weeds	Mix with glyphosate, paraquat, or glufosinate to control emerged vegetation. Provides poor control of most large-seeded broadleaf weeds. May cause temporary growth suppression of soybean with high rainfall and water-saturated soil. Do not use more than 21 ounces of Outlook per season.
fomesafen – 0.25 to 0.38 lb/A	fomesafen 2 or 1.88 lb/gal formulation — 1 to 1.5 pt/A	Preemergence	Small-seeded broadleaf weeds, especially pigweeds and prickly sida	Mix with glyphosate, paraquat, or glufosinate to control emerged vegetation. Do not exceed a cumulative total of 0.375 pound of fomesafen per acre per year. Sufficient weed control depends on adequate rainfall for incorporation. Temporary injury to soybean can result if rainfall occurs soon after crop emergence; new soybean growth emerging after rainfall will be normal.
flumetsulam – 0.05 to 0.067 oz/A	Python 80 WDG — 1.0 to 1.33 oz/A	Preemergence	Annual broadleaf weeds	Do not (1) apply more than 1.4 ounces of Python in a year; (2) exceed 0.07 lb flumetsulam per year; (3) apply to soils with a pH of 7.8 or higher; (4) aerially apply.
flumioxazin – 0.063 to 0.096 lb/A	flumioxazin 51% formulation — 1 to 2.5 oz/A or 4 lb/gal formulation — 1 to 2.6 oz/A	Preplant or preemergence	Prickly sida, morningglory, pigweeds, horseweed; other annual broadleaf weeds	Mix with glyphosate, paraquat, or glufosinate to control emerged vegetation. Soybean injury is possible under cool and wet conditions following planting or when incorporating rainfall occurs as seedlings are cracking. To reduce likelihood of injury, use flumioxazin as a preplant herbicide and allow rainfall to occur before planting. Injury may occur if flumioxazin is used in the same field where flufenacet, metolachlor/s-metolachlor, or dimethenamid-P will be used.
flumioxazin + chlorimuron – 0.076 lb/A	Valor XLT 40.3 WDG — 3 oz/A	Preplant or preemergence	Prickly sida, morningglory, pigweed, horseweed; other annual broadleaf weeds	See <i>Special Instructions and Remarks</i> for flumioxazin. Mix with glyphosate, paraquat, or glufosinate to control emerged vegetation. Valor XLT has increased morningglory, annual grass, cocklebur, and sicklepod control and longer residual control of glyphosate-resistant horseweed (marestail).

Soybean Weed Management

Situation and active ingredient rate per broadcast acre	Formulated product per broadcast acre	Time of application	Weeds controlled	Special instructions and remarks
flumioxazin + chlorimuron + thifensulfuron – 0.065 to 0.1 lb/A	Envive 41.3 WDG — 2.5 to 4 oz/A	Preplant or preemergence	Prickly sida, morningglory, pigweed, horseweed; other annual broadleaf weeds	See <i>Special Instructions and Remarks</i> for Valor XLT and flumioxazin. Mix with glyphosate, paraquat, or glufosinate to control emerged vegetation. Do not apply more than 4 ounces per season.
flumioxazin + chlorimuron + metribuzin – 0.23 to 0.34 lb/A	Trivence 61.3 WDG — 6 to 9 oz/A	Preplant or preemergence	Prickly sida, morningglory, pigweed, horseweed; other annual broadleaf weeds	See <i>Special Instructions and Remarks</i> for Valor XLT, flumioxazin, and metribuzin. Mix with glyphosate, paraquat, or glufosinate to control emerged vegetation. Do not apply more than 9 ounces per season. Do not apply to Black Belt soils with a pH > 7.0 or history of nutrient deficiency such as iron chlorosis.
flumioxazin + pyroxasulfone – 0.14 to 0.18 lb/A	Fierce 76 WDG — 3 to 3.75 oz/A or Fierce EZ 3 SC — 6 to 7.7 oz/A	Preplant or preemergence	Prickly sida, morningglory, pigweed, crabgrass, barnyardgrass; other annual grass and broadleaf weeds	See <i>Special Instructions and Remarks</i> for flumioxazin. Mix with glyphosate, paraquat, or glufosinate to control emerged vegetation. Do not apply more than 3.75 ounces of Fierce 76 WDG per season.
flumioxazin + pyroxasulfone + chlorimuron – 0.15 to 0.2 lb/A	Fierce XLT 62.4 WDG — 3.75 to 5.25 oz/A	Preplant or preemergence	Prickly sida, morningglory, pigweed, crabgrass, barnyardgrass; other annual grass and broadleaf weeds	See <i>Special Instructions and Remarks</i> for flumioxazin and Valor XLT. Mix with glyphosate, paraquat, or glufosinate to control emerged vegetation. Do not apply more than 3.75 ounces per acre on soils with pH greater than 6.8.
flumioxazin + pyroxasulfone + metribuzin – 0.33 to 0.5 lb/A	Fierce MTZ 2.64 SC — 1 to 1.5 pt/A	Preplant or preemergence	Annual grasses and broadleaf weeds	Mix with glyphosate, paraquat, or glufosinate to control emerged vegetation. Do not apply more than 1.5 pints per acre per year. Do not make more than one application per year.
imazaquin – 0.125 lb/A	Scepter 70 DG — 2.86 oz/A	Preemergence	Cocklebur, morningglory, prickly sida, smartweed, and common ragweed	Mix with glyphosate, paraquat, or glufosinate to control emerged vegetation. Sufficient weed control depends on adequate rainfall for incorporation. In no-till or double-crop following wheat, use at least 20 gallons water. Add a nonionic surfactant at 0.25% v/v.
metolachlor – 1.5 to 2.5 lb/A or s-metolachlor – 0.95 to 1.6 lb/A	Various formulations (see table at beginning of section for specific rates by soil texture)	Preemergence	Annual grasses and some small-seeded broadleaf weeds	Mix with glyphosate, paraquat, or glufosinate to control emerged vegetation. Sufficient weed control depends on adequate rainfall for incorporation. If stand failure occurs, do not re-treat unless replanting is in the middles.
s-metolachlor + fomesafen – 1.32 lb/A	Prefix 5.29 EC — 2 pt/A	Preplant or preemergence	Annual grasses and broadleaf weeds	Mix with glyphosate, paraquat, or glufosinate to control emerged vegetation. A maximum of 3 pints per acre can be applied within a single cropping season (includes preemergence and postemergence timings). Injury can occur if Prefix is applied at soybean cracking or after soybean emergence if rainfall occurs after soybean emergence.
s-metolachlor + metribuzin – 0.98 to 2 lb/A	Boundary 6.5 EC — 1.2 to 2.5 pt/A	Preplant or preemergence	Barnyardgrass, crabgrass, pigweed, prickly sida, hemp sesbania; other grass and broadleaf weeds	See <i>Special Instructions and Remarks</i> for metolachlor/s-metolachlor and metribuzin. Do not use rates > 1.5 pints per acre on soils above pH 7.0. Do not use on sands with less than 0.5% organic matter.
s-metolachlor + metribuzin + fomesafen – 1.2 to 2.69 lb/A	Intimidator 4.8 EC — 2 to 4.48 pt/A	Preplant or preemergence	Barnyardgrass, crabgrass, pigweed, prickly sida, hemp sesbania; other grass and broadleaf weeds	Mix with glyphosate, paraquat, or glufosinate to control emerged vegetation. Do not exceed 4.48 pints per acre per season. Do not exceed a cumulative total of 0.375 pound of fomesafen per acre per year.

Soybean Weed Management

Situation and active ingredient rate per broadcast acre	Formulated product per broadcast acre	Time of application	Weeds controlled	Special instructions and remarks
metribuzin – 0.25 to 0.63 lb/A	metribuzin 75% formulation — 5.33 to 13.4 oz/A or 4 lb/gal formulation — 8 to 20 oz/A (see table at beginning of section for specific rates by soil texture)	Preplant or preemergence	Hemp sesbania, prickly sida, early sicklepod; annual grasses and small-seeded broadleaf weeds	Mix with glyphosate, paraquat, or glufosinate to control emerged vegetation. Injury may occur (1) on soils with calcareous surface or pH 7.5 and above, (2) to certain soybean varieties (see label for list), (3) on soil with < 0.5% organic matter, (4) when soybean are planted < 1.5 inches deep, and (5) when heavy rains follow application, especially in poorly drained areas where water may stand several days.
metribuzin + chlorimuron – 0.19 to 0.28 lb/A	Canopy 75 DF — 4 to 6 oz/A	Preplant or preemergence	Cocklebur, hemp sesbania, prickly sida, morningglory, sicklepod, smartweed, ragweed, spotted spurge	See <i>Special Instructions and Remarks</i> for metribuzin. Mix with glyphosate, paraquat, or glufosinate to control emerged vegetation.
pendimethalin – 0.5 to 0.75 to 1.0 lb/A	pendimethalin 3.8 lb/gal formulation — 1 to 1.5 to 2 pt/A or 3.3 lb/gal formulation — 1.2 to 1.8 to 2.4 pt/A	Preplant or preemergence	Annual grasses and some small-seeded broadleaf weeds such as pigweed and purslane	See <i>Special Instructions and Remarks</i> for pendimethalin. Mix with glyphosate, paraquat, or glufosinate to control emerged vegetation. Rainfall or overhead irrigation is needed within 7 days for activity. Seedling diseases, cold weather, excessive moisture, shallow or deep planting, low or high soil pH, high soil salt concentration or drought can weaken seedlings and increase the possibility of crop damage.
pyroxasulfone – 0.08 to 0.18 lb/A	Zidua 85 WDG — 1.5 to 3.5 oz/A or 4 SC — 2.5 to 5.75 oz/A	Preplant or preemergence	Pigweed, crabgrass, barnyardgrass, prickly sida, velvetleaf; other grass and broadleaf weeds	Mix with glyphosate, paraquat, or glufosinate to control emerged vegetation. Do not apply more than 0.11 pound active ingredient per acre on coarse soils or more than 0.19 pound active ingredient per acre ounces on all other soils per cropping season.
pyroxasulfone + carfentrazone – 0.07 to 0. lb/A	Anthem Flex 4 SC — 2.25 to 6.4 oz/A	Preplant or preemergence	Pigweed, crabgrass, barnyardgrass, prickly sida, velvetleaf; other grass and broadleaf weeds	Mix with glyphosate, paraquat, or glufosinate to improve weed control spectrum. Do not apply more than 3.8 ounces per acre on coarse soils or more than 5.45 ounces per acre on medium soils or more than 6.4 ounces per acre on fine soils.
pyroxasulfone + flumiclorac – 0.11 to 0.18 lb/A	Perpetuo 2.3 SC — 6 to 10 oz/A	Preplant or preemergence	Annual grasses and broadleaf weeds	Mix with glyphosate, paraquat, or glufosinate to improve weed control spectrum. Do not apply more than 10 ounces per acre in a single season. Do not apply more than 8 ounces per acre in a single season to coarse soils.
pyroxasulfone + fluthiacet-methyl – 0.067 to 0.185 lb/A	Anthem Maxx 4.3 SC — 2 to 5.5 oz/A	Preplant or preemergence	Pigweed, crabgrass, barnyardgrass, prickly sida, velvetleaf; other grass and broadleaf weeds	Mix with glyphosate, paraquat, or glufosinate to control emerged vegetation. Do not apply more than 3.4 ounces on coarse soils or more than 5.7 ounces on all other soils per cropping season.
pyroxasulfone + sulfentrazone – 0.2 to 0.52 lb/A	Authority Edge 4.25 SC — 5.9 to 15.7 oz/A	Preplant or preemergence	Annual grasses, Palmer amaranth, prickly sida, velvetleaf	Mix with glyphosate, paraquat, or glufosinate to improve weed control spectrum. Do not apply more than 9.4 ounces per acre on coarse soils or more than 15.7 ounces per acre on all other soils.
pyroxasulfone + sulfentrazone – 0.14 to 0.5 lb/A	Authority Supreme 4.16 SC — 4.3 to 15.4 oz/A	Preplant or preemergence	Annual grasses, Palmer amaranth, prickly sida, velvetleaf	Mix with glyphosate, paraquat, or glufosinate to control emerged vegetation. Do not apply more than 15.4 ounces per acre per year. Do not apply more than the cumulative amounts of 0.27 pounds active ingredient per acre of pyroxasulfone and 0.24 pounds active ingredient of sulfentrazone per year.

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Situation and active ingredient rate per broadcast acre	Formulated product per broadcast acre	Time of application	Weeds controlled	Special instructions and remarks
sulfentrazone + cloransulam-methyl – 0.18 to 0.28 lb/A	Sonic or Authority First 70 WDG — 4 to 6.45 oz/A	Preplant or preemergence	Yellow nutsedge, pigweed, prickly sida, morningglory, common ragweed, horseweed	Mix with glyphosate, paraquat, or glufosinate to control emerged vegetation. Do not apply more than 8 ounces per season.
sulfentrazone + carfentrazone-ethyl – 0.15 to 0.23 lb/A	Spartan Charge 3.45 SL — 5.75 to 8.5 oz/A	Preplant or preemergence	Pigweed, morningglory; other broadleaf weeds	Mix with glyphosate, paraquat, or glufosinate to control emerged vegetation. Do not apply more than 8.5 fluid ounces per acre per 12-month period. Soybean chlorosis and stunting may occur at pH 7.5 and above, as well as under cold and wet growing conditions. Do not use on soils classified as sand, which have less than 1% organic matter.
sulfentrazone + flumioxazin – 0.19 to 0.24 lb/A	Zone Defense 77 WDG — 4 to 5 oz/A	Preplant or preemergence	Pigweed, morningglory, prickly sida; other broadleaf weeds	Mix with glyphosate, paraquat, or glufosinate to improve weed control spectrum. Use higher rate for soils with pH less than 7.0 and lower rate for soils with pH greater than 7.0. Injury may occur if excessive rainfall occurs after application but before soybean emergence.
sulfentrazone + s-metolachlor – 1.04 to 2.11 lb/A	Authority Elite 7 SC — 19 to 38.7 oz/A	Preplant or preemergence	Annual grasses and small-seeded broadleaf weeds	Mix with glyphosate, paraquat, or glufosinate to control emerged vegetation. Do not apply after crop emerges. Do not apply more than 38.7 ounces per cropping season.
sulfentrazone + metribuzin – 0.23 to 0.51 lb/A	Authority MTZ 45 DG — 8 to 18 oz/A	Preplant or preemergence	Pigweed, morningglory, prickly sida; other annual broadleaf weeds	See <i>Special Instructions and Remarks</i> for metribuzin. Mix with glyphosate, paraquat, or glufosinate to control emerged vegetation. Do not apply more than 33 ounces per year. Do not apply after soybean emergence or severe injury may occur. Do not apply to soils classified as coarse or having less than 1% organic matter.
sulfentrazone + chlorimuron ethyl – 0.13 to 0.35 lb/A	Authority XL 70 DG — 3 to 8 oz/A	Preplant or preemergence	Pigweed, morningglory, prickly sida; other annual broadleaf weeds	Mix with glyphosate, paraquat, or glufosinate to control emerged vegetation. Do not apply more than 9.6 ounces per year. Do not apply after soybean emergence or severe injury may occur. Do not apply to Black Belt soils with a pH of more than 6.8 or history of nutrient deficiency.
Cultivation: Use so that the soil moved will not interfere with subsequent use of postemergence herbicides. Cultivation within 7 days before or after a postemergence herbicide application may reduce control from that treatment. Deep cultivation (more than 2 inches) is usually not necessary and may damage the crop.				
Postemergence (Enlist varieties)				
2,4-D – 0.71 to 0.95 lb/A	Enlist One 3.8 SL — 1.5 to 2 pt/A	Preemergence or postemergence up to R2 growth stage	Annual and perennial broadleaf weeds	See www.enlisttankmix.com and the product label for instructions related to Enlist One.
glufosinate – 0.53 to 0.79 lb/A	glufosinate 2.34 lb/gal formulation — 29 to 43 oz/A	Small, actively growing weeds from crop emergence to just before bloom	Annual grasses and broadleaf weeds; horseweed, morningglory, pigweed (less than 4 inches)	Do not apply more than 87 fluid ounces per season. Sequential applications should be made 10 to 14 days apart to improve control of larger weeds. Apply when temperatures are warm, as colder weather may reduce activity. Do not use nozzles and pressure that result in coarse spray droplets.
glyphosate + 2,4-D – 1.46 to 1.98 lb/A	Enlist Duo 3.33 SL — 3.5 to 4.75 pt/A	Preemergence or postemergence up to R2 growth stage	Annual grasses and broadleaf weeds	See www.enlisttankmix.com and the product label for instructions related to Enlist Duo.
Postemergence (Enlist, LibertyLink, LibertyLink GT27, Roundup Ready 2 XtendFlex varieties) See Postemergence (all varieties) list in this section for information on mixtures with glufosinate.				
glufosinate – 0.53 to 0.66 lb/A	glufosinate 2.34 lb/gal formulation — 29 to 36 oz/A	Small, actively growing weeds from crop emergence to just before bloom	Annual grasses and broadleaf weeds; horseweed, morningglory, pigweed (less than 4 inches)	See <i>Special Instructions and Remarks</i> for glufosinate under Postemergence (Enlist varieties).

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Situation and active ingredient rate per broadcast acre	Formulated product per broadcast acre	Time of application	Weeds controlled	Special instructions and remarks
Postemergence (Enlist, LibertyLink GT27, Roundup Ready 2, Roundup Ready 2 Xtend, Roundup Ready 2 XtendFlex varieties) See Postemergence (all varieties) list in this section for information on mixtures with glyphosate.				
glyphosate – 1 to 1.5 lb/A	Various formulations (see product label for specific rates)	From soybean emergence through R2 growth stage	Annual and perennial grass and broadleaf weeds	Do not apply more than 2.25 pounds (ae) in a single growing season. Sequential applications should be made 10 to 14 days apart to improve control of larger weeds. Glyphosate-resistant weeds are prevalent throughout Mississippi. See Herbicide Resistant Weed section for additional control options.
glyphosate + fomesafen – 1.23 lb/A	Flexstar GT 3.5 2.82 SL — 3.5 pt/A	Small, actively growing weeds after first trifoliolate	Annual grasses and broadleaf weeds; horseweed, morningglory, pigweed (less than 4 inches)	See <i>Special Instructions and Remarks</i> for glyphosate and fomesafen.
glyphosate + s-metolachlor – 1.6 to 2.3 lb/A	Sequence — 2.5 to 3.5 pt/A	Soybean emergence to V3	Annual and perennial grass and broadleaf weeds	See <i>Special Instructions and Remarks</i> for glyphosate and metolachlor/s-metolachlor. Provides residual control of small-seeded grasses and broadleaf weeds. Rainfall is required for residual control. Do not apply > 3.5 pints per acre. Expect poor control of large-seeded grasses like browntop millet and Texas panicum.
Postemergence (Roundup Ready 2 Xtend and Roundup Ready 2 XtendFlex varieties)				
dicamba – 0.5 lb/A	Engenia 5 SL — 12.8 oz/A	Preemergence or postemergence through June 30	Broadleaf weeds	See www.engeniaherbicide.com/stewardship/application-checklist.html and the product label for instructions related to Engenia.
dicamba – 0.5 lb/A	XtendiMax with VaporGrip 2.91 SL — 22 oz/A	Preemergence or postemergence up to R1 growth stage or through June 30	Broadleaf weeds	See www.xtendimaxapplicationrequirements.com and the product label for instructions related to XtendiMax.
dicamba + s-metolachlor – 1.5 lb/A	Tavium plus VaporGrip 3.39 CS — 57 oz/A	Preemergence or postemergence up to V4 growth stage or 45 days after planting	Annual grasses and broadleaf weeds	See www.syngenta-us.com/herbicides/tavium-application-stewardship and the product label for instructions related to Tavium plus VaporGrip.
Postemergence [Sulfonylurea-Tolerant Soybean (STS) or BOLT varieties]				
chlorimuron + thifensulfuron – 0.0066 to 0.02 lb/A	Synchrony XP 28.4 DG — 0.38 to 1.13 oz/A	Small, actively growing weeds from before soybean emergence to 60 days before harvest	Hemp sesbania, morningglory, yellow nutsedge, sicklepod	The 1- to 1.125-ounce rates provide some residual control of certain small-seeded broadleaf weeds. Add nonionic surfactant at 0.25% v/v or nonphytotoxic crop oil concentrate at 1% v/v if applied with a glyphosate formulation not preloaded with a surfactant.
halosulfuron + thifensulfuron – 0.031 + 0.0036 lb/A	Permit Plus 75 WDG — 0.75 oz/A	Small, actively growing weeds from between the V1 and R2 soybean growth stages	Yellow nutsedge, purple nutsedge, hemp sesbania, common ragweed, velvetleaf	Only one application of Permit Plus is allowed per season. Add nonionic surfactant at 0.25% v/v or nonphytotoxic crop oil concentrate at 1% v/v if applied with a glyphosate formulation not preloaded with a surfactant. Ammonium sulfate at 8.5 to 17 pounds per 100 gallons of water is recommended.
Postemergence (All varieties)				
acetochlor – 0.94 to 1.5 lb/A	Warrant 3 CS — 1.25 to 2 qt/A	Soybean emergence to R2 growth stage; optimum at V2-V3 growth stage	Annual grasses and pigweed	Mix with glyphosate or glufosinate (depending on variety) to improve weed control spectrum. Warrant will not control emerged weeds. Apply postemergence to soybean but before weed seedling emergence. Do not apply more than 4 quarts per season.

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Situation and active ingredient rate per broadcast acre	Formulated product per broadcast acre	Time of application	Weeds controlled	Special instructions and remarks
acetochlor + fomesafen – 1.29 to 1.89 lb/A	Warrant Ultra 3.45 CS — 48 to 70 oz/A	Soybean emergence up to R2 growth stage; optimum at V2-V3 growth stage	Annual grasses and pigweed	Mix with glyphosate or glufosinate (depending on variety) to improve weed control spectrum. Use the higher rate where weed infestations are heavy. Do not apply postemergence if applications were made preplant or preemergence.
acifluorfen – 0.38 to 0.50 lb/A	acifluorfen 2 lb/gal formulation — 1.5 to 2 pt/A	Small, actively growing weeds	Hemp sesbania, morningglory, pigweeds (less than 2 inches)	Mix with glyphosate or glufosinate (depending on variety) to improve weed control spectrum. Do not apply to soybean and weeds under stressed conditions, within 50 days of harvest, or more than 4 pints per acre per growing season. Add a nonionic surfactant at 0.25% v/v or a nonphytotoxic crop oil concentrate at 1% v/v.
acifluorfen + 2,4-DB – 0.38 to 0.50 + 0.03 lb/A	acifluorfen 2 lb/gal formulation — 1.5 to 2 pt/A + 2,4-DB 1.75 lb/gal formulation — 2.2 oz/A or 2 lb/gal formulation — 1.9 oz/A	Small, actively growing weeds	Hemp sesbania, morningglory, groundcherry, pigweeds (less than 2 inches)	See <i>Special Instructions and Remarks</i> for acifluorfen. Mix with glyphosate or glufosinate (depending on variety) to improve weed control spectrum. Do not apply within 60 days of harvest. The 2,4-DB tank mixture will cause soybean foliage damage and may reduce yields. Do not use crop oil concentrate.
acifluorfen + bentazon – 0.75 lb/A	Storm 4 L — 1.5 pt/A	Small, actively growing weeds	Broadleaf weeds	Mix with glyphosate or glufosinate (depending on variety) to improve weed control spectrum. Do not (1) apply more than 1.5 pints per application; (2) exceed 3 pints per season; (3) apply by air if sensitive crops are less than 200 feet down wind; (4) apply within 50 days before harvest. Add a nonionic surfactant at 0.25% v/v or a nonphytotoxic crop oil concentrate at 1% v/v.
bentazon – 0.75 to 1 lb/A	bentazon 4 lb/gal formulation — 1.5 to 2 pt/A or 5 lb/gal formulation — 1.2 to 1.6 pt/A + 2,4-DB 1.75 lb/gal formulation — 2.2 oz/A or 2 lb/gal formulation — 1.9 oz/A	Small, actively growing weeds	Cocklebur, prickly sida (2 to 3 inches), smartweed	Mix with glyphosate or glufosinate (depending on variety) to improve weed control spectrum. Do not apply more than 4 pints per acre per season, within 65 days of harvest, or under stressed conditions. For added control of hemp sesbania, 0.5 to 1 pint of acifluorfen plus surfactant may be added to bentazon.. Add a nonionic surfactant at 0.25% v/v or a nonphytotoxic crop oil concentrate at 1% v/v.
bentazon + 2,4-DB – 0.75 to 1 + 0.03 lb/A	bentazon 4 lb/gal formulation — 1.5 to 2 pt/A or 5 lb/gal formulation — 1.2 to 1.6 pt/A + 2,4-DB 1.75 lb/gal formulation — 2.2 oz/A or 2 lb/gal formulation — 1.9 oz/A	Small, actively growing weeds	Cocklebur; prickly sida (2 to 3 inches), smartweed, morningglory	See <i>Special Instructions and Remarks</i> for bentazon. Mix with glyphosate or glufosinate (depending on variety) to improve weed control spectrum. The 2,4-DB mix will cause soybean foliage injury and may reduce yields. Do not add surfactant to the 2,4-DB mixture.
chlorimuron – 0.0078 to 0.0104 to 0.0117 lb/A	chlorimuron 25% formulation — 0.5 to 0.67 to 0.75 oz/A	After soybean have 1 trifoliolate leaf until 60 days before maturity	Entireleaf and ivyleaf morningglory, giant ragweed, sicklepod (two applications 14 days apart)	Mix with glyphosate or glufosinate (depending on variety) to improve weed control spectrum. Do not use on soybean grown on Black Belt soils having a pH greater than 7.0 or a history of iron chlorosis. A sequential application may be applied 14 to 21 days after first application, but do not exceed a total of 1.5 ounces of per season. Soybean may be stunted, particularly from sequential applications. Add a nonionic surfactant at 0.25% v/v.

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Situation and active ingredient rate per broadcast acre	Formulated product per broadcast acre	Time of application	Weeds controlled	Special instructions and remarks
clethodim – 0.063 to 0.13 lb/A	Various formulations (see product label for specific rate)	Small, actively growing weeds	Annual grasses, johnson-grass, bermudagrass	Apply over-the-top or as a semi-directed spray to cover grasses. Do not apply (1) more than 32 ounces per acre per season (1 EC), (2) if rainfall is expected within 1 hour, or (3) to stressed plants. See label for sequential and mixture instructions for broadleaf herbicides. Add a nonphytotoxic crop oil concentrate at 1% v/v.
cloransulam – 0.25 oz/A	FirstRate 84 WG — 0.3 oz/A	Small, actively growing weeds	Common cocklebur, morningglory, ragweed, sicklepod	Mix with glyphosate or glufosinate (depending on variety) to improve weed control spectrum. Do not (1) apply through irrigation system; (2) make more than two applications per season. Add a nonionic surfactant at 0.25% v/v or a nonphytotoxic crop oil concentrate at 1.2% v/v.
flumetsulam – 0.0063 lb/A	Python 80 WDG — 0.125 oz/A	When soybean is in 1–5 trifoliolate growth stage	Prickly sida (less than 2 inches tall)	Mix with glyphosate or glufosinate (depending on variety) to improve weed control spectrum. Do not apply to soybean with more than five trifoliolates. Do not apply more than two postemergence applications, and applications must be separated by at least 14 days. Add a nonionic surfactant at 0.25% v/v or a nonphytotoxic crop oil concentrate at 1% v/v.
fomesafen – 0.25 to 0.38 or 0.24 to 0.35 lb/A	fomesafen 2 or 1.88 lb/gal formulation — 1 to 1.5 pt/A	Small, actively growing weeds	Hemp sesbania, morningglory, Pennsylvania smartweed, pigweed	Mix with glyphosate or glufosinate (depending on variety) to improve weed control spectrum. May cause temporary soybean leaf bronzing, crinkling, and/or spotting. Rainfall within 4 hours of application may reduce control. Do not apply more than 1.5 pints per season or apply to stressed plants. Add a nonionic surfactant at 0.25% v/v.
fluaizifop – 0.094 to 0.25 lb/A	Fusilade DX 2 EC — 6 to 16 oz/A (see table at beginning of section for specific rates by species)	Small, actively growing weeds	Annual grasses, seedling and rhizome johnson-grass, bermudagrass, volunteer grain sorghum, red rice	Apply over-the-top or as a semi-directed spray to cover the grasses. Do not apply (1) more than 32 ounces per acre per season, (2) after first bloom, or (3) if rainfall is expected within 1 hour after application. See Fusilade DX label for sequential and tank mix applications. Add a nonionic surfactant at 0.25% v/v or a nonphytotoxic crop oil concentrate at 1% v/v.
imazaquin – 0.063 or 0.13 lb/A	Scepter 70 DG — 1.43 to 2.86 oz/A	Small, actively growing weeds	Cocklebur (up to 12 inches tall), wild poinsettia, sicklepod.	Mix with glyphosate or glufosinate (depending on variety) to improve weed control spectrum. For effective sicklepod control, use sequential preemergence and postemergence treatments. Apply at least 90 days before soybean harvest. Do not apply more than 0.25 pound of active ingredient per season. Add a nonionic surfactant at 0.25% v/v or a nonphytotoxic crop oil concentrate at 1% v/v.
lactofen – 0.2 lb/A	Cobra 2 EC — 12.5 oz/A	Before soybean exceed three trifoliolate leaves	Hemp sesbania, morningglory, prickly sida, common ragweed, pigweed	Mix with glyphosate or glufosinate (depending on variety) to improve weed control spectrum. Apply over-the-top or as a directed spray. Temporary speckling, burn, and/or crinkling of soybean leaves will occur. Do not (1) cultivate 5 days prior to application or while spraying; (2) apply more than once per growing season; (3) not later than 90 days before harvest. Add a nonionic surfactant at 0.125% v/v or a nonphytotoxic crop oil concentrate at 1 to 2 pt/A.
metolachlor – 1.5 to 2 lb/A or s-metolachlor – 0.95 to 1.27 lb/A	Various formulations (see table at beginning of section for specific rates by soil texture)	Soybean emergence to V3	Annual grasses and pigweed	Mix with glyphosate or glufosinate (depending on variety) to improve weed control spectrum. Metolachlor/s-metolachlor should be applied postemergence to soybean but before weed seedling emergence.
s-metolachlor + fomesafen – 1.32 lb/A	Prefix 5.29 EC — 2 pt/A	When soybean is in V1 to V3 growth stage	Morningglory, pigweed, hemp sesbania, Pennsylvania smartweed	See <i>Special Instructions and Remarks</i> for fomesafen and metolachlor/s-metolachlor. Mix with glyphosate or glufosinate (depending on variety) to improve weed control spectrum. Application should be made to weeds no larger than 3- to 4-leaf growth stage. Do not add crop oil concentrate, as severe soybean injury can occur.
pyroxasulfone – 0.053 to 0.12 lb/A	Zidua 85 WDG — 1 to 2 oz/A or 4 SC — 1.7 to 3.8 oz/A	Soybean emergence to V5	Annual grasses and pigweed	Mix with glyphosate or glufosinate (depending on variety) to improve weed control spectrum. Zidua should be applied postemergence to soybean but before weed seedling emergence.
pyroxasulfone + fluthiacet-methyl – 0.055 to 0.11 lb/A	Anthem Maxx 4.3 SC — 1.65 to 3.25 oz/A	Soybean emergence to V3	Soybean emergence to V3	Mix with glyphosate or glufosinate (depending on variety) to improve weed control spectrum. Anthem Maxx should be applied postemergence to soybean but before weed seedling emergence.

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Situation and active ingredient rate per broadcast acre	Formulated product per broadcast acre	Time of application	Weeds controlled	Special instructions and remarks
pyroxasulfone + flumiclorac – 0.11 to 0.18 lb/A	Perpetuo 2.3 SC — 6 to 10 oz/A	Soybean emergence to V6	Annual grasses and pigweed	Mix with glyphosate or glufosinate (depending on variety) to improve weed control spectrum. Do not apply more than 8 ounces per acre in a single season to coarse soils. Add nonphytotoxic crop oil concentrate or methylated seed oil at 1% v/v. Ammonium sulfate at 2 pounds per acre or urea-ammonium nitrate at 2 quarts per acre may also be included.
quizalofop – 0.034 to 0.069 lb/A	quizalofop 0.88 lb/gal formulation — 5 to 10 oz/A (see table at beginning of section for specific rates by species)	Small, actively growing weeds before soybean pod set, and/or 80 days before soybean harvest	Annual grasses, seedling and rhizome johnson-grass, bermudagrass, volunteer grain sorghum, red rice	Do not apply (1) with crop oil concentrates; (2) > 20 ounces per season; (3) to drought-stressed grasses; or (4) if rain is expected within 1 hour after application. Do not cultivate 7 days before or after application or mix with bentazon or chlorimuron except as specified on the label. Add a nonionic surfactant at 0.25% v/v or a nonphytotoxic crop oil concentrate at 1% v/v.
sethoxydim – 0.19 to 0.38 lb/A	Poast 1 EC — 24 to 48 oz/A (see table at beginning of section for specific rates by species)	Small, actively growing weeds	Annual grasses, seedling and rhizome johnson-grass, bermudagrass, red rice	Do not apply (1) to grasses under drought stress or herbicide injury; (2) if rainfall is expected within one hour after application; (3) within 90 days of harvest; (4) more than a total of 7.5 pints in one season. bentazon at labeled rate according to weed growth stage may be added, but Poast rates must be increased 50%. Add a nonphytotoxic crop oil concentrate at 1 qt/A.
Directed or Hooded Sprayers				
2,4-DB – 0.20 lb/A	2,4-DB 1.75 lb/gal formulation — 0.9 pt/A or 2 lb/gal formulation — 0.8 pt/A	After soybean are 8 inches tall	Cocklebur; partial control of small pigweed and morningglory	Apply once or twice as a semi-directed spray when soybean are 8 to 12 inches tall with sprays directed to contact no more than lower one-third of stems. Precise application is essential to prevent soybean injury. Do not apply if soybean are under drought stress. Avoid spray pressures in excess of 40 psi. Do not add surfactant to spray mixtures.
linuron – 0.5 to 1.0 lb/A	linuron 4 lb/gal formulation — 1 to 2 pt/A or 50% formulation — 1 to 2 lb/A	After soybean are 12 inches tall	Annual grasses and broadleaf weeds	Apply only single application as directed spray at base of crop plants striking the soybean plants no higher than 2 to 3 inches above the ground. Do not exceed 25 psi nozzle pressure or apply under windy conditions. Add a nonionic surfactant at 0.25% v/v.
linuron + 2,4-DB – 0.5 + 0.20 lb/A	linuron 4 lb/gal formulation — 1 pt/A or 50% formulation — 1 lb/A + 2,4-DB 1.75 lb/gal formulation — 0.9 pt/A or 2 lb/gal formulation — 0.9 pt/A	After soybean are 12 inches tall	Most annual grasses, cocklebur, morningglory, hemp sesbania, sicklepod prickly sida	See <i>Special Instructions and Remarks</i> for linuron and 2,4-DB.
metribuzin – 0.25 to 0.50 lb/A	metribuzin 75% formulation — 5.33 to 10.67 oz/A or 4 lb/gal formulation — 8 to 16 oz/A (see table at beginning of section for specific rates by soil texture)	After soybean are 8 inches tall	Annual grasses and broadleaf weeds	Apply as a directed spray at the base of the soybean plants spraying no more than the lower 1/4 to 1/3 of the soybean plants. Soybean leaves contacted by the spray will be killed. Do not exceed 30 psi nozzle pressure or apply to sensitive varieties. Controls most broadleaf weeds < 3 inches tall except morningglory, most annual grasses < 1 inch tall. For hemp sesbania and prickly sida control, use 0.375 to 0.5 pounds active ingredient per acre.

Soybean Weed Management

Situation and active ingredient rate per broadcast acre	Formulated product per broadcast acre	Time of application	Weeds controlled	Special instructions and remarks
metribuzin + 2,4-DB – 0.25 to 0.5 lb/A + 0.2 lb/A	metribuzin 75% formulation — 5.33 to 10.67 oz/A or 4 lb/gal formulation — 8 to 16 oz/A + 2,4-DB 1.75 lb/gal formulation — 0.8 pt/A	After soybean are 8 inches tall	Annual grasses and broadleaf weeds	See <i>Special Instructions and Remarks</i> for metribuzin and 2,4-DB.
s-metolachlor + metribuzin – 0.106 to 1.63 lb/A	Boundary 6.5 EC — 1.3 to 2 pt/A	After soybean are 8 inches tall	Annual grasses and broadleaf weeds	Boundary may be mixed with other herbicides labeled for directed or hooded applications to improve control of emerged weeds. Do not exceed 3.9 pints of Boundary per acre per season. Do not allow spray to contact more than the lower 1/4 to 1/3 of soybean plants.
paraquat – 0.07 to 0.13 lb/A	paraquat 2 lb/gal formulation — 0.28 to 0.52 pt/A or 3 lb/gal formulation — 0.19 to 0.35 pt/A	After soybean are 8 inches tall	Annual grasses and broadleaf weeds, pig-weeds, purslane	Use low rate for weeds less than 2 inches in height and the higher rate for weeds greater than 2 inches. Soybean less than 8 inches will be injured or killed. Adjust nozzles to spray the lower 3 inches of the soybean plants. Do not exceed 30 psi to avoid drift. Do not apply more than twice. The second application should follow the first by 7 to 14 days.
Midseason Cocklebur Control				
2,4-DB – 0.20 lb/A	2,4-DB 1.75 lb/gal formulation — 0.9 pt/A or 2 lb/gal formulation — 0.8 pt/A	7 to 10 days before soybean bloom until mid-bloom	Cocklebur	See <i>Special Instructions and Remarks</i> for 2,4-DB. Apply as broadcast spray after cocklebur plants have elongated and are as tall as soybean plants. 2,4-DB usually causes soybean injury but symptoms generally disappear within one week after treatment. Do not add surfactant.
Spot Spraying				
clethodim	Various formulations — 0.25% + 1% crop oil concentrate by volume	Actively growing weeds	Johnsongrass, bermudagrass, annual grasses	Spray to wet foliage but not to point of runoff. Mixing example would be clethodim at 1 pint plus crop oil concentrate at 4 pints in 50 gallons of water.
fluzifop	Fusilade DX 2 EC — 0.5% + 0.25% nonionic surfactant or 1% crop oil concentrate by volume	Actively growing weeds	Johnsongrass (12 to 18 inches), bermudagrass, annual grasses	Spray to wet foliage but not to point of runoff. Make last application before soybean bloom. If a surfactant is used in lieu of crop oil concentrate, use only nonionic surfactants that contain at least 75% surface active agent. Mixing example would be Fusilade DX at 1 quart plus nonionic surfactant at 1 pint or crop oil concentrate at 4 pints in 50 gallons of water.
quizalofop	quizalofop 0.88 lb/gal formulation — 0.375% + 0.25% nonionic surfactant or 1% crop oil concentrate by volume	Actively growing weeds before soybean pod set and/or within 80 days of soybean harvest	Johnsongrass (10 to 16 inches), bermudagrass (6 inches), annual grasses	Spray to wet foliage but not to point of runoff. Mixing example would be quizalofop at 1.5 pints plus nonionic surfactant at 1 pint or crop oil concentrate at 4 pints in 50 gallons of water.
sethoxydim	Poast 1 EC — 1.5% + 1.0% crop oil concentrate by volume	Actively growing weeds	Johnsongrass (15 inches), bermudagrass, annual grasses	Spray to wet foliage but not to point of runoff. Do not apply within 90 days of harvest. Mixing example would be Poast at 6 pints plus crop oil concentrate at 4 pints in 50 gallons of water.
glyphosate	Various formulations — 1% by volume for annual weeds or 2% by volume for perennial weeds	After johnsongrass reaches 12 inches in height but before soybean pod set	Johnsongrass, bermudagrass, annual and perennial weeds	Use high rate mix for bermudagrass. Spray to wet foliage of johnsongrass stems or other undesirable vegetation. Non-Roundup Ready soybean in the treated area will be killed. Keep drift to a minimum. Do not apply if soybean are setting pods.

Soybean Weed Management

Situation and active ingredient rate per broadcast acre	Formulated product per broadcast acre	Time of application	Weeds controlled	Special instructions and remarks
Preharvest				
carfentrazone – 0.016 to 0.023 lb	Aim 2 EC — 1 to 1.5 oz/A	Mature, fully developed soybean with 50% natural defoliation and remaining leaves yellow	Morningglory desiccation	Do not apply more than 1.5 ounces per acre per season. Do not apply within 3 days of harvest. Aim may be mixed with glyphosate to improve control of grasses and other weeds. Add a nonionic surfactant at 0.25% v/v or a nonphytotoxic crop oil concentrate at 1% v/v.
glyphosate – 0.75 to 3.5 lb/A	Various formulations (see product label for specific rates)	Preharvest but after soybean pods have lost all green color	Annual grasses, johnsongrass, some broadleaf weeds	Do not apply more than 3.5 pounds (ae) per acre for preharvest applications. Do not apply more than 1.5 pounds (ae) of glyphosate per acre by air. Allow a minimum of 7 days between application and harvest. Use rates greater than 1.5 pounds ae would be beneficial for perennial weed control.
paraquat – 0.13 to 0.25 lb/A	paraquat 2 lb/gal formulation — 0.52 to 1 pt/A or 3 lb/gal formulation — 0.35 to 0.67 pt/A	Mature, fully developed soybean with at least 50% of leaves dropped and remaining leaves yellow	Annual and perennial grasses and broadleaf weeds	Drought-stressed weeds will not be desiccated. Immature soybean will be injured and yields reduced. Interval between application and soybean harvest is a minimum of 15 days. Add a nonphytotoxic crop oil concentrate at 1% v/v. Avoid drift to rice.
paraquat + sodium chlorate – 0.25 lb/A + 3 lb/A	paraquat 2 lb/gal formulation — 0.52 to 1 pt/A or 3 lb/gal formulation — 0.35 to 0.67 pt/A + various formulations (see product label for specific rates)	Mature, fully developed soybean with at least 50% of leaves dropped and remaining leaves yellow	Annual and perennial grasses and broadleaf weeds	See <i>Special Instructions and Remarks</i> for paraquat and sodium chlorate. Avoid drift to rice.
safllufenacil – 0.022 to 0.044 lb/A	Sharpen 2.85 SC — 1 to 2 oz/A	Soybean that have reached physiological maturity	Broadleaf weeds	Apply to indeterminate varieties with at least 65% brown pods and 70% defoliation or when seed moisture is 30% or less. Apply to determinate varieties when seed are fully developed with greater than 50% defoliation and remaining leaves are yellowing. Do not apply more than 2 fluid ounces per acre as a harvest aid per cropping season. Do not apply within 3 days of harvest. Add methylated seed oil at 1% v/v plus ammonium sulfate.
sodium chlorate – 6 lb/A	Various formulations (see product label for specific rates)	7 to 10 days before soybean harvest	Desiccation of most annual grasses and broadleaf weeds	Drought-stressed weeds will not be desiccated. Immature soybean will be injured and yields reduced. Do not graze treated fields or feed treated bean foliage and fodder.



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