



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; preemergence 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
Authortity 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.

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 <i>s</i> -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.
<i>s</i> -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.
<i>s</i> -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/ <i>s</i> -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.
<i>s</i> -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.

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
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).

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
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.

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
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.

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
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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