

2025

Louisiana Suggested Chemical Weed Management Guide for Agronomic Crops



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Should the registration of a herbicide or certain uses of a herbicide be canceled by federal or state agencies, suggestions thus affected herein are no longer applicable. Use of products in this guide does not constitute a guarantee or warranty of the products named and does not signify that these products are approved to the exclusion of comparable products.

Introduction

Herbicide rates are for broadcast application unless specified differently in the table heading for each crop.

Rates of soil-applied herbicides may vary according to soil type, therefore, be sure to read the label.

Herbicides should be applied in enough water to assure an even distribution over the area treated. That amount may vary from 5 to 40 gallons per acre on a broadcast basis. Wettable powder formulations require at least 50 mesh screens throughout the spray system and nozzle tips with a capacity of 0.2 gallons per minute (GPM) or larger. Considerable agitation is necessary to keep wettable powders in suspension.

Tanks made of aluminum, fiberglass or other corrosion-resistant materials will reduce the amount of nozzle clogging. Some herbicides may not be used in unlined steel tanks. Be sure that the water used as the spray solution is free from trash and other foreign material, particularly mud or soil particles.

Correct calibration is of utmost importance. Excess rates may cause injury to the applied crop, injury from excess residue to succeeding crops and increased herbicide costs. Less than recommended rates can result in unsatisfactory weed control and could possibly encourage resistance development in the weed populations being managed. Read the label and know that you are applying only the recommended amount.

Every herbicide has a rain-free (rain-fastness) time requirement to achieve proper efficacy. Herbicide labels should be consulted prior to application to determine the rain-free time requirement.

Handle Pesticides Safely

- Read the pesticide label prior to purchasing, mixing and applying the pesticide to ensure that the user has the correct product for the job and that the user knows how to use the product safely and correctly.
- Follow label directions.
- Observe safety precautions on the pesticide label, such as “Keep out of Reach of Children.”
- Wear personal protective equipment that is listed on the label when performing pesticide handling tasks. The label will list the minimum amount that an applicator should wear.
- Do not eat, drink, use tobacco products, or go to the bathroom while handling pesticides. Be sure to wash your hands before doing any of the listed tasks after handling pesticides.
- Mix only the amount of pesticide you need. Do not store diluted pesticide for later use.
- Always store pesticides in their original containers. Never store pesticides in containers that can be confused for food or drink.
- Avoid mixing or applying pesticides near wells or open water.
- Refer to the pesticide label under “Directions for Use” for more information on how to use the pesticide safely and correctly.
- At the completion of pesticide applications, the applicator should triple rinse the spray container and puncture it to make it unusable for any future use.

Restricted Use Pesticides

Some of the pesticides or certain uses of pesticides in this publication may be classified for restricted use. Those pesticides with restricted use labels will contain information regarding these restrictions. Be sure to read all labels thoroughly. It is illegal to use any pesticide in a manner that is inconsistent with the label directions. It is unlawful for a noncertified applicator to use a pesticide that has been classified with restricted uses. Information on pesticide applicator certification programs may be obtained from the LSU AgCenter’s Pesticide Safety Education Program.

If pesticides are handled or applied improperly or if unused portions are not disposed of safely, they may be injurious to humans, domestic animals, desirable plants and fish or other wildlife and may contaminate water supplies. Use pesticides only when needed and handle them with care. Follow the directions and heed all precautions on the container label. Please consult Safety Data Sheets (SDS) for any pesticides to determine their toxicity information prior to their use.

Herbicide Labels

Since this management guide focuses on weed management, the term herbicide will be commonly used throughout. As a reminder, the term herbicide is used for the group of pesticides that controls or kills weeds. State and federal agencies regulate herbicide (and all other pesticide) use through the issuance of herbicide labels, which are the directions for herbicide use and have the effect of federal law. Each herbicide is identified under various “sections” or parts of the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA). FIFRA is the federal law that addresses, among other things, how a herbicide may be used. Contained within FIFRA are the sections that deal with specific situations. Herbicide users should understand three different types of labels, each addressed by a specific section of FIFRA.

Section 3: The most comprehensive registration granted. Most pesticides in the U.S. have a “Section 3” registration. This registration shows the United States Environmental Protection Agency has reviewed and approved all required information to support all uses listed on the product label.

Section 24[c]: Granted by the state under federal regulation and often called a “special local need” label. A 24[c] label applies only to the state or states that issue the label and is issued for a specific use pattern for crops or sites already approved under a Section 3 label. This label has a time period of use (usually five years), which may be renewed.

Section 18: A state will petition the U.S. EPA for an emergency exemption label to control a specific weed problem not adequately addressed by any Section 3-labeled herbicides that poses a threat to crop production. Before determining issuance of a Section 18 label, each Section 18 petition is scrutinized by the U.S. EPA. If the label is issued, the herbicide use is very clearly defined. If the U.S. EPA does not approve the Section 18 petition, the state may issue a crisis exemption and allow use of the herbicide. In all cases, Section 18 labels are temporary and expire within one year of issuance.

Worker Protection Standard (WPS)

The Environmental Protection Agency (EPA) Agricultural Worker Protection Standard (WPS) is an OSHA regulation and is aimed at reducing the risk of pesticide poisoning and injury among agricultural workers and pesticide handlers. Pesticide applicators must comply with this rule when using agricultural use pesticide products that reference the Worker Protection Standard, 40 CFR 170. In 2015, the EPA made major revisions to the Worker Protection Standard (WPS).

The LSU AgCenter has worked to provide an updated WPS Train-the-Trainer program that has been approved by the EPA. In Louisiana those employers who wish to train their own workers and handlers must be a certified applicator and go through the new WPS Train-the-Trainer program with the LSU AgCenter. All pesticide workers and handlers on agricultural establishments must now be trained on an annual basis. If you went through a WPS Train-the-Trainer program prior to November of 2016 then you will have to attend a new WPS Train-the-Trainer program. Once you have completed that program, the status of “WPS Trainer” will be added to the back of your pesticide certification card and you will then be able to train agricultural workers and handlers. This “WPS Trainer” status will recertify along with your private or commercial pesticide applicator certification at your normal recertification meeting.

Training dates and locations can be found at <https://www.lsuagcenter.com/pesticide>

If you would like to participate in a WPS Train-the-Trainer Program, please email bgueltig@agcenter.lsu.edu.

As part of the revised rules there are a few things that need to be pointed out.

- Pesticide workers and handlers must be trained every 12 months.
- Workers and handlers must be trained by using EPA-approved training materials.
- WPS Trainers must go through the new EPA approved Train-the-Trainer Program (see information above).
- The old card system for keeping track of WPS training is no longer being used.
- Trainers must maintain the following information when training workers and handlers:
 - Trained worker’s printed name and signature.
 - Date of the training.
 - Information identifying which EPA-approved training materials were used.
 - The trainer’s name and qualification to train.
 - The worker or handler employer’s name.
 - The LSU AgCenter has created a form that you are welcome to use. You may download the training verification form for WPS at the LSU AgCenter’s PSEP webpage: www.lsuagcenter.com/pesticide.
- Records of training (for workers and handlers) must be maintained for two years.
- The following information must be properly displayed at a central location:
 - New safety poster: <https://npsecstore.com/collections/posters>.
 - Application records.
 - Emergency medical contact information.
 - SDS (safety information).
- When using a pesticide that requires a respirator, employers must:
 - Have an employee medically evaluated by a physician or other licensed health care professional.
 - Have employee go through an annual fit test for each type of respirator required by the pesticide product label.
 - Have the employee participate in annual training on how to properly use the respirator(s).
 - Maintain records for two years of the completion of the above requirements.

The How to Comply Manual (for WPS compliance) is a great reference guide and can be ordered at <https://npsecstore.com>.

To get more information about the WPS revised rule, you will need to refer to the final rule at <https://www.epa.gov/pesticide-worker-safety/agricultural-worker-protection-standard-wps>.

Where to get updated information:

- <http://www.lsuagcenter.com/pesticide>.
- <https://npsecstore.com>.
- Get the newest pesticide safety poster at <https://npsecstore.com>.
- Get EPA approved training materials at <https://www.pesticideresources.org>.

Paraquat Training Requirements

Paraquat Dichloride, also known as paraquat, is a widely used product in Louisiana in many of the state's commodities. Since 2000, 17 deaths have been caused by accidental ingestion of paraquat in the U.S. Many of these deaths resulted from people illegally transferring the pesticide to beverage containers and the victim later mistaking it for a drink.

To assist in preventing these tragedies, product manufacturers will be required by the Environmental Protection Agency (EPA) to have new label requirements that emphasize paraquat toxicity and supplemental warning materials. Also, the new labels will restrict the use of paraquat products to certified applicators only. Companies were required to have the newly labeled product on the market after November 14, 2019.

The new label requirements require anyone handling paraquat to be a certified applicator and require handlers to complete a training module for certified applicators using paraquat. This training was developed by paraquat manufacturers as part of the EPA's 2016 risk mitigation requirements and has been approved by the EPA. The training covers paraquat toxicity, new label requirements and restrictions, consequences of misuse, and other important information.

Again, Paraquat is a restricted use pesticide for use **only by a certified applicator**. This new restriction applies to mixing, loading, and applying paraquat, as well as other pesticide handling activities.

As part of this training, applicators will be required to take a 15-question exam and score 100%. The certification awarded for this product-specific training will be good for three years once an applicator has completed this training and passed the exam. The training is only available online at this time and

is produced by the product manufacturer. The training can be found online at [Paraquat Dichloride Training for Certified Applicators | US EPA](#).

Once applicators have completed the required training and testing for the product, they will receive a certificate documenting completion of the requirement. It is the applicator's responsibility to save that documentation. Applicators will need this documentation and current certification with the Louisiana Department of Agriculture and Forestry (LDAF) in order to purchase paraquat products.

In summary, when purchasing the newly labeled product:

- Product may ONLY be mixed, loaded, or applied by a certified applicator who has successfully completed the paraquat-specific training before use.
- Application "under the direct supervision" of a certified applicator is NO LONGER allowed.
- The product specific Paraquat training must be repeated every three years.
- Applicators should maintain their own certification records.

For more information on how to become a certified applicator in Louisiana, please contact the LSU AgCenter Pesticide Safety Education Program. <https://www.lsuagcenter.com/pesticide>

For more information from the EPA:

<https://www.epa.gov/pesticides/paraquat-certified-applicator-training-prevent-poisonings-now-available>

Summary

Different types of labels registrations (by the EPA) allow herbicide use under varying conditions. It is important for herbicide users to understand this part of the herbicide registration process, the results and how those results affect herbicide use. Much more information is available at these internet sites: **U.S. EPA Office of Pesticide Programs** (<https://www.epa.gov/pesticides>), **FDA Food and Drug Administration** (<https://www.fda.gov>). In addition, herbicide labels and Safety Data Sheets (SDS) can be found at Product Databases (cdms.net), <http://www.agrian.com/home> or the herbicide manufacturer's website.

Disclaimer: 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. Additionally, references to commercial products do not guarantee or warrant the standards of those products.

Louisiana Suggested Chemical Weed Management Guide for Row Crops Editorial Committee

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Weed Resistance And Herbicide Classification

Weed resistance is defined by the Weed Science Society of America (WSSA) as the inherited ability of a plant to survive and reproduce after exposure to a dose of herbicide normally lethal to the wild type. In a plant, resistance may be naturally occurring or induced by such techniques as genetic engineering or selection of variants produced by tissue culture or mutagenesis. Repeated applications of the same herbicide or a different herbicide with a similar mode of action on the same field in consecutive years has contributed to the widespread occurrence of resistance to herbicides in several weed species around the world, in the U.S. and in Louisiana (see list below). Weed management programs must not solely depend on herbicides to be economically sustainable in the long term. A combination of the following integrated weed management (IWM) strategies is recommended:

- 1. Use residual herbicides with multiple sites of action. A layered soil residual program (PRE followed by POST residual) is recommended.
- 2. Rotate different crops.
- 3. Crop rotation allows rotating herbicides with different sites of action.
- 4. Tank-mix herbicides with multiple effective sites of action at full recommended rates in a cropping season.
- 5. Avoid sequential applications of the same herbicide group.
- 6. Utilize tillage, cultivation or other cultural practices such as narrow row spacing and cover crops (e.g. cereal rye) whenever and wherever feasible.
- 7. Clean equipment thoroughly before and after each use.
- 8. Control weeds on fallow ground or set aside to prevent spreading of documented or suspected resistant weeds.

If you suspect resistance after a herbicide application, attempt to eradicate the escapes using mechanical methods (e.g., hand-removal, tillage). Use harvest weed seed control (HWSC) methods to mitigate and prevent the spread of herbicide-resistant weed seeds when infestations are high, and you have weed biotypes resistant to multiple herbicide sites of action.

Do not allow weeds to produce seed.

If seeds are produced, collect a seed sample from suspect plants and take to your parish LSU AgCenter extension agent who will have them screened by an LSU AgCenter weed scientist and inform you if the population is resistant.

Herbicide-Resistant Weeds in Louisiana

Weed	Herbicide
Amazon sprangletop	cyhalofop-butyl, fenoxaprop-P-butyl
Barnyardgrass	imazethapyr, propanil, quinclorac
Common cocklebur	DSMA, MSMA
Italian ryegrass	glyphosate
Itchgrass	fluazifop-P-butyl
Johnsongrass	clethodim, fluazifop-P-butyl, glyphosate
Junglerice	glyphosate
Palmer amaranth	glyphosate
Rice flatsedge	halosulfuron
Waterhemp	glyphosate

Herbicide Classification According to Site of Action

WSSA/HRAC Code (Group No.)	Site of Action	Chemical Family	Herbicide
1	Inhibition of Acetyl CoA Carboxylase	Aryloxyphenoxy-propionates (FOPs)	Clodinafop-propargyl Cyhalofop-butyl Fenoxaprop-ethyl Fluazifop-butyl Quizalofop-ethyl
1	Inhibition of Acetyl CoA Carboxylase	Cyclohexanediones (DIMs)	Clethodim Sethoxydim
1	Inhibition of Acetyl CoA Carboxylase	Phenylpyrazoline	Pinoxaden
2	Inhibition of Acetolactate Synthase	Imidazolinones	Imazamox Imazapic Imazapyr Imazaquin Imazethapyr
2	Inhibition of Acetolactate Synthase	Pyrimidinyl benzoates	Bispyribac-sodium Pyrithiobac-sodium
2	Inhibition of Acetolactate Synthase	Sulfonanilides	Pyrimisulfan
2	Inhibition of Acetolactate Synthase	Sulfonylureas	Bensulfuron-methyl Chlorimuron-ethyl Chlorsulfuron Flazasulfuron Foramsulfuron Halosulfuron-methyl Imazosulfuron Mesosulfuron-methyl Metsulfuron-methyl Nicosulfuron Orthosulfamuron Primisulfuron-methyl Prosulfuron Rimsulfuron Sulfosulfuron Thifensulfuron-methyl Tribenuron-methyl Trifloxysulfuron-Na
2	Inhibition of Acetolactate Synthase	Triazolinones	Flucarbazone-Na Propoxycarbazone-Na Thiencarbazone-methyl

WSSA/HRAC Code (Group No.)	Site of Action	Chemical Family	Herbicide
2	Inhibition of Acetolactate Synthase	Triazolopyrimidine - Type 1	Cloransulam-methyl Diclosulam Flumetsulam
2	Inhibition of Acetolactate Synthase	Triazolopyrimidine - Type 2	Penoxsulam Pyroxsulam
3	Inhibition of Microtubule Assembly	Benzamides	Propyzamide=pronamide
3	Inhibition of Microtubule Assembly	Benzoic acid	Chlorthal-dimethyl=DCPA
3	Inhibition of Microtubule Assembly	Dinitroanilines	Benefin=benfluralin Ethalfluralin Oryzalin Pendimethalin Prodiamine Trifluralin
3	Inhibition of Microtubule Assembly	Phosphoroamidates	Butamifos
3	Inhibition of Microtubule Assembly	Pyridines	Dithiopyr
4	Auxin Mimics	Benzoates	Dicamba
4	Auxin Mimics	Other	Benazolin-ethyl
4	Auxin Mimics	Phenoxy-carboxylates	2,4-D 2,4-DB MCPA Mecoprop
4	Auxin Mimics	Pyridine-carboxylates	Aminopyralid Clopyralid Florpyrauxifen Picloram Halauxifen
4	Auxin Mimics	Pyridyloxy-carboxylates	Fluroxypyr Triclopyr
4	Auxin Mimics	Pyrimidine-carboxylates	Aminocyclopyrachlor
4	Auxin Mimics	Quinoline-carboxylates	Quinclorac
5	Inhibition of Photosynthesis at PSII - Serine 264 Binders	Amides	Propanil
5	Inhibition of Photosynthesis at PSII - Serine 264 Binders	Phenlcarbarnates	Desmedipham Phenmedipham
5	Inhibition of Photosynthesis at PSII - Serine 264 Binders	Pyridazinone	Chloridazon (=pyrazon)

WSSA/HRAC Code (Group No.)	Site of Action	Chemical Family	Herbicide
5	Inhibition of Photosynthesis at PSII - Serine 264 Binders	Triazines	Atrazine Prometryne Propazine Simazine Simetryne Terbumeton Terbuthylazine Trietazine
5	Inhibition of Photosynthesis at PSII - Serine 264 Binders	Triazinones	Hexazinone Metribuzin
5	Inhibition of Photosynthesis at PSII - Serine 264 Binders	Triazolinone	Amicarbazone
5	Inhibition of Photosynthesis at PSII - Serine 264 Binders	Uracils	Bromacil Terbacil
5	Inhibition of Photosynthesis at PSII - Serine 264 Binders	Ureas	Diuron Fluometuron Linuron Siduron Tebuthiuron
6	Inhibition of Photosynthesis at PSII - Histidine 215 Binders	Benzothiadiazinone	Bentazon
6	Inhibition of Photosynthesis at PSII - Histidine 215 Binders	Nitriles	Bromoxynil
6	Inhibition of Photosynthesis at PSII - Histidine 215 Binders	Phenyl-pyridazines	Pyridate
9	Inhibition of Enolpyruvyl Shikimate Phosphate Synthase	Glycine	Glyphosate
10	Inhibition of Glutamine Synthetase	Phosphinic acids	Glufosinate-ammonium
12	Inhibition of Phytoene Desaturase	Diphenyl heterocycles	Fluridone
12	Inhibition of Phytoene Desaturase	N-Phenyl heterocycles	Norflurazon
13	Inhibition of Deoxy-D-Xyulose Phosphate Synthase	Isoxazolidinone	Clomazone
14	Inhibition of Protoporphyrinogen Oxidase	Diphenyl ethers	Acifluorfen Fomesafen Lactofen Oxyfluorfen

WSSA/HRAC Code (Group No.)	Site of Action	Chemical Family	Herbicide
14	Inhibition of Protoporphyrinogen Oxidase	N-Phenyl-imides	Trifludimoxazin Flumiclorac-pentyl Flumioxazin Saflufenacil Tiafenacil
14	Inhibition of Protoporphyrinogen Oxidase	N-Phenyl-imides (procide active form)	Fluthiacet-methyl
14	Inhibition of Protoporphyrinogen Oxidase	N-Phenyl-oxadiazolones	Oxadiazon
14	Inhibition of Protoporphyrinogen Oxidase	N-Phenyl-triazolinones	Carfentrazone-ethyl
14	Inhibition of Protoporphyrinogen Oxidase	N-Phenyl-triazolinones (continued)	Sulfentrazone
14	Inhibition of Protoporphyrinogen Oxidase	Phenylpyrazoles	Pyraflufen-ethyl
15	Inhibition of Very Long-Chain Fatty Acid Synthesis	Benzofurans	Ethofumesate
15	Inhibition of Very Long-Chain Fatty Acid Synthesis	Isoxazolines	Pyroxasulfone
15	Inhibition of Very Long-Chain Fatty Acid Synthesis	Oxiranes	Indanofan
15	Inhibition of Very Long-Chain Fatty Acid Synthesis	Thiocarbamates	Butylate EPTC Molinate Thiobencarb (=Benthiocarb) Vernolate
15	Inhibition of Very Long-Chain Fatty Acid Synthesis	α -Chloroacetamides	Acetochlor Alachlor Dimethenamid Propachlor Metolachlor
18	Inhibition of Dihydropteroate Synthase	Carbamate	Asulam
19	Auxin Transport Inhibitor	Aryl-carboxylates	Diflufenzopyr-sodium Naptalam
22	PS I Electron Diversion	Pyridiniums	Diquat Paraquat
23	Inhibition of Microtubule Organization	Carbamates	Chlorpropham
24	Uncouplers	Dinitrophenols	Dinosam Dinoseb
27	Inhibition of Hydroxyphenyl Pyruvate Dioxygenase	Isoxazoles	Isoxaflutole

WSSA/HRAC Code (Group No.)	Site of Action	Chemical Family	Herbicide
27	Inhibition of Hydroxyphenyl Pyruvate Dioxygenase	Pyrazoles	Pyrasulfotole Tolpyralate Topramezone
27	Inhibition of Hydroxyphenyl Pyruvate Dioxygenase	Triketones	Benzobicyclon Bicyclopyrone Mesotrione Tembotrione
28	Inhibition of Dihydroorotate Dehydrogenase	Aryl pyrrolidinone anilide	Tetflupyrolimet
29	Inhibition of Cellulose Synthesis	Alkylazines	Indaziflam
29	Inhibition of Cellulose Synthesis	Benzamides	Isoxaben
29	Inhibition of Cellulose Synthesis	Nitriles	Dichlobenil Chlorthiamid
30	Inhibition of Fatty Acid Thioesterase	Benzyl ether	Cinmethylin Methiozolin
31	Inhibition of Serine-Threonine Protein Phosphatase	Other	Endothal
32	Inhibition of Solanesyl Diphosphate Synthase	Diphenyl ether	Aclonifen
33	Inhibition of Homogentisate Solanesyltransferase	Phenoxy pyridazine	Cyclopyrimorate
34	Inhibition of Lycopene Cyclase	Triazole	Amitrole
0	Unknown	Acetamides	Napropamide
0	Unknown	Phosphorodithioate	Bensulide

Guidelines For Managing Winter Vegetation

Introduction

Conservation tillage systems, whether no-till or stale seedbed, require herbicide programs that successfully control native winter vegetation or planted cover crops prior to planting. Elimination of competing vegetation helps to ensure crop stand establishment, rapid early season crop growth and efficient fertilizer utilization. Winter vegetation common to Louisiana ranges from easy-to-control weeds, such as annual bluegrass and common chickweed, to difficult-to-control species, such as curly dock and ryegrass. Cover crops may include wheat, rye, vetch, winter peas and tillage radish among others. Consequently, proper weed identification and herbicide selection are keys to a successful preplant burndown weed control program.

More than 20 winter weeds are commonly found in fields throughout Louisiana. However, only a few key species necessitate selection of the most effective herbicide program. Glyphosate and paraquat continue to be the “backbone” of most burndown herbicide programs. Each product exhibits specific strengths and weaknesses. Tank-mixtures with other herbicides broaden the spectrum of control and/or provide residual control until planting. Glyphosate provides slow systemic control of weeds, while paraquat results in fast contact control requiring thorough weed coverage for maximum effectiveness. Addition of ammonium sulfate to glyphosate spray solution can be beneficial when hard water (water containing mineral salts, including iron, calcium and magnesium) is used as the carrier. These conditions are more often observed in private wells and not municipal water sources.

Glyphosate provides good-to-excellent control of annual bluegrass, Carolina foxtail, little barley, buttercup species, chickweed species, dandelion, horseweed (mare's-tail), shepherd's-purse, bittercress and Virginia pepperweed. Control of geranium species, curly dock, henbit, cutleaf evening-primrose, smartweed species and legume cover crops has been poor to fair. Tank-mixture with other herbicides can improve control of these weeds as presented in Table 1.

Paraquat provides good to excellent control of annual bluegrass, little barley, buttercup species, geranium species, chickweed species, henbit and shepherd's-purse. Control of large ryegrass prior to seedhead emergence, curly dock, cutleaf evening-primrose, horseweed (mare's-tail), smartweed species, swinecress, legume cover crops and Virginia pepperweed has been poor. Tank-mix partners increase activity of paraquat on these species (Table 1).

Liberty 280 SL is effective on numerous winter weeds found in Louisiana (Table 1). Activity of the herbicide is greater under higher temperatures. Although it is an excellent burndown herbicide, producers are limited in the amount of Liberty 280 SL that can be used per season including burndown timing. In some cases, producers are well advised to save their Liberty 280 SL for managing weeds within the growing crop.

Timing of Vegetation Removal

Timing of vegetation removal is another critical factor for successfully implementing reduced tillage programs. Conservation tillage practices provide an environment favorable to insect pest populations, primarily cutworms. Cutworm larvae feed on existing winter vegetation until it is removed or decomposed to a point no longer adequate as a food source. If present at planting, cutworm larvae may threaten stands of emerging crops. Research has shown that destroying winter vegetation at least three to four weeks prior to cotton planting is critical. Cutworms are able to feed on decaying vegetation. Therefore, a herbicide application six to eight weeks prior to planting is preferable. Labeled pyrethroid insecticides can be used in combination with a burndown herbicide or at-planting[1] when the potential for cutworm infestation is high. If any living vegetation remains on the seedbed at planting, insecticide should be used for cutworm management. Recent research has shown that even when insects are managed, weeds like cutleaf evening-primrose and swinecress will reduce crop yield when not removed well in advance of planting. In a five-year study, corn yield was 15 to 25 percent higher when weeds were removed four weeks before planting compared to two weeks.

Use of Fall- Or Spring-Applied Residual Herbicides for Managing Troublesome Weeds

Increased problems in managing weeds like henbit and Italian ryegrass in the spring have led to increased interest in fall herbicide programs. Research has shown that an application of a residual herbicide in the fall can assist spring herbicide applications for preplant burndown in overall management of numerous troublesome weeds. Applications in Louisiana are optimum beginning mid- to late October through November when temperatures have cooled and chance of rainfall for activation is greater. Numerous herbicides provide good control of grass and broadleaf winter annual weeds (Table 2).

In some cases, the soil must be tilled, moved or in some way disturbed prior to planting. Be certain to check the product labels for specific recommendations. Although these treatments will result in a relatively weed-free seedbed at planting, the soil will be exposed to weathering. Therefore, these treatments should not be used alone on highly erodible or sloping soil. LSU AgCenter research has shown that certain residual herbicides can be used in combination with cover crops applied after emergence giving both weed control and agronomic and soil stability benefits. **Be certain to consult with your local Farm Service Agency (FSA) or National Resource Conservation Service (NRCS) office to determine if you can use these treatments without conflicting with your conservation plan.**

Following the spring burndown herbicide application, weeds may regrow or new weeds may germinate when the treatment is applied six to eight weeks prior to planting. In these situations, use of residual herbicides such as Goal 2XL, Valor, Canopy EX, Envive, Enlite, Leadoff, and Valor XLT with glyphosate, paraquat, or glufosinate can be beneficial in increasing control of existing weeds or provide soil residual control. However, they

perform best as residual herbicides used earlier in the season (January and early February) or closer to planting. The use of residual herbicides earlier in the season will improve the control of troublesome winter weeds and help protect crops from yield losses associated with late burndown timings. Sequential applications of glyphosate or paraquat are also very effective and may eliminate the need for tank-mixes. Glyphosate applied alone or in tank mixture six weeks prior to planting followed by paraquat, glufosinate, or glyphosate plus Reviton at planting is an excellent weed control program.

Plant-back restrictions can influence which residual herbicide that is selected. Table 4 provides a list of the plant-back restrictions for commonly used fall- and spring-applied herbicides for major crops in Louisiana. Always refer to labels prior to application for revisions.

Glyphosate-Resistant Horseweed (Mare's-Tail) and Italian Ryegrass

Glyphosate-resistant horseweed (mare's-tail) is present in Louisiana. In Louisiana, few acres receive a burndown application composed strictly of glyphosate because of weeds that are difficult to control with glyphosate alone. Thorough scouting and tank-mixes with herbicides will control glyphosate-resistant horseweed (mare's-tail). It is recommended that 8 to 12 oz/A labeled dicamba formulations be tank-mixed with glyphosate when horseweed (mare's-tail) is present, whether glyphosate-resistance is suspected or not. Herbicides such as Sharpen, Leadoff, Canopy EX, Envive, or 2,4-D can exhibit good activity on emerged horseweed (mare's-tail) but not to the level of dicamba. Fall application of Leadoff, Canopy EX, Envive, Envoke, Valor XLT, Fierce, or Valor prior to horseweed (mare's-tail) emergence provides excellent residual control. Please consult individual product labels for rates, precautions and plant-back restrictions.

Research indicates that glyphosate and paraquat-resistant Italian ryegrass are present in Louisiana. Producers are encouraged to closely monitor Italian ryegrass populations. Mississippi State University weed scientists have developed a glyphosate-resistant Italian ryegrass management plan that has been adopted by LSU AgCenter weed scientists. Management of glyphosate-resistant Italian ryegrass depends upon the crop to be planted in the spring and can be divided into a fall, winter or spring management timing, but research has shown greater Italian ryegrass control when control measures are initiated in the fall followed by a winter or spring herbicide application. Fields should be double-disked (all crops) or treated with Command at 16 to 28 oz/A, Boundary at 2.0 pt/A, metribuzin at 3 to 5 oz/A, Dual Magnum or equivalent at 1.33 to 1.67 pt/A, Zidua at 3.25 to 5 oz/A, Anthem Flex at 3.64 to 5.46 oz/A, Anthem Max at 3.25 to 4.87 oz/A, or trifluralin at 3 pt/A in mid-October thru November. Please consult individual product labels for rates, precautions, and plant-back restrictions. Emerged glyphosate-resistant Italian ryegrass will not be controlled by these products; therefore, these products should be tank-mixed with paraquat at 0.5 to 0.75 lb a.i./A. Preliminary research has shown that Reviton at 2 oz can provide fair control of small (1-2 inches) ryegrass but not to the level of paraquat. Research has also shown that combinations of Dual Magnum or Zidua applied at 80% emergence to two weeks after emergence of a cereal rye cover crop to be very effective in managing

Italian ryegrass. Regardless of which fall control measure is utilized, fields should be scouted in January/February, and if glyphosate-resistant Italian ryegrass has emerged, Select Max at 12 to 16 oz/A (or equivalent rate of 1, 2 or 3 lb clethodim formulation) should be applied. Preplant applications of Select Max or any other clethodim formulation should be made at least 30 days before planting corn or rice. Multiple applications of Select Max or any other clethodim formulation are discouraged to prevent development of resistance to this herbicide. If no control measures are initiated in the fall or winter, or if glyphosate-resistant Italian ryegrass was not observed earlier, paraquat at 0.75 to 1.0 lb a.i./A should be applied when resistance is identified. Research has shown that the addition of atrazine (corn) at 1 qt/A, metribuzin (soybean) at 4 oz/A, or diuron (cotton) at 1.5 pt/A will increase efficacy of paraquat against glyphosate-resistant Italian ryegrass. Sequential applications should be based on careful scouting for emerged glyphosate-resistant Italian ryegrass.

Summary

Burndown herbicide decisions should be based on activity of glyphosate or paraquat on the most difficult to control weed species present. Appropriate tank mixtures should be considered based on their ability to enhance control with glyphosate or paraquat and/or to provide residual activity.

Guidelines for Choosing a Burndown Program

1. Vegetation should be destroyed at least three to four weeks prior to planting, preferably six to eight weeks.
2. Choice of herbicide program depends on the most difficult-to-control weed species present.
3. Use glyphosate if annual ryegrass, horseweed (mare's-tail), swinecress, speedwell, groundsel, Virginia pepperweed or wheat is the target vegetation. Use paraquat if a geranium species or henbit is the primary weed present.
4. If glyphosate-resistant Italian ryegrass or horseweed (mare's-tail) is suspected or confirmed, utilize alternative/complimentary residual or postemergence herbicides based upon research.
5. Carolina geranium, curly dock, cutleaf evening-primrose, clover species, henbit, smartweed, swinecress and legume cover crop control can be increased when glyphosate is tank-mixed with other herbicides.
6. Carolina foxtail, curly dock, cutleaf evening-primrose, clover species, dandelion, groundsel, henbit, horseweed (mare's-tail), smartweed, speedwell, swinecress, Virginia pepperweed and legume cover crop control can be increased when paraquat is tank-mixed with other herbicides.
7. Consider using an insecticide program that controls cutworms if any live vegetation is present at planting.

Table 1. Effectiveness of selected spring-applied herbicides and combinations for controlling winter vegetation.**Table Legend**

Rating	Score
None to Slight	0-3
Fair	4-6
Good	7-8
Excellent	9-10

	Paraquat	Paraquat + Goal 2XL	Paraquat + Harmony Extra	Paraquat + Firstshot	Paraquat + Clarity	Paraquat + 2,4-D	Glyphosate	Glyphosate + Goal	Glyphosate + Harmony Extra	Glyphosate + FirstShot	Glyphosate + Clarity	Glyphosate + 2,4-D	Clarity	2,4-D	Glyphosate + Valor	Glufosinate
Annual bluegrass (2-6")	9	9	9	9	9	9	9	9	9	9	9	9	0	0	9	9
Ryegrass (6-10")	4	5	5	5	4	4	7	7	7	7	7	7	0	0	7	6
Carolina foxtail (2-6")	8	9	8	8	8	8	9	9	9	9	8	9	0	0	9	9
Little barley (2-6")	9	9	9	9	9	9	9	9	9	9	9	9	0	0	9	9
Buttercups (2-6")	9	9	9	9	9	9	9	9	9	9	9	9	-	9	9	9
Geranium spp. (2-6")	9	9	9	9	9	9	5	6	8	8	7	8	5	6	6	9
Chickweeds (2-4")	9	9	9	9	9	9	9	9	9	9	9	9	3	3	9	9
Curly dock (6-8")	4	5	7	7	7	7	6	7	9	9	8	9	8	7	8	8
Cutleaf eveningprimrose (6-8")	4	7	8	8	8	9	4	6	7	7	8	9	8	9	6	8
Cutleaf eveningprimrose (2-5")	4	7	8	8	8	9	5	8	7	7	8	9	8	9	8	9
Clovers/medics (2-6")	6	8	9	9	8	8	5	7	8	8	9	9	9	9	-	9
Dandelion (4-6")	8	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9
Groundsel (2-4")	7	9	9	9	9	9	9	9	9	9	9	9	-	9	9	9
Henbit (6-8")	8	9	9	9	8	8	6	9	9	9	8	7	6	5	9	9
Horseweed (mare's-tail) (4-10")	5	7	7	7	6	6	9	9	9	9	9	9	9	6	9	9
Smartweed spp. (2-6")	4	7	9	9	8	6	7	8	9	9	9	8	8	6	9	-
Purslane speedwell (2-4")	7	8	9	9	8	8	9	9	9	9	9	9	-	5	9	-
Shepherd's purse (6-10")	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	8
Smallflower bittercress (6-10")	9	9	9	9	9	9	9	9	9	9	9	9	7	7	9	-
Swinecress (2-4")	2	3	7	7	6	6	7	8	9	9	8	8	7	6	8	9
Legume cover crops (6-8")	6	8	9	9	9	9	5	7	8	8	9	9	9	9	7	9
Virginia pepperweed (4-6")	2	7	7	7	9	9	9	9	9	9	9	9	-	3	9	-
Wheat (8-12")	7	8	7	7	6	6	9	9	9	9	8	9	0	0	9	7

Table 2. Effectiveness of selected fall-applied herbicide combinations for control of winter annual weeds 90 days after application.¹

Herbicide	Annual bluegrass	Buttercup species	Chickweed species	Cutleaf eveningprimrose	Henbit	Swinecress	Shepherd's purse
Canopy EX ²	7	9	9	7	8	8	8
Dual Magnum	8	7	7	5	7	7	7
Enlite ²	7	9	9	7	7	8	8
Envive ²	7	9	9	7	8	8	8
Fierce	8	9	9	7	9	8	8
Goal/Galigan ³	7	9	9	8	9	9	9
LeadOff	8	9	9	7	9	8	8
Valor	6	9	9	7	8	8	8
Valor XLT ²	8	9	9	7	9	8	8

¹ Glyphosate at 1 lb/A or paraquat (Gramoxone SL at 1 qt/A) was tank-mixed with each residual herbicide.

² For use only when soybeans will be planted the following spring.

³ Goal/Galigan must be tilled, moved or in some way disturbed prior to planting.

Table 3. Effectiveness of burndown herbicides used in corn four weeks after application.¹**Table Legend**

Rating	Score
None to Slight	0-3
Fair	4-6
Good	7-8
Excellent	9-10

	Annual bluegrass	Italian ryegrass	Carolina foxtail	Little barley	Carolina geranium	Chickweed	Curly dock	Cutleaf eveningprimrose ²	Henbit	Horseweed	Speedwell	Shepherd's purse	Bittercress	Swinecress	Smartweed
2,4-D ³	0	0	0	0	5	3	6	9	5	5	6	8	6	5	5
glyphosate	9	6	8	9	6	9	5	5	6	8	9	9	8	7	6
glyphosate + Banvel/Clarity	9	6	8	9	8	9	8	8	8	8	9	9	9	8	7
glyphosate + Goal	9	6	8	9	7	9	6	6	8	8	9	9	9	7	7
glyphosate + Valor	9	6	8	9	5	9	5	8 ²	9	8	9	9	8	8	8
glyphosate + FirstShot	9	6	8	9	7	9	8	6	8	8	9	9	9	8	9
glyphosate + 2,4-D	9	6	8	9	8	9	7	9	7	8	9	9	9	7	7
glyphosate + Sharpen	9	6	8	9	8	9	7	8	8	9	9	9	9	9	-
glyphosate +2,4-D + Clarity	9	6	8	9	8	9	9	9	8	9	9	9	8	9	9
glyphosate + 2,4-D +Valor	9	6	8	9	8	9	8	9	9	8	9	9	9	8	9
glyphosate +2,4-D + LeadOff	9	8	8	9	8	9	8	9	9	8	9	9	9	9	8
paraquat ³	8	4	7	8	8	9	4	5	5	5	6	8	8	2	4
paraquat + Goal/Galigan	9	5	8	9	9	9	5	6	8	6	7	9	9	3	5
paraquat + FirstShot	8	5	7	9	9	9	5	7	8	6	8	9	9	6	9
paraquat + 2,4-D	8	4	7	8	8	9	6	9	7	5	7	8	9	5	5

¹ Consult the label(s) prior to use and determine:

(1) proper burndown application timing and herbicide rate; (2) if surfactant or crop oil concentrate is needed in the burndown treatment; and (3) the required time period between burndown application and crop planting.

² Small cutleaf eveningprimrose only (4- to 5-inch rosette or less).³ Numerous formulations of 2,4-D and paraquat are available.

Table 4. Plant-back restrictions for commonly used fall and spring applied burndown herbicides.¹

Herbicide	Corn	Cotton	Grain Sorghum	Rice	Soybean
2,4-D	See label	See label	See label	See label	See label
Aim	none	none	none	none	none
Boundary	4m	12m	12m	8m	none
Canopy EX	See label	See label	See label	See label	none
dicamba	See label	See label	See label	See label	See label
Diuron	See label	See label	See label	See label	See label
Dual Magnum	none	none	none	12m	none
Enlite	9m	9m	9m	9m	none
Envive	see label	see label	12m	see label	none
Fierce	7d-1m	45d-2m	11-12m	10-12m	none
FirstShot	14d	14d	14d	0d	3/7d
Goal/Galigan	10m	7d	10m	10m	7d
Harmony GT XP	none	45d	45d	45d	none
LeadOff	none	30d (see label)	10m	10m	30d (see label)
glufosinate	none	none	180d	none	none
Valor	See label	See label	See label	See label	none
Valor XLT	10m (soil pH < 7.0); 18m (soil pH > 7.0)	10m (soil pH < 7.0); 30m (soil pH > 7.0)	10m (soil pH < 7.0); 18m (soil pH > 7.0)	9m (soil pH < 7.0); 18m (soil pH > 7.0)	none
Zidua	none	1-4m	6-12m	10-24m	0-4m
Reviton	none	7d @ 1 oz; 14d @ 2-3 oz	120-180d	120-180d	0-7d @ 1 oz; 7d @ 2-3 oz

¹ Always consult label for specific requirements/precautions and differing restrictions based on rate, soil type, rainfall/irrigation and/or pH.

Table 5. General fall and spring applied programs.

Active Ingredient and Rate	Formulated Product and Rate	Weeds Controlled	Remarks and Precautions
paraquat @ 0.47-0.94 lb/A	paraquat 2 or 3 lb/gal formulations @ 1.9-3.8 pt/A or 1.25-2.5 pt/A; Add 0.25% v/v NIS	Most small annual grasses and broadleaf weeds including glyphosate-resistant ryegrass. Fair to poor activity on horseweed (mare's-tail), dock, cutleaf eveningprimrose, smartweed, swinecress, and Virginia pepperweed.	Results in rapid plant desiccation. Provides no soil residual weed control. Use higher rates (2-2.5 pt/A) for ryegrass control. Labeled tank mixtures with other herbicides increases control of broadleaf weeds mentioned.
thifensulfuron methyl + titribenuron methyl @ 0.016-0.25 lb/A	FirstShot @ 0.5-0.8 oz/A; Add 0.25% v/v NIS	Smartweed, knotweed, dock, cutleaf eveningprimrose, henbit, wild garlic/ onion and other small seeded winter broadleaf weeds.	Apply with glyphosate, or paraquat for improved control of annual grasses and select broadleaf weeds, especially at lower labeled use rates.
glyphosate2 @ 1.0 lb/A	glyphosate (4 or 5 lb/gal formulations) @ 1.0qt/A or 22 oz/A	Good activity on most emerged annual grass and broadleaf weeds. Fair activity on dock, cutleaf eveningprimrose, smartweed, swinecress, buttercup, geranium and henbit.	Provides no soil residual activity. Labeled tank mixtures with other herbicides increases control of broadleaf weeds mentioned.
glufosinate @ 0.53-0.79 lb/A	glufosinate 2.34 formulations (Liberty 280 SL, Cheetah etc.) @ 29-43 oz/A	Annual grass and broadleaf weeds. Good alternative for control of glyphosate-resistant horseweed (mare's-tail).	Provides no soil residual activity. Optimum results have been obtained when applied under warm, high humidity conditions with bright sunlight between sunrise and two hours before sunset. Do not use air induction spray tips due to potential coverage issues. Apply in a minimum of 15 GPA. Consult label for allowed tank mixtures with other herbicides listed above and below.
pyroxasulfone + flumioxazin @ 0.143-0.214 lb/A	Fierce @ 3-4.5 oz/A	Annual grass and broadleaf weeds. Good residual control of glyphosate-resistant ryegrass and horseweed (mare's-tail) with fall application.	Labeled primarily for residual fall and spring burndown application. Optimum fall timing is late October to mid-November. Apply with glyphosate or paraquat for improved control of emerged grasses and broadleaves.
S-metolachlor + metribuzin @ 1.63 lb/A	Boundary @ 2 pt/A	Annual grass and broadleaf weeds. Good residual control of glyphosate-resistant ryegrass and horseweed (mare's-tail) with fall application.	Labeled primarily for residual fall and spring burndown application. Fall application is labeled from Sept. 1-Nov. 30. Apply with glyphosate or paraquat for improved control of emerged grasses and broadleaves.
pyroxasulfone @ 0.106-0.159 lb/A	Zidua WG @ 2-3 oz/A; Zidua SC @ 3.25-5 oz/A	Annual grass and broadleaf weeds. Good residual control of glyphosate-resistant ryegrass with fall application.	Labeled for residual fall and spring burndown application. Fall application is labeled from Sept. 1-Dec. 1. Apply with glyphosate or paraquat for control of emerged grasses and broadleaves.

Active Ingredient and Rate	Formulated Product and Rate	Weeds Controlled	Remarks and Precautions
pyroxasulfone @ 0.106-0.159 lb/A + carfentrazone @ 0.008-0.011 lb/A	Anthem Flex @ 3.64-5.46 oz/A	Glyphosate-resistant Italian ryegrass and small seeded annual winter weeds.	Apply to prepared seedbeds between Sept. 1 and Dec. 1. Optimum control is generally observed when applied from late October to mid-November. Mix with paraquat to control emerged ryegrass. Incorporation to a depth of 2-3 inches will be beneficial if activating rainfall is not received soon after application. Refer to label for maximum combined fall and spring amounts.
pyroxasulfone @ 0.106-0.159 lb/A + fluthiacet-methyl @ 0.0032-0.0048 lb/A	Anthem Max @ 3.25-4.87 oz/A	Glyphosate-resistant Italian ryegrass and small seeded annual winter weeds.	Apply to prepared seedbeds between Sept. 1 and Dec. 1. Optimum control is generally observed when applied from late October to mid-November. Mix with paraquat to control emerged ryegrass. Incorporation to a depth of 2-3 inches will be beneficial if activating rainfall is not received soon after application. Refer to label for maximum combined fall and spring amounts.
clomazone @ 0.0375-0.66 lb/A	Command 3 ME @ 16-28 oz/A	Glyphosate-resistant Italian ryegrass and small seeded annual winter weeds.	Apply to prepared seedbeds between Oct. 1 and Nov. 30. Mix with paraquat to control emerged ryegrass. Incorporation to a depth of 2-3 inches will be beneficial if activating rainfall is not received soon after application. Refer to label for maximum combined fall and spring amounts and rate range according to soil type.
carfentrazone @ 0.016-0.031 lb/A	Aim @ 1.0-1.6 oz/A; Add 0.25% v/v NIS	Morningglory, hemp sesbania, pigweed and other broadleaves. May be used to control cotton plants in replant situations.	Apply prior to cotton emergence. Provides no residual soil activity or control of emerged grasses. Apply with glyphosate or paraquat for control of emerged grasses and improved control of broadleaves. Consult label for adjuvant requirements.
2,4 D @ 0.5-1.0 lb/A	2,4-D (4L formulations) @ 1-2 pt/A	Good activity on buttercup, cutleaf eveningprimrose, wild onion, dock and glyphosate-resistant horseweed (mare's-tail). Fair activity on geranium and hennbit but poor on chickweed.	Provides minimal residual soil activity or control of emerged grasses. Apply with glyphosate or paraquat for control of emerged grasses and improved control of broadleaves.
dicamba @ 0.25-0.5 lb/A	Clarity @ 8-16 oz/A; Engenia @ 6.4-12.8 oz/A; Xtendimax @ 11-22 oz/A	Good activity on glyphosate-resistant horseweed (mare's-tail), chickweed and dock. Fair activity on geranium and buttercup.	Provides minimal residual soil activity or control of emerged grasses. Apply with glyphosate or paraquat for control of emerged grasses and improved control of broadleaves.
haloxifen-methyl @ 0.004 lb/A	Elevore @ 1 oz/A	Excellent control of hennbit and good control of glyphosate-resistant horseweed (mare's-tail). Fair control of cutleaf eveningprimrose.	Provides minimal residual soil activity or control of emerged grasses. Apply with glyphosate or paraquat for control of emerged grasses and improved control of broadleaves.

Active Ingredient and Rate	Formulated Product and Rate	Weeds Controlled	Remarks and Precautions
flumioxazin @ 0.032-0.064 lb/A	Valor SX @ 1-2 oz/A	Good residual activity on glyphosate-resistant horseweed (mare's-tail) in fall and annual broadleaf weeds in fall and spring. Very good residual control of smartweed.	Labeled primarily at higher rate for residual fall and spring burndown application. Lower rate aids in speed of activity in glyphosate tank-mixes. Optimum fall timing is late October to mid-November. Apply with glyphosate or paraquat for improved control of emerged grasses and broadleaves.
oxyfluorfen @ 0.25-0.5 lb/A	Goal 2XL/Galigan 1-2 pt/A	Good residual activity on annual grass and broadleaf weeds including henbit, geranium, and smartweed.	Provides good residual control plus activity on select emerged weeds. Apply with glyphosate or paraquat for improved control of emerged grasses and broadleaves.
chlorimuron + metribuzin @ 0.281 lb/A	Canopy @ 6 oz/A	Most small-seeded annual broadleaf weeds and wild garlic/onion. Excellent residual control of annual winter weeds including glyphosate resistant horseweed (mare's-tail) from fall application.	Labeled for fall and spring burndown application. Optimum fall timing is late October to mid-November. Apply with glyphosate or paraquat for improved control of emerged grasses and broadleaves.
chlorimuron + tribenuron @ 0.37 lb/A	Canopy EX @ 2 oz/A	Most small-seeded annual broadleaf weeds and wild garlic/onion. Excellent residual control of annual winter weeds including glyphosate resistant horseweed (mare's-tail) from fall application.	Labeled for fall and spring burndown application. Optimum fall timing is late October to mid-November. Apply with glyphosate or paraquat for improved control of emerged grasses and broadleaves.
flumioxazin + chlorimuron @ 0.076 lb/A	Valor XLT @ 3 oz/A	Most small-seeded annual broadleaf weeds and wild garlic/onion. Excellent residual control of annual winter weeds including glyphosate resistant horseweed (mare's-tail) from fall application.	Labeled for fall and spring burndown application. Optimum fall timing is late October to mid-November. Apply with glyphosate or paraquat for improved control of emerged grasses and broadleaves.
chlorimuron + flumioxazin + thifensulfuron @ 0.09 lb/A	Envive @ 3.5 oz/A	Most small-seeded annual broadleaf weeds and wild garlic/onion. Excellent residual control of annual winter weeds including glyphosate resistant horseweed (mare's-tail) from fall application.	Labeled for fall and spring burndown application. Optimum fall timing is late October to mid-November. Apply with glyphosate or paraquat for improved control of emerged grasses and broadleaves.
chlorimuron + flumioxazin + thifensulfuron @ 0.105 lb/A	Enlite @ 3.5 oz/A	Most small-seeded annual broadleaf weeds and wild garlic/onion. Excellent residual control of annual winter weeds including glyphosate resistant horseweed (mare's-tail) from fall application.	Labeled for fall and spring burndown application. Optimum fall timing is late October to mid-November. Apply with glyphosate or paraquat for improved control of emerged grasses and broadleaves.

Active Ingredient and Rate	Formulated Product and Rate	Weeds Controlled	Remarks and Precautions
rimsulfuron + thifensulfuron @ 0.5 oz/A	Leadoff @ 1.5 oz/A; Add 0.25% v/v NIS	Dock, smartweed, henbit, wild garlic/onion and most small-seeded annual broadleaf weeds. Excellent residual control of annual winter weeds including glyphosate resistant horseweed (mare's-tail) from fall application.	Labeled for fall and spring burndown application. Optimum fall timing is late October to mid-November. Apply with glyphosate or paraquat for improved control of emerged grasses and broadleaves.
thifensulfuron methyl @ 0.014-0.028 lb/A	Harmony GT XP @ 0.3-0.6 oz/A; Add 0.25% v/v NIS	Most small-seeded annual broadleaf weeds, wild garlic/onion and dock. Excellent residual control of annual winter weeds from fall application.	Labeled for fall and spring burndown application. Optimum fall timing is late October to mid-November. Higher rate required for residual control of winter weeds from fall application. Apply with glyphosate or paraquat for improved control of emerged grasses and broadleaves.
S-metolachlor @ 1.25-1.6 lb/A	Dual Magnum @ 1.33-1.67 pt/A	Glyphosate-resistant Italian ryegrass and small seeded annual winter weeds.	Apply to prepared seedbeds between Sept. 1 and Dec. 1. Optimum control is generally observed when applied from late October to mid-November. Mix with paraquat to control emerged ryegrass. Incorporation to a depth of 2-3 inches will be beneficial if activating rainfall is not received soon after application.
saflufenacil @ 0.022-0.044 lb/A oz/A	Sharpen @ 1-2 oz/A; Add 1% v/v MSO + 8.5 lb/100 gallon AMS	Good activity on most annual broadleaf winter weeds.	Labeled for fall and spring burndown application. Optimum fall timing is late October to mid-November. Apply with glyphosate or paraquat for improved control of emerged grasses and broadleaves. Higher rate required for residual control of winter weeds from fall application. See label for specific adjuvant requirements with application.
clethodim @ 0.09-0.12 lb/A	Select Max @ 12-16 oz/A (or equivalent 2 lb clethodim formulation); Add 1% v/v COC	Glyphosate-resistant Italian ryegrass and annual grasses.	Optimum timing is late January into spring to small actively growing plants. No residual control. Tank Mixture with 2,4-D or dicamba can result in decreased control. Inadequate or complete control failure may indicate resistance.
tiafenacil @ 0.022-0.066 lb/A	Reviton @ 1-3 oz/A; Add 1% v/v MSO	Horseweed (mare's-tail), cutleaf eveningprimrose, henbit, white clover and numerous small seeded annual broadleaf and grasses. Fair to good control of small (<3") Italian ryegrass.	Provides no residual soil activity. Consult label for adjuvant requirements. Apply with glyphosate for improved burndown and cover crop termination speed and efficacy.

Corn

Table 1. Weed response ratings for selected corn herbicides applied preemergence.

Table Legend

Rating	Score
None to Slight	0-3
Fair	4-6
Good	7-8
Excellent	9-10

	Barnyardgrass	Broadleaf signalgrass	Browntop millet	Crabgrass	Seedling johnsongrass	Rhizome johnsongrass	Purple nutsedge	Yellow nutsedge	Hemp sesbania	Hhophornbeam copperteaf	Annual morningglory	Pigweed species	Prickly sida	Sicklepod	Smellmelon
Acuron	9	9	9	9	6	1	1	9	8	9	8	9	8	8	9
Anthem Flex or Maxx	9	9	9	9	9	1	-	-	7	8	7	8	7	6	8
Atrazine	7	6	6	6	5	1	0	5	8	9	8	8	8	8	5
Atrazine + metolachlor/S-metolachlor	9	8	8	9	8	1	1	9	8	9	8	8	8	8	9
Lexar EZ	9	9	9	9	7	1	1	9	8	9	8	9	8	8	9
Resicore	9	9	8	9	8	0	4	4	9	9	9	9	9	7	9
Sharpen	1	1	1	1	1	0	-	-	6	7	6	9	7	5	7
SureStart II	8	7	8	9	8	1	-	-	-	9	9	8	9	8	8
Trivolt	9	8	9	9	8	7	-	-	9	9	7	9	8	8	8
Verdict	8	8	8	9	7	1	1	7	8	8	8	8	8	8	8
Zidua SC	9	9	9	9	9	1	-	-	7	8	7	8	7	6	8

Control expected under optimum conditions. LSU AgCenter 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 Louisiana.

Table 2. Weed response ratings for selected corn herbicides applied postemergence.**Table Legend**

Rating	Score
None to Slight	0-3
Fair	4-6
Good	7-8
Excellent	9-10

	Barnyardgrass	Broadleaf signalgrass	Browntop millet	Crabgrass	Seedling johnsongrass	Rhizome johnsongrass	Purple nutsedge	Yellow nutsedge	Annual morningglory	Hemp sesbania	Hopornbeam copperleaf	Pigweed species	Prickly sida	Sicklepod	Smellmelon
2,4-D	1	1	1	1	4	0	3	2	9	8	8	8	8	8	8
Acuron GT	9	9	9	9	9	9	8	8	9	9	9	9	9	9	9
Armezon or Impact	5	5	5	5	1	3	-	-	8	8	8	9	8	8	8
Atrazine + crop oil	7	5	6	6	3	3	1	3	8	7	9	8	8	7	9
Capreno	7	7	7	7	9	8	-	-	9	9	8	8	8	9	9
Dicamba	0	0	0	0	0	0	0	3	9	9	5	8	5	6	7
Glufosinate	8	8	8	8	7	7	8	9	9	9	9	9	9	9	9
Glyphosate	9	9	9	9	9	9	7	7	8	7	9	9	8	8	8
Halex GT	9	9	9	9	9	9	8	8	8	9	9	9	9	9	9
Lexar EZ	9	9	9	9	7	1	1	9	8	8	9	9	8	8	9
Mesotrione	7	7	7	9	0	0	-	-	9	7	9	9	9	5	9
Nicosulfuron	8	8	8	5	9	8	4	5	6	2	1	5	2	5	1
Realm Q	9	7	7	-	8	7	-	-	9	8	9	8	9	7	8
Resicore	7	-	7	7	6	0	4	4	9	9	9	9	9	7	9
Shieldex	6	-	6	-	0	0	-	-	9	7	9	8	8	5	8
Sinate	8	8	8	8	8	7	4	8	9	9	9	9	9	9	9
Status	3	3	3	0	3	0	0	0	9	9	9	9	9	9	9

Control expected under optimum conditions. LSU AgCenter 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 Louisiana.

Table 3. Removal of partial corn stands for replanting.

Active Ingredient and Rate	Formulated Product and Rate	Weeds Controlled	Remarks and Precautions
clethodim - 0.045 lb/A	Various formulations – see label; Add 1% v/v COC + 2.5 to 4 lb/A AMS	All corn hybrids.	Do not replant within six days after application. Controls failed corn stands up to 12 inches tall. Avoid off-site movement to emerged, nontarget corn.
paraquat - 0.63-0.75 lb/A + atrazine - 0.5 lb/A	Paraquat (2 lb/gal formulation) - 40-48 oz/A; Paraquat (3 lb/gal formulation) - 26.9-32 oz/A + atrazine 4L - 16 oz/A or atrazine 90 DF - 0.55 lb/A; Add 0.25% v/v NIS or 1% COC; see label	All corn hybrids.	Apply with corn is small enough to achieve adequate coverage. Corn may be replanted immediately. Avoid off-site movement to emerged, nontarget corn.
paraquat - 0.63-0.75 lb/A + diuron - 0.5 lb/A	Paraquat (2 lb/gal formulation) - 40-48 oz/A; Paraquat (3 lb/gal formulation) - 26.9-32 oz/A + diuron 4L - 16 oz/A or diuron 80 DF - 0.63 lb/A; Add 0.25% v/v NIS or 1% COC; see label	All corn hybrids.	Apply with corn is small enough to achieve adequate coverage. Corn may be replanted immediately. Avoid off-site movement to emerged, nontarget corn.

Table 4. Preemergence herbicides.

Active Ingredient and Rate	Formulated Product and Rate	Weeds Controlled	Remarks and Precautions
acetochlor – 0.8-2.4 lb/A	acetochlor 7 lb/gal formulation – 1 to 2.75 pt/A	Annual grasses and small-seeded broadleaf weeds.	Preplant up to 30 days before planting, preplant incorporated, or preemergence. Mix with nonselective herbicide to control emerged vegetation.
acetochlor - 1.1-2 lb/A + atrazine – 1-1.5 lb/A	Various formulations; See product label for specific rates	Annual grasses and broadleaf weeds.	Apply preplant or preemergence before weeds emerge. See comments for acetochlor and atrazine. Adjust rates per label if OM > 3%. Mix with nonselective herbicide to control emerged vegetation.
acetochlor + flumetsulam + clopyralid – 0.8-1.33 lb/A	SureStart II 4.25 EC – 1.5 to 2.5 pt/A	Annual grasses and broadleaf weeds.	Apply preplant or preemergence before weeds emerge. Applications may be made from 30 days prior to planting until 11-inch corn.
acetochlor + mesotrione + clopyralid – 0.93-1.13 lb/A	Resicore 3.29 SC – 2.25 to 2.75 pt/A	Annual grasses and broadleaf weeds.	Apply preplant or preemergence before weeds emerge. Half of the total rate can be applied preemergence and half applied postemergence.
atrazine - 2.0 lb/A (1.6 lb/A on highly erodible soils)	4 lb/gal formulations - 2 qt/A; 90 DF formulations - 2.2 lb/A	Many small-seeded annual broadleaf weeds and some annual grasses.	Apply preemergence before weeds emerge. Rainfall required for activation. Do not exceed 2.5 pounds of active ingredient per year. See label for addition restrictions.
atrazine - 1.0-2 lb/A + S-metolachlor - 0.75-1.25 lb/A	Various formulations; See product label for specific rates	Most small-seeded annual grasses and broadleaf weeds.	See comments for atrazine and S-metolachlor. Apply to the bare soils surface after planting but before weeds emerge. See product labels for other tank-mix instructions.
dimethenamid-P - 0.56-0.84 lb/A	Outlook 6L – 12 to 18 oz/A; See product label for specific rates	Most annual grasses, pigweeds, and some sedges.	Apply preemergence before weeds emerge. May also be used before planting; consult label. Higher rates may be needed on soil with 3% or higher OM; consult label. Mix with atrazine for improved broadleaf weed control; consult label. Mix with nonselective herbicide to control emerged vegetation.

Active Ingredient and Rate	Formulated Product and Rate	Weeds Controlled	Remarks and Precautions
dimethenamid-P + saflufenacil – 0.44-0.8 lb/A	Verdict – 10 to 18 oz/A; See product label for specific rates	Small-seeded grasses and broadleaf weeds.	Apply preemergence before weeds emerge. Application following corn emergence will cause severe corn injury. Do not use on fields treated with organophosphate or carbamate . Tank-mixing Verdict with atrazine at 1.5 lb/A will increase spectrum of weeds controlled. Mix with nonselective herbicide to control emerged vegetation.
pyroxasulfone - 0.08-0.21lb/A	Zidua SC - 2.5 to 6.5 oz/A; See product label for specific rates	Most annual grasses and broadleaf weeds.	Apply preemergence before weeds emerge. May also be used before planting; consult label. Only crops listed on Zidua SC label can be planted the following year. Tank-mixing Zidua SC with atrazine at 1.5 lb/A will increase spectrum of weeds controlled. Mix with nonselective herbicide to control emerged vegetation.
pyroxasulfone + carfentrazone-ethyl – 0.109-0.227 lb/A	Anthem Flex - 3.5 to 7.28 oz/A; See product label for specific rates	Many small-seeded annual broadleaf weeds and most annual grasses.	Corn must be planted 1.5 inches or deeper. Apply to the bare soil surface after planting but prior to spike stage corn. May be used after corn emergence; consult label. Mix with nonselective herbicide to control emerged vegetation.
pyroxasulfone + fluthiacet-methyl – 0.12-0.19 lb/A	Anthem Maxx - 3 to 6.5 oz/A; See product label for specific rates	Many small-seeded broadleaf weeds and most annual grasses.	Corn must be planted 1.5 inches or deeper. Apply to the bare soil surface after planting but before weeds emerge. May also be used after corn emergence; consult label. Mix with nonselective herbicide to control emerged vegetation.
S-metolachlor or metolachlor + safener - 0.8-1.6 lb/A	Various Formulations; See product label for specific rates	Most annual grasses and broadleaf weeds.	Apply after planting before weeds emerge. Poor control of most large seeded broadleaf weeds. For improved broadleaf weed control mix with atrazine; consult label. Mix with nonselective herbicide to control emerged vegetation.

Active Ingredient and Rate	Formulated Product and Rate	Weeds Controlled	Remarks and Precautions
Thiencarbazone-methyl + isoxaflutole + flufenacet – 0.569 lb/A	Trivolt – 20 oz/A	Annual grasses and broadleaf weeds; seedling and rhizome johnsongrass	Do not apply if water table is less than 25 feet below ground surface. Consult label for crop rotation restrictions. Organic matter and soil pH influence use rate; consult label. Do not use on fields treated with organophosphate or carbamate insecticides. Tank-mixing Trivolt with atrazine to increase spectrum of weeds controlled. Mix with nonselective herbicide to control emerged vegetation.
atrazine + bicyclopyrone + mesotrione + S-metolachlor – 1.9-2.6 lb/A	Acuron - 2.5-3 qt/A	Annual grasses and broadleaf weeds	Consult label for crop rotation restrictions. Organic matter influences use rate; consult label. Mix with nonselective herbicide to control emerged vegetation.

Table 5. Postemergence herbicides.

Active Ingredient and Rate	Formulated Product and Rate	Weeds Controlled	Remarks and Precautions
2,4-D amine - 0.25-0.5 lb/A	2,4-D Amine - 0.5-1.0 pt/A	Broadleaf weeds.	Apply before corn is 15 inches tall or after grain is dented. Do not treat at tasseling and silking stage. If necessary, to spray after corn is 15 inches tall but before tasseling, do not spray in whorl. Under certain conditions injury is possible; consult label.
acetochlor + mesotrione + clopypalid – 0.93-1.13 lb/A	Resicore 3.29 SC – 2.25-2.75 pt/A; Add 0.25% v/v NIS or 1% v/v COC	Small weeds less than 3 inches tall.	Mix with nonselective herbicide and/or atrazine to improve weed control spectrum. Do not apply carbamate or organophosphate insecticide seven days of before or seven days after application.
atrazine - 2.0 lb/A	4L formulations - 2 qt/A; 90 DF formulations - 2.2 lb/A; Add 1% v/v COC	Most broadleaf weeds and some grasses; grasses must be very small to obtain control.	Apply before weeds exceed 1.5 inches or corn exceeds 12 inches in height. Do not exceed 2.5 lb ai/A atrazine per season. Do not graze or feed forage from treated areas to livestock for 21 days after treatment. Mix with nonselective herbicide to improve weed control spectrum.
atrazine - 1-2 lb/A + S-metolachlor – 0.8-1.6 lb/A	Various formulations; See product label for specific rates.	Annual grasses and broadleaf weeds.	Mix with nonselective herbicide to improve weed control spectrum.
atrazine + S-metolachlor + mesotrione - 2.08-2.78 lb/A	Lexar EZ – 2.25-3 qt/A; Add 0.25% v/v NIS.	Most small-seeded grasses and broadleaf weeds.	See comments in preemergence section. Apply before weeds emerge and corn is 12 inches tall. Do not apply carbamate or organophosphate insecticide within seven days of application. Do not apply with liquid fertilizer. Mix with nonselective herbicide to improve weed control spectrum. See the Lexar EZ label for other tank-mixtures.
dicamba - 0.25-0.5 lb/A	Various formulations; See product label for specific rates.	Most broadleaf weeds.	Mix with nonselective herbicide to improve weed control spectrum. Do not make more than one application per season. Apply before corn is 36 inches tall or until 15 days before tassels emerge. Application to corn greater than 8 inches tall can cause stalks to lean and/or become brittle potentially leading to breaking if exposed to high winds.

Active Ingredient and Rate	Formulated Product and Rate	Weeds Controlled	Remarks and Precautions
dicamba - 0.138-0.276 lb/A + diflufenzopyr - 0.05-0.1 lb/A	Status - 5-10 oz/A; Add 0.25% v/v NIS or 1% v/v COC or MSO	Most broadleaf weeds.	Apply after corn is 4 inches tall (V2) up to 36 inches (V8). Do not apply within 15 days of tassel emergence. Do not mix with 2,4-D or more dicamba. Do not mix with EC formulation herbicides. Do not apply to stressed or injured corn. Mix with atrazine and/or nonselective herbicide to improve weed control spectrum.
glufosinate - 0.53-0.79 lb/A	Various formulations with 2.34 lb/ gal glufosinate - 29-43 oz/A	Many annual grasses and broadleaf weeds. Adhere to weed size restrictions on label or unsatisfactory control will result.	Glufosinate-tolerant corn only. Apply from emergence through V5. Apply before weeds are 2-3 inches tall with atrazine at 1.0 lb/A and/or residual grass herbicides. Refer to label for approved tank-mixes. Do not apply more than 87 oz/year.
glyphosate – 0.75-1 lb/A	Various formulations; See product label for specific rates and requirements.	Most annual grasses and broadleaf weeds.	Glyphosate-tolerant corn only. Consult product labels for glyphosate products cleared on Roundup Ready corn. No more than 3.7 lb acid equivalent/A for all in-crop applications from emergence and to V8 growth stage or 48 inches.
glyphosate + S-metolachlor + mesotrione – 1.98-2.22 lb/A	Halex GT-3 – 3.6-4.0 pt/A; Add 0.25% v/v NIS and 8.5-17% w/v AMS.	Most annual grass and broadleaf weeds; good residual control is tank-mixed with atrazine.	Glyphosate-tolerant corn only. Apply from emergence 30-inch-tall corn or V8 growth stage. Do not use Halex GT if another HPPD inhibitor such as Callisto, Impact or Laudis has or will be used. Do not apply carbamate or organophosphate insecticide within seven days of application. Mix with atrazine to improve the spectrum of weeds controlled.
glyphosate + S-metolachlor + mesotrione + bicyclopyrone – 2.02 lb/A	Acuron GT – 3.75 pt/A; Add 0.25% v/v NIS and 8.5-17% w/v AMS	Annual grasses and broadleaf weeds.	Glyphosate-tolerant corn only. Do not make more than one application per year. Do not mix with emulsifiable concentrate (EC) products.
halosulfuron-methyl - 0.032-0.063 lb/A	Various formulations with 75% halosulfuron - 0.67-1.33 oz/A; Add 0.25% v/v NIS or 1% v/v COC	Purple and yellow nutsedge, common cocklebur.	Apply to spiking corn thru layby. Do not exceed two applications with a total of 2 2/3 oz/A/season Permit. Mix with atrazine and/or nonselective herbicide to improve weed control spectrum.
mesotrione - 0.094 lb/A	Callisto - 3 oz/A; Add 1% v/v COC	Many broadleaf weeds.	Apply before weeds are 4 inches tall. Has excellent residual weed control, so early applications are encouraged. Do not use if Counter was used at planting; consult label for other use restrictions. Do not tank-mix with MSO blend adjuvants. Mix with atrazine and/or nonselective herbicide to improve weed control spectrum.

Active Ingredient and Rate	Formulated Product and Rate	Weeds Controlled	Remarks and Precautions
nicosulfuron - 0.03 lb/A	Various formulations; Add 0.25% v/v NIS or 1% COC; See product label for specific rates and requirements.	Johnsongrass and annual grasses.	Apply to corn up to 20 inches tall. Do not broadcast after the six-leaf stage. Can be applied with drop nozzles up to 36 inches tall (V10) corn; consult label. Do not apply to corn treated with Counter 15 G, Counter20CR, Dyfonate, Lorsban, and Thimet; consult label. Tank-mixing Accent Q with atrazine and/or nonselective herbicide to improve weed control spectrum.
nicosulfuron + rimsulfuron - 0.036 lb/A	Steadfast Q - 1.5 oz/A; Add 0.25% v/v NIS or 1% COC	Most annual grasses, johnsongrass and some broadleaf weeds.	Apply to corn up to 20 inches tall. Do not apply after the V6 growth stage. Do not apply to corn treated with Counter 15 G, Counter20CR, Dyfonate, Lorsban, and Thimet; consult label. Mix with atrazine and/or nonselective herbicide to improve weed control spectrum.
paraquat – 0.26-0.63 lb/A	Paraquat (2 lb/gal formulation) – 16-40 oz/A; Paraquat (3 lb/gal formulation) – 11-27 oz/A; Add 0.25% v/v NIS	Annual grasses and weeds less than 4 inches tall.	Application only with hooded sprayer after corn is 6 inches tall. Avoid crop contact with spray solution. Mix with residual grass and broadleaf herbicide to improve weed control spectrum.
pyroxasulfone + fluthiacet-methyl – 0.101-0.202 lb/A	Anthem Maxx – 3-6.5 oz/A; Add 0.25% v/v NIS or 1% COC; See product label for specific rates and requirements.	Most annual grasses and small-seeded broadleaf weeds.	Apply before corn exceeds V4 growth stage. Mix with nonselective herbicide and/or with atrazine to improve weed control spectrum.
rimsulfuron + thifensulfuron-methyl – 0.018 lb/A	Resolve Q - 1.25 oz/A; Add 0.25% v/v NIS or 1% COC	Most annual grasses and some broadleaf weeds.	Apply to corn up to 20 inches tall or that has no more than seven collars. Do not apply to corn treated with Counter 15 G, Counter20CR, Dyfonate, Lorsban, and Thimet; consult label. Mix with atrazine and/or nonselective herbicide to improve weed control spectrum.
rimsulfuron + mesotrione - 0.098 lb/A	Realm Q - 4 oz/A; Add 0.25% v/v NIS or 1% COC	Most annual grasses and broadleaf weeds.	Do not apply to corn taller than 20 inches or plants with seven or more collars. Do not tank-mix with organophosphate insecticide. Apply organophosphate insecticide either seven days before or seven days after application. Mix with atrazine and/or nonselective herbicide to improve weed control spectrum.
tembotrione - 0.08 lb/A	Laudis - 3 oz/A; Add 1% v/v MSO and 1.5 lb/A AMS	Many broadleaf weeds. Laudis alone will not control most morningglories.	Apply up to V8 growth stage. Consult label for other use restrictions. Mix with atrazine and/or nonselective herbicide to improve weed control spectrum.

Active Ingredient and Rate	Formulated Product and Rate	Weeds Controlled	Remarks and Precautions
thiencarbazone-methyl + tembotrione - 0.081 lb/A	Capreno - 3 oz/A; Add 1% v/v COC and 1.5 lb/A AMS	Seedling and rhizome johnsongrass. Most annual grasses and broadleaf weeds.	Apply before corn exceeds 12 inches in height. Corn injury may occur if rainfall does not occur within three weeks after application. Do not use on fields treated with Counter; consult label. Mix with atrazine and/or nonselective herbicide to improve weed control spectrum.
tolpyralate – 0.026-0.035 lb/A	ShieldEX – 1-1.35 oz/A; Add 1% v/v MSO or COC	Many broadleaf weeds.	Apply up to V6 growth stage or 20-inch corn. Mix with atrazine and/or nonselective herbicide to improve weed control spectrum.
topramezone - 0.016-0.044 lb/A	Armezon or Impact - 0.75-2 oz/A; Apply with 1% v/v MSO and 1.5 lb/A AMS.	Annual grasses and broadleaf weeds.	Apply to corn up V8 growth stage. Mix with atrazine and/or nonselective herbicide to improve weed control spectrum.
topramezone + glufosinate – 0.42-0.56 lb/A	Sinate – 21-28 oz/A; Add 1% v/v methylated seed oil and 3 lb/A of AMS.	Annual grasses and broadleaf weeds.	Glufosinate-tolerant Corn Only. Mix with atrazine to improve weed control spectrum. Apply from corn emergence until V7 growth stage.

Table 6. Preharvest or harvest aid.

Active Ingredient and Rate	Formulated Product and Rate	Weeds Controlled	Remarks and Precautions
2,4-D amine – 0.45-0.95 lb/A	Various formulations; See product label for specific rates and requirements.	Broadleaf weeds.	Apply after corn is in dent or hard dough stage. Do not harvest before five to seven days after application.
carfentrazone – 0.016-0.031 lb/A	Aim – 1-2 oz/A; Add 1% v/v COC	Better on vines than pigweed, sicklepod, etc.	Apply after corn grain is physiologically mature. Use a minimum volume of 10 gallons by ground and 5 gallons by air. Do not apply harvest before three days after application.
paraquat – 0.3-0.5 lb/A	Paraquat (2 lb/gal formulation) – 1.2-2 pt/A; Paraquat (3 lb/gal formulation) – 0.8-1.3 pt/A; Add 0.25% v/v NIS.	Grasses and broadleaves.	Apply after black layer has formed. Use a minimum of 20 gallons by ground or 5 gallons by air. Apply at least seven days prior to harvest.
sodium chlorate – 6 lb/A	Various formulations; See product label for specific rates and requirements.	Desiccation of green vegetation.	Apply to corn field where grasses make harvest difficult. Apply at least 14 days before anticipated harvest date on clear days when temperatures are expected to exceed 70 F. DO NOT graze treated fields or feed fodder, forage or residual seeds within 14 days of application.

Cotton

Table 1. Weed response ratings for selected cotton herbicides applied preemergence.

Table Legend

Rating	Score
None to Slight	0-3
Fair	4-6
Good	7-8
Excellent	9-10

	hophornbeam copperleaf	smellmelon	bermudagrass	rhizome johnsongrass	seedling johnsongrass	annual grasses	yellow nutsedge	prickly sida	pigweed	morninglory	hemp sesbania	sicklepod
Command 3ME	6	6	3	9	8	9	0	8	4	6	1	2
Cotoran, Meturon or Fluometuron	9	9	0	7	7	8	0	8	9	8	8	7
S-metolachlor/metolachlor (all formulations)	1	1	0	7	6	8	8	4	8	4	3	2
Diuron	7	7	0	7	6	7	0	7	9	6	7	8
Treflan or Prowl	1	1	2	9	8	9	0	2	8	4	1	2
Solicam DF	7	8	3	7	6	8	4	8	8	6	5	-
Treflan or Prowl + Cotoran,	9	9	0	9	9	9	0	8	9	9	8	7
Treflan, or Prowl + Diuron	8	8	0	9	9	9	0	7	9	8	8	8
Staple LX + Cotoran	9	9	0	9	7	8	3	9	9	8	8	8

Control expected under optimum conditions. LSU AgCenter 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 Louisiana.

Table 2. Weed response ratings for selected cotton herbicides applied postemergence.**Table Legend**

Rating	Score
None to Slight	0-3
Fair	4-6
Good	7-8
Excellent	9-10

Control expected under optimum conditions. LSU AgCenter 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 Louisiana.

	hophornbeam copperleaf	smellmelon	bermudagrass	rhizome johnsongrass	seedling johnsongrass	annual grasses	yellow nutsedge	prickly sida	pigweed	morningglory	hemp sesbania	sicklepod
Aim/ET	-	8	0	0	0	0	0	0	8	9	9	6
Aim/ET + MSMA	5	5	0	4	8	8	8	7	8	9	9	8
Aim/ET + glyphosate	9	9	7	8	9	9	7	8	9	9	9	9
Assure II	0	0	8	8	9	9	0	0	0	0	0	0
Cobra + MSMA	9	9	0	6	9	7	6	8	9	9	8	6
Cotoran, Meturon or Fluometuron	8	8	0	4	7	6	3	6	7	5	5	6
Caparol or Cotton-Pro	8	8	0	4	8	7	5	7	8	8	6	7
Caparol or Cotton-Pro + MSMA	9	9	0	4	9	8	7	8	9	9	7	8
Cotoran + MSMA	9	9	0	4	8	8	6	7	9	8	6	8
Envoke	8	9	0	6	6	5	8	3	9	8	8	8
Fusilade DX	0	0	8	8	9	9	0	0	0	0	0	0
glyphosate	9	9	7	8	9	9	7	8	9	8	8	8
glyphosate+ Warrant	9	9	7	8	9	9	7	8	9	8	8	8
Goal + MSMA	9	9	0	5	9	8	7	7	8	9	7	8
Liberty 280 SL	10	10	6	8	9	9	4	9	9	10	9	9
Liberty 280 SL + Dual Magnum	10	10	6	8	9	9	4	9	9	10	9	9
Liberty 280 SL + Staple LX	10	10	6	8	9	9	4	9	9	10	9	9
diuron	7	7	0	4	8	6	0	7	8	7	6	8
diuron + MSMA	8	8	0	4	9	9	7	8	9	8	6	8
Linex + MSMA	9	9	0	4	9	8	6	8	9	9	7	8
Poast Plus	0	0	8	8	9	9	0	0	0	0	0	0
Select Max/other clethodim formulations	0	0	8	8	9	9	0	0	0	0	0	0
Sequence	9	9	7	8	9	9	7	8	9	8	8	8
Staple LX	2	4	0	4	6	5	5	8	9	8	8	6
Staple LX + glyphosate	9	9	7	8	9	9	7	9	9	9	9	8
Suprend	8	9	0	4	8	7	8	7	9	8	8	8
Valor	9	9	0	0	0	0	3	8	9	9	9	8

Table 3. Preplant and preplant-incorporated herbicides.

Active Ingredient and Rate	Formulated Product and Rate	Weeds Controlled	Remarks and Precautions
diuron - 0.5-1.6 lb/A	Diuron 4L - 0.5-1.6 qt/A	Good residual control of morninglory, pigweed, and small-seeded annual grasses.	Apply 15 to 45 days prior to planting. Avoid tillage or “dragging” of beds after application to prevent cotton injury and/or maximize weed control. Rainfall or irrigation amounts of 0.5 inch or greater between application and planting lessen likelihood of crop injury. Mix with other herbicides such as glyphosate or paraquat to completely burndown existing vegetation.
flumioxazin - 0.032-0.064 lb/A	Valor SX WDG - 1-2 oz/A	Good residual control of pigweed, morninglory, hemp sesbania, prickly sida, and hophornbeam copperleaf. Some annual grass suppression.	Plant at least 30 days after application AND at least 1 inch of rainfall or overhead irrigation has been received. Mix with other herbicides such as glyphosate or paraquat to completely burndown existing vegetation.; Excellent residual control of glyphosate-resistant horseweed (mare’s-tail) and small-seeded annual winter weeds when applied from late October to mid-November.
fomesafen - 0.25 lb/A	Reflex - 1 pt/A	Good residual control of pigweed, morninnglory and other broadleaf weeds. Some suppression of yellow nutsedge and annual grasses.	Plant at least 21 days after application on medium or fine textured soils AND at least 0.5 inch of rainfall or overhead irrigation has been received. Do not disturb or rework seedbed after application. Plant at least 0.75 inches deep. Cotton plants may exhibit some crinkling or spotting on foliage or stunting, but plants normally outgrow these effects. Mix with other herbicides such as glyphosate or paraquat to completely burndown existing vegetation.
pendimethalin - 0.5-1.5 lb/A	Prowl 3.3 EC - 1.2-1.8 pt/A on coarse soil; 1.8-2.4 pt/A on medium soil; 2.4-3.6 pt/A on heavy soil; Prowl H2O - 1-2 pt/A on coarse soil; 2 pt/A on medium soil; 3 pt/A on heavy soil	Most annual grasses, seedling johnsongrass, pigweed and suppression of morninglory.	Apply up to 60 days before planting and incorporate in the top 2 inches within seven days of planting within seven days prior to planting.
trifluralin - 0.5-1.5 lb/A	Treflan, Trifluralin, and other 4L formulations - 1-1.5 pt/A on coarse soil; 1.5- 2 pt/A on medium soil; 3 pt/A on heavy soil	Most annual grasses, seedling johnsongrass, pigweed, and suppression of morninglory.	Apply prior to planting (immediately preferred) and incorporate in the top 2 to 3 inches of the final seedbed within 24 hours of application.

Table 4. Preemergence herbicides.

Active Ingredient and Rate	Formulated Product and Rate	Weeds Controlled	Remarks and Precautions
acetochlor - 0.94-1.5 lb/A	Warrant - 1.25-2 qt/A	Good pigweed control and good to fair control of most annual grasses and small-seeded broadleaves.	Consult label for rate range considering soil type and O.M. content. Emerged weeds are not controlled and require addition of a labeled postemergence herbicide such as glyphosate or glufosinate. Please see label for appropriate tank mix partners and related information.
clomazone - 0.5-1.25 lb/A	Command 3 ME - 1.3-3.3 pt/A	Most annual grasses, rhizome and seedling johnsongrass, prickly sida, wild poinsettia, spurred anoda, velvetleaf and itchgrass. Fair to poor control of entireleaf morningglory, hemp sesbania, pigweed, smellmelon and hophornbeam copperleaf.	Apply before or after planting prior to cotton emergence. Requires the use of disulfoton or phorate insecticides at a minimum of 0.75 lb ai/A applied in furrow to protect cotton from injury. Read and follow label instructions concerning application conditions and buffer zones to reduce nontarget drift injury.
fluometuron - 0.8-2.0 lb/A	Cotoran 80WP, Meturon 80DF, Fluometuron 80DF - 1.0 lb/A on light soil; 1.5 lb/A on medium soil; 2.5 lb/A on heavy soil; Cotoran, Meturon 4L - 0.8 qt/A on coarse soil; 1.2 qt/A on medium soil; 2.0 qt/A on heavy soil	Most small-seeded annual grasses and broadleaf weeds. Fair control of pigweed and nutsedge.	Apply at/after planting before weeds and cotton emerge. Wheat can be planted three months after application. Temporary chlorosis can occur under cool, wet environmental conditions after planting.
fluridone - 0.15-0.3 lb/A	Brake - 16-32 oz/A	Annual grasses, pigweed and other small-seeded broadleaves. Some suppression of nutsedge.	Apply at/after planting before weeds and crop emerge. Can be applied up to 14 days prior to planting. Provides very long residual control when receiving adequate rainfall/irrigation for activation. Excellent pigweed material. Addition of Cotoran or Reflex can benefit broadleaf weed control, especially at lower rates.
metolachlor - 0.49-1.3 lb/A	Parallel 7.8EC/others - 0.5-1.0 pt/A on coarse soil; 0.67-1.33 pt/A on medium soil; 1.0-1.33 pt/A on heavy soil	Most annual grasses and pigweed. Suppression of yellow nutsedge, morningglory and hophornbeam copperleaf.	Apply at/after planting before weeds emerge.
norflurazon - 1.0-2.0 lb/A	Solicam DF - 1.25 lb/A on light soil; 1.9 lb/A on medium soil; 2.5 lb/A on heavy soil	Most small-seeded annual grasses and broadleaf weeds. Fair control of pigweed and nutsedge.	Apply at/after planting before weeds and crop emerge. Can be applied up to 30 days before planting.

Active Ingredient and Rate	Formulated Product and Rate	Weeds Controlled	Remarks and Precautions
pendimethalin - 0.5-1.5 lb/A	Prowl 3.3 EC - 1.2-1.8 pt/A on coarse soil; 1.8-2.4 pt/A on medium soil; 2.4-3.6 pt/A on heavy soil; Prowl H2O - 1-2 pt/A on coarse soil; 2 pt/A on medium soil; 3 pt/A on heavy soil	Most annual grasses, seedling johnsongrass, pigweed and suppression of morningglory.	Apply at/after planting before weeds and cotton emerge.
pyrithiobac - 0.03-0.053 oz/A + fluometuron - 0.8-2 lb/A	Staple LX - 1.3-2.1 fl. oz./A + Cotoran et al as above	Weeds listed under fluometuron with improved yellow nutsedge activity	Apply at/after planting before weeds and cotton emerge.
S-metolachlor - 1.5-2.0 lb/A	Dual Magnum, Dual II Magnum - 1.0-1.33 pt/A on medium soil; 1.33 pt/A on heavy soil	Most annual grasses and pigweed. Suppression of yellow nutsedge, morningglory and hophornbeam copperleaf	Apply at/after planting before weeds emerge.

Table 5. Postemergence herbicides.

Active Ingredient and Rate	Formulated Product and Rate	Weeds Controlled	Remarks and Precautions
2,4-D choline - 0.7-0.95 lb/A	Enlist One - 24-32 oz/A	Most small broadleaf weeds. Fair control of glyphosate-resistant horseweed (mare's-tail).	For use in Enlist varieties only. Only labeled for use in Enlist cotton. Apply no later than mid-bloom. Federal and state labels contain numerous restrictions for use. See label/website for further information including training requirements prior to purchase and use.
2,4-D choline - 0.7-0.95 lb/A + glufosinate - 0.4-0.53 lb/A	Enlist One - 24-32 oz/A + glufosinate 2.34 formulations (Liberty 280 SL, Cheetah etc.) - 22-29 oz/A	See comments in 2,4-D choline and glufosinate sections.	For use in Enlist varieties only. Only labeled for use in Enlist cotton. Apply no later than mid-bloom. Federal and state labels contain numerous restrictions. See label/website for further information including training requirements prior to purchase and use.
2,4-D choline - 0.75-1.0 lb/A + glyphosate - 0.7-0.94 lb/A	Enlist Duo - 56-75 oz/A	See comments in 2,4-D choline and glyphosate sections.	For use in Enlist varieties only. Only labeled for use in Enlist cotton. Apply no later than mid-bloom. Federal and state labels contain numerous restrictions. See label/website for further information including training requirements prior to purchase and use. Enlist Duo can be tank-mixed with other herbicides to broaden the weed spectrum. Please see company website for list of products that can be legally tank-mixed.
clethodim - 0.08-0.25 lb/A	Select Max - 10-32 oz./A; 2 lb formulations - 6-16 oz/A	Annual and perennial grasses and susceptible volunteer corn.	Apply before grasses exceed height for treatment stated on label. Use 8-12 oz/A on small annual grasses/volunteer corn and 12-16 oz/A on perennial and larger annual grasses. Apply with NIS - 1 qt/100 gal or COC - 1 gal/100 gal. Tank mixtures with other herbicides may reduce activity.
dicamba - 0.5 lb/A	Engenia - 12.5 oz/A OR XtendiMax - 22 oz/A	Most small broadleaf weeds including glyphosate-resistant horseweed (mare's-tail) and redvine. Expect poor control of hophornbeam copperleaf and prickly sida.	For use in XtendFlex varieties only. Federal and state labels contain numerous restrictions for use including cutoff application dates. See labels/websites for further information including training requirements prior to purchase and use. Please see company websites for list of products that can be legally tank-mixed and corresponding comments above. Can only be co-applied with potassium salts of glyphosate and must include a label approved volatility reduction agent (VRA). A limited amount of residual activity on broadleaves can be achieved with adequate rainfall or irrigation after application.

Active Ingredient and Rate	Formulated Product and Rate	Weeds Controlled	Remarks and Precautions
dicamba - 0.5 lb/A + s-metolachlor - 1 lb/A)	Tavium - 3.53 pt/A	See dicamba and S-metolachlor sections above.	For use in XtendFlex varieties only. Federal and state labels contain numerous restrictions for use including cutoff application dates. See labels/websites for further information including training requirements prior to purchase and use. Please see company websites for list of products that can be legally tank-mixed and corresponding comments above. Apply through six-leaf stage or 60 days before harvest, whichever comes first. Can only be co-applied with potassium salts of glyphosate and must include a label approved volatility reduction agent (VRA). A limited amount of residual activity on broadleaves can be achieved with adequate rainfall or irrigation after application.
fenoxaprop-ethyl + fluazifop - 0.08-0.24 lb/A	Fusion - 4-12 oz/A.	Same as above for fluazifop.	Same as above for fluazifop.
fluazifop - 0.093-0.188 lb/A	Fusilade DX - 6-12 oz/A	Annual and perennial grasses and susceptible volunteer corn.	Apply before grasses exceed height for treatment stated on label. Use 6-8 oz/A on small annual grasses/volunteer corn and 10-12 oz/A on perennial and larger annual grasses. Apply with NIS - 1 qt/100 gal or COC - 1 gal/100 gal. Tank mixtures with other herbicides may reduce activity.
glufosinate - 0.4-0.53 lb/A + glyphosate - 1.0 lb/A	glufosinate 2.34 formulations (Liberty 280 SL, Cheetah etc.) - 22-29 oz/A + glyphosate (4 or 5 L formulations) - 32 or 22 oz/A	See comments in glufosinate and glyphosate sections.	Liberty-Link, Glytol/Liberty-Link, Enlist, AND XtendFlex varieties only: See other cautions above. Improved control of larger (>3 - 4 inches) grasses, sedges, and pigweeds as compared to glufosinate alone. See labels for approved residual herbicide tank mixes and corresponding comments above.
glufosinate - 0.4-0.59 lb/A	glufosinate 2.34 formulations (Liberty 280 SL, Cheetah etc.) - 22-32 oz/A	Most small annual broadleaves including glyphosate-resistant horseweed (mare's- tail) and annual grasses and seedling johnsongrass. Fair to poor control of large (>3 – 4 inches) pigweed, goosegrass, broadleaf signalgrass and nutsedge.	Liberty-Link, Glytol/Liberty-Link, Enlist, AND XtendFlex varieties only: Apply from cotton emergence to early bloom. Time applications to weed size stated on label, not crop stage. Use lower rates on small actively growing weeds. Optimum results have been obtained when applied under warm, high humidity conditions with bright sunlight between sunrise and two hours before sunset. Do not use air induction spray tips due to potential coverage issues. Apply in a minimum of 15 GPA. Consult labels for maximum application rates and approved formulations/tank mixes/additives.

Active Ingredient and Rate	Formulated Product and Rate	Weeds Controlled	Remarks and Precautions
glufosinate - 0.4-0.59 lb/A + S-metolachlor or metolachlor - 0.95-1.33 lb/A	glufosinate 2.34 formulations (Liberty 280 SL, Cheetah etc.) - 22-32 oz/A + Dual Magnum or label approved metolachlor formulations - 1-1.33 pt/A	See comments in glufosinate and S-metolachlor/metolachlor sections above.	Liberty-Link, Glytol/Liberty-Link, Enlist, AND XtendFlex varieties only: Apply from cotton emergence to early bloom. Time applications to weed size stated on label, not crop stage. Use lower rates on small actively growing weeds. Can be applied in first or second overtop application to provide residual control. See other cautions above. Consult labels for maximum application rates and approved formulations/tank mixes/additives.
glufosinate - 0.4-0.59 lb/A + pyriithobac - 0.0325-0.095 lb/A	glufosinate 2.34 formulations (Liberty 280 SL, Cheetah etc.) - 22-32 oz/A + Staple LX - 1.3 -3.8 oz/A	See comments in glufosinate and pyriithobac sections above.	Liberty-Link, Glytol/Liberty-Link, Enlist, AND XtendFlex varieties only: Apply from cotton emergence to early bloom. Time applications to weed size stated on label, not crop stage. Use lower rates on small actively growing weeds. Can be applied in first or second overtop application to provide residual control. See other cautions above. Consult labels for maximum application rates and approved formulations/tank mixes/additives.
glufosinate - 0.79 lb/A	glufosinate 2.34 formulations (Liberty 280 SL, Cheetah etc.) - 43 oz/A	Salvage situation for large broadleaf and grass weeds.	Liberty-Link, Glytol/Liberty-Link, Enlist, AND XtendFlex varieties only: See other cautions above.
glyphosate + pyriithobac - 1.0 + 0.0325-0.095 lb/A	Glyphosate (4 or 5 L formulations) + Staple LX - 32 or 22 oz/A + 1.3-3.8 oz/A	See comments in glyphosate and pyriithobac sections above.	Use on Roundup Ready Flex, Glytol/Liberty-Link, Enlist, and XtendFlex varieties only: No restriction on cotton size. See other cautions above. DO NOT mix with ANY metolachlor formulations. Can be applied in first or second overtop application to provide residual control. Consult labels for maximum application rates and approved formulations/tank-mixes/additives.
glyphosate - 1.0 lb/A	5 L formulations - 22 oz/A; 4L formulations - 32 oz/A	Most small broadleaf weeds and grasses and yellow nutsedge. Good to fair activity on larger mornnglory, yellow nutsedge, prickly sida and hemp sesbania. Suppression of purple nutsedge, smartweed and redvine.	Use on Roundup Ready Flex, Glytol/Liberty-Link, Enlist, and XtendFlex varieties only: No restriction on cotton size. Larger cotton may interfere with spray coverage, resulting in reduced weed control. Can be mixed with insecticides and PGRs. Air induction nozzles may reduce insecticide efficacy. Consult labels for maximum application rates and approved formulations/tank-mixes/additives.

Active Ingredient and Rate	Formulated Product and Rate	Weeds Controlled	Remarks and Precautions
glyphosate - 1.0 lb/A + S-metolachlor or metolachlor - 0.95-1.33 lb/A	5 L formulations - 22 oz/A; 4 L formulations - 32 oz/A + Dual Magnum or label approved metolachlor formulations - 1-1.33 pt/A or Sequence 5.25 L - 2.5-4.0 pt/A	See comments in glyphosate and S-metolachlor/metolachlor sections above.	Use on Roundup Ready Flex, Glytol/Liberty-Link, Enlist, and XtendFlex varieties only: No restriction on cotton size. See other cautions above. DO NOT mix with Staple LX. Can be applied in first or second overtop application to provide residual control. Consult labels for maximum application rates and approved formulations/tank mixes/additives.
pyrithiobac - 0.065-0.095 lb/A	Staple LX - 2.6-3.8 fl. oz/A	Pigweed, cocklebur, morningglory, hemp sesbania and other broadleaf weeds. Suppression of sicklepod, glyphosate- resistant horseweed (mare's-tail), small volunteer soybean, prickly sida, yellow nutsedge and seedling johnsongrass.	Apply when weeds are small and actively growing. Temporary cotton injury seen as chlorosis (yellowing) may occur following application. Consult label for approved tank-mixes. Do not tank-mix with grass herbicides as grass control can be reduced. Apply with NIS - 1 qt/100 gal.
quizalofop P-ethyl - 0.034-0.083 lb/A	Assure II - 5-12 oz/A	Annual and perennial grasses and susceptible volunteer corn.	Apply before grasses exceed height for treatment stated on label. Use 5-8 oz/A on small annual grasses/volunteer corn and 10-12 oz/A on perennial and larger annual grasses. Apply with NIS - 1 qt/100 gal or COC - 1 gal/100 gal. Tank mixtures with other herbicides may reduce activity.
sethoxydim - 0.188-0.28 lb/A	Poast Plus - 1.5-2.25 pt/A	Annual and perennial grasses and susceptible volunteer corn.	Apply before grasses exceed height for treatment stated on label. Use 1.5 pt/A on small annual grasses/volunteer corn and 2.25 pt/A on perennial and larger annual grasses. Apply with Dash HC, Sundance HC, MSO, or COC at labeled rates. Tank mixtures with other herbicides may reduce activity.
trifloxysulfuron-sodium - 0.0047-0.007 lb/A	Envoke - 0.1-0.15 oz/A.	Sicklepod, morningglory, hemp sesbania, pigweed, yellow nutsedge and small volunteer soybean. Suppression of annual grasses, seedling johnsongrass, glyphosate- resistant horseweed (mare's-tail) and purple nutsedge. Weak on prickly sida.	Apply after cotton reaches the five-true-leaf stage. Do not apply to cotton that is stressed. Consult label for approved tank-mixes. Do not tank-mix with grass herbicides as grass control can be reduced. Apply with NIS - 1 qt/100 gal.
quizalofop-P-ethyl+glufosinate – 0.631-0.846 lb/A	Zalo – 32-43 oz/A	See comments in quizalofop-P-ethyl and glufosinate sections above.	Liberty-Link, Glytol/Liberty-Link, Enlist, AND XtendFlex varieties only: Apply from emergence to 14d of anticipated bloom. See label for additive/adjuvant requirements.

The following herbicides in Tables 6 and 7 can be applied singly with a surfactant or in combination with MSMA where labeled as a directed spray for improved control of emerged grasses and nutsedge from 3-inch cotton to first bloom. MSMA use in cotton is limited to two applications per year, not to exceed 2 lbs/A each, with the second application being a salvage treatment. A 50-foot buffer zone is required around permanent water bodies or aquatic habitats. Glyphosate⁴ and glufosinate can also be tank mixed with many of the following products according to label directions for improved control of emerged grass and broadleaves. Use glyphosate and glufosinate with the appropriate herbicide resistant cotton variety.

Table 6. Directed postemergence herbicides.

Active Ingredient and Rate	Formulated Product and Rate	Weeds Controlled	Remarks and Precautions
carfentrazone - 0.012-0.025 lb/A	Aim 2 EC - 0.75-1.6 oz/A.	Morninglory, purslane, smartweed, hemp sesbania. Suppression of small prickly sida.	Application to cotton at the five to six node or less growth stage must be with hooded or shielded sprayer to avoid plant contact. Can be applied to 12" or greater cotton as a directed layby spray to the base of the plant to minimize contact to non-bark tissue. Does not control grasses nor provide residual control. Apply with NIS - 1qt/100 gal or COC - 1gal/100 gal.
diuron - 0.2-0.4 lb/A	Direx 4L/ 4 lb diruon formulations - 0.4-0.6 qt/A; Karmex DF - 8-12 oz/A.	Annual seedling grasses and broadleaf weeds.	Apply after cotton is 6 inches tall to layby and actively growing as a directed spray. Provides longer residual control in comparison to other post directed herbicides. Apply 12.8 oz/A of the liquid formulation or 8 oz/A of the dry formulation to 6-8 inch cotton. Apply 19.2 oz/A of the liquid formulation or 12 oz/A of the dry formulation to 8-12 inch cotton. Apply with NIS - 1qt/100 gal or COC - 1gal/100 gal.
flumioxazin - 0.063	Valor - 2 oz/A	See comments in flumioxazin section above.	Apply when cotton is at least 6 inches as a directed spray through shielded or hooded spray equipment. Directed spray layby applications can be made once cotton reaches 16 inches in height. Apply with NIS - 1 qt/100gal or COC - 1 gal/100 gal. Fierce is a flumioxazin containing herbicide labeled for post directed application in cotton. Refer to the label for application information.
fluometuron - 1.0-2.0 lb/A	Cotoran/Meturon, Fluometuron 80DF - 1.25-2.5 lb/A; Cotoran/Meturon 4L - 1.0 -2.0 qt/A.	Annual seedling grasses and broadleaf weeds.	Apply after cotton is 3 inches tall to layby. Apply with NIS - 1qt/100 gal or COC - 1gal/100 gal.
fomesafen - 0.25-0.375 lbs/A	Reflex 2 EC - 1-1.5 pt/A	Small annual broadleaf weeds.	Apply after cotton is at least 6 inches tall through layby as a directed spray. Use shielded or hooded spray equipment for applications to 6-12 inch cotton. Apply with NIS - 1qt/100 gal or COC - 1gal/100 gal. Additional post directed herbicides labeled for cotton contain fomesafen in the formulation including Cheetah Max, Prefix, and Flexstar GT. Refer to these individual labels for application information.

Active Ingredient and Rate	Formulated Product and Rate	Weeds Controlled	Remarks and Precautions
lactofen - 0.195 lb/A	Cobra - 12.5 oz/A.	Morninglory, purslane, smartweed, hemp sesbania. Suppression of small prickly sida.	Apply after cotton is 6 inches tall as a directed spray no higher than 2-3 inches on the stem or after 12 inches tall as a layby treatment. Does not control grasses nor provide residual control. Apply with NIS - 1qt/100 gal or COC - 1gal/100 gal for post-directed applications and COC - 1 gal/100 gal for layby application.
oxyfluorfen - 0.25-0.50 lb/A	Goal 2XL - 1.0-2.0 pt/A	Annual seedling grasses and broadleaf weeds.	Apply after cotton is 6-8 inches tall as a directed spray. Apply with NIS - 1qt/100 gal or COC - 1gal/100 gal.
prometryn - 0.5-0.65 lb/A	Caparol 4L/Cotton Pro and other prometryn 4 lb formulations - 1.0-1.3 pt/A.	Annual seedling grasses and broadleaf weeds.	Apply after cotton is 6 inches tall to layby with shielded or hooded spray equipment. Apply with NIS - 1qt/100 gal or COC - 1gal/100 gal.
pyraflufen ethyl - 0.0008125-0.00325 lb/A	ET - 0.5 to 2 oz/A.	Morninglory, purslane, smartweed, hemp sesbania. Suppression of small prickly sida.	Apply only with hooded spray equipment to plants with less than 3-inch stem bark. May be applied with post-directed equipment up to 1 oz/A to cotton 18 inches in height with at least 3 inches stem bark as a layby spray. Does not control grasses nor provide residual control. Apply with NIS - 1 qt/100gal or COC - 1 gal/100 gal.
pyroxasulfone - 0.04-0.114 lb/A	Zidua 85 WG - 0.75-2.1 oz/A; Zidua SC - 1.25-3.5 oz/A	Most annual grasses and pigweed. Suppression of yellow nutsedge, morninglory and hophornbeam copperleaf.	Apply as a directed spray from the 5-leaf stage to beginning bloom. Apply with NIS - 1 qt/100gal or COC - 1 gal/100 gal. Additional post directed herbicides labeled for cotton contain pyroxasulfone in the formulation including Anthem Flex and Fierce. Refer to these individual labels for application information.
trifloxysulfuron-sodium - 0.007-0.01 lb/A + prometryn - 0.79-1.18 lb/A	Suprend - 1-1.5 lb/A	Annual seedling grasses and broadleaves. See comments in trifloxysulfuron-sodium and prometryne sections above.	Apply after cotton is at least 6 inches tall. Apply with NIS - 1qt/100 gal or COC - 1gal/100 gal.

Table 7. Layby herbicides (one application).

Active Ingredient and Rate	Formulated Product and Rate	Weeds Controlled	Remarks and Precautions
diuron - 0.8-1.2 lb/A	Karmex DF - 1.0-1.5 lb/A; Direx 4L/4 lb diuron formulations - 1.6-2.4 pt/A	See comments in diuron section above.	Apply when cotton is at least 12 inches tall as a directed spray. Apply with NIS - 1qt/100 gal or COC - 1gal/100 gal.
prometryn - 0.8-1.6 lb/A	Caparol 80 WP - 1.5 lb/A on sandy soil; 1.75 lb/A on loam soil; 2.0 lb/A on clay soil; Caparol 4L, Cotton-Pro - 2.4 pt/A on sandy soil; 2.8 pt/A on loam soil; 3.2 pt/A on clay soil	See comments in prometryn section above.	Apply to cotton at least 12 inches as a directed spray. Apply with NIS - 1qt/100 gal or COC - 1gal/100 gal.
linuron - 0.5-1.5 lb/A	Linex 4L - 1.0-3.0 pt/A	Good morningglory, hophornbeam copperleaf and purslane control. Good to fair activity on annual grasses, pigweed and sicklepod.	Apply as a directed spray at 1 pt/A for cotton at least 12 inches and 1-1.5 pt/A for cotton at least 18 inches in height. Apply with surfactant at 1 pt per 25 gallons of spray mixture. Sequential treatments can be made 1 week apart. A single 2- 3 pt/A application can be made once cotton reaches 20 inches.
flumioxazin - 0.032-0.064 lb/A	Valor - 1-2 oz/A	See comments in flumioxazin section above.	Apply when cotton is at least 16 inches tall as a directed spray. Apply with NIS - 1qt/100gal.

Grain Sorghum

Table 1. Weed response ratings for selected grain sorghum herbicides applied preemergence.

Table Legend

Rating	Score
None to Slight	0-3
Fair	4-6
Good	7-8
Excellent	9-10

	barnyardgrass	broadleaf signalgrass	browntop millet	crabgrass	seedling johnsongrass	rhizome johnsongrass	purple nutsedge	yellow nutsedge	hemp sesbania	hophornbeam copperleaf	annual morningglory	pigweed species	prickly sida	sicklepod	smellmelon
atrazine (numerous formulations)	7	7	6	7	5	1	5	0	8	8	8	8	8	9	5
atrazine + metolachlor/S-metolachlor + safener	9	8	9	9	8	1	9	1	8	8	8	8	8	9	9
Halex GT + atrazine	9	9	9	9	7	1	-	-	9	8	9	8	8	9	9
Lexar EZ	9	9	9	9	7	1	9	1	9	8	8	8	8	9	9
metolachlor/S-metolachlor + safener (numerous formulations)	8	8	9	9	7	1	7	1	9	2	2	2	2	2	1
Outlook	8	8	9	9	7	1	7	1	8	2	2	2	2	2	1
Sharpen	1	1	1	1	1	1	-	-	9	7	6	6	5	7	7
Verdict	8	8	9	9	7	1	7	1	8	8	8	8	8	8	8

Control expected under optimum conditions. LSU AgCenter 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 Louisiana.

Table 2. Weed response ratings for selected corn herbicides applied postemergence.**Table Legend**

Rating	Score
None to Slight	0-3
Fair	4-6
Good	7-8
Excellent	9-10

	barnyardgrass	broadleaf signalgrass	browntop millet	crabgrass	seedling johnsongrass	rhizome johnsongrass	purple nutsedge	yellow nutsedge	hemp sesbania	hophornbeam copperleaf	annual morningglory	pigweed species	prickly sida	sicklepod	smellmelon
2,4-D	1	1		1	0	0	3	2	8	8	8	9	8	8	8
atrazine	7	5	6	7	3	3	3	1	8	8	7	8	7	9	9
dicamba	0	0	0	0	0	0	0	3	8	9	9	9	7	8	8
Facet + atrazine	8	8	7	7	4	0	3	1	8	8	9	9	7	8	7
Huskie + atrazine	6	6	6	-	3	3	-	-	9	9	8	9	8	8	7
Peak	0	0	0	0	0	0	0	0	7	9	8	8	8	-	-
Permit	0	3	3	-	3	3	9	7	6	7	4	5	6	-	-
Yukon	0	3	3	-	3	3	9	7	9	8	9	9	8	6	8
atrazine (layby application)	4	4	4	4	4	1	2	0	8	0	7	8	6	9	9
diuron (layby application)	6	6	6	6	6	1	2	1	8	7	6	7	7	9	9

Control expected under optimum conditions. LSU AgCenter 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 Louisiana.

Table 3. Preplant and preemergence herbicides.

Active Ingredient and Rate	Formulated Product and Rate	Weeds Controlled	Remarks and Precautions
atrazine - 2.0 lb/A	4L formulations - 2 qt/A; 90 DF formulations - 2.2 lb/A	Most annual small-seeded broadleaf weeds and some grasses.	Apply after planting before weeds and crop emerge. Mix with nonselective herbicide to control emerged vegetation. Do not apply to soils with less than 1% organic matter or to soils of lighter texture than silt loams. Only sorghum or corn should be planted within one year on soil treated with atrazine. Do not exceed 2.0 lb ai/A/applications or 2.5 lb ai/A/year. Follow the label concerning maximum atrazine rates.
dimethenamid-P - 0.56-0.98 lb/A	Outlook 6L - 12-21 oz/A; See product label for specific rates.	Yellow nutsedge, annual grasses, pigweed.	Use with Concep-treated grain sorghum seed only. Mix with nonselective herbicide to control emerged vegetation. Do not use on forage sorghum. See label for tank-mix applications and for restrictions.
S-metolachlor - 1.0-1.9 lb/A	Various formulations; See product label for specific rates.	Most annual grasses and some broadleaf weeds.	Use with Concep-treated grain sorghum seed only. Apply after planting before weeds and crop emerge. Mix with nonselective herbicide to control emerged vegetation. Do not apply to light soils or any soils with less than 1% organic matter.
S-metolachlor - 0.75-1.25 lb/A + atrazine - 1.0-1.63 lb/A	Various formulations; See product label for specific rates.	Most small-seeded annual grasses and broadleaf weeds.	Use with Concep-treated grain sorghum seed only. Apply after planting before weeds and crop emerge. Mix with nonselective herbicide to control emerged vegetation. See comments for atrazine and S-metolachlor. Use Bicep Lite if another atrazine application will be needed at layby. Do not use on coarse textured soils. Injury can occur if applied when soils are cool and wet during early growth of grain sorghum.
S-metolachlor + atrazine + mesotrione – 2.78 lb/A	Lexar EZ - 3 qt/A	Most small-seeded grasses and broadleaf weeds.	Use with Concep-treated grain sorghum seed only. Can be applied preplant (up to 21 days before planting) to preemergence. Mix with nonselective herbicide to control emerged vegetation. Do not apply to sand, sandy loam or loamy sand soils. Do not apply to forage sorghum, sweet sorghum, sudangrass or sorghum-sudangrass, or dual-purpose sorghum. Postemergence application will cause severe grain sorghum injury. Injury can occur if applied when soils are cool and wet during early growth of grain sorghum.

Active Ingredient and Rate	Formulated Product and Rate	Weeds Controlled	Remarks and Precautions
S-metolachlor + glyphosate + mesotrione – 2.195 lb/A	Halex GT - 4 pt/A	Annual grasses and broadleaf weeds.	Use with Concep-treated grain sorghum seed only. Can be applied preplant (up to 21 days before planting) to preemergence. Do not apply to sand, sandy loam or loamy sand soils. Postemergence application will cause severe grain sorghum injury. Injury can occur if applied when soils are cool and wet during early growth of grain sorghum. Tank-mixing atrazine at 1 lb/A will broaden weed spectrum.
saflufenacil + dimethenamid-P - 0.17-0.52 lb/A	Verdict - 4-12 oz/A; See product label for specific rates.	Small-seeded grasses and broadleaf weeds.	Use with Concep-treated grain sorghum seed only. Can be applied preplant to preemergence. Mix with nonselective herbicide to control emerged vegetation. Rates depend upon soil texture. Postemergence application to grain sorghum will cause severe injury. Injury can occur if applied when soils are cool and wet during early growth of grain sorghum.

Table 4. Postemergence herbicides.

Active Ingredient and Rate	Formulated Product and Rate	Weeds Controlled	Remarks and Precautions
2,4-D amine - 0.5 lb/A	2,4-D amine - 1.0 pt/A	Small broadleaf weeds.	Apply after sorghum is 4-6 inches tall until flowering. Use directed application taken care to keep 2,4-D out of whorl once sorghum is 10-12 inches tall. Do not use when sorghum is flowering.
atrazine - 1.0-2.0 lb/A	4L formulations – 1-2 qt/A; 90 DF formulations - 1.11-2.2 lb/A; Add 1% v/v COC.	Most effective on broadleaf weeds.	Apply before weeds are 1.5 inches tall and after sorghum is 4-6 inches tall. Weeds larger than 1.5 inches tall may not be killed. Do not apply to sandy loam or lighter soil textures. Preferred application as directed spray but may be applied overtop where sorghum is not under stress. Sorghum should not be grazed within 21 days. Do not exceed 2.5 lb ai/A/season. Follow label restrictions on maximum atrazine rates.
bromoxynil + pyrasulfotole – 0.206-0.258 lb/A	Huskie - 12.8-16 oz/A; Add 0.25% v/v NIS .	Broadleaf weeds.	Apply from three-leaf to 30-inch grain sorghum or until flag leaf emerges. Use high rate for morningglory and pigweed control. Weeds must be small for acceptable results. Expect some temporary injury following application. Atrazine at 0.5-1 lb/A should be tank-mixed to broaden the weed spectrum.
dicamba - 0.25 lb/A	Various formulations; See product label for specific rates.	Most broadleaf weeds; see label.	Apply at spike to 15-inch tall sorghum. Optimal timing is three- to five-leaf sorghum, when weeds are less than 3 inches tall. Effective for controlling small broadleaf weeds like morningglory, smartweed, etc. Mixing with atrazine adds to residual control (up to 12 inches tall sorghum). Use drop nozzles if sorghum is taller than 8 inches.
halosulfuron - 0.031-0.047 lb/A	Permit - 0.67-1.0 oz/A; Add 1% v/v COC or 0.25% v/v NIS.	Selected broadleaves and sedges.	Apply to sorghum 2-leaf to layby (before grain head emergence). Use only a single application with the total rate not to exceed 1.0 oz/A per season.

Active Ingredient and Rate	Formulated Product and Rate	Weeds Controlled	Remarks and Precautions
halosulfuron + dicamba – 0.169-0.253 lb/A	Yukon 67.5 WSG – 4-6 oz/A; Add 1% v/v COC or 0.25% v/v NIS.	Nutsedge, morningglories, common ragweed.	Apply to 2-leaf to 15-inch sorghum. Do not exceed 8 oz/A/season.
prosulfuron - 0.027 lb/A	Peak - 0.75 oz/A; Add 0.25% v/v NIS.	Most broadleaf weeds.	See crop rotation section on label for precautions about rotational. Do not apply to grain sorghum under stress from moisture or cold weather. Do not apply to sorghum that has been treated with an organophosphate insecticide at planting or within 15 day of postemergence organophosphate insecticide application.
quinclorac - 0.25-0.375 lb/A + atrazine - 0.5-1.0 lb/A	Facet L – 22-32 oz/A + 1 to 2 pt/A atrazine (4L); Add 1% v/v COC.	Broadleaf weeds controlled by atrazine plus improved grass control.	See comments for atrazine plus crop oil above. Facet L can be applied to grain sorghum from emergence up to 12 inches tall. Apply when weeds are small and actively growing. See label.
S-metolachlor - 0.95-1.6 lb/A	Various formulations; See product label for specific rates.	Most annual grasses and some broadleaf weeds.	Use with Concep-treated grain sorghum seed only. Risk of sorghum injury increases with adjuvants or fertilizers are applied with Dual Magnum.

Table 5. Preharvest or harvest aid.

Active Ingredient and Rate	Formulated Product and Rate	Weeds Controlled	Remarks and Precautions
carfentrazone - 0.016 lb/A	Aim - 1.0 oz/A; Add 0.25% v/v NIS.	Desiccation of morningglories.	Apply three days prior to harvest. Thorough coverage is essential; use at least 10 GPA. Tank mixture can include sodium chlorate.
glyphosate - 0.77-1.0 lb/A	Various formulations; See product label for specific rates.	Grass and broadleaf weeds, grain sorghum regrowth.	May be applied prior to harvest after grain sorghum has reached 30% moisture or less. Allow a minimum of seven days preharvest interval. Not recommended for grain sorghum grown for seed. Consult label.
sodium chlorate - 6 lb/A	Various formulations; See product label for specific rates.	Desiccation of green vegetation.	Apply seven to 10 days prior to harvest. Follow label directions.

Rice

Table 1. Effectiveness of selected preplant burndown rice herbicides on certain weeds.
Table Legend

Rating	Score
None to Slight	0-3
Fair	4-6
Good	7-8
Excellent	9-10

	palmleaf morningglory	eclipta	barnyardgrass	red rice	sprangletop	signalgrass	fall panicum	sedge	alligatorweed	ducksalad	redstem	hemp sesbania	waterhyssop	jointvetch	smartweed	dayflower	Texasweed	<i>Fimbristylis</i>
2,4-D	9	9	0	0	0	0	0	5	8	8	9	9	9	8	5	7	9	9
FirstShot	7	7	0	0	0	0	0	5	9	7	6	8	-	8	9	-	-	0
Gambit	4	9	0	0	0	0	0	9	8	9	7	9	6	9	9	8	8 ³	0
Gramoxone SL	8	9	9	8	9	9	9	5 ¹	6	7	9	9	7	8	4	7	9	-
Grandstand	9	8	0	0	0	0	0	5	9	7	9	9	8	8	5	7	9	8
LeadOff	5	-	8	6	7	5	8	5	-	-	-	7	-	7	8	-	-	-
Permit/Halomax	7	8	0	0	0	0	0	9	4	9	9	9	9	9	6	8	8	0
Roundup	7	8	9	7	9	9	9	7	7	7	9	7	7	7	6	6	9	9
Sharpen	8	8	0	0	6	5	6	6	7	8	9	8	6	9	7	7	8	4 ³

¹ Annual sedge suppression.

² With proper water management, refer to Bolero label.

³ Weeds must be <4 inches tall.

⁴ Controlled only when small (< 2 leaf).

Table 2. Effectiveness of selected preplant burndown rice herbicides on certain weeds.**Table Legend**

Rating	Score
None to Slight	0-3
Fair	4-6
Good	7-8
Excellent	9-10

	palmleaf morningglory	eclipta	barnyardgrass	red rice	sprangletop	signalgrass	fall panicum	sedge	alligatorweed	ducksalad	redstem	hemp sesbania	waterhyssop	jointvetch	smartweed	dayflower	Texasweed	<i>Fimbristylis</i>
Bolero PPS ²	4	0	8	8	8	7	6	5	4	7	3	0	6	4	5	7	5	8
Bolero DPRE	5	8	8	0	8	5	7	5	4	8	8	6	8	5	5	8	6	8
Clearpath	8	8	9	8	8	9	5	9	6	8	8	7	6	7	6	7	8	5
Command	0	0	9	0	8	8	9	0	0	7	0	0	0	5	2	7	0	0
Facet PRE (drill-seeded)	8	8	9	0	0	9	5	2	4	3	4	7	6	7	0	5	4	5
Gambit	4	7	0	0	0	0	0	9	8	8	7	7	6	7	6	8	8	1
Newpath PPI/PRE	8	6	8	8	8	9	5	9	6	8	8	4	6	4	6	7	8	-
Obey PRE	8	9	9	0	8	9	8	2	4	7	4	7	6	7	2	7	4	5
pendimethalin + Facet L DPRE	8	8	9	0	9	8	5	4	6	3	2	8	4	7	0	3	6	7
pendimethalin DPRE	0	0	8	0	8	8	7	0	0	0	0	0	0	0	0	0	0	7
RiceOne DPRE	0	0	9	0	8	9	9	0	0	7	0	0	0	5	2	7	0	7
Sharpen PRE	8	7	4	0	4	4	6	6	4	4	6	7	6	7	6	7	7	6

¹ Annual sedge suppression.² With proper water management, refer to Bolero label.³ Weeds must be <4 inches tall.⁴ Controlled only when small (< 2 leaf).

Table 3. Effectiveness of selected postemergence rice herbicides on certain weeds.**Table Legend**

Rating	Score
None to Slight	0-3
Fair	4-6
Good	7-8
Excellent	9-10

	palmleaf morningglory	eclipta	barnyardgrass	red rice	sprangletop	signalgrass	fall panicum	sedge	alligatorweed	ducksalad	redstem	hemp sesbania	waterhyssop	jointvetch	smartweed	dayflower	Texasweed	Fimbristylis
2,4-D amine	9	9	0	0	0	0	0	2 ¹	8	9	9	9	9	7	6	8	9	9
Aim ³	8	6	0	0	0	0	0	5	5	4	6	9	7	6	8	5	6	5
Aim + Grandstand	9	8	0	0	0	0	0	5	8	6	9	9	8	9	8	6	7	-
Basagran	8	8	0	0	0	0	0	8 ⁴	4	8	9	4	8	3	7 ⁴	9	2	7 ³
Beyond Xtra or Postscript	8	6	8	9	7	9	7	8	3	2	8	3	6	3	5	6	7	-
Blazer	5	4	0	0	0	0	0	0	4	3	9	9	0	0	0	0	5	0
Bolero + propanil	5	9	9	0	9	9	8 ⁴	7	5	7 ⁴	7 ⁴	9	9	8 ⁴	6 ⁴	8 ⁴	8	-
Clearpath	8	9	9	8	6	9	6	8	6	3	3	8	6	8	6	6	7	-
Clincher ²	0	0	9	0	9	9	8	0	0	0	0	0	0	0	0	0	0	0
Facet L	8	9	9	0	0	9	5 ⁴	4	6	3	3	8	3	8	0	3	6	0
Facet L + propanil	8	9	9	0	7 ⁴	9	8 ⁴	5 ¹	6	7 ⁴	7 ⁴	9	8	9 ⁴	6 ⁴	7 ⁴	8	4 ³
Fullscript	8	9	9	9	7	9	7	8	6	3	8	8	3	8	3	6	7	-
Gambit	9	9	0	0	0	0	0	9	8	9 ⁴	9	9	7	9	9	8	8 ³	0
Grandstand	9	8	0	0	0	0	0	5	7	3	9	7	8	8	7	6	9	8
Grasp	3	7	9	0	3	3	3	8	7	8	8	9	7	7	8	7	6	2

	palmleaf morningglory	eclipta	barnyardgrass	red rice	sprangletop	signalgrass	fall panicum	sedge	alligatorweed	ducksalad	redstem	hemp sesbania	waterhyssop	jointvetch	smartweed	dayflower	Texasweed	Fimbristylis
Highcard	0	0	9 ³	9 ³	9 ³	9 ³	3	0	0	0	0	0	0	0	0	0	0	0
League	8	8	0	0	0	0	0	8	6	7	8	9	7	8	8	8	8	0
Londax ²	5	8	0	0	0	0	0	8	7	9	9	6	9	6	6	8	8	0
Loyant	9	9	6 ⁴	0	6 ⁴	6 ⁴	6 ⁴	8	9	9	8	9	8	9	9	8	0	0
Newpath or Preface	8	6	8	8	6	9	4	8	3	2	8	3	6	3	4	6	7 ³	-
Novixid	9	9	9	0	6 ⁴	6 ⁴	6 ⁴	8	9	9	8	9	8	9	9	8	6	7
Obey	8	9	9	0	8	9	8	2	4	7	4	7	6	7	2	7	4	0
pendimethalin + Facet L	8	8	9	0	8	9	5 ⁴	4	6	3	2	8	4	7	0	3	6	0
pendimethalin + propanil	5	9	9	0	9	9	8 ⁴	5	5	7	9	9	8 ⁴	8 ⁴	6 ⁴	7	6	4 ³
Permit/Halomax	7 ³	8	0	0	0	0	0	9	4	5	8	9	4	9	4	8	7 ³	0
Permit Plus	7	9	0	0	0	0	0	9	6	7	9	9	6	9	8	8	7	0
Permit/Halomax + Londax	7 ³	8	0	0	0	0	0	9	7	9	9	9	9	9	6	8	8	0
propanil	5	8	9	0	7 ⁴	9	8 ⁴	4 ¹	5	6 ⁴	7 ⁴	7	8	8 ⁴	6 ⁴	6 ⁴	6	4 ³
propanil + Aim	9	8	9	0	7 ⁴	9	8 ⁴	6	5	6	7	9	8	9	8 ⁴	6	6	-
propanil + Londax	9	9	9	0	7 ⁴	9	8 ⁴	9	7	7	9	9	8	9 ⁴	8	8 ⁴	9	4 ³
propanil + Permit/Halomax	9	9	9	0	7 ⁴	9	8 ²	9	5	5	8	9	9	9	5	8	8 ⁴	4 ³

	palmleaf morningglory	eclipta	barnyardgrass	red rice	sprangletop	signalgrass	fall panicum	sedge	alligatorweed	ducksalad	redstem	hemp sesbania	waterhyssop	jointvetch	smartweed	dayflower	Texasweed	Fimbristylis
Provisia	0	0	9	9	9	9	9	0	0	0	0	0	0	0	0	0	0	0
RebelEX	3	7	9 ⁴	0	9 ⁴	9 ⁴	8 ⁴	8	7	8	8	9	7	7	8	7	6	0
Regiment or Arroz	8	6	9	0	3	3	0	7 ¹	7	8 ⁴	8	8	7	8	7	7	8	7
RiceBeaux	5	9	9	0	9	9	8 ⁴	7	5	7 ²	7 ²	9	9	8 ²	6 ²	8 ²	0	4 ³
Ricestar HT	0	0	9 ⁴	0	8	9	7 ⁴	0	0	0	0	0	0	0	0	0	0	0
Rindé	8	9	9	0	3	9	5 ⁴	7 ¹	7	8 ⁴	8	9	7	9	7	7	8	7
Rogue ²	-	-	5 ⁴	5	9	-	-	9 ⁶	3	9	0	3	7	2	-	4	5	8
Sharpen	8	8	0	0	6 ⁴	5 ⁴	6 ⁴	6 ¹	7	8	9	8	6	9	7	7	8 ³	4 ³
Strada	7	8	0	0	0	0	0	5	5	7	9	9	8	9	6	9	6	0
Strada PRO	7	8	0	0	0	0	0	9	5	7	9	9	8	9	6	9	6	0

¹ Annual sedge suppression.² With proper water management.³ Weeds must be <4 inches tall.⁴ Controlled only when small (< 2 leaf).⁵ Possible weedy rice suppression. ⁶ Annual sedge control only.

Table 4. Activity of selected herbicide programs for perennial grass control.

Herbicide Program	Brook paspalum	knotgrass	creeping rivergrass ⁴	water paspalum	Nealley's sprangletop
Command PRE ²	4	5	4	5	5
Command PRE fb Clincher ³	5	9	8	8	7
Command + Facet L PRE ²	4	5	4	5	6
Command + Facet L PRE ² fb Clincher ³	5	9	8	9	7
Command PRE fb Grasp ³	5	5	7	5	5
Facet L + pendimethalin DPRE ²	4	6	5	7	6
Facet L + pendimethalin DPRE fb Clincher ³	6	9	7	9	7
Clincher fb Clincher ³	7	9	8	9	8
Grasp ³	4	2	6	2	0
Loyant ¹	4	6	6	5	6
Newpath fb Beyond Xtra ³	7	9	8	8	5
Newpath fb Newpath ³	7	9	8	8	5
propanil ³	2	3	2	2	6
Provisia fb Provisia	5	9	7	9	9
Regiment fb Regiment ³	3	2	7	2	4
Ricestar HT fb Ricestar HT ³	3	4	5	6	9

¹ Control rating is based on herbicides applied to small, actively growing plant segments.

² Ratings taken two weeks after application.

³ Ratings taken one month after application.

⁴ Also referred to as perennial barnyardgrass.

Table 5. Crawfish production and rice herbicides.

Herbicide	Notes
2,4-D	May be toxic to aquatic invertebrates.
Aim	Commercial crawfish not specifically mentioned; however, herbicide is moderately toxic to fish.
Basagran	Do not use Basagran on rice fields in which the commercial cultivation of crawfish is practiced.
Beyond Xtra or Postscript	Crawfish production not specifically mentioned.
Bolero	Crawfish production not specifically mentioned. Toxic to shrimp.
Broadhead	Do not use treated rice fields for aquaculture of edible fish and crustaceans (crawfish).
Clearpath	Do not use treated rice fields for aquaculture of edible fish and crustaceans (crawfish).
Clincher	Do not fish or commercially grow fish, shellfish or crustaceans on treated acres during the year of treatment.
Command, RiceOne	Do not apply on rice fields in which concurrent crawfish farming is included in the cultural practices.
Duet	Do not apply to fields where commercial crawfish farming is practiced.
Facet L	Do not use treated fields for aquaculture of edible fish or crawfish.
Fullscript	Do not use treated fields for the aquaculture of edible fish or crustaceans (crawfish).
Gambit	Do not commercially grow fish, shellfish, or crustaceans on treated acres during the year of treatment.
Grandstand	Do not commercially grow shellfish or crustaceans on treated acres during the year of treatment.
Grasp	Except for crawfish, do not fish or commercially grow fish, shellfish or crustaceans on treated acres during the year of treatment.
GraspXtra	Do not apply later than three months prior to crawfish production.
Highcard	Crawfish not specifically mentioned; however, do not allow MaxAce rice to go to seed in a nonrice year . This includes any fallow or crawfish production fields.

Herbicide	Notes
Londax	Do not harvest crawfish prior to harvesting rice.
Loyant	Except for crawfish, do not fish or commercially grow fish, shellfish, or crustaceans on treated acres during the year of Loyant treatment.
Newpath or Preface	Crawfish production not specifically mentioned.
Novixid	Except for crawfish, do not fish or commercially grow fish, shellfish, or crustaceans on treated acres during the year of Loyant treatment.
Obey	Do not apply on rice fields in which concurrent crawfish or catfish farming are included in the cultural practices.
Permit/Halomax	Crawfish not specifically mentioned.
Permit Plus	Crawfish not specifically mentioned.
propanil	Crawfish not specifically mentioned in restrictions. Commercial catfish production prohibited.
Prowl/pendimethalin	Crawfish not specifically mentioned. Product may be hazardous to aquatic animals.
Provisia	Crawfish not specifically mentioned; however, do not allow Provisia rice to go to seed in a non-rice year. This includes any fallow or crawfish production fields.
RebelEX	Do not fish or commercially grow fish, shellfish or crustaceans on treated acres during the year of treatment.
RiceBeaux	Applications to fields where catfish/crawfish farming is practiced and draining water from treated fields into areas where catfish farming is practiced is prohibited during 12 months following treatment. Do not use adjacent to catfish/crawfish ponds.
RiceOne	Do not apply on rice fields in which concurrent crawfish farming is included in the cultural practices.
Ricestar HT	Ricestar must not be applied to fields where crawfish are cultured commercially.
Rindé	Do not apply Rindé if commercial crawfish farming is practiced in rice paddies.
Rogue	Do not fish or commercially grow fish, shellfish or crustaceans on treated acres during the year of treatment
Roundup and glyphosate formulations	Crawfish not specifically mentioned; however, do not allow Provisia rice to go to seed in a non-rice year. This includes any fallow or crawfish production fields.

Herbicide	Notes
Sharpen	May be applied to rice fields used for crustaceans, including crawfish production and commercial fish production.
Storm	Do not use Storm on rice fields where commercial crawfish production is practiced.
Strada and Strada PRO	Crawfish production not specifically mentioned.
Ultra Blazer	Do not harvest crawfish from treated rice areas for food.

Table 6. Preplant burndown herbicides.

Active Ingredient and Rate	Formulated Product and Rate	Weeds Controlled	Remarks and Precautions
2,4-D @ 0.5-1 lb/A	2,4-D @ 1-2 pt of 4 lb/gal material	Most broadleaf weeds.	Labels differ between application timing and planting. Follow label restrictions regarding application timing and total amount of 2,4-D applied per season.
prosulfuron plus halosulfuron @ 0.049-0.099 lb/A	Gambit 79 DF @ 1-2 oz/A	Most annual broadleaf weeds and sedges.	1.5 oz/A is adequate in a burndown weed management program with glyphosate.
paraquat @ 0.6-0.75 lb/A	Gramoxone SL @ 2-3 pt/A; Apply with NIS @ 1-2 pt/100 gal	Most annual broadleaf weeds and grasses.	Apply near planting and when weeds are less than 6 inches tall. Especially useful on small red rice immediately before flooding to water-seed. Apply two days before establishing a flood. Avoid nontarget drift.
triclopyr @ 0.375 lb/A	Grandstand @ 1 pt/A; Consult label for adjuvant requirement.	Good on alligatorweed and other perennial broadleaf weeds.	Apply 21 days prior to planting. May be useful where 2,4-D use is restricted.
glyphosate @ 0.5-2 lb/A	4 L glyphosate formulations ³ @ 1-4 pt/A	Most annual grasses and many broadleaf weeds.	Apply seven to 14 days prior to planting. For use in reduced-till or no-till rice. Allow five to seven days between application and flooding for planting.
thifensulfuron @ 0.0164-0.025 lb/A + tribenuron @ 0.0164-0.025 lb/A	FirstShot @ 0.5-0.8 oz/A; Consult label for adjuvant requirement.	Curly dock, henbit, smartweed, garlic.	Apply before planting with other burndown products, like glyphosate or paraquat.
rimsulfuron @ 0.0155-0.021 lb/A + tribenuron @ 0.0155-0.021 lb/A	LeadOff @ 1.5-2 oz/A; Consult label for adjuvant requirement.	Annual grass and broadleaf weeds; control or suppression of many sedge species.	This is a 24C label that was approved will expire March 20, 2021. There is a 60-day recropping restriction for rice with soil pH 6.5 or less at 1.5 oz/A and 90 days at 2 oz/A.
halosulfuron @ 0.031 lb/A	Permit/Halomax @ 0.66 oz/A; Consult label for adjuvant requirement.	Sedges, hemp sesbania, jointvetch.	Use as part of a preplant or burndown treatment. Safe on soil pH up to 8. May injure rice under certain environmental conditions.
saflufenacil @ 0.04 lb/A	Sharpen @ 2 oz/A; Consult label for adjuvant requirement.	Annual broadleaf and grass weeds and suppression of sedges and aquatics.	Grasses must be less than two- to three-leaf. Apply in mixture with glyphosate to broaden weed spectrum.

Refer to the burndown section of this guide for additional suggestions on managing cool-season weeds. **Water-seeded, no-till systems.** Research has shown that dense vegetation may be killed effectively with herbicides but stand establishment is difficult because of inadequate soil/seed contact due to mats of dead vegetation. Additional research has shown that soil kept free of vegetation all winter will become compacted, and rice seedlings may have difficulty “pegging” and will tend to drift.

Certain populations of barnyardgrass, duckweed and pickerelweed have become resistant to some traditional herbicides. If this occurs, use alternative herbicides. Contact your local LSU AgCenter county agent for recommendations. Also, refer to the herbicide resistance section of this guide for suggestions on herbicide resistance management.

Table 7. Preplant herbicides.

Active Ingredient and Rate	Formulated Product and Rate	Weeds Controlled	Remarks and Precautions
thiobencarb @ 4 lb/A	Bolero 10G @ 40 lbs/A	Barnyardgrass, sedges, partial control of red rice.	Apply after flooding before seeding into "clear water." Do not disturb field after application. Do not use if fields were cultivated while flooded.
thiobencarb @ 4 lb/A	Bolero @ 4 pt/A	Barnyardgrass and annual sedges; partial control of red rice; duck salad and waterhyssop on silt loam soils.	Apply immediately after soil preparation and before flooding for water-seeding. Apply to seedbed free of vegetation. Field should be flooded, seeded with pre-sprouted seed, drained to optimize stand and re-flooded when seedlings have rooted (within five days).

Refer to the burndown section of this guide for additional suggestions on managing cool-season weeds. **Water-seeded, no-till systems.** Research has shown that dense vegetation may be killed effectively with herbicides but stand establishment is difficult because of inadequate soil/seed contact due to mats of dead vegetation. Additional research has shown that soil kept free of vegetation all winter will become compacted, and rice seedlings may have difficulty "pegging" and will tend to drift.

Certain populations of barnyardgrass, duck salad and pickerelweed have become resistant to some traditional herbicides. If this occurs, use alternative herbicides. Contact your local LSU AgCenter county agent for recommendations. Also, refer to the herbicide resistance section of this guide for suggestions on herbicide resistance management.

Table 8. Preemergence herbicides.

Active Ingredient and Rate	Formulated Product and Rate	Weeds Controlled	Remarks and Precautions
clomazone @ 0.3-0.5 lb/A	Command 3 ME @ 0.8-1 pt/A on light soil; 1-1.33 pt/A on heavy soil	Annual grasses.	Apply after planting before rice and weeds have emerged. Consult label before applying by air. Adhere to buffer zone restrictions. Medium-grain varieties may be more sensitive to Command.
quinclorac @ 0.25-0.5 lb/A	Facet L @ 22-28 oz/A on light soil; 32 oz/A on medium soil; 43 oz/A on heavy soil	Barnyardgrass, hemp sesbania, broadleaf signalgrass, morningglory; Does not control sprangletop.	Drill-seeded rice only. Apply after planting prior to emergence. Do not use on sand or loamy sand. Injury can occur on rice not covered with soil. Rainfall or flushing needed to activate. No more than 43 oz/A/season.
clomazone @ 0.244-0.488 lb/A+ quinclorac @ 0.244-0.488 lb/A	Obey @ 26-52 oz/A; 26-39 oz/A on light soil; 39 oz/A on medium soil; 52 oz/A on heavy soil	Barnyardgrass, broadleaf signalgrass, fall panicum, sprangletop (spp.), elicpta, jointvetch, morningglory.	Apply 14 days before planting through planting but before weed emergence. If weeds emerged before application, consult label for proper adjuvant.
saflufenacil @ 0.04 lb/A	Sharpen @ 2 oz/A; Consult label for adjuvant requirement.	Annual broadleaf and grass weeds and suppression of sedges and aquatics.	Grasses must be less than two- to three-leaf. Refer to label for proper adjuvant. Apply in mixture with glyphosate to broaden weed spectrum. Rate and crop injury may vary depending on soil type and organic matter. See label.

Refer to the burndown section of this guide for additional suggestions on managing cool-season weeds. **Water-seeded, no-till systems.** Research has shown that dense vegetation may be killed effectively with herbicides but stand establishment is difficult because of inadequate soil/seed contact due to mats of dead vegetation. Additional research has shown that soil kept free of vegetation all winter will become compacted, and rice seedlings may have difficulty “pegging” and will tend to drift.

Certain populations of barnyardgrass, duckweed and pickerelweed have become resistant to some traditional herbicides. If this occurs, use alternative herbicides. Contact your local LSU AgCenter county agent for recommendations. Also, refer to the herbicide resistance section of this guide for suggestions on herbicide resistance management.

Table 9. Delayed preemergence herbicides.

Active Ingredient and Rate	Formulated Product and Rate	Weeds Controlled	Remarks and Precautions
clomazone @ 0.3-0.42 lb/A + pendimethalin @ 0.6-1 lb/A	RiceOne @ 35-50 oz/A; 35 oz/A on light soil; 35-50 on medium and heavy soil	Barnyardgrass, broadleaf signalgrass, sprangletop, and other annual grass weeds.	Drill-seeded rice only. Apply four to nine days after planting to soil that has been sealed by rain or a flush. Drain surface water before application. Rice seed exposed to spray may be severely injured. Rice seed must have imbibed water prior to application. Rainfall or flush required for reactivation.
thiobencarb @ 4 lb/A	Bolero @ 4 pt/A	Barnyardgrass, sprangletop, annual sedges, suppression of broadleaf weeds.	Apply after planting dry-seeded rice once soils have been sealed by rainfall or a flush, but one to five days before rice emerges. Don't allow soil to dry and crack. Control usually will not exceed three weeks.
quinclorac @ 0.19-0.375 lb/A + pendimethalin @ 1 lb/A	Facet L @ 0.1625-32 oz/A + pendimethalin 3.3 EC @ 2.4 pt/A or Prowl H2O @ 2.1 pt/A	Barnyardgrass, broadleaf signalgrass, sprangletop, morningglory, hemp sesbania, northern jointvetch.	Drill-seeded rice only. Apply four to nine days after planting to soil that has been sealed by rain or a flush. Drain surface water before application. Rice seed exposed to spray may be severely injured. Rice seed must have imbibed water prior to application. Rainfall or flush required for reactivation.
pendimethalin @ 1 lb/A	pendimethalin 3.3 EC @ 2.4 pt/A or Prowl H2O @ 2.1 pt/A	Barnyardgrass, broadleaf signalgrass, sprangletop.	Drill-seeded rice only. Apply four to nine days after planting to soil that has been sealed by rain or a flush. Drain surface water before application. Rice seed exposed to spray may be severely injured. Rice seed must have imbibed water prior to application. Rainfall or flush required for reactivation.

Refer to the burndown section of this guide for additional suggestions on managing cool-season weeds. **Water-seeded, no-till systems.** Research has shown that dense vegetation may be killed effectively with herbicides but stand establishment is difficult because of inadequate soil/seed contact due to mats of dead vegetation. Additional research has shown that soil kept free of vegetation all winter will become compacted, and rice seedlings may have difficulty "pegging" and will tend to drift.

Certain populations of barnyardgrass, duckweed and pickerelweed have become resistant to some traditional herbicides. If this occurs, use alternative herbicides. Contact your local LSU AgCenter county agent for recommendations. Also, refer to the herbicide resistance section of this guide for suggestions on herbicide resistance management.

Table 10. Postemergence herbicides.

Active Ingredient and Rate	Formulated Product and Rate	Weeds Controlled	Remarks and Precautions
2,4-D @ 1.25-1.5 lb/A	2,4-D (3.8 L) @ 2.5-3 pt/A	Most broadleaf weeds and seedling sedges including fimbristylis.	Apply after rice tillers but before panicle initiation. Best application time is at the rice first green ring at beginning of joint elongation but may be applied up to second green ring. Earlier or later applications may result in rice injury. Rice should have a shallow flood at the time of treatment.
carfentrazone @ 0.025-0.05 lb/A	Aim 2 EC @ 1-1.6 oz/A	Hemp sesbania, red stem, toothcup, palmleaf morningglory, one- to two-leaf jointvetch.	Apply to rice with at least two to three leaves and actively growing. Add surfactant only when large weeds are present. Expect injury with high temperatures and humidity.
thiobencarb @ 3 lb/A + propanil @ 3 lb/A	Bolero @ 3 pt/A + propanil @ 3 lb/A (see propanil label for appropriate amount); RiceBeaux @ 4 qt/A	Annual grasses, some sedges, small broadleaf weeds.	In dry-seeded rice , apply after emergence if soil is wet. If soil is dry, wait until rice has two to three leaves. In water-seeded rice , apply after rice has two leaves. Treatment will provide residual activity if field is flushed or flooded within three days. Do not submerge rice when applying the permanent flood.
bentazon @ 0.75-1 lb/A	Basagran @ 1.5-2 pt/A; Consult label for adjuvant requirement.	Redstem, ducksalad, dayflower, some sedges.	Apply before weeds exceed labeled heights. Lowering of the flood may be necessary to expose weeds to ensure proper coverage. Refer to label for tank-mix options.
clomazone @ 0.3-0.5 lb/A	Command 3 ME @ 0.8-1.33 pt/A; Impregnate on 150 lb/A fertilizer	Barnyardgrass, broadleaf signalgrass, junglerice, sprangletop, ducksalad.	Water-seeded rice only. Apply when rice is pegging and actively growing with one to two visible leaves. Allow 24-48 hours before flushing or establishing a pinpoint flood. Hybrids, medium- and short-grain cultivars may be more sensitive.
cyhalofop @ 0.25-0.28 lb/A	Clincher @ 13.5-15 oz/A; Consult label for adjuvant requirement.	Barnyardgrass, broadleaf signalgrass, fall panicum, junglerice, knotgrass, sprangletop.	Apply pre-flood on one- to three-leaf grass or post-flood on one- to two-tiller grass. Use 13 oz/A when applied early. Use 15 oz/A when applied on larger grasses or perennials. Best activity under saturated soil conditions. Refer to label for approved tank-mixes, additives and adjuvants.
quinclorac @ 0.375-0.50 lb/A	Facet L @ 32-43 oz/A; Apply with COC @ 2 pt/A	Barnyardgrass, signalgrass, jointvetch, hemp sesbania; Suppression of alligatorweed at the highest rate.	In water-seeded rice , apply after the two-leaf rice stage. In dry-seeded rice , apply after emergence. Does not control sprangletop. After application, flushing may be required for reactivation.
quinclorac @ 0.375 lb/A + propanil @ 3 lb/A	Facet L @ 43 oz/A + propanil @ 3 lb/A; See propanil label for adjuvant requirement.	Same as above plus increased control of sprangletop, some sedges.	For timing, see quinclorac comments above. Follow directions on propanil label for adjuvants.

Active Ingredient and Rate	Formulated Product and Rate	Weeds Controlled	Remarks and Precautions
prosulfuron plus halosulfuron @ 0.049-0.099 lb/A	Gambit 79 DF @ 1-2 oz/A	Activity on most annual broadleaf weeds and sedges.	1-2 oz/A per application not to exceed 2 oz/A per year. Wait 3-4 days before establishing permanent flood after application. In water-seeded rice , apply from one-leaf (no exposed roots) up to 48 days before harvest.
triclopyr @ 0.375 lb/A	Grandstand @ 1 pt/A; Apply with NIS or COC; consult label.	Alligatorweed, Texasweed, jointvetch, other broadleaf weeds; Sesbania control is improved with propanil; see label.	Apply when weeds are small. Rice must be in the three- to four-leaf to 1/2-inch internode stage. Weak on duckweed. Overlapping of swaths may result in rice injury. Do not "dress" ends of field. Two applications per season are allowed.
penoxsulam @ 0.032-0.036 lb/A	Grasp @ 2-2.3 oz/A; Apply with COC or MSO @ 1 qt/A.	Barnyardgrass, junglerice, duckweed, annual sedges, small actively growing weeds; Little to no control of sprangletop, signalgrass, fall panicum.	In drill-seeded rice , apply from emergence up to 60 days before harvest. In water-seeded rice , apply from pegging-one-leaf (no exposed roots) up to 60 days before harvest. Consult label for rates used post-flood or on larger weeds. Refer to label for surface irrigation and permanent flood establishment.
penoxsulam @ 0.032-0.042 lb/A + triclopyr @ 0.25- 0.35 lb/A	Grasp Xtra @ 16-22 oz; Apply with COC or MSO @ 1 qt/A.	Barnyardgrass, junglerice, duckweed, annual sedges, small actively growing weeds.	In drill-seeded rice , two- to three-leaf to 1/2-inch internode. In water-seeded rice , three- to four-leaf to 1/2-inch. Do not apply more than 22 oz/A/year.
imazosulfuron @ 0.15 -0.3 lb/A	League @ 3.2-6.4 oz/A; Consult label for adjuvant requirement.	Sesbania, duckweed, nutsedge.	Apply postemergence. Slight injury can occur on medium- and short-grain rice.
florpyrauxifen @ 0.026 lb/A	Loyant @ 16 oz/A; See Loyant label for approved surfactant	Suppression of barnyardgrass and other annual grasses. Activity on many broadleaf weeds and annual sedges.	Apply to small actively growing grass and broadleaf weeds one to four leaf. Activity on rice flatsedge and suppression of yellow nutsedge. Apply when adequate soil moisture is present. If target weeds under moisture stress do not apply.
bensulfuron @ 0.6-1 oz/A	Londax 60 DF @ 1-1.6 oz/A	Aquatic broadleaf weeds, gooseweed, sedges; suppression of alligatorweed.	Apply into flood when weeds are small and submerged. Alligatorweed cannot be well established. Control may be reduced under cold water conditions. Londax may be applied impregnated on dry fertilizer. May not control certain populations of duckweed.
bensulfuron @ 0.6 oz/A + propanil @ 3-4 lb/A	Londax 60 DF @ 1 oz/A + propanil at 3-4 lb/A; See propanil label for adjuvant requirements.	Eclipta, gooseweed, palmleaf morningglory, Texasweed, sedges, grasses.	Apply before permanent flood. Good for controlling aquatic weeds where 2,4-D cannot be used.
clomazone 0.3-0.488 lb/A + quinclorac 0.3-0.488 lb/A	Obey @ 32-52 oz/A; 32 oz/A on light soil; 32-43 oz/A on medium soil; 43-52 oz/A on heavy soil; Consult label for proper adjuvant.	Barnyardgrass, broadleaf signalgrass, fall panicum, sprangletop (spp.), eclipta, jointvetch, morningglory.	Apply postemergence to rice from the two- to five-leaf stage. Application will control emerged weeds and provide residual activity.

Active Ingredient and Rate	Formulated Product and Rate	Weeds Controlled	Remarks and Precautions
halosulfuron @ 0.023-0.063 lb/A	Permit/Halomax @ 0.5-1.34 oz/A; Apply with COC @ 1qt/A	Sedges, hemp sesbania, jointvetch.	Apply after rice emergence to 48 days before harvest. Do not use more than 1.34 oz/A/season. Consult label for post-flood applications.
bensulfuron @ 0.028-0.04 lb/A + halosulfuron @ 0.012-0.023 lb/A	Londax @ 0.75-1 oz/A + Permit/Halomax @ 0.25-0.5 oz/A	Sedges, hemp sesbania, jointvetch, most aquatic weeds.	See comments for bensulfuron and halosulfuron. Adjuvant required; consult label.
florpyrauxifen @ 0.0214 lb/A + penoxsulam @ 0.0364 lb/A	Novixid @ 27.4 fl oz/A	Most broadleaves, grasses, and aquatic weeds and some sedges	Apply after the rice is two-leaf with no exposed roots but before 60 days prior to harvest. Soil moisture is required for optimal performance. Maintain soil moisture after application or establish a permanent flood. Do not apply more than 27.4 fl oz/A per year.
halosulfuron @ 0.023-0.063 lb/A + propanil @ 3-4 lb/A	Permit/Halomax @ 0.5-1.333 oz/A + propanil at 3-4 lb/A; See propanil label for adjuvant requirements.	Sedges, hemp sesbania, jointvetch, grasses.	Broad-spectrum weed control. Consult label for post-flood applications.
propanil @ 3-6 lb/A	Sold under various trade names. 4 L/SC/EC @ 3-6 qt/A; 80 DF @ 3.5-7 lb/A	Most annual grasses, some sedges, broadleaf weeds in the seedling stage.	Apply to grasses before the four-leaf stage. Usually within 10-14 days after seeding. Use 3 lb for grass in the one- to two-leaf stage; add 1 lb for each additional leaf. Use 5-6 lb on five-leaf to tillering grasses; control usually not satisfactory. Consult label for adjuvants requirement.
bispyribac-sodium @ 0.32-0.63 oz/A	Regiment /Arroz 80 WP @ 0.4-0.8 oz/A; Consult label for adjuvant requirement.	Barnyardgrass, junglerice, nutsedge, small broadleaf weeds; little to no control of sprangletop, signalgrass, fall panicum.	Apply to rice that is at least three leaves. Barnyardgrass should be one-leaf-tillering. Broadleaf weeds should be one- to four-leaf stage. Controls large barnyardgrass and junglerice and suppresses some perennial <i>Echinochloa</i> species.
bispyribac-sodium @ 0.021-0.034 lb/A + quinclorac @ 0.26-0.42 lb/A	Rindé @ 22-36 oz/A; Consult label for adjuvant requirement.	Annual grasses and broadleaves	Apply to rice from three-leaf to green ring. Do not apply more than 36 oz/A of Rindé per year. Do not use in ratoon crop.
saflufenacil @ 0.02 lb/A	Sharpen @ 1 oz/A; Consult label for adjuvant requirement.	Annual broadleaf and grass weeds and suppression of sedges and aquatics.	Grasses must be less than two- to three-leaf. Refer to label for proper adjuvant.
orthosulfamuron @ 0.053-0.065 lb/A	Strada 50 WG @ 1.7-2.1 oz/A; Consult label for adjuvant requirement.	Annual sedges, hemp sesbania, jointvetch.	Apply after the two- to three-leaf rice stage to actively growing weeds with one to four leaves. Strada may be mixed with other herbicides to broaden spectrum. See label.
orthosulfamuron @ 0.053-0.065 lb/A + halosulfuron @ 0.0155-0.0186 lb/A	Strada PRO 54 WG @ 2.08-2.5 oz/A; Consult label for adjuvant requirement.	Annual sedges, rice flatsedge, yellow nutsedge, hemp sesbania, jointvetch.	Apply to emerged weeds from prior to rice emergence until after permanent flood establishment. Do not apply past 1/2-inch internode.

Active Ingredient and Rate	Formulated Product and Rate	Weeds Controlled	Remarks and Precautions
penoxulam 0.03-0.04 lb/A @ + cyhalofop @ 0.22-0.28 lb/A	RebelEX @ 16-20 oz/A	Barnyardgrass, broadleaf signalgrass, fall panicum, junglerice, knotgrass, sprangletop, ducksalad, hemp sesbania, annual sedges.	A prepackaged mixture of Clincher plus Grasp. Apply to small actively growing weeds. Grasses should not exceed the three-leaf stage to avoid antagonism. Field should be wet for maximum Clincher activity; however, plant should be 75% exposed for Grasp activity.
fenoxaprop @ 0.059-0.109 lb/A	Ricestar HT 0.58 EC @ 13-24 oz/A	Barnyardgrass, broadleaf signalgrass, junglerice, sprangletop.	Apply 19 oz/A on one- to two-leaf grasses and up to 24 oz/A on larger grasses. Activity decreases on grasses with more than four leaves. Do not apply more than 30 oz/A per year. Tank-mix with only approved herbicides. See label.
aciflourfen @ 0.125 lb/A	Ultra Blazer 2 L @ 0.5 pt/A; Apply with NIS @ 1 qt/100 gal	Hemp sesbania.	Apply after sesbania is above rice plants but before sesbania flowers. Do not apply within 50 days of harvest. Refer to label for tank-mixes.
benzobicyclon @ 0.22-0.33 lb/A	Rogue SC @ 8.4-12.6 oz/A	Sprangletop, rice flatsedge, ducksalad, fimbristylis.	Apply Rogue only after the permanent flood has been established in both water-seeded and drill-seeded production systems. Maintain a deep flood greater than or equal to 3 inches.

Refer to the burndown section of this guide for additional suggestions on managing cool-season weeds. **Water-seeded, no-till systems.** Research has shown that dense vegetation may be killed effectively with herbicides but stand establishment is difficult because of inadequate soil/seed contact due to mats of dead vegetation. Additional research has shown that soil kept free of vegetation all winter will become compacted, and rice seedlings may have difficulty "pegging" and will tend to drift.

Certain populations of barnyardgrass, ducksalad and pickerelweed have become resistant to some traditional herbicides. If this occurs, use alternative herbicides. Contact your local LSU AgCenter county agent for recommendations. Also, refer to the herbicide resistance section of this guide for suggestions on herbicide resistance management.

Table 11. Herbicide-tolerant rice.

Active Ingredient and Rate	Formulated Product and Rate	Weeds Controlled	Remarks and Precautions
quizalofop @ 0.089-0.107	Highcard @ 13-15.5 oz/A; Apply with COC @ 1% v/v	Red rice, barnyardgrass, broadleaf signalgrass, junglerice and sprangletop	Apply to MaxAce rice only. Once grasses pass the four- to five-leaf growth stage, control will begin to decrease. Do not apply more than 31 oz/A per year. Tan-mix with only approved herbicides, See label.
imazamox @ 0.031-0.047 lb/A	Beyond Xtra or Postscript@ 4-6 oz/A POST; Consult label for adjuvant requirement.	Red rice, barnyardgrass, broadleaf signalgrass, junglerice, sedges, some broadleaf weeds.	Apply after one application of imazethapyr on rice four-leaf up to 14 days after PI. Beyond is approved for tolerant Clearfield rice cultivars and Preface is approved for Fullpage hybrids. Refer to label for approved tank-mixes.
imazamox @ 0.0325-0.05 lb/A + quinclorac @ 0.325-0.5 lb/A	Fullscript @ 13-20 oz/A POST; Consult label for adjuvant requirement.	Red rice, barnyardgrass, broadleaf signalgrass, sedges and some broadleaves	Apply Fullscript to Fullpage rice from one-leaf to rice panicle initiation plus 14 days. Do not apply more than 20 oz/A per year.
imazethapyr @ 0.063 lb/A + quinclorac @ 0.312 lb/A	Clearpath @ 0.5 lb/A; Consult label for adjuvant requirement.	Red rice, hemp sesbania, barnyardgrass, broadleaf signalgrass, junglerice, sedges	Apply preplant up to seven days prior to planting, preemergence, or postemergence (up to five-leaf rice if drill-seeded and two-leaf rice if water-seeded). Refer to label for tank-mixes. Must be preceded or followed by a Newpath or Beyond application.
imazethapyr @ 0.063-0.094 lb/A	Newpath or Preface @ 4-6 oz/A; Consult label for adjuvant requirement.	Red rice, barnyardgrass, broadleaf signalgrass, junglerice.	Two applications required. The first application can be lightly incorporated before planting or applied preemergence or at the spike-leaf rice stage. The second application should be applied to three- to five-leaf rice or 10-14 days after the spiking treatment. Beyond can be substituted for second application.
quizalofop @ 0.069-0.107 lb/A	Provisia @ 10-15.5 oz/A; Apply with COC @ 1% v/v	Barnyardgrass, broadleaf signalgrass, junglerice, red rice, sprangletop and perennial grass weeds.	Apply 10-15.5 oz/A to Provisia rice only on one- to two-leaf grasses and up to 15.5 oz/A on larger grasses. Do not apply more than 31 oz/A per year. Tank-mix with only approved herbicides. See label.

Refer to the burndown section of this guide for additional suggestions on managing cool-season weeds. **Water-seeded, no-till systems.** Research has shown that dense vegetation may be killed effectively with herbicides but stand establishment is difficult because of inadequate soil/seed contact due to mats of dead vegetation. Additional research has shown that soil kept free of vegetation all winter will become compacted, and rice seedlings may have difficulty “pegging” and will tend to drift.

Certain populations of barnyardgrass, duckweed and pickerelweed have become resistant to some traditional herbicides. If this occurs, use alternative herbicides. Contact your local LSU AgCenter county agent for recommendations. Also, refer to the herbicide resistance section of this guide for suggestions on herbicide resistance management.

Table 12. Salvage Treatments.

Active Ingredient and Rate	Formulated Product and Rate	Weeds Controlled	Remarks and Precautions
prosulfuron plus halosulfuron @ 0.099 lb/A	Gambit 79 DF @ 1.5 oz/A; Apply with MSO or COC	Activity on most annual broadleaf weeds and sedges.	Apply up to 48 days prior to harvest.
florpyrauxifen @ 0.026 lb/A	Loyant @ 16 oz/A; See Loyant label for approved surfactant	Barnyardgrass, hemp sesbania, Indian jointvetch, yellow nutsedge, rice flatsedge, alligatorweed, spreading dayflower, duck salad, many aquatic broadleaf weeds.	Apply up to 60 days prior to harvest
halosulfuron @ 0.047-0.063 lb/A	Permit/Halomax @ 1-1.34 oz/A; Apply with COC @ 1qt/A	Sedges, hemp sesbania, jointvetch.	Apply up to 48 days before harvest. Do not use more than 1.34 oz/A/season.
fenoxaprop @ 0.109 lb/A	Ricestar HT @ 24 oz/A; Apply with COC @ 1% v/v	Barnyardgrass, broadleaf signalgrass, junglerice, sprangletop.	Apply to four-leaf to tillering grasses. As grass size increases, activity is delayed/decreased.
benzobicyclon @ 0.22-0.33 lb/A	Rogue SC @ 8.4-12.6 oz/A	Sprangletop, rice flatsedge, duck salad, Fimbristylis.	Apply Rogue up to 60 days prior to harvest. Rogue must make contact with the water to be active. If canopy closure has occurred, then Rogue can be surface-coated on fertilizer to ensure the Rogue reaches the water surface.

Refer to the burndown section of this guide for additional suggestions on managing cool-season weeds. **Water-seeded, no-till systems.** Research has shown that dense vegetation may be killed effectively with herbicides but stand establishment is difficult because of inadequate soil/seed contact due to mats of dead vegetation. Additional research has shown that soil kept free of vegetation all winter will become compacted, and rice seedlings may have difficulty “pegging” and will tend to drift.

Certain populations of barnyardgrass, duck salad and pickerelweed have become resistant to some traditional herbicides. If this occurs, use alternative herbicides. Contact your local LSU AgCenter county agent for recommendations. Also, refer to the herbicide resistance section of this guide for suggestions on herbicide resistance management.

Additional Comments:

RATOON CROP HERBICIDES:

Basagran, Clincher, Grandstand, and Grasp are labeled for ratoon (stubble) crop rice. See labels for rates and timing of application.

Soybean

Table 1. Weed response ratings for selected soybean herbicides applied preemergence.

Table Legend

Rating	Score
None to Slight	0-3
Fair	4-6
Good	7-8
Excellent	9-10

	Barnyardgrass	Broadleaf signalgrass	Crabgrass	Hemp sesbania	Hopornbeam copperleaf	Johnsongrass - seedling	Jointvetch	Morningglory – entireleaf	Morningglory - pitted	Pigweed species	Prickly sida	Red rice	Redweed	Sicklepod	Smellmelon
Anthem Flex/Anthem Maxx	9	9	9	8	8	8	8	7	7	9	8	-	9	8	8
Authority Edge	9	9	9	-	9	8	-	9	9	9	8	-	-	9	8
Authority Elite / BroadAxe	9	9	9	8	8	7	8	9	9	9	9	-	8	8	8
Authority First / Sonic	7	7	7	8	9	7	-	9	9	8	8	-	-	8	8
Authority MTZ	5	5	5	9	9	5	8	9	9	9	9	-	9	8	9
Authority Supreme	9	9	9	-	9	8	-	9	9	9	8	-	-	9	8
Authority XL	7	7	7	9	9	6	8	9	9	9	9	-	9	9	9
Boundary	8	9	9	7	9	8	7	5	8	8	7	-	9	8	8
Canopy DF	8	8	8	8	9	6	5	8	8	9	9	6	9	8	7
Canopy EX	5	5	5	7	9	4	8	8	8	9	8	4	8	6	7
Clomazone	9	9	9	1	6	9	2	4	7	4	9	7	8	1	-
Envive / Enlite	7	7	7	7	8	6	8	8	9	8	7	7	8	8	8
Fierce or Fierce EZ	7	7	7	8	9	7	8	9	9	9	8	7	9	8	9
Fierce MTZ or Kyber	9	9	9	9	9	8	-	8	8	9	8	-	9	8	9
Fierce XLT	7	7	7	9	9	7	-	9	9	9	9	7	-	9	9
FirstRate	3	3	3	3	5	2	-	8	8	7	5	1	-	6	5
metribuzin	8	8	8	8	9	6	6	5	8	8	8	6	9	4	6
Outlook	9	9	9	2	5	7	1	1	1	8	5	8	7	2	7
Pendimethalin	9	9	9	1	0	9	1	3	3	8	1	6	2	2	6

	Barnyardgrass	Broadleaf signalgrass	Crabgrass	Hemp sesbania	Hopornbeam copperleaf	Johnsongrass - seedling	Jointvetch	Morningglory – entireleaf	Morningglory - pitted	Pigweed species	Prickly sida	Red rice	Redweed	Sicklepod	Smellmelon
Prefix	8	8	8	9	9	7	8	6	6	9	7	8	9	6	9
Python	0	0	0	0	7	0	-	6	6	6	9	0	-	7	5
Scepter	7	7	7	0	8		-	5	7	7	9	7	-	5	7
S-metolachlor/metolachlor (various formulations)	9	9	9	2	5	7	1	1	1	9	5	8	7	2	7
Tendovo	9	9	-	7	9	-	-	8	8	9	8	-	-	8	8
Trivence	8	8	8	8	9	-	-	8	8	8	8	-	-	8	8
Valor or flumioxazin	6	6	6	8	8	2	5	8	8	9	8	0	8	8	7
Valor XLT	6	6	6	9	9	4	9	9	9	9	9	0	9	8	9
Verdict	9	9	9	8	9	7	-	9	8	9	8	-	-	8	9
Warrant	8	8	8	2	5	7	1	1	1	8	5	8	7	2	7
Zidua SC	9	9	9	8	8	8	8	7	7	9	8	9	9	8	8

Control expected under optimum conditions. LSU AgCenter 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 Louisiana.

Table 2. Weed response ratings for selected soybean herbicides applied postemergence.

Table Legend		Barnyardgrass	Broadleaf signalgrass	Crabgrass	Hemp sesbania	Hophornbeam copperleaf	Johnsongrass - seedling	Jointvetch	Morningglory – entire leaf	Morningglory - pitted	Pigweed species	Prickly sida	Red rice	Redweed	Sicklepod	Smellmelon
Rating	Score															
None to Slight	0-3															
Fair	4-6															
Good	7-8															
Excellent	9-10															
Assure II		9	9	9	0	0	9	0	0	0	0	0	9	0	0	0
Basagran		0	0	0	6	4	0	3	4	4	5	8	0	7	1	5
Classic or chlorimuron		0	0	0	8	6	0	7	8	8	9	2	0	8	8	4
Clethodim		9	9	9	0	0	9	0	0	0	0	0	8	0	0	0
Cobra		3	3	3	9	9	0	6	9	9	9	8	1	8	6	9
Enlist Duo		9	9	9	8	9	9	-	9	9	8	8	9	-	8	9
Enlist One + Liberty 280SL		5	5	5	9	9	8	-	9	9	9	9	-	-	9	9
Enlist One		0	0	0	7	8	0	-	8	8	7	7	0	-	7	8
FirstRate		3	3	3	7	7	0	-	9	9	7	8	0	8	4	6
Fomesafen + glyphosate		9	9	9	9	9	9	7	9	9	9	8	9	9	9	9
Fomesafen		4	4	4	9	9	0	7	9	9	9	3	0	5	6	9
Fusilade DX		9	9	9	0	0	9	0	0	0	0	0	7	0	0	0
glufosinate		7	7	7	9	7	8	-	9	9	7	8	-	-	9	8
Poast Plus		9	9	9	0	0	9	0	0	0	0	0	7	0	0	0
Pursuit		8	8	8	2	4	7	2	7	7	9	4	8	6	3	5
Sequence		9	9	9	7	9	9	7	8	8	9	8	9	8	9	9
Storm		3	3	3	9	9	0	5	9	9	9	8	1	8	4	9
Ultra Blazer		3	3	3	9	8	0	5	9	9	8	3	0	3	3	8
Warrant Ultra		8	8	8	8	9	5	-	5	8	8	7	-	-	7	8

Control expected under optimum conditions. LSU AgCenter 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 Louisiana.

Table 3. Preplant incorporated herbicides.

Active Ingredient and Rate	Formulated Product and Rate	Weeds Controlled	Remarks and Precautions
pendimethalin - 0.5-1.5 lb/A	Various formulations; See product label for specific rates.	Most annual grasses, seedling johnsongrass; fair control of some broadleaf weeds.	Before planting, incorporate 2-3 inches deep within seven days of application if sufficient rainfall has not been received. Highest rates for high organic matter soils. Prowl can be applied at rates higher than listed to control certain annuals and to suppress rhizome johnsongrass; consult label.
trifluralin - 0.5-1.5 lb/A	Various formulations; See product label for specific rates.	Most annual grasses, seedling johnsongrass; fair control of some broadleaf weeds.	Apply before planting and incorporate 2-3 inches deep. Trifluralin can be applied at rates higher than listed to control certain annuals and to suppress rhizome johnsongrass; consult label.

Table 4. Preemergence herbicides.

Active Ingredient and Rate	Formulated Product and Rate	Weeds Controlled	Remarks and Precautions
Acetochlor + fomesafen – 1.29-1.89 lb/A	Warrant Ultra – 48-70 oz/A	Annual grasses and broadleaf weeds	Apply at planting. Mechanical incorporated not recommended.
chlorimuron + thifensulfuron + flumioxazin - 0.09-0.084 lb/A	Envive - 3.5 oz/A or Enlite - 2.8 oz/A	Broadleaf and grass weeds.	Apply at planting. Consult label for pH, organic matter and recrop restrictions to determine whether to use Envive or Enlite.
chlorimuron + metribuzin - 0.188-0.281 lb/A	Canopy 75 DF - 4-6 oz/A	Annual grasses, broadleaf weeds.	Apply at preplant incorporated or surface-applied at planting. Do not use postemergence. Follow labeled rotational crop restrictions. Follow sprayer cleanup instructions before spraying subsequent crops. Do not apply to soils with a pH greater than 7.5. Soils with pH of 7.0-7.4, use 4 oz./A of Canopy 75 DF to reduce potential injury. Do not apply to metribuzin sensitive varieties.
chlorimuron + flumioxazin + metribuzin 0.23-0.383 lb/A	Trivence - 6-10 oz/A	Annual grass, broadleaf weeds.	Do not apply soils with soil pH greater than 7 or history of nutrient deficiency such as iron chlorosis. Use rate dependent based upon soil pH and soil type. Please consult label.
clomazone - 1-1.25 lb/A	clomazone (3 lb/gal formulation) - 2.6-3.3 pt/A	Annual grasses, prickly sida purslane, spotted spurge, velvetleaf.	Do not apply within 1,500 feet of towns, subdivisions, commercial vegetables, greenhouses or nurseries. Do not graze or feed forage, hay or straw from treated fields to livestock. Do not apply with aerial equipment.
dimethenamid-P - 0.76-1.3 lb/A	Outlook 6EC - 12-18 oz/A; See product label for specific rates.	Most annual grasses, red rice, johnsongrass from seed; fair control of some broadleaf weeds.	Apply after planting before weeds emerge.
flumetsulam - 0.05-0.067 lb/A	Python 80 WDG - 1-1.33 oz/A	Annual broadleaf weeds.	Do not apply more than 1.4 oz of Python per year. Do not apply to soils with pH of 7.8 or higher. Do not apply with aerial equipment. Consult label for more information on rates and re-crop intervals.

Active Ingredient and Rate	Formulated Product and Rate	Weeds Controlled	Remarks and Precautions
flumioxazin - 0.063 lb/A	Various formulations; See product label for specific rates.	Broadleaves, some suppression of annual grasses.	Apply after planting before weeds emerge. Consult label for tank-mixes to improve grass control. Soybean injury is possible under cool and wet conditions following planting or when incorporating rainfall occurs as seedlings are cracking. Do not tank-mix with metolachlor/S-metolachlor or dimethenamid-P.
metribuzin - 0.25-0.75 lb/A	Various formulations; See product label for specific rates.	Annual grasses, most broadleaf weeds such as cocklebur, prickly sida, hemp sesbania, wild poinsettia.	Injury may occur on soils with calcareous surface or pH 7.5 or greater, soils with less than 0.5% organic matter, when soybean planted less than 1.5 inches deep, and when heavy rains follow application and field are poorly drained. Differential sensitivity among soybean varieties have been documented. See label for list.
pendimethalin - 0.5-1.5 lb/A	Various formulations; See product label for specific rates.	Most annual grasses, johnsongrass from seed; fair control of some broadleaf weeds.	Apply at planting. Highest rates for high organic matter soils.
pyroxasulfone - 0.08-0.18 lb/A	Zidua SC - 2.5-5.75 oz/A; See product label for specific rates.	Annual grass, broadleaf weeds.	May be applied preplant or preemergence. Must have rainfall for activation. Do not apply if soybeans have begun to emerge.
pyroxasulfone + flumioxazin + chlorimuron - 0.117-0.146 lb/A	Fierce XLT - 3-3.75 oz/A	Annual grass, broadleaf weeds.	Do not apply more than 3.75 oz/A on soils with pH greater than 6.8. Consult label. See Remarks and Precautions for flumioxazin.
pyroxasulfone + fluthiacet-methyl - 0.07-0.185 lb/A	Anthem Maxx - 2-5 oz/A; See product label for specific rates.	Many small seeded annual broadleaf weeds and most annual grasses.	Apply preplant or preemergence, but before soybean cracking or emergence.
pyroxasulfone + carfentrazone - 0.07-0.2 lb/A	Anthem Flex - 2.25-6.4 oz/A; See product label for specific rates.	Many small seeded annual broadleaf weeds and most annual grasses.	Apply preplant or preemergence, but before soybean cracking or emergence.
pyroxasulfone + flumioxazin - 0.143-0.178 lb/A	Fierce 76 WDG - 3-3.75 oz/A	Annual grass, broadleaf weeds.	May be applied preplant or preemergence. Must have rainfall for activation. See Remarks and Precautions for flumioxazin.

Active Ingredient and Rate	Formulated Product and Rate	Weeds Controlled	Remarks and Precautions
saflufenacil + dimethenamid-P - 0.22-0.44 lb/A	Verdict - 5-10 oz/A	Annual grass, broadleaf weeds.	Preplant interval depends upon rate. Soybean can be planted immediately following 5 oz/A, 14 days after 7.5 oz/A and 30 days after 10 oz./A. Do not apply to emerged soybean because severe injury will occur.
S-metolachlor + metribuzin + fomesafen - 1.2-2.71 lb/A	Intimidator 4.8 EC - 32-72 oz/A; 32 oz/A = 0.19 lb/A of metribuzin; 40 oz/A = 0.23 lb/A of metribuzin; 60 oz/A = 0.35 lb/A of metribuzin; 72 oz/A = 0.42 lb/A of metribuzin	Annual grasses, broadleaf weeds.	Do not exceed 72 oz/A per season. Do not exceed 0.38 lb/A of fomesafen per acre per season. When selecting product rate, ensure amount of metribuzin applied is safe for soil type and pH. See Remarks and Precautions for metribuzin.
S-metolachlor/metolachlor - 0.96-1.91 lb/A	Various formulations; See product label for specific rates.	Most annual grasses, red rice, johnsongrass from seed; fair control of some broadleaf weeds.	Apply at preplant incorporated, surface applied or preplant. Apply after planting and before weeds emerge. May be incorporated.
S-metolachlor + metribuzin - 1.22-1.63 lb/A	Boundary 6.5 EC - 1.5-2 pt/A	Most annual grasses, selected broadleaf weeds.	Apply before planting. Ensure soybean variety is tolerant of metribuzin prior to use.
S-metolachlor + fomesafen - 1.32 lb/A	Prefix 5.3 EC - 2.0 pt/A	Annual grasses, broadleaf weeds.	Before, during or after crop emergence. Must have rainfall for activation. Excellent choice for pigweed control. Postemergence applications must be applied no later than 90 days before harvest.
S-metolachlor + metribuzin + cloransulam – 1.43-2.08 lb/A	Tendovo – 1.2-1.75 qt/A; See product label for specific rates.	Annual grasses, broadleaf weeds.	Preplant to preemergence. Use rate depends upon soil type. Soybean injury may occur if soil pH is 7.5 or above.
sulfentrazone + pyroxasulfone - 0.14-0.26 lb/A	Authority Supreme - 4.3-8 oz/A	Annual grass, broadleaf weeds. Yellow nutsedge suppression.	Before, during or after planting, but before crop emergence. Consult label for re-cropping intervals.
sulfentrazone + S-metolachlor 1.04-1.75 lb/A	Authority Elite OR BroadAxe - 19-32 oz/A; See product label for specific rates.	Annual grasses, annual sedges, broadleaf weeds.	Before, during or after planting, but before crop emergence. Consult label for re-cropping intervals.

Active Ingredient and Rate	Formulated Product and Rate	Weeds Controlled	Remarks and Precautions
sulfentrazone + metribuzin - 0.34-0.42 lb/A	Authority MTZ - 12-18 oz/A; See product label for specific rates.	Annual grasses, broadleaf weeds.	Before, during or after planting but before crop emergence. Soybean cultivars may differ in tolerance to Authority MTZ; check label for specific cultivars.
sulfentrazone + pyroxasulfone - 0.23-0.3 lb/A	Authority Edge - 7-9 oz/A; See product label for specific rates.	Annual grass, broadleaf weeds. Yellow nutsedge suppression.	Before, during or after planting, but before crop emergence. Consult label for re-cropping intervals.
sulfentrazone + chlorimuron - 0.22-0.35 lb/A	Authority XL - 5-8 oz/A; See product label for specific rates.	Annual grass, broadleaf weeds.	Before, during or after planting, but before crop emergence. Consult label for pH, organic matter and re-crop restrictions to determine whether to use Authority XL.
sulfentrazone + cloransulam - 0.18-0.28 lb/A	Authority First OR Sonic - 4-6.45 oz/A; See product label for specific rates.	Broadleaf weeds with grass suppression.	Before, during or after planting but before crop emergence. Consult label for re-cropping intervals.

Table 5. Postemergence herbicides.

Active Ingredient and Rate	Formulated Product and Rate	Weeds Controlled	Remarks and Precautions
2,4-D choline - 0.7-0.95 lb/A	Enlist One - 1.5-2 pt/A	Broadleaf weeds.	For use in Enlist varieties only. Only Enlist One and Enlist Duo are labeled for use in Enlist soybean. Do not apply past the R2 (full flower) soybean growth stage. A minimum of 12 days between sequential applications is required. Federal label contains additional rules and restrictions. See label for further detail. Please see company websites for list of products that can be legally tank-mixed. See Herbicide-Tolerant Soybean Varieties on last page of this section for further information.
2,4-D choline + glyphosate - 1.96 lb/A	Enlist Duo - 4.75 pt/A	Annual grass and broadleaf weeds.	For use in Enlist varieties only. Only Enlist One and Enlist Duo are labeled for use in Enlist soybean. Do not apply past the R2 (full flower) soybean growth stage. A minimum of 12 days between sequential applications is required. Federal label contains additional rules and restrictions. See label for further detail. Please see company websites for list of products that can be legally tank-mixed. See Herbicide-Tolerant Soybean Varieties on last page of this section for further information.
2,4-D choline - 0.95 lb/A + glufosinate 0.59 lb/A	Enlist One - 2 pt/A + Liberty 280SL, Cheetah, or Interline - 32 oz/A	Broadleaf weeds; good control of small grasses; good option for glyphosate-resistant pigweed control.	For use in Enlist varieties only. When tank-mixed with Liberty, Cheetah, or Interline, only Enlist One is labeled for use in Enlist soybean. See additional information in Enlist One and glufosinate sections. See Herbicide-Tolerant Soybean Varieties on last page of this section for further information.
acetochlor - 0.94-1.5 lb/A	Warrant - 1.25-2 qt/A; See product label for specific rates.	Annual grasses, small-seeded broadleaves.	Postemergence surface applied from emergence to R2. Optimum timing of application is V2 to V3. Emerged weeds are not controlled and require addition of a labeled postemergence herbicide.
acifluorfen - 0.25-0.5 lb/A	Ultra Blazer 2L - 0.5-1.5 pt/A; Add 0.25% v/v NIS or 1% v/v COC; see label.	Hemp sesbania, most morningglories, smellmelon.	Apply when seedling weeds are in two- to four-leaf stage and actively growing. Use 1.0 pt./A for hemp sesbania that is actively growing but before flowering. Rate is dependent on weed spectrum and size. Consult label. Maximum rate 0.5 pt./A/application and 2 pt./A/season.
acifluorfen + bentazon - 0.5-.75 lb/A	Storm - 1-1.5 pt/A; Add 0.25% v/v NIS or 1% v/v COC; see label.	Hemp sesbania, morningglories, smellmelon, pigweed, prickly sida, cocklebur, other broadleaf.	Application same as above. Choose most serious weed pest and use the full rate of whichever herbicide is considered most effective plus 1 pt. of the herbicide. Read and follow label instructions. Storm at 1.5 pt./A is equivalent to 1 pt of each herbicide in a tank-mix.
bentazon - 0.75-1.5 lb/A	Basagran 5L - 1.2-2.4 pt/A; Add 1% v/v COC; see label.	Cocklebur and prickly sida; fair on other broadleaf weeds.	Apply after soybean plants have first trifoliate leaves.

Active Ingredient and Rate	Formulated Product and Rate	Weeds Controlled	Remarks and Precautions
chlorimuron - 0.008-0.012 lb/A	Classic 25DG - 0.5-0.75 oz/A; Add 0.25% v/v NIS; see label.	Morningglories, pigweed, sicklepod, hemp sesbania.	Apply after soybeans have first trifoliolate leaves and when weeds have two to six leaves. See label for re-crop intervals. Don't apply to soils with a pH higher than 7.5.
chlorimuron + thifensulfuron - 0.013-0.02 lb/A	Synchrony XP - 0.75-1.125 oz/A	Broadleaf and grass weed control.	For use in STS/RR or Bolt soybean varieties only. Apply after first trifoliolate leaf. Mix with glyphosate to broaden the weed control spectrum. See Herbicide-Tolerant Soybean Varieties on last page of this section for further information.
clethodim - 0.09-0.25 lb/A	Various formulations; See product label for specific rates.	Annual and perennial grasses.	Application same as above. Refer to label for rate for specific grass species. Addition of a spray-grade nitrogen fertilizer or ammonium sulfate may further improve weed control. See label.
cloransulam-methyl - 0.016 lb/A	FirstRate - 0.30 oz/A; Add 0.25% v/v NIS; see label.	Horseweed (mare's-tail), cocklebur and morningglories, specifically palmleaf morningglory.	Apply before weeds exceed height limitations (generally 2-4 inches tall) and prior to soybeans reaching 50% flowering stage. Application prior to full emergence of first soybean trifoliolate may cause temporary chlorosis. May tank-mix with other soybean herbicides, including glyphosate in Roundup Ready soybeans. May reduce grass control when mixed with some grass herbicides.
fluzifop-P-butyl - 0.125-0.50 lb/A	Fusilade DX - 0.37-0.75 pt/A; Add 0.25% v/v NIS or 1% v/v COC ; see label	Annual and perennial grasses.	Apply before grasses exceed height recommended for treatment. Use the highest rate for bermudagrass with runners 4 to 6 inches long. Application to larger grasses or grasses under stress may result in reduced control.
flumetsulam - 0.0063 lb/A	Python - 0.125 oz/A; Add 0.25% v/v NIS or 1% v/v COC; see label.	Prickly sida.	Prickly sida less than 2 inches tall. Do not apply to soybean with more than five trifoliates. Do not apply more than two postemergence applications and applications must be separated by at least 14 days. If Python is applied preemergence and postemergence, the cumulative rate cannot exceed 0.138 ounces per season.
flumiclorac - 0.023-0.054 lb/A	Resource - 4-8 oz/A; Add 1% v/v COC; see label.	Common ragweed, prickly sida and velvetleaf.	Apply when weeds are 2 inches. Add non-selective herbicide to improve broadleaf control and to provide grass control.
fluthiacet - 0.0035-0.006 lb/A	Cadet 91 EC - 0.5-0.9 oz/A; Apply 0.25% v/v NIS; see label.	Morningglories, pigweeds, hemp sesbania.	Apply when weeds are 2 inches. Add non-selective herbicide to improve broadleaf control and to provide grass control.
fomesafen - 0.25-0.35 lb/A	Various formulations; Apply 0.25% v/v NIS; see label.	Morningglories, cocklebur, pigweed, hemp sesbania, suppression of grasses.	Apply before weeds exceed height limitations. Soybeans are very tolerant to fomesafen. May be mixed with grass herbicides. Injury may be observed under hot, humid conditions.

Active Ingredient and Rate	Formulated Product and Rate	Weeds Controlled	Remarks and Precautions
glufosinate - 0.59-0.79 lb/A	glufosinate 2.34 lb/gal formulation - 32-43 oz/A	Most broadleaf weeds; good control of small grasses and pigweed if not taller than 3-inches.	For use in Liberty Link, Enlist, and XtendFlex varieties only. Two to three applications and/or the use of residual herbicides are recommended. Make first application 7-10 days after emergence on 2- to 3-inch weeds. Make the second application 10-14 days later. Make the third application as needed on 2- to 3-inch weeds. Do not exceed 87 oz./A/year. Multiple residual herbicides can be tank-mixed with glufosinate to broaden weed spectrum. Use residual in burndown or at planting. See Herbicide-Tolerant Soybean Varieties on last page of this section for further information.
glyphosate - 0.7-1.5 lb/A	Various formulations; See product label for specific rates.	Most broadleaf weeds and grasses.	For use in Roundup Ready/Roundup Ready 2 varieties, Enlist, Xtend, XtendFlex varieties only. See Herbicide-Tolerant Soybean Varieties on last page of this section for further information. If glyphosate-resistant weed species is present, do not expect control. Multiple residual herbicides can be tank-mixed with glyphosate to broaden weed spectrum.
glyphosate + S-metolachlor - 1.64-2.63 lb/A	Sequence 5.25 L - 2.5-4.0 pt/A	Most broadleaf weeds and grasses.	For use in Roundup Ready/Roundup Ready 2 varieties, Enlist, Xtend, XtendFlex varieties only. Apply from soybean cracking to 90 days before soybean harvest. See Herbicide-Tolerant Soybean Varieties on last page of this section for further information.
glyphosate + fomesafen - 1.23-1.87 lb/A	Flexstar GT 3.5 - 3.5-5.3 pt/A	Most broadleaf weeds and grasses; good option for increased control of morningglory, hemp sesbania, smellmelon.	For use in Roundup Ready/Roundup Ready 2 varieties, Enlist, Xtend, XtendFlex varieties only. See Herbicide-Tolerant Soybean Varieties on last page of this section for further information.
imazethapyr - 0.06 lb/A	Pursuit DG - 1.44 oz/A; Add 0.25% v/v NIS; see label.	Annual grasses and certain broadleaf weeds.	Apply before weeds are 3 inches tall. See comments in preemergence section. See label for re-crop intervals.
lactofen - 0.15-0.19 lb/A	Cobra 2L - 10.0-12.5 oz/A; Add 0.25% v/v NIS; see label.	Morningglories, cocklebur, pigweeds, prickly sida, ballonvine, smellmelon, copperleaf.	Apply before weeds exceed height limitations. Application may cause moderate burn; however, soybeans normally recover in 10 days without loss of yield.
metribuzin - 0.25-0.5 lb/A	Various formulations; See product label for specific rates.	Annual grasses and broadleaf weeds.	DIRECTED OR HOODED SPRAYER ONLY. Apply as a directed spray at the base of soybean plants contacting only the lower 1/4 to 1/3 of the soybean.
pyroxasulfone - 0.053- 0.189 lb/A	Zidua SC - 1.75-5.75 oz/A; See product for specific rates.	Annual grass, some broadleaf weeds.	Apply between emergence and V6 soybean growth stages. Optimum timing is V2-V3. Emerged weeds are not controlled and require addition of a labeled postemergence herbicide.

Active Ingredient and Rate	Formulated Product and Rate	Weeds Controlled	Remarks and Precautions
pyroxasulfone + fluthiacet-methyl - 0.06-0.11 lb/A	Anthem Maxx - 1.65-3.25 oz/A; See product label for specific rates.	Annual grasses, some broadleaf weeds.	Apply between V1 and V3 soybean growth stages. Optimum timing is V2-V3. Control of emerged weeds is minimal, thus addition of a labeled postemergence herbicide is required. Organic matter influences use rate on coarse textured soil, consult label.
quizalofop - 0.10-0.20 lb/A	Assure II - 5-10 oz/A; Add 0.25% v/v NIS or 1% v/v COC; see label.	Annual and perennial grasses.	Apply before grasses exceed height recommended for treatment. Application to larger grasses or grasses growing under stress may result in reduced control.
sethoxydim - 0.19-0.47 lb/A	Poast Plus - 1.5-2.25 pt/A; Add 0.25% v/v NIS or 1% v/v COC; see label.	Annual and perennial grasses.	Apply before grasses exceed height recommended for treatment. In general use 0.5 pt./A for annual grasses up to 4 inches tall, 1.5 pt/A for johnsongrass 1-2 feet tall and 2.25 pt./A for bermudagrass with 4- to 6-inch runners. Application to larger grasses or grasses under stress may result in reduced control. Activity may be reduced if mixed with other herbicides. Consult labels for retreatment rates.
S-metolachlor/metolachlor - 0.96-1.25 lb/A	Various formulations; See product label for specific rates.	Most annual grasses, red rice, seedling johnsongrass; fair control of some broadleaf weeds.	Postemergence applications must be applied no later than 90 days before harvest. Optimum timing is V2-V3. Emerged weeds are not controlled and require addition of a labeled postemergence herbicide.
S-metolachlor + fomesafen - 1.32 lb/A	Prefix 5.3 EC - 2.0 pt/A	Annual grasses, broadleaf weeds.	Before, during or after crop emergence. Must have rainfall for activation. Excellent choice for pigweed control. Postemergence applications must be applied no later than 90 days before harvest.

Table 6. Preharvest or harvest aid.

Active Ingredient and Rate	Formulated Product and Rate	Weeds Controlled	Remarks and Precautions
carfentrazone - 0.016-0.023 lb/A	Aim 2EC - 1-1.5 oz/A; Add 1% v/v COC	Better on morningglories than pigweed, sicklepod, etc.	Apply after crop has matured and grain has begun to dry down. More effective on annual vines. Do not apply within three days of harvest. Apply in 10 gal. by ground, 5 gal. by air.
saflufenacil - 0.022-0.045 lb/A	Sharpen - 1-2 oz/A; Add 1% MSO + 8.5 lb/100 gal AMS	Morningglories and other broadleaf weeds. Good for ragweed parthenium control.	Apply once soybean has reached physiological maturity (all pods and seeds have no green color). Indeterminate varieties: 65% brown pods, more than 70% leaf drop, 30% or less seed moisture. Determinate varieties: more than 50% leaf drop and remaining leaves are yellowing. Preharvest interval is 3 days.
paraquat - 0.13-0.25 lb/A	paraquat (2 lb/gal formulation) - 8-16 oz/A; paraquat (3 lb/gal formulation) - 5.4-10.7 oz/A; Add 0.25% v/v NIS; see label.	Desiccation of weeds and soybeans only.	Indeterminate varieties: 65% of pods are mature or moisture content is 30% or less. Determinate varieties: 50% leaf drop and remaining leaves are yellow. Some drought stressed weeds will not be desiccated. Do not graze or harvest for hay. Apply in 20 gal. by ground or 5 gal. by air. Preharvest interval is 15 days. Immature soybeans will be injured.
sodium chlorate - 6 lb/A	Various formulations; See product label for specific rates.	Desiccation only. Level of weed control is affected by environmental conditions.	Apply 7-10 days before harvest. Apply in 20 gal. by ground, 5 gal. by air. Check label for environmental conditions most favorable for desiccation. Apply under high temperatures and humidity.

Herbicide-tolerant Soybean Varieties

Enlist soybean

These varieties are tolerant to applications of 2,4-D choline, glyphosate, and glufosinate. The initial application of 2,4-D choline with or without glyphosate or glufosinate should be made when weeds are no more than 3 inches tall. LSU AgCenter data indicates that weed management programs in Enlist soybean should contain residual herbicides applied preemergence and early postemergence to ensure season-long weed control. Corteva Agriscience provides a website listing which herbicides can be legally tank-mixed with their Enlist One or Enlist Duo. Implementation of a weed management program containing residual herbicides preemergence and postemergence is critical if 2,4-D choline will be applied for control of herbicide-resistant weeds (ex. glyphosate-resistant Palmer amaranth or waterhemp) as 2,4-D applied alone or when tank-mixed with glyphosate or glufosinate will not provide season-long control of herbicide-resistant weeds.

Liberty Link soybean

These varieties are tolerant to overtop applications of glufosinate. The initial application of glufosinate 2.34 lb/gal formulation should be made at 29-36 oz product/A, seven to 10 days after soybean emergence. A sequential application of glufosinate should follow 10-14 days later or to 2- to 4-inch weeds. A maximum of 87 oz product/A/year can be applied. Do not apply past first bloom. Glufosinate should provide good control of most broadleaf weeds but is weak on grass weeds. For acceptable grass weed control, glufosinate should be applied to grasses less than 3 inches tall. The Liberty Link soybean weed control system works very well with a residual herbicide that provides grass control. If Liberty Link soybean is planted in an area with known large grassy weed populations, a graminicide such as clethodim, Assure II, etc. should be budgeted to control late-season grass problems.

Roundup Ready soybean

These varieties are tolerant to overtop applications of glyphosate. The initial application of glyphosate should be made at 0.7 to 1 lb/A when weeds are less than 4 inches tall. If the first application is made to weeds 5-12 inches tall, increase the glyphosate rate to 1.5 lb/acre. Numerous formulations of glyphosate are available for use; therefore, rates may differ depending upon glyphosate formulation. Additionally, ensure that the formulation is labeled for use in Roundup Ready soybean. Do not apply past first bloom. Consult the product label for use requirements. Sequential treatments may be needed, depending upon weed pressure, growing conditions and other factors. If applying glyphosate by air, be extremely careful to prevent off-site target movement. In addition, weeds resistant to glyphosate have been identified in Louisiana; therefore, programs with multiple herbicidal modes of action applied as residual (preemergence and postemergence) in conjunction with glyphosate is a must.

Sulfonylurea tolerant soybean (STS) or BOLT

These varieties are tolerant to herbicides such as Classic, Canopy or Synchrony STS (members of the sulfonylurea herbicide family). These varieties allow utilization of the sulfonylurea herbicides in high pH soils in the current crop year and in following crops. Soybean varieties are available that are tolerant to both glyphosate and sulfonylurea herbicides (STS/RR or BOLT varieties).

Small Grains

(Wheat, Oats, Rye)

Control Strategies for Troublesome Weeds in Wheat

- 1. Little barley:** Start clean and apply metribuzin as soon as wheat reaches the two- to three-leaf stage. A second application may be required after wheat begins to tiller. Osprey, PowerFlex HL and Axial may provide some suppression but will not control little barley.

2. Ryegrass: Two applications are usually required to manage ryegrass. The first application should be applied in the fall, and the second application should be applied in the winter (January or February). Metribuzin, Axiom, Finesse, Osprey, Powerflex, Anthem Flex and Zidua SC are good choices for managing ryegrass in the fall. Metribuzin must be applied at the two- to three-leaf wheat stage before ryegrass emerges. To control ryegrass, Finesse should be applied preplant or preemergence before wheat and ryegrass emerge. When using Finesse, fields must be fallowed or planted to STS soybeans. Powerflex HL, Osprey, and Osprey Xtra should be applied postemergence when ryegrass reaches the two- to three-leaf stage. Finesse, Powerflex and Osprey will not control ALS resistant ryegrass. Anthem Flex and Zidua must be applied as a delay-PRE following 80% wheat emergence. Axial Bold has been the most consistent herbicide for managing ryegrass in February.

3. Vetch: Two applications are often required to manage severe infestations. PowerFlex HL and Harmony Extra can be used in the fall for control. In most situations, PowerFlex HL in the fall followed by Harmony Extra in January or February is the best control strategy. 2,4-D can also be used after wheat has finished tillering and before jointing.

Table 1. Weed response ratings for selected small grain herbicides applied preemergence.

Table Legend		annual bluegrass	bittercress	buttercup	canarygrass	chickweed	curly dock	cutleaf eveningprimrose	henbit	little barley	ryegrass	shepherd's purse	swinncress	vetch	wild garlic	wild onion
Rating	Score															
None to Slight	0-3															
Fair	4-6															
Good	7-8															
Excellent	9-10															
Sharpen (preplant)		1	8	8	-	8	8	8	8	-	1	8	8	8	-	-
Finesse (preplant)		9	9	9	-	9	8	9	9	3	7	9	9	3	5	5
Finesse (preemergence)		9	9	9	-	9	8	9	9	3	7	9	9	3	5	5

Control expected under optimum conditions. LSU AgCenter 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 Louisiana.

Table 2. Weed response ratings for selected corn herbicides applied postemergence.

Table Legend		annual bluegrass	bittercress	buttercup	canarygrass	chickweed	curly dock	cutleaf eveningprimrose	henbit	little barley	ryegrass	shepherd's purse	swincress	vetch	wild garlic	wild onion
Rating	Score															
None to Slight	0-3															
Fair	4-6															
Good	7-8															
Excellent	9-10															
2,4-D		0	9	9	0	8	9	9	7	0	0	9	8	9	6	8
Anthem Flex		8	9	9	-	8	-	-	8	0	8	7	8	0	-	-
Axial Bold		0	0	0	9	0	0	0	0	3	8	0	0	0	0	0
Axiom		9	7	8	6	9	7	8	9	0	7	9	8	3	0	0
dicamba plus 2,4-D		0	0	0	0	9	9	9	8	5	0	9	9	9	8	9
Finesse		9	-	-	-	9	8	8	9	-	7	9	8	3	6	6
Harmony Extra		0	9	9	0	9	9	8	8	7	0	9	8	8	9	7
metribuzin		9	0	0	6	9	7	8	9	0	7	9	8	3	0	0
Osprey		9	9	9	8	7	7	6	9	3	9	9	8	3	5	5
Osprey Xtra		9	9	9	8	7	-	-	5	5	9	7	7	7	-	-
Powerflex HL		8	9	8	9	9	9	9	9	0	9	9	9	9	5	5
Prowl H ₂ O		9	-	-	8	-	3	3	9	-	7	-	-	0	0	0
Zidua SC		8	9	9	-	8	-	-	8	0	8	7	8	0	-	-

Control expected under optimum conditions. LSU AgCenter 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 Louisiana.

Table 3. Preplant and preemergence herbicides.

Active Ingredient and Rate	Formulated Product and Rate	Weeds Controlled	Remarks and Precautions
chlorsulfuron + metsulfuron - 0.0094-0.0234 lb/A	Finesse Cereal and Fallow 75 DF - 0.2-0.5 oz/A	Most common broadleaf weeds and annual bluegrass. Suppresses ryegrass.	Wheat only: Do not apply to soils with a pH above 7.9. Apply before planting. Drill wheat at least 1 inch deep or injury may occur. Do not use if wheat will be broadcast-seeded. Can be mixed with glyphosate to control emerged weeds. Extremely long rotation interval for most crops grown in Louisiana. STS soybeans can be grown six months after application; all other crops can be grown 18 months after application. Do not use an organophosphate insecticide within 60 days of application. Can be applied in a liquid nitrogen solution. No grazing restrictions.
saflufenacil – 0.067- 0.089 lb/A	Sharpen – 3-4 oz/A	Broadleaf weeds.	Wheat, oats, and rye: Apply preplant, preplant incorporated or preemergence. Small grain varieties may vary in their sensitivity to Sharpen; consult seed supplier. If foliar activity is needed, MSO at 1% v/v plus AMS at 8.5 to 17 lb/100 gal must be mixed with Sharpen.

Table 4. Postemergence herbicides.

Active Ingredient and Rate	Formulated Product and Rate	Weeds Controlled	Remarks and Precautions
2,4-D amine - 0.5-1.0 lb/A; 2,4-D ester - 0.21-0.5 lb/A; 2,4-D acid - 0.21-0.7 lb/A	Various formulations; See product label for specific rates.	Dock, plantain, mustard and other broadleaf weeds, plus winter peas and vetch; Wild onion or wild garlic. Use highest labeled rate. Control will not be complete, but aerial bulblet formation will be reduced. Less effective on wild garlic than on wild onion.	Wheat, Oats, Rye: Application timing and grazing restrictions may vary; always refer to the label. Most labels allow applications after the onset of tillering. Applications are safest after two to three tillers have formed. Do not apply at panicle initiation, panicle differentiation, boot or heading stages. Panicle initiation and differentiation occur around the time the first internode is 0.5 inches long. Choose sunny days for making the application. LVE formulation is more compatible with nitrogen solutions. Do not graze or feed forage from treated fields within two weeks after treatment. Do not exceed these rates, or severe injury may occur. If used on oats or rye, make application only after tillering is complete and before jointing.
dicamba - 0.125 lb/A + 2,4-D amine - 1 lb/A	Various formulations; See product label for specific rates.	Most broadleaf weeds, winter peas, vetch; More effective on wild onion and wild garlic than 2,4-D alone.	Wheat: Do not use unless potential injury is acceptable. Application timing same as for 2,4-D, except that this combination may not be used after jointing.

Active Ingredient and Rate	Formulated Product and Rate	Weeds Controlled	Remarks and Precautions
mesosulfuron-methyl 0.013 lb/A	Osprey - 4.75 oz/A; Add MSO - 1.3-1.5 pt/A	Annual bluegrass, limited broadleaf weed control; Good control of non-ALS resistant ryegrass.	Wheat and Triticale: Apply when ryegrass is in the one-leaf to two-tiller stage. Can be applied from wheat emergence to jointing. Best results are obtained if applications are made before ryegrass tillers. Some transient leaf burn may occur if applied within 14 days of nitrogen fertilizer application. Can be tank-mixed with some broadleaf herbicides, insecticides and fungicides; consult label. See label for rotation intervals.
mesosulfuron + thien carbazonemethyl - 0.018 lb/A	Osprey Xtra - 4.75 oz/A; Add NIS - 0.5% v/v and urea-ammonium nitrate - 1-2 quarts/A or ammonium sulfate - 1.5-3 lb/A.	Annual bluegrass and broadleaf weeds	Wheat and Triticale: Use only on winter wheat or fall-sowed triticale. Do not apply within 30 days of harvesting or grazing forage and 60 days for hay, grain or straw. Some transient leaf burn may occur if applied within 14 days of nitrogen fertilizer application. See label for rotation intervals.
metribuzin - 0.094-0.14 lb/A	75 DF formulation - 2-3 oz/A; 4 lb/gal formulation - 3-4.5 oz/A	Annual bluegrass, henbit, chickweed.	Wheat: Apply between the two-leaf and two-tiller crop stage before weeds emerge. Injury may occur when applications are made to waterlogged soils. Some varieties may be sensitive to metribuzin. Do not use if wheat has been broadcast-seeded.
flufenacet + metribuzin - 0.17-0.43 lb/A	Axiom - 4-10 oz/A	Broadleaf weeds, annual bluegrass, ryegrass	Wheat: Apply between the two-leaf and two-tiller crop stage before weeds emerge. Injury may occur when applications are made to waterlogged soils. Some varieties may be sensitive to metribuzin. Do not use wheat if it has been broadcast-seeded.
pendimethalin - 0.7-1.4 lbs ai/A	Prowl H2O - 1.5-3 pt/A; See product label for specific rates.	Residual/preemergence control of many broadleaf weeds and annual grasses. Suppresses ryegrass.	Wheat: Only microencapsulated formulation (ME) of pendimethalin can be utilized. The emulsified concentration (EC) formulation is not labeled for use. May be applied by ground, air, chemigation or on dry bulk fertilizer. Wheat should be planted 0.5-1 inch deep. Apply after wheat reaches the one-leaf stage until flag leaf emergence. Must be applied before weeds emerge. May be applied with any herbicide labeled for wheat. Applications before wheat emerges may result in severe stand reductions. Do not harvest hay or forage within 28 or 11 days of application, respectively. Do not apply within 60 days of harvest.
pinoxaden + fenoxaprop - 0.008	Axial Bold - 15 oz/A	Ryegrass - Does not control annual bluegrass.	Wheat: Apply between the emergence and preboot stage. For optimum control, apply prior to the three-tiller stage of ryegrass. Can be tank-mixed with some broadleaf herbicides, insecticides and fungicides. Consult label for approved pesticides. Do not graze within 30 days of application or harvest within 70 days of application. Consult label for crop rotation restrictions.

Active Ingredient and Rate	Formulated Product and Rate	Weeds Controlled	Remarks and Precautions
pyroxasulfone - 0.05-0.08 lb/A	Zidua SC - 1.75-4 oz/A	Annual bluegrass, ryegrass, other small-seeded broadleaf weeds.	Delayed preemergence to early postemergence only. Do not apply until 80% of the wheat has germinated and the shoot is at least 1/2 inch tall up to the fourth tiller stage. Do not apply seed wheat deeper than 1.5 inches, but seed at least 1 inch deep. Excessive rainfall after application or poor environmental conditions can lead to injury. Do not apply to broadcast seeded wheat.
pyroxasulfone + carfentrazone - 0.063-0.141 lb/A	Anthem Flex – 2-4.5 oz/A	Annual bluegrass, ryegrass, other small-seeded broadleaf weeds.	Wheat: Delayed preemergence to early postemergence only. Do not apply until 80% of the wheat has germinated and the shoot is at least 1/2 inch tall up to the fourth tiller stage. Do not apply seed wheat deeper than 1.5 inches, but seed at least 1 inch deep. Excessive rainfall or poor environmental conditions after application can lead to injury. Do not apply to broadcast seeded wheat.
pyroxsulam - 0.002 lb ai/A	Powerflex HL - 2 oz/A; Add 0.25-0.5% v/v NIS + plus 1-2 qt/A UAN or 1.5- 3 lb/A AMS; 1-1.25 % v/v COC; or 1% v/v MSO.	Most common broadleaf weeds, including vetch. Good annual bluegrass control when applied in the fall. Excellent control of non-ALS resistant ryegrass.	Wheat: Apply anytime between the three-leaf stage and jointing. Best results obtained when applied in the fall to actively growing weeds. COC or MSO may be required with spring applications, large weeds or under poor growing conditions. COC and MSO increase the risk of injury. Do not apply liquid fertilizer within seven days of an application. Do not graze within seven days or cut hay within 28 days of an application. Do not apply organophosphate insecticides within five days of an application. Cotton, soybean, grain sorghum and sunflowers can be planted three months after application. Corn can be planted nine months after application. The rotation interval for rice and sweet potatoes is 12 months.
thifensulfuron + tribenuron – 0.02-0.028 lb/A	Harmony Extra SG - 0.45-0.9 oz/A; Add 0.25% v/v NIS.	Wild garlic and many broadleaf weeds. Use 0.75-0.9 oz/A for wild garlic. Does not control wild onion.	Wheat, Oats: Apply after the two-leaf stage but before the flag leaf emerges. Do not use with nitrogen.

Sugarcane

The Sugarcane Weed Management Guide is prepared by Dr. Matt Foster, Sugarcane Weed Scientist, LSU AgCenter Sugar Research Station, St. Gabriel, Louisiana, and Dr. Ali Wright, Research Agronomist, USDA-ARS, Sugar Research Unit, Houma, Louisiana.

The sections in the guide are in chronological order based on the sugarcane growing season from planting through harvest. Also included are sections on fallow and ditchbank weed control.

For additional information concerning herbicides listed in this weed guide, consult the herbicide label.

Expected weed control with sugarcane herbicides is provided in Tables 1 and 2.

Information related to weed management programs for crops grown in Louisiana can be found at https://www.lsuagcenter.com/portals/communications/publications/management_guides. Follow the link for the Suggested Weed Chemical Control Guide for the most current information.

Rates for herbicides are expressed on a **broadcast** basis.

To calculate **band rate per traveled acre**, for liquid and dry formulations, use this formula:

$$[\text{band width(in)} \div \text{row width(in)}] \times \text{broadcast rate per acre} = \text{band rate per traveled acre}$$

At-planting Preemergence Weed Control (August/September)

Herbicides may be applied on a band to the top of the row or broadcast. A broadcast application will help reduce weed encroachment from the row middles. Herbicide should be applied immediately after the row has been rolled or packed. When rainfall of about 1/2 inch is received within 10 days after herbicide application, residual weed control can be expected for about 60 days. A follow-up herbicide application about 60 days after planting can extend the control of summer weeds and can also provide residual control of winter weeds, resulting in cleaner beds in the spring. See "At-Planting Preemergence Split Application Programs" and "Postemergence Weed Control (September-November)" sections. Herbicide programs described in this section also can be used in sugarcane harvested for seed and in sugarcane harvested early during grinding.

Active Ingredient and Rate	Formulated Product and Rate	Weeds Controlled	Remarks and Precautions
atrazine @ 2.0-4.0 lb/A	Atrazine/others; 4L @ 2.0-4.0 qt/A; 90DF @ 2.2-4.4 lb/A	Annual summer and winter broadleaf weeds.	Use higher rate on heavy soils and when sugarcane is planted prior to early September.
sulfentrazone plus metribuzin @ 0.18-0.37 lb/A + 0.27-0.56 lb/A	Authority MTZ 45DF @ 16-33 oz/A	Morningglory (tie-vine), divine nightshade and other broadleaf weeds and nutsedge.	Use higher rate on heavy soils and soils with organic matter higher than 2 percent. At the highest rate of 33 oz/A, the amount of metribuzin in Authority MTZ is not sufficient to provide grass control. A 16 oz rate of Authority MTZ contains 0.27 lb of metribuzin; A 33 oz rate of Authority MTZ contains 0.56 lb of metribuzin.
mesotrione @ 0.19-0.24 lb/A	Callisto 4L/others @ 6-7.7 oz/A	Annual summer and winter broadleaf weeds.	Use higher rate on heavy soils or when sugarcane is planted prior to early September.
clomazone @ 1.0-1.25 lb/A plus diuron @ 2.5 lb/A	Command 3ME @ 2.7-3.3 pt/A plus Diuron/Direx/others 4L @ 2.5 qt/A	Seedling johnsongrass, itchgrass, browntop millet, vaseygrass and other annual grasses; bermudagrass suppression.	Use higher rate on heavy soils and when sugarcane is planted prior to early September. Bleaching can occur when sugarcane has less than 2 inches of soil cover. Poor nutsedge control.
clomazone @ 1.0-1.25 lb/A plus metribuzin @ 1.125 lb/A	Command 3ME @ 2.7-3.3 pt/A plus Metribuzin/others 75DF @ 1.5 lb/A	Seedling johnsongrass, itchgrass, browntop millet, vaseygrass and other annual grasses; bermudagrass suppression.	Use higher rate on heavy soils and when sugarcane is planted prior to early September. Bleaching can occur when sugarcane has less than 2 inches of soil cover. Poor nutsedge control.
diuron @ 2.4-3.0 lb/A	Diuron/Direx/others; 4L @ 2.4-3.0 qt/A; 80DF @ 3.0-3.8 lb/A	Broadleaf weeds.	Use higher rate on heavy soils and when sugarcane is planted prior to early September.

Active Ingredient and Rate	Formulated Product and Rate	Weeds Controlled	Remarks and Precautions
metribuzin @ 1.5-3.0 lb/A	Metribuzin/others 75DF @ 2.0-4.0 lb/A	Seedling johnsongrass and other annual grasses and broadleaf weeds.	Safe to sugarcane on all soil types. Use higher rate on heavy soils and when sugarcane is planted prior to early September. Can provide bermudagrass suppression at higher rates. Addition of pendimethalin can improve control of browntop millet and itchgrass.
S-metolachlor @ 1.71-2.33 lb/A plus atrazine @ 0.64-0.88 lb/A plus mesotrione @ 0.71-0.23 lb/A	Lumax EZ 3.7L @ 2.75-3.75 qt/A	Browntop millet, vaseygrass, other annual grasses, morningglory (tie-vine), divine nightshade, and other broadleaf weeds; yellow nutsedge and seedling johnsongrass suppression.	Use the higher rate on heavier soils, soils with higher organic matter content, and when sugarcane is planted prior to early September. When applied alone, Lumax EZ poorly controlled itchgrass; however, the addition of clomazone or pendimethalin can improve control of johnsongrass and itchgrass.
S-metolachlor @ 1.70-2.33 lb/A	Dual II Magnum/ Dual Magnum/others @ 0.89-1.22 qt/A	Browntop millet, vaseygrass, other annual grasses, divine nightshade, and other broadleaf weeds; yellow nutsedge and seedling johnsongrass suppression.	Use the higher rate on heavier soils, soils with higher organic matter content, and when sugarcane is planted prior to early September. S-metolachlor has no activity on emerged weeds. Poor itchgrass control.
pendimethalin @ 2.0-3.0 lb/A	Prowl/Prowl H₂O/others; 3.3EC @ 2.4-3.6 qt/A; 3.5EW @ 2.25-3.4 qt/A; 3.8CS @ 2.1-3.1 qt/A	Seedling johnsongrass, itchgrass, browntop millet and other annual grasses.	May be applied to the soil surface or incorporated. Use higher rate on heavy soils. Should be applied with other herbicides for broadleaf weed control. Addition of metribuzin can improve control of bermudagrass.
pendimethalin @ 1.99-2.90 lb/A plus metribuzin @ 0.76-1.1 lb/A	Tripzin ZC @ 2.75-4 qt/A	Seedling johnsongrass, itchgrass, browntop millet and other annual grass and broadleaf weeds.	Use higher rate on heavy soils.
sulfentrazone @ 0.31-0.38 lb/A	Spartan 4F/others @ 10.0-12.0 oz/A	Divine nightshade, broadleaf weeds and nutsedge.	Use higher rate on heavy soils and when sugarcane is planted prior to early September. Poor control of smallflower morningglory.
sulfentrazone @ 0.31-0.38 lb/A plus carfentrazone-ethyl @ 0.035-0.041 lb/A	Spartan Charge 3.5SE @ 12.8-15.2 oz/A	Divine nightshade, broadleaf weeds and nutsedge.	Use higher rate on heavy soils and when sugarcane is planted prior to early September. Poor control of smallflower morningglory.

Active Ingredient and Rate	Formulated Product and Rate	Weeds Controlled	Remarks and Precautions
trifluralin @ 1.0-2.0 lb/A	Treflan/Trifluralin/others 4L @ 1.0-2.0 qt/A	Seedling johnsongrass, itchgrass, browntop millet, vaseygrass and other annual grasses; bermudagrass suppression.	Roll or pack rows and incorporate herbicide within 24 hours after application. Avoid incorporation at a depth that will damage seed pieces. Other herbicides should be applied to the soil surface for broadleaf weed control.
flumioxazin @ 0.19-0.25 lb/A	Valor SX 51WDG/others @ 6.0-8.0 oz/A	Divine nightshade and annual broadleaf weeds.	Use higher rate on heavy soils or when sugarcane is planted prior to early September. Do not apply after sugarcane emergence.
hexazinone @ 0.5 lb/A plus diuron @ 2.5 lb/A	Velpar 2L @ 1.0 qt/A or Velossa 2.4L @ 1.6 pt/A plus Diuron/Direx/others 4L @ 2.5 qt/A	Seedling johnsongrass, browntop millet, vaseygrass and other annual grass and broadleaf weeds; bermudagrass suppression.	Apply before sugarcane emerges. Application to coarse-textured soils that are low in organic matter may result in sugarcane chlorosis (yellowing) and stunting.
hexazinone @ 0.5 lb/A plus metribuzin @ 1.5 lb/A	Velpar 2L @ 1.0 qt/A or Velossa 2.4L @ 1.6 pt/A plus Metribuzin/others 75DF @ 2.0 lb/A	Seedling johnsongrass, browntop millet, vaseygrass and other annual grass and broadleaf weeds; bermudagrass suppression.	Apply before sugarcane emerges. Application to coarse-textured soils that are low in organic matter may result in sugarcane chlorosis (yellowing) and stunting.

Sugarcane Weed Management

At-planting Preemergence Split Application Programs

A split application program with herbicide applied at planting and around 60 days later will provide extended residual control of bermudagrass, johnsongrass and itchgrass. In some cases where split application programs are used, beds in the spring are essentially free of winter weeds. Programs that can be successful in suppressing bermudagrass include:

- **Command** at 3.3 pt/A plus **Diuron/Direx**/others at 2.5 qt/A at planting followed 60 days later by **Metribuzin**/others at 1.5 lb/A
- **Command** at 3.3 pt/A plus **Metribuzin**/others at 1.5 lb/A at planting followed 60 days later by **Metribuzin**/others at 1.5 lb/A
- **Metribuzin**/others at 2-3 lb/A at planting followed 60 days later by **Metribuzin**/others at 1.5 lb/A
- **Velpar** at 1 qt/A or **Velossa** at 1.6 pt/A plus **Diuron/Direx**/others at 2.5 qt/A at planting followed 60 days later by **Metribuzin**/others at 1.5 lb/A
- **Velpar** at 1 qt/A or **Velossa** at 1.6 pt/A plus **Metribuzin**/others at 1.5 lb/A at planting followed 60 days later by **Metribuzin**/others at 1.5 lb/A
- **Treflan/Trifluralin**/others at 1.5-2 qt/A and incorporated at planting followed 60 days later by **Metribuzin**/others at 1.5 lb/A

Another option for bermudagrass would be to apply herbicide at planting on a band and sink the middles prior to the follow-up application. This program will reduce cost up front but will require an additional tillage operation and favorable weather conditions. If tillage cannot be performed, encroachment of bermudagrass from the row middles can result in a severe weed problem the following year.

Weed Control in Sugarcane Harvested for Seed and in Succession Planted Sugarcane

Although shading from the crop canopy will suppress growth of weeds, once sugarcane is harvested for seed, bermudagrass will rapidly initiate new growth. Any of the herbicide programs listed for use at planting can also be used in fields where sugarcane was harvested for seed or where sugarcane was harvested early and delivered to the mill. Herbicides listed for use at planting may also be used when sugarcane is succession planted. Rates may be reduced slightly (25 percent) due to the later planting date and to minimize the chance of sugarcane injury.

Residual Control of Winter Weeds (October/November)

For residual control of winter grass and broadleaf weeds, apply **Dual II Magnum/Dual Magnum**/others, **Lumax EZ**, **Atrazine**/others, **Diuron/Direx**/others, **Velpar** plus **Diuron/Direx**/others or **Metribuzin**/others in October/November to early harvested sugarcane, newly planted sugarcane, or sugarcane harvested for seed. Follow herbicide rates specified on the product's label for emerged sugarcane. In most cases, the "At-Planting Weed Control (August/September)" section herbicide rate can be reduced by 25 percent for November applications. Where a follow-up application is being made, selecting a herbicide with a different mode of action than the one previously applied should be considered to reduce risk of crop injury and development of herbicide-resistant weeds. If weeds are present, nonionic surfactant at 1 to 2 qt/100 gal or crop oil concentrate at 2-4 qt/100 gal should be added to the spray solution. **Dual II Magnum/Dual Magnum**/others will not provide control to emerged weeds.

Postemergence Weed Control (September-November)

- **Johnsongrass and Itchgrass (September/October):** In early planted sugarcane or in sugarcane harvested for seed, johnsongrass may reinfest fields prior to winter. When applied in October to actively growing johnsongrass 12-18 inches tall, **Asulox/Asulam** 3.3L at 3 qt/A or **Envoke** 75WG at 0.3 oz/A plus **Asulox/Asulam** at 2 qt/A plus nonionic surfactant at 1-2 qt/100 gal of water or crop oil concentrate at 4 qt/100 gal of water has controlled johnsongrass and reduced reinfestation the following spring. **Asulox/Asulam** alone and with **Envoke** also controls large itchgrass (more than 6 inches). *For additional information on **Asulox/Asulam** and **Envoke** see the "Postemergence Weed Control - Johnsongrass and Other Grasses (March/April)" section.*
- **Purple and Yellow Nutsedge (September/October):** To control purple and yellow nutsedge 4-12 inches in height in early planted sugarcane apply **Permit**/others 75WDG at 1.0-1.33 oz/A with nonionic surfactant at 1-2 qt/100 gal of water or crop oil concentrate at 4 qt/100 gal of water. To control 2-6-inch yellow nutsedge or to suppress 2-4-inch purple nutsedge, apply **Envoke** 75 WG at 0.3 oz/A with nonionic surfactant at 1-2 qt/100 gal of water or crop oil concentrate at 4 qt/100 gal of water. The higher rate of **Permit**/others is needed when nutsedge is large and the population is dense. For best results, herbicide application should be made before nutsedge is 6 inches tall. If application is delayed until nutsedge forms a dense mat on the soil surface, a sizeable tuber population will have developed underground and control will be reduced. Activity of both **Permit**/others and **Envoke** is slow and four weeks may be needed to maximize control. Sugarcane is very tolerant to overtop application of **Permit**/others. No more than three applications of **Permit**/others can be made per year and no

more than 2.33 oz should be applied per acre per year. **Envoke** can cause some yellowing and white banding on sugarcane leaves as well as slight stunting but sugarcane growth and emergence in spring has not been affected. **Envoke** will also provide some residual control of winter weeds. Other herbicides may be applied with **Permit**/others or **Envoke** for additional weed control. For additional information on **Permit**/others and **Envoke** see the “Postemergence Weed Control - Purple and Yellow Nutsedge (March/April)” section.

- **Yukon**, a 67.5 percent WDG premix of **halosulfuron** (the active ingredient in **Permit**/others) and **dicamba** (the active ingredient in **Clarity/Vision**), can provide control of both nutsedge and broadleaf weeds. For **Yukon**, a 4 oz/A rate is equivalent to 0.67 oz/A **Permit** 75 WDG and 4.5 oz/A **Clarity/Vision** 4L; a 6 oz/A rate is equivalent to 1 oz/A **Permit** and 6.6 oz/A **Clarity/Vision**; and a 8 oz/A rate is equivalent to 1.3 oz/A **Permit** and 9.0 oz/A **Clarity/Vision**.
- **Bermudagrass (September-November)**: Shielded application of **glyphosate** to row sides and middles after planting or early harvest has provided good to excellent control of emerged bermudagrass. Apply 2-3 qt/A of the 4 lb ai/gallon formulation or equivalent rate based on active ingredient in 5-20 gal of water per acre as a shielded application. *Information on glyphosate can be found in the “Fallow Weed Control” section.* Severe injury will occur if **glyphosate** comes in contact with sugarcane foliage.
- **Armezon (September-November)**: In early planted sugarcane or in sugarcane harvested for seed, bermudagrass may infest fields prior to winter. When applied to actively growing bermudagrass, **Armezon** 2.8 SC at 1-2 oz/A plus methylated seed oil or crop oil concentrate at 4 qt/100 gal of water plus approved nitrogen fertilizers has shown to suppress bermudagrass and may result in fewer bermudagrass stolons in spring. Research has shown that **Armezon** at 1 oz/A plus **Trycera** 2.87L at 40 oz/A plus methylated seed oil or crop oil concentrate at 4 qt/100 gal of water plus approved nitrogen fertilizers can provide greater bermudagrass suppression compared to **Armezon** alone.
- **Broadleaf Weeds (September-November)**: Apply **Weedmaster/Brash**/others 3.8L at 0.5-1 qt/A, **2,4-D** 3.8L at 0.5-1.5 qt/A, **Unison** 1.74L at 24-64 oz/A, **Clarity/Vision**/others 4L at 0.5-1.0 pt/A or **Trycera** 2.87L at 0.7-2.1 qt/A when air temperature is above 65 F. *(Additional information related to these herbicides is provided in the “After Layby Weed Control (July-Harvest)” section.*
- **2,4-D Formulations**: Acid, amine salt and ester formulations of **2,4-D** are available. Since only the acid form of **2,4-D** is active in controlling weeds, the herbicide concentration on the label is provided in lb of ae (acid equivalent) per gal instead of lb of ai (active ingredient) per gal, as is the case with most other herbicides. Amine salt and ester formulations of **2,4-D** range from 3.8-5.6 lb

ae/gal. These numbers are important in determining the amount of formulated product to apply per acre. The lower the lb ae/gal the more formulated product required. For example, a 32 fluid oz rate (1 qt/A) of a 3.8L formulation would correspond to 21.7 oz for a 5.6L formulation. **Unison** is an acid formulation of **2,4-D** and contains 1.74 lb ae/gal. The rate range for **Unison** is 24-64 oz/A and rate, like other formulations, is dependent on weed spectrum, density, and size. **Unison** is less volatile (susceptible to changing from a liquid to a gas where off-target movement can occur) than other **2,4-D** formulations. Caution should be used anytime **2,4-D** is applied near sensitive plants regardless of formulation.

Postemergence Weed Control in Winter (January-March)

- **Broadleaf Weeds**: Apply **Weedmaster/Brash**/others 3.8L at 0.5-1.0 qt/A, **2,4-D** 3.8L at 0.5-1.5 qt/A, **Unison** 1.74L at 24-64 oz/A, **Clarity/Vision**/others 4L at 0.5-1.0 pt/A after broadleaf weeds have emerged and when air temperature is above 65 F. The higher rate should be used when broadleaf weeds are large and clover or vetch is present. *Information related to these herbicides and 2,4-D formulations is provided in the “After Layby Weed Control (July-Harvest)” section.* **Atrazine**/others, **Diuron/Direx**/others, **Velpar** plus **Diuron/Direx**/others, **Metribuzin**/others, or **Valor** (prior to sugarcane emergence) may be added to improve postemergence weed control and to provide soil residual activity. **Callisto** 4L at 3 oz/A plus **Atrazine**/others, **Diuron/Direx**/others, **Velpar**, or **Metribuzin**/others is another option that will provide postemergence weed control and soil residual activity.
- **Grass and Broadleaf Weeds**: **Gramoxone SL** 3L or **Paraquat**/others 3L at 2 pt/A plus nonionic surfactant at 1-2 qt/100 gal or crop oil concentrate at 2-4 qt/100 gal can be applied to sugarcane with no more than four leaves to control ryegrass, rescuegrass, timothy grass and winter annual bluegrass as well as some broadleaf weeds. **Atrazine**/others, **Diuron/Direx**/others, **Velpar** plus **Diuron/Direx**/others, **Metribuzin**/others, or **Valor** (prior to sugarcane emergence) may be added to improve burndown and provide soil residual activity. **Gramoxone SL/Paraquat**/others can also be applied with **Weedmaster/Brash**/others, **2,4-D**, or **Clarity/Vision**/others. Annual bluegrass can be controlled with **Diuron/Direx**/others 4L at 2.5 lb/A, **Velpar** 2L at 0.8 qt/A plus **Diuron/Direx**/others 4L at 1.4 qt/A or **Metribuzin**/others at 1.33 lb/A plus a nonionic surfactant or crop oil concentrate. If herbicides with soil residual activity are applied prior to March 1, schedule layby cultivation and herbicide application earlier than normal to avoid weed reinfestation. Selection of a herbicide with a different mode of action than the one previously applied should be considered to reduce risk of crop injury and development of herbicide-resistant weeds.
- Where paraquat-resistant ryegrass is suspected, apply **Envoke** at 0.3 - 0.5 oz/A in combination with **Asulox** 3.3 L at 2 qt/A plus nonionic surfactant or crop oil concentrate to control emerged paraquat-resistant ryegrass.

Spring Weed Control (February/March)

Herbicide programs should be implemented in February or March after residue from the previous harvest has been removed. If weeds are present, nonionic surfactant at 1-2 qt/100 gal or crop oil concentrate at 2-4 qt/100 gal should be added to the spray solution. In most cases herbicide is banded on the top of the row following cultivation of the row sides and middles. If winter broadleaf weeds are present **Weedmaster/Brash/others** 3.8L at 0.5-1.0 qt/A, **2,4-D** 3.8L at 0.5-1.5 qt/A, **Unison** 1.74L at 24-64 oz/A, **Clarity/Vision/others** 4L at 0.5-1.0 pt/A or **Trycera** 2.87L at 0.7-2.1 qt/A can be added. The higher rate should be used when broadleaf weeds are large and clover or vetch is present.

Preemergence (February/March):

Active Ingredient and Rate	Formulated Product and Rate	Weeds Controlled	Remarks and Precautions
atrazine @ 2.0-4.0 lb/A	Atrazine/others; 4L @ 2-4 qt/A; 90DF @ 2.2-4.4 lb/A	Seedling broadleaf weeds.	Use higher rate on heavy soils.
mesotrione @ 0.09lb/A	Callisto 4L/others @ 3 oz/A	Seedling broadleaf weeds.	Addition of atrazine can improve broadleaf weed control.
mesotrione @ 0.08-0.09 lb/A plus atrazine @ 0.5-0.6 lb/A	Callisto Xtra @ 20-24 oz/A	Seedling broadleaf weeds.	Good control of fringed redmaids. Use higher rate on heavy soils.
clomazone @ 1.0-1.25 lb/A plus diuron @ 2.5 lb/A	Command 3ME @ 2.7-3.3 pt/A plus Diuron/Direx/others 4L @ 2.5 qt/A	Seedling johnsongrass, itchgrass, browntop millet, vaseygrass and other annual grasses; bermudagrass suppression.	Bleaching/whitening of sugarcane will occur if the crop is emerged at application.
clomazone @ 1.0-1.25 lb/A plus metribuzin @ 1.125 lb/A	Command 3ME @ 2.7-3.3 pt/A plus Metribuzin/others 75DF @ 1.5 lb/A	Seedling johnsongrass, itchgrass, browntop millet, vaseygrass and other annual grasses; bermudagrass suppression.	Bleaching/whitening of sugarcane can occur if the crop is emerged at application.
diuron @ 2.4-3.0 lb/A	Diuron/Direx/others; 4L @ 2.4-3.0 qt/A; 80DF @ 3.0-3.8 lb/A	Seedling broadleaf weeds.	Use higher rate on heavy soils. Application can be applied otop of sugarcane until daily maximum temperatures for the week preceding application average 80 F or greater.
S-metolachlor @ 0.93-1.87 lb/A plus atrazine @ 0.35-0.70 lb/A plus mesotrione @ 0.09-0.19 lb/A	Lumax EZ 3.7L @ 1.5-3.0 qt/A	Browntop millet, vaseygrass, other annual grasses, morningglory (tie-vine), divine nightshade and other broadleaf weeds; yellow nutsedge and seedling johnsongrass suppression.	Use higher rate on heavy soils. Addition of pendimethalin can improve control of johnsongrass and itchgrass. If applied at planting or in fall, the cumulative yearly amount of Lumax EZ cannot exceed 5.25 qt/A.
S-metolachlor @ 0.94-1.87 lb/A	Dual II Magnum/Dual Magnum/others @ 0.49-0.98 qt/A	Browntop millet, vaseygrass, other annual grasses, divine nightshade, and other broadleaf weeds; yellow nutsedge and seedling johnsongrass suppression.	Use the higher rate on heavier soils, soils with higher organic matter content, and when sugarcane is planted prior to early September. Do not apply more than 0.98 qt/A as a postemergence application per year. Do not apply more than 0.49 qt/A as a postemergence application if a preplant or preemergence application was made. Do not apply to sugarcane greater than 60 inches in height or within 100 days of harvest. S-metolachlor has no activity on emerged weeds.

Active Ingredient and Rate	Formulated Product and Rate	Weeds Controlled	Remarks and Precautions
metribuzin @ 1.5-3.0 lb/A	Metribuzin/others 75DF @ 2.0-4.0 lb/A	Seedling johnsongrass and other annual grass and broadleaf weeds.	Safe to sugarcane on all soil types. Use higher rate on heavy soils. Can provide suppression of bermudagrass at higher rates. Addition of pendimethalin can improve control of browntop millet and itchgrass.
pendimethalin @ 2.0-3.0 lb/A	Prowl/Prowl H₂O/others; 3.3EC @ 2.4-3.6 qt/A; 3.5EW @ 2.25-3.4 qt/A; 3.8CS @ 2.1-3.1 qt/A	Seedling johnsongrass, itchgrass, browntop millet and other annual grasses.	May be applied to the soil surface or incorporated. Use higher rate on heavy soils. Should be applied with other herbicides for broadleaf weed control. Addition of metribuzin can improve control of bermudagrass.
pendimethalin @ 1.99-2.90 lb/A plus metribuzin @ 0.76-1.1 lb/A	Tripzin ZC @ 2.75-4 qt/A	Seedling johnsongrass, itchgrass, browntop millet and other annual grass and broadleaf weeds.	Use higher rate on heavy soils.
trifluralin @ 2.0 lb/A	Treflan/Trifluralin/others 4L @ 2.0 qt/A	Seedling johnsongrass, itchgrass, browntop millet and other annual grasses.	Incorporate within 24 hours after application. Can provide suppression of bermudagrass. Other herbicides should be applied for broadleaf weed control.
flumioxazin @ 0.13-0.25 lb/A	Valor SX 51WDG @ 4.0-8.0 oz/A	Divine nightshade and annual broadleaf weeds.	Can provide residual control when applied at 6-8 oz/A. Do not apply after sugarcane emergence.
hexazinone @ 0.5 lb/A plus diuron @ 2.5 lb/A	Velpar 2L @ 1.0 qt/A or Velossa 2.4L @ 1.6 pt/A plus Diuron/Direx/others 4L @ 2.5 qt/A	Seedling johnsongrass, browntop millet, vaseygrass and other annual grass and broadleaf weeds; bermudagrass suppression.	Apply to sugarcane before active tillering begins. Application to coarse-textured soils that are low in organic matter may result in sugarcane chlorosis (yellowing) and stunting.
hexazinone @ 0.5 lb/A plus metribuzin @ 1.5 lb/A	Velpar 2L at 1.0 qt/A or Velossa 2.4L @ 1.6 pt/A plus Metribuzin/others 75DF @ 2.0 lb/A	Seedling johnsongrass, browntop millet, vaseygrass, and other annual grass and broadleaf weeds; bermudagrass suppression.	Apply to sugarcane before active tillering begins. Application to coarse-textured soils that are low in organic matter may result in sugarcane chlorosis (yellowing) and stunting.

Postemergence Weed Control (March/April)

- **Johnsongrass and Other Grasses (March/April): Asulox/Asulam** can be applied broadcast, banded, or as a spot treatment. Nonionic surfactant at 1-2 qt/100 gal of water or crop oil concentrate at 1 gal/100 gal of water should be added to the spray solution. If the pH of water is above 9.0, addition of a buffer may be beneficial. At application, average air temperature should be at least 60 F. A 20-hour rain-free period following **Asulox** application may be needed to maximize control.
 - **First Application** - Apply 4 qt/A **Asulox/Asulam** 3.3L broadcast (or the correct proportion if applying on a band) in 15-30 gal of water per acre to actively growing johnsongrass 12-18 inches tall and to itchgrass less than 8 inches tall. If applying on a band, outside nozzles should be mounted on drops and band width should be wide enough to ensure thorough wetting of all foliage. **Asulox** applied at 3-4 qt/A also controls browntop millet, foxtails, goosegrass and barnyardgrass/junglerice when 6-8 inches tall. Vaseygrass that is less than 8 inches tall can be partially controlled with **Asulox** at 4 qt/A, but activity is very slow.
 - **Second Application** - A second application of **Asulox/Asulam** at 3-4 qt/A broadcast (or the correct proportion if applying on a band) can increase johnsongrass control but may not increase sugarcane yield over that obtained with a single **Asulox** application in March/April. This may be beneficial in the plant cane or first stubble crop to reduce infestations in subsequent crops. The second application of **Asulox** should be made to johnsongrass regrowth, usually about eight weeks after the first application. Sugarcane injury is more likely when **Asulox** is applied to sugarcane stressed from drought or excessive soil moisture and high temperature, especially after June 1.
 - **Spot Treatment** - The most accurate and economical method of spot treating is to use a calibrated sprayer at a constant speed with the operator turning the spray nozzles on and off as needed. If a high-volume "cattle gun" type nozzle is used for spot treatment, apply a 2% solution of **Asulox/Asulam** (2 gal of herbicide plus 98 gal of water). Spray to wet foliage but do not drench as sugarcane injury can be greater compared with spot treating using a calibrated sprayer.
 - **Aerial Application - Asulox/Asulam** may also be applied by air using the same rates specified above. Spray volume should be a minimum of 5 gal per acre. After calculating the actual sugarcane acreage to be treated, acreage should be increased to account for ditchbanks and headlands also receiving application.
- **Envoke** - **Envoke** 75WG can be applied postemergence overtop to plant or ratoon cane up to 24 inches tall at 0.3 oz/A broadcast (or the correct proportion if applying on a band) or as a directed application at 0.3-0.6 oz/A to sugarcane 18 inches tall at layby. Nonionic surfactant at 1-2 qt/100 gal of water

or crop oil concentrate at 4 qt/100 gal of water should be added to the spray solution. **Envoke** applied overtop of sugarcane can cause some yellowing and white banding on leaves present in the whorl at application as well as slight stunting but recovery is rapid and no negative effect on sugarcane yield has been observed. **Envoke** at 0.3 oz/A will suppress but will not control rhizome johnsongrass or large itchgrass. Combinations of **Envoke** with **Asulox/Asulam** provide complementary broadleaf and grass weed control. **Envoke** at 0.3 oz/A applied with **Asulox** 3.3 L at 2 qt/A (half rate) plus nonionic surfactant or crop oil concentrate has improved control of large rhizome johnsongrass (more than 18 inches) when compared with **Asulox** applied alone at 4 qt/A (full rate). **Envoke** at 0.3 oz/A applied with **Asulox** at 2 qt/A controlled large itchgrass (more than 6 inches) better than **Asulox** applied alone at 4 qt/A. For ground application use a minimum of 10 gal of water per acre (broadcast basis). Higher spray volume of at least 20 gal per acre should be used for heavy weed infestations to ensure adequate spray coverage. **Envoke cannot be applied aerially. For both Asulox/Asulam and Envoke, Do Not cultivate, fertilize or otherwise disturb the johnsongrass root system seven days before or after application.**

- **Purple and Yellow Nutsedge (March/April):** Apply **Permit**/others 75WDG at 1.0-1.33 oz/A, **Yukon** 67.5 WDG at 6-8 oz/A, or **Envoke** 75 WG at 0.3 oz/A with nonionic surfactant at 1-2 qt/100 gal of water or crop oil concentrate at 1 gal/100 gal of water.
- **Divine Nightshade (March/April):** **Trycera** 2.87L at 0.7-2.1 qt/A with nonionic surfactant at 1 to 2 qt/100 gal of water or crop oil concentrate at 1 gal/100 gal of water will provide excellent control of divine nightshade. **Clarity/Vision**/others 4L at 1.0 qt/A, **Callisto** 4L at 3 oz/A plus **Atrazine**/others at 2 qt/A, or **Callisto Xtra** at 24 oz/A plus **Atrazine**/others at 1.5 qt/A with nonionic surfactant at 1-2 qt/100 gal of water or crop oil concentrate at 1 gal/100 gal of water will provide some control of divine nightshade.
- **Bermudagrass (March/April):** **Armezon** 2.8 SC at 1-2 oz/A plus methylated seed oil or crop oil concentrate at 4 qt/100 gal of water plus approved nitrogen fertilizers will provide three to five weeks of bermudagrass suppression. Sequential application may be applied 14 days after the initial treatment. **Armezon** can be tank-mixed with other herbicides registered in sugarcane such as **Atrazine**, **Metribuzin** or **Prowl**. Applicators must follow label restrictions for the most restrictive tank-mix product. The maximum yearly use rate for **Armezon** is 4 oz/A. Research has shown reduced bermudagrass suppression when **Armezon** and **Metribuzin** were tank-mixed. **Armezon** at 1 oz/A plus **Trycera** 2.87L at 40 oz/A plus methylated seed oil or crop oil concentrate at 4 qt/100 gal of water plus approved nitrogen fertilizers has shown greater bermudagrass suppression compared to **Armezon** alone. **Delay cultivation for two to three weeks following application.**

Layby Weed Control (May/June)

Herbicides at layby are applied broadcast and directed underneath the sugarcane canopy usually following the last cultivation. It is necessary that the lower canopy be contacted by the spray to assure weed control both in the sugarcane drill and in the row middles. If weeds are present, nonionic surfactant at 1-2 qt/100 gal or crop oil concentrate at 2-4 qt/100 gal should be added to the spray solution for herbicides with postemergence activity. Information related to postemergence activity of herbicides can be found in the "After Layby Weed Control (July-Harvest)" section.

Preemergence Layby (May/June):

Active Ingredient and Rate	Formulated Product and Rate	Weeds Controlled	Remarks and Precautions
atrazine @ 2.0-4.0 lb/A	Atrazine/others; 4L @ 2-4 qt/A; 90DF @ 2.2-4.4 lb/A	Morningglory (tie-vine) and other broadleaf weeds.	Use higher rate on heavy soils and where morningglory (tie-vine) is a problem weed. Residual red morningglory control can be expected for around 35 days. Residual control of tie-vine can be extended by applying atrazine a few weeks after the layby cultivation.
sulfentrazone plus metribuzin @ 0.18-0.37 lb/A + 0.27-0.56 lb/A	Authority MTZ 45DF @ 16-33 oz/A	Morningglory (tie-vine), divine nightshade, and other broadleaf weeds and nutsedge.	Use higher rate on clay soils and/or soils with organic matter content higher than 2%. At the highest rate of 33 oz/A the amount of metribuzin in Authority MTZ is not sufficient to provide grass control. See information below for Spartan 4F concerning red morningglory control. Injury will occur if herbicide contacts newly emerging sugarcane shoots and leaves. Do not apply more than 33 oz/A in one growing season and within 120 days of harvest.
mesotrione @ 0.09 lb/A	Callisto 4L/others @ 3 oz/A	Morningglory (tie-vine) and other broadleaf weeds.	Addition of atrazine can improve broadleaf weed control, as well as provide postemergence control of divine nightshade. Should be applied with other herbicides for grass control.
mesotrione @ 0.08-0.09 lb/A plus atrazine @ 0.5-0.6 lb/A	Callisto Xtra @ 20-24 oz/A	Morningglory (tie-vine) and other broadleaf weeds.	Use higher rate on heavy soils. Should be applied with other herbicides for grass control. Addition of atrazine can improve postemergence control of divine nightshade.
diuron @ 2.4-3.0 lb/A	Diuron/Direx/others; @ 2.4-3 qt/A; 80 DF formulation @ 3.0-3.8 lb/A	Seedling broadleaf weeds.	Apply when sugarcane is 30 inches or taller. Injury will occur if herbicide contacts newly emerging sugarcane shoots and leaves.
S-metolachlor @ 0.93-1.87 lb/A plus atrazine @ 0.35-0.70 lb/A plus mesotrione @ 0.09-0.19 lb/A	Lumax EZ 3.7L @ 1.5-3.0 qt/A	Browntop millet, vaseygrass, other annual grasses, morningglory (tie-vine), divine nightshade and other broadleaf weeds; yellow nutsedge and seedling johnsongrass suppression.	Use higher rate on heavy soils. Do not apply to sugarcane greater than 60 inches in height and within 100 days of harvest. Addition of pendimethalin can improve control of seedling johnsongrass and itchgrass. Do not apply more than 5.25 qt/A per year.

Active Ingredient and Rate	Formulated Product and Rate	Weeds Controlled	Remarks and Precautions
S-metolachlor @ 0.94-1.87 lb/A	Dual II Magnum/Dual Magnum/ others @ 0.49-0.98 qt/A	Browntop millet, vaseygrass, other annual grasses, divine nightshade, and other broadleaf weeds; yellow nutsedge and seedling johnsongrass suppression.	Use the higher rate on heavier soils, soils with higher organic matter content, and when sugarcane is planted prior to early September. Do not apply more than 0.98 qt/A as a postemergence application per year. Do not apply more than 0.49 qt/A of as a postemergence application if a preplant or preemergence application was made. Do not apply to sugarcane greater than 60 inches in height or within 100 days of harvest. S-metolachlor has no activity on emerged weeds.
metribuzin @ 1.5-3.0 lb/A	Metribuzin/others 75DF @ 2.0-4.0 lb/A	Seedling johnsongrass and other annual grass and broadleaf weeds.	Addition of pendimethalin can improve control of browntop millet and itchgrass. Residual control of red morningglory can be expected for around 35 days.
pendimethalin @ 2.0-3.0 lb/A	Prowl/Prowl H₂O/others; 3.3EC @ 2.4-3.6 qt/A; 3.5EW @ 2.25-3.4 qt/A; 3.8CS @ 2.1-3.1 qt/A	Seedling johnsongrass, itchgrass, browntop millet and other annual grasses.	May be applied to soil surface or soil incorporated. Use higher rate if surface applied or if itchgrass is a problem. For additional broadleaf weed control, such as morningglory, atrazine, diuron, metribuzin, or Spartan may be applied in combination with pendimethalin. See precautions for diuron and Spartan.
pendimethalin @ 1.99-2.90 lb/A plus metribuzin @ 0.76-1.1 lb/A	Tripzin ZC @ 2.75-4 qt/A	Seedling johnsongrass, itchgrass, browntop millet and other annual grass and broadleaf weeds.	Use higher rate on heavy soils.
sulfentrazone @ 0.19-0.25 lb/A	Spartan 4F/others @ 6.0-8.0 oz/A	Divine nightshade, broadleaf weeds and nutsedge.	Use higher rate on heavy soils and where morningglory (tie-vine) is a problem weed. Residual red morningglory control around 90% can be expected for 50 days and control around 80% can be expected at 70 days. Poor control of smallflower morningglory. Injury will occur if herbicide contacts newly emerging sugarcane shoots and leaves. Do not apply within 120 days of harvest. Can be applied more than once during the growing season but total usage per 12-month period cannot exceed 12 oz/A.

Active Ingredient and Rate	Formulated Product and Rate	Weeds Controlled	Remarks and Precautions
sulfentrazone @ 0.31-0.38 lb/A plus carfentrazone-ethyl @ 0.035-0.041 lb/A	Spartan Charge 3.5SE @ 12.8-15.2 oz/A	Divine nightshade, broadleaf weeds and nutsedge.	Use higher rate on heavy soils and where morningglory (tie-vine) is a problem weed. Residual red morningglory control around 90% can be expected for 50 days and control around 80% can be expected at 70 days. Poor control of smallflower morningglory. Injury will occur if herbicide contacts newly emerging sugarcane shoots and leaves. Do not apply within 120 days of harvest. Can be applied more than once during the growing season but total usage per 12-month period cannot exceed 15.2 oz/A.
trifluralin @ 1.5-2.0 lb/A	Treflan/Trifluralin/others 4L @ 1.5-2 qt/A	Seedling johnsongrass, itchgrass, browntop millet and other annual grasses.	Incorporate within 24 hours after application. Other herbicides should be applied to the soil surface for broadleaf weed control.
flumioxazin @ 0.10-0.25 lb/A	Valor SX 51WDG/others @ 3.0-8.0 oz/A	Divine nightshade and broadleaf weeds.	Apply when sugarcane is at least 24 inches in height and has begun to joint. Spray contact with more than the lower six inches of sugarcane plants will result in severe injury. Residual red morningglory control can be expected for around 35 days. Valor/others can be applied at a maximum rate of 12 oz/A per crop year. Do not apply within 90 days of harvest.

After Layby Weed Control (July-Harvest)

Morningglory or tie-vines can cause significant problems at sugarcane harvest. To control morningglory and other broadleaf weeds, herbicides can be applied over the crop canopy by air or ground sprayer, or herbicides can be directed underneath the crop canopy. Coverage of the entire morningglory plant with spray solution will provide the most consistent control. Nonionic surfactant at 1-2 qt/100 gal or crop oil concentrate at 2-4 qt/100 gal should be added to the spray solution.

Postemergence After Layby (July-Harvest):

Active Ingredient and Rate	Formulated Product and Rate	Weeds Controlled	Remarks and Precautions
2,4-D @ 0.47-1.42 lb/A	2,4-D 3.8L @ 1.0-1.5 qt/A; See information below on 2,4-D formulations.	Morningglory (tie-vine) and other broadleaf weeds.	Apply higher rate if vines are climbing sugarcane plants. Surfactant may be added. <u>Note:</u> Use of 2,4-D is restricted in some parishes. Check local restrictions before application. To avoid potential stand and yield loss in the subsequent plant cane crop, do not apply to seed cane sources within seven weeks of planting. See information below on 2,4-D formulations.
atrazine @ 2.0 - 4.0 lb/A	Atrazine/others; 4L @ 2-4 qt/A; 90DF @ 2.2-4.4 lb/A	Morningglory (tie-vine) and other broadleaf weeds.	Apply with surfactant overtop or directed before row closure occurs. Use higher rate if vines are climbing sugarcane plants.
sulfentrazone plus metribuzin @ 0.18 - 0.37 lb/A + 0.27 - 0.56 lb/A	Authority MTZ 45DF @ 16-33 oz/A	Morningglory (tie-vine) and other broadleaf weeds and nutsedge.	Apply with surfactant as a directed treatment. Injury will occur if herbicide contacts newly emerging sugarcane shoots and leaves. Do not apply more than 33 oz/A in one growing season and within 120 days of harvest.
mesotrione @ 0.09 lb/A	Callisto 4L/others @ 3 oz/A	Morningglory (tie-vine) and other annual broadleaf weeds.	Can be applied over-the-top or as a directed spray. Only one application can be made if Callisto was applied preemergence earlier in the season. Do not harvest sugarcane within 114 days following an over-the-top application and within 100 days following a directed spray. Addition of atrazine can improve postemergence control of divine nightshade.
mesotrione @ 0.08 - 0.09 lb/A plus atrazine @ 0.5 - 0.6 lb/A	Callisto Xtra @ 20-24 oz/A	Morningglory (tie-vine) and other broadleaf weeds.	Can be applied over-the-top or as a directed spray. Only one application can be made if Callisto was applied preemergence earlier in the season. Do not harvest sugarcane within 114 days following an over-the-top application and within 100 days following a directed spray. Addition of atrazine can improve postemergence control of divine nightshade.
dicamba @ 0.5 - 0.75 lb/A	Clarity/Vision/others 4L @ 16-24 oz/A	Morningglory (tie-vine) and other broadleaf weeds.	Apply higher rate if vines are climbing sugarcane plants. Surfactant may be added. Can be used in areas where 2,4-D use is restricted. To avoid potential stand and yield loss in the subsequent plant cane crop, do not apply to seed cane sources within seven weeks of planting.

Active Ingredient and Rate	Formulated Product and Rate	Weeds Controlled	Remarks and Precautions
trifloxysulfuron-sodium @ 0.014 - 0.028 lb/A	Envoke 75WG @ 0.3-0.6 oz/A	Morningglory (tie-vine) and other broadleaf weeds, itchgrass and other annual grasses and purple and yellow nutsedge.	Apply as a directed treatment with nonionic surfactant at 1 qt per 100 gallons. Do not apply within 100 days of harvest. A maximum of three applications or 1.5 oz/A may be applied per growing season. Do not apply aerially.
paraquat @ 0.26 – 0.75 lb/A	Gramoxone SL/Paraquat/ others 3L @ 0.7-2.0 pt/A	Small grass and broadleaf weeds and bermudagrass suppression.	Apply with surfactant as a directed treatment to the row middles in late June to desiccate bermudagrass. Herbicide contact to young sugarcane tillers and leaves can cause significant injury.
halosulfuron @ 0.03 - 0.06 lb/A	Permit/others 75WDG @ 0.67-1.33 oz/A	Purple and yellow nutsedge.	Apply as a directed treatment at 1-1.33 oz/A with surfactant to nutsedge growing under the crop canopy.
sulfentrazone @ 0.19 - 0.25 lb/A	Spartan 4F/others @ 6.0-8.0 oz/A	Morningglory (tie-vine) and other broadleaf weeds and nutsedge.	Apply with surfactant as a directed treatment at the higher rate if morningglory is climbing sugarcane plants. Injury will occur if herbicide contacts newly emerging sugarcane shoots and leaves. If applied in the spring or at layby do not reapply. Do not apply within 120 days of harvest.
sulfentrazone @ 0.31 - 0.38 lb/A plus carfentrazone-ethyl @ 0.035 – 0.041 lb/A	Spartan Charge 3.5SE @ 12.8-15.2 oz/A	Broadleaf weeds and nutsedge.	Apply with surfactant as a directed treatment at the higher rate if morningglory is climbing sugarcane plants. Injury will occur if herbicide contacts newly emerging sugarcane shoots and leaves. If applied in the spring or at layby do not reapply. Do not apply within 120 days of harvest. Can be applied more than once during the growing season but total usage per 12-month period cannot exceed 15.2 oz/A.
flumioxazin @ 0.10 - 0.25 lb/A	Valor SX 51WDG/others @ 3.0-8.0 oz/A	Morningglory (tie-vine) and other broadleaf weeds and some annual grasses.	Apply as a directed treatment after sugarcane has begun to joint. Spray contact with more than the lower six inches of sugarcane plants will result in severe injury. Residual red morningglory control can be expected for around 35 days. Valor/others can be applied at a maximum rate of 12 oz/A per crop year. Do not apply within 90 days of harvest.

Active Ingredient and Rate	Formulated Product and Rate	Weeds Controlled	Remarks and Precautions
2,4-D plus dicamba @ 0.36 - 0.72 lb/A + 0.12 - 0.24 lb/A	Weedmaster/Brash/others 3.8L @ 0.5-1.0 qt/A	Morningglory (tie-vine) and other annual broadleaf weeds.	Apply higher rate if vines are climbing sugarcane plants. Surfactant may be added. <u>Note:</u> Use of 2,4-D is restricted in some parishes. Check local restrictions before application. To avoid potential stand and yield loss in the subsequent plant cane crop, do not apply to seed cane sources within seven weeks of planting.
halosulfuron plus dicamba @ 0.03- 0.06 lb/A + 0.14 - 0.28 lb/A	Yukon 67.5WDG @ 4-8 oz/A	Purple and yellow nutsedge, small morningglory (tie vines) and other broadleaf weeds.	Apply as a directed treatment at with surfactant to nutsedge growing under the crop canopy.

2,4-D Formulations: Acid, amine salt, and ester formulations of **2,4-D** are available. Since only the acid form of **2,4-D** is active in controlling weeds, the herbicide concentration on the label is provided in lb of ae (acid equivalent) per gal instead of lb of ai (active ingredient) per gal, as is the case with most other herbicides. Amine salt and ester formulations of **2,4-D** range from 3.8 to 5.6 lb ae/gal. These numbers are important in determining the amount of formulated product to apply per acre. The lower the lb ae/gal the more formulated product required. For example, a 32 fluid oz rate (1 qt/A) of a 3.8L formulation would correspond to 21.7 oz for a 5.6L formulation. **Unison** is an acid formulation of **2,4-D** and contains 1.74 lb ae/gal. The rate range for **Unison** is 24 to 64 oz/A, and like other formulations, is dependent on weed spectrum, density, and size. **Unison** is less volatile (susceptible to changing from a liquid to a gas where off-target movement can occur) than other **2,4-D** formulations. Caution should be used anytime **2,4-D** is applied near sensitive plants regardless of formulation.

Fallow Weed Control

Weed control programs during the fallow period can include use of tillage (deep plowing/disking) and herbicides. Frequent and timely cultivation, where weeds are destroyed and prevented from reestablishing can be an effective management tool especially in dry years. Tillage, especially tillage just prior to planting, can reduce soil moisture in the seedbed, which in dry years can hinder plant cane emergence and growth. Apply preemergence herbicides to a weed-free and clod-free bed. Packing of the row top prior to application may improve weed control.

Preemergence Fallow:

Active Ingredient and Rate	Formulated Product and Rate	Weeds Controlled	Remarks and Precautions
atrazine @ 2 lb/A	Atrazine/others; 4L @ 2 qt/A; 90DF @ 2.2 lb/A	Broadleaf weeds.	Apply to weed free beds. Do not apply more than 10 qt/A or 11.1 lb/A per crop year.
EPTC @ 3.0-6.1 lbs/A	Eptam 7E @ 3.5-7 pt/A	Annual grass and broadleaf weeds.	Must be thoroughly incorporated 2 to 4 inches deep immediately following application. For bermudagrass and johnsongrass suppression, plants should be turned under and chopped thoroughly prior to treatment. Must be applied 45 days prior to planting sugarcane.
halosulfuron @ 0.03-0.06 lb/A	Permit/others 75WDG @ 0.67-1.33 oz/A	Purple and yellow nutsedge.	A rate of 1-1.33 oz/A with surfactant is recommended for control of nutsedge. Can be applied with other herbicides. Do not exceed 2.7 oz/A in one growing season.
pendimethalin @ 2.5 lb/A	Prowl/Prowl H₂O/others; 3.3EC @ 3 qt/A; 3.5EW @ 2.25-3.4 qt/A; 3.8CS @ 2.6 qt/A	Seedling johnsongrass, itchgrass, browntop millet, other annual grasses.	Apply to clean seedbed or incorporate 4 inches deep at least 60 days prior to planting.

- Glyphosate Formulations:** Postemergence herbicides should be applied to actively growing weeds. Several formulations of **glyphosate** are available. Since only the acid form of **glyphosate** is active in controlling weeds, **glyphosate** should be applied based on the amount of ae (acid equivalent) per gallon instead of pound of ai (active ingredient) per gallon, as is the case with most other herbicides. A 32 oz/A rate of a 4L (3 ae) formulation would correspond to 21.3 oz/A of a 5.5L formulation, and 20 oz/A of a 5.88L formulation. Most formulations of **glyphosate** contain some surfactant. The need for additional surfactant is based on how much surfactant is present in the formulation and the quality of the surfactant. The herbicide label may state that no additional surfactant is needed or recommended, that surfactant may be added, or that surfactant is required and the amount is specified. **Always consult the label for specific information on the need for surfactants and other adjuvants.**
- Johnsongrass in Fallow:** For control of johnsongrass and other weeds, rates of 1-2 qt/A of the 4L **glyphosate** formulation is sufficient. Do not cultivate for seven days after application to allow adequate time for the **glyphosate** to be taken into the plant and moved to underground rhizomes. Under heavy weed infestation, two to three weeks between **glyphosate** application and planting will allow time for johnsongrass to desiccate and will promote more efficient opening of rows and covering of planted sugarcane. When applying **2,4-D** in combination with **glyphosate** for additional broadleaf weed control, use the high end of the **glyphosate** rate to avoid a possible reduction in grass control (antagonism).
- Broadleaf Weeds in Fallow:** **Atrazine**/others 4L at 1-2 qt/A, **Aim** 2EC at 1-2 oz/A, and **Valor** 51WDG at 3-4 oz/A, can be applied to control broadleaf weeds and in particular morningglory (tie-vine). The higher rates should be applied to control large vining weeds. **Atrazine**/others and **Aim** can be applied any time during the fallow period. **Valor** can be applied from two weeks prior to planting to before sugarcane emerges. Some residual weed control can be expected with **Atrazine**/others or **Valor**; however, **Aim** has no soil residual activity. Nonionic surfactant at 1-2 qt/100 gal or crop oil concentrate at 2-4 qt/100 gal should be added to the spray solution. If applied with **glyphosate**, surfactant present in the **glyphosate** formulation may be adequate.
- Bermudagrass in Fallow:** In fields where bermudagrass population is high, tillage in combination with **glyphosate** is most effective. Apply 2-3 qt/A of the 4L **glyphosate** formulation for control of bermudagrass with less than 8-inch runners. Retreatment with 2-3 qt/A may be necessary to maintain control. Do not cultivate for seven days after application to allow adequate time for the **glyphosate** to be taken into the plant and moved to underground rhizomes. Under heavy weed infestation, two to three weeks between **glyphosate** application and planting will allow time for bermudagrass to desiccate and will promote more efficient opening of rows and covering of planted sugarcane. **Multiple applications of glyphosate are more effective in controlling bermudagrass than a single application.**
- Purple and Yellow Nutsedge in Fallow:** **Permit**/others 75 WDG at 1.0-1.33 oz/A, **Yukon** 67.5 WDG at 6-8 oz/A and **Envoke** 75WG at 0.15-0.2 oz/A applied with nonionic surfactant at 1-2 qt/100 gal of water or crop oil concentrate at 4 qt/100 gal of water will provide some control of nutsedge. The higher rate is needed when nutsedge is large and the population is dense. For best results herbicide application should be made before nutsedge is 6 inches tall. If application is delayed until nutsedge forms a dense mat on the soil surface a sizeable tuber population will have developed underground and control will be reduced. **Permit**/others, **Yukon** and **Envoke** can be applied with **glyphosate** products without negatively affecting grass control. If applied with **glyphosate**, surfactant present in the **glyphosate** formulation may be adequate. If two applications of **glyphosate** are planned, **Permit**/others, **Yukon**, or **Envoke** should be applied with **glyphosate** in the first application. The follow up application of **glyphosate** alone should be effective on nutsedge regrowth. **Yukon**, a premix of **halosulfuron** (the active ingredient in **Permit**) and **dicamba** (the active ingredient in **Clarity/Vision**/others) and **Envoke** will also provide some control of broadleaf weeds. For **Yukon**, a 6 oz/A rate is equivalent to 1.0 oz/A **Permit** 75WDG and 6.6 oz/A **Clarity/Vision** 4L and a 8 oz/A rate is equivalent to 1.3 oz/A **Permit** and 9.0 oz/A **Clarity/Vision**. As also noted for **glyphosate**, do not cultivate for seven days after application of **Permit**/others, **Yukon** or **Envoke** to allow adequate time for movement of herbicide to underground nutsedge tubers.
- In situations where nutsedge and other weeds may interfere with row opening at planting, **Gramoxone SL / Paraquat**/others 3L at 2 pt/A plus nonionic surfactant at 1-2 qt/100 gal or crop oil concentrate at 2-4 qt/100 gal can be applied one to two weeks before planting to desiccate weeds. Because herbicide does not move to underground nutsedge tubers, rapid reestablishment should be expected, consider applying **Authority MTZ**, or **Spartan** at-planting or the use of **Permit**/others, **Yukon**, **Envoke**, in September or October. See "At-Planting Weed Control (August/September)" and "Postemergence Weed Control (September-November)" sections.
- Doveweed in Fallow:** Doveweed is a summer annual weed that emerges from mid-June through September. Doveweed as well as many other members of the dayflower family are poorly controlled with **glyphosate**. In fallow programs where **glyphosate** is the only herbicide used for weed control, doveweed can form a dense mat across the row and can interfere with row opening at planting. In fields with a known history of doveweed, **glyphosate** should be applied with **Metribuzin**/others 75DF at 1.3 lb/A or **Valor SX** 51WDG at 6-8 oz/A in June to control weeds on formed beds. **Metribuzin**/others 75DF should provide preemergence control of doveweed up to 60 days after application. For emerged doveweed, effective control may be obtained with **Gramoxone SL / Paraquat**/others 3L at 2 pt/A, **Atrazine**/others 4L at 2 qt/A, or **Metribuzin**/others at 1.5 lb/A applied one to three weeks before planting. Nonionic surfactant at 1-2 qt/100 gal or crop oil concentrate at 2-4 qt/100 gal should be added to the spray solution for postemergence applications. Application of **Gramoxone SL /**

Paraquat/others 3L at 1.33 pt/A with **Atrazine**/others at 2 qt/A or application of **Metribuzin**/others 75DF at 1 lb/A with **Weedmaster/Brash**/others 3.8L at 1.5 pt/A were effective when planting was delayed beyond three weeks after application.

- **No-Tillage Fallow Program:** In a no-tillage program, sugarcane stubble must be destroyed with herbicide. To obtain around 90% control of sugarcane stubble, **glyphosate** 4L should be applied at 1.0 qt/A (6-inch stubble), 1.5 qt/A (10-inch stubble), 2.0 qt/A (16-inch stubble) and 2.5 qt/A (18-inch stubble). Typically, in a no-tillage program a second **glyphosate** application will be needed to control weeds and any sugarcane regrowth that might occur. It is important that the first **glyphosate** application be made by the end of April to allow for sugarcane to completely decompose before rows are worked at planting. In fields where bermudagrass population is high, a no-tillage program where **glyphosate** is used for weed control may not be as effective as **glyphosate** in combination with tillage.

- **Note:** Glyphosate herbicides can be applied by air, but extreme caution should be used due to problems with off-target movement and damage to sugarcane and other crops in areas adjacent to treated fields.

Ditchbank Weed Control

Problem weeds, such as johnsongrass, itchgrass, bermudagrass, poppingweed (*Equisetum*/horsetail) and *Rubus* species (briars), should be controlled on ditchbanks. This will aid in field drainage and prevent weed movement into adjacent sugarcane fields. These recommendations are for nonirrigation drainage ditch use only. **Do Not apply herbicides to a ditch when water is present unless specifically allowed based on the herbicide label.** Herbicides should be applied in a minimum of 20 gallons of water per acre spray volume.

Active Ingredient and Rate	Formulated Product and Rate	Weeds Controlled	Remarks and Precautions
2,4-D plus triclopyr @ 2.0 + 1.0 lb/A	Crossbow 3L @ 4.0 qt/A	Poppingweed, briars and woody species.	Best control obtained when applied to young poppingweed, less than 2 years old. For control of briars and smaller diameter woody species, apply at 1.0 to 1.5 gal/100 gal of water and add nonionic surfactant at 1 qt/100 gal of water. Apply in a spray volume of 40 to 60 gal per acre to thoroughly soak all stems and plant crowns at the soil line. This product contains 2,4-D and use may be restricted in some areas of the state.
diuron @ 2.0-15.0 lb/A	Diuron/Direx/others; 4L @ 2.0-15.0 qt/A; 80DF @ 2.5-18.8 lb/A	Annual grass and broadleaf weeds.	Provides residual control of many annual weeds. Addition of nonionic surfactant at 1-2 qt/100 gal of water or crop oil concentrate at 2-4 qt/100 gal of water will increase contact activity on small, emerged weeds no more than 3 in tall. Herbicide activity will be improved if soil in the ditch is moist at application. Do not allow herbicide to contact roots of desirable plants when applied at the higher rates.
triclopyr @ 2.0-3.0 lb/A	Garlon/others; 4L @ 2.0-3.0 qt/A; 3L @ 2.7-4.0 qt/A	Poppingweed, briars and woody species.	Control is greater when applied to young poppingweed, less than 2 years old. For control of briars and smaller diameter woody species, apply at 1.5 pt/A of 4L formulation or 2 pt/A of 3A formulation plus nonionic surfactant at 1-2 qt/100 gal of water. Apply in a spray volume of 40-60 gal per acre to thoroughly soak all stems and plant crowns at the soil line. <u>Note:</u> Garlon 4 at 1 gallon per 80 gallons water plus 1% Roundup has been effective on poppingweed when plants were thoroughly wetted.
triclopyr plus glyphosate	Garlon/others + Roundup/others	Poppingweed and other ditchbank weeds.	For a 100-gallon total spray mix, include 5 qt of Garlon 4 or other triclopyr product with a 4L concentration and 4 qt of a Roundup/glyphosate product with a 5.5L concentration or 5.5 quarts of a 4L glyphosate product. If the glyphosate formulation does not contain surfactant, add nonionic surfactant at 2 quarts per 100 gallons of water. Because herbicide rates are <u>not</u> specified in product per acre, spray volume (gallons per acre) will affect herbicide rate per unit area treated, number of acres of ditchbank treated and cost per acre. In general, spray volume should be in the range of 20-40 gallons per acre. A standard multi-nozzle spray boom positioned over the ditch, a hand gun (cattle gun sprayer), or a single stationary nozzle sprayer can be used for application. It is important that poppingweed foliage be well covered. Herbicide should not be applied to a ditch when water is present unless specifically allowed based on the herbicide label. <u>Note:</u> Treating only the bottom of the ditch and not the sides will allow for water movement and will also help to reduce ditchbank erosion.

Active Ingredient and Rate	Formulated Product and Rate	Weeds Controlled	Remarks and Precautions
pendimethalin @ 2.5-3.3 lb/A	Prowl/Prowl H₂O/others; 3.3EC @ 3.0-4.0 qt/A; 3.8CS @ 2.6-3.5 qt/A	Seedling johnsongrass, itchgrass and other annual grasses.	Apply in a minimum of 20 gal per acre spray volume prior to weed emergence; will NOT control emerged weeds. May apply with postemergence herbicides to provide residual activity.
glyphosate @ 1.0-5.0 lb/A	Roundup/others; 4L @ 1.0-5.0 qt/A; 5.5L @ 0.7-3.6 qt/A	Johnsongrass, itchgrass and other weeds.	Johnsongrass, itchgrass and most other weeds are controlled at 1-2 qt/A of the 4L glyphosate formulation. Apply 2-3 qt/A for control of bermudagrass with less than 8-inch runners. Retreatment with 2-3 qt/A may be necessary to maintain bermudagrass control. Application with diuron at 5.0 lb ai/A (see information on diuron) or Velpar 2L at 1.0 qt/A or Velossa 2.4L at 1.6 pt/A and Diuron/Direx/others 4L at 2.5 qt/A can increase initial control and provide extended control of many annual weeds. Do not allow herbicide to contact foliage of desirable plants.
hexazinone @ 0.5 lb/A plus diuron @ 2.5 lb/A	Velpar 2L @ 1.0 qt/A or Velossa 2.4L @ 1.6 pt/A plus Diuron/Direx/others 4L @ 2.5 qt/A	Most ditchbank weeds including some control of poppingweed.	Will not control rhizome johnsongrass or curly dock. Do not use on out-flow ditches or ditches not directly between two cane fields. Very slow activity on poppingweed. Inclusion of 2 qt/A of a 4L glyphosate formulation has increased rhizome johnsongrass and curly dock control. Apply in a spray volume of at least 40 gal per acre to thoroughly cover the soil and foliage and soak all stems and plant crowns at the soil line. Nonionic surfactant at 1 qt/100 gal of water or crop oil concentrate at 1 gallon/100 gal of water should be added.
2,4-D plus dicamba @ 0.36-2.15 lb/A + 0.12-0.75 lb/A	Weedmaster/Brash/others 3.8L @ 0.5-3.0 qt/A	Broadleaf weeds.	Use 1 qt/A to control annual broadleaf weeds and 1 to 3 qt/A for suppression of perennial weeds. This product contains 2,4-D and use may be restricted in some areas of the state.

Table 1. Effectiveness of selected sugarcane herbicides applied preemergence.

	Seedling Johnsongrass	Rhizome Johnsongrass	Itchgrass (Raoulgrass)	Bermudagrass ¹	Browntop Millet	Annual Grasses	Vaseygrass	Morningglory (Tie-vines)	Other Broadleaf Weeds	Nutsedges	Doveweed	Winter Grasses ²	Winter Broadleaf Weeds ³
Weed control estimates represent 28 to 35 days after application of preemergence herbicides at the high end of the rate range.													
A value of 0 = no control.													
A value of 10 = 100% control.													
Atrazine/others	2	0	2	0	4	5	0	8	9	2	5	8	9
Authority MTZ	5	0	2	1	5	5	-	9	8	7	-	5	8
Callisto	2	0	0	0	5	5	-	5 ⁵	8	2	8	3	7
Command	8	2	8	6	8	8	9	3	3	2	-	7	2
Command plus Diuron/Direx/others or Metribuzin/others	9	2	8	8	9	9	9	6	8	2	-	7	8
Diuron/Direx/others	7	0	5	1	6	6	9	6	8	2	3	7	8
Eptam ⁴	8	6	-	6	-	-	-	7	6	5	-	2	2
Prowl/others	8	2	8	2	8	9	4	2	2	3	0	6	2
Prowl plus Velpar/Velossa + Diuron/Direx/others	8	2	8	5	9	9	9	7	8	3	9	7	8
Prowl plus Metribuzin/others	9	2	8	5	9	9	5	8	9	4	9	8	8
Lumax EZ	7	0	2	0	9	9	9	8	9	7	8	9	9
Metribuzin/others	9	0	2	6	6	9	2	8	9	5	9	8	8
Spartan	4	0	2	0	3	4	6	9	8	7	-	4	8
Spartan Charge	4	0	2	0	3	4	6	9	8	7	-	4	8
Dual II Magnum/ Dual Magnum/others	7	0	1	0	7	9	9	1	5	7	-	9	7
Treflan/Trifluralin/others ⁴	9	6	9	7	9	9	8	2	2	5	-	8	2
Valor	3	0	2	0	3	4	-	8	9	6	-	8	9
Velpar/Velossa + Diuron/Direx/others or Metribuzin/others	8	2	7	7	8	9	9	7	8	5	9	8	8

Notes:

¹ Expected control level with application at planting prior to weed emergence and following a good fallow program or when applied in late winter prior to weed emergence from the winter dormant period.

² Winter grasses include ryegrass, rescuegrass, and timothy grass.

³ Winter broadleaf weeds include sowthistle, wild geranium and clovers.

⁴ Herbicide must be incorporated.

⁵ Addition of atrazine improves control.

Table 2. Effectiveness of selected sugarcane herbicides applied postemergence in-crop and in fallow.

	Seedling Johnsongrass	Rhizome Johnsongrass	Itchgrass (Raouigrass)	Bermudagrass	Browntop Millet	Annual Grasses	Vaseygrass	Morningglory (Tie-vines)	Other Broadleaf Weeds	Nutsedges	Doveweed	Winter Grasses ¹	Winter Broadleaf Weeds ²
Weed control estimates represent 14 to 21 days after application of postemergence herbicides at the high end of the rate range.													
A value of 0 = no control.													
A value of 10 = 100% control.													
Aim	0	0	0	0	0	0	-	9	8	0	0	-	-
Armezon	-	1	1	5	-	8	-	-	8	-	-	-	-
Asulox/Asulam ³	8	7	7	2	8	9	-	0	0	0	-	-	-
Atrazine/others	2	0	2	0	2	6	-	9	9	2	7	4	7
Callisto	0	0	1	0	4	4	-	6 ^{4,5}	8	2	-	-	8
Callisto + Atrazine/others	2	0	2	0	6	7	-	9	8	2	7	4	7
Clarity/Vision/others	0	0	0	0	0	0	-	9	9	3	6	0	9
Diuron/Direx/others	6	2	5	0	5	8	-	7	8	2	-	6	6
Envoke ³	7	4	8	1	7	9	-	6	8	7	2	-	-
Envoke + Asulox/Asulam ³	8	7	9	2	8	9	7	6	8	7	2	7	7
Glyphosate herbicides	9	9	9	8	9	9	9	6	7	6	4	8	8
Gramoxone SL/ Paraquat/others	8	2	8	4	8	9	-	8	8	2	8 ⁴	8	8
Permit/others	1	0	0	0	0	1	-	4	4	8	0	0	0
Spartan	2	0	2	0	2	4	-	6	8	7	-	3	8
Spartan Charge	2	0	2	0	2	4	-	9	8	7	-	3	8
Valor	2	0	2	0	3	4	-	9	8	2	5 ⁴	2	8
Weedmaster/Brash/others	0	0	0	0	0	0	-	9	9	3	6	0	9
Yukon	0	0	0	0	0	0	-	8	8	8	6	0	8
2,4-D/others	0	0	0	0	0	0	-	9	9	3	6	0	9

Notes:

¹ Winter grasses include ryegrass, rescuegrass, and timothy grass.

² Winter broadleaf weeds include sowthistle, wild geranium and clovers.

³ Requires 28-35 days to reach maximum control.

⁴ Addition of atrazine improves control.

⁵ For best results, apply before morningglory exceed 5 inches in height.

Recrop Intervals for Various Herbicides Used in Louisiana

When herbicides are applied (alone, as a tank-mix or in a sequential program), follow the re-crop interval that is most restrictive for any applied herbicide. Soil pH, among other considerations, may affect herbicide selection. Extremes in environmental conditions, such as lower-than-normal temperatures and/or rainfall after herbicide application, in addition to other factors, may affect the re-crop interval and may increase the potential for injury. Environmental conditions, such as temperature and rainfall after application, may affect the re-crop interval. These listings are minimum intervals between herbicide application and re-cropping, assuming herbicide application is at the proper rate and application timing.

The label should always be consulted prior to use to determine precautions, conditions or other restrictions that may alter the re-crop intervals.

Table 1. Rotational crop restrictions for herbicides labeled for use in corn.

Herbicide	Corn	Cotton	Grain Sorghum	Rice	Soybean	Wheat
Acuron	None	10m	10m	10m	10m	4m
Acuron GT	None	10m	10m	10m	10m	4.5m
Anthem Flex/Anthem Maxx	None	1-4m	6-12m (see label)	10-24m (see label)	0-4m (see label)	0-6m (see label)
Armezon/Impact	None	9m	9m	3m	9m	3m
Atrazine	None	following year	None	following year (see label)	following year	1yr
Capreno	None	10m	10-18m (see label)	10m (see label)	18m	4m
Dicamba	None	21d	15d	22d	15-28d	15d
Halex GT	None	10m	None	10m	10m	4.5m
Halosulfuron	1m	4m	2m	None	9m	2m
Impact Z	None	18m	9m	10m	9m	9m
Keystone NXT	None	following spring	None	following year (see label)	following spring	2yr
Laudis	None	10m	10m	10m	8m	4m
Lexar EZ	None	following year	following year	following year	following year	following year
Mesotrione	None	10m	None	10m	10m	4m
Metolachor/S-metolachlor	None	None	None (see label)	1yr (see label)	None	4.5m
Nicosulfuron	None	10m	10-18m (see label)	10-18m (see label)	15d	4m
Outlook	None	4m	4m	6-9m (see label)	None	4m
Pendimethalin	None	None	10-12m	None	None	4m
Realm Q	None	10m (see label)	10m (see label)	10m	10m	9m

Herbicide	Corn	Cotton	Grain Sorghum	Rice	Soybean	Wheat
Resicore	None	12m	10.5m	10.5m (see label)	10.5m	4m
Resolve Q	None	1m	1m	10m	1m	3m
Sharpen	None	1.5-9m (see label)	0-1m (see label)	0-4m (see label)	0-6m (see label)	0-3m (see label)
ShieldEX	None	12m	9m	9m	9m	3m
Sinate	None	9m	9m	3m	9m	3m
Status	7d	30d	30d	120d	30d	30d
Steadfast Q	None	10m	10-18m (see label)	10-18m (see label)	15d	4m
Surestart II	None	26m	12m	26m	Spring	4m
Trivolt	None	10m	18m	12m	9m	4m
Verdict	None	6-9m (see label)	0-1m (see label)	4m	4-6m (see label)	4m
Warrant	None	None	None (see label)	Following year	None	4m
Zidua SC	None	1-4m (see label)	6-12m (see label)	10-24m (see label)	0-4m (see label)	1-6m (see label)

Table 2. Rotational crop restrictions for herbicides labeled for use in cotton.

Herbicide	Corn	Cotton	Grain Sorghum	Rice	Soybean	Wheat
2,4-D	14d	30d (see label and herbicide technology)	29d	30d	15d (see label and herbicide technology)	7d
Assure II	4m	None	4m	120d	None	4m
Clethodim	1m	None	1m	1m	None	1m
Command	9m	see label	9m	0-9m (see label)	None	12m
Dicamba	None	21d	15d	22d	15-28d	15d
Diuron	4m-1yr (see label)	4m-1yr (see label)	4m-1yr (see label)	4m-1yr (see label)	4m-1yr (see label)	4m-1yr (see label)
Envoke	7m	7m	7m	7-16m (see label)	7m	3m
Flumioxazin	30d	30d	30d	30d-9m (see label)	none	1m
Fluometuron	8m	None	9m	9m	9m	3m
Fomesafen	10m	See label	18m	10m	None	4m
Fusilade DX	2m	None	2m	2m	None	2m
Goal 2XL	10m	None	10m	10m	None	10m
Metolachlor/S-metolachlor	None	None	None (see label)	1yr (see label)	None	4.5m

Herbicide	Corn	Cotton	Grain Sorghum	Rice	Soybean	Wheat
Pendimethalin	None	None	10-12m	None	None	4m
Prometryn	5m	5m	12m	12m	12m	12m
Sequence	None	None	None	following year	None	4.5m
Staple LX	9-10m (see label)	None	following year	9m	10m	4m
Trifluralin	None	None	None	12-14m (see label)	None	None
Warrant	None	None	None (see label)	Following year	None	4m

Table 3. Rotational crop restrictions for herbicides labeled for use in rice.

Herbicide	Corn	Cotton	Grain Sorghum	Rice	Soybean	Wheat
2,4-D	14d	30d	29d	30d	15d	7d
Aim	None	None	None	None	None	None
Basagran	None	None	None	None	None	None
Beyond/Postscript	8.5m	9m	9m	9m conventional/none Clearfield or Fullpage	None	3m
Bolero	6m	6m	6m	None	6m	6m
Broadhead	12m	12m	12m	None	12m	12m
Clearpath	10m	18m	18m	18m conventional/ None Clearfield or Fullpage	10m	10m
Clincher	3m	3m	3m	None	3m	3m
Command	9m	see label	9m	0-9m (see label)	None	12m
Facet L	10m	10m	None	None	10m	None
Gambit	None	15m	2m	None	10m	2m
Grandstand R	4m	4m	4m	None	4m	4m
Grasp	3m	3m	3m	None	3m	3m
GraspExtra	3m	3m	3m	None	3m	3m
League	12m	8m	12m	None	12m	12m
Londax	4m	4m	4m	None	4m	4m
Loyant	3m	3m	3m	None	3m	3m

Herbicide	Corn	Cotton	Grain Sorghum	Rice	Soybean	Wheat
NewPath/Preface	8.5m	18m	18m	18m conventional/ None Clearfield or Fullpage	None	4m
Obey	309d	309d	309d	None	309d	309d
Pendimethalin	None	None	10-12m	None	None	4m
Permit Plus	1m	4m	2m	None	soil dependent	2m
Permit/Halomax	1m	4m	2m	None	9m	2m
Propanil	2m	2m	2m	None	2m	2m
RebelEx	3m	3m	3m	None	3m	3m
Regiment	None	None	None	None	None	None
RiceBeaux	2m	2m	2m	None	2m	2m
RiceOne	12	None	12m	None Drill seed only	None	12m
Ricestar HT	None	None	None	None	9m	None
Sharpen	None	1.5-9m (see label)	0-1m (see label)	0-4m (see label)	0-6m (see label)	0-3m (see label)
Strada	3m	6m	12m	None	6m	3m
StradaPro	3m	6m	36m	None	9m	3m
StradaXT	309d	309d	309d	None	309d	309d
Ultra Blazer	100d	100d	100d	None	None	3m

Table 4. Rotational crop restrictions for herbicides labeled for use in soybean.

Herbicide	Corn	Cotton	Grain Sorghum	Rice	Soybean	Wheat
2,4-D	14d	30d (see label and herbicide technology)	29d	30d	15d (see label and herbicide technology)	7d
Anthem Flex/Anthem Maxx	None	4m	6-12m (see label)	10-24m (see label)	0-4m (see label)	1-6m (see label)
Authority Edge	4m	12m	10-18m (see label)	10-24m (see label)	0-4m (see label)	4-10m (see label)
Authority Elite/BroadAxe	10m	12-18m (see label)	10m	10m	None	4.5m
Authority First/Sonic	10-18m (see label)	12-18m (see label)	12m	10m	None	4m
Authority MTZ	4-10m (see label)	12-18m (see label)	12-18m (see label)	10m	None	4m
Authority Supreme	4m	12-18m (see label)	10-12m	10-24m (see label)	0-4m (see label)	4-6m (see label)
Authority XL	10-18m (see label)	12-18m (see label)	10-18m (see label)	10-18m (see label)	None	4m

Herbicide	Corn	Cotton	Grain Sorghum	Rice	Soybean	Wheat
Basagran	None	None	None	None	None	None
Boundary	4m	12m	12m	8m	None	4.5m
Canopy DF	10-18m (see label)	10-18m (see label)	10-18m (see label)	10-18m (see label)	None	4m
Canopy EX	7m	10m	12m	9-18m (see label)	None	4m
Classic	7m	8m	9m	9-10m (see label)	None	3m
Clethodim	1m	None	1m	1m	None	1m
Cobra	None	None	None	None	None	None
Command	9m	see label	9m	0-9m (see label)	None	12m
Dicamba	None	21d (see label)	15d	22d	14-28d (see label)	15d
Enlite	9m	9m	9m	9m	None	3m
Envive	10-18m (see label)	10m-30m (see label)	12-18m (see label)	10-18m (see label)	None	4m
Fierce or Fierce EZ	30d (see label)	2m	12m	10-12m (see label)	None	2m
Fierce MTZ or Kyber	1m	18m	18m	12m	None	8m
Fierce XLT	10-18m	15-30m (see label)	18m	18m	None	10-18m (see label)
Finesse Cereal & Fallow	18m	18m	4m	18m	4-18m (see label)	None
FirstRate	9m	9m	9m	9m	None	4m
Flexstar GT 3.5	10m	None	18m	10m	10m	4m
Flumioxazin	30d	30d	30d	30d-9m (see label)	None	1m
Fomesafen	10m	See label	18m	10m	None	4m
Fusilade DX	2m	None	2m	2m	None	2m
Intimidator	10m	12m	18m	10m	None	4.5m
Metribuzin	4m	18m	18m	12m	4m	4m
Pendimethalin	None	None	10-12m	None	None	4m
Prefix	10m	1m	10m	10m	None	4.5m
Pursuit 2EC	8.5m	18m	18m	See label	None	4m
Python	None	18m	12m	6m	None	4m
Scepter	9.5m	18m	11m	following year	None	4m
Sequence	None	None	None	following year	None	4.5m
Sharpen	None	1.5-9m (see label)	0-1m (see label)	0-4m (see label)	0-6m (see label)	0-3m (see label)

Herbicide	Corn	Cotton	Grain Sorghum	Rice	Soybean	Wheat
Storm	100d	100d	100d	None	None	40d
Synchrony XP	7m	8-10m (see label)	9-15m (see label)	9-18m (see label)	None	3-4m (see label)
Tendovo	9m	12m	12m	9m	None	4.5m
Ultra Blazer	100d	100d	100d	None	None	3m
Warrant	None	None	None (see label)	Following year	None	4m
Warrant Ultra	10m	1m	10m	10m	None	4m
Valor XLT	10-18m (see label)	10-30m (see label)	10-18m (see label)	9-18m (see label)	None	4m
Verdict	None	6-9m (see label)	0-1m (see label)	4m	4-6m (see label)	4m
Zidua WG/Zidua SC	None	1-4m (see label)	6-12m (see label)	10-24m (see label)	0-4m (see label)	1-6m (see label)

Table 5. Rotational crop restrictions for herbicides labeled for use in wheat

Herbicide	Corn	Cotton	Grain Sorghum	Rice	Soybean	Wheat
2,4-D	14d	30d (see label and herbicide technology)	29d	30d	15d (see label and herbicide technology)	7d
Anthem Flex	None	1-4m	6-10m	10-24m	0-4m	1-6m (see label)
Axial XL	3m	3m	3m	3m	3m	None
Dicamba	None	21d (see label and herbicide technology)	22d	22d	15-28d (see label and herbicide technology)	15d
Finesse Cereal & Fallow	18m	18m	4m	18m	18m	4m
Harmony Extra	14d	14d	14d	None	7d	2m
Huskie	4m	unknown	7d	unknown	4m	7d
Metribuzin	4m	18m	18m	12m	4m	4m
Osprey	3m	3m	3m	3m	3m	7d
PowerFlex HL	10m	10m	10m	12m	12m	1m
Sharpen	None	1.5-9m (see label)	0-1m (see label)	0-4m (see label)	0-6m (see label)	0-3m (see label)
Zidua WG/Zidua SC	None	1-4m (see label)	6-12m (see label)	10-24m (see label)	0-4m (see label)	1-6m (see label)

Glossary of Herbicides

Herbicide trade name, common name, formulation, and manufacturer.

Liquid formulations include:

- **AC:** applicator's concentration
- **CS:** aqueous capsule suspension
- **E, EC or EW:** emulsifiable concentration
- **F:** flowable
- **L:** liquid
- **ME:** micro-encapsulated
- **SC:** soluble concentrate
- **SL:** soluble liquid
- **S:** suspension

Dry formulations include:

- **DF:** dry flowable
- **DG:** dispersible granules
- **G:** granules
- **SE:** suspoemulsion
- **SP:** soluble powder
- **W, WG and WDG:** wettable dispersible granules
- **WP:** wettable powder
- **WSG:** wettable soluble granules

Trade Name	Common Name	Formulation	Manufacturer
2,4-D amine or ester	2,4-D	several	several
2,4-DB	2,4-DB	several	several
Aatrex and others	atrazine	4L, 90 DF	several
Accent Q	nicosulfuron	54.5 WDG	Corteva Agriscience
Acuron	atrazine + bicyclopyrone + mesotrione + S-metolachlor	3.44 ZC (1 + 0.06 + 0.24 + 2.14 lb/gal)	Syngenta Crop Protection
Acuron GT	S-metolachlor + glyphosate + mesotrione + bicyclopyrone	4.295 ZC (2 + 2 + 0.2 + 0.095)	Syngenta Crop Protection
Aim	carfentrazone	40 DG; 2 EC; 1.9 EW	FMC
Anthem Flex	pyroxasulfone + carfentrazone	4 SE (3.733 + 0.267 lb/gal)	FMC
Anthem Maxx	pyroxasulfone + fluthiacet-methyl	4.3 SC (4.174 + 0.126 lb/gal)	FMC
Armezon	topramezone	2.8 L	BASF
Arroz	bispyribac	80 DF	AMVAC
Assure II	quizalofop	0.88 EC	Corteva Agriscience
Asulox	asulam	3.3 EC	UPI
Authority Edge	sulfentrazone + pyroxasulfone	4.25 SC (2.73 + 1.52 lb/gal)	FMC
Authority Elite/BroadAxe	sulfentrazone + S-metolachlor	7.0 SL (0.7 + 6.3 lb/gal)	FMC/Syngenta Crop Protection
Authority First/Sonic	sulfentrazone + choransulam	0.7 DF (0.62 + 0.08 lb/gal)	FMC/Corteva Agriscience
Authority MTZ	sulfentrazone + metribuzin	45 DG (18 + 27%)	FMC

Trade Name	Common Name	Formulation	Manufacturer
Authority Supreme	sulfentrazone + pyroxasulfone	4.16 SC (2.08 + 2.08 lb/gal)	FMC
Authority XL	sulfentrazone + chlorimuron	70 DG (62.22 + 7.78%)	FMC
Axial XL	pinoxaden	0.83 EC	Syngenta Crop Protection
Axial Bold	pinoxaden + fenoxaprop-p-ethyl	0.69 EC (0.457 + 0.228 lb/gal)	Syngenta Crop Protection
Axiom	flufenacet + metribuzin	68 DF (54.4 + 13.6%)	Bayer CropScience
Balance Flexx	isoxaflutole	2.05 L	Bayer CropScience
Banvel	dicamba	4 SL	Microflo
Barrage HF	2,4-D ester	4.7 EC	Helena
Basagran	bentazon	5 SL	AgriSolutions
Beyond Xtra	imazamox	1 S	BASF
Bicep II Magnum	S-metolachlor + atrazine	5.5 L (3.1 + 2.4 lb/gal)	Syngenta Crop Protection
Bolero	thiobencarb	8 EC	Valent
Boundary	S-metolachlor + metribuzin	6.5 EC (5.25 + 1.25 lb/gal)	Syngenta Crop Protection
Brake	fluridone	1.2 L	SePro
Buctril	bromoxynil	4 EC; 2 EC	Bayer CropScience
Butoxone 200	2,4-DB	2 SL	Cedar Chemical
Butyrac 200	2,4-DB	2 SL	Albaugh
Cadet	fluthiacet methyl	0.91 EC	FMC
Callisto	mesotrione	4 L	Syngenta Crop Protection
Callisto Xtra	mesotrione + atrazine	3.7 L (0.5 + 3.2 lb/gal)	Syngenta Crop Protection
Canopy DF	metribuzin + chlorimuron	75 DF (64.3 + 10.7%)	Corteva Agriscience
Canopy EX	chlorimuron + tribenuron	29.5% WDG (22.7% + 6.8%)	Corteva Agriscience
Caparol	prometryn	80 DF; 4 L	Syngenta Crop Protection
Capreno	thiencarbazone-methyl + tembotrione	3.45 L (0.57 + 2.88 lb/gal)	Bayer CropScience
Cheetah	glufosinate	2.34 L	Nufarm Americas Inc.
Cinch	S-metolachlor	7.64 EC	Corteva Agriscience
Cinch ATZ	S-metolachlor + atrazine	5.5 F (3.1 + 2.4 lb/gal)	Corteva Agriscience
Clarity	dicamba	4 S	BASF
Classic	chlorimuron	25 DF	Corteva Agriscience
Clearcast	imazamox	1 SC	BASF

Trade Name	Common Name	Formulation	Manufacturer
Clearpath	imazethapyr + quinclorac	75 DF	BASF
Clincher SF	cyhalofop	2.38 L	Corteva Agriscience
Cobra	lactofen	2 EC	Valent
Command	clomazone	3 ME	FMC
Cotoran	fluometuron	4 L; 80 DF	MANA
Cotton-Pro	prometryn	4 L	Corteva Agriscience
Delta Goal	oxyfluorfen	4 EC	Corteva Agriscience
Direx	diuron	4 L	MANA
Dual II Magnum	S-metolachlor	7.64 EC	Syngenta Crop Protection
Dual Magnum	S-metolachlor	7.62 EC	Syngenta Crop Protection
Duet	propanil + bensulfuron	60 DF (60 + 0.46%)	RiceCo
Duracor	aminopyralid + fluorpyrauxifen	0.734 L (0.667 + 0.067 lb/gal)	Corteva Agriscience
Elevore	halauxifen	0.572 L	Corteva Agriscience
Enlite	chlorimuron + flumioxazin + thifensulfuron	47.9 WDG (2.85 + 36.21 + 8.8%)	Corteva Agriscience
Envive	chlorimuron + flumioxazin + thifensulfuron	41.3 WDG (9.2 + 29.2 + 0.9%)	Corteva Agriscience
Envoke	trifloxysulfuron	75 DG	Syngenta Crop Protection
ET	pyraflufen ethyl	0.208 EC	Nichino
Facet	quinclorac	75 DF	BASF
Fierce	flumioxazin + pyroxasulfone	76 WDG (33.5 + 42.5%)	Valent
Fierce EZ	flumioxazin + pyroxasulfone	3.04 SC (1.34 + 1.7 lb/gal)	Valent
Fierce MTZ	flumioxazin + metribuzin + pyroxasulfone	2.64 SC (0.5 + 1.5 + 0.64 lb/gal))	Valent
Finale	glufosinate	1 SL	Bayer CropScience
Finesse Cereal and Fallow	chlorsulfuron + metsulfuron	75 DF (62.5 + 12.5%)	Corteva Agriscience
FirstRate	cloransulam	84 DF	Corteva Agriscience
FirstShot SG	thifensulfuron + tribenuron	50% SG (25% + 25%)	Corteva Agriscience
Flexstar GT 3.5	fomesafen + glyphosate	2.82 L (0.56 + 2.66 lb/gal)	Syngenta Crop Protection
Flexstar	fomesafen	1.88 ME	Syngenta Crop Protection
Forfeit 280	glufosinate	2.34 L	Loveland Products, Inc.
FreeHand	dimethenamid-P + pendimethalin	1.75 G (0.375 + 0.5 lb/gal)	BASF
Fullscript	imazamox + quinclorac	3.3 SC (0.3 + 3 lb/gal)	ADAMA

Trade Name	Common Name	Formulation	Manufacturer
Fusilade DX	fluazifop	2 EC	Syngenta Crop Protection
Fusion	fluazifop + fenoxaprop	2.56 EC (2 + 0.56 lb/gal)	Syngenta Crop Protection
Galigan	oxyfluorfen	2 E	MANA
Galleon	penoxsulam	2 SC	SePRO
Gambit	halosulfuron + prosulfuron	79 DF (50 + 29%)	Gowan
Garlon	triclopyr	4 L	Corteva Agriscience
Glory; Metribuzin 75 DF	metribuzin	75 DG	various
glyphosate formulations	glyphosate	various	various
Goal 2XL; Goal T/O	oxyfluorfen	2 EC; 1.6 EC	Corteva Agriscience
Gramoxone, Parazone, Quik-Quat	paraquat	2 SL	Syngenta Crop Protection; Drexel; MANA
Grandstand R	triclopyr	3 SL	Corteva Agriscience
Grasp	penoxsulam	2 EC	Corteva Agriscience
Grasp Xtra	penoxasulam + triclopyr	2.31 EC (0.25 + 2.06 lb/gal)	Corteva Agriscience
Halex GT	mesotrione + S-metolachlor + glyphosate	4.4 L (0.209 + 2.09 + 2.09)	Syngenta Crop Protection
Harmony Extra	thifensulfuron + tribenuron	75 DF (50 + 25%)	Corteva Agriscience
Harness Extra	acetochlor + atrazine	5.6 L (3.1 + 2.5 lb/gal); 6 L (4.3 + 1.7 lb/gal)	Bayer CropScience
Harness	acetochlor	7 EC	Bayer CropScience
Highcard	quizalofop-P-ethyl	0.88 EC	ADAMA
Imox	imazamox	1 L	Alligare LLC
Impact	topramezone	2.8 L	AMVAC
Interline	glufosinate	2.34 L	UPL NA Inc.
Intro	alachlor	4.51 EC	Bayer CropScience
Karmex	diuron	4 L; 80 DF	MANA
Keystone NXT	acetochlor + atrazine	5.6 L (3.1 + 2.5 lb/gal)	Corteva Agriscience
Krovar	bromacil + diuron	80 DF (40 + 40%)	Bayer CropScience
Kyber	flumioxazin + metribuzin + pyroxasulfone	2.64 SC (0.5 + 1.5 + 0.64 lb/gal))	Corteva Agriscience
Laudis	tembotrione	3.5 L	Bayer CropScience
LeadOff	rimsulfuron + thifensulfuron	33.4 WG (16.7 + 16.7%)	Corteva Agriscience
League	imazosulfuron	75 WG	Valent

Trade Name	Common Name	Formulation	Manufacturer
Lexar EZ	atrazine + S-metolachlor + mesotrione	3.67 ZC (1.74 + 1.74 + 0.224 lb/gal)	Syngenta Crop Protection
Liberty 280	glufosinate	2.34 SL	Bayer CropScience
Linex/Lorox	linuron	4 L	NovaSource
Londax	bensulfuron	60 DF	Corteva Agriscience
Loyant	florpyrauxifen	0.21 L	Corteva Agriscience
Lumaz EZ	atrazine + S-metolachlor + mesotrione	3.67 ZC (0.935 + 2.49 + 0.249 lb/gal)	Syngenta Crop Protection
MSMA (others)	MSMA	6 SL; 6.6 SL	several
Newpath	imazethapyr	2 AS	BASF
Novixid	florpyrauxifen-benzyl + penoxasulam	0.27 L (0.1 + 0.17 lb/gal)	Corteva Agriscience
Obey	clomazone + quinclorac	2.5 L (1.25 + 1.25 lb/gal)	FMC
Osprey	mesosulfuron	4.5 DF	Bayer CropScience
Osprey Xtra	mesosulfuron + thien carbazon-methyl	6 DF (4.5 + 1.5 %)	Bayer CropScience
Oust	sulfometuron	75 WDG	Bayer CropScience
Outlook	dimethenamid-p	6 EC	BASF
Parrlay	metolachlor	8 EC	Bayer CropScience
Peak	prosulfuron	57 DG	Syngenta Crop Protection
Pendimax	pendimethalin	3.3 EC	Corteva Agriscience
Pendulum	pendimethalin	3.3 EC; 2 G; 60 WDG	BASF
Pennant Magnum	S-metolachlor	7.62 EC	Syngenta Crop Protection
Permit	halosulfuron	75 DG	Gowan
Poast	sethoxydim	1.5 EC	Microflo
Poast Plus	sethoxydim	1 EC	Microflo
Powerflex HL	pyroxsulam	0.13 WG	Corteva Agriscience
Prefix	S-metolachlor + fomesafen	Co-Pak (7.62 EC/2 LC)	Syngenta Crop Protection
Provisia	quizalfop	0.88 EC	BASF
Prowl	pendimethalin	3.3 EC	BASF
Prowl H2O	pendimethalin	3.8 CS	BASF
Pursuit	imazethapyr	2 AS; 70 DG	BASF
Python	flumetsulam	80 WDG	Corteva Agriscience
Realm Q	rimsulfuron + mesotrione	38.75 DG (7.5 + 31.25%)	Corteva Agriscience

Trade Name	Common Name	Formulation	Manufacturer
RebelEX	penoxulam + cyhalofop	2.03 L (0.25 + 1.78)	Corteva Agriscience
Reflex	fomesafen	2 LC	Syngenta Crop Protection
Regiment	bispyribac	80 DF	Valent
Resicore	acetochlor + mesotrione + clopyralid	3.29 L (2.8 + 0.3 + 0.19)	Corteva Agriscience
Reviton	tiafenacil	2.83 SC	Helm
Resolve Q	rimsulfuron + thifensulfuron	22.4 DF (18.4 + 4%)	Corteva Agriscience
Resource	flumiclorac	0.86 EC	Valent
RiceBeaux	propanil + thiobencarb	6 SL (35% + 31%)	RiceCo
RiceOne	clomazone + pendimethalin	3.63 SC (1.07 + 2.56 lb/gal)	RiceCo
Ricestar HT	fenoxaprop	0.58 EW	Bayer CropScience
Rindé	bispyribac-sodium + quinclorac	1.62 L (0.12 + 1.5 lb/gal)	AMVAC
Roundup formulations	glyphosate	various	Bayer CropScience
Sandea	halosulfuron	75 DF	Gowan
Select and others	clethodim	1, 2, or 3 EC	various
Select Max	clethodim	0.97 EC	Valent
Sencor and others	metribuzin	4 L; 75 DF	various
Sequence	glyphosate + S-metolachlor	5.25 F (2.25 + 3 lb/gal)	Syngenta Crop Protection
Sharpen	saflufenacil	2.85 SC	BASF
ShieldEX	tolpyralate	3.33 SC	SummitAgro USA
Sinate	topramezone + glufosinate	2.57 L (0.1 + 2.47)	AMVAC
Solicam	norflurazon	78.6 DF	Syngenta Crop Protection
Sonalan HFP	ethalfluralin	3 EC	Gowan Company
Sonalan 10G	ethalfluralin	10 G	Gowan Company
Spartan	sulfentrazone	4 F; 75 DF	FMC
Spartan Charge	sulfentrazone + carfentrazone-ethyl	3.5 F (3.15 + 0.35 lb/gal)	FMC
Stam M4	propanil	4 L; 80 DF	Corteva Agriscience
Staple LX	pyrithiobac	3.2 SL	Corteva Agriscience
Status	dicamba + diflufenzopyr	61.1 WG (44 + 17.1%)	BASF
Steadfast Q	nicosulfuron + rimsulfuron	37.7 WDG (25.2 + 12.1)	Corteva Agriscience
Storm	bentazon + acifluorfen	4 SL (2.67 + 1.33 lb/gal)	UPI

Trade Name	Common Name	Formulation	Manufacturer
Strada	orthosulfamuron	50 WG	Isagro-USA
Strada Pro	orthosulfamuron + halosulfuron	54 WG (42.05 + 11.92%)	Isagro-USA
Strelus II	S-metolachlor	7.64 EC	Atticus Agricultural Products
Super Wham	propanil	4 EC	RiceCo
Synchrony XP	chlorimuron + thifensulfuron	28.4 XP (21.5 + 6.9%)	Corteva Agriscience
Treflan	trifluralin	10 G	Corteva Agriscience
Treflan HFP	trifluralin	4 EC	Corteva Agriscience
Tripzin ZC	pendimethalin + metribuzin	4 L (2.9 + 1.1 lb/gal)	UPL
Trivence	chlorimuron + flumioxazin + metribuzin	61.3 DG (3.8 + 12.8 + 44.6%)	Corteva Agriscience
Trivolt	thiencarbazone-methyl + isoxaflutole + flufenacet	3.65 SC (0.23 + 0.57 + 2.85 lb/gal)	Bayer CropScience
Trycera	triclopyr	2.87 SL	Helena
Ultra Blazer	acifluorfen	2 SL	UPI
Valor	flumioxazin	51 WDG	Valent
Valor XLT	flumioxazin + chlorimuron	40.3 WDG (30% + 10.3%)	Valent
Vanquish	dicamba	4 SL	Syngenta Crop Protection
Vantage	sethoxydim	1 EC	BASF; Microflo
Velossa	hexazinone	2.4 L	Helena Agri-Enterprises, LLC
Velpar	hexazinone	75 DF; 2 L	Corteva Agriscience/Bayer CropScience
Verdict	saflufenacil + dimethamid-P	5.57 EC (0.57 + 5 lb/gal)	BASF
Visor S-MOC	S-metolachlor	7.62 EC	Innvictis Crop Care LLC
Visor S-MOC II	S-metolachlor	7.64 EC	Innvictis Crop Care LLC
Warrant	acetochlor	3 CS	Bayer Crop Science
Warrant Ultra	acetochlor + fomesafen	3.45 CS (2.82 + 0.63 lb/gal)	Bayer Crop Science
Weedmaster	dicamba + 2,4-D	3.87 SL (1 + 2.87 lb/gal)	BASF
Yukon	halosulfuron + dicamba	67.5 WSG (12.5 + 55%)	Gowan
Zalo	quizalofop-P-ethyl + glufosinate	2.52 SL (0.23 + 2.29 lb/gal)	
Zidua SC	pyroxasulfone	4.17 SC	BASF

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