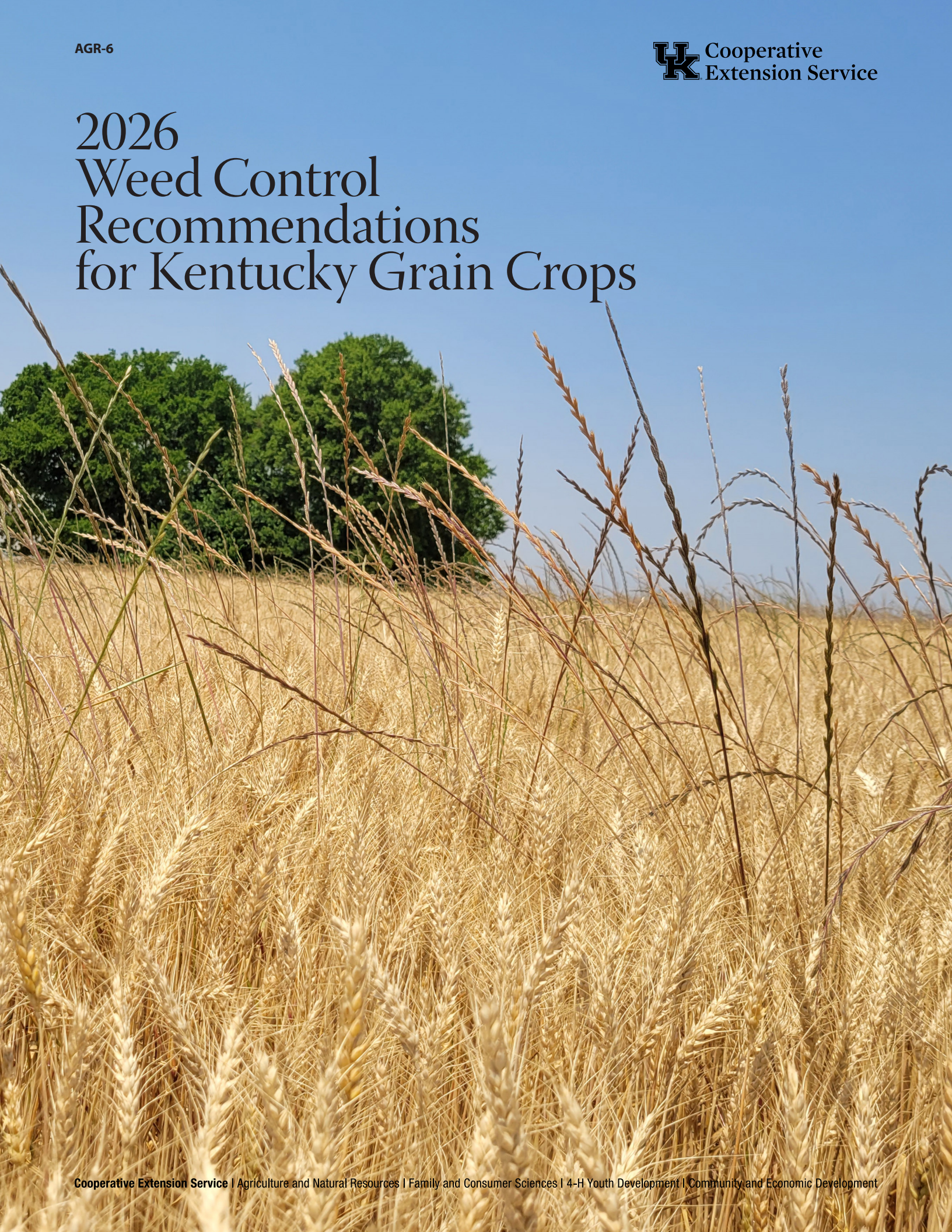
AGR-6

Cooperative Extension Service

2026 Weed Control Recommendations for Kentucky Grain Crops



Cooperative Extension Service | Agriculture and Natural Resources | Family and Consumer Sciences | 4-H Youth Development | Community and Economic Development

NOTICE
Kentucky Agriculture Water Quality Act

In 1994, the Kentucky General Assembly passed The Kentucky Agriculture Water Quality Act (AWQA). The AWQA (KRS 224.71-100 through 224.71-140) states that landowners of 10 acres or more that conduct or allow agriculture or silviculture (forestry) production on their land were required to develop and implement a water quality plan by October 23, 2001.

These individual water quality plans will be based upon the guidance found in the Kentucky Agriculture Water Quality Plan. One of the six sections that make up the Kentucky Agriculture Water Quality Plan is Pesticides and Fertilizer (Section 2). Therefore, if your agriculture operation, of 10 acres or more, involves the use and storage of agriculture chemicals, then your water quality plan must include information about those pesticide and fertilizer activities.

In an effort to help landowners/producers more effectively develop and implement the Pesticides and Fertilizer section of their water quality plan, the Extension publication ***Agricultural Chemical Storage and Handling*** (IP-41) is available at your local County Extension Offices. This publication is one of several that make up the Kentucky Assessment System or KY·A·Syst.

For further information about the Kentucky Agriculture Water Quality Act, the sections of the Plan and the KY·A·Syst publications that apply to your situation, contact your local:

- University of Kentucky Cooperative Extension Service County Office
- Division of Conservation
- Division of Water Regional Office
- USDA Natural Resource Conservation Service
- USDA Farm Service Agency
- Division of Forestry District Office
- Local Conservation District Office
- County Health Department
- Kentucky Farm Bureau Federation

Conversion Factors

Liquid Measure
3 teaspoons = 1 tablespoon = 14.8 ml
1 fluid ounce = 2 tablespoons = 29.6 ml
1 pint = 2 cups = 16 fluid ounces = 473.2 ml
1 quart = 2 pints = 4 cups = 32 fl. oz. = 946.4 ml
1 gallon = 4 quarts = 8 pints = 16 cups =128 fl. oz = 3786 ml
1 gallon = 3.79 liters = 8.355 pounds
1 cubic foot of water = 62.43 pounds = 7.48 gallons

Area Measure
1 acre = 43,560 sq ft = 160 sq rods = 4840 sq yd = 0.4ha

Dry Measure
1 pound=16 ounces=454 grams
1 short ton = 2000 pounds = 908 kg
1 long ton = 2240 pounds = 1017 kg

Linear Measure
12 inches = 1 foot = 30.5 cm
36 inches = 3 feet = 1 yard = 0.9 meters
1 rod = 16.5 feet
1 mile = 5280 feet = 1760 yards =1.6 km

The information provided in this publication is for general guidance in selection of herbicide products. Always consult the product labels for proper application of herbicides, precautions and any restrictions.

Listing of pesticide products implies no endorsement by the University of Kentucky or its representatives. Criticism of products not listed is neither implied nor intended.

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2026 Weed Control Recommendations for Kentucky Grain Crops

Travis Legleiter

INTRODUCTION

The use of herbicides suggested in this publication is based on research at the Kentucky Agricultural Experiment Station and elsewhere. We have given what we believe to be the most effective herbicides, with the most suitable rates and times of application. Use of trade or brand names in this publication does not imply approval of the product to the exclusion of others which may be of similar or suitable composition.

Herbicide registrations and labels are constantly being revised and changed; therefore, herbicides recommended in this publication were registered for the prescribed uses when the publication was printed. If the registration of a herbicide product listed has been canceled, it would no longer be recommended by the University of Kentucky.

Read and follow label directions carefully before you buy, store, mix, apply, or dispose of a pesticide. Follow carefully the precautions stated on the label of the bag or container. It is hazardous to use herbicides for purposes other than those specified on the approved label. Use herbicides only on crops for which they are approved and recommended. Use only recommended amounts. Besides wasting money, using too much material may damage the crop and make it unsafe for food or feed. The seizure of any raw agricultural commodity, moving in interstate commerce, which carries a pesticide residue in excess of the established tolerance, is authorized by the Environmental Protection Agency.

Apply herbicides only at time specified on the label, and observe the recommended intervals between the time of treatment and time of planting, grazing or harvesting the crop. Guard against possible injury to nearby susceptible crops or plants.

In general, the use of herbicides should supplement good agricultural practices which include:

- the use of high quality crop seed free of weed seed;
- proper planting methods with good seed to soil contact;
- high soil fertility and good crop rotation; and
- practices that prevent weeds from producing mature seeds.

Environmental & Safety Precautions (WPS)

Proper use of herbicides and other pesticides is important to the safety of humans and the environment. Pesticide labels contain precautionary statements to inform people of the potential hazards and safeguards associated with pesticides. The types of precautionary statements may vary depending on particular product and its use. Examples of issues that may require precautionary statements are: 1) use of protective clothing, 2) exposure to domestic animals,3) storage, 4) disposal of excess pesticides, rinsates and containers, 5) toxicity to fish and wildlife, 6) groundwater, and 7) endangered species. To assure the pesticide is used in a safe manner, it is important to read and follow the label directions.

Worker Protection Standards (WPS) were established to protect pesticide handlers and agricultural workers. This federal EPA regulation requires that employees are informed about pesticide use and protection practices. WPS requires pesticide safety training for workers and handlers, display of safety posters, and access to labeling and other specific information at a central location. Further protection is ensured by excluding workers from areas being treated with a pesticide, REI (Restricted-Entry Intervals) following a pesticide application, and proper use of PPE (Personal Protective Equipment). REI's and protective clothing requirements are listed on the pesticide label.

The Endangered Species Act: What You Need to Know

The following description has been endorsed by the Weed Science Society of America, Entomological Society of America, and American Phytopathological Society.

1: What is the Endangered Species Act (ESA)?
The Endangered Species Act is a long-standing federal law, first passed in 1973, which requires government agencies to ensure any actions they take do not jeopardize a species that has been federally listed as endangered or threatened. When an agency has a proposed action that might affect a listed species or its habitat, they consult with one or both of the agencies that helps enforce the ESA, the U.S. Fish and Wildlife Services or the National Marine Fisheries Service (this is known as "***a consultation***" with "***the Services***"). The Services then may recommend changes to the project or action to protect listed species or habitats.

2: How does the ESA affect pesticide use?
The Environmental Protection Agency (EPA) Office of Pesticide Programs (OPP) is the federal agency that regulates pesticide use. Because the use of pesticides can affect animals and plants (or their habitat), pesticide registrations are considered "actions" that would trigger an endangered species consultation.

3: Why am I hearing about the ESA and pesticide use now?
Due to the complex nature of the process, the EPA has not fully completed the required endangered species consultations with the Services for pesticide registrations in the past, which has left many of those pesticides vulnerable to lawsuits. Courts have annulled pesticide registrations which has led to their removal from market. To make pesticide registrations more secure from litigation, ultimately all pesticide registrations will comply with the Endangered Species Act (https://www.epa.gov/endangered-species).

4: How will this affect the pesticide I use today?
Many pesticide labels **will likely have changes that could include**:

- Requirement to check the EPA's Bulletins Live! Two website and follow current ESA restrictions for the pesticide product in the bulletin (https://www.epa.gov/endangered-species/bulletins-live-two-view-bulletins)
- Measures to reduce spray drift
- Measures to reduce runoff/erosion
- Other measures to reduce pesticide exposure to listed species and their habitat

In short, farmers and applicators should expect to see some new application requirements on their pesticide labels. But there is no need to panic. To date, no pesticide has ever been fully removed from the market based solely on endangered species risks, and that remains an unlikely scenario in the future.

5: Why does complying with the ESA matter?
By starting to fully comply with the ESA, **EPA anticipates that this will give farmers and applicators more stable, reliable access to the pesticides they need.** Furthermore, the ESA has been successful at bringing back some species Americans care about – such as the bald eagle or the Eggert sunflower – and restoring them to healthy populations, which has benefited the natural and cultivated ecosystems that agriculture (and society) rely on.

Spray Drift and runoff/erosion Mitigation Calculators
The EPA has developed the Pesticide App for Label Mitigations, which is a mobile friendly tool that can be used to calculate runoff/erosion mitigation points as well as spray drift buffer reductions. The application can be found here: https://www.epa.gov/pesticides/pesticide-app-label-mitigations

Water Quality Statements

The potential for contamination of surface and/or ground water has become an important consideration when choosing herbicides. Several products have groundwater and surface water advisory statements on their label. Such statements advise not to apply these herbicides where the water table (groundwater) is close to the surface and where the soils are very permeable (i.e. well drained soils such as sands, sandy loams, or loamy sands). Refer to these statements and observe all precautions on the label when using these products. Products with a groundwater advisory (GWA) or surface water advisory (SWA) are indicated in the Restricted Use & Advisories column of the Herbicide Glossary (Page 7)

Restricted Use Herbicides

Some herbicide products are classified as Restricted Use Pesticides because they have a higher potential for affecting the environment, human health, or animals. Herbicides currently classified as Restricted Use are indicated with "RU" in the Restricted Use & Advisories column of the Herbicide Glossary (Page 7).

Current regulations require that accurate records be kept for all pesticides which include Restricted Use Pesticides as well as those classified as General Use Pesticides. An applicator must make a written record within 30 days after the application. Records to keep include product name and EPA registration number, total amount applied, location, crop or site of application, size of treated area, name and certification number of applicator or supervisor, and date of application.

Method and Time of Herbicide Treatment

Herbicides are generally considered to be either soil active or foliar active. Soil active herbicides are generally applied to the soil surface since they are most effective when weeds are germinating. Foliar active herbicides control weeds after they have emerged from the soil.

Herbicides can also be applied at different times for weed control. They are applied either before or after crop planting. The timing of the application is dependent on: a) the herbicide characteristics; b) weed(s) to be controlled; and c) crop being grown. The following terms are often used that refer to the time of herbicide application:

- Before Planting-- **preplant soil incorporated, preplant surface applied, preplant foliar** as a "burndown" of existing vegetation, or **early preplant** (usually 7 to 30 days before planting)
- After Planting (before crop and weed emergence) -- **preemergence** onto the soil surface.
- After Crop and Weed Emergence -- **cracking stage** (at crop emergence), **postemergence**, **directed** or **semi-directed** between the rows of taller crops on small weeds, or **layby** before crop canopy.

Herbicides used in no-tillage crop production generally consist of a foliar "burndown" herbicide plus a soil residual. A non-selective foliar herbicide is applied before or at planting, but before crop emerges to kill all existing vegetation. Soil residual herbicides provide additional weed control throughout the growing season.

Cultivation

Timely, shallow cultivation may be necessary following herbicide treatment. When cultivating, the cultivator should be as shallow as possible. This will prevent bringing new weed seeds from below the herbicide layer to the soil surface.

If rainfall does not occur within 7 to 10 days following application of a preemergence herbicide, a shallow incorporation such as with a rotary hoe may be necessary for maximum weed control.

Cultivation following a preplant-incorporated herbicide application should also be shallow, or less than one half the depth that the herbicide was incorporated.

Types of Herbicide Formulations

Herbicides are formulated as flowables (F), liquids (L), water solutions (S), soluable concentrates (SC), emulsifiable concentrates (EC), micro-encapuslated (ME), capsule-suspension (ZC), dry flowables (DF), soluable granules (SG), water dispersible granules (WDG), or wettable powders (WP). They are usually added to water and applied as a spray solution. Most spray mixtures require constant agitation to prevent the herbicides from settling to the bottom of the tank. Granular (G) herbicides are applied dry. Do not mix granular herbicides with different granular pesticides or fertilizers.

Tank Mixtures & Sequential Applications

For broad spectrum weed control, more than one herbicide may be necessary. In this publication we have included only formulations or tank mixtures registered with the EPA by the manufacturer.

When tank mixing two or more herbicide products it is important to consult the product(s) label to determine if potential problems may occur. Often a jar test may be required to determine if the products are compatible in the spray tank. Some tank mixtures or herbicide combinations can reduce weed control activity (i.e. they are **antagonistic**); whereas, other tank mixes will increase the weed control activity (i.e. **synergistic**). The potential for crop injury is sometimes increased by applying two or more herbicides to the same crop.

In addition to combining herbicides, sequential herbicide applications are used to provide season-long weed control. These applications may consist of an early pre-plant herbicide treatment followed by an application of a soil-applied herbicide at planting or a herbicide treatment before or at planting followed by a postemergence herbicide application later in the season after the crop has emerged. When using herbicides in sequential treatments, extreme care should be taken to keep within the recommended rates for each herbicide. In addition, rotational crop options may be reduced when herbicides with similar modes of action are applied the same crop season.

Weed Sprayers

Even distribution of herbicides at the proper rate is essential for good weed control. A small variation in the rate of application of some herbicides may result in failure to kill weeds or may cause injury to the crop. For spray applications of herbicides in farm crops, the low-pressure sprayer (15 to 50 pounds per square inch pressure) is most suitable either for broadcast or band spraying. Hand sprayers of 3 to 5-gallon capacity are suitable for small areas and for spot spraying.

A good field sprayer should have:

- A pump that is easily replaced, resistant to wear and chemicals, and that has a capacity of 8 to 15 gallons per minute.
- A boom equipped with nozzles with replaceable tips, the nozzles being evenly spaced on the bottom for broadcast spraying.
- 50-mesh screens for suction line and nozzles, and a gauge that measures pressure accurately from 10 to 100 pounds per square inch; and
- A mechanical or jet agitator to keep the spray well mixed and prevent the herbicide from settling to the bottom of the tank.

Adjuvants and Additives

An adjuvant is any substance included in the herbicide formulation which enhances the effectiveness of the herbicide. Additives include adjuvants or other substances added to the spray mixture which may result in increased or decreased effectiveness of the spray mixture or for improving application. Products typically recommended for use with herbicides contain 80 to 90% of the active agent. Additives include such substances as:

- **Emulsifier**—a substance which promotes the suspension of one liquid or another.
- **Surfactant**—a material which favors or improves the emulsifying, dispersing, spreading, wetting or other surface modifying properties of liquids.
- **Crop Oil Concentrate (COC)**—a blend of non-phytotoxic crop oils, surfactants, and emulsifiers
- **Methylated Vegetable or Seed Oil (MSO)** - a methylated vegetable or seed oil mixed with an emulsifier to allow for dispersion in water.
- **Wetting Agent**—a substance that reduces interfacial tensions and causes spray solutions or suspensions to make better contact with treated surfaces.
- **Water Conditioner** – a product that modifies the water carrier properties, such as pH or hardness. Ammonium Sulfate (AMS) is the most widely used water conditioner that reduces hard water cations.
- **Nitrogen Fertilizers**—an ammonium containing fertilizer that enhances the uptake of certain post-emergence herbicides inside the cell wall (eg. 28% or 32% Urea Ammonium Nitrate or Ammonium Sulfate)
- **Drift Control or Reduction Agent (DRA)**—a substance added to the spray solution to reduce the potential for off-site movement of spray particles.
- **Volatility Reduction Agent (VRA) –** an additive that reduces the volatility potential of a spray solution.

Sprayer Calibration

To ensure you are applying the correct amount of material per acre, it is necessary to know how much liquid the sprayer is delivering per acre at a given speed and pressure. The following is a fast, simple method of calibrating a sprayer for broadcast application.

Ounce Collected Calibration Method:

1. Measure the distance shown in the following table in the field to be sprayed. Select the distance based on your sprayer nozzle spacing.

Nozzle Spacing (Inches)	Distance to Measure (Feet)
40	102
38	107
36	113
34	120
32	127
30	136
28	146
26	157
24	170
22	185
20	204
18	227
16	255
14	291

2. Record the time in seconds to drive the measured distance in the field at the desired throttle and gear setting.
3. Catch the nozzle discharge for the recorded time (from above) in a measuring cup or other container graduated in fluid ounces.
4. The total discharge in fluid ounces per nozzle is equal to the gallons per acre applied.
5. Repeat the measurement for each nozzle and section to ensure equal distribution across the boom.

Nozzles

Many types of nozzles are available for use. Each type provides different patterns, flow rates, spray angles, and droplet sizes. The following nozzle designs and types are most common for agriculture broadcast sprayers.

- Single stage nozzle - a nozzle with a single orifice for creating spray patterns and metering spray output. TeeJet XR nozzles are an example of a single stage nozzle.
- Two stage or Pre-orifice nozzle - a nozzle containing two orifices: a per-orifice that meters the spray output and an exit orifice that creates the spray pattern.
- Air induction nozzle – a nozzle that contains ports to induce air into the spray mixture within the nozzle body. Air induction nozzles produce overall larger droplets as compared to a similar non-air induction nozzle.
- Twin fan nozzle - Nozzle that has two exit orifices often angled 60 degrees apart facing forward and backward to create two spray fans from a single nozzle. These are also known as twin jet nozzles.

The following catalogs and websites contain guides for selection and calibration of nozzles from major agriculture nozzle manufactures. This list is intended as an aid in selecting the appropriate nozzle and calibration of sprayers and not as an endorsement of any specific nozzle manufacturer:

https://www.teejet.com/-/media/dam/agricultural/usa/sales-material/catalog/cat52-us.pdf

https://www.pentair.com/content/dam/extranet/web/nam/hypro/catalogs/hypro-shurflo-catalog.pdf

https://greenleaftech.com/dynamic.php?pg=Choosing_the_Right_Nozzle/Nozzle_Calculator

Sprayer Cleanup

Ideally spray equipment should be cleaned in the field after the spray job has been completed. Do not clean spray equipment in areas where rinse water will contaminate water supplies, streams, or injure susceptible crops.

Flushing spray equipment with water will be sufficient for removing potentially harmful amounts of many pesticides. However, there are certain groups of pesticides such as plant growth -regulators, sulfonylurea herbicides, and organophosphate insecticides thar may require special attention in cleaning equipment. *Special attention to clean out procedures can be critically important when switching applications between crops to help avoid significant crop injury.* As a rule, a sprayer that has been used to apply 2,4-D, dicamba, or any other growth regulator herbicide should not be used in treating tobacco or other susceptible crops.

Some pesticide labels provide specific information on cleaning spray equipment; therefore, consult the label for guidelines. If specific guidelines are not indicated on the label the following procedure is generally recommended:

Always wear the proper PPE (Personal Protective Equipment) as outlined by the most restrictive pesticide label used within the spray tank when conducting all steps of the sprayer cleanup procedure.

1. Fill the tank at least one-half full with clean water. Flush tanks, lines, booms, and nozzles for at least 5 minutes using a combination of agitation and spraying. Rinsate from this procedure is best sprayed onto cropland to avoid accumulation of pesticide contaminated rinsate on one site. Thoroughly rinse the inside surfaces of the tank. Pay attention to the surfaces around the tank fill access and tank plumbing fixtures. The use of a

360-degree nozzle or other special rinsing nozzles installed permanently to the spray system can help automate this procedure.

2. Fill the tank again with clean water and add a cleaning solution or a commercially available tank cleaner. Agitate the solution for 15 minutes and operate the spray booms long enough to ensure that all nozzles and boom lines are filled with the cleaning solution. Let the solution stay in the system for several hours, preferably overnight. When emptying the tank, spray the cleaning solution onto an area suitable for the rinsate solution.

   If a commercial tank cleaner is not available, you can make a cleaning solution by adding one of the following per 50 gallons of water:

   - *2 quarts of household ammonia*
   - *4 pounds of trisodium phosphate cleaner*

3. Add more water and rinse the system again by using a combination of agitation an spraying. Remove and clean nozzles, screens, and strainers in a bucket of cleaning solution.
4. Make a final rinse and flush the system again with clean water.

Herbicide Resistance

Herbicide resistance has become an important issue to consider when making weed management decisions. Crops traditionally susceptible to some herbicides are being developed which are tolerant (i.e. resistant) to specific herbicides. For example, soybean varieties and corn hybrids resistant to glyphosate, glufosinate and other products are now available to producers.

Herbicide resistance can also occur and develop from natural weed populations. For example, resistance of smooth pigweed to triazine type herbicides (i.e. Atrazine and Princep) has been found and documented in some localized areas of Kentucky where corn is grown in consecutive years. Other states have also reported weed resistance in field crops following the continuous use of certain herbicides. The potential for weed resistance to develop increases with continuous use of herbicides that have the same site of action (i.e. similar chemistry). Therefore, herbicide use should be monitored, and production practices implemented to prevent and reduce the potential for weed resistance to occur.

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A key to avoiding development of herbicide resistant weed populations is prevention. Listed below are management strategies to consider in preventing and managing herbicide resistant weeds.

- **Scout fields** regularly and identify weeds present. Respond quickly to shifts in weed populations to restrict the spread of weeds.
- **Select herbicides based on weeds present** and use a herbicide only when necessary.
- **Rotate crops**. Crop rotation helps disrupt weed cycles and some weed problems are more easily managed in some crops than others.
- **Rotate herbicide Sites of Action**. Avoid using the same herbicide or another herbicide with the same site of action (i.e. herbicides that inhibit the same process in target weeds) for two consecutive years in a field. It is possible for a herbicide used in one crop to have the same site of action as a different herbicide used in another crop. For example: Accent, Classic, Harmony Extra, Harmony SG, Scepter, Osprey, Permit, Pursuit, Python, Resolve, and Steadfast, contain active ingredients with the same site of activity in plants (Group 2 - ALS inhibitors).
- Apply herbicides with **different sites of action** as a tank mixture or sequential application during the same season.
- Combine **other weed control practices** such as cultivation with herbicide treatments where soil erosion potential is minimized.
- **Clean tillage and harvest equipment** to avoid moving weed problems from one field to the next.

Herbicide Classification

Herbicide site of action can be defined as the mechanism whereby a herbicide interferes with plant metabolism or function that inhibits plant growth or leads to plant death. Herbicides are often classified according to their site of action. Herbicides within the same site of action inhibit the same pathway or enzyme within a susceptible plant. The site of action herbicide groups are listed in the following table along with representative examples of herbicide products and general information on how they function

Herbicide Classification by Site of Action Groups

Group Number	Herbicide Classification	Herbicide Examples	Site of Uptake	Plant Selectivity	Translocation	Symptomology
1	**ACCase Inhibitors** (lipid synthesis) ***Aryloxyphenoxy propionates** ***Cyclohexanediones**	Axial Bold, Assure II, Fusion, Select, Poast	foliage	grasses	phloem mobile (with sugars)	Growing point rots at the nodes, new leaves pull out easily
2	**ALS Inhibitors** (amino acid synthesis) * **Imidazolinones** * **Sulfonylureas** * **Sulfonamides**	Scepter, Pursuit, Accent, Classic, Harmony FirstRate, Python	soil or foliage	selected broadleaves or grasses	phloem mobile (with sugars); xylem mobile in soil uptake	Chlorotic new growth, shortened internodes, reddened veins on soybeans, yellow flash in corn, bottle brush roots
3	**Microtubule Assembly Inhibitors** (root growth inhibitor) * **Dinitroanalines**	Prowl, Treflan	soil	grasses more than broadleaves	minimal transport	Stunting and clubbed root tips
4	**Synthetic Auxins (Growth Regulator)** * **Phenoxy acids** * **Benzoic acids** * **Pyridine carboxylic acids**	2,4-D dicamba [Clarity, etc] Starane, Vista	foliage primarily	broadleaves	phloem mobile (with sugars)	Distorted growth of new leaves, callus growth on stems
5	**Photosynthesis Inhibitors** [PS II] * **Triazines** * **Triazinones**	**Binding Site A** Atrazine, Princep metribuzin	soil or foliage	broadleaves more than grasses	xylem mobile (moves with water)	Contact burn of existing leaves, chlorosis of oldest leaf margins of seedlings if soil uptake
6	* **Benzothiadiazinones** * **Nitriles**	**Binding Site B** Basagran Buctril				
7	* **Phenylureas**	**Binding Site C** Lorox				
9	**EPSP Synthetase Inhibitor**	glyphosate [Durango, Roundup, etc.]	foliage	non-selective	phloem mobile (with sugars)	Chlorotic new growth to death depending on rate, occasional white flash
10	**Glutamine Synthetase Inhibitor**	Liberty, Interline	foliage	non-selective	primarily contact	Chlorosis of entire plant in 4 - 5 days
13	**Carotenoid Biosynthesis** (pigment inhibitor)	Command	soil or foliage	grasses and selected broadleaves	xylem mobile (moves with water)	Bleaching (whitening) of leaves
14	**PPO Inhibitors** (cell membrane disruptors) * **Diphenylethers** * **Triazolinones** * **N-phenylphthalamides** * **Pyrimidinedione**	Blazer, Cobra, Flexstar Aim, Authority, Spartan Resource, Valor Sharpen	foliage or soil	broadleaves more than grasses	xylem mobile (moves with water), acts as a contact when applied POST	Contact burn of existing leaves, chlorosis of veins if soil uptake
15	**VLCFA synthensis inhibitors** (seedling shoot growth inhibitors) * **Chloroacetamides** * **Oxyacetamides** * **Isoxazolines**	Harness, Surpass, Warrant, Dual, Outlook, Define, Zidua	soil	grasses and selected broadleaves	xylem mobile (minimal transport)	Leafing out under-ground, wrapped leaves of grasses, bugging whipping
19	**Auxin Transport Inhibitor**	diflufenzopyr [component of Status]	foliage	broadleaves	phloem mobile	-------
22	**PSI Electron Diverters** * **Bipyridyliums**	paraquat [Gramoxone]	foliage	non-selective	contact activity	Rapid water soaking of existing leaves
27	**4-HPPDs** (pigment inhibitors)	Armezon, Balance, Callisto, Impact, Laudis	soil or foliage	selected broadleaves or grasses	xylem mobile (moves with water)	Bleaching (whitening) of existing leaves

Herbicide Glossary

Trade Name*	Formulation	Active Ingredient	MOA Group#	Manufacturer	Crops**	Restricted Use & Advisories***
2,4-D	several forms	2,4-D	Group 4	various	corn, grain sorghum, soybean, wheat, barley	--
AAtrex 4L	L	Atrazine (4 lb)	Group 5	Syngenta	corn (field, popcorn), grain sorghum	RU, GWA, & SWA
AAtrex Nine-O	WDG	Atrazine (88.2%)	Group 5	Syngenta	corn (field, popcorn), grain sorghum	RU, GWA, & SWA
Abundit Edge	L	glyphosate (isopropylamine salt)	Group 9	Corteva	corn (field, popcorn, sweet), soybean	--
Accent Q	WDG	nicosulfuron (54.5%)+ isoxadifen (safener)	Group 2	Corteva	corn (field, popcorn, sweet)	--
Acuron	L	S-metolachlor (2.14 lb) + atrazine (1.0 lb) + mesotrione (0.24 lb) + bicyclopyrone (0.06 lb) + benoxacor (safener)	Group 15 Group 5 Group 27 Group 27	Syngenta	corn (field, popcorn, sweet)	RU, GWA, & SWA
Acuron Flexi	L	S-metolachlor (2.86 lb) + mesotrione (0.32 lb) + bicyclopyrone (0.08 lb) + benoxacor (safener)	Group 15 Group 27 Group 27	Syngenta	corn (field, popcorn, sweet)	GWA & SWA
Acuron GT	L	S-metolachlor (2.0 lb) + glyphosate (2.0 lb ae) + mesotrione (0.20 lb) + bicyclopyrone (0.095 lb) + (safener)	Group 15 Group 9 Group 27 Group 27	Syngenta	corn (field, popcorn, sweet)	GWA & SWA
Afforia	WDG	thifensulfuron (5%) + tribenuron (5%) + flumioxazin (40.8%)	Group 2 Group 2 Group 14	Corteva	soybean	--
Aim EC	EC	carfentrazone (2 lb)	Group 14	FMC	corn (field, popcorn), grain sorghum, soybean, wheat, barley	--
Antares Complete	L	sulfentrazone (0.4 lb) + metribuzin (1 lb) + S-metolachlor (4.7 lb)	Group 14 Group 5 Group 15	Helena	soybean	GWA & SWA
Anthem	L	fluthiacet-methyl (0.063 lb) + pyroxasulfone (2.087 lb)	Group 14 Group 15	FMC	corn (field, popcorn, sweet), soybean	GWA & SWA
Anthem Flex	SE	carfentrazone (0.267 lb) + pyroxasulfone (3.733 lb)	Group 14 Group 15	FMC	wheat	GWA & SWA
Anthem MAXX	SC	fluthiacet-methyl (0.126 lb) + pyroxasulfone (4.174 lb)	Group 14 Group 15	FMC	corn (field, popcorn, sweet), soybean	GWA & SWA
Armezon	SC	topramezone	Group 27	BASF	corn (field, popcorn, sweet)	--
Armezon PRO	L	dimethenamid-P (5.25 lb) + topramezone (0.1 lb)	Group 15 Group 27	BASF	corn (field, popcorn, sweet)	GWA & SWA
Arrow 2EC	EC	clethodim(2 lb)	Group 1	ADAMA	soybean	--
Assure II	EC	quizalofop P-ethyl (0.88 lb)	Group 1	AMVAC	ENLIST Corn, soybean	--
Atrazine 4L	L	atrazine (4 lb)	Group 5	various	corn (field, popcorn), grain sorghum	RU, GWA, & SWA
Atrazine 90	WDG or DF	atrazine (88%)	Group 5	various	corn (field, popcorn), grain sorghum	RU, GWA, & SWA
Authority Assist	L	sulfentrazone (3.33 lb) + imazethapyr (0.67 lb)	Group 14 Group 2	FMC	soybean	GWA & SWA
Authority Edge	SC	sulfentrazone (2.73 lb) + pyroxasulfone (1.52 lb)	Group 14 Group 15	FMC	soybean	GWA & SWA
Authority Elite	L	sulfentrazone (0.7 lb) + S-metolachlor (6.3 lb)	Group 14 Group 15	FMC	soybean	GWA & SWA
Authority First DF	DF	sulfentrazone (62.1%) + cloransulam (7.9%)	Group 14 Group 2	FMC	soybean	GWA & SWA
Authority Maxx	DF	sulfentrazone (62.12%) + chlorimuron (3.88%)	Group 14 Group 2	FMC	soybean	GWA & SWA
Authority MTZ DF	DF	sulfentrazone (18%) + metribuzin (27%)	Group 14 Group 5	FMC	soybean	GWA & SWA
Authority Supreme	SC	sulfentrazone (2.08 lb) + pyroxysulfone (2.08 lb)	Group 14 Group 15	FMC	soybean	GWA & SWA

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Trade Name*	Formulation	Active Ingredient	MOA Group#	Manufacturer	Crops**	Restricted Use & Advisories***
Authority XL	DF	sulfentrazone (62.22%) + chlorimuron (7.78%)	Group 14 Group 2	FMC	soybean	GWA & SWA
Axial Bold	EC	pinoxaden (0.457 lb) + fenoxaprop (0.228 lb)	Group 1 Group 1	Syngenta	wheat, barley	--
Axiom DF	DF	flufenacet (54.4%) + metribuzin (13.6%)	Group 15 Group 5	Bayer CropScience	corn (field), soybean, wheat	GWA & SWA
Balance Flexx	SC	isoxaflutole (2 lb) + cyprosulfamide (safener)	Group 27	Bayer CropScience	corn (field)	RU, GWA, & SWA
Basis	WDG	rimsulfuron (50%) + thifensulfuron (25%)	Group 2 Group 2	Corteva	corn (field)	--
Basis Blend	SG	rimsulfuron (20%) + thifensulfuron (10%)	Group 2 Group 2	Corteva	corn (field)	--
Beacon	DF	primisulfuron (75%)	Group 2	Syngenta	corn (field, popcorn)	--
Bellum	SC	mesotrione (4 lb)	Group 27	Rotam	corn (field, popcorn, sweet corn), sorghum (grain, sweet)	SWA
Bicep II Magnum	L	S-metolachlor (2.4 lb) + atrazine (3.1 lb) + benoxacor (safener)	Group 15 Group 5	Syngenta	corn (all types), grain sorghum	RU, GWA, & SWA
Boundary 6.5EC	EC	S-metolachlor (5.25 lb) + metribuzin (1.25 lb)	Group 15 Group 5	Syngenta	soybean	GWA & SWA
Brawl II	EC	S-metolachlor (7.64 lb) + benoxacor (safener)	Group 15	Tenkoz	corn (all types), soybean, grain & forage sorghum	GWA & SWA
Brawl II ATZ	SC	S-metolachlor (2.4 lb) + atrazine (3.1 lb) + benoxacor (safener)	Group 15 Group 5	Tenkoz	corn (all types), grain sorghum	RU, GWA, & SWA
Breakfree NXT	L	acetochlor (7 lb)+ dichlormid (safener)	Group 15	Corteva	corn (field, popcorn)	GWA & SWA
Broclean	L	bromoxynil (2lb)	Group 6	Loveland	corn (field, popcorn), grain sorghum, wheat, barley, oats	--
BroadAxe XC	L	sulfentrazone (0.7 lb) + S-metolachlor (6.3 lb)	Group 14 Group 15	Syngenta	soybean	GWA & SWA
Buccaneer; Buccaneer Plus; or Buccaneer 5 Extra	L	glyphosate (isopropylamine salt)	Group 9	Tenkoz	corn (field, popcorn), grain sorghum, soybean, wheat, barley	--
Buccaneer K	L	Glyphosate (potassium salt)	Group 9	Tenkoz	corn (field, popcorn), grain sorghum, soybean, wheat, barley	--
Cadet	EC	fluthiacet-methyl (0.91 lb)	Group 14	FMC	corn (field, popcorn), soybean	--
Calibra	ZC	S-metolachlor (2.82 lb) + mesotrione (0.28 lb)	Group 15 Group 27	Syngenta	corn (field, popcorn, sweet), grain sorghum	GWA & SWA
Callisto	SC	mesotrione (4 lb)	Group 27	Syngenta	corn (field, popcorn, sweet corn), sorghum (grain, sweet)	SWA
Callisto GT	L	glyphosate (3.8 lb) + mesotrione (0.38 lb)	Group 9 Group 27	Syngenta	corn (field) [glyphosate-tolerant]	SWA
Callisto Xtra	L	atrazine (3.2 lb) + mesotrione (0.5 lb)	Group 5 Group 27	Syngenta	corn (field, yellow popcorn, silage, sweet corn)	RU, GWA, & SWA
Canopy	WDG	chlorimuron (10.7 %) + metriburin (64.3%)	Group 2 Group 5	Corteva	Soybean	GWA
Canopy Blend	DG	chlorimuron (8.3 %) + metribuzin (50%)	Group 2 Group 5	Corteva	soybean	GWA
Canopy EX	WDG	chlorimuron (22.7 %) + tribenuron (6.8%)	Group 2 Group 2	Corteva	Soybean	--
Capreno	SC	thiencarbazone (0.57 lb) + tembotrione (2.88 lb) + isoxadifen (safener)	Group 2 Group 27	Bayer CropScience	corn (field)	GWA
Charger Max	EC	S-metolachlor (7.64 lb)+ (seed safener)	Group 15	Winfield United	corn (all types), grain sorghum, soybean	GWA & SWA

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Trade Name*	Formulation	Active Ingredient	MOA Group#	Manufacturer	Crops**	Restricted Use & Advisories***
Charger Max ATZ	L	S-metolachlor (2.4 lb) + atrazine (3.1 lb) + (seed safener)	Group 15 Group 5	Winfield United	corn (all types), grain sorghum	RU, GWA & SWA
Cheetah	L	glufosinate (2.34 lb)	Group 10	Nufarm	corn (field), soybean [glufosinate-tolerant]	--
Cheetah Max	L	glufosinate (2 lb)+ fomesafen (1 lb)	Group 10 Group 14	Nufarm	soybean [glufosinate-tolerant]	GWA & SWA
Cinch	ED	S-metolachlor (7.64 lb) + benoxacor (safener)	Group 15	Corteva	corn (all types), grain sorghum, soybean	GWA & SWA
Cinch ATZ	L	S-metolachlor (2.4 lb) + atrazine (3.1 lb) + benoxacor (safener)	Group 15 Group 5	Corteva	corn (all types), grain sorghum	RU, GWA & SWA
Clarity	S	dicamba (4 lb ae) (diglycolamine salt)	Group 4	BASF	corn (field, popcorn), grain sorghum, wheat, barley	GWA & SWA
Clash	L	dicamba (4 lb ae) (diglycolamine salt)	Group 4	Nufarm	corn, grain sorghum, wheat, barley, oats	GWA & SWA
Classic	DF	chlorimuron (25%)	Group 2	AMVAC	soybean	--
Cloak	WDG	chlorimuron (10.7%) + metribuzin (64.3%)	Group 2 Group 5	Nufarm	soybean	GWA
Cloak EX	WDG	chlorimuron (22.7% + tribenuron (6.8%)	Group 2 Group 2	Nufarm	soybean	--
Cobra	EC	lactofen (2 lb)	Group 14	Valent	soybean	--
Command 3ME	ME	clomazone	Group 13	FMC	soybean, tobacco	--
Confidence	E	acetochlor (7 lb) + (safener)	Group 15	Winfield United	corn (field, popcorn)	GWA & SWA
Confidence Xtra 5.6L	L	acetochlor (3.1 lb) + atrazine (2.5 lb) + (safener)	Group 15 Group 5	Winfield United	corn (field, popcorn)	RU, GWA, & SWA
Cornerstone Plus or Cornerstone 5 Plus	L	glyphosate (isopropylamine salt)	Group 9	Winfield United	corn (field, popcorn), grain sorghum, soybean, wheat, barley	--
Cornerstone K	L	Glyphosate (potassium salt)	Group 9	Winfield United	corn (field, popcorn), grain sorghum, soybean, wheat, barley	--
Corvus	L	thiencarbazone (0.75 lb) + isoxaflutole (1.88 lb) + safener	Group 2 Group 27	Bayer CropScience	corn (field)	RU, GWA, & SWA
Credit 41 Extra or Credit 5.4 Extra	L	glyphosate [IPA salt]	Group 9	Nufarm	corn (field, popcorn), grain sorghum, soybean, wheat, barley	--
Credit K6	L	Glyphosate (potassium salt)	Group 9	Nufarm	corn (field, popcorn), grain sorghum, soybean, wheat, barley	--
Credit Xtreme	L	glyphosate isopropylamine salt (2.5 lb)+ potassium salt (2.0 lb)	Group 9	Nufarm	corn (field, popcorn), grain sorghum, soybean, wheat, barley	--
Crusher	WDG	rimsulfuron (25%) + thifensulfuron-methyl (25%)	Group 2 Group 2	FMC	corn (field), soybean	--
Degree Xtra	CS	acetochlor (2.7 lb) + atrazine (1.34 lb) + MON13900 (safener)	Group 15 Group 5	Bayer CropScience	corn (field, popcorn), grain sorghum	RU, GWA, & SWA
Diablo	S	dicamba (4 lb ae) (dimethylamine salt)	Group 4	Nufarm	corn, grain sorghum, wheat, barley, oats	GWA & SWA
DiFlexx	SC	dicamba (4 lb ae) (diglycolamine salt)+ cyprosulfamide (safener)	Group 4	Bayer CropScience	corn (field, silage, popcorn)	GWA & SWA
DiFlexx Duo	SC	dicamba (1.26 lb ae) + tembotrione (0.27 lb) cyprosulfamide (safener)	Group 4 Group 27	Bayer CropScience	corn (field, silage, popcorn)	GWA & SWA
Dimetric Charged	L	metribuzin (3 lb) + flumioxazin (0.67)	Group 5 Group 14	Winfield United	soybean	GWA & SWA

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Trade Name*	Formulation	Active Ingredient	MOA Group#	Manufacturer	Crops**	Restricted Use & Advisories***
Dual II Magnum	EC	S-metolachlor (7.64 lb) + benoxacor (safener)	Group 15	Syngenta	corn (all types), grain sorghum, soybean	GWA & SWA
Duramax	L	glyphosate (dimethylamine salt)	Group 9	Albaugh	corn (field, popcorn), grain sorghum, soybean, wheat, barley	--
Durango DMA	L	glyphosate (dimethylamine salt)	Group 9	Albaugh	corn (field, popcorn), grain sorghum, soybean, wheat, barley	--
Elevore	SC	halauxifen-methyl (0.572 lb)	Group 4	Corteva	corn, sorghum, soybean, wheat, barley	GWA & SWA
Empyros	EC	S-metolachlor (3.72 lb) + tolpyralate (0.10 lb)	Group 15 Group 27	Helena	corn (field, popcorn, sweet)	GWA & SWA
Empyros Triad	L	S-metolachlor (1.75 lb) + atrazine (1.75 lb) + tolpyralate (0.043 lb)	Group 15 Group 5 Group 27	Helena	corn (field, popcorn, sweet)	RU, GWA, & SWA
Enlist Duo	L	2,4-D [choline salt] (1.6 lb) + glyphosate [DMA salt] (1.7 lb)	Group 4 Group 9	Corteva	corn, soybean [*Enlist E3*]	--
Enlist One	L	2,4-D [choline salt] (3.8 lb)	Group 4	Corteva	corn, soybean [*Enlist E3*]	--
Envive	DG	chlorimuron (9.2%) + thifensulfuron (2.9%) + flumioxazin (29.2%)	Group 2 Group 2 Group 14	Corteva	soybean	GWA
EverpreX	EC	S-metolachlor (7.62 lb)	Group 15	Corteva	corn, grain sorghum, soybean	GWA & SWA
Enversa	ME	acetochlor (3 lb) (encapsulated)	Group 15	Corteva	Grain sorghum, soybean	GWA & SWA
Explorer	SC	mesotrione (4 lb)	Group 27	Syngenta	corn (field, popcorn, sweet corn), sorghum (grain, sweet)	SWA
Extreme	L	imazethapyr (0.17 lb) + glyphosate [IPA salt] (2 lb)	Group 2 Group 9	BASF	soybean	--
Fierce	WDG	flumioxazin (33.5%) + pyroxasulfone (42.5%)	Group 14 Group 15	Valent	corn (field), soybean, wheat	GWA & SWA
Fierce MTZ	SC	flumioxazin (0.5 lb) + pyroxasulfone (0.64) + metribuzin (1.5 lb)	Group 14 Group 15 Group 5	Valent	soybean	GWA & SWA
Fierce EZ	SC	flumioxazin (1.34 lb) + pyroxasulfone (1.7 lb)	Group 14 Group 15	Valent	corn (field), soybean	GWA & SWA
Fierce XLT	WDG	chlorimuron (6.67%) flumioxazin (24.57 %) pyroxasulfone (31.7%)	Group 2 Group 14 Group 15	Valent	soybean	GWA & SWA
Finesse Cereal and Fallow	DF	chlorsulfuron (62.5%) + metsulfuron-methyl (12.5%)	Group 2 Group 2	FMC	wheat, barley, triticale	--
FirstAct	EC	quizalofop P-ethyl (0.83 lb)	Group 1	ADAMA	sorghum (*quizalofop-resistant*)	--
FirstRate	WDG	cloransulam (84%)	Group 2	AMVAC	soybean	GWA & SWA
FirstShot SG (with TotalSol)	SG	thifensulfuron (25%) + tribenuron (25%)	Group 2 Group 2	FMC	corn (field), grain sorghum, soybean, wheat, barley, fallow	GWA & SWA
Flexstar	L	fomesafen (1.88 lb)	Group 14	Syngenta	soybean	GWA & SWA
Flexstar GT 3.5	SL	fomesafen (0.56 lb) + glyphosate (2.26 lb)	Group 14 Group 9	Syngenta	soybean [glyphosate-tolerant]	GWA & SWA
Forfeit 280	SL	glufosinate (2.34lb)	Group 10	Loveland	corn (field), soybean [glufosinate-tolerant]	--
FulTime NXT	ME	acetochlor (2.7 lb) + atrazine (1.34 lb)	Group 15 Group 5	Corteva	corn (field, popcorn, sweet)	RU, GWA, & SWA
Fusilade DX	EC	fluazifop-P-butyl (2 lb)	Group 1	Syngenta	soybean	GWA & SWA
Fusion	EC	fluazifop-P-butyl (2 lb) + fenoxaprop-P-ethyl (0.56 lb)	Group 1 Group 1	Syngenta	soybean	GWA
Glory	DF	metribuzin (75%)	Group 5	ADAMA	Corn (field), soybean, wheat (tolerant varieties)	GWA
Glory 4L	SC	metribuzin (4 lb)	Group 5	ADAMA	Corn (field), soybean, wheat (tolerant varieties)	GWA

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Trade Name*	Formulation	Active Ingredient	MOA Group#	Manufacturer	Crops**	Restricted Use & Advisories***
Gramoxone SL 3.0	SL	paraquat (3 lb)	Group 22	Syngenta	corn (field, popcorn), grain sorghum, soybean, wheat, barley	RU
Grapple	SG	rimsulfuron (25%)	Group 2	NuFarm	corn (field)	SWA
Halex GT	EC	S-metholachlor (2.09) + glyphosate (2.09) + mesotrione (0.209)	Group 15 Group 9 Group 27	Syngenta	corn (Glyphosate-Tolerant hybrids)	GWA & SWA
Harmony Extra SG (with TotalSol)	SG	thifensulfuron (33.33%) + tribenuron (16.67%)	Group 2 Group 2	FMC	wheat, barley, oats, corn(field), grain sorghum, soybean, fallow	GWA & SWA
Harmony SG (with TotalSol)	SG	thifensulfuron (50%)	Group 2	FMC	wheat, barley, oats, corn (field), grain sorghum, soybean, fallow	GWA & SWA
Harness	EC	acetochlor (7 lb) + furilazole (safener)	Group 15	Bayer CropScience	corn (field, popcorn)	GWA & SWA
Harness Max	SC	acetochlor (3.52 lb) + mesotrione (0.33 lb)	Group 15 Group 27	Bayer CropScience	corn (field, popcorn)	GWA & SWA
Harness Xtra 5.6L	SC	acetochlor (3.1 lb) + atrazine (2.5 lb) + furilazole (safener)	Group 15 Group 5	Bayer CropScience	corn (field, popcorn)	RU, GWA, & SWA
Helmquat 3SL	L	paraquat (3 lb)	Group 22	HELM AGRO	corn (field, popcorn), grain sorghum, soybean, wheat, barley	RU
Honcho K6	L	glyphosate (Potassium salt)	Group 9	Bayer CropScience	corn (field, popcorn), grain sorghum, soybean, wheat, barley	--
Honcho Plus	L	glyphosate (isopropylamine salt)	Group 9	Bayer CropScience	corn (field, popcorn), grain sorghum, soybean, wheat, barley	--
Hornet	WDG	flumetsulam (18.5%) + clopyralid (50%)	Group 2 Group 4	AMVAC	corn (field)	--
Huskie	EC	pyrasulfotole (0.31 lb) + bromoxynil (1.75 lb)	Group 27 Group 6	Bayer CropScience	wheat, barley, grain sorghum	GWA & SWA
ImiFlex	SL	imazamox (1 lb)	Group 2	UPL	sorghum [*Advanta igrowth tolerant*], soybean	GWA & SWA
Impact	SC	topramezone (2.8 lb)	Group 27	AMVAC	corn (field, popcorn, sweet)	--
Impact Core	EC	topramezone (0.071 lb) + acetochlor (7.08 lb)	Group 27 Group 15	AMVAC	corn (field, popcorn)	GWA & SWA
Impact Z	S	topramezone (0.26 lb) + atrazine (4 lb)	Group 27 Group 5	AMVAC	corn (field, popcorn, sweet)	RU, GWA, & SWA
Incinerate	SC	mesotrione (4 lb)	Group 27	WinField United	corn (field, popcorn, sweet corn), sorghum (grain, sweet)	SWA
Instigate	WDG	rimsulfuron (4.17%) + mesotrione (41.67%)	Group 2 Group 27	Corteva	corn (field)	SWA
Intensity	EC	clethodim (2 lb)	Group 1	Loveland	soybean	--
Intensity One	EC	clethodim (0.97 lb)	Group 1	Loveland	soybean, corn (field)	--
Interline	SL	glufosinate (2.34 lb)	Group 10	UPL	corn (field), soybean [glufosinate-tolerant]	--
Intermoc	SL	glufosinate (1.07 lb) + S-metolachlor (2.5 lb)	Group 10 Group 15	UPL	soybean [glufosinate-tolerant]	GWA & SWA
Intimidator	L	S-metolachlor (3.39 lb) + metribuzin (0.75 lb) + fomesafen (0.67 lb)	Group 15 Group 5 Group 14	Loveland	soybean	GWA & SWA
Katagon	OD	tolpyralate (1 lb) + nicosulfuron (1 lb)	Group 27 Group 2	Helm Agro	corn (field)	GWA & SWA
Keystone NXT	SE	acetochlor (3.1 lb) + atrazine (2.5 lb)	Group 15 Group 5	Corteva	corn (field, popcorn, sweet)	RU, GWA & SWA
Kyber Pro	SC	flumioxazin (0.5 lb) + pyroxasulfone (0.64) + metribuzin (1.5 lb)	Group 14 Group 15 Group 5	Corteva	soybean	GWA & SWA

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Trade Name*	Formulation	Active Ingredient	MOA Group#	Manufacturer	Crops**	Restricted Use & Advisories***
Kyro	S	acetochlor (2.78 lb) + topramezone (0.046 lb) + clopyralid (0.247 lb)	Group 15 Group 27 Group 4	Coreva	corn (field, popcorn, silage)	GWA & SWA
Laudis	S	tembotrione (3.5 lb)	Group 27	Bayer CropScience	corn (field, popcorn, sweet)	GWA & SWA
LeadOff	WDG	rimsulfuron (16.7%) + thifensulfuron-methyl(16.7%)	Group 2 Group 2	Corteva	corn (field), soybean	GWA & SWA
Ledger	EC	S-metolachlor (5.25 lb) + metribuzin (1.25 lb)	Group 15 Group 5	Tenkoz	soybean	GWA & SWA
Lexar EZ	L	S-metolachlor (1.74 lb) + mesotrione (0.224 lb) + atrazine (1.74 lb) + benoxacor (safener)	Group 15 Group 27 Group 5	Syngenta	corn (field, popcorn, sweet), grain sorghum	RU, GWA, & SWA
Liberty ULTRA	SL	glufosinate (1.76 lb)	Group 10	BASF	corn (field), soybean [*glufosinate-tolerant*]	SWA
Linex 4L	L	linuron (4 lb)	Group 7	Tessenderlo Kerley	soybean	GWA & SWA
Lumax EZ	ZC	S-metolachlor (2.49 lb) + mesotrione (0.249 lb) + atrazine (0.935 lb) + benoxacor (safener)	Group 15 Group 27 Group 5	Syngenta	corn (field, popcorn, sweet), grain sorghum	RU, GWA & SWA
Mad Dog; Mad Dog Plus; or Mad Dog 5.4	L	glyphosate (isopropylamine salt)	Group 9	Loveland	corn (field, popcorn), grain sorghum, soybean, wheat, barley	--
Mad Dog K6	L	glyphosate (potassium salt)	Group 9	Loveland	corn (field, popcorn), grain sorghum, soybean, wheat, barley	--
Maestro 2EC	EC	bromoxynil (2 lb)	Group 6	Nufarm	corn (field, popcorn), sorghum, wheat, barley, oats, rye, triticale	--
Maestro 4EC	EC	bromoxynil (4 lb)	Group 6	Nufarm	corn (field, popcorn), sorghum, wheat, barley, oats, rye, triticale	--
Marksman	S	dicamba (1.1 lb) + atrazine (2.1 lb)	Group 4 Group 5	BASF	corn (field, popcorn)	RU, GWA, & SWA
Marvel	L	fluthiacet (0.117 lb) + fomesafen (2.883 lb)	Group 14 Group 14	FMC	soybean	GWA & SWA
Matador-S	EC	S-metolachlor (3.38 lb) + metribuzin (0.75 lb) + imazethapyr (0.17)	Group 15 Group 5 Group2	Loveland	soybean	GWA & SWA
Mauler	L	metribuzin (4 lb)	Group 5	Valent	soybean	GWA
Maverick	SC	mesotrione (0.829 lb) + clopyralid (0.693 lb) + pyroxasulfone (0.693)	Group 27 Group 4 Group 15	Valent	corn (field, silage, yellow popcorn)	GWA & SWA
Metribuzin 75	DF	metribuzin (75%)	Group 5	Loveland	corn(field), soybean, wheat (tolerant varieties)	GWA
Motif	SC	mesotrione (4 lb)	Group 27	UPI	corn (field, sweet, yellow popcorn), sorghum (grain, sweet),	SWA
Moxy 2E	EC	bromoxynil (2 lb)	Group 6	Winfield	corn (field, popcorn), sorghum, wheat, barley, oats, rye, triticale	--
Nimble	WDG	thifensulfuron (50%) + tribenuron (25%)	Group 2 Group 2	FMC	wheat, barley, oats, corn (field), grain sorghum, soybean, fallow	--
Optill	WDG	saflufenacil (17.8%) + imazethapyr (50.2%)	Group 14 Group 2	BASF	corn (CLEARFIELD hybrids), soybean	GWA & SWA
Osprey	WDG	mesosulfuron-methyl (4.5%)	Group 2	Bayer CropScience	wheat	SWA
Outflank	WDG	flumioxazin (51%)	Group 14	ADAMA	corn (field), soybean, wheat	--
Outlook	EC	dimethenamid-P (6 lb)	Group 15	BASF	corn (field, popcorn), grain sorghum, soybean	GWA

Herbicide Glossary

Trade Name*	Formulation	Active Ingredient	MOA Group#	Manufacturer	Crops**	Restricted Use & Advisories***
Panoflex (with TotalSol)	SG	tribenuron (40%) + thifensulfuron (10%)	Group 2 Group 2	FMC	corn (field), soybean, wheat, fallow, burndown, post harvest,	GWA & SWA
Panther	WDG	flumioxazin (51%)	Group 14	Nufarm	corn (field), soybean, wheat	--
Panther MTZ	L	metribuzin (3 lb) + flumioxazin (0.67)	Group 5 Group 14	Nufarm	soybean	GWA & SWA
Panther SC	SC	flumioxazin (4 lb)	Group 14	Nufarm	corn (field), soybean, wheat	--
Panther Pro	L	metribuzin (3 lb) + flumioxazin (0.67 lb) + imazethapyr (0.56 lb)	Group 5 Group 14 Group 2	Nufarm	soybean	GWA
Parallel	EC	metolachlor (7.8 lb) + safener	Group 15	ADAMA	corn (all types), grain & forage sorghum, soybean	GWA & SWA
Parallel Plus	L	metolachlor (2.7 lb) + atrazine (2.8 lb) + benoxacor (safener)	Group 15 Group 5	ADAMA	corn, grain sorghum	RU, GWA, & SWA
Permit	DF	halosulfuron (75%)	Group 2	Gowan	corn (field), grain sorghum	--
Perpetuo	SC	flumiclorac-pentyl (0.59 lb) + pyroxasulfone (1.71 lb)	Group 14 Group 15	Valent	corn (field), soybean	GWA & SWA
Phoenix	EC	lactofen (2 lb)	Group 14	Valent	soybean	--
Pixxaro EC	EC	halauxifen (0.10 lb) + fluroxypyr (2.33 lb)	Group 4 Group 4	Corteva	wheat, barley, and triticale	GWA & SWA
Poast	EC	sethoxydim (1.5 lb)	Group 1	Micro Flo /BASF	soybean, tobacco	--
PowerFlex HL	G	pyroxsulam (13%)	Group 2	Corteva	wheat	--
Prefix	L	S-metolachlor (4.34 lb) + fomesafen (0.95 lb)	Group 15 Group 14	Syngenta	soybean	GWA & SWA
Prequel	WDG	rimsulfuron (15%) + isoxaflutole (30%)	Group 2 Group 27	Corteva	corn (field)	RU, GWA, & SWA
Presidual	EC	S-metolachlor (5.25 lb) + metribuzin (1.25 lb)	Group 15 Group 5	WinField United	Soybean	GWA & SWA
Preview 2.1SC	SC	sulfentrazone (1.12 lb) + metribuzine (2.23 lb)	Group 14 Group 5	UPL	Soybean	GWA & SWA
Princep 4L	L	simazine (4 lb)	Group 5	Syngenta	corn (all types)	GWA
Princep Caliber 90	DF	simazine (90%)	Group 5	Syngenta	corn (all types)	GWA
Prowl 3.3EC	EC	pendimethalin (3.3 lb)	Group 3	BASF	corn (field, popcorn), soybean, tobacco	--
Prowl H_2O	L	pendimethalin (3.8 lb)	Group 3	BASF	corn (field, popcorn), soybean, tobacco, wheat	--
Pruvin	DF	rimsulfuron (25%)	Group 2	ADAMA	corn (field)	SWA
Pursuit	L	imazethapyr (2 lb)	Group 2	BASF	corn (CLEARFIELD hybrids), soybean	--
Python	WDG	flumetsulam (80%)	Group 2	AMVAC	corn (field), soybean	--
Quelex	G	florasulam (10%) + halauxifen-methyl (10.4%) + cloquintocet (safener)	Group 2 Group 4	Corteva	barley, triticale, wheat	GWA & SWA
Raptor 1S	L	imazamox (1 lb)	Group 2	BASF	soybean	--
Realm Q	WDG	rimsulfuron (7.5%) + mesotrione (31.25%) + isoxadifen [safener]	Group 2 Group 27	Corteva	corn (field)	SWA
Reflex	SL	fomesafen (2 lb)	Group 14	Syngenta	soybean	GWA
Resicore	SE	acetochlor (2.8 lb) + mesotrione (0.3 lb) + clopyralid (0.19 lb) + furilazole (safener)	Group 15 Group 27 Group 4	Corteva	corn (field, silage, popcorn)	GWA & SWA
Resicore XL or Resicore REV	ME	acetochlor (2.8 lb) + mesotrione (0.27 lb) + clopyralid (0.19 lb) + furilazole (safener)	Group 15 Group 27 Group 4	Corteva	corn (field, silage, popcorn)	GWA & SWA
Resolve Q	WSG	rimsulfuron (18.4%) + thifensulfuron (4.0%)	Group 2 Group 2	Corteva	corn (field)	--

Herbicide Glossary

Trade Name*	Formulation	Active Ingredient	MOA Group#	Manufacturer	Crops**	Restricted Use & Advisories***
Resource	EC	flumiclorac pentyl (0.86 lb)	Group 14	Valent	corn (field), soybean	--
Restraint	EC	tolpyralate (0.094 lb) + acetochlor (6.404 lb)	Group 15 Group 27	Summit Agro	corn (field, popcorn, sweet)	GWA & SWA
Reviton	SC	tiafenacil (2.83 lb)	Group 14	HELM AGRO	corn (field), wheat, soybean	GWA & SWA
Revulin Q	DF	nicosulfuron (14.4%)+ mesotrione (36.8% + isoxadifen (safener)	Group 2 Group 27	Corteva	corn (field, popcorn, sweet)	SWA
Rifle	L	dicamba (4 lb) (dimethylamine salt)	Group 4	Loveland	corn, grain sorghum, wheat, barley, oats	--
Ringside	SL	fomesafen (2 lb)	Group 14	Syngenta	soybean	GWA
Roundup PowerMAX or WeatherMAX	L	glyphosate (potassium salt)	Group 9	Bayer CropScience	corn (field, popcorn), grain sorghum, soybean, wheat, barley	--
Roundup PowerMAX 3	L	glyphosate (potassium salt)	Group 9	Bayer CropScience	corn (field, popcorn), grain sorghum, soybean, wheat, barley	--
Rumble	L	fomesafen (1.88 lb)	Group 14	ADAMA	soybean	GWA
Sandea	DF	halosulfuron (75%)	Group 2	Gowan	corn (field), grain sorghum	GWA & SWA
Scepter 70DG	DG	imazaquin (70%)	Group 2	BASF / AMVAC	soybean	--
Scout	L	glufosinate (2.34 lb)	Group 10	Valent	corn (field), soybean [glufosinate-tolerant]	--
Section 2EC	EC	clethodim (2 lb)	Group 1	Winfield United	soybean	--
Section Three	EC	clethodim (3 lb)	Group 1	Winfield United	soybean	--
Select 2EC	EC	clethodim (2 lb)	Group 1	Winfield United	soybean	--
Select MAX	EC	clethodim (0.97 lb)	Group 1	Valent	soybean, corn (field)	--
Sequence	L	glyphosate (2.25 lb ae) + S-metolachlor (3 lb)	Group 9 Group 15	Syngenta	corn (field, popcorn), grain & forage sorghum, soybean	GWA & SWA
Shadow	EC	clethodim (2 lb)	Group 1	UPL	soybean	--
Shadow 3EC	EC	clethodim (3 lb)	Group 1	UPL	soybean	--
Shafen Star	L	fomesafen (1.88 lb)	Group 14	Shardra USA	soybean	GWA & SWA
Sharpen	S	saflufenacil (2.85 lb)	Group 14	BASF	corn(field, popcorn),grain sorghum, soybean, wheat, barley, oats	GWA & SWA
Shieldex 400SC	SC	tolpyralate (3.33 lb)	Group 27	Summit Agro	corn (field, sweet, popcorn)	GWA & SWA
Simazat 4L	L	simazine (2 lb)+ atrazine (2 lb)	Group 5 Group 5	Drexel	corn	RU, GWA, & SWA
Sinate	SL	topramezone (0.1 lb) + glufosinate (2.47lb)	Group 27 Group 10	AMVAC	corn (field, sweet) [*LibertyLink*]	--
Solstice	S	fluthiacet methyl (0.216 lb) + mesotrione (4 lb)	Group 14 Group 27	FMC	corn (field), popcorn, sweet)	GWA & SWA
Sonic	DG	sulfentrazone (62.1%) + cloransulam (7.9%)	Group 14 Group 2	Corteva	soybean	GWA & SWA
Sonic Boom	SC	sulfentrazone (1.12 lb) + metribuzine (2.23 lb)	Group 14 Group 5	Corteva	Soybean	GWA & SWA
Status	WDG	diflufenzopyr (16%) + dicamba (40%) + isoxadifen (safener)	Group 19 Group 4	BASF	corn (field)	GWA & SWA
Steadfast Q	WDG	nicosulfuron (25.2%) + rimsulfuron (12.5%) + isoxadifen (safener)	Group 2 Group 2	Corteva	corn (field)	GWA & SWA
Stealth	EC	pendimethalin (3.3 lb)	Group 3	Loveland	corn (field, popcorn), soybean, tobacco	--
Sterling Blue	L	dicamba (4 lb) (dimethylamine salt)	Group 4	Winfield United	corn, grain sorghum, wheat, barley, oats	GWA & SWA

Herbicide Glossary

Trade Name*	Formulation	Active Ingredient	MOA Group#	Manufacturer	Crops**	Restricted Use & Advisories***
Storen	ZC	S-metolachlor (2.69 lb) + mesotrione (0.31 lb) + pyroxasulfone (0.15 lb) + bicyclopyrone (0.075 lb) + benoxacor (safener)	Group 15 Group 27 Group 15 Group 27	Syngenta	corn (field, yellow popcorn, sweet)	GWA & SWA
SureStart II	SE	acetochlor (3.75 lb) + flumetsulam (0.12 lb) + clopyralid (0.38 lb) + furilazole (safener)	Group 15 Group 2 Group4	Corteva	corn (field, silage)	GWA & SWA
Surmise	L	glufosinate (2.34 lb)	Group 10	Albaugh	corn (field), soybean [*glufosinate-tolerant]*	--
Surpass EC	EC	acetochlor (6.4 lb)+ dichlormid (safener)	Group 15	Corteva	corn (field, popcorn, sweet)	GWA
Surpass NXT	SE	acetochlor (7 lb) + dichlormid (safener)	Group 15	Corteva	corn (field, popcorn, sweet)	GWA
Surtain	ZC	saflufenacil (0.626 lb) + pyroxasulfone (1.002 lb)	Group 14 Group 15	BASF	Corn (field)	GWA & SWA
Surveil	WDG	cloransulam 12% + flumioxazin 36%	Group 2 Group 14	Corteva	soybean	GWA & SWA
Synchrony XP	DF	chlorimuron (21.5%) + thifensulfuron (6.9%)	Group 2 Group 2	Corteva	soybean (STS varieties)	--
Tailwind	L	metolachlor (5.25 lb) + metribuzin (1.25 lb)	Group 15 Group 5	ADAMA	soybean	GWA & SWA
Targa 0.88E	EC	quizalofop P-ethyl (0.88 lb)	Group 1	Gowan	soybean	--
Tendovo	ZC	cloransulam (0.065 lb)+ metribuzin (0.642 lb) + S-metolachlor (3.47 lb)	Group 2 Group 5 Group 15	Syngenta	soybean	GWA & SWA
Thunder Master	L	imazethapyr (0.17 lb) + glyphosate [IPA salt] (2 lb)	Group 2 Group 9	Albaugh	Soybean	--
Top Gun	L	fomesafen (2 lb)	Group 14	Loveland	soybean	GWA & SWA
TopNotch	CS	acetochlor (3.2 lb)+ dichlormid (safener)	Group 15	Corteva	corn (field, popcorn, sweet)	--
Torment	L	fomesafen (2 lb) + imazethapyr (0.5 lb)	Group 14 Group 2	ADAMA	soybean	GWA
Total	L	glufosinate (2.34 lb)	Group 10	Winfield	corn (field), soybean [*glufosinate-tolerant]*	--
Tribal	L	S-metolachlor (3.3 lb) + metribuzin (0.62 lb) + sulfentrazone (0.35 lb)	Group 15 Group 5 Group 14	Loveland	soybean	GWA & SWA
TriCor 75DF	DF	metribuzin (75%)	Group 5	UPL	corn (field), soybean, wheat (tolerant varieties)	GWA
TriCor 4F	F	metribuzin (4 lb)	Group 5	UPL	corn (field), soybean, wheat (tolerant varieties)	GWA
TripleFLEX II	SE	acetochlor (3.75 lb) + flumetsulam (0.12 lb) + clopyralid (0.38 lb) + furilazole (safener)	Group 15 Group 2 Group 4	Bayer CropScience	corn (field, silage)	GWA & SWA
Tripzin ZC	ZC	pendimethalin (2.9 lb) + metribuzin (1.1 lb)	Group 3 Group 5	UPL	corn(field), soybean	GWA
Trivence	DG	chloriumuron (3.9%) + flumioxazin (12.8%) + metribuzin (44.6%)	Group 2 Group 14 Group 5	Corteva	soybean	GWA & SWA
TriVolt	SC	thiencarbazone (0.23 lb) + isoxaflutole (0.57 lb) + flufenacet (2.85 lb) + crop safener	Group 2 Group 27 Group 15	Bayer CropScience	corn (field)	RU, GWA, & SWA
Ultra Blazer	L	acifluorfen (2 lb)	Group 14	UPL	soybean	--
Valor EZ	SC	flumioxazin (4 lb)	Group 14	Valent	corn (field), soybean, wheat	--
Valor SX	WDG	flumioxazin (51% WDG)	Group 14	Valent	corn (field), soybean, wheat	--
Valor XLT	DG	flumioxazin (30%) + chlorimuron (10.3%)	Group 14 Group 2	Valent	soybean	--

Herbicide Glossary

Trade Name*	Formulation	Active Ingredient	MOA Group#	Manufacturer	Crops**	Restricted Use & Advisories***
Verdict	EC	saflufenacil (0.57 lb) + dimethenamid-P (5.0 lb)	Group 14 Group 15	BASF	corn (field, popcorn, silage), soybean	GWA & SWA
Vise	L	metolachlor (4,45 lb) + fomesafen (0.95 lb)	Group 15 Group 14	ADAMA	soybean	GWA & SWA
Vision	L	dicamba (3.8 lb ae)	Group 4	Helena	corn, grain sorghum, wheat, barley, oats	--
Volley ATZ NXT	SE	acetochlor (3.1 lb) + atrazine (2.5 lb)	Group 15 Group 5	TENKOZ	corn (field, popcorn)	RU, GWA, & SWA
Volunteer	EC	clethodim (2 lb)	Group 1	TENKOZ	soybean	--
Warrant	CS	acetochlor (3 lb)	Group 15	Bayer CropScience	soybean	GWA & SWA
Weedar XHL	L	2,4-D (6 lb) [DMA & MMA salts]	group 4	Nufarm	corn, sorghum, soybean, small grains	--
Weedmaster	L	dicamba (2.87 lb) + 2,4-D (1.0 lb)	Group 4 Group 4	Nufarm	sorghum	--
Weedmaster XHL	L	2,4-D [DMA & MMA salts] (3.75 lb) + dicamba (1.25 lb)	Group 4 Group 4	Nufarm	corn, sorghum, soybean, small grains	--
Weedone 638	L	2,4-D (2.8 lb ae) [2,4-D acid+butoxyethyl ester]	Group 4	Nufarm	corn, sorghum, soybean, small grains	--
Weedone 650	L	2,4-D (5.64 lb ae) [ethylhexyl ester]	Group 4	Nufarm	corn, sorghum, soybean, small grains	--
Weedone LV4	L	2,4-D (3.8 lb ae) [isooctyl ester]	Group 4	Nufarm	corn, sorghum, soybean, small grains	--
Zalo	SL	quizalofop-P-ethyl (0.23 lb)+ glufosinate (2.29 lb)	Group 1 Group 10	AMVAC	soybean [glufosinate tolerant]	--
Zest WDG	WDG	nicosulfuron (75%)	Group 2	Corteva	grain sorghum [*INZEN Traited*]	GWA & SWA
Zidua	WDG	pyroxasulfone (85%)	Group 15	BASF	corn (field, popcorn, sweet), soybean, wheat	GWA & SWA
Zidua SC	SC	pyroxasulfone (4.17 lb)	Group 15	BASF	corn (field, popcorn, sweet), soybean, wheat	GWA & SWA
Zidua Pro	SC	saflufenacil (0.48 lb) + imazethapyr (1.33 lb) + pyroxasulfone (2.28 lb)	Group 14 Group 2 Group 15	BASF	soybean	GWA & SWA
Zone 4F	F	sulfentrazone (4 lb)	Group 14	HELM AGRO	soybean	GWA & SWA
Zone Assist	SC	sulfentrazone (3.33 lb) + imazethapyr (0.67 lb)	Group14 Group 2	HELM AGRO	soybean	GWA & SWA
Zone Elite	SC	sulfentrazone (6.3 lb) + metolachlor (0.7 lb)	Group 14 Group 15	HELM AGRO	soybean	GWA & SWA
Zone Maxx	DG	sulfentrazone (62.2%) + chlorimuron (7.8%)	Group 14 Group 2	HELM AGRO	soybean	GWA & SWA

*AS=aqueous suspension, CS= capsule suspension DF=dry flowable, EC=emulsifiable concentrate, F=flowable, G=granule, L=liquid, ME= micro-encapsulated, OD= Oil Dispersion, S=suspension, SC=suspension concentrate, SE=suspension emulsion, SG=soluble granule, SL=soluble liquid, WDG=water dispersible granule, WDL=water dispersible liquid, WP=wettable powder, ZC=mixture of a capsule suspension (CS) and suspension concentrate (SC).

****dicamba tolerant:** Roundup Ready 2 Xtend and Roundup Ready 2 XtendFlex; **glufosinate tolerant:** Liberty Link, LLGT27, Enlist E3, and Roundup Ready 2 XtendFlex; **glyphosate tolerant**: Roundup Ready 2, Roundup Ready 2 Xtend, Roundup Ready 2 XtendFlex, LLGT27, and Enlist E3

*** **RU:** Restricted Use Herbicide; **GWA:** Ground Water Advisory; **SWA:** Surface Water Advisory

Glyphosate Products Labeled For Use in Grain Crops

Glyphosate Product	Rate Equivalent *0.56 lb a.e.*/A	Rate Equivalent *0.75 lb a.e.*/A	Rate Equivalent *1.125 lb a.e.*/A	Rate Equivalent *1.5 lb a.e.*/A
3 lb ae/gal (IPA salt)[1] Buccaneer, Buccaneer Plus, Cornerstone Plus, Credit 41Extra, Envy, Envy Intense, Four Power Plus, Glyphogan, Glyphogan Plus, Glyphosate 4 Plus, Glyphosate 41%, Gly Star Original, Gly Star Plus, Gly Star Gold, Honcho Plus, Imitator Plus, Mad Dog, Mad Dog Plus, Makaze, Razor ***3 lb ae/gal (IPA + MOA salt)***[1] Showdown	24 fl oz (1.5 pt)	32 fl oz (2 pt)	48 fl oz (3 pt)	64 fl oz (4 pt)
3.75 lb ae/gal (IPA salt)[1] Buccaneer 5	19 fl oz	26 fl oz	38 fl oz	52 fl oz
4 lb ae/gal (IPA salt)[1] Buccaneer 5 Extra, Cornerstone 5 Plus, Credit 5.4 Extra, Gly Star 5 Extra, Mad Dog 5.4, Sunphosate 5 MAX ***4 lb ae/gal (DMA salt)***[1] Duramax, Durango DMA	18 fl oz	24 fl oz (1.5 pt)	36 fl oz	48 fl oz (3 pt)
4.5 lb ae/gal (K salt)[1] Abundit Edge, Buccaneer K, Cornerstone K, Credit K6, Gly Star K-Plus, Honcho K6, Mad Dog K6, Roundup PowerMAX, Roundup PowerMAX II, Roundup Weather MAX ***4.5 lb ae/gal (IPA + K salt)***[1] Credit Xtreme, Envy Six Max	16 fl oz (1 pt)	21 fl oz	32 fl oz (2 pt)	42 fl oz
4.8 lb ae/gal (K salt)[1] Roundup PowerMAX 3	15 fl oz	20 fl oz	30 fl oz	40 fl oz

[1] IPA = Isopropylamine salt DMA=Dimethylamine K = Potassium salt MOA = Monoammonium salt

Adjuvant and Additive Rate Conversion Tables

Labels of herbicides requiring the use of an adjuvant or additive can vary in how the rate of the adjuvant is presented. Some labels use a percent volume per volume while others may present the rate in pints or quarts per 100 gallons of spray mix. In this publication we present adjuvant and additive rates that match the label language. The following table allows for the quick conversion of adjuvant rates between pt/100gal, qt/100gal, gal/100gal, and percent volume per volume for your convenience.

% V/V[1]	pt/100gal[2]	qt/100gal[3]	gal/100gal[4]
0.125	1	0.5	0.125
0.25	2	1	0.25
0.5	4	2	0.5
1	8	4	1
1.5	12	6	1.5
2	16	8	2
2.5	20	10	2.5

There are numerous liquid ammonium sulfate products now available on the market. While liquid formulations are convenient to handle, the conversion of a liquid formulation to a dry ammonium sulfate rate can be difficult. The following table allows for the conversion of a liquid ammonium sulfate (AMS) solution with 3.4 lb AMS per gallon or 34% AMS (The most common formulation available) to pounds AMS per 100 gallons water or pounds AMS per acre at both 10 and 15 gallon per acre spray volumes.

Liquid AMS[5] Rate			lb ammonium sulfate		
% V/V[1]	qt/100gal[3]	gal/100gal[4]	lb AMS/100gal[6]	lb AMS/A – 10 GPA[7]	lb AMS/A – 15 GPA[8]
2	8	2	-	-	1
2.5	10	2.5	**8.5**	-	-
3	12	3	10.2	1	1.5
3.5	14	3.5	11.9	-	-
4	16	4	13.6	-	2
4.5	18	4.5	15.3	1.5	-
5	20	5	**17**	-	2.5
6	24	6	-	2	3
7.5	30	7.5	-	2.5	-
9	36	9	-	3	-

[1]%v/v = Percent volume of additive per volume of spray mixture
[2]pt/100gal = Pints of additive per 100 gal of spray mixture
[3]qt/100gal = Quarts of additive per 100 gal of spray mixture
[4]gal/100gal = Gallons of additive per 100 gal of spray mixture
[5] Liquid AMS is any liquid ammonium sulfate formulation that contains either 34% AMS or 3.4lb AMS per gallon.
[6]lb AMS/100gal = Pounds ammonium sulfate per 100 gallons of spray water
[7]lb AMS/A – 10 GPA = Pounds ammonium sulfate per acre when spray volume is ten gallons per acre
[8]lb AMS/A – 15 GPA = Pounds ammonium sulfate per acre when spray volume is fifteen gallons per acre

CORN

Precautions on Use of Herbicides Containing Atrazine and Simazine Near Ground or Surface Water

*Herbicide products which contain **atrazin**e (i.e. AAtrex, Acuron, Atrazine, Bicep II Magnum, Brawl II ATZ, Callisto Xtra, Cinch ATZ, Charger Max ATZ, Confidence Xtra, Degree Xtra, Empyros Triad, FulTime NXT, Harness Xtra, Impact Z, Keystone NXT, Lexar EZ, Lumax EZ, Marksman, Parallel Plus, Simazat, Volley ATZ NXT, etc.) and **simazine** (Princep, Simazine, Simazat) have special label restrictions for use near ground or surface waters. Current label guidelines emphasize the use of low rates, buffer zones, and conservation tillage practices as methods for reducing the risk of contamination of water sources. The maximum rate of these herbicide products for early preplant, preplant incorporated, or preemergence applications depends on soil erodibility, as defined by the Natural Resources Conservation Service, and percent of ground covered with plant residue.*

***Rate Restrictions -** For soils that are not highly erodible the maximum use rate for **atrazine** is 2.0 lb ai (active ingredient) per acre and for **simazine** is 2.0 lb ai per acre per season. For highly erodible soils the maximum rate is also 2.0 lb ai per acre for atrazine or simazine if conservation tillage is utilized and at least 30% of the soil is covered with plant residue. If ground cover is less than 30%, the maximum atrazine or simazine rate is 1.6 lb ai/A for highly erodible soils. The total amount of **atrazine** applied to a field should not exceed 2.5 lb ai/A; the total amount for **simazine** should not exceed 2.0 lb ai/A per calendar year. For atrazine the rate for postemergence applications should not exceed 2.0 lb ai/A if no previous atrazine applications were made.*

***Setbacks** - Caution is needed when mixing, loading, or applying **atrazine** and **simazine** near sources of water. According to label directions, atrazine containing products should not be **mixed** or **loaded** within 50 feet of wells (including abandoned wells, drainage wells, or sink holes), rivers, intermittent streams, lakes, or reservoirs. This setback does not apply to the use of properly designed impervious pads and properly diked mixing/loading areas.*

*These products should not be **applied** within 50 feet of wells or sink holes, within 66 feet of points where field surface water enters permanent or intermittent streams or rivers, or within 200 feet around lakes or reservoirs. If applied to highly erodible soils, the 66 feet buffer area must be planted to a crop or seeded with grass. When atrazine or simazine is to be applied near tile riser pipes applicators can choose to:*
1) use a 66 feet setback buffer around the tile riser pipes; 2) apply atrazine and simazine products if field is under no-tillage practices and high crop residue management is maintained; or 3) incorporate atrazine and simazine products in the soil to a depth of 2-3 inches.

Some situations will require a high level of management in order to comply with these restrictions. The maximum labeled rate of atrazine or simazine may not be sufficient to provide season-long control of some problem weeds. Therefore, more emphasis may be needed on using postemergence herbicides, tillage, or crop rotation to help manage such problem weeds as burcucumber, cocklebur, morningglory, giant ragweed, and velvetleaf.

Crop Replant Situations or Volunteer Corn

Emerged corn can be a problem in fields where corn must be replanted due to poor stands, flooding and other unforeseen weather conditions, or where volunteer corn plants emerge prior to planting. For conventional corn hybrids, glyphosate products (eg. Roundup) are often used to kill emerged corn prior to replanting. Although, the majority of modern corn hybrids contain herbicide traits such as Roundup Ready (glyphosate-resistant), Liberty Link (glufosinate-resistant), and/or Enlist (quizalofop-resistant) limiting herbicide options for control of emerged corn prior to replanting. The table below indicates herbicide options depending on the genetic tolerance of the previous corn hybrid grown.

Herbicide options for replanting field corn or control of volunteer corn based on previous corn hybrid grown.

HERBICIDE	Previous Corn Hybrid			
	Conventional hybrid	Roundup Ready	ENLIST hybrid	Liberty Link
Assure II [*ENLIST™ hybrids*]	++	++	X	++
Glyphosate (Roundup, etc.)	++	X	X	++
Paraquat + Atrazine	+	+	+	+
Paraquat + Linex (linuron)	+	+	+	+
Select MAX (clethodim)	++	++	++	+

+ = Recommended; ++ = Highly recommended; X = No control

Herbicide treatments for control of volunteer corn plants or killing existing stands of corn for replant situations.

Assure II (5 to 12 fl oz/A) + COC (1% v/v) or NIS (0.25% v/v)
[Only for use with **ENLIST**™ field corn hybrids]

For control of volunteer corn and certain grassy weeds in field corn hybrids specifically identified as field corn containing the ENLIST herbicide tolerant trait. Apply on ENLIST field corn that is at the V2 through V6 growth stages. Do not apply more than 12 fl oz/A per crop season or more than 2 applications per year.Consult Supplemental label for additional restrictions or application requirements.
***Do not use for corn replant situations*.**

Glyphosate
See page 17 for examples of glyphosate formulations. Consult label for specific product rates and if Ammonium Sulfate or surfactant is needed. Will not control hybrids with Roundup Ready corn technology.

EG. GLYPHOSATE Products	Volunteer Corn Plant Height		
	6" tall (0.38 lb ae/A)	12" tall (0.56 lb ae/A)	20" tall (0.75 lb ae/A)
Roundup (3 lb ae/gal)	16 fl oz	24 floz	32 fl oz
Durango DMA / Duramax (4 lb ae/gal)	12 fl oz	18 fl oz	24 fl oz
Roundup PowerMax (4.5 lb ae/gal)	11 fl oz	16 fl oz	22 fl oz
Roundup PowerMax3 (4.8 lb ae/gal)	10 fl oz	15 fl oz	20 fl oz

Gramoxone SL [3.0] (1.7 to 2.33 pt/A) + Linex 4L (0.67 to 1 pt/A) –OR– Atrazine 4L (0.5 to 1 qt/A)
+
Non-Ionic Surfactant (0.25% to 0.5% v/v)

For control of volunteer corn up to 6 inches in height prior to replanting to field corn. Apply the higher rate of both herbicides for corn 7 to 12 inches in height. Apply with a non-ionic surfactant (NIS). With Atrazine the maximum rate allowed may depend on previous applications. Corn or grain sorghum may be planted at any time following application provided the combined maximum label rate has not been exceeded (consult label).

SELECT MAX –OR– INTENSITY ONE (6 fl oz/A) + NIS (0.25% v/v) + AMS (2.5 to 4 lbs/A)

For control of an existing stand of Roundup Ready field corn or other volunteer corn plants prior to replanting to field corn. Apply on field corn up to 12 inches tall. ***Replant no sooner than 6 days after application.*** Apply with a non-ionic surfactant (NIS) plus Ammonium Sulfate (AMS). Do not use COC or MSO as a spray additive. Do not apply more than 6 oz/A per season.
GENERIC PRODUCTS: For other clethodim products (eg. ARROW, INTENSITY, SECTION) consult individual product for application rates.

BURNDOWN

NOTE: *Herbicides used in no tillage corn production can be applied as either an early preplant treatment (15 to 30 days before planting) or at time of planting (prior to or after planting but before crop emerges). Consult the herbicide labels for specific directions.*

EARLY PREPLANT treatments are soil residual herbicides applied in early spring before weeds emerge, generally 15 to 30 days before planting; thus, the use of a "burndown" herbicide may not be necessary. If vegetation is present, a "burndown" herbicide may be included at time of application to kill the existing weedy vegetation. In addition, use of an early preplant program may require a sequential herbicide treatment applied at or after planting to provide additional length of weed control. Tillage after application may reduce effectiveness of the herbicide treatment.

AT PLANTING treatments include foliar "burndown" herbicides to kill existing vegetation plus a soil residual herbicides for preemergence control of annual grasses and broadleaf weeds. Depending on the amount of vegetation present and herbicide used, spray volume per acre may vary between 10 to 40 gallons of liquid per acre.

Foliar "Burndown" Herbicides for No-Tillage Corn

2,4-D

	Rate/A	2,4-D acid equivalent
2,4-D LV Ester or Amine [3.8 lb ae/gal] (various)	1 to 2 pt/A	0.47 to 0.95 lb ae/A
ENLIST ONE [3.8 lb ae/gal]	1.5 to 2 pt/A	0.71 to 0.95 lb ae/A
WEEDONE 638 [2.8 lb ae/gal]	1.5 to 2.5 pt/A	0.52 to 0.88 lb ae/A
WEEDONE 650 [5.64 lb ae/gal]	0.67 to 1.33 pt/A	0.47 to 0.94 lb ae/A

[NOTE: Rates vary with formulation of 2,4-D product used (consult label)]

Weeds Controlled: For control of annual and certain perennial broadleaf weeds including dandelion, prickly lettuce, marestail, mustard spp., and giant ragweed.

Additives: An additive may be used to increase the effectiveness on some weeds. Consult product labels on use of additives in tank mixtures.

Spray Volume: Apply in 10 or more gallons per acre of spray solution.

General Comments: Product formulations vary from 3 to 6 lb ae/gal. Most 2,4-D ESTER or 2,4-D AMINE products can be applied prior to planting corn (Preplant *7 to 14 days before planting*) or Preemergent from *3 to 5 days after planting* [some product labels indicate any time before or after planting, but before corn emerges]. Be cautious about applications near sensitive broadleaf crops, such as tobacco, soybean, vegetables, or ornamental plantings, and avoid potential injury caused by spray drift.

Tank Mixtures: Consult other herbicide product labels for the tank mix partner(s) to be used. For allowed tank mixtures with Enlist One consult the ***www.EnlistTankMix.com*** website. *Mixing ENLIST ONE with a K-Salt formulated Glyphosate (eg. Roundup PowerMax, Abundit Edge) using an inductor tank or in low water volumes could lead to incompatible mixing. When tank mixing ENLIST ONE with a K-Salt Glyhosate, mixing should occur in a bulk tank with at least half the carrier volume already in the tank.*

DICAMBA

CLARITY, CLASH, DIABLO, DIFLEXX, RIFLE, STERLING BLUE, or VISION [*DGA salt*] (4 lb ae/gal)	8 to 16 fl oz/A (0.5 to 1 pt/A)	dicamba 0.25 to 0.5 lb ae/A

Weeds Controlled: For control of annual and perennial broadleaf weeds including dandelion, annual fleabane, marestail (horseweed), prickly lettuce, musk thistle, and giant ragweed. Consult label for applications to legume sods such as alfalfa or clover.

Additives: Although not required, the addition of a surfactant may improve control of emerged weeds. Use of crop oil concentrate (COC or HSOC) or methylated seed oil (MSO) may also be used but may cause temporary crop response. *Do not tank mix with products that contain ammonium salts such as ammonium sulfate or urea ammonium nitrate*. Consult all product labels on use of additives in tank mixtures.

Spray Volume: Apply at 10 to 50 GPA with ground equipment (consult product label)

General Comments: Apply before, during, or after corn planting to emerged and actively growing broadleaf weeds. For legume sods (e.g. alfalfa and clover) apply after 4-6" of growth has occurred. Be cautious about applications near sensitive broadleaf crops, such as tobacco, soybean, vegetables or ornamental plantings, and avoid potential injury caused by spray drift.

Tank Mixtures: *For tank mixtures allowed consult specific product label*.

ENLIST DUO

ENLIST DUO	3.5 to 4.75 pt/A	2,4-D choline salt:glyphosate 0.7:0.75 to 0.95:1.0 lb ae/A

Weeds Controlled: For control of annual and certain perennial broadleaf weeds including dandelion, prickly lettuce, marestail, mustard spp., and giant ragweed.
Additives: None
Spray Volume: Apply in a broadcast spray volume of 10 to 15 gallons of water per acre.
General Comments: For corn that does not contain the Enlist trait apply Preplant (burndown) 7 to 14 days before planting corn to control emerged grass and broadleaf weeds or Preemergent 3 to 5 days after planting, but before corn emerges. Be cautious about applications near sensitive broadleaf crops, such as tobacco, soybean, vegetables or ornamental plantings, and avoid potential injury caused by spray drift. *CONSULT LABEL FOR SPECIFIC GUIDELINES FOR APPLICATIONS AND PROTECTION OF SENSITIVE AREAS.*
Environmental Statements: Consult the following website for required mitigation measures to manage potential water runoff. https://www.enlist.com/en/enlist-ahead/mitigation-measures-to-manage-runoff.html
Rain Delay: Rainfast within 4 hours following application. To avoid potential field runoff avoid applications within 48 hours of anticipated rainfall.
Rotation Restrictions: During the growing season following application, do not replant treated fields with crops other than those labeled for use with 2,4-D or glyphosate.
Harvest & Forage Restrictions: Do not harvest or feed treated vegetation for at least 8 weeks after application.
Tank Mixtures: ENLIST DUO may only be tank-mixed with products that have been tested. A list of approved products can be found at ***www.EnlistTankmix.com*** website which should be consulted no more than 7 days before applying.

GLUFOSINATE

INTERLINE, CHEETAH, FORFEIT, SURMISE, or TOTAL	32 to 43 fl oz/A	glufosinate-ammonium 0.58 to 0.79 lb ai/A
+	+	
Ammonium Sulfate (AMS)	1.5 to 3 lb/A	

(Anti-foam or drift control agents may be added if needed.)

Weeds Controlled: Chickweed, marestail (horseweed), giant foxtail, crabgrass, johnsongrass (seedling), lambsquarters, common ragweed, giant ragweed, smartweed, vetch.
Timing: Apply preplant or prior to crop emergence of any conventional or transgenic corn hybrid.
Spray Volume: A minimum of 15 GPA; for dense weed canopies use 20 GPA. Use proper nozzles with uniform spray coverage to achieve optimum weed control.

General Comments: Weed control may be reduced when applied to weeds stressed from drought or cool temperatures.
Harvest & Forage Restrictions: Do not apply within 60 days of harvesting corn as a forage or within 70 days of harvesting corn as grain or fodder.
Tank Mixtures: Consult label for tank mixtures options.

HARMONY SG

HARMONY SG 50DF	0.45 to 0.9 oz/A	thifensulfuron-methyl 0.014 to 0.028 lb ai/A
+	+	
Non-ionic Surfactant (NIS)	0.25 to 0.5% v/v	
or	or	
Crop Oil Concentrate (COC)	1% v/v	

(Ammonium nitrogen fertilizer or ammonium sulfate may be added to enhance control)

Weeds Controlled: HARMONY SG provides control of wild garlic, curly dock and wild mustard species
General Comments: Apply pre-plant for "burndown" control of emerged wild garlic and cool-season broadleaf weeds. Apply to actively growing wild garlic and other broadleaf weeds when temperatures are generally above 60 F or more. HARMONY may be applied to corn anytime pre-plant, at-planting (0 days before planting), and/or postemergence. Do not make more than one pre-plant application per growing season.
Tank Mixtures: Tank mixtures in corn may include other pre-plant burndown products such as paraquat, glyphosate (eg. Roundup), dicamba (eg. Banvel/Clarity), and/or 2,4-D (consult individual labels).

GLYPHOSATE

Below are examples of glyphosate formulations and their rates for burndown applications in no-till corn. The application rate of product may vary depending on glyphosate product used. Dry Ammonium Sulfate at 1 to 2% by weight (8.5 to 17 lb/100 gal) may be included with any of the of the following products to improve weed control during dry weather conditions, or when mixed in hard water or with certain other herbicides. Recommendations for use of surfactants will vary depending on product. ALWAYS CONSULT THE PRODUCT LABEL FOR SPECIFIC DIRECTIONS.

Glyphosate formulation[1]	Annuals <6" tall	Annuals >6" tall
3 lb Glyphosate formulations *Numerous products* (3 lb ae/gal)	1.5 to 2 pt/A (24 to 32 fl oz/A) (0.56 to 0.75 lb ae/A)	2 to 3 pt/A (32 to 48 fl oz/A) (0.75 to 1.13 lb ae/A)
Buccaneer 5 (3.75 lb ae/gal)	1.2 to 1.75 pt/A (19 to 28 oz/A) (0.56 to 0.82 lb ae/A)	1.75 to 2.5 pt/A (28 to 40 oz/A) (0.82 to 1.17 lb ae/A)
Durango DMA (4 lb ae/gal)	1.13 to 1.5 pt/A (18 to 24 fl oz/A) (0.56 to 0.75 lb ae/A)	1.5 to 2.25 pt/A (24 to 36 fl oz/A) (0.75 to 1.13 lb ae/A)
Roundup PowerMAX (4.5 lb ae/gal)	1 to 1.4 pt/A (16 to 22 fl oz/A) (0.56 to 0.77 lb ae/A)	1.4 to 2 pt/A (22 to 32 fl oz/A) (0.77 to 1.13 lb ae/A)
Roundup PowerMAX 3 (4.8 lb ae/gal)	0.94 to 1.25 pt/A (15 to 20 fl oz/A) (0.56 to 0.75 lb ae/A)	1.25 – 1.88 pt/A (20 to 30 fl oz/A) (0.75 to 1.13 lb ae/A)
[1] **See page 17 for a detailed list of glyphosate products**		

Annual Weeds Controlled: Annual fleabane, barnyardgrass, brome spp., chickweed, common ragweed, crabgrass, fall panicum, giant foxtail, giant ragweed, henbit, johnsongrass (seedling), lambsquarters, mustards, prickly lettuce, rye, smartweed, wheat.

Perennial Weeds: CONSULT LABEL FOR GLYPHOSATE RATE FOR SPECIFIC PERENNIAL WEED SPECIES. The best control of perennial weeds is usually achieved at late growth stages approaching maturity and when soil moisture is adequate for active plant growth. At normal application times for no-till corn, perennial weeds may not be at the proper growth stage. Control may be reduced if plants are mowed or grazed and not allowed to regrow to the recommended growth stage. Perennial weeds may require multiple applications for optimum control.

Spray Volume: Apply in 10 to 20 gallons of clean water/A when mixing with other herbicides. A spray volume of 3 to 10 gallons of water/A is often recommended when glyphosate is used alone at reduced labeled rates for certain annual weed species.

General Comments: Apply before, during, or after planting but before crop emergence Glyphosate is a translocated herbicide. Rainfall soon after application may reduce effectiveness, some labels indicate a rainfast period of 4 or 6 hours.

Tank Mixtures: Other foliar and soil residual herbicides are labeled for tank mixing with glyphosate products (consult the label of product used).

LIBERTY ULTRA

LIBERY ULTRA + Ammonium Sulfate (AMS)	19 to 29 fl oz/A + 1.5 to 3 lb/A	L-glufosinate-ammonium 0.26 to 0.40 lb ai/A *glufosinate-ammonium equivalent* *0.52 to 0.80 lb ai/A*

(Anti-foam or drift control agents may be added if needed.)

Weeds Controlled: Chickweed, marestail (horseweed), giant foxtail, crabgrass, johnsongrass (seedling), lambsquarters, common ragweed, giant ragweed, smartweed, vetch.
Timing: Apply preplant or prior to crop emergence of any conventional or transgenic corn hybrid.
Spray Volume: A minimum of 15 GPA; for dense weed canopies use 20 GPA. Use nozzles and pressure that delivers medium to coarse spray droplets.

General Comments: Liberty Ultra is a refined glufosinate formulation that contains the active L-isomer of glufosinte as compared to older glufosinate formulations that contained both the active L- and inactive D-isomers of glufosinate. Weed control may be reduced when applied to weeds stressed from drought or cool temperatures.
Environmental Statements: Liberty Ultra contains a Surface Water Advisory statement on the label.
Endangered Species Mitigations: Downwind Spray Drift Buffer (ground application with medium to coarse droplets): 10 ft; Runoff Mitigation Points: 3
Harvest & Forage Restrictions: Do not apply within 60 days of harvesting corn as a forage or within 70 days of harvesting corn as grain or fodder.
Tank Mixtures: Consult label for tank mixtures options.

PARAQUAT

GRAMOXONE SL 3.0	Rate/A	paraquat
Annual weeds 1-3 " tall	1.3 to 1.7 pt/A	0.5 to 0.65 lb ai/A
Annual weeds 3-6 " tall	1.7 to 2.0 pt/A	0.65 to 0.75 lb ai/A
Annual weeds >6 " tall	2.0 to 2.7 pt/A	0.75 to 1.0 lb ai/A
+	+	
Crop Oil Concentrate	4 qt/100gal	
or	or	
Non-ionic Surfactant	1 to 2 pt/100gal	

Weeds Controlled: Controls small annual grasses and broadleaf weeds including foxtails, common chickweed, and henbit. Regrowth may occur from treated perennial grasses and broadleaf weeds, legume sods, perennial grass sods, or grass cover crops such as wheat treated between tillering and boot stage of growth. Also, emerged annual weeds such as marestail, prickly lettuce, smartweed, and giant ragweed may not be effectively controlled. Split applications 5 to 7 days apart may be more effective on certain hard-to-control weeds.

Spray Volume: Apply with at least 10 to 20 GPA of clean water or in a complete clear liquid fertilizer solution. Do not use suspension type fertilizers. A spray volume of more than 20 GPA may be needed if weeds > 6" tall.

General Comments: GRAMOXONE is a non-selective contact-type herbicide classified as a RESTRICTED USE PESTICIDE due to acute toxicity. ***Certified applicators must successfully complete an EPA-approved training program before mixing, loading, and/or applying paraquat.*** Apply as a broadcast spray before, during, or after planting, but before crop emergence. To get effective control it is essential to obtain complete coverage of sprayed vegetation. Split applications may be more effective on hard-to-control grass species. Rainfall occurring within 15 to 30 minutes after application should not reduce effectiveness. Do not use around home gardens, schools, recreational parks, golf courses or playgrounds.

Tank Mixtures: Atrazine, Balance, Banvel, Bicep II Magnum, Callisto, Cinch, Cinch ATZ, Clarity, 2,4-D, Degree, Degree Xtra, Distinct, Dual II Magnum, Frontier, FulTime, Guardsman, Harmony Extra, Harness, Harness Xtra, Hornet, Keystone, Lexar, Lorox, Lumax, Outlook, Princep, Prowl, Python, Sharpen, Simazine, Surpass, TopNotch. Tank mixtures with 2,4-D Ester should be applied 7 to 14 days prior to planting corn.

Foliar "Burndown" Plus Residual Herbicides for No-tillage Corn

ATRAZINE

ATRAZINE 4L	3 to 4 pt/A	atrazine
AATREX NINE-O	1.6 to 2.2 lb/A	1.5 to 2 lb ai/A
+	+	
Crop Oil Concentrate (COC)	1 qt/A	

Weeds Controlled: Black nightshade, burcucumber, cocklebur, jimsonweed, lambsquarters, morningglories, pigweeds, prickly sida, common ragweed, giant ragweed, smartweed, velvetleaf. Can be used to "burndown" emerged small annual weeds (generally less than 3" tall).

Crop Stage: Appy to the soil either preplant incorporated or preemergence at or before planting. ATRAZINE can also be applied up to 30 days before planting, either as a single or split application. For treatments after planting apply before corn reaches 12 inches in height.

General Comments: AATREX 4L or ATRAZINE 4L contains 4 lb ai atrazine per gal. AATREX NINE-0 contains 0.9 lb ai of atrazine per lb product. Low soil moisture or soil pH above 7.0 may increase persistence; whereas, ATRAZINE dissipates more rapidly when soil pH is acidic.

Environmental Statements: ATRAZINE containing products are RESTRICTED-USE pesticides and contain a GROUND and SURFACE WATER ADVISORY statement on the label. Do not use on very permeable soils or where groundwater is close to the soil surface. [NOTE: See page 19 for PRECAUTIONS on use of ATRAZINE (AATREX) near ground or surface water]

Rain Delay: None

Rotation Restrictions: Do not plant small grains or small-seeded legumes and grasses in the fall of the same year or the year following application, or injury may occur. Plant only corn, sorghum or soybeans in the spring following use of ATRAZINE. If applied after June 10, plant only corn or sorghum the following season.

Harvest & Forage Restrictions: Wait 60 days before grazing or feeding forage from treated areas.

Tank Mixtures: Dual, glyphosate, Gramoxone, Princep, Prowl, simazine. Also consult the product label of the tank mix partner(s) to be used. If annual grasses and broadleaf weeds exceed 3 inches in height at time of application, use of 2,4-D, dicamba, glyphosate (eg. Roundup, etc.), or paraquat (eg. Gramoxone) is recommended.

BALANCE FLEXX

BALANCE FLEXX	5 fl oz/A	isoxaflutole 0.078 lb ai/A
+		
Crop Oil Concentrate (COC)		
or		
Methylated Seed Oil (MSO)		

NOTE: Apply up to 6 fl oz/A for applications 8 to 30 days prior to planting [Use lower rates for course soils.]

Weeds Controlled: Foxtails, jimsonweed, lambsquarters, black nightshade, fall panicum, pigweed, common ragweed, smartweed, velvetleaf. Can also "burndown" emerged small annual weeds (generally less than 3" tall). For weeds not controlled by BALANCE FLEXX or when weeds are greater than 3 inches the addition of another "burndown" herbicide such as Gramoxone, glyphosate, or 2,4-D is recommended.

Crop Stage: BALANCE FLEXX may be preplant incorporated or preplant surface-applied up to 21 days prior to corn planting (30 days when applied as a planned sequential program). When applied preemergence apply after planting or behind planter after furrow closure, but before weeds and crop emerge. Corn should be planted a minimum of 1.5 inches deep with complete and firm coverage of the seed furrow to avoid direct contact with the seed. BALANCE FLEXX alone or tank mixed with atrazine can also be applied to corn from spiking through the 2 leaf-collar growth stage (V2).

General Comments: BALANCE FLEXX contains 2 lb ai isoxaflutole per gal plus cyprosulfamide (corn safener). For use on field corn; do not use on other types of corn such as popcorn and sweet corn.

Environmental Statements: BALANCE FLEXX is a RESTRICTED-USE pesticide and has GROUND and SURFACE water advisory statements on the label. Do not apply BALANCE on certain loamy sand and sandy soil types if the water table is less than 25 feet below ground and less than 2% organic matter by weight. BALANCE FLEXX should not be mixed or loaded within 50 feet of any wells, sink holes, perennial or intermittent streams and rivers, and natural or impounded lakes and reservoirs, unless an impervious pad is used.

Rain Delay: None.

Rotation Restrictions: Crops that may be planted include wheat after 4 months; soybeans, barley, popcorn, sweet corn, and grain sorghum after 6 months; and alfalfa after 10 months. Other crops may require an 18 month waiting period with a minimum of 15 inches of cumulative precipitation from time of application to planting of rotational crop.

Harvest & Forage Restrictions: Corn forage harvest is permitted at 45 days or more after an early postemergence treatment.

Tank Mixtures: Atrazine, Bicep II Magnum, 2,4-D, Degree, Degree Xtra, Dual II Magnum, Frontier, FulTime, glufosinate, glyphosate, Gramoxone, Guardsman, Harness, Harness Xtra, , Keystone, Outlook, Princep, Prowl, simazine, TopNotch.

CORVUS

CORVUS + Crop Oil Concentrate (COC) or Methylated Seed Oil (MSO)	4.5 to 5.6 fl oz	thiencarbazone-methyl:isoxaflutole 0.026:0.07 to 0.033:0.08 lb ai/A

Weeds Controlled: Barnyardgrass, crabgrass, foxtails, lambsquarters, black nightshade, fall panicum, pigweed, common ragweed, smartweed, velvetleaf. Can also "burndown" emerged small annual weeds (generally less than 6" tall). For weeds not controlled by CORVUS or when weeds are greater than 6 inches the addition of another "burndown" herbicide such as paraquat, glyphosate, or 2,4-D is recommended.
Crop Stage: CORVUS may be preplant incorporated or preplant surface-applied up to 21 days prior to corn planting (30 days when applied as a planned sequential program). When applied preemergence apply after planting or behind planter after furrow closure, but before weeds emerge. Corn should be planted a minimum of 1.5 inches deep with complete and firm coverage of the seed furrow to avoid direct contact with the seed. CORVUS alone or tank mixed with atrazine can also be applied to corn from spiking through the 2 leaf-collar (V2) growth stage.
General Comments: CORVUS is a premixture containing thiencarbazone-methyl + isoxaflutole [0.75 + 1.88 lb ai per gal] plus cyprosulfamide (corn safener). For use on field corn and corn grown for silage; do not use on other types of corn such as popcorn and sweet corn. Do not use CORVUS in the same season as Counter, Dyfonate, Lorsban, Thimet, or any other organophosphate or carbamate insecticide. Poncho, Aztec, Regent, and Force insecticides may be used prior to application.
Environmental Statements: CORVUS is a RESTRICTED-USE pesticide and has GROUND and SURFACE water advisory statements on the label. Do not apply on certain loamy sand and sandy soil types found in Kentucky if the water table is less than 25 feet below ground and less than 2% organic matter by weight. CORVUS should not be mixed or loaded within 50 feet of any wells, sink holes, perennial or intermittent streams and rivers, and natural or impounded lakes and reservoirs, unless an impervious pad is used.
Rain Delay: None
Rotation Restrictions: Crops that may be planted include wheat after 4 months; soybeans, barley, popcorn, and sweet corn after 9 months; and alfalfa, canola, oats, and sorghum after 17 months. Rotational interval may be longer for some crops when soil pH is 7.5 or above. Other crops may require a 17 to 24 month waiting period with a minimum of 30 inches of cumulative precipitation from time of application to planting of rotational crop.
Harvest & Forage Restrictions: Do not harvest field corn for forage within 45 days of application
Tank Mixtures: Anthem, atrazine, dicamba, 2,4-D, glyphosate, Laudis, Liberty (glufosinate), paraquat, simazine (Princep), Surpass, Verdict, Zidua

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FIERCE

FIERCE (76WDG) or **FIERCE EZ** (3.04 SC)	3 oz/A or 6 fl oz/A	flumioxazin:pyroxasulfone 0.064:0.080 lb ai/A

Weeds Controlled: Crabgrass, fall panicum, foxtail, black nightshade, lambsquarters, smooth pigweed, prickly sida, common ragweed, waterhemp.
Crop Stage: Apply FIERCE or FIERCE EZ to field corn between 7 and 30 days early pre-plant [EPP] prior to planting. Do not use on popcorn, sweet corn or corn grown for seed.
General Comments: ***Apply at least 7 days before corn planting****. Use only on no-till or minimum tillage fields where last year's crop residue has not been incorporated into the soil.* For control of emerged weeds, apply FIERCE with an appropriate tank mix partner. Use a minimum of 15 gal of spray solution per acre to ensure thorough coverage. Spray equipment must be cleaned each day following application (consult label).
Environmental Statements: FIERCE has ground and surface water advisory statements on the label.
Rain Delay: 1 hour
Rotation Restrictions: Crops that may be planted include soybeans immediately; field corn 7 days after FIERCE application (for minimum and no-till situations) or 30 days when FIERCE has been applied to conventional tilled areas; wheat 4 months; and other crops 18 months.
Harvest & Forage Restrictions: None indicated.
Tank Mixtures: Tank mix partners for burndown and/or residual control include 2,4-D LVE, atrazine, Basis, dicamba, Express, glyphosate, Hornet, paraquat, Python, Resolve, or simazine.

INSTIGATE

INSTIGATE + Crop Oil Concentrate (COC) or Modified Seed Oil (MSO) or Non-ionic Surfactant (NIS) + Nitrogen based adjuvant (UAN or AMS) [unless prohibited by tankmix partner]	5.25 to 6 oz/A	rimsulfuron:mesotrione 0.014:0.14 to 0.016:0.16 lb ai/A

Weeds Controlled: For "burndown" control of small annual weeds (generally less than 3" tall) and residual control for barnyardgrass, foxtail, lambsquarters, black nightsade, pigweeds, common ragweed.

Crop Stage: May be applied either preplant surface (up to 14 days prior to planting), preplant incorporated, preemergence, or at a maximum rate of 5.4 oz/A as an early post emergence treatment (up through 2 leaf collars) to field corn.

General Comments: INSTIGATE is a selective herbicide for burndown and residual control of certain annual grass and broadleaf weeds in field corn. INSTIGATE 45.8% WDG is a premixture containing rimisulfuron + mesotrione [4.17% + 41.67% per lb product]. INSTIGATE may be applied at 5.25 to 5.4 oz/A for early postemergence rescue treatment on corn exhibiting up to 2 leaf collars. Do not apply more than 1 oz active ingredient rimsulfuron per acre or 3.85 oz active ingredient mesotrione in a growing season from all product sources that contain rimisulfuron (eg. Prequel, Realm Q, Steadfast Q, or Resolve) or mesotrione (eg. Callisto, etc.). DO NOT apply to corn when certain soil insecticides such as "Counter" will be applied within 60 days of application. Consult label directions before applying with other insecticides such as Lorsban or Thimet. Crop injury may occur under certain environmental conditions such as cold weather and/or wet soils.

Rainfall Delay: Not indicated on the label.

Rotation Restrictions: Rotational crops which may be planted include field corn anytime; winter cereals (wheat, etc.) after 9 months; alfalfa, canola, popcorn, sweet corn, sorghum, and soybean after 10 months following INSTIGATE application. Other crops may require an 18 month waiting period.

Harvest & Forage Restrictions: Do not graze, feed forage, grain or fodder (stover) from treated areas to livestock within 45 days of application.

Tank Mixtures: For improved control of emerged weeds may be tank mixed with glyphosate, glufosinate, 2,4-D, and dicamba products. May also be tank mixed with other soil-residual herbicides for added grass and broadleaf control such as Atrazine, Breakfree brands and Cinch brand herbicides.

LEADOFF or CRUSHER

LEADOFF or **CRUSHER** + Crop Oil Concentrate (COC) or Modified Seed Oil (MSO) or Non-ionic Surfactant (NIS) + Nitrogen based adjuvant (UAN or AMS)	1.5 oz/A or 1.0 oz/A	rimsulfuron:thifensulfuron-methyl 0.016:0.016 lb ai/A

If applied with glyphosate or glufosinate that contains a built-in adjuvant, no additional surfactant is needed.

Weeds Controlled: For "burndown" control of common chickweed, curly dock, henbit, and certain mustard species; and residual control for barnyardgrass, foxtail, lambsquarters, pigweeds.

Crop Stage: Apply preplant after fall harvest through early spring, up to planting; or preemergence anytime after planting but before corn emergence. Do not apply postemergence to corn. Consult label and your seed supplier before applying to corn hybrids potentially sensitive to ALS-type herbicides.

General Comments: LEADOFF 33.4% WDG and CRUSHER 50% WDG are premixtures containing rimisulfuron + thifensulfuron-methyl Similar products include BASIS and BASIS Blend. These products are selective herbicides for burndown and residual control of certain annual grass and broadleaf weeds. Do not apply more than 1 oz active ingredient rimsulfuron per acre per crop year from all product sources that contain rimisulfuron (eg. Leadoff, Crusher, Prequel, Realm Q, Steadfast Q, Resolve Q, or Solida). DO NOT apply to corn when certain soil insecticides such as "Counter" will be applied within 60 days of application. Consult label directions before applying LEADOFF or CRUSHER with other insecticides such as Lorsdan or Thimet. Crop injury may occur under certain environmental conditions such as cold weather and/or wet soils.

Rainfall Delay: Not indicated on the label.

Rotation Restrictions: Rotational crops which may be planted include field corn anytime; soybeans after 1 month [when LEADOFF is applied at >1.5 to 2 oz/A wait 2 months]; winter cereals (wheat) after 3 months; or alfalfa, canola, popcorn, sweet corn, red clover, sorghum, and tobacco after 10 months following application. Tobacco can be planted 1.5 months after LEADOFF application. Other crops may require an 18 month waiting period. Consult label for additional crop rotation intervals for certain crops.

Harvest & Forage Restrictions: Do not graze, feed forage, grain or fodder from treated areas to livestock within 30 days of application.

Tank Mixtures: For improved control of emerged weeds may be tank mixed with glyphosate, paraquat, glufosinate, 2,4-D LVE, and dicamba products. LEADOFF may also be tank mixed with other soil-residual herbicides for added residual control such as Atrazine and Breakfree brand herbicides.

SHARPEN

SHARPEN	2.5 to 3 fl oz/A	saflufenacil
+	+	0.056 to 0.067 lb ai/A
Methylated Seed Oil (MSO)	1 % v/v	
+	+	
Ammonium Sulfate (AMS)	8.5 to 17 lb/100 gal	
or	or	
Urea Ammonium Nitrate (UAN)	1.25 to 2.5 gal/100 gal	

Weeds Controlled: For "burndown" and residual control of selected broadleaf weeds such as cocklebur, marestail (horseweed), morningglory, giant ragweed, and velvetleaf.

Crop Stage: May be preplant surface applied up to 14 days before planting field corn (30 days when applied as a planned sequential program with a postemergence herbicide). DO NOT apply after corn emergence or severe crop injury will occur.

General Comments: SHARPEN contains 2.85 lb ai saflufenacil per gal. Spray volumes of 15 to 20 GPA are recommended to increase spray coverage and optimize burndown activity. If limited or no residual broadleaf weed control is desired, SHARPEN can be applied at 1.0 fl oz/A with an adjuvant system any time prior to corn emergence. For control of emerged grasses and/or broadleaf weeds not controlled by SHARPEN a tank mix with another herbicide (such as glyphosate) is recommended. The use of AMS is recommended when mixing SHARPEN with glyphosate-based herbicides. Do not apply SHARPEN when an at-planting application of an organophosphate or carbamate insecticide is planned or has been used (consult label for use of other insecticides).

Environmental Statements: SHARPEN has Ground and Surface water advisory statements on the label.

Rain Delay: SHARPEN is rainfast 1 hour after application.

Rotation Restrictions: Corn (field), sorghum, and small grains may be replanted immediately. For sweet corn wait a minimum of 2 months; soybean 2 to 3 months (consult label) after application; Other crops may require a minimal of at least 6 months. Crop rotation interval may be reduced for lower use rates.

Harvest & Forage Restrictions: Do not graze or feed forage for 80 days following application.

Tank Mixtures: SHARPEN can be tank mixed or applied sequentially with atrazine, Clarity, glyphosate (eg. Roundup), Harness, Harness Xtra, Outlook, Prowl H2O, Status, Verdict.

TRIVOLT

TRIVOLT	20 fl oz/A	thiencarbazone-methyl:isoxaflutole:flufenacet
+		0.036:0.089:0.445 lb ai/A
Crop Oil Concentrate (COC)		
or		
Methylated Seed Oil (MSO)		

Weeds Controlled: Barnyardgrass, crabgrass, foxtails, lambsquarters, black nightshade, fall panicum, Palmer amaranth, smooth pigweed, common ragweed, smartweed, velvetleaf, waterhemp. Can also "burndown" emerged small annual weeds (generally less than 6" tall). For weeds not controlled by TRIVOLOT or when weeds are greater than 6 inches the addition of another "burndown" herbicide such as paraquat, glyphosate, glufosinate, or 2,4-D is recommended.

Crop Stage: TRIVOLT may be preplant surface-applied or preplant incorporated up to 21 days prior to corn planting (30 days when applied as a planned sequential program). When applied preemergence apply after planting or behind planter after furrow closure, but before weeds emerge. Corn should be planted a minimum of 1.5 inches deep with complete and firm coverage of the seed furrow to avoid direct contact with the seed. TRIVOLT tank mixed with atrazine can also be applied to corn from spiking through the 2 leaf-collar (V2) growth stage. Do not tank mix with other herbicides or adjuvants for early postemergence applicaions.

General Comments: TRIVOLT is a premixture containing thiencarbazone-methyl + isoxaflutole + flufenacet [0.23 + 0.57 + 2.85 lb ai per gal] plus corn seed safener. For use on field corn and corn grown for silage; do not use on other types of corn such as popcorn and sweet corn. Do not use TRIVOLT in the same season as certain soil-applied organophosphate or carbamate insecticides (consult label for insecticide interactions).

Environmental Statements: TRIVOLT is a RESTRICTED-USE pesticide and has GROUND and SURFACE water advisory statements on the label. Use in areas where soils are permeable, particularly where the water table is shallow, may result in ground water contamination. Do not mix or load within 50 feet of any wells, sink holes, perennial or intermittent streams and rivers, and natural or impounded lakes and reservoirs, unless an impervious pad is used.

Rain Delay: None.

Rotation Restrictions: Crops that may be planted include field corn anytime; wheat after 4 months; soybeans and sweet corn after 9 months; barley, rye, popcorn and tobacco after 12 months; and alfalfa, sorghum, oats, and canola after 17 months following application. Rotational interval may be longer for some crops when soil pH is 7.5 or above. Some crops may require a 17 to 24 month waiting period with a minimum of 15 to 30 inches of cumulative precipitation from time of application to planting of rotational crop (consult label).

Harvest & Forage Restrictions: Do not harvest field corn for forage within 45 days of application.

Tank Mixtures: Atrazine, dicamba, 2,4-D, glufosinate, glyphosate, paraquat.

VERDICT

VERDICT	13 to 15 fl oz/A	saflufenacil:dimethenamid-P
+	+	0.058:0.51 to 0.067:0.59 lb ai/A
Methylated Seed Oil (MSO)	1 % v/v	
+	+	
Ammonium Sulfate (AMS)	8.5 to 17 lb/100 gal	
or	or	
Urea Ammonium Nitrate (UAN)	1.25 to 2.5 gal/100 gal	

Weeds Controlled: Barnyardgrass, crabgrass, fall panicum, foxtails, black nightshade, cocklebur, lambsquarters, morningglory, pigweed, prickly sida, common ragweed, giant ragweed, smartweed, velvetleaf.

Crop Stage: Apply as an early preplant surface (15 to 30 days EPP), preplant surface or preplant incorporated treatment (<14 days), preemergence, or as a burndown with residual control of certain broadleaf weeds. Do not apply after corn emergence or severe crop injury will occur.

General Comments: VERDICT contains saflufenacil + diethenamid-P [0.57 + 5.0 lb ai per gal]. When used as part of a burndown plus residual weed control program an adjuvant system is required for optimum burndown activity. Do not apply more than 25 fl oz/A of VERDICT per crop season or exceed a maximum amount of 0.134 lb ai/A saflufenacil. For control of emerged grasses and/or broadleaf weeds not controlled by VERDICT a tank mix with another herbicide (such as glyphosate) is recommended. The use of AMS is recommended when mixing VERDICT with glyphosate-based herbicides. Do not apply where an at-planting application of an organophosphate or carbamate insecticide is planned (consult label for use with other soil insecticides).

Environmental Statements: GROUND and SURFACE WATER ADVISORY statements on the label.

Rain Delay: Rainfast 1 hour after application for burndown activity. For residual control applications must be activated by at least 1/2 inch rainfall.

Rotation Restrictions: Field corn, popcorn, and grain sorghum may be replanted immediately after crop failure. Fall-seeded small grains may be planted 4 months or more following treatment; soybean may be planted 2 months after application on medium and fine textured soil or course soil with >2% OM. Other rotational crop may be planted the following spring.

Harvest & Forage Restrictions: Corn may be harvested, fed, or grazed 80 or more days after application.

Tank Mixtures: VERDICT may be tank mixed or applied sequentially with Atrazine, Clarity, glyphosate (eg. Roundup), Sharpen, Status.

Relative Response of Cover Crops and Weeds to Burndown Herbicides

HERBICIDE	COVER CROPS									WEEDS																
	Alfalfa	Clvoer, Red	Clover, White	Fescue, Tall	Orchardgrass	Rye	Ryegrass, Annual	Vetch, Hairy	Wheat	Brome spp.	Corn, Volunteer	Chickweed, Common	Dandelion	Dock, Curly	Fleabane, Annual	Foxtails	Henbit/Deadnettle	Johnsongrass (seedling)	Johnsongrass (rhizome)	Lettuce, Prickly	Marestail (Horseweed)#	Mustard spp.	Pokeweed	Ragweed, Giant	Thistle, Musk	Wild Garlic
Atrazine + Oil	3	5	4	6	3	6	5	6	6	7	0	**9**	4	4	-	6	**8**	0	0	**8**	7	**8**	2	**8**	4	-
Dicamba[1] (Clarity, etc)	**8**	**9**	**8**	0	0	0	0	**8**	0	0	0	7	**8**	7	**8**	0	6	0	0	**9**	**8**	7	6	**9**	7	6
2,4-D Ester / Enlist One	6	**8**	5	0	0	0	0	**8**	0	0	0	5	**8**	4	6	0	4	0	0	**8**	**8**	**8**	5	**8**	7	6
Enlist Duo	6	7	5	7	5	**8**	7	8	**9**	**9**	**9***	**9**	**8**	6	**8**	**9**	**8**	**9**	**8**	**8**	**8**	**8**	6	**9**	7	6
Harmony SG	-	-	-	-	-	0	0	7	0	0	0	**6**	-	**8**	-	-	**6**	0	0	-	-	**8**	-	-	-	**8**
Glufosinate (Liberty Ultra, etc.) [3]	-	-	-	-	-	-	3	**8**	5	-	7*	**9**	6	7	-	**8**	7	**8**	3	**8**	**8**	**8**	-	**8**	-	-
Glyphosate [2]	6	6	5	7	5	**8**	7	6	**9**	**9**	**9***	**9**	6	4	**8**	**9**	**8**	**9**	**8**	**8**	**8***	**8**	6	**9**	6	-
Leadoff / Crusher	-	-	-	-	-	0	0	7	0	0	0	**9**	**8**	**8**	-	0	**8**	0	0	6	7	**8**	-	-	-	-
Paraquat (gramoxone)	3	7	5	5	3	7	6	7	7	7	6	**9**	4	2	6	**9**	**8**	7	3	5	4	6	4	7	3	**8**
Paraquat (gramoxone) + Atrazine	4	7	5	**8**	6	**8**	7	**8**	**9**	**8**	7	**9**	7	5	6	**9**	**9**	7	3	**9**	**8**	**9**	4	**9**	5	**8**
Sharpen	4	6	5	0	0	2	2	6	2	2	0	7	5	5	7	**2**	6	0	0	**8**	**8**	**8**	0	**8**	5	-
Verdict	4	6	5	0	0	2	2	6	2	2	0	7	5	5	7	**2**	6	0	0	**8**	**8**	**8**	0	**8**	5	-

GOOD= 8-9 **FAIR = 6-7** **POOR = 5 or less** **- Insufficient Data**

This table should be used only as a guide. *Information presented in this table is the relative burndown response of emerged plants to herbicides applied at normal rates for no-till corn. This information generally does not reflect soil residual effects of the herbicides. The relative response values are based on a numerical scale from 0 to 9 and compare effectiveness of herbicides to control a particular cover crop or weed species. A herbicide may perform better or worse than indicated in the table due to weed size, environmental conditions or when tank mixed with other herbicides. If a farmer is achieving satisfactory results under their conditions, they should not necessarily change products as a result of information in this table.*

[1] Examples of DICAMBA products labeled for use as a burndown treatment in corn include Clarity, Clash, Diablo, DiFlexx, Rifle, Sterling Blue, and Vision.

[2] See page 17 for list of glyphosate products labeled for use in grain crops. Consult the label for specific use directions including use of additives, if needed.

[3] Environmental stress conditions such as cool temperatures and cloudy weather may limit burndown activity for weed control with LIBERTY ULTRA (glufosinate-ammonium)

Glyphosate will not effectively control biotypes of horseweed (marestail) that are tolerant to this herbicide.

* Volunteer corn plants containing genetic traits with herbicide tolerance (eg. RR-corn hybrids or LL-corn hybrids) will not be effectively controlled.

Guide to Weed and Crop Response to Soil Applied Corn Herbicides[1]

	Barnyardgrass	Broadleaf Signalgrass	Crabgrass	Fall Panicum	Foxtail	Johnsongrass (seedling)	Johnsongrass (rhizome)	Shattercane (Wild Cane)	Yellow Nutsedge	Black Nightshade	Burcucumber	Cocklebur	Lambsquarters	Marestail (Horseweed)	Morningglory	Palmer Amaranth	Pigweed, Smooth	Prickly Sida (Teaweed)	Ragweed, Common	Ragweed, Giant (Horseweed)	Sicklepod	Smartweed	Velvetleaf	Waterhemp	Crop Response[2]
Acetochlor[3]	8	7	8	8	9	5	0	5	7	8	0	0	7	0	0	8	8	0	6	0	4	5	0	8	1
Acuron (**PRE only**)	8	7	8	7	9	5	0	5	7	9	6	7	9	8	7	9	9	7	8	7	-	9	9	9	2
Acuron Flexi (**PRE only**)	8	7	8	7	9	5	0	5	7	9	5	7	9	8	6	9	9	7	8	7	-	9	9	9	2
Atrazine	6	4	5	3	6	0	0	0	5	9	7	8	9	7	8	9	9	9	9	8	7	9	8	9	0
Balance Flexx	7	7	6	8	8	6	0	6	2	9	7	3	9	8	4	7	9	7	8	6	4	8	9	8	2
Bicep II Magnum / Cinch ATZ	8	7	8	8	9	5	0	5	7	9	6	8	9	7	7	9	9	9	9	7	6	9	7	9	1
Calibra	8	7	8	8	9	5	0	5	7	9	-	6	9	7	6	8	9	-	7	6	-	8	8	8	1
Corvus	8	7	8	8	8	6	0	6	4	9	7	6	9	8	6	7	9	-	8	6	-	8	9	8	2
Degree Xtra/HarnessXtra/FulTime/ Breakfree ATZ / Keystone	8	7	8	8	9	5	0	5	7	9	5	8	9	7	7	9	9	9	9	7	6	9	7	9	1
Dual II Magnum / Cinch	8	7	8	8	9	5	0	5	7	8	0	0	5	0	0	7	7	0	5	0	4	5	0	8	1
Fierce[4] (**PRE only**)	8	7	8	8	8	6	2	-	-	8	-	6	8	7	7	8	9	8	8	6	-	7	7	9	2
Harness MAX	8	7	8	8	9	5	0	5	7	8	7	8	9	6	7	8	8	5	7	7	5	8	9	8	2
Instigate[4]	8	6	6	7	9	5	0	-	4	8	6	7	8	-	6	8	9	-	8	6	-	7	7	6	2
LeadOff[4] / Crusher[4]	8	-	6	6	8	-	-	2	-	-	-	6	7	-	6	-	8	-	7	3	-	6	6	-	2
Lexar EZ (**PRE only**)	8	7	8	8	9	5	0	5	7	9	6	7	9	8	7	9	9	7	8	7	5	9	9	9	2
Maverick	8	7	8	7	9	5	0	5	6	8	6	7	9	-	7	8	9	7	8	7	6	8	8	8	1
Outlook	8	7	8	8	9	5	0	5	7	8	0	0	6	0	0	8	8	0	5	0	4	5	0	8	1
Princep	8	5	7	6	8	2	0	3	2	9	6	7	9	-	7	9	9	9	9	7	7	9	8	9	0
Prowl (**PRE only**)	8	7	8	8	9	6	2	6	0	0	0	0	8	0	2	7	8	2	0	0	0	6	6	7	2
Resicore/Resicore XL/Resicore REV	8	7	8	8	9	5	0	5	6	8	-	7	9	-	7	7	9	6	8	7	7	8	7	7	2
Sharpen	2	2	2	2	2	0	0	2	-	8	-	7	8	8	8	8	8	7	8	7	5	8	8	8	1
Storen	8	7	8	7	9	6	0	6	7	9	5	7	9	8	7	9	9	7	8	7	-	9	9	9	2
SureStart[4] / TripleFlex[4]	8	7	8	7	9	5	0	5	6	8	3	8	9	-	7	8	9	8	8	6	6	8	7	8	1
Surtain	8	7	8	8	8	5	0	6	5	8	-	6	8	8	8	8	8	7	8	7	5	8	8	8	1
TriVolt	8	7	8	8	8	6	0	6	6	9	7	6	9	8	6	7	9	-	8	6	-	8	9	8	2
Verdict[4]	8	7	8	8	9	5	0	5	7	8	-	7	8	8	8	9	9	7	9	7	5	9	8	9	1
Zidua	8	7	8	8	9	5	0	6	5	8	-	5	6	5	0	8	8	6	7	3	-	6	7	8	1

GOOD = 8-9 **FAIR = 6-7** **POOR = 5 or less** **- Insufficient Data**

[1] *This table should be used only as a guide. The relative response value is based on a numerical scale from 0 to 9 comparing the effectiveness of herbicides to a particular weed. Under certain weather or environmental conditions, a herbicide may perform better or worse than indicated in the table. Response may be less in no-tillage than in conventional tillage. If a farmer is getting satisfactory results under their conditions, they should not necessarily change products as a result of the information in the table.*

[2] ***A rating of 3 or less will not result in a crop yield loss under normal conditions.*** *Certain corn hybrids vary in their injury response to a herbicide treatment.*

[3] *Acetochlor containing products include Breakfree NXT, Confidence, Harness, Surpass EC, Surpass NXT, and TopNotch.*

[4] *Crusher, Fierce, Instigate, LeadOff, SureStart, TripleFlex, and Verdict are intended for use in a planned preemergence followed by a postemergence program. Ratings indicate early-season effectiveness.*

Soil Applied Herbicides

Preemergence (Surface Applied) or Preplant Incorporated

The following soil-residual herbicide treatments may be applied before or after planting but before crop and weeds emerge using one of the following methods: 1) preemergence surface applied in no-tillage or conventional tillage or 2) shallowly incorporated (surface blended) before planting in conventional tillage usually within the upper 1 to 2 inches of soil. Preemergence surface applied treatments need rainfall to move the herbicide into the soil for preemergence control of weeds.

ACETOCHLOR (VARIOUS PRODUCTS)

HARNESS, BREAKFREE NXT, CONFIDENCE, or SURPASS NXT (7 lb ai/gal)	1.75 to 2.25 pt/A	acetochlor 1.5 to 2 lb ai/A
SURPASS EC (6.4 lb ai/gal)	2 to 2.5 pt/A	acetochlor 1.6 to 2 lb ai/A
TOPNOTCH (3.2 lb ai/gal)	2 to 2.5 qt/a	acetochlor 1.6 to 2 lb ai/A

Weeds Controlled: Barnyardgrass, crabgrass, fall panicum, foxtails, black nightshade, pigweed.
Crop Stage: Apply preplant incorporated, preemergence, or early postemergence for control of annual grasses and certain broadleaf weeds. Acetochlor products and certain tank mixtures may be applied up to 30 days before planting. For treatments after planting, apply prior to weed seedling emergence and before corn reaches 11 inches in height.
General Comments: HARNESS contain 7 lb ai per gal acetochlor plus furilazone (corn safener). BREAKFREE NXT, and SURPASS NXT contain 7 lb ai per gal acetochlor plus dichlormid (corn safener). SURPASS EC contains 6.4 lb ai per gal acetochlor plus dichlormid (corn safener). TOPNOTCH is an encapsulated herbicide that contains 3.2 lb ai per gal acetochlor plus dichlormid (corn safener). Application rates may vary depending on soil texture, percent organic matter, tillage system, weed species, and tank mixture components. Incorporation and higher use rates will improve control of some weeds.
Environmental Statements: These herbicides have a GROUNDWATER ADVISORY statement on the label and some products are classified as RESTRICTED USE pesticides. Do not use in areas where soils are very permeable, particularly where the groundwater is shallow. Consult label for specific guidelines.
Rain Delay: None
Rotation Restrictions: Consult individual product labels for specific guidelines on rotational crops.
Harvest & Forage Restrictions: None.
Tank Mixtures: Atrazine, Balance Pro, Clarity, 2,4-D, glyphosate (Roundup, etc.), gramoxone, Hornet, Princep, Prowl, Python. Consult the product label to apply early postemergence with Accent, Aim, Atrazine, Banvel, Beacon, Buctril, Clarity, Distinct, Liberty, Marksman, Permit, Steadfast.

ACURON

ACURON	2.5 to 3 qt/A	S-metolachlor: atrazine: mesotrione: bicyclopyrone 1.3: 0.63: 0.15: 0.038 to 1.6: 0.75: 0.18: 0.045 lb ai/A

Weeds Controlled: Barnyardgrass, black nightshade, crabgrass, foxtails, lambsquarters, marestail, Palmer amaranth, smooth pigweed, common ragweed, smartweed, velvetleaf, waterhemp.
Crop Stage: Apply preemergence on the soil surface no more than 28 days prior to planting or early postemergence before corn exceeds 12 inches in height. When applied early postemergence apply before small broadleaf weeds exceed 3 inches tall.
General Comments: ACURON contains S-metolachlor + atrazine + mesotrione + bicyclopyrone [2.14 + 1.0 + 0.24 + 0.06 lb ai/gal] plus the safener benoxacor. When tank mixing or applying sequentially with other herbicides do not exceed rate limitations for products containing atrazine, mesotrione and S-metolachlor. Applying ACURON postemergence to corn that has received an at-plant application of “Counter” insecticide can result in severe crop injury.Consult label before use with other organphosphate or carbamate insecticides.
Environmental Statements: ACURON is a RESTRICTED-USE pesticide with a GROUND and SURFACE WATER ADVISORY statements. Do not use on very permeable soils or where groundwater is close to the soil surface or where the potential exists to enter surface water. [NOTE: See page 19 for PRECAUTIONS on use of atrazine containing products (eg. ACURON) near ground or surface water].
Rain Delay: None.
Rotation Restrictions: Crops that may be planted include corn (all types) anytime; before planting wheat, barley, or rye wait 4 months; sorghum and soybeans wait 10 months; and for other rotational crops wait 18 months (consult label). If applied after June 1, rotating to crops other than corn may result in crop injury.
Harvest & Forage Restrictions: Do not graze or feed forage from treated areas for 45 days following application. Corn can be harvested for grain, seed, or silage when treated before 12 inches tall. Do not harvest for forage within 60 days after application.
Tank Mixtures: Atrazine, glyphosate, Gramoxone, Princep, and Warrior insecticide. Tank mixtures with 2,4-D is allowed; however, check compatibility before mixing. Tank mixtures for early postemergence applications include Atrazine, Accent Q, Basis brands, glyphosate products [apply to glyphosate-tolerant corn hybrids], or Steadfast Q.

ACURON FLEXI

ACURON FLEXI	2 to 2.25 qt/A	S-metolachlor: mesotrione: bicyclopyrone 1.4: 0.16: 0.04 to 1.6: 0.18: 0.045 lb ai/A

Weeds Controlled: Barnyardgrass, black nightshade, crabgrass, foxtails, lambsquarters, marestail, Palmer amaranth, smooth pigweed, common ragweed, smartweed, velvetleaf, waterhemp.

Crop Stage: Apply early preplant (up to 28 days prior to planting), preemergence, or postemergence on corn up to 30 inches in height or 8-leaf stage of corn growth.

General Comments: ACURON FLEXI contains S-metolachlor + mesotrione + bicyclopyrone [2.86 + 0.32 + 0.08 lb ai/gal] plus the safener benoxacor. When tank mixing or applying sequentially with other herbicides do not exceed rate limitations for products containing bicyclpyrone, mesotrione and S-metolachlor. Applying ACURON FLEXI postemergence to corn that has received an at-planting application of "Counter" insecticide can result in severe crop injury. Consult label before use with other organphosphate or carbamate insecticides. Apply postemergence before broadleaf weeds exceed 3 inches tall.

Environmental Statements: ACURON FLEXI has ground and surface water advisory statements.

Rain Delay: None.

Rotation Restrictions: Crops that may be planted include corn (all types) anytime; before planting wheat, barley, or rye wait 4 months; for alfalfa, sorghum and soybeans wait 10 months; and for other rotational crops wait 18 months. If applied after June 1, rotating to crops other than corn may result in crop injury.

Harvest & Forage Restrictions: Do not use for feed or harvest forage within 45 days following application.

Tank Mixtures: Atrazine, Clarity, glyphosate, Gramoxone, Princep, , Tricor, and Warrior insecticide. Tank mixtures for early postemergence applications include Atrazine, Accent Q, Basis Blend, glyphosate products [apply only to glypohosate-tolerant corn hybrids], Resolve Q, Status, or Steadfast Q.

BICEP II MAGNUM [S-metolachlor + atrazine]

BICEP II MAGNUM, BRAWL II ATZ, CINCH ATZ, or **CHARGER MAX ATZ**	1.6 to 2.1 qt/A	S-metolachlor:atrazine 1.0: 1.2 to 1.3: 1.6 lb ai/A
OR		OR
DUAL II MAGNUM, BRAWL II, CINCH, or **CHARGER MAX**	1.33 pt/A	S-metolachlor 1.3 lb ai/A
+		+
AATREX 4L	1.2 to 2 qt/A	atrazine 1.2 to 2 lb ai/A

Weeds Controlled: Barnyardgrass, cocklebur, crabgrass, fall panicum, foxtails, jimsonweed, lambsquarters, morningglories, black nightshade, pigweeds, prickly sida, common ragweed, smartweed.

Crop Stage: Apply preplant incorporated, preplant surface, or preemergence. These products may be applied up to 30 days before planting as a single application. When applying 30 to 45 days before planting, apply 2/3 full rate early, followed by 1/3 full rate at planting. BICEP II MAGNUM, BRAWL II ATZ, CINCH ATZ, or CHARGER MAX ATZ can be applied after planting, but as a broadcast treatment before corn exceeds 5 inches in height and weeds pass the 2-leaf stage.

General Comments: BICEP II MAGNUM, BRAWL II ATZ, CINCH ATZ, and CHARGER MAX ATZ are prepackage mixtures containing S-metolachlor + atrazine [2.4 + 3.1 lb ai/gal] plus benoxacor (corn safener).

Environmental Statements: These products are RESTRICTED-USE pesticides with a GROUNDWATER ADVISORY statement. Do not use on very permeable soils or where groundwater is close to the soil surface. [NOTE: See page 19 for PRECAUTIONS on use of atrazine containing products (eg. BICEP II MAGNUM, BRAWL II ATZ, CINCH ATZ, and CHARGER MAX ATZ) near ground or surface water].

Rain Delay: None

Rotation Restrictions: Do not plant small grains or small-seeded legumes in the fall of the same year or the year following application, or injury may occur. Plant only corn, sorghum or soybeans in the spring following application. If applied after June 10, plant only corn or sorghum the following season.

Harvest & Forage Restrictions: Do not graze or feed forage from treated areas for 60 days.

Tank Mixtures: AAtrex, Atrazine, Balance, Cinch, 2,4-D, Dual II Magnum, Gramoxone, Princep, Roundup. Postemergence tank mixtures include Exceed, Accent, and Liberty (LL-corn) or glyphosate (RR-corn). Consult label to apply with other herbicides regarding corn growth stages, weed heights, and other precautions.

CALIBRA

CALIBRA	2.4 to 2.8 qt/A	S-metolachlor: mesotrione 1.7: 0.17 to 2.0: 0.20 lb ai/A

Weeds Controlled: Barnyardgrass, black nightshade, crabgrass, fall panicum, foxtails, lambsquarters, Palmer amaranth, pigweeds, smartweed, velvetleaf, waterhemp.

Crop Stage: Apply preplant up to 28 days prior to planting, preemergence on the soil surface, or early postemergence before field corn exceeds 30 inches in height or up to 8-leaf stage of corn growth, whichever comes first. When applied early postemergence apply before broadleaf weeds exceed 3 inches in height.

General Comments: CALIBRA [3.1 ZC] (formulated as a capsule-suspension) contains S-metolachlor + mesotrione [2.82 + 0.28 lb ai/gal] plus benoxacor (corn safener). Do not apply CALIBRA on popcorn or sweet corn as a postemergence treatment. Applying CALIBRA early postemergence to corn that has received an at-plant application of "Counter" insecticide can result in severe corn injury. Consult label before use with other organophosphate or carbamate insecticides.

Environmental Statements: CALIBRA has GROUND and SURFACE water advisory statements. Do not use on very permeable soils or where groundwater is close to the soil surface or where the potential exists to enter surface water.

Rain Delay: None.

Rotation Restrictions: Corn or grain sorghum [treated with a seed safener] can be planted/replanted anytime. Small grains (wheat, barley, and rye) and other sorghums (forage and sweet) may be planted 4½ months after application; alfalfa, soybeans, sunflower, and tobacco after 10 months. Most other crops require an 18 month waiting period (consult label). If applied after June 1, rotating to crops other than corn or grain sorghum may result in crop injury.

Harvest & Forage Restrictions: Do not graze or feed forage from treated areas for 45 days following application. Do not harvest grain within 60 days after application.

Tank Mixtures: Burndown and preemergence tank mixtures include Atrazine, 2,4-D, Clarity (dicamba), Gramoxone, Liberty (glufosinate), Princep, Roundup (glyphosate), TriCor (metribuzin) herbicides; and Besiege and Warrior II insecticides. Tank mixtures for early postemergence applications include Atrazine, Accent Q, Basis Blend, Diflexx, glyphosate [glyphosate-resistant hybrids], Liberty [glufosinate-tolerant corn], Peak, Resolve Q, Status, Steadfast Q.

DEGREE XTRA

DEGREE XTRA	2.9 to 3.7 qt/A	acetochlor:atrazine 1.95: 0.97 to 2.49: 1.23 lb ai/A

Weeds Controlled: Barnyardgrass, crabgrass, fall panicum, foxtails, jimsonweed, lambsquarters, black nightshade, pigweed, prickly sida, common ragweed, smartweed.

Crop Stage: Apply preplant incorporated, preemergence, or early postemergence before weed seedlings reach the 2-leaf stage and corn is no more than 11 inches in height. DEGREE XTRA may be applied up to 30 days before planting.

General Comments: DEGREE XTRA 4.04CS is a pre-package mixture containing encapsulated acetochlor + atrazine [2.7 + 1.34 lb ai/gal] plus MON 13900 (corn safener). Rate may vary depending on soil texture, percent organic matter, tillage system, weed species, and tank mixture components. Incorporation and higher use rates will improve control of some weeds. Consult label for reduced rates when DEGREE XTRA is used as part of a planned program with postemergence herbicides.

Environmental Statements: DEGREE XTRA and ATRAZINE are RESTRICTED-USE pesticides with a GROUNDWATER ADVISORY statement on the label. Do not use in areas where soils are very permeable, particularly where the groundwater is shallow. Do not apply to coarse soils where depth of groundwater is within 30 feet of the soil surface. NOTE: See page 19 for PRECAUTIONS on use of atrazine containing products (eg. DEGREE XTRA) near ground or surface water].

Rain Delay: None

Rotation Restrictions: Do not rotate to crops other than corn, soybeans, sorghum (milo), wheat, or tobacco. The possibility of crop injury can occur to soybeans or other nonlabeled crops planted in the year following application.

Harvest & Forage Restrictions: Do not graze or feed forage from treated areas for 60 days.

Tank Mixtures: Atrazine, 2,4-D, Gramoxone, Harness, Princep, Roundup. Consult label to apply early postemergence with Accent,, Clarity, Marksman, or Permit. DEGREE XTRA may also be tank mixed with Hornet, Python, Prowl, or Roundup (RR-corn).

DUAL II MAGNUM [S-metolachlor]

DUAL II MAGNUM	1.33 to 1.57 pt/A	(S-metolachlor 1.3 to 1.6 lb ai/A)

Weeds Controlled: Barnyardgrass, black nightshade, crabgrass, fall panicum, foxtails. Higher use rates and incorporation will improve control of weeds such yellow nutsedge,black nightshade, triazine resistant pigweed.
Crop Stage: Apply preplant incorporated or preemergence for control of annual grasses and certain broadleaf weeds. Metolachlor products may be applied up to 30 days before planting as a single or split application and/or when tank mixed with atrazine. To extend the duration of weed control a maximum rate of 2 pt/A may also be applied after corn emergence until corn plants reach 40 inches in height.
General Comments: Other metolachlor containing products include BRAWL II, CHARGER MAX, and CINCH, contain 7.64 lb ai S-metolachlor per gal plus benoxacor (corn seed safener).
Environmental Statements: These products have a GROUNDWATER ADVISORY statement on the label. Do not use on very permeable soils or where groundwater is close to the soil surface.
Rain Delay: None
Rotation Restrictions: Corn, soybean and grain sorghum (use Concep or Screen treated sorghum seed) may be planted anytime following application. Small grains may be planted 4 1/2 months, alfalfa 4 months, and clover 9 months following application; and tobacco may be planted the next spring following treatment. Other crops may require a 12 month waiting period.
Harvest & Forage Restrictions: Do not graze or feed forage for 30 days following application.
Tank Mixtures: AAtrex, Atrazine, Balance, 2,4-D, Gramoxone, Princep, Prowl, Roundup. Postemergence tank mixtures include Liberty (LL-corn) or Roundup (RR-corn). Consult label to apply with other herbicides regarding corn growth stages, weed heights, and other precautions.

HARNESS MAX

HARNESS MAX	64 to 75 fl oz/A (4 to 4.7 pt/A)	acetochlor:mesotrione 1.76: 0.17 to 2.1: 0.19 lb ai/A

Weeds Controlled: Barnyardgrass, cocklebur, crabgrass, fall panicum, foxtails, lambsquarters, morningglory, black nightshade, Palmer amaranth, pigweed, smartweed, velvetleaf, waterhemp.
Crop Stage: Apply preplant incorporated or preemergence for control of annual grasses and broadleaf weeds. HARNESS MAX may be applied up to 30 days before planting. For postemergence treatments after planting, apply before corn exceeds 11” tall and before weeds are greater than 3 inches.
General Comments: HARNESS MAX contains acetochlor + mesotrione [3.52 + 0.33 lb ai per gal]. Higher use rates and/or a tank mixture with other herbicides will improve control of some weeds. To provide broad spectrum weed control this product should be followed by a planned postemergence weed control program. Consult label for precautions when using insecticides at planting or with a postemergence treatment.
Environmental Statements: HARNESS MAX has GROUNDWATER ADVISORY statements on the label. Do not use on very permeable or course soils, where groundwater is close to the soil surface, or near surface water.
Rain Delay: None
Rotation Restrictions: Field corn, yellow popcorn, or grain sorghum [use sorghum seed treated with a safener] can be planted immediately after application; wheat after 4 months; alfalfa and soybeans after 10 months; and barley, rye or oats in the spring following application. Other rotational crops may require waiting until 18 months following application.
Harvest & Forage Restrictions: Allow minimum of 60-days following last application before harvesting for forage, grain, or feeding forage to livestock.
Tank Mixtures: Atrazine, Callisto, Clarity, 2,4-D, Gramoxone, Hornet, Marksman, Princep, Prowl, Python, Roundup brand glyphosate. Consult product labels to apply early postemergence with Accent, Atrazine,, Beacon, Callisto (mesotrione), Clarity, Hornet, Liberty (LL-corn), Marksman, Resolve, Roundup brand glyphosate (RR-corn), Steadfast.

HARNESS XTRA

HARNESS XTRA	2.3 to 2.4 qt/A	acetochlor : atrazine 1.78: 1.4 to 1.86: 1.5 lb ai/A
OR		OR
HARNESS, BREAKFREE NXT, CONFIDENCE, or **SURPASS NXT**	1.75 to 2.25 pt/A	acetochlor 1.5 to 2 lb ai/A
+		+
ATRAZINE 4L	1.25 to 1.5 qt/A	atrazine 1.25 to 1.5 lb ai/A

Weeds Controlled: Barnyardgrass, cocklebur, crabgrass, fall panicum, foxtails, jimsonweed, lambsquarters, morningglory, black nightshade, pigweed, prickly sida, common ragweed, smartweed.
Crop Stage: Apply preplant incorporated, preemergence, or early postemergence before weed seedlings reach the 2-leaf stage and corn is no more than 11 inches in height. HARNESS XTRA may be applied up to 30 days before planting.
General Comments: HARNESS XTRA is a premixture containing acetochlor + atrazine [3.1 + 2.5 lb ai/gal] plus furilazone (corn safener). Application rate may vary depending on soil texture, percent organic matter, tillage system, weed species, and tank mixture components. Incorporation and higher use rates will improve control of some weeds.

Environmental Statements: HARNESS XTRA and ATRAZINE are RESTRICTED-USE pesticides with a GROUNDWATER ADVISORY statement on the label. Do not use in areas where soils are very permeable, particularly where the groundwater is shallow. Do not apply to coarse soils where depth of groundwater is within 30 feet of the soil surface. NOTE: See page 19 for precautions on use of atrazine containing products (eg. HARNESS XTRA, etc.) near ground or surface water.
Rain Delay: None
Rotation Restrictions: Corn, sorghum (milo), and soybeans may be planted the year following application. Crop injury can occur to soybeans or other nonlabeled crops planted the year following application (see label).
Harvest & Forage Restrictions: Do not graze or feed forage from treated areas for 60 days.
Tank Mixtures: Atrazine, 2,4-D, Gramoxone, Harness, Princep, Roundup. Consult HARNESS XTRA label to apply early postemergence with Accent, Clarity, Marksman, or Permit.

KEYSTONE NXT or FULTIME NXT

KEYSTONE NXT	2.3 to 2.6 qt/A	acetochlor: atrazine 1.8: 1.4 to 2.0: 1.6 lb ai/A
or		
FULTIME NXT	2.9 to 3.7 qt/A	acetochlor: atrazine 1.9: 0.97 to 2.5: 1.23 lb ai/A
OR		OR
TOPNOTCH	2 to 2.5 qt/A	acetochlor 1.6 to 2 lb ai/A
+		+
ATRAZINE 4L	1 to 1.5 qt/A	atrazine 1 to 1.5 lb ai/A

Weeds Controlled: Barnyardgrass, cocklebur, crabgrass, fall panicum, foxtails, jimsonweed, lambsquarters, morningglory, black nightshade, pigweed, prickly sida, common ragweed, smartweed.
Crop Stage: Apply preplant incorporated, preemergence, early postemergence, or may also be applied up to 30 days prior to planting. For treatments after planting apply before corn reaches 11 inches in height.
General Comments: KEYSTONE NXT (5.6SE) is a premixture containing acetochlor + atrazine [3.1 + 2.5 lb ai/gal] plus dichlormid (corn safener). FULTIME NXT (4SE) is a premixture containing an encapsulated combination of acetochlor + atrazine [2.7 + 1.34 lb ai/gal] plus dichlormid (corn safener). Similar products include VOLLEY ATZ NXT. Application rate may vary depending on soil texture, percent organic matter, tillage system, time of application, and tank mixture components.
Environmental Statements: KEYSTONE and FULTIME are Restricted-Use pesticides with a GROUND WATER ADVISORY statement on the label. Do not use in areas where soils are very permeable, particularly where the groundwater is shallow or areas with high groundwater tables. [NOTE: See page 19 for precautions on use of atrazine containing products (eg. KEYSTONE, FULTIME) near ground or surface water].
Rain Delay: None
Rotation Restrictions: Corn may be replanted immediately if crop is lost. Do not apply after June 10, unless only corn will be planted the following year. Otherwise, sorghum or soybean may be planted the spring following application. Alfalfa, barley, millet, oats, rye, tobacco, or wheat may be planted 15 months after applicaton. The potential for injury to tobacco may occur because of atrazine carryover.
Harvest & Forage Restrictions: Do not graze or feed forage for 60 days following application.
Tank Mixtures: Atrazine, Balance Pro, Clarity, 2,4-D, glyphosate, Gramoxone, Hornet WDG, Marksman, Princep, Prowl, Python, Surpass EC. Consult label to apply early postemergence with other tank mix products.

LEXAR EZ

LEXAR EZ	3 qt/A	S-metolachlor: mesotrione: atrazine 1.3: 0.17: 1.3 lb ai/A

Weeds Controlled: Barnyardgrass, black nightshade, crabgrass, fall panicum, foxtails, lambsquarters, pigweeds, prickly sida, common ragweed, smartweed, velvetleaf.

Crop Stage: Apply preemergence on the soil surface no more than 14 days before planting or early postemergence before corn exceeds 12 inches in height. When applied early postemergence apply before small broadleaf weeds exceed 3 inches tall.

General Comments: LEXAR EZ contains S-metolachlor + mesotrione + atrazine [1.74 + 0.224 + 1.74 lb ai/gal] plus benoxacor (corn safener). Do not apply LEXAR early postemergence if corn received an at-plant application of "Counter" insecticide. Consult label before use with other organophosphate or carbamate insecticides. Do not apply mesotrione products (eg. Callisto, Camix, Lumax) in the same season as LEXAR.

Environmental Statements: LEXAR EZ is a RESTRICTED-USE pesticide with a GROUNDWATER ADVISORY statement. Do not use on very permeable soils or where groundwater is close to the soil surface or where the potential exists to enter surface water. [NOTE: See page 19 for PRECAUTIONS on use of atrazine containing products (eg. LEXAR) near ground or surface water].

Rain Delay: None.

Rotation Restrictions: Do not plant crops other than corn, soybeans, sorghum, or small grain cereals the spring following application. If applied after June 1, do not rotate to crops other than corn or sorghum. For other crops wait 18 months before planting as a rotational crop.

Harvest & Forage Restrictions: Do not graze or feed forage from treated areas for 45 days following application. Do not harvest forage, grain, or stover within 60 days after application.

Tank Mixtures: Atrazine, glyphosate, Gramoxone, Princep, and Warrior insecticide. Tank mixtures for early postemergence applications (before corn < 12 inches) include Atrazine, Accent Q, Basis, glyphosate products[-glyphosate tolerant hybrids], Liberty[LL-corn],Resolve Q, Status, Steadfast,. Tank mixtures with 2,4-D is allowed; however, check compatibility before mixing.

MAVERICK

MAVERICK	18 to 32 fl oz/A	mesotrione: clopyralid: pyroxasulfone 0.12: 0.07: 0.10 to 0.21: 0.13: 0.17 lb ai/A

Weeds Controlled: Barnyardgrass, crabgrass, foxtails, lambsquarters, black nightshade, Palmer amaranth, smooth pigweed, common ragweed, smartweed, velvetleaf, waterhemp.

Crop Stage: Apply preplant burndown, preplant incorporated, or preemergence (after planting). When applied postemergence do not exceed 14 fl oz/A (up to V6 or 18 inch tall field corn) and do not apply to popcorn.

General Comments: MAVERICK is a pre-package mixture containing mesotrione + clopyralid + flumetsulam [0.829 + 0.693 + 0.693 lb ai per gal product]. Do not exceed yearly maximum labeled application rates of each active ingredient based on soil type (consult lablel). Corn must be planted at a minimum 1 inch deep. Applying MAVERICK postemergence to corn that has received at-plant application of phorate or tebufos insecticide may result in severe corn injury; use of other organophosphate insecticides may result in temporary corn injury. Do not apply to white popcorn or ornamental (Indian) corn.

Environmental Statements: MAVERICK have ground and surface water advisory statements on the label.

Rain Delay: None

Rotation Restrictions: The following rotational crops may be planted as indicated: corn anytime; wheat after 4 to 6 months (depending on rate); soybean after 10.5 months; most other crops 18 months following application (consult label). If applied after June 1 rotating to crops other than corn or grain sorghum next spring may result in crop injury.

Harvest & Forage Restrictions: Allow a preharvest interval of 30 days for ears and forage, and 60 days for stover. Do not graze sooner than 45 days after application.

Tank Mixtures: Atrazine, glyphosate, glufosinate (Consult label for use of adjuvants when tank mixing with other products).

OUTLOOK

OUTLOOK	14 to 21 oz/A	dimethenamid-P 0.66 to 0.98 lb ai/A

Weeds Controlled: Barnyardgrass, crabgrass, fall panicum, foxtails, black nightshade, pigweed. Incorporation and higher rates will improve control of some weeds.

Crop Stage: Apply preplant, preemergence or early postemergence for control of annual grasses and certain broadleaf weeds. OUTLOOK may be applied up to 30 days before planting as a single or split application and/or when tank mixed with other herbicides. When used after crop emergence but prior to weed germination, apply OUTLOOK as a broadcast application to corn up to 12 inches tall. As a lay-by treatment, apply to corn that is between 12" to 36" tall (directed applications are recommended for best performance).

General Comments: OUTLOOK 6E contains 6 lb ai diethenamid-P per gal. Application rate may vary depending on soil CEC (cation exchange capacity) or soil texture and percent organic matter.

Environmental Statements: OUTLOOK has a GROUNDWATER ADVISORY statements on the label. Do not use on very permeable soils or where groundwater is close to the soil surface. OUTLOOK may not be mixed or loaded within 50 feet of wells, sink holes, perennial or intermittent streams and rivers, and natural or impounded lakes and reservoirs. This setback does not apply to properly capped or plugged abandoned wells and to impervious pads or properly diked mixing/loading areas.

Rain Delay: None

Rotation Restrictions: Fall-seeded small grains may be planted 4 months or more following treatment. Other rotational crop may be planted the following spring.

Harvest & Forage Restrictions: Corn may be grazed or fed to livestock 40 days after application.

Tank Mixtures:2,4-D, Acquire, Atrazine, Balance, Clarity, Gramoxone, Princep, Prowl, Roundup brands. Consult product labels to apply early postemergence with Accent, Atrazine, Beacon, Clarity, Liberty (LL-corn), Marksman.

PROWL

PROWL 3.3E	2.4 to 3.6 pt/A	pendimethalin 1 to 1.5 lb ai/A
or		or
PROWL H2O	3 pt/A	pendimethalin 1.4 lb ai/A

Weeds Controlled: Barnyardgrass, crabgrass, fall panicum, foxtails, lambsquarters, pigweeds.

Crop Stage: Corn injury can result when PROWL contacts the germinating corn seed; therefore, apply to the soil surface after corn planting. **Do not incorporate PROWL or severe corn injury can result.** To reduce the risk of corn injury, plant at least 1 1/2 inches deep; corn seed must be completely covered with soil. In minimum or no-tillage situations ensure good seed coverage. PROWL may be applied postemergence until field corn is 30 inches tall or in the V8 growth stage, whichever is more restrictive. Consult label for tank mixing with other herbicides.

General Comments: PROWL 3.3E contains 3.3 lb ai/gal pendimethalin. PROWL H20 3.8L contains 3.8 lb ai/gal pendimethalin. Other pendimethalin products include PENDIMAX.

Environmental Statements: None

Rain Delay: None

Rotation Restrictions: Most crops may be planted following normal growth and harvest of corn. For wheat and barley wait 4 months after application of PROWL before planting. Do not feed forage or graze livestock for 75 days after planting wheat or barley as rotational crops. If tank mixed or used with other herbicides consult the labels for additional crop rotation guidelines.

Harvest & Forage Restrictions: Livestock can graze or be fed forage 21 days after treatment with PROWL H20.

Tank Mixtures: Atrazine, Bicep, Dual, Guardsman, Harness, Harness Xtra, Marksman. Early postemergence mixtures include Accent, Atrazine, Beacon, Marksman. Consult label to apply PROWL with other soil-applied or postemergence herbicides regarding maximum corn growth stages, weed heights, and other precautions.

RESICORE REV

RESICORE REV	2.5 to 2.75 qt/A	acetochlor:mesotrione:clopyralid 1.75: 0.17: 0.12 to 1.9: 0.19: 0.13 lb ai/A

Weeds Controlled: Barnyardgrass, crabgrass, foxtails, lambsquarters, morningglory, black nightshade, fall panicum, smooth pigweed, common ragweed, smartweed.

Crop Stage: Apply early preplant (EPP), preplant surface, preplant incorporated, preemergence, or early postemergence (Resicore before corn reaches 11 inches; Resicore XL and Resicore REV prior to 24 inch corn).

General Comments: RESICORE XL is a premixture containing acetochlor + mesotrione + clopyralid [2.8 + 0.27 + 0.19 lb ai per gallon] plus the crop safener furilazole. Apply when broadleaf weeds are less than 3 inches if applied after crop emergence. A non-ionic surfactant may be used with postemergence treatments (consult label for use of crop oil concentrate). Applying RESICORE to emerged corn that has received an at-planting application of phorate or terbofos or other organophosphate insecticide can result in crop injury.

Environmental Statements: RESICORE has ground and surface water advisory statements on the label. Do not use on very permeable soils or where groundwater is close to the soil surface.

Rain Delay: None indicated on label.

RESICORE REV (Continued)

Rotation Restrictions: Corn can be replanted anytime; wheat after 4 months; alfalfa, barley, oats, rye, sorghum, or soybean after 10.5 months following application. All other rotational crops require 18 months following application.
Harvest & Forage Restrictions: Do not apply RESICORE within 45 days of harvest for ears and forage or within 60 days of harvest for stover.
Tank Mixtures: May be used in tank mix combinations with other herbicides to broaden control. For preplant burndown apply with glyphosate, glufosinate, or paraquat, and/or atrazine can be used when applied preemergence. Check label for tank mixture compatibility with 2,4-D. For control of emerged grass postemergence tank mixtures may include Accent Q, Basis brands, and Steadfast Q. Do not make postemergence applications of RESICORE in a tank mix with organophosphate or carbamate insecticides or crop injury may occur.

SIMAZAT

SIMZAT 4L	4 to 6 pt/A	simazine: atrazine 1.0: 1.0 to 1.5: 1.5 lb ai/A
OR		OR
ATRAZINE 4L	2 to 3 pt/A	atrazine 1 to 1.5 lb ai/A
+		+
PRINCEP 4L or	2 to 3 pt/A	simazine 1 to 1.5 lb ai/A
PRINCEP CALIBER 90	1.1 to 1.6 lb/A	

Weeds Controlled: Black nightshade, cocklebur, foxtails, giant ragweed, jimsonweed, lambsquarters, morningglories, pigweeds, prickly sida, common ragweed, smartweed, velvetleaf.
Crop Stage: Appy to the soil either preplant incorporated or preemergence. May be applied early preplant within 2 weeks prior to planting. Do not apply after corn emergence.
General Comments: SIMAZAT 4L is a premixture containing simazine + atrazine [2.0 + 2.0 lb ai/gal]. Low soil moisture or soil pH above 7.0 may increase persistence; whereas, simazine and atrazine dissipate more rapidly when soil pH is acidic.
Environmental Statements: SIMAZAT is a RESTRICTED-USE pesticide and contains a GROUND and SURFACE WATER ADVISORY statement on the label. Do not use on very permeable soils or where groundwater is close to the soil surface. [NOTE: See page 19 for PRECAUTIONS on use of SIMAZAT near ground or surface water]
Rain Delay: None
Rotation Restrictions: Land treated with SIMAZAT should not be planted to any crop except corn or sorghum until the following year or injury may occur. Do not plant tobacco, vegetables, small grains or small-seeded legumes and grasses in the fall of the same year or the year following application, or injury may occur. When applied after June 10, plant only corn or sorghum the following season. If SIMAZAT is applied at rates higher than 4 pt/A a crop of untreated corn or sorghum should precede the next rotational crop.
Harvest & Forage Restrictions: Do not graze treated areas or feed forage to livestock for 60 days after application.
Tank Mixtures: Atrazine, Paraquat

SIMAZINE

PRINCEP 4L	2 to 4 pt/A	simazine 1 to 2 lb ai/A
PRINCEP CALIBER 90	1.1 to 2.2 lb/A	

Weeds Controlled: Barnyardgrass, black nightshade, foxtails, lambsquarters, pigweeds, prickly sida, common ragweed, smartweed, velvetleaf.
Crop Stage: Appy to the soil either preplant incorporated or preemergence. Do not apply after corn emergence. PRINCEP is also labeled for applications the previous fall before corn planting to target weed problems such as Italian ryegrass and other cool-season annual weeds.
General Comments: PRINCEP 4L and SIMAZINE 4L contains 4 lb ai simazine per gal. PRINCEP CALIBER 90 and SIMAZINE 90DF contains 0.9 lb ai of simazine per lb product. PRINCEP is more persistent in soil than atrazine. Low soil moisture or soil pH above 7.0 may increase persistence. Whereas, PRINCEP dissipates more rapidly when soil pH is acidic.
Environmental Statements: PRINCEP and SIMAZINE have a GROUNDWATER ADVISORY statements. Do not use on very permeable soils or where groundwater is close to the soil surface. [NOTE: See page 19 for PRECAUTIONS on use of Simazine near ground or surface water.]
Rain Delay: None
Rotation Restrictions: Do not plant small grains or small-seeded legumes in the fall of the same year. Plant only corn or soybeans in the spring following use of PRINCEP (simazine). If rate exceeds 3 lb active ingredient per acre, a crop of untreated corn should preceed the next rotational crop.
Harvest & Forage Restrictions: Do not graze corn treated with PRINCEP (simazine). No label restrictions which prohibit use of treated corn for silage or haylage.
Tank Mixtures: Atrazine, glyphosate, Gramoxone.

STOREN

STOREN	2.1 to 2.4 qt/A	S-metolachlor: mesotrione: pyroxasulfone: bicyclopyrone 1.4:0.16: 0.08: 0.04 to 1.6: 0.19: 0.0.09: 045 lb ai/A

Weeds Controlled: Barnyardgrass, crabgrass, foxtails, lambsquarters, marestail, black nightshade, Palmer amaranth, smooth pigweed, common ragweed, smartweed, velvetleaf, waterhemp.

Crop Stage: Apply early preplant (up to 28 days prior to planting) or preemergence. Can also be applied early postemergence on field corn up to V8 leaf stage of corn growth.

General Comments: DO NOT use on coarse textured soils. STOREN contains S-metolachlor + mesotrione + pyroxasulfone + bicyclopyrone [2.69 + 0.31 + 0.15 + 0.075 lb ai/gal] plus the safener benoxacor. When tank mixing or applying sequentially with other herbicides do not exceed rate limitations for products containing bicyclpyrone, mesotrione, pyroxasulfone, and S-metolachlor. Applying STOREN postemergence to corn that has received an at-planting application of "Counter" insecticide can result in severe crop injury. Consult label before use with other organphosphate or carbamate insecticides. Apply postemergence before broadleaf weeds exceed 3 inches tall and labeled grasses reach 2 inches in height.

Environmental Statements: STOREN has ground and surface water advisory statements.

Rain Delay: None.

Rotation Restrictions: Crops that may be planted include corn (all types) anytime; before planting wheat wait 4 months; for sorghum and soybeans wait 10 months; for barley, oats, and rye wait 11 months; and for other rotational crops wait 18 months after application. A 10-month rotation interval can be used for alfalfa when applied at less than 2.1 qt/A and soil pH >6.5 or minimum of 18" rainfall.

Harvest & Forage Restrictions: Do not use for feed or harvest forage within 45 days following application.

Tank Mixtures: Atrazine, Clarity, Glyphosate, Gramoxone (paraquat), Princep, Roundup, Sharpen, Tricor (metribuzin), and Warrior insecticide. Tank mixtures for early postemergence applications include Accent Q, Atrazine, Basis products, Diflexx, Glyphosate products [apply only to glypohosate-resistant corn hybrids], Liberty [apply only on glufosinate-resistant corn hybrds], Resolve Q, Status, or Steadfast Q.

SURESTART II or TRIPLEFLEX II

SURESTART II or	1.75 to 3 pt/A	acetochlor: flumetsulam: clopyralid 0.82: 0.03: 0.08 to 1.4: 0.045: 0.14 lb ai/A
TRIPLEFLEX II	1.75 to 3 pt/A	

Weeds Controlled: Barnyardgrass, cocklebur, crabgrass, foxtails, lambsquarters, morningglory, black nightshade, pigweed, common ragweed, prickly sida, smartweed.

Crop Stage: Apply preplant surface, preplant incorporated, postplant preemergence, or early postemergence (up to 11 inch tall corn). SURESTART may also be applied up to 30 days before planting.

General Comments: SURESTART and TRIPLEPLEX are pre-package mixtures containing acetochlor + flumetsulam + clopyralid [3.75 + 0.12 + 0.38 lb ai per gal product] plus MON13900 (furilazole) corn safener. Corn planting depth should be at least 1.5 inches. When applied at lower rates it should be part of a planned preemergence followed by a postemergence program. Do not apply in areas where 1) soil pH>7.8, 2) soil pH<5.9 and organic matter exceeds 5%, or 3) soils that average less than 1.5% organic matter, unless the risk of crop injury is acceptable. Do not apply SURESTART or TRIPLEFLEX if Counter or Thimet insecticide has been applied to corn. Soil applied organophosphate insecticide should be applied in a T-band or a band to avoid potential crop injury. The maximum application amount on corn is 3.5 pt/A per crop season.

Environmental Statements: SURESTART and TRIPLEFLEX have ground and surface water advisory statements on the label. Do not use on very permeable soils or where groundwater is close to the soil surface.

Rain Delay: None

Rotation Restrictions: The following rotational crops may be planted as indicated: wheat after 4 months; alfalfa, barley, clover, oats, rye, soybean the spring following application; sorghum 12 months; and sweet corn and tobacco 18 months following application.

Harvest & Forage Restrictions: An interval of at least 85 days is required between application and field corn harvested for grain.

Tank Mixtures: Glyphosate products [eg. Durango, Roundup,], glufosinate [eg. Liberty], paraquat [eg. Gramoxone], and 2,4-D. Do not tank mix with another pesticide product that contains the same active ingredient as this product.

Generic Products: TRISIDUAL

SURTAIN

SURTAIN	11 to 14 fl oz/A	saflufenacil : pyroxasulfone 0.054 : 0.086 to 0.068 : 0.110 lb ai/A

Weeds Controlled: Barnyardgrass, crabgrass, fall panicum, foxtails, black nightshade, lambsquarters, marestail (horseweed), morningglory, Palmer amaranth, common ragweed, pigweed, smartweed, velvetleaf, waterhemp.
Crop Stage: Apply preplant incorporated, preplant surface, preemergence or early postemergence for preemergence control. SURTAIN can be applied early postemergence from corn spiking up to V3 corn.
General Comments: SURTAIN contains pyroxasulfone (1.002 lb/gal) and encapsulated saflufenacil (0.626 lb/gal). Application rates vary by soil texture, 11 to 14 fl oz/A is the labeled rate for medium soils, check label for use rates on other soil types. SURTAIN must be activated by at least ½ inch of rain or irrigation to maximize residual weed control. DO NOT apply SURTAIN where an at planting application of an organophosphate or carbamate insecticide is planned or has occurred (SEE LABEL FOR EXCEPTIONS). Separate sequential applications of SURTAIN by at least 14 days. DO NOT exceed maximum cumulative amounts of pyroxasulfone: 0.266 lb/A or saflufenacil: 0.134 lb/A. DO NOT use liquid fertilizer as a carrier for early postemergence applications or injury symptoms may occur. Avoid allowing spray solutions of SURTAIN to sit or store in sprayers for extended periods of time, use of SURTAIN spray solutions that have been allowed to sit may result in crop injury when applied early postemergence.
Environmental Statements: SURTAIN has GROUND and SURFACE WATER ADVISORY statements on the label.
Rain Delay: None
Rotation Restrictions: SURTAIN rotational crop planting intervals are rate dependent. Intervals listed here are based on a rate of 11 to 14 fl oz/a, unless otherwise noted. Refer to the SURTAIN label for rotational restrictions for other use rates.
Corn may be planted at any time following application; Sweet and popcorn may be planted after 2 months. Soybean may be planted 2 months after an application of 11 fl oz SURTAIN and 3 months after an application of 14 fl oz SURTAIN. Wheat may be planted after 1 month, cover crops after 4 months, sorghum after 6 months, alfalfa after 10 months, other small grains after 11 months, and forage grasses after 18 months. Other rotational crops may be planted 18 months after treatment (consult label).
Harvest & Forage Restrictions: None
Tank Mixtures: DO NOT tank mix with glufosinate when applying early postemergence as crop injury may occur.

ZIDUA

ZIDUA or	2 to 3 oz/A	pyroxasulfone 0.11 to 0.16 lb ai/A
ZIDUA SC	3.25 to 5.0 fl oz/A	

Weeds Controlled: Barnyardgrass, crabgrass, fall panicum, foxtails, black nightshade, pigweed, waterhemp.
Crop Stage: Apply preplant incorporated, preplant surface, or early postemergence for preemergence control of annual grasses and certain broadleaf weeds. ZIDUA may be applied up to 45 days before planting before weeds emerge and/or tank mixed with an appropriate burndown or postemergence herbicides for emerged weeds. As an early postemergence treatment apply to corn at spiking up to V4 leaf stage of growth.
General Comments: ZIDUA contains pyroxasulfone (85% per lb product); ZIDUA SC contains 4.17 lb ai/gal. Application rate may vary depending on soil texture and weeds present. Always pre-dissolve ZIDUA before adding it into the spray tank. Corn seed must be planted a minimum of 1-inch deep.
Environmental Statements: ZIDUA has a GROUND and SURFACE WATER ADVISORY statements on the label.
Rain Delay: None
Rotation Restrictions: Corn and soybean may be planted at any time following application. Wheat may be planted after 4 months, alfalfa and grain sorghum 10 months (consult label), and other small grains 11 months after application. Other rotational crops may be planted 18 months after treatment (consult label).
Harvest & Forage Restrictions: None
Tank Mixtures: Atrazine, Glyphosate products, Outlook, Prowl H20, Sharpen, Status, Verdict.

Guide to Weed and Crop Response to Postemergence Corn Herbicides[1]

	Barnyardgrass	Broadleaf Signalgrass	Crabgrass	Fall Panicum	Foxtail	Johnsongrass (seedling)	Johnsongrass (rhizome)	Ryegrass,Annual (Italian)	Shattercane (Wild Cane)	Yellow Nutsedge	Black Nightshade	Burcucumber	Cocklebur	Lambsquarters	Marestail (Horseweed)	Morningglory	Palmer Amaranth	Pigweed, Smooth	Prickly Sida (Teaweed)	Ragweed, Common	Ragweed, Giant	Sicklepod	Smartweed	Velvetleaf	Waterhemp	Crop Repsonse[2]
Accent Q	**8**	**8**	5	7	**8**	**9**	**8**	7	**9**	5	2	7	6	5	2	6	3	**8**	2	2	2	4	6	5	7	3*
Acuron Flexi	6	6	7	4	5	-	-	-	-	5	**8**	7	**8**	**9**	7	7	7	**8**	6	7	**8**	-	**8**	**9**	**8**	2
Acuron GT (RR-corn)[4]	**9**	**9**	**9**	**9**	**9**	**9**	**9**	7	**9**	6	**8**	**8**	**9**	**9**	7[#]	7	**8**[#]	**9**	7	7	**8**	**8**	**8**	**9**	**8**[#]	2
Armezon PRO / Impact Core	7	5	**8**	7	7	6	0	2	6	5	**9**	7	**8**	**9**	6	6	**8**	**9**	7	7	7	5	7	**9**	**9**	2
Assure II (ENLIST Corn)[4]	**8**	**8**	**8**	**9**	**9**	**9**	**8**	7	**9**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Callisto (mesotrione)	6	6	6 [5]	2	3	0	0	2	0	5	**8**	7	**8**	**9**	6	7	7	**8**	5	7	**8**	5	**8**	**9**	**8**	2
Callisto Xtra	6	6	6 [5]	2	5	0	0	2	0	5	**9**	7	**9**	**9**	7	**8**	**8**	**9**	7	**8**	**8**	6	**9**	**9**	**9**	2
Capreno	**8**	7	7	**8**	**8**	**8**	6	-	**9**	5	**9**	7	**8**	**9**	6	6	**8**	**9**	6	**8**	7	6	**8**	**9**	**9**	1
Dicamba [Clarity, DiFlexx, etc]	0	0	0	0	0	0	0	0	0	0	**9**	7	**9**	**9**	**8**	**9**	**9**	**9**	**8**	**9**	**9**	7	**9**	**8**	**8**	2
DiFlexx Duo	7	7	7	2	6	7	0	3	7	4	**9**	**8**	**9**	**9**	**8**	**9**	**9**	**9**	**8**	**9**	**9**	**9**	**9**	**9**	**9**	3
Enlist Duo (ENLIST-corn)[4]	**9**	**9**	**9**	**9**	**9**	**9+**	**9**	7	**9**	6	**8**	**8**	**9**	**9**	7	**8**	7	**9**	**8**	**9**	**9**	**8**	**8**	**8**	**8**	0
Glufosinate (LL-corn)[4]	7	7	7	**8**	**9** [6]	**8**	5	6	7	5	**8**	7	**9**	**8**	**8**	**8**	7	7	**8**	**9**	**8**	7	**9**	**8**	**8**	0
Glyphosate[3] (RR-corn)[4]	**9**	**9**	**9**	**9**	**9**	**9+**	**9**	**8**	**9**	6	**8**	**8**	**9**	**8**	7[#]	7	7[#]	**9**	7	7	**8**	**8**	**8**	**8**	7[#]	0
Halex GT (RR-corn)[4]	**9**	**9**	**9**	**9**	**9**	**9+**	**9**	7	**9**	6	**8**	**8**	**9**	**9**	7[#]	7	**8**[#]	**9**	7	7	**8**	**8**	**8**	**9**	**8**[#]	2
Impact / Armezon	**8**	6	7	7	7	6	0	0	6	4	**9**	7	**8**	**9**	6	6	**8**	**9**	7	7	7	5	7	**9**	**9**	1
Impact Z	**8**	6	7	7	7	6	0	0	6	4	**9**	7	**8**	**9**	6	6	**8**	**9**	7	7	7	5	**7**	**9**	**9**	1
Katagon	7	6	7 [5]	6	7	6	5	-	**8**	4	6	-	6	**8**	6	6	**8**	**8**	-	7	**7**	-	6	**9**	**8**	1
Kyro	**8**	6	7	7	7	6	0	0	6	4	**9**	7	**9**	**9**	6	6	**8**	**9**	7	**9**	**9**	-	7	**9**	**9**	2
Laudis	7	7	7	2	6	7	0	3	7	4	**8**	7	**8**	**8**	6	6	**8**	**8**	7	7	**8**	7	**8**	**8**	**9**	1
Permit	2	2	2	3	3	3	0	0	3	**8**	4	3	**9**	4	2	4	6	**8**	7	**8**	7	2	7	**8**	6	2
Realm Q	7	7	6	7	**8**	7	6	6	**9**	6	**8**	7	**9**	**8**	-	6	**8**	**9**	7	7	7	6	**9**	**8**	**8**	2*
Resolve Q	7	7	6	7	**8**	7	6	5	**9**	6	3	-	7	7	-	6	-	**9**	6	6	4	6	7	**8**	7	2*
Shieldex	7	6	7 [5]	5	7	6	0	-	6	4	7	-	7	**8**	6	6	**8**	**8**	-	7	**8**	-	6	**9**	**8**	1
Sinate (LL-corn)[4]	7	7	7	7	**9** [6]	**8**	5	6	7	5	**9**	7	**9**	**9**	**8**	**8**	**8**	**9**	7	**9**	**8**	7	**8**	**9**	**8**	1
Status	5	1	3	5	5	5	2	0	5	0	**8**	7	**9**	**9**	**8**	**8**	**9**	**9**	**8**	**9**	**9**	**8**	**8**	**8**	**8**	2
Steadfast Q	**8**	**8**	6	7	**8**	**9**	**8**	7	**9**	6	2	7	6	5	2	6	4	**8**	2	2	2	4	6	5	7	3*

EXCELLENT = 9+ GOOD = 8-9 FAIR = 6-7 POOR = 5 or less - Insufficient Data

[1] *This table should be used only as a guide. The relative response value is based on a numerical scale from 0 to 9 comparing the effectiveness of herbicides to a particular weed. Under certain weather or environmental conditions, a herbicide may perform better or worse than indicated in the table. If a farmer is getting satisfactory results under their conditions, they should not necessarily change products as a result of the information in the table.*

[2] ***A rating of 3 or less will not result in a crop yield loss under normal conditions.*** *Certain corn hybrids vary in their injury response to a herbicide treatment.*

* NOTE: *When applied within label guidelines the potential crop response may be less for herbicide products designated with a "Q" that contain the crop safener (isoxadifen).*

[3] Examples of GLYPHOSATE products labeled for use on Roundup Ready corn can be found on page 17.

[4] *Apply only on selected field corn hybrids designated with GENETIC resistance/tolerance to LibertyLink (LL-corn), Roundup-Ready (RR-corn), or to ENLIST corn hybrids.*

[5] Effectiveness rating for large crabgrass; less effective on smooth crabgrass.

[6] Effectiveness of glufosinate on yellow foxtail may be lower (7)

[#] Will not effectively control weed biotypes resistant to a class of chemistry associated with this herbicide.

Response of Perennial Broadleaf Weeds to Postemergence Corn Herbicides[1]

	Bindweed, Field	Dandelion	Dogbane, Hemp	Horsenettle	Milkweed, Common	Milkweed, Honeyvine	Pokeweed, Common	Thistle, Canada	Thistle, Musk	Trumpetcreeper
Accent Q	3	7	6	3	6	6	4	5	2	2
Acuron GT (RR-corn)[2]	6	**8**	-	6	6	-	7	**8**	-	-
Callisto (meostrione)	-	7	5	6	-	6	7	6	-	-
Callisto GT (RR-corn)[2]	-	**8**	7	7	7	6	7	**8**	-	-
Callisto Xtra	-	7	5	7	-	6	7	6	-	-
Capreno	-	6	3	7	-	-	6	5	-	-
2,4-D	5	7	5	4	4	4	5	5	7	-
Dicamba [Clarity, DiFlexx, etc]	6	7	6	6	6	6	7	6	7	7
DiFlexx Duo	6	**8**	7	6	6	6	7	6	7	7
Glufosinate [Liberty Ultra, etc.] (LL-corn)[2]	5	7	6	4	6	6	5	4	-	-
Glyphosate (RR-corn)[2]	7	**8**	7	7	7	6	7	**8**	5	7
Halex GT (RR-corn)[2]	7	**8**	7	7	7	6	7	**8**	5	7
Kyro	6	6	-	-	-	-	-	**9**	-	-
Permit	3	5	3	-	6	7	5	2	-	-
Sinate (LL-corn)[2]	5	7	6	6	6	6	5	6	-	-
Status	6	**8**	6	6	6	7	7	6	7	-
Steadfast Q	3	7	5	3	-	-	3	5	2	2

GOOD = 8-9 FAIR = 6-7 POOR = 5 or less - Insufficient Data

[1] ***Effectiveness of in-season herbicide treatments for perennial and biennial broadleaf weeds often provides only partial control or suppression.*** *The response value indicated is based on a numerical scale from 0 to 9 comparing the relative effectiveness of the herbicides listed to a particular weed. Under certain weather or environmental conditions, a herbicide may perform better or worse than indicated in the table.* ***Therefore, this table should be used only as a guide for selecting treatments to deal with problem weeds.***

[2] *Apply only on selected field corn hybrids designated with GENETIC resistance/tolerance to LibertyLink (LL-corn) or to Roundup-Ready (RR-corn). Consult the label for guidelines and specific directions.*

Maximum Grass Weed Size Labeled for Postemergence Corn Herbicide Applications

HERBICIDE	Rate/A	Barnyardgrass	Broadleaf Signalgrass	Crabgrass, Large	Fall Panicum	Foxtail	Johnsongrass (seedling)	Johnsongrass (rhizome)	Ryegrass, Annual (Italian)	Shattercane (Wild Cane)	Yellow Nutsedge
Accent Q	0.67 oz / 0.9 oz	4"	2"	X	4"	4"	12"	18"	6"	12"	X
Acuron GT (RR-corn)	3.75 pt	4”	4”	4”	4”	4”	4”	4”	X	4”	X
Armezon PRO	16 to 24 fl oz	4”	3"[1]	3"	3"[1]	3"[1]	4"[1]	X	X	4"[1]	X
Assure II (ENLIST corn	5 fl oz	X	X	X	X	4”	8”	X	X	12”	X
	8 fl oz	6”	X	6”[2]	6:	8”	--	X	X	--	X
	10 fl oz	--	6”	--	--	--	--	24”[2]	6”	--	X
Callisto GT (RR-corn)	2 pt	4”	4”	4”	4”	4”	X	X	X	4”	4”
Capreno	3 fl oz	5”	5”	3”	5”	3”	5”	X	X	12”	X
DiFlexx Duo	24 to 40 fl oz	5”	4”	3”	X	3"[5]	5”	X	X	6”	X
Halex GT (RR-corn)	3.6 to 4 pt	4”	4”	4”	4”	4”	4”	4”	X	4”	4”
Impact / Armezon	1 fl oz	4”	3"[1]	3”	3"[1]	3"[3]	4"[1]	X	X	4"[1]	X
Impact Core	30 fl oz	3”	3"[1]	3”	3"[1]	3"[3]	3"[1]	X	X	3"[1]	X
Impact Z	8 to 10.7 fl oz	5”	3"[1]	4”	3"	3"[3]	4"[1]	X	X	4"[1]	X
Kyro	45 fl oz	3”	3”[1]	3”	3”[1]	3”	3”[1]	X	X	3”[1]	X
	60 fl oz	4”	3”	4”	3”	4”[6]	4”	X	X	4”[1]	X
Laudis	3 fl oz	5”	4”	3”	X	3”	5”	X	X	6”	X
Glufosinate (LL-corn)	22 fl oz	3”	3”	3" [4]	3”	6" [4]	3”	X	X	6”	X
Permit	1.0 to 1.33 oz	X	X	X	X	X	X	X	X	X	12"
Realm Q	4 oz	1-2"	1-2"[1]	0.5	1-2"	1-2"	1-2"[1]	X	1-2"[1]	4"	1-2"[1]
Resolve Q	1.25 oz	2”	2"[1]	0.5”	2”	2”	2"[1]	X	2"[1]	4”	2"[1]
Glyphosate 4S (RR-corn)	1.5 pt	5"	5"	18"	6"	12"	18"	X	X	18"	X
	2 pt	7"	7"	18"	8"	20"	18"	Boot stage	6"	18"	<6"[1]
Roundup PowerMAX 3 (RR-corn)	15 oz	3"	3"	6"	4"	12"	12"	X	X	12"	X
	20 oz	6"	6"	12"	6"	20"	18"	Boot stage	6"	20"	<6"[1]
Sinate (LL-corn)	21 fl oz	3”	3”	3" [4]	3”	3" [4]	3”	X	X	3”	X
	28 fl oz	4”	4”	4" [4]	4”	4" [4]	4”	X	X	4”	X
Steadfast Q	1.5 oz	4"	2"	1"	4"	4"	12"	12"	4"	6"	4"[1]

X = Not labeled for control. Some weeds may be labeled for suppression or partial control. -- = same height as indicated above

[1] Suppression, partial control, or reduced competition.

[2] Two applications may be necessary for acceptable control. Consult label for specifi weed height, timing of application, treating regrowth, and tank mixtures.

[3] Maximum size for giant foxtail with ARMEZON, IMPACT, IMPACT Z is 4 inches; suppression or partial control of green and yellow foxtail.

[4] Maximum size for yellow foxtail with Glufosinate is 3 inches. Crabgrass and yellow foxtail must be treated prior to tiller initiation

[5] Maximum size for green foxtail with DiFlexx Duo is 2 inches.

[6] Maximum size for yellow foxtail with Kyro is 3 inches.

Maximum Broadleaf Weed Size Labeled for Postemergence Corn Herbicide Applications

HERBICIDE	Rate/A	Black Nightshade	Burcucumber	Cocklebur	Lambsquarters	Marestail (Horseweed)#	Morningglory	Palmer Amaranth #	Pigweed, Smooth	Prickly Sida	Ragweed,Common#	Ragweed, Giant #	Sicklepod	Smartweed	Velvetleaf	Waterhemp #
Accent Q	0.67 oz	X	3"	X	X	X	3"	X	4"	X	X	X	X	4"	X	X
Acuron Flexi	2 to 2.25 qt	3"	X	3"	3"	3"	3"	3"	3"	3"[1]	3"	3"	3"	3"	3"	3"
Acuron GT (RR-corn)	3.75 pt	4"	4"[1]	4"	4"	4"[1]	4"[1]	4"[1]	4"	4"	4"[1]	4"[1]	4"	4"	4"	4"[1]
Armezon PRO	16 to 24 fl oz	4"	4"	5"	4"	4"	4"	4"	4"	2"	4"	5"	X	2"	4"	4"
Callisto (mesotrione)	3 oz	5"	5"[1]	5"	5"	5"[1]	5"[1]	3"[1]	5"	X	5"[1]	5"	X	5"	5"	2"
Callisto GT (RR-corn)	2 pt	4"	4"	4"	4"	4"	4"	4"	4"	4"	4"	4"	4"	4"	4"	4"
Callisto Xtra	20 fl oz 24 fl oz	5" 10"	2" 10"	5" 10"	5" 10"	5" 5"/10"[1]	2" 5"/10"[1]	2" 3"	5" 10"	2" 2"/10"[1]	3" 10"	3" 10"	X X	5" 10"	5" 10"	3" 10"
Capreno	3 fl oz	<6"	<6"[1]	<6"	<6"	<6"[1]	<6"[1]	<6"	<6"	<6"[1]	<6"	<6"	<6"[1]	<6"	<6"	<6"
DiFlexx Duo	24 to 40 fl oz	<6"	<6"	<6"	<6"	<6"	<6"	<6"	<6"	<6"	<6"	<6"	<6"	<6"	<6"	<6"
Halex GT (RR-corn)	3.6 to 4 pt	4"	4"	4"	4"	4"	4"	4"	4"	4"	4"	4"	4"	4"	4"	4"
Impact or Armezon	1 fl oz	6"	6"	6"	6"	6"	6"[1]	6"	6"	3"	6"	6"	X	3"	6"	6"
Impact Core	30 fl oz	4"	4"	4"	4"	4"	4"[1]	4"	4"	2"	4"	4"	X	2"	4"	4"
Impact Z	8 to 10.7 fl oz	6"	6"	8"	6"	6"[3]	6"[1]	6"[3]	6"	3"	6"	8"[3]	X	3"	8"[3]	6"[3]
Kyro	45 fl oz 60 fl oz	4" 6"	2" 6"	4" 6"	4" 6"	4" 6"	2" 2"	4" 6"	4" 6"	2" 6"	4" 6"	4" 6"	4"[1] 6"[1]	3" 3"	4" 6"	4" 6"
Laudis	3 fl oz	<6"	<6"[1]	<6"	<6"	<6"	<6"[1]	<6"	<6"	X	<6"	<6"	<6"[1]	<6"	<6"	<6"
Glufosinate (LL-corn)	22 fl oz	6"	6"	6"	4"	X[1]	6"	X	3"	4"	6"	6"	4"	6"	3"	4"
Permit	1.0 to 1.33 oz	X	12"[1]	14"	2"[1]	X	3"[1]	X	6"[2]	X	12"	6"	X	2"	12"[2]	X
Realm Q	4 oz	<5"	<5"	<5"	<5"	X	<5"[1]	<5"	<5"	<5"	<5"	<5"	X	<5"	<5"	<5"
Resolve Q	1.25 oz	X	X	3"[1]	3"	X	3"[1]	X	3"	X	3"[1]	X	X	3"[1]	3"[1]	X
Glyphosate 4S (RR-corn)	1.5 pt 2 pt	12" 12"	6" 12"	18" 24"	8" 12"	6" 12"	2" 4"	12" 18"	18" 24"	2" 3"	6" 8"	4" 6"	2" 4"	6" 8"	3" 4"	X 6"
Roundup PowerMAX 3 (RR-corn)	15 oz 20 oz	4" 6"	6" 12"	18" 24"	6" 12"	6" 12"	X 3"	12" 18"	12" 18"	2" 4"	6" 12"	6" 12"	2" 4"	X 6"	X 6"	X 6"
Sinate (LL-corn)	21 fl oz 28 fl oz	4" 6"	4" 6"	4" 6"	4" 6"	4" 6"	3" 4"	4" 6"	4" 6"	3" 4"	4" 6"	4" 6"	3" 4"	3" 4"	4" 6"	4" 6"
Steadfast Q	1.5 oz	X	4"	4"[1]	4"[1]	X	4"	X	4"	X	X	X	X	4"[1]	4"[1]	2"

NOTE: 2,4-D, CLARITY, DIFLEXX, STATUS and other dicamba products do not indicate size of weeds. Most seedling broadleaf weeds <3" can be effectively controlled; however, some species may be more difficult to control at the use rates labeled for corn and may depend on timing of the application.

X = Not labeled for control. Some weeds may be labeled for suppression or partial control.

[1]Suppression, partial control, or reduced competition. [2]Liquid Nitrogen or Ammonium Sulfate may be added to improve control (consult label) [3]Use high rate.

#Biotypes of this weed resistant to the class of chemistry associated with certain herbicides will not be effectively controlled.

Adjuvants, Crop Growth Stages, and Rain-Free Periods for Postemergence Corn Herbicides

Herbicide	Adjuvant[1]	Crop Stage	Rainfast[2]
Accent Q	COC, MSO, or NIS plus UAN or AMS	Broadcast up to 20" tall corn or that exhibits 6 or fewer collars (V6); Use only drop nozzles for corn between 20“ to 36" tall. Do not apply to corn that exceeds 36" tall or that has 10 or more collars (V10).	4 hours
Acuron Flexi	NIS. Consult label for use of COC	Apply before corn emergence until plants reach 30 inches or up to 8-leaf stage of corn growth.	**
Acuron GT (RR-corn)[3]	NIS plus AMS	Corn emergence up to 30” height or the 8-leaf (V8) growth stage.	**
Armezon PRO	MSO or COC plus UAN or AMS	May be applied preemergence up to 30” tall corn, but 45 days prior to harvest. Use directed applications when corn is 12–30” tall.	1 hour
Assure II (ENLIST corn)[3]	COC or NIS	Apply ASSURE II to emerged Enlist field corn from V2 to V6 growth stage.	1 hour
Atrazine	COC or Crop Oil	Apply before corn reaches 12” tall	**
Callisto (mesotrione)	COC plus UAN or AMS	Broadcast on corn up to 30" tall or up to the 8-leaf stage of corn growth.	1 hour
Callisto Xtra	COC or NIS plus UAN or AMS	Apply after crop emergence but before corn exceeds 12” in height	**
Capreno	COC plus UAN or AMS	Broadcast apply from the 1 leaf collar (V10 to 6-leaf (V6) growth stage. Use directed applications when corn is V6 to V7 growth stage	1 hour
Dicamba [Clarity, Sterling Blue, Vision, etc]	NIS, UAN, or AMS may be added. Consult label for use of COC	Apply 8 to 16 oz/A (0.5 to 1 pt/A) from emergence through 5th leaf stage or until corn reaches 8" tall, whichever occurs first; Apply 8 oz/A when corn is from 8" to 36" tall, if 6th true leaf is emerging from whorl, or 15 days before tassel emergence.	4 hours
DiFlexx or DiFlexx Duo	NIS, COC, MSO plus UAN or AMS may be added (consult label)	Broadcast from spike through V6 (6 leaf collars) or 36" tall, whichever occurs first. Directed applications may be made from V7-V10 crop growth stage (7 to 10 collars), up to 36” tall, or 15 days before tassel emergence, whichever occurs first.	4 hours
Enlist Duo (ENLIST-corn)[3]	None	Broadcast on corn no larger than V8 growth stage or 30 inches, whichever occurs first. For corn 30 to 48 inches apply using drop nozzles to avoid whorl of corn plants.	**
Halex GT (GT-corn)[3]	NIS plus AMS	Corn emergence up to 30” height or the 8-leaf (V8) growth stage.	**
Impact / Armezon	MSO or COC plus UAN or AMS	May be applied anytime after corn emergence up to 45 days prior to harvest.	1 hour
Impact Core	MSO (NIS) plus AMS or UAN	After corn emergence up to 11” corn height	1 hour
Katagon	MSO, COC, or NIS	Apply up to the 5 leaf collar (V5) or 20 inches tall	4 hours
Kyro	COC, HSOC, or MSO	Corn emergence up to 24 inch tall corn	**
Laudis	MSO or COC plus UAN or AMS	Corn emergence up to the V8 growth stage (exhibits 8 collars)	1 hour
glufosinate & Liberty Ultra (LL-corn)[3]	AMS	Apply from corn emergence until V-6 growth stage. Can be applied with drop nozzles until LL-corn is 36" tall.	4 hours
Permit	NIS or COC (may add 28% Liq N)	Apply from the spike through layby stage of field corn.	4 hours
Realm Q	COC or NIS plus UAN (27-32%) or AMS	Apply to corn up to 20" tall. Do not apply to corn taller than 20" or exhibiting 7 or more leaf collars.	**
Resolve Q	NIS plus UAN (28-32%) or AMS	Apply postemergence to corn that is up to 20” tall. Do not apply to corn taller than 20” or exhibiting 7 or more leaf collars.	**
Roundup and other glyphosate products (RR-corn)[3]	Adjuvant requirements vary with product used	Apply broadcast over-the-top from corn emergence through V8 corn stage or 30 inches, whichever occurs first. For “Roundup Ready 2 Corn” and other hybrids designated as Glyphosate Tolerant drop nozzles can be used to direct applications on corn 30 to 48 inches.	**
Shieldex	MSO, COC, or NIS	Apply to corn up to the 6 leaf collar (V6) stage or up to 20” tall.	1 hour
Sinate (LL-corn)[3]	MSO or HSMOC plus AMS	Apply from corn emergence up to 24 inches (V-7 growth stage). Use drop nozzles for corn 24 to 36" tall.	4 hours
Status	NIS, COC, or MSO plus UAN (28-34%) or AMS	Apply from 4-inch tall (V2) to 36-inch tall (V10) corn. Do not apply if corn is more than 36”, or within 15 days before tassel emergence.	4 hours
Steadfast Q	COC, MSO, or NIS plus UAN or AMS	Apply to corn up to 20" tall. Do not apply to corn >20" tall or exhibiting 6 or more leaf collars (V6), whichever is more restrictive.	4 hours

[1]COC - Crop Oil Concentrate; NIS - Non-Ionic Surfactant (at least 80% active ingredient); AMS - Ammonium Sulfate; UAN - Urea Ammonium Nitrate (28% to 32% nitrogen fertilizer); MSO - Methylated Seed Oil; ESO - Ethylated Seed Oil; HSCOC- high surfactant oil concentrate

[2]A “**” indicates no specific time period on label for rainfastness, 6 to 8 hours of rain-free period is suggested.

[3]Apply only on selected field corn hybrids which have GENETIC resistance/tolerance to Liberty Link (LL-corn); to Roundup Ready and Glyphosate-Tolerant (RR-corn or GT-corn), or ENLIST corn.

Postemergence Herbicides

ACCENT Q (nicosulfuron)

ACCENT Q	0.9 oz/A	nicosulfuron 0.031 lb ai/A
+		
Crop Oil Concentrate (COC) or	1% v/v	
Modified Seed Oil (MSO) or	0.5% v/v	
Non-Ionic Surfactant (NIS)	0.25 to 0.5% v/v	
+		
Ammonium Nitrogen Fertilizer (28% to 32% UAN)	2 qt/a	
or		
Amoniuam Sulfate (AMS)	2 lb/a	

Weeds Controlled: Barnyardgrass, broadleaf signalgrass, foxtails, johnsongrass, pigweeds, shattercane.

Crop Stage: ACCENT Q is labeled for use on field corn grown for grain or silage. Consult label for specific use directions on field corn grown for seed and use on popcorn and sweet corn. When applied alone ACCENT Q (nicosulfuron) can be broadcast on field corn up to 20 inches tall or that exhibits 6 or fewer collars (V6 growth stage). Use drop nozzles for a post-directed application on corn between 20 to 36 inches tall. DO NOT APPLY to corn that is taller than 36 inches or that has developed 10 or more collars (V10), whichever is the most restrictive. When tank mixed with other herbicides consult the label for maximum crop growth stage.

General Comments: ACCENT Q contains 0.545 lb ai of nicosulfuron per lb of product plus isoxadifen (a crop safener); Consult label for optimum size for control of johnsongrass and shattercane. For use to control other weeds, apply when weeds are less than 4 inches in height. The combined dosage for two applications of ACCENT Q cannot exceed 1.8 oz/A. Before applying ACCENT Q consult the soil insecticide interaction information on the label to ensure that it is compatible with insecticides previously applied to corn.Applications to corn previously treated with “Counter”, “Lorsban”, or “Thimet” may cause unacceptable crop injury. Consult label directions before applying ACCENT Q (nicosulfuron) with foliar applied insecticides or other foliar herbicides. The likelihood of corn injury may increase if applied at improper stage of growth or when corn is under stress due to drought, diseases, insect damage, or nutrient deficiency.

Environmental Statements: Avoid direct spray drift to nearby crops or vegetation.

Rain Delay: Allow 4 hours between application and expected rainfall.

Rotation Restrictions: Rotational crops which may be planted include soybean 15 days; wheat, barley or rye 4 months following application; and alfalfa or red clover 10 months following application. Sorghum may be planted after 10 months if soil pH is 7.5 or less. For all other crops, the rotation interval is 10 months where soil pH is 6.5 or less, and 18 months where soil pH is greater than 6.5.

Harvest & Forage Restrictions: Wait 30 days after before utilizing treated corn for grain, forage feed or grazing.

Tank Mixtures: On field corn the following tank mixtures may be used – Atrazine, Bicep II Magnum, Callisto, Cinch, Cinch ATZ, dicamba (eg. Clarity), Dual II Magnum, Exceed, Impact, Lexar, Lumax, Marksman, Outlook, Prowl, Surpass EC [Consult label for any precautions and maximum application rates of all products before tank mixing]. When tank mixed with other herbicides consult the label for crop growth stage, rates, and use of adjuvants. DO NOT tank mix with 2,4-D since poor control of grasses may occur.

ACURON FLEXI

ACURON FLEXI	2 to 2.25 qt/A	S-metolachlor: mesotrione: bicyclopyrone 1.4: 0.16: 0.04 to 1.6: 0.18: 0.045 lb ai/A
+		
Non-Ionic Surfactant (NIS)	1 to 2 qt / 100gal	

Weeds Controlled: Barnyardgrass, black nightshade, crabgrass, foxtails, lambsquarters, marestail, Palmer amaranth, smooth pigweed, common ragweed, smartweed, velvetleaf, waterhemp.

Crop Stage: Apply postemergence on corn up to 30 inches in height or 8-leaf stage of corn growth.

General Comments: ACURON FLEXI contains S-metolachlor + mesotrione + bicyclopyrone [2.86 + 0.32 + 0.08 lb ai/gal] plus the safener benoxacor. Use of other additives such as COC and UAN may result in crop injury. Do not use Methylated Seed Oil (MSO). Applying ACURON FLEXI postemergence to corn that has received an at-planting application of “Counter” insecticide can result in severe crop injury. Consult label before use with other organphosphate or carbamate insecticides. Apply postemergence before broadleaf weeds exceed 3 inches tall.

Environmental Statements: ACURON FLEXI has ground and surface water advisory statements.

Rain Delay: None.indicated.

Rotation Restrictions: Crops that may be planted include corn (all types) anytime; before planting wheat, barley, or rye wait 4 months; for alfalfa, sorghum and soybeans wait 10 months; and for other rotational crops wait 18 months. If applied after June 1, rotating to crops other than corn may result in crop injury.

Harvest & Forage Restrictions: Do not use for feed or harvest forage within 45 days following application.

Tank Mixtures: Postemergence applications include Atrazine, Accent Q, Basis Blend, Glyphosate products [apply only to glypohosate-tolerant corn hybrids], Peak, Resolve Q, Status, or Steadfast Q.

ACURON GT
(Glyphosate Tolerant Corn Hybrids ONLY)

ACURON GT	3.75 pt/A	S-metolachlor: mesotrione: bicyclopyrone: glyphosate 0.94: 0.09: 0.04: 0.94) lb ai/A
+		
Non-Ionic Surfactant (NIS)	1 to 2 qt/100gal	
+		
Ammonium Sulfate (AMS)	8.5 to 17 lb/100gal	

Weeds Controlled: Barnyardgrass, black nightshade, broadleaf signalgrass, cocklebur, crabgrass, fall panicum, foxtails, lambsquarters, marestail, Palmer amaranth, smooth pigweed, giant ragweed, sicklepod, smartweed, velvetleaf, waterhemp.
Crop Stage: Apply postemergence on corn up to 30 inches in height or 8-leaf stage of corn growth.
General Comments: ACURON GT contains S-metolachlor + mesotrione + bicyclopyrone + glyphosate acid [2.0 + 0.2 + 0.095 + 2.0 lb/gal] plus a safener. Use of other additives such as COC and other additives may result in crop injury. Do not use Methylated Seed Oil (MSO) or urea ammonium nitrate (UAN). Applying GT postemergence to corn that has treated with “Counter”, “Lorsban”, or other organophosphate-containing soil insecticide can result in severe crop injury. Consult label before use with foliar organphosphate or carbamate insecticides. Severe corn injury may occur if applied with EC formulated products. Apply postemergence before broadleaf weeds exceed 4 inches tall.
Environmental Statements: ACURON GT has ground and surface water advisory statements.
Rain Delay: None.indicated.
Rotation Restrictions: Crops that may be planted include corn (field, seed, popcorn, sweet) anytime; for small grains (wheat, barley, rye, and oats) wait 4.5 months; for alfalfa*, sorghum and soybeans wait 10 months; and for other rotational crops wait 18 months. *The 10-month rotation to alfalfa applies if the soil pH is 6.0 or greater and 18” minimum rainfall has been received.
Harvest & Forage Restrictions: Do not graze or feed as forage or harvest for grain within 45 days following application.
Tank Mixtures: Atrazine, Clarity, Distinct, Status, glyphosate products, or Peak (consult label). Insecticides include Besiege and Warrior II.

ARMEZON PRO

ARMEZON PRO	16 to 24 fl oz/A	topramezone: dimethenamid-P 0.012: 0.66 to 0.019: 0.98 lb ae/A
+		
MSO or COC	0.5 to 1 gal/100 gal	
+		
UAN [28-34%] or 10-34-0	1.25 to 2.5 gal/100 gal	
or		
Ammonium Sulfate (AMS)	8.5 to 17 lb/100 gal	

Weeds Controlled: Black nightshade, cocklebur, crabgrass, lambsquarters, Palmer amaranth, smooth pigweed, velvetleaf, waterhemp.
Crop Stage: For field corn and popcorn apply preemergence up to V8 or 30 inches tall corn (apply to sweet corn <12-inches tall). When field corn or popcorn is 12-inches to 30-inches tall apply as a directed application below corn canopy with drop nozzles. Do not apply to field corn within 45 days prior to corn harvest or after V8 growth stage.
General Comments: ARMEZON PRO is a pre-package mixture containing topramezone + dimethenamid-P [0.1+5.25 lb ai/gal]. For most applications apply before susceptible weeds exceed 4 inches. Use of herbicide tank mixtures and/or oil-type adjuvants may increase potential for crop necrosis. Consult supplemental labels for preemergence/residual activity on weeds and additional crop rotation information.
Environmental Statements: Consult groundwater and surface water protection statements on the label.
Rain Delay: 1 hour.
Rotation Restrictions: Corn (all types) may be replanted immediately. Cereal grains (wheat, barley, oats, and rye) may be planted 4 months after application; alfalfa, grain sorghum, and soybeans after 9 months. Red clover, tobacco, and most other rotational crops may be planted 18 months after application.
Harvest & Forage Restrictions: Do not graze or harvest for forage at least 45 days after application.
Tank Mixtures: May be tank mixed or applied sequentially with other herbicides to broaden the spectrum or increase residual weed control. Consult label when tank mixing with atrazine and other photosystem II inhibitor herbicides or when using with isoxaflutole (ie. Balance Flexx).

ASSURE II
(ENLIST Corn Hybrids only)

ASSURE II 0.88E	5 to 12 oz/A	quizalofop 0.034 to 0.083 lb ai/A
+	+	
Crop Oil Concentrate (COC)	1% v/v	
or	or	
Non-Ionic Surfactant (NIS)	0.25% v/v	

Weeds Controlled: Barnyardgrass, broadleaf signalgrass, crabgrass, fall panicum, foxtails, johnsongrass, shattercane, volunteer corn. Will not control volunteer corn from an Enlist corn hybrid.
Crop Stage: Apply ASSURE II to emerged Enlist field corn from V2 to V6 growth stage.
General Comments: DO NOT APPLY TO FIELD CORN WITHOUT THE ENLIST TRAIT OR SEVERE INJURY WILL OCCUR. Follow label directions for herbicide rate and stages of weed growth for optimum results. For Johnsongrass control apply 8 fl oz to seedling johnsongrass (2 to 6" tall) or 12 fl oz to rhizome johnsongrass when it is 12 to 16 inches tall. Maximum rate per growing season is 12 fl oz/A.
Environmental Statements: Applicator must maintain a 36 foot downwind buffer. See label for areas that may be included in the downwind buffer. DO NOT apply when windes exceed 15 mph.
Rain Delay: 1 hour.
Rotation Restrictions: Do not plant crops other than soybean, canola, or Enlist corn within 120 days after last application.
Harvest & Forage Restrictions:. Do not harvest grain and stover within 79 days of application. Do not graze or harvest forage within 30 days of application.
Tank Mixtures: Do Not tank mix Assure II with any other pesticides without first consulting the tank mix website: www.EnlistTankMix.com/ASSUREII . Tank mixing with postemergence broadleaf herbicides may result in reduced grass control.

CALLISTO

CALLISTO 4SC	3 fl oz/A	mesotrione 0.094 lb ai/A
+		
Crop Oil Concentrate	1% v/v	
+		
Urea Ammonium Nitrate (28-0-0)	2.5% v/v	
or		
Ammonium Sulfate	8.5 lb/100gal	

Weeds Controlled: Black nightshade, cocklebur, lambsquarters, pigweeds, giant ragweed, smartweed, velvetleaf.
Crop Stage: CALLISTO is labeled for use on field corn and corn grown for silage. For applications on yellow popcorn and sweet corn consult label for use of adjuvants. Broadcast on corn up to 30 inches tall or up to the 8-leaf stage of corn growth.
General Comments: CALLISTO 4SC contains 4 lb ai mesotrione per gal. Do not use Methylated Seed Oils or MSO blend adjuvants as a spray additive. When applied with other products consult Callisto label or other supplemental labels for permitted uses of adjuvant additives. For postemergence control apply CALLISTO when broadleaf weeds are less than 5 inches tall and actively growing. When applying take necessary precautions to reduce the potential for spray drift. Do not apply CALLISTO if the corn crop was treated with Counter or Lorsban insecticide. Do not make foliar postemergence applications in a tank mixture with any organophosphate or carbamate type insecticides and consult label directions before applying CALLISTO as a sequential with foliar insecticides. Do not make more than two applications of CALLISTO per season and do not exceed 3 oz/A per application. The total amount per season of mesotrione may not exceed 0.24 lb ai/A applied as CALLISTO (7.7 fl oz./A) or from all other mesotrione containing products, including Lexar, Lumax, and Camix.
Environmental Statements: CALLISTO has a SURFACE WATER advisory statement on the label.
Rain Delay: 1 hour.
Rotation Restrictions: Corn (all types), sorghum, and oats may be replanted immediately. Small grains may be planted 120 days (4 months) after CALLISTO application. Soybeans, canola, tobacco, alfalfa, and sunflowers may be planted back the following season, but not less than 10 months after application. Red clover and most other rotational crops may be planted 18 months after application.
Harvest & Forage Restrictions: Do not harvest for forage, grain, or stover within 45 days of application.
Tank Mixtures: Accent, Atrazine, Basis, Buctril, Glyphosate, Steadfast, Stout. DO NOT apply post- emergence in a tank mixture with an emulsifiable concentrate grass herbicide or injury may occur. Soil-residual herbicides include Axiom, Define, Bicep II Magnum, Degree, Degree Xtra, Dual II Magnum, FulTime, Harness, Harness Xtra, Keystone, Outlook, Surpass EC, Prowl, Topnotch. Burndown herbicides include 2,4-D, Gramoxone, Roundup brands, and Touchdown brands.
Similar Products: ARGOS, BELLUM, EXPLORER, INCINERATE, MOTIF, Mesotrione

CALLISTO GT
(Glyphosate Tolerant Corn Hybrids ONLY)

CALLISTO GT	2 pt/A	glyphosate: mesotrione 1.0: 095 lb ai/A
+		
Non-Ionic Surfactant (NIS)	1 to 2 qt/100gal	
+		
Ammonium Sulfate (AMS)	8.5 to 17 lb/100gal	

Weeds Controlled: Barnyardgrass, black nightshade, broadleaf signalgrass, burcucumber, cocklebur, crabgrass, fall panicum, foxtails, johnsongrass, lambsquarters, pigweed, giant ragweed, shattercane, sicklepod, smartweed, velvetleaf, waterhemp. Consult label for specific weed species.
Crop Stage: Use only on selected CORN HYBRIDS which are designated with Glyphosate Tolerance or the Roundup Ready gene. Apply from corn emergence up to 30 inches in height or the 8-leaf growth stage.
General Comments: CALLISTO GT is a pre-package mixture containing glyphosate + mesotrione [3.8+0.38 lb ae/gal]. Apply with Non-Ionic Surfactant plus Ammonium Sulfate. Crop Oil Concentrate at 1% v/v may be substituted for NIS; however, use of Ammonium Nitrate (UAN) or other suspension fertilizers is not recommended and will result in crop injury. For control of emerged annual grasses and broadleaf weeds less than 4 inches tall. Do not apply more than 2 pt/A of CALLISTO GT per growing season or apply more than 0.24 lb of mesotrione (eg. Callisto) per year. Severe corn injury could result if CALLISTO GT is applied when corn has been treated with soil-applied organo-phosphate insecticides (eg. Counter, Lorsban) or foliar applied organophosphate or carbamate insecticides or if tank mixed with emulsifiable concentrate grass herbicides.
Environmental Statements: Do not apply directly to water or areas where surface water is present.
Rain Delay: Rainfall soon after application may reduce effectiveness.
Rotation Restrictions: Corn and grain sorghum may be replanted immediately; barley, rye, and winter wheat 4 months after application; or alfalfa, canola, soybeans, and tobacco may be planted 10 months after application. Other crops not listed by the label may be planted 18 months after application.
Harvest & Forage Restrictions: To avoid possible illegal residues, do not graze or feed forage from treated areas for 45 days following application or do not harvest forage, grain, or stover within 45 after application.
Tank Mixtures: Atrazine, Buctril, Clarity, Status.

CALLISTO XTRA

CALLISTO XTRA	20 to 24 fl oz/A	mesotrione: atrazine 0.078: 0.5 to 0.094: 0.6 lb ai/A
+		
Crop Oil Concentrate or	1 %v/v	
Non-Ionic Surfactant	0.25% v/v	
+		
Urea Ammonium Nitrate [28-0-0] or	2.5% v/v	
Ammonium Sulfate (AMS)	8.5 to 17 lb/100 gal	

Weeds Controlled: Black nightshade, cocklebur, lambsquarters, Palmer amaranth, pigweed, common ragweed, giant ragweed, smartweed, velvetleaf, waterhemp.
Crop Stage: CALLISTO XTRA is labeled for use on field corn and corn grown for silage. For applications on yellow popcorn and sweet corn consult label for use of adjuvants. Apply to corn after crop emergence but before corn exceeds 12” in height.
General Comments: CALLISTO XTRA is a premixture of mesotrione + atrazine [0.5 + 3.2 lb ai per gal]. Do not use Methylated Seed Oils or MSO blend adjuvants as a spray additive. For postemergence weed control apply when weeds are less than 5” in height. Use the higher rate for increased residual control and for susceptible weeds 5-10” tall. When applying take necessary precautions to reduce the potential for spray drift. Do not apply CALLISTO XTRA if the corn crop was treated with Counter or Lorsban insecticide. Do not make foliar postemergence applications in a tank mixture with any organophosphate or carbamate type insecticides and consult label directions before applying as a sequential with foliar insecticides. The total amount per season of mesotrione (i.e. applied as Callisto, Camix, Lexar, or Lumax) may not exceed 0.24 lb ai/A or do not exceed 2.5 lb ai/A of atrazine containing products.
Environmental Statements: CALLISTO EXTRA is a RESTRICTED-USE pesticide and contains GROUND and SURFACE WATER ADVISORY statements on the label. [NOTE: See page 19 for PRECAUTIONS on use of atrazine containing products near ground or surface water].
Rain Delay: None indicated on the label.
Rotation Restrictions: Corn (all types) and sorghum (grain) may be replanted immediately. Wheat, barley, and rye may be planted after 4 months; alfalfa, canola, soybeans, and tobacco after 10 months following application. Other rotational crops may require an 18 month rotational interval (consult label).
Harvest & Forage Restrictions: Do not graze or harvest for forage or grain within 60 days of application.
Tank Mixtures: Accent Q, atrazine, Basis, Buctril, Clarity, glufosinate, glyphosate , Require Q, Resolve Q, Status, Steadfast, Steadfast Q, Steadfast ATZ, and Stout. DO NOT apply postemergence in a tank mixture with an emulsifiable concentrate grass herbicide, unless specified by the label, or injury may occur. Soil-residual herbicides include products such as Bicep II Magnum.

CAPRENO

CAPRENO	3 fl oz/A	thiencarbazone: tembotrione 0.013: 0.068 lb ai/A
+		
Crop Oil Concentrate (COC)	1 gal/100 gal	
+		
Ammonium Nitrate [UAN] or	1.5 qt/A	
Ammonium Sulfate [AMS]	8.5 lb/100gal	

Weeds Controlled: Barnyardgrass, cocklebur, fall panicum, foxtail, johnsongrass (seedling), lambsquarters, black nightshade, Palmer amaranth, pigweeds, common ragweed, shattercane, smartweed, velvetleaf, waterhemp.
Crop Stage: CAPRENO is labeled for use on field corn grown for grain or silage. Broadcast apply to corn from 1 leaf collar (V1) through the 6-leaf collar stage (V6) stage of growth. Use directed applications on corn that is from V6 through V7 growth stage.
General Comments: CAPRENO is a premixture of thiencarbazone-methyl + tembotrione [0.57 + 2.88 lb ai per gal]. For postemergence control of broadleaf weeds <6" tall and selected grasses. Consult label for maximum height of grasses. When applying take necessary precautions to reduce the potential for spray drift. Do not apply CAPRENO if the corn crop was treated with soil-applied Lorsban, Counter, Dyfonate, Thimet, or any other organophosate insecticides. Do not make foliar postemergence applications within 7 days of any organophosphate or carbamate type insecticides and consult label directions before applying CAPRENO with other soil-applied or foliar insecticides. Do not apply with liquid fertilizers as the primary spray carrier. Do not exceed a total of 6 fl oz/A per growing season.
Environmental Statements: Do not apply directly to water, or to areas where surface water is present.
Rain Delay: 1 hour.
Rotation Restrictions: Field corn (yellow dent) may be replanted immediately. Wheat may be planted 4 months after CAPRENO application; barley, soybean, white corn, sweet corn, popcorn, and sorghum after 10 months; or alfalfa, canola, and oats after 18 months. Most other rotational crops may be planted 18 months after application with completion of a
successful field bioassay. Consult label for additional restrictions if precipitation is limited or soil pH is 7.5 or above.
Harvest & Forage Restrictions: Do not graze or harvest corn forage for at least 45 days after application.
Tank Mixtures: Atrazine, Buctril, glufosinate, and glyphosate products.

DICAMBA

DICAMBA e.g. CLARITY, DIFLEXX, STERLING BLUE, VISION, etc.	8 to 16 fl oz/A (0.5 to 1 pt/A)	dicamba 0.25 to 0.5 lb ai/A

Weeds Controlled: Black nightshade, cocklebur, common ragweed, giant ragweed, jimsonweed, lambsquarters, morningglories, Palmer amaranth, pigweed, prickly sida, sicklepod, smartweed, velvetleaf, waterhemp.
Crop Stage: Apply 8 to 16 oz/A (0.5 to 1 pt/A) as a broadcast spray from corn emergence through 5th leaf stage or until corn is 8 inches tall, whichever comes first. Apply at a maximum of 8 oz/A (0.5 pt/A), if 6th true leaf is emerging from whorl, when corn size reaches 8 to 36 inches tall, or up to 15 days before tassel emergence, whichever comes first. *Consult DIFLEXX label for application rates and crop growth stages.* Use DIRECTED spray applications when 1)
corn leaves prevent proper weed coverage, 2) sensitive crops are growing nearby, or 3) tank mixing with 2,4-D.
Additives: Although not required, the addition of a surfactant or sprayable fluid fertilizer may improve control of emerged weeds. Avoid use of a spray additive such as crop oil concentrate after corn has emerged. Use of fluid fertilizer as a carrier is not recommended after corn emerges. Consult all product labels on use of additives in tank mixtures.
General Comments: CLARITY 4S and STERLING BLUE contain 4 lb ae/gal of the diglycolamine salt of dicamba; DIFLEXX 4SC contains 4 lb ae/gal of the diglycolamine salt of dicamba plus a safener (cyprosulfamide). VISION contains 3.8 lb dicamba acid. Avoid applications to crops under stress due to environmental conditions or other factors.
Environmental Statements: Some crops such as tobacco, soybeans, grapes, vegetables, and ornamental plants can be extremely susceptible to DICAMBA spray drift and vapors. Do not apply where sensitive crops are growing nearby, if winds over 5 MPH and are moving in the direction of sensitive crops, or if air temperatures on the day of application will exceed 85 degrees.
Rain Delay: 4 hours.
Rotation Restrictions: Any rotational crop may be planted following normal growth and harvest of corn. However, for between crop or post harvest applications delay planting soybeans a minimum of 30 days per each pint/acre of DICAMBA applied and delay planting wheat 20 days per pint of DICAMBA treated per acre. Any rotational crop may be planted at 120 days or more following application. For barley, oat, wheat, and other grass seedlings, wait at least 15 days per 8 oz/A of the dicamba product applied.
Harvest & Forage Restrictions: Do not graze or harvest DICAMBA treated corn for dairy or beef feed until the crop has reached the ensilage (milk) stage or late in maturity, except corn treated with DIFLEXX can be harvested for forage 45 days after application.
Tank Mixtures: Accent, Atrazine, Glyphosate (RR-corn), Hornet, Liberty (LL-corn), Permit,. Tank mixtures with other products containing DICAMBA must not exceed a combined rate of 0.5 lb of dicamba per acre. Dicamba plus 2,4-D (0.25 pt/A) may be applied as a DIRECTED treatment using drop nozzles in corn (apply when corn is at least 8 inches tall, but less than 36 inches in height or until 15 days before tassel emergence). Consult label for tank mixes with soil applied herbicides.

DIFLEXX DUO

DIFLEXX DUO	24 to 40 fl oz/A	dicamba: tembotrione 0.24: 0.05 to 0.39: 0.08 lb ae/A
+		
Methylated Seed Oil (MSO)or	1 % v/v	
Crop Oil Concentrate (COC)	1 % v/v	
+		
Urea Ammonium Nitrate [UAN] or	1.5 qt/A	
Ammonium Sulfate [AMS]	8.5 to 17 lb/100gal	

Weeds Controlled: Black nightshade, burcucumber, cocklebur, lambsquarters, marestail, morningglories, Palmer amaranth, pigweed, prickly sida, common ragweed, giant ragweed, sicklepod, smartweed, velvetleaf, waterhemp.
Crop Stage: Apply as a broadcast spray from emergence up to, but not including, the V7 stage of corn growth or 36" tall, whichever occurs first. DIFLEXX DUO should be applied **as a directed spray** when corn is from V7 thru V10 stages of growth, up to 36", or up to 15 days prior to tassel, whichever occurs first. *Directed applications should be used 1) if corn leaves prevent proper spray coverage, 2) sensitive crops are growing nearby, or 3) when tank mixing with 2,4-D.*
General Comments: DIFLEXX DUO is a premixture of dicamba (diglycolamine salt) + tembotrione [1.86 + 0.27 lb per gal]. For postemergence control of broadleaf weeds <6" tall and selected grasses. Consult label for maximum height of grasses. When applying take necessary precautions to reduce the potential for spray drift. Do not apply to crops that exhibit injury or under stress due to environmental conditions.
Environmental Statements: Spray drift may result in injury to non-target crops such as tobacco, soybeans, grapes, vegetables, and ornamental plants. Do not apply when wind speed is greater than 10 MPH. Do not apply when weather conditions, wind speed, or wind direction may cause spray drift to non-target areas.
Rain Delay: Rainfast within 4 hours.
Rotation Restrictions: Corn may be replanted immediately.Cereal grains (eg. wheat, barley) and sweet corn can be planted 4 months after application; soybean after 8 months; sorghum, canola, and alfalfa after 10 months; tobacco after 12 months; or other crops after 18 months. Following a field bioassay cover crops is allowed as long as these crops are not grazed by livestock nor harvested for food. Consult label for additional rotation crop guidelines.
Harvest & Forage Restrictions: Do not graze or harvest corn forage within 45 days of DIFLEXX DUO application. Corn grain and stover may be harvested once the crop has reached the ensilage (milk) stage.
Tank Mixtures: Atrazine, Glyphosate (RR-corn), and Liberty (LL-corn), Consult label for tank mixtures for insect and disease control.

ENLIST DUO
(ENLIST Corn Hybrids only)

ENLIST DUO	3.5 to 4.75 pt/ A	2,4-D choline salt:glyphosate 0.7: 0.75 to 0.95: 1.0 lb ae/A

Weeds Controlled: For control of annual and certain perennial grasses and broadleaf weeds.
Crop Stage: Apply when weeds are small and corn is no larger than V8 growth stage or 30 inches, whichever occurs first. For corn heights 30 to 48 inches apply only using drop nozzles to avoid spraying in to the whorl of corn plants.
General Comments: For use on field corn that contains the ENLIST trait. Apply in a broadcast spray volume of 10 to 15 gallons of water per acre. Be cautious about applications near sensitive crops, such as tobacco, soybean, vegetables or ornamental plantings, and avoid potential injury caused by spray drift. *CONSULT LABEL FOR SPECIFIC APPLICATION GUIDELINES AND SPRAY DRIFT MANAGEMENT FOR PROTECTION OF SENSITIVE AREAS.*
Environmental Statements: Consult the following website for required mitigation measures to manage potential water runoff. https://www.enlist.com/en/enlist-ahead/mitigation-measures-to-manage-runoff.html
Rain Delay: Rainfast within 4 hours following application. To avoid potential field runoff avoid applications within 48 hours of anticipated rainfall.
Rotation Restrictions: During the growing season following application, do not replant treated fields with crops other than those labeled for use with 2,4-D or glyphosate.
Harvest & Forage Restrictions: Do not apply within 50 days of forage harvest.
Tank Mixtures: ENLIST DUO may only be tank-mixed with products that have been tested. A list of approved products can be found at ***www.EnlistTankmix.com*** which should be consulted no more than 7 days before applying.

GLUFOSINATE
(Liberty Link Hybrids ONLY)

INTERLINE, CHEETAH, FORFEIT, SURMISE, TOTAL	32 fl oz/A	glufosinate-ammonium 0.58 lb ai/A
+	+	
Ammonium Sulfate (AMS)	3 lb/A (17 lb/100 gal)	

Weeds Controlled: Burcucumber, cocklebur, giant foxtail, green foxtail, jimsonweed, johnsongrass (seedling), lambsquarters, morningglory, black nightshade, fall panicum, pigweed, common ragweed, giant ragweed, prickly sida, shattercane, smartweed, velvetleaf.

Crop Stage: Use only on selected FIELD CORN HYBRIDS designated as "LibertyLink" or warranted to be resistant to LIBERTY applications (consult label). Apply as a broadcast treatment from emergence until corn is V-6 growth stage (exhibits 6 developed collars). Applications with drop nozzles can be made from emergence until LL-corn is 36 inches tall. Avoid spraying into whorls or leaf axils of corn stalks.

General Comments: LIBERTY contains 2.34 lb ai of glufosinate-ammonium per gal. Do not use a nitrogen solution as a spray carrier or add any other surfactants or crop oils. LIBERTY is a non-selective contact herbicides that controls certain grasses and broadleaf weeds. Good spray coverage is important for optimum control; apply at a minimum of 15 GPA or 20 GPA under unfavorable conditions. See label for optimum stages of weed growth and rate at time of application. If required, a second application of LIBERTY up to 32 fl oz/A can be applied. Apply 22 fl oz/A with labeled tank mix partners. Avoid applications when corn shows injury from prior herbicide applications or environmental stress.

Environmental Statements: Use precautions to avoid spray particle drift to nearby crops or sensitive vegetation.

Rain Delay: 4 hours after application.

Rotation Restrictions: Corn, soybeans, and canola may be planted anytime. Wheat, barley, rye, oats, or triticale may be planted 70 days after last application. Minimum waiting period for planting other crops is 180 days (6 months).

Harvest & Forage Restrictions: Allow 60 days following application before harvesting corn for forage and allow 70 days before harvesting for corn grain or corn fodder.

Tank Mixtures: Atrazine, Capreno, DiFlexx, Laudis

GLYPHOSATE[1]
(Glyphosate-Tolerant Corn Hybrids ONLY)

The information below provides guidelines for postemergence applications of GLYPHOSATE on corn hybrids designated as "Roundup Ready Corn 2", "Roundup Ready Corn", "Agrisure GT", or GT-corn hybrids. The maximum corn growth stage for postemergence treatments and the labeled application rates for use on Glyphosate-Tolerant (GT) corn hybrids may depend on the genetic event of the corn hybrid planted and the specific glyphosate product used. Consult your seed dealer for specific guidelines for corn tolerance. Ammonium Sulfate at 1 to 2% by weight (8.5 to 17 lb/100 gal) may be included with glyphosate to improve weed control. Some Glyphosate products do not need additional surfactant; but some products require addition of a non-ionic surfactant. **ALWAYS CONSULT THE PRODUCT LABEL FOR SPECIFIC DIRECTIONS.**

Glyphosate Formulation[1]	Product Rate / A	Glyphosate Acid Equivalent / A	Hybrid Traits
3 lb Glyphosate Formulations [*3 lb ae/gal formulation*]	1.5 up to 2 pt/A* (24 to 32 fl oz/A)	0.56 to 0.75 ae/A	Roundup Ready Corn and GT-corn hybrids **^***
***** NOTE: For certain glyphosate products up to 3 pt/A may be made with single in-season applications and/or drop nozzles may be used when corn height is 30 to 40 inches (consult specific product label for details).			
Buccaneer 5 [*3.75 lb ae/gal formulation*]	1.25 to 1.6 pt/A (20 to 26 fl oz/A)	0.58 to 0.75 lb ae/A	Roundup Ready Corn or other GT-corn hybrids **^**
Duramax / Durango DMA [*4 lb ae/gal formulation*]	1.12 to 2.25 pt/A (18 to 37.5 fl oz/A)	0.56 to 1.15 lb ae/A	Roundup Ready Corn 2#
	1.12 to 1.5 pt/A (18 to 24 fl oz/A)	0.56 to 0.75 lb ae/A	Roundup Ready Corn**^**
Roundup PowerMAX / Roundup WeatherMAX [*4.5 lb ae/gal formulation*]	1 to 2 pt/A (16 to 32 fl oz/A)	0.56 to 1.12 lb ae/A	Roundup Ready Corn 2#
Roundup PowerMAX 3 [*4.8 lb ae/gal formulation*]	0.94 to 1.88 pt/A (15 to 30 fl oz/A)	0.56 to 1.12 lb ae/A	Roundup Ready Corn 2#

CROP GROWTH STAGE: USE ONLY ON FIELD CORN HYBRIDS DESIGNATED AS GLYPHOSATE-TOLERANT.

^ May be applied on "Roundup Ready Corn" or other designated GT-corn hybrids from emergence through V8 growth stage or until corn reaches 30 inches, whichever comes first.

Apply as a broadcast treatment over-the-top of Glyphosate-Tolerant corn hybrids from corn emergence through the V8 growth stage or until corn reaches 30 inches, whichever comes first. On corn hybrids designated as "Roundup Ready Corn 2" and/or with certain glyphosate products drop nozzles may be used when corn height is 30 to 48 inches.

[1] Glyphosate is available in various formulations. **SEE PAGE 17 FOR A DETAILED LIST OF GLYPHOSATE PRODUCTS.**

GLYPOHSATE CONTINUES ON PAGE 54 →

GLYPHOSATE (continued)

Weeds Controlled: Barnyardgrass, black nightshade, broadleaf signalgrass, burcucumber, cocklebur, crabgrass, fall panicum, foxtails, jimsonweed, johnsongrass (seed and rhizomes), lambsquarters, pigweed, giant ragweed, shattercane, sicklepod, smartweed, velvetleaf. Consult label for specific troublesome weed species and their recommended growth stages.
General Comments: Observe label for recommendations for control of specific troublesome weed species. A sequential application may be needed to control regrowth on new weed flushes. For optimum control of perennials, apply when broadleaf plants are in the early bud to flowering stage and when grasses are in the boot to seedhead stage.
Environmental Statements: Take precautions to prevent spray particle drift to desirable plants.
Rain Delay: Rainfall soon after application may reduce effectiveness. Some labels indicate 4 or 6 hours.
Rotation Restrictions: Any crop may be planted following normal growth and harvest of corn. Wait at least 30 days before planting crops not listed on the label.
Harvest & Forage Restrictions: Allow a minimum of 50 days between application and harvest of corn forage.
Tank Mixtures: Consult label of glyphosate product used for specific tank mixtures with other herbicide or insecticide products.
Maximum Use Rates: The following table indicates the maximum rate of product for various glyphosate formulations for a single in-crop application and the total combined rate for sequential applications to Roundup Ready corn or other GT-corn hybrids

Glyphosate Formulation (acid equivalent)	Maximum Rate **Preplant Before Crop Emergence**	Maximum Rate for Single **In-Crop Application**	Combined Total of Multiple **In-Crop Applications**	Maximum Use Rate for **Pre-Harvest Application**	Combined Season Total for **All Applications**
3 lb Glyphosate, *Numerous Products* (3 lb ae/gal)	5 qt/A	2 pt/A [GT-hybrid] 3 pt/A [RR-2 hybrid]	2 qt/A [GT-hybrid] 3 qt/A [RR-2 hybrid]	1 qt/A	8 qt/A
Buccaneer 5 (3.75 lb ae/gal)	4 qt/A	1.6 pt/A	3.2 pt/A	1.6 pt/A	6.5 qt/A
Duramax Durango DMA (4 lb ae/gal)	3.75 qt	1.5 pt/A [GT-hybrid] 2.25 pt/A [RR-2 hybrid]	1.5 qt/A [GT-hybrid] 2.25 qt/A [RR-2 hybrid]	0.75 qt/A (1.5 pt/A)	6 qt/A
Roundup PowerMAX, Roundup WeatherMAX (4.5 lb ae/gal)	3.3 qt/A	32 fl oz/A (2 pt/A) [RR-2 hybrid]	64 fl oz/A (2 qt/A) [RR-2 hybrid]	22 fl oz/A	5.3 qt/A
Roundup PowerMAX 3 (4.8 lb ae/gal)	3.1 qt/A	30 fl oz/A [RR-2 hybrid]	60 fl oz/A [RR-2 hybrid]	20 fl oz/A	5 qt/A

HALEX GT
(Glyphosate Tolerant Corn Hybrids ONLY)

HALEX GT	3.6 to 4 pt/A	S-metolachlor: glyphosate: mesotrione 0.9: 0.9: 0.094 to 1.0: 1.0: 0.1 lb ai/A
+		
Non-Ionic Surfactant (NIS)	1 to 2 qt/100 gal	
+		
Ammonium Sulfate (AMS	8.5 - 17 lb/100 gal	

Weeds Controlled: Barnyardgrass, black nightshade, broadleaf signalgrass, burcucumber, cocklebur, crabgrass, fall panicum, foxtails, johnsongrass, lambsquarters, pigweed, giant ragweed, annual ryegrass, shattercane, sicklepod, smartweed, velvetleaf. Consult label for specific weed species.
Crop Stage: Use only on selected CORN HYBRIDS which are designated with Glyphosate Tolerance or the Roundup Ready gene. Apply from corn emergence up to 30 inches in height or the 8-leaf growth stage.
General Comments: HALEX GT is a pre-package mixture containing S-metolachlor + glyphosate + mesotrione [2.09+2.09+0.209 lb ai/gal]. Apply with Non-Ionic Surfactant plus Ammonium Sulfate. The use of Ammonium Nitrate (UAN) or other suspension fertilizers is not recommended and will result in crop injury. For control of emerged annual grasses and broadleaf weeds and for residual control of weeds. Do not apply more than 4 pt/A of HALEX GT per growing season or do not apply with CALLISTO during the same season.
Environmental Statements: HALEX GT contains ground and surface water advisory statements on the label.
Rain Delay: Rainfall soon after application may reduce effectiveness.
Rotation Restrictions: Corn and grain sorghum may be replanted immediately; barley, rye, and winter wheat may be planted 120 days after application; or alfalfa, soybeans, and tobacco may be planted 10 months after application. Red clover and other crops not listed by the label may be planted 18 months after application.
Harvest & Forage Restrictions: To avoid possible illegal residues, do not graze or feed forage from treated areas for 60 days following application or do not harvest forage, grain, or stover within 45 after application.
Tank Mixtures: Atrazine.

IMPACT or ARMEZON

IMPACT or **ARMEZON**	0.75 to 1.0 fl oz/A	topramezone 0.016 to 0.022 lb ae/A
+		
Methylated Seed Oil (MSO)or Crop Oil Concentrate (COC)	1 to 1.5 gal/100 gal	
+		
UAN [28-34%] or 10-34-0 or	1.25 to 2.5 gal/100 gal	
Ammonium Sulfate (AMS)	8.5 lb/100 gal	

Weeds Controlled: Barnyardgrass, black nightshade, cocklebur, lambsquarters, Palmer amaranth, pigweed, velvetleaf, waterhemp.
Crop Stage: Labeled for use on field corn grown for grain or silage, popcorn, and sweet corn. Apply after corn emergence up to 45 days prior to corn harvest.
General Comments: IMPACT and ARMEZON 2.8SC contain 2.8 lb ae topramezone per gal. For most applications apply at 0.75 to 1.0 fl oz/A when susceptible weeds are 3 to 6 inches and actively growing. ***IMPACT up to 2 fl oz/A can be applied for improved control of certain weed species*** *(consult IMPACT label)*. The addition of atrazine in the tank mixture may be required for certain weeds (consult labels). When applying take necessary precautions to reduce the potential for spray drift.
Environmental Statements: Do not apply directly to water or areas where surface water is present.
Rain Delay: 1 hour.
Rotation Restrictions: Corn (all types field, sweet, and popcorn) may be replanted immediately. Small grains (wheat, barley, oats, and rye) may be planted 3 months after application; alfalfa, sorghum, and soybeans after 9 months. Red clover, tobacco, and most other rotational crops may be planted 18 months after application.
Harvest & Forage Restrictions: Do not graze or harvest for forage at least 45 days after application.
Tank Mixtures: Accent, Atrazine, Buctril, Clarity, 2,4-D, glufosinate, glyphosate, Hornet, Marksman, Option, Permit, Require Q, Resolve Q, Status, Steadfast, Stout. May also be tank mixed with soil residual herbicides such as Bicep II Magnum, Degree Xtra, Dual II Magnum, Harness Xtra, Outlook, and Prowl.

IMPACT CORE

IMPACT CORE	28 to 34 fl oz/A	topramezone:acetochlor 0.016: 1.5 to 0.019: 1.9 lb ae/A
+		
Methylated Seed Oil (MSO)	1 to 2 qt/100 gal	
+		
UAN [28-34%] or	1.25 to 2.5 gal/100 gal	
Ammonium Sulfate (AMS)	1.5 to 2.5 lb/A	

Weeds Controlled: Cocklebur, crabgrass, lambsquarters, black nightshade, Palmer amaranth, pigweed, velvetleaf, waterhemp.
Crop Stage: Labeled for use on field corn and popcorn. Apply from spike stage of corn up to 11 inch tall corn. Apply a minimum of 45 days prior to corn harvest.
General Comments: IMPACT CORE is a pre-mixture containing topramezone+acetochlor [0.071 + 7.08 lb ai per gal]. For most applications apply when susceptible broadleaf weeds are 1 to 3 inches and actively growing (consult label for maximum weed size). Apply in a minimum of 15 gal/A for larger weeds and/or more dense infestations.
Environmental Statements: IMPACT CORE contains GROUND and SURFACE WATER ADVISORY statements on the label.
Rain Delay: 1 hour.
Rotation Restrictions: Corn (all types) may be replanted immediately. Wheat may be planted 4 months after application; alfalfa, barley, rye, oats, grain sorghum after 9 months; and soybean 10 months after application. Most other rotational crops may be planted 18 months after application.
Harvest & Forage Restrictions: Do not harvest for silage or fodder at least 45 days after application.
Tank Mixtures: May be used in tank mixtures or sequential applications with other herbicides that are registered for use in corn (consult label). If tank mixed with other products, follow the label restrictions for the most restrictive of the tank mix partners and use of additives.

IMPACT Z

IMPACT Z	8 to 10.7 fl oz/A	topramezone: atrazine 0.016: 0.25 to 0.022: 0.33 lb ae/A
+		
Metylated Seed Oil or COC	1 to 1.5 gal/100 gal	
+		
UAN [28-34%] or 10-34-0	1.25 to 2.5 gal/100 gal	
Or		
Ammonium Sulfate	8.5 lb/100 gal	

Weeds Controlled: Black nightshade, cocklebur, lambsquarters, Palmer amaranth, pigweed, common ragweed, giant ragweed, velvetleaf, waterhemp.
Crop Stage: Labeled for use on field corn grown for grain or silage, popcorn, and sweet corn. Apply after corn emergence up to 12 inch tall corn. A minimum of 45 days prior to corn harvest.
General Comments: IMPACT Z 4.26S is a pre-mixture containing topramezone + atrazine [0.26+2.0 lb ai per gal]. For most applications apply when susceptible broadleaf weeds are 4 to 6 inches and actively growing (consult label for maximum weed size). When applying take necessary precautions to reduce the potential for spray drift. Do not apply more than one application per year or exceed more than 2.25 lb ai atrazine per season.
Environmental Statements: IMPACT Z is a RESTRICTED-USE pesticide and contains GROUND and SURFACE WATER ADVISORY statements on the label. [NOTE: See page 19 for PRECAUTIONS on use of atrazine containing products near ground or surface water].
Rain Delay: 4 hours.
Rotation Restrictions: Corn (all types field, sweet, and popcorn) may be replanted immediately. Alfalfa, sorghum, soybean, and certain small grain crops (wheat, barley, and rye) may be planted 9 months after application; most other rotational crops may be planted 18 months after application.
Harvest & Forage Restrictions: Do not graze or harvest for forage at least 60 days after application.
Tank Mixtures: May be used in tank mixtures or sequential applications with other herbicides that are registered for use in corn (consult label). If tank mixed with other products, follow the label restrictions for the most restrictive of the tank mix partners and use of additives.

KATAGON

KATAGON	2.3 to 3.4 fl oz/A	tolpyralate: nicosulfuron 0.018: 0.018 to 0.026: 0.026 lb ai/A
+		
Methylated Seed Oil (MSO) or Crop Oil Concentrate (COC)	0.5 to 1 gal/100 gal	
or		
Non-Ionic Surfactant (NIS)	2 pt/100 gal	

[Ammonium Nitrogen Fertilizer (UAN or AMS) may also be added to the spray solution]

Weeds Controlled: Lambsquarters, Palmer amaranth, smooth pigweed, shattercane, velvetleaf, waterhemp.
Crop Stage: Labeled for use only on field corn. Apply up to the 5 leaf collar stage (V5) or up to 20 inches tall, whichever is more restrictive.
General Comments: KATAGON is formulated as an oil dispersion that contains 1.0 lb ai tolpyralate + 1.0 lb nicosulfuron per gal. Apply before susceptible weeds exceed 5 inches in height and actively growing. The addition of atrazine to the tank mixture may improve the postemergence efficacy on certain weeds (consult label). Do not exceed a total of 3.4 fl oz/A per application or a total of 6.8 fl oz/A per season.
Environmental Statements: Do not apply directly to water or areas where surface water is present or where/when conditions could favor runoff.
Rain Delay: 4 hours.
Rotation Restrictions: Corn (field) may be replanted immediately. Winter wheat, oats, barley, and rye may be planted 4 months after application; soybean after 9 months; popcorn, sweet corn, alfalfa, and red clover after 10 months. Most other rotational crops may be planted 18 months after application (consult label).
Harvest & Forage Restrictions: Do not apply within 70 days of grain harvest. Do not graze or feed treated corn forage, grain, or fodder (stover) for 45 days after application.
Tank Mixtures: May be tank mixed with other corn herbicides (physical compatibility needs to be determined). Follow label directions for each product included. Applications of KATAGON to corn previously treated with insecticide products containing terbufos, chlorpyrifos, or phorate may cause unacceptable crop injury.

KYRO

KYRO	45 to 60 fl oz/A	acetochlor : topramezone : clopyralid 0.97 : 0.017: 0.087 to 1.3 : 0.022: 0.12 lb ai/A
+		
COC, HSOC or MSO	0.5 to 1 % v/v	

(Consult label for adjuvants when tank mixing)

Weeds Controlled: barnyardgrass, black nightshade, cocklebur, lambsquarters, Palmer amaranth, pigweed, common ragweed, giant ragweed, velvetleaf, waterhemp. (residual control of barnyardgrass, crabgrass, fall panicum, foxtails, black nightshade, and pigweed)

Crop Stage: Labeled for postemergence use on field corn, silage corn, and popcorn. Apply from emergence up to 24 inches tall.

General Comments: Kyro contains topramezone, clopyralid, and encapsulated acetochlor. For post-emergence control of annual grasses, a minimum of 45 fl oz/A Kyro is required. Residual control and control of broadleaves bigger than 4" inches a minimum of 45 fl oz/A Kyro required. For maximum control of annual grasses KYRO should be used as sequential treatment following preemergence application of a residual grass herbicide. Maximum single application and yearly application of 60 fl oz/A. Do not use liquid fertilizer as a carrier or severe crop injury may occur.

Environmental Statements: Kyro contains GROUND and SURFACE WATER ADVISORY statements on the label.

Rain Delay: Not listed

Rotation Restrictions: Corn (all types) may be replanted immediately. Wheat may be planted 4 months after application; alfalfa, barley, rye, oats, grain sorghum, soybean after 10.5 months. All other rotational crops may be planted 18 months after application.

Following harvest of corn treated with Kyro, only non-food or non-feed winter cover crops may be planted. Do not graze or harvest rotational cover crops for food or animal feed for 18 months following the last application of Kyro. This prohibition does not apply to winter wheat, which may be planted 4 months following the last application of Kyro.

Harvest & Forage Restrictions: 45 days for harvest of ears and forage. 60 days for harvest of stover.

Tank Mixtures: May be used in tank mixtures or sequential applications with other herbicides that are registered for use in corn (consult label). Tank mixes with atrazine, glyphosate, or glufosinate can improve postemergence weed control. See label for adjuvant restrictions when tank mixing Kyro.

LAUDIS

LAUDIS	3 fl oz/A	tembotrione 0.082 lb ai/A
+		
Methylated Seed Oil (MSO) or Crop Oil Concentrate (COC)	1 gal/100 gal	
+		
Ammonium Nitrate (UAN) or	1.5 qt/A	
Ammonium Sulfate (AMS)	8.5 lb/100 gal (1.5 lb/A)	

Weeds Controlled: Cocklebur, lambsquarters, black nightshade, Palmer amaranth, pigweed, giant ragweed, velvetleaf, waterhemp.

Crop Stage: LAUDIS is labeled for use on field corn grown for grain or silage, popcorn, and sweet corn. Apply from corn emergence up to the V8 stage of growth (V7 stage for sweet corn)

General Comments: LAUDIS contains 3.5 lb ai tembotrione per gal. For postemergence control apply LAUDIS when susceptible broadleaf weeds are <6 inches and actively growing. Consult label for maximum height of grasses. When applying take necessary precautions to reduce the potential for spray drift. LAUDIS may be used with foliar applied insecticides registered for use in corn. Do not apply LAUDIS with liquid fertilizers as the primary spray carrier. Do not exceed a total of 6 fl oz/A per growing season (3 fl oz/A for sweet corn).

Environmental Statements: Do not apply directly to water, or to areas where surface water is present.

Rain Delay: 1 hour.

Rotation Restrictions: Corn may be replanted immediately. Small grains may be planted 4 months after LAUDIS application; soybean after 8 months; or alfalfa, canola, and sorghum after 10 months. Most other rotational crops may be planted 18 months after application with completion of a successful field bioassay.

Harvest & Forage Restrictions: Do not graze or harvest corn forage for at least 45 days after application.

Tank Mixtures: Tank mixing with atrazine can improve performance on some weeds. Other products include Accent, Buctril, glufosinate, glyphosate, Option, Steadfast, Stout. LAUDIS may be tank mixed with soil residual herbicides such as Define SC. May also be tank mixed with foliar insecticides labeled for corn.

LIBERTY ULTRA
(Liberty Link Hybrids ONLY)

LIBERTY ULTRA	19 to 29 fl oz/A	L-glufosinate-ammonium 0.26 to 0.40 lb ai/A
+		*glufosinate ammonium equivalent 0.52 to 0.80 lb ai/A*
Ammonium Sulfate (AMS)	1.5 to 3 lb/A	

Weeds Controlled: Burcucumber, cocklebur, giant foxtail, green foxtail, jimsonweed, johnsongrass (seedling), lambsquarters, morningglory, black nightshade, fall panicum, pigweed, common ragweed, giant ragweed, prickly sida, shattercane, smartweed, velvetleaf.

Crop Stage: Use only on selected FIELD CORN HYBRIDS designated as "LibertyLink" or glufosinate-resistant. Apply as a broadcast treatment from emergence through V6 corn growth stage (exhibits 6 developed collars). Applications with drop nozzles can be made from emergence until LL-corn is 36 inches tall. Avoid spraying into whorls or leaf axils of corn stalks.

General Comments: Liberty Ultra is a refined glufosinate formulation that contains the active L-isomer of glufosinte as compared to racimic glufosinate formulations that contained both the active L- and inactive D-isomers of glufosinate. Do not use a nitrogen solution as a spray carrier. Good spray coverage is important for optimum control; apply at a minimum of 15 GPA or 20 GPA under unfavorable conditions. Avoid applications when corn shows injury from prior herbicide applications or environmental stress. DO NOT apply more than 29 fl oz/A per single application. Apply up to 2 postemergence applications per year and a maximum of 58 fl oz per year (including burndown applications). Allow a minimum of 7 days between Liberty Ultra applications.

Environmental Statements: Liberty Ultra contains a Surface Water Advisory on the label. Use precautions to avoid spray particle drift to nearby crops or sensitive vegetation.

Endangered Species Mitigations: Downwind Spray Drift Buffer (ground application with medium to coarse droplets): 10 ft; Runoff Mitigation Points: 3

Rain Delay: 4 hours after application.

Rotation Restrictions: Corn, soybeans, and canola may be planted anytime. Wheat, barley, rye, oats, or triticale may be planted 70 days after last application. Minimum waiting period for planting other crops is 180 days (6 months).

Harvest & Forage Restrictions: Allow 60 days following application before harvesting corn for forage and allow 70 days before harvesting for corn grain or corn fodder.

Tank Mixtures: Liberty ULTRA does not provide residual weed control or control of unexposed plant parts . Certain herbicide tank mixes may aid in the performance of Liberty ULTRA or be added to provide residual herbicide activity.

PERMIT

PERMIT 75DF	0.67 to 1.33 oz/A	halosulfuron 0.032 to 0.063 lb ai/A
+		
Non-Ionic Surfactant or	1 to 2 qt/100 gal	
Crop Oil Concentrate (COC)	1 gal/100 gal	

Weeds Controlled: Cocklebur, pigweeds, common ragweed, velvetleaf, yellow nutsedge.

Crop Stage: Apply from the spike through layby stage of field corn.

General Comments: PERMIT 75DG contains 0.75 lb ai halosulfuron per lb product. Apply with Non-Ionic Surfactant or Crop Oil Concentrate. Liquid nitrogen may be included in the spray solution. Apply for postemergence control of yellow nutsedge and certain broadleaf weeds in field corn and grain sorghum (milo). Consult label for optimum stages of weed growth. Two applications of PERMIT are allowed per season with a total amount not to exceed 2.67 oz product per acre. Avoid applications when crop and weeds are under stress due to drought, excessive moisture, diseases, insect damage, or nutrient deficiency.

Rain Delay: 4 hours after application.

Rotation Restrictions: Crops that may be planted include field corn after 1 month, sorghum, wheat, barley, forage grasses after 2 months, popcorn after 3 months; or soybeans and alfalfa after 9 months following PERMIT application.

Harvest & Forage Restrictions: Allow 30 days following PERMIT application before grazing or harvesting for forage or silage.

Tank Mixtures: Accent, Atrazine, Beacon, Buctril, Callisto, Clarity, 2,4-D, Glyphosate [various products], Impact, Liberty, Option, Marksman, Status, Steadfast. Consult label for maximum corn heights and use of additives with tank mixtures.

Generic Products: Sandea

REALM Q

REALM Q	4 oz/A	rimsulfuron: mesotrione 0.019: 0.08 lb ai/A
+		
Crop Oil Concentrate	1% v/v	
+		
Fertilizer Solution [28% or 32% UAN] or	2 qt/A	
Ammonium Sulfate (AMS)	2 lb/A	

Weeds Controlled: Cocklebur, foxtail, lambsquarters, Palmer amaranth, smooth pigweed, giant ragweeed, shattercane, velvetleaf, waterhemp.
Crop Stage: Apply REALM Q to field corn that is up to 20 inches tall. Do not apply to corn taller than 20 inches or exhibiting 7 or more collars, whichever is more restrictive. Do not apply to seed corn, popcorn, or sweet corn. Consult with your seed supplier before applying to any corn hybrids known to be sensitive to ALS-type herbicides.
General Comments: REALM Q contains rimsulfuron + mesotrione [7.5% + 31.25% per lb of product] plus a corn safener (isoxadifen). Nonionic Surfactant or other special adjuvant types can be used in place of Crop Oil Concentrate or if applied with glyphosate additional adjuvant may not be needed (consult label). Apply when weeds are young and actively growing; apply in a minimum spray volume of 15 gal per acre for best performance. Do not apply more than 1 oz/A of rimsulfuron per growing season. DO NOT apply to corn when certain insecticides such as “Counter” or "Lorsban" has been applied. Consult label directions before applying REALM Q with other organophosphate insecticides or foliar herbicides such as "Basagran". The likelihood of corn injury may increase if applied during a prolonged period of cold weather and/or in conjunction with wet soils.
Rainfall Delay: Not indicated on the label.
Rotation Restrictions: Rotational crops which may be planted include field corn anytime; winter wheat after 4 months; or alfalfa, canola, sorghum, soybean, popcorn, sweet corn, and tobacco after 10 months following a REALM Q application (consult label if interval should be extended). Other crops may require an 18 month waiting period.
Harvest & Forage Restrictions: Do not graze, feed forage, grain or fodder (stover) to livestock within 45 days. Do not harvest grain within 70 days.
Tank Mixtures: May be tank mixed with other products registered for use in corn unless these mixtures conflict with the REALM Q label. Specific tank mixes listed include glyphosate (Roundup, etc.) and glufosinate. REALM Q may also be tank mixed with soil-residual herbicides such as Atrazine, Breakfree, Breakfree ATZ, Cinch, Cinch ATZ (consult label for adjuvant selection with tank mixtures).

RESOLVE Q

RESOLVE Q	1.25 oz/A	rimsulfuron: thifensulfuron 0.014: 0.003 lb ai/A
+		
Crop Oil Concentrate (COC) or	1 qal/100 gal	
Modified Seed Oil (MSO)	0.5 gal/100 gal	
+		
Fertilizer Solution [28% or 32% UAN] or	2 qt/A	
Ammonium Sulfate (AMS)	2 lb/A	

Weeds Controlled: Foxtail, pigweed, shattercane, velvetleaf.
Crop Stage: Do not apply to seed corn, popcorn, or sweet corn. Consult with your seed supplier before applying to any corn hybrids known to be sensitive to ALS-type herbicides. Apply to field corn that is up to 20 inches tall. Do not apply to corn taller than 20 inches or exhibiting 7 or more collars, whichever is more restrictive.
General Comments: RESOLVE Q is a unit area pack herbicide which contains rimsulfuron + thifensulfuron-methyl [18.4% + 4.0% per lb of product] plus a corn safener (isoxadifen). A nonionic surfactant or special adjuvant types can be used instead of COC or MSO or if applied with glyphosate or glufosinate that contains a built-in adjuvant no additional surfactant needs to be added to the spray tank (consult label). Apply when weeds are young and actively growing (consult label for recommended weed sizes). Apply in a minimum spray volume of 15 gal per acre. Do not apply more than 1.0 oz active ingredient of rimsulfuron from applications of RESOLVE Q or other rimsulfuron containing products. DO NOT apply within 45 days of crop emergence when an organophosphate insecticide (such as Counter) has been applied as a treatment. Consult label directions before applying RESOLVE Q with other organophosphate insecticides or foliar herbicides. The likelihood of corn injury may increase if applied at improper stage of growth or when corn is under stress due to drought, diseases, insect damage, or nutrient deficiency.
Rainfall Delay: Not indicated on the label (6 to 8 hours suggested).
Rotation Restrictions: Rotational crops which may be planted when only 1.25 oz/A has been applied per season include field corn anytime; soybean (including STS-soybean) after 1 month; wheat after 3 months; or sorghum, popcorn, sweet corn, alfalfa, red clover, and tobacco after 10 months following a RESOLVE Q application. Other crops may require an 18 month waiting period. Check label if a maximum 2.5 oz/A rate was applied per season.
Harvest & Forage Restrictions: Do not graze, feed forage, grain or fodder to livestock within 30 days.
Tank Mixtures: May be tank mixed with other products registered for use in corn unless these mixtures conflict with the RESOLVE Q label. Specific tank mixes include glyphosate (eg. Roundup, etc.) glufosinate (eg. Liberty), or Impact + atrazine. RESOLVE Q may also be tank mixed with soil-residual herbicides such as Breakfree, Breakfree ATZ, Cinch, Cinch ATZ, Lexar, Lumax, and Prequel.

SEQUENCE
(Glyphosate Tolerant Corn Hybrids ONLY)

SEQUENCE	2.5 pt/A	S-metolachlor: glyphosate 0.94: 0.7 lb ai/A

Weeds Controlled: Barnyardgrass, broadleaf signalgrass, burcucumber, cocklebur, crabgrass, fall panicum, foxtails, jimsonweed, johnsongrass, lambsquarters, pigweeds, common ragweed, giant ragweed, shattercane, smartweed, velvetleaf.
Crop Stage: Use only on selected field corn hybrids which are designated with Glyphosate Tolerance or the Roundup Ready gene. Apply from seedling emergence of corn until 30 inches in height.
General Comments: SEQUENCE 4.25L contains S-metolachlor + glyphosate [3.0+2.25 lb ai/gal]. For control of annual grasses and broadleaf weeds and for suppression of certain perennial weed species. Do not exceed 5 pt/A of SEQUENCE per season. Consult label for maximum use rates when tank mixed with Dual Magnum or glyphosate.
Environmental Statements: SEQUENCE has GROUNDWATER ADVISORY statements on the label. Do not use on very permable soil or where ground water is close to the soil surface.
Rain Delay: Rainfall soon application may reduce control of emerged weeds.
Rotation Restrictions: Corn, sorghum (with Concep treated seed), and soybean may be planted immediately; alfalfa after 4 months; wheat, barley, rye, and oats after 4.5 months; clover after 9 months; and tobacco in the spring following application.
Harvest & Forage Restrictions: Make postemergence applications at least 50 days before harvest. Do not graze or feed forage from treated areas for 30 days following application.
Tank Mixtures: When applied postemergence SEQUENCE may be applied in a tank mixture with the following herbicide products - Atrazine, Bicep II Magnum, Callisto, Clarity, 2,4-D, Dual Magnum, Lexar, Lumax, or the following insecticides – Karate, Warrier.

SHIELDEX

SHIELDEX 400SC	1.0 to 1.35 fl oz/A	tolpyralate 0.026 to 0.035 lb ai/A)
+		
Metylated Seed Oil (MSO)or Crop Oil Concentrate (COC)	0.5 to 1 gal/100 ga	
or		
SURFACTANT (Non-Ionic)	2 pt/100 gal	

[Ammonium Nitrogen Fertilizer (UAN or AMS) may also be added to the spray solution]

Weeds Controlled: Lambsquarters, Palmer amaranth, smooth pigweed, giant ragweed, velvetleaf, waterhemp.
Crop Stage: Labeled for use on field corn grown for grain or silage, popcorn, and sweet corn. Apply up to the 6 leaf collar stage (V6) or up to 20 inches tall, whichever is more restrictive.
General Comments: SHIELDEX 400SC contains 3.33 lb ai tolpyralate per gal. Apply at 1.0 to 1.35 fl oz/A before susceptible weeds exceed 5 inches in height and actively growing. The addition of atrazine to the tank mixture may improve the postemergence efficacy on certain weeds (consult label). Do not exceed a total of 1.35 fl oz/A per application or a total of 2.7 fl oz/A (0.07 lb ai/A) per season.
Environmental Statements: Do not apply directly to water or areas where surface water is present or where/when conditions could favor runoff.
Rain Delay: 1 hour.
Rotation Restrictions: Corn (all types field, sweet, and popcorn) may be replanted immediately. Wheat, oats, rye, and grasses grown for forage may be planted 3 months after application; alfalfa, sorghum, and soybeans after 9 months. Most other rotational crops may be planted 12 months after application (consult label).
Harvest & Forage Restrictions: Do not apply within 45 days of grain harvest. Do not graze or feed treated corn forage or silage for 21 days after application.
Tank Mixtures: May be tank mixed with other corn herbicides (physical compatibility needs to be determined). Follow label directions for each product included.

SINATE
(Liberty Link Hybrids ONLY)

SINATE 2.57SL	21 to 28 fl oz/A	topramezone: glufosinate 0.016: 0.41 to 0.022: 0.54 lb ai/A
+		
Metylated Seed Oil (MSO) or	1 gal/100 gal	
High Surfactant Methylated Oil Concentrate (HSMOC)	2 to 3 qt/100 gal	
+		
Ammonium Sulfate (AMS)	3 lb/A	

Weeds Controlled: Cocklebur, giant foxtail, green foxtail, johnsongrass (seedling), lambsquarters, marestail, morningglory, black nightshade, Palmer amaranth, pigweed, common ragweed, giant ragweed, smartweed, velvetleaf, waterhemp.
Crop Stage: Use only on selected corn hybrids (field and sweet) designated as "LibertyLink" (consult label). Apply as a broadcast treatment from emergence up to 24 inches tall or V-7 growth stage (exhibits 7 developed collars). Use drop nozzles for corn 24 to 36 inches tall.
General Comments: SINATE is a pre-mixture containing topramezone + glufosinate-ammonium [0.1+2.47 lb ai/gal]. Topramezone is a selective, systemic herbicide, whereas, glufosinate is a non-selective contact herbicide that requires good spray coverage for optimum control. Apply at a minimum of 15 GPA to thoroughly cover target weeds. Do not apply if corn shows injury from prior herbicide applications or environmental stress.
Environmental Statements: Use precautions to avoid spray particle drift to nearby crops or sensitive vegetation.
Rain Delay: 4 hours after application.
Rotation Restrictions: Corn (all types) can be planted anytime. Cereal grains (wheat, barley, oats, rye) and forage grasses may be planted after 3 months; alfalfa and soybeans may be planted 9 months after last application. Other crops may require 18 month waiting period (consult label).
Harvest & Forage Restrictions: Allow 60 days following application before harvesting corn for forage and allow 70 days before harvesting corn for grain or corn fodder.
Tank Mixtures: Atrazine. Consult label for use with other labeled products.

STATUS

STATUS	5 to 10 oz/A	diflufenzopyr:dicamba 0.05: 0.125 to 0.1: 0.25 lb ai/A
+		
Non-Ionic Surfactant (NIS) or	1 qt/100 gal	
Crop Oil Concentrate (COC) or	1 to 2 pt/A	
Methylated Seed Oil (MSO)	1 to 2 pt/A	
+		
Fertilizer Solution (28% to 34% UAN) or	5 qt/100 gal	
Ammonium Sulfate (AMS)	17 lb/100 gal	

Weeds Controlled: Cocklebur, jimsonweed, lambsquarters, morningglory, black nightshade, pigweed, common ragweed, giant ragweed, prickly sida, sicklepod, smartweed, velvetleaf.
Crop Stage: Apply STATUS from 4-inch tall (V2) to 36-inch tall (V10) corn.
General Comments: STATUS 56WG contains diflufenzopyr + dicamba (0.16 lb + 0.4 lb ae per lb product) + isoxadifen (crop safener). Apply with an adjuvant (NIS, COC, or MSO) plus a liquid fertilizer solution (UAN or AMS). For optimum results apply to actively growing weeds and use thorough spray coverage. Crop tolerance may be affected if corn is growing under stress conditions. Allow a minimum of 15 days between sequential applications of STATUS. Do not apply more than a total of 12.5 oz/A of STATUS per acre per season.
Environmental Statements: STATUS has Ground and Surface Water Advisory statements on the label. Avoid applications when conditions favor spray drift or when sensitive crops such as tobacco, soybeans, ornamentals, or vegetable crops are growing nearby.
Rain Delay: 4 hours before expected rainfall.
Rotation Restrictions: Do not plant any crop within 120 days after last application with the following exceptions. If at least 1 inch of rainfall occurs following application of STATUS at ≤ 5 oz/A, crops such as alfalfa, cereal grain crops, grain sorghum, and soybeans may be planted 30 days after the rainfall event. If crop failure occurs, corn can be replanted within 7 or more days after application of STATUS .
Harvest & Forage Restrictions: Do not apply within 32 days of forage harvest or within 72 days of harvest for corn grain or stover.
Tank Mixtures: STATUS may be applied sequentially or in tank mixes with other herbicides except with the following limitations: 1) avoid tank mixes with plant growth regulating herbicides that contain dicamba, 2,4-D, or clopyralid, 2) avoid tank mixes with emulsifiable concentrate (EC) formulations of chloroacetamide herbicides [eg. Dual II Magnum, Harness, Outlook, Surpass, etc.], 3) avoid foliar-applied tank-mixes with Lorsban insecticide (consult label).

STEADFAST Q

STEADFAST Q	1.5 oz/A	nicosulfuron: rimsulfuron 0.024: 0.012 lb ai/A
+		
Crop Oil Concentrate (COC) or	1 qt /25 gal	
Modified Seed Oil (MSO) or	1 pt/25 gal	
Non-Ionic Surfactant (NIS)	1 qt/100 gal	
+		
Fertilizer Solution [28% or 32% UAN] or	2 qt/A	
Ammonium Sulfate (ams)	2 lb/A	

Weeds Controlled: Barnyardgrass, broadleaf signalgrass, foxtails, johnsongrass (seedling), pigweeds, shattercane.
Crop Stage: Apply STEADFAST Q to field corn hybrids with a relative maturity rating of 77 days or more. Do not apply to seed corn, popcorn, or sweet corn. Apply STEADFAST Q as a broadcast treatment to field corn up to 20 inches tall. Do not apply to corn taller than 20 inches or exhibiting 6 or more collars, whichever is more restrictive. For applications to corn hybrids with 77 to 88 days of Relative Maturity and for tank mixtures containing atrazine or Exceed apply before corn exceeds 12" tall.
General Comments: STEADFAST Q is a prepackage mixture containing nicosulfuron+rimsulfuron [25.2%+12.5% per lb of product plus isoxadefin (corn safener)]. Apply when weeds are young and actively growing (consult label for recommended weed sizes). Apply in a minimum spray volume of 15 gal per acre. Do not make more than one application per cropping season. DO NOT apply STEADFAST Q to corn when a soil insecticide such as 'Counter' has been applied at planting or as a layby treatment. Consult label directions before applying STEADFAST with other organophosphate insecticides or foliar herbicides. The likelihood of corn injury may increase if applied at improper stage of growth or when corn is under stress due to drought, diseases, insect damage, or nutrient deficiency.
Rain Delay: Allow 4 hours.
Rotation Restrictions: Rotational crops which may be planted include soybean after 15 days (0.5 month); wheat, barley, oats, and rye after 4 months; popcorn, sweet corn, sorghum (pH<7.5), alfalfa, and clover 10 months following a STEADFAST Q application. If soil pH<6.5, do not plant other rotational crops not listed within 10 months after application; when soil pH>6.5 wait 18 months.
Harvest & Forage Restrictions: Wait 30 days after application before utilizing corn as forage, hay, or grazing.
Tank Mixtures: Atrazine, Callisto, dicamba (Clarity), Distinct, Exceed, Marksman, (see label for application limitations to corn >12" tall for some tank mixtures). STEADFAST Q may also be tank mixed with Cinch, Dual II Magnum, Lumax, Outlook, and Prowl for preemergence grass control (apply before corn exceeds maximum height of preemergence grass herbicide label). DO NOT tank mix STEADFAST Q with Basagran, Laddok or some organophosphate insecticides, such as Lorsban, malathion, or parathion as severe crop injury may occur. DO NOT tank mix with 2,4-D since poor control of grasses may occur.

PREHARVEST or HARVEST AID

GLYPHOSATE

Glyphosate products labeled for preharvest use in corn are listed below. SEE PAGE 17 FOR A DETAILED LIST OF GLYPHOSATE PRODUCTS. Always consult the product label for specific directions.

GLYPHOSATE [*3 lb ae/gal formulation*]* (4 lb ai/gal)	2 pt/A (32 fl oz/A)	[glyphosate 0.75 lb ae/A] (1.0 lb ai/A)
Example products: Numerous glyphosate products (See page 17) .		
GLYPHOSATE [*3.75 lb ae/gal formualtion*]*	1.6 pt/A (26 fl oz/A)	[glyphosate 0.75 lb ae/A]
Example product: Buccaneer 5		
GLYPHOSATE [*4 lb ae/gal formulation*]* (5.4 lb ai/gal)	1.5 pt/A (24 fl oz/A)	[glyphosate 0.75 lb ae/A] (1.0 lb ai/A)
Example product: Duramax, Durango DMA, Gly Star 5		
GLYPHOSATE [*4.5 lb ae/gal formualtion*]* (5.5 lb ai/gal)	1.38 pt/A (22 fl oz/A)	[glyphosate 0.77 lb ae/A] (0.95 lb ai/A)
Example products: Roundup PowerMAX, Roundup WeatherMAX.		
GLYPHOSATE [*4.8 lb ae/gal formualtion*]* (5.88 lb ai/gal)	1.25 pt/A (20 fl oz/A)	[glyphosate 0.75 lb ae/A] (0.92 lb ai/A)
Example products: Roundup PowerMAX 3		

***Additives:** Recommendations for use of non-ionic surfactants will vary depending on the Glyphosate product. Dry Ammonium Sulfate at 1 to 2% by weight (8.5 to 17 lb/100 gal) or an equivalent rate of liquid Ammonium Sulfate is recommended to improve weed control.

Weeds Controlled: For control of many annual and perennial grasses and broadleaf weeds, including some vines which may interfere with crop harvest.

General Comments: Higher application rates may be used with certain glyphosate products on non-Roundup Ready corn hybrids (consult label). Apply using either aerial or ground spray equipment. Make application at 35% or less grain moisture. Ensure that maximum kernel fill is complete and the corn is physiologically mature (i.e. black layer formed). Allow 7 days between application and harvest.

2,4-D AMINE or ESTER

2,4-D AMINE or	1.5 to 2 pt/A	2,4-D 0.75 to 1 lb ai/A or
2,4-D ESTER	1 to 2 pt/A	2,4-D 0.5 to 1 lb ai/A

[4 lb ai/gal formulations]

Weeds Controlled: Cocklebur, jimsonweed, common ragweed, velvetleaf and vines that interfere with crop harvest.

Crop Stage: As a preharvest treatment apply after hard dough or denting stage.

PARAQUAT

GRAMOXONE SL 3.0	0.8 to 1.3 pt/A	paraquat 0.3 to 0.5 lb ai/A

Weeds Controlled: For desiccation of broadleaf weeds and grasses.

Crop Stage: Make one application at least 7 days prior to harvest. Apply after the corn is mature and black layer has formed at the base of the kernels.

Additives: Apply with a Non-Ionic Surfactant at 0.25% v/v (1 to 2 pt/100 gal).

General Comments: GRAMOXONE is a RESTRICTED-USE pesticide due to acute toxicity. *Certified applicators must successfully complete an EPA-approved training program before mixing, loading, and/or applying paraquat*. Apply as a spray solution in a minimum of 20 gallons of water per acre.

Environmental Statements: Avoid spray particle drift to nearby crops and other sensitive vegetation.

Rain Delay: 15 to 30 minutes following application.

Rotation Restrictions: Any crop may be planted following normal corn growth and harvest.

Harvest & Forage Restrictions: 7 days.

POSTHARVEST APPLICATIONS

GLYPHOSATE

Glyphosate products labeled for Between Crop or Postharvest use in corn are listed below. SEE PAGE 17 FOR A DETAILED LIST OF GLYPHOSATE PRODUCTS. Always consult the product label for specific directions.

GLYPHOSATE [*3 lb ae/gal formulation*]* (4 lb ai/gal)	2 to 5 qt/A	[glyphosate 1.5 to 3.75 lb ae/A] (2 to 5 lb ai/A)
Example products: Numerous glyphosate products (See page 17) .		
GLYPHOSATE [*4 lb ae/gal formulation*]* (5.4 lb ai/gal)	1.5 to 3.75 qt/A	[glyphosate 1.5 to 3.75 lb ae/A] (2 to 5 lb ai/A)
Example product: Duramax, Durango DMA,		
GLYPHOSATE [*4.5 lb ae/gal formualtion*]* (5.5 lb ai/gal)	1.5 to 3.3 qt/A	[glyphosate 1.7 to 3.7 lb ae/A] (2 to 4.5 lb ai/A)
Example products: Roundup PowerMAX, Roundup WeatherMAX.		
GLYPHOSATE [*4.8 lb ae/gal formualtion*]* (5.88 lb ai/gal)	1.25 to 3 qt/A	[glyphosate 1.5 to 3.7 lb ae/A] (1.8 to 4.4 lb ai/A)
Example products: Roundup PowerMAX 3		

***Additives:** Recommendations for use of non-ionic surfactants will vary depending on the Glyphosate product. Dry Ammonium Sulfate at 1 to 2% by weight (8.5 to 17 lb/100 gal) or an equivalent rate of liquid Ammonium Sulfate is recommended to improve weed control.

Weeds Controlled: Bindweeds, Canada thistle, honeyvine milkweed, johnsongrass, trumpetcreeper and other problem broadleaf weeds.

REMARKS: Rates depend on weed species present and their density. The higher rate is recommended when glyphosate is applied alone. Glyphosate can also be tank mixed with dicamba at 0.25 lb ai/A (eg. CLARITY 0.5 pt/A) or 2,4-D at 0.5 lb ai/A (1 pt/A). Apply to actively growing weeds; therefore, allow sufficient time for weed regrowth after crop harvest. Do not disturb treated areas for at least 7 days following application. Avoid applications after plants have been exposed to a hard killing frost. Vines are best controlled when in or beyond full bloom stage.

DICAMBA

DICAMBA (4 lb /gal) [eg. CLARITY, DIFLEXX, STERLING BLUE, VISION, etc.]	8 to 32 fl oz/A (0.5 to 2 pt/A)	dicamba 0.25 to 1 lb ai/A

Weeds Controlled: Bindweeds, honeyvine milkweed, trumpetcreeper and other problem broadleaf weeds.

REMARKS: Rates depend on weed species present and their density. Dicamba can be tank mixed with 2,4-D (1 to 4 pt/A) Apply to actively growing weeds after crop harvest and before a killing frost. Vines are best controlled when in or beyond full bloom stage. Do not disturb treated areas for at least 7 days following application. Consult DICAMBA product label for crop rotation guidelines and other specific information.

GRAIN SORGHUM

See page 19 for PRECAUTIONS on use of atrazine containing products near ground and surface water. See comments in the corn section for detailed information on each of the herbicides listed below such as application methods and crop rotation restrictions.

Preemergence

ATRAZINE 4L 1.6 to 2 qt/A or (atrazine 1.6 to 2 lb ai/A)
AATREX NINE-O 1.8 to 2.2 lb/A

Weeds Controlled: Black nightshade, cocklebur, common ragweed, giant ragweed, jimsonweed, lambsquarters, morningglories, pigweeds, prickly sida, smartweed, velvetleaf.
Remarks: Apply at-planting prior to sorghum emergence or before sorghum exceeds 12 inches in height as a postemergence treatment. In case of crop failure, sorghum may be replanted into soil previously treated with ATRAZINE. Do not make a second ATRAZINE application or injury may occur.

CALLISTO 6.0 to 6.4 fl. oz/A (mesotrione 0.18 to 0.20 lb ai/A)

Weeds Controlled: Black nightshade, cocklebur, lambsquarters, pigweeds, smartweed, velvetleaf.
Remarks: Except for grain sorghum and sweet sorghum do not use CALLISTO in the production of other types of sorghums such as forage sorghums or sudangrass. Can be applied preemergence or as a pre-plant non-incorporated treatment up to 21 days before planting sorghum. Applying CALLISTO more than 7 days (but not more than 21 days) prior to planting will reduce the risk of crop injury. If emerged weeds are present at the time of the preemergence application, use a nonionic surfactant (NIS) at 0.25% v/v or crop oil concentrate (COC) at 1% v/v (UAN or AMS can also be added to the spray solution). Do not apply CALLISTO to emerged sorghum or severe crop injury may occur. In case of crop failure, corn, sorghum, or pearl millet may be replanted into soil previously treated with CALLISTO. Do not make a second application or injury may occur.

CALIBRA 2.25 qt/A [S-metolachlor:mesotrione 1.58:0.16 lb ai/A]

Weeds Controlled: Barnyardgrass, black nightshade, crabgrass, fall panicum, foxtails, lambsquarters, pigweeds, smartweed, velvetleaf.
Remarks: Use Concep III treated sorghum seed. Apply CALIBRA as a broadcast non-incorporated treatment up to 21 days before planting and up through planting but prior to sorghum emergence. Applying more than 7 days (but not more than 21 days) prior to planting will reduce the risk of crop injury. May also be applied as a split application to grain sorghum, but cannot exceed the maximum rate of 2.25 qt/A of CALIBRA. In case of crop failure, corn or grain sorghum (treated with seed safener) may be replanted immediately, but do not reapply CALIBRA.

LEXAR EZ 3 qt/A [S-metolachlor:mesotrione:atrazine 1.3:0.17:1.3 lb ai/A]

Weeds Controlled: Barnyardgrass, black nightshade, crabgrass, fall panicum, foxtails, lambsquarters, pigweeds, prickly sida, common ragweed, smartweed, velvetleaf.
Remarks: Use Concep III treated sorghum seed. Apply as a broadcast non-incorporated treatment up to 21 days before planting and up through planting but prior to sorghum emergence. Applying more than 7 days (but not more than 21 days) prior to planting will reduce the risk of crop injury. May also be applied as a split application to grain sorghum, but cannot exceed the maximum rate of 3 qt/A. Do not apply LEXAR EZ to emerged sorghum or severe crop injury may occur. In case of crop failure, corn or grain sorghum (Concep treated) may be replanted immediately, but do not reapply LEXAR EZ.

SHARPEN 1 to 2 fl oz/A (saflufenacil 0.022 to 0.044 lb ai/A)

Weeds Controlled: Cocklebur, marestail (horseweed), morningglory, giant ragweed, and velvetleaf.
Remarks: Apply preplant or preemergence to grain sorghum for broadleaf weed control. Can also be applied prior to sorghum emergence as a burndown treated on emerged weeds (consult label for use of MSO plus AMS or UAN as additives). Do not apply SHARPEN after sorghum emergence or severe crop injury will occur. To avoid potential injury to sensitive hybrids consult with your local seed supplier. Do not apply when an at-planting application of an organophosphate or carbamate insecticide has been used. Sorghum can be harvested for forage, fed, or grazed 70 days or more after application. Tank mixtures include Atrazine, Clarity, Glyphosate (eg. Roundup), or Outlook.

Preplant Incorporate or Preemergence

DUAL II MAGNUM or **CHARGER MAX** 1.33 to 1.67 pt/A (S-metolachlor 1.3 to 1.6 lb ai/A)

Weeds Controlled: Black nightshade, crabgrass, fall panicum, foxtails, pigweeds, yellow nutsedge.

Remarks: Use CONCEP treated sorghum seed.

BICEP II MAGNUM 1.6 qt/A (S-metolachlor:atrazine 1.0:1.2 lb ai/A)
OR OR
DUAL II MAGNUM 1 pt/A (S-metolachlor 1.0 lb ai/A)
\+ +
AATREX 4L 1.2 qt/A or (atrazine 1.2 lb ai/A)
AATREX NINE-O 1.3 lb/A

Weeds Controlled: Black nightshade, cocklebur, common ragweed, crabgrass, fall panicum, foxtails, jimsonweed, lambsquarters, morningglories, pigweeds, prickly sida, smartweed.

Remarks: Use CONCEP or SCREEN treated sorghum seed.

OUTLOOK 6E 14 to 20 oz/A (dimethenamid-P 0.66 to 0.94 lb ai/A)

Weeds Controlled: Barnyardgrass, crabgrass, fall panicum, foxtails, black nightshade, pigweed.

Remarks: Use sorghum seed treated with a seed safener.

OUTLOOK 6E 14 to 20 oz/A (dimethenamid-P 0.66 to 0.94 lb ai/A)
\+ +
ATRAZINE 4L 1 to 2 qt/A or (atrazine 1 to 2 lb ai/A)
AATREX NINE-O 1.1 to 2.2 lb/A

Weeds Controlled: Barnyardgrass, black nightshade, cocklebur, common ragweed, crabgrass, fall panicum, foxtails, jimsonweed, lambsquarters, morningglory, pigweed, prickly sida, smartweed.

Remarks: Use sorghum seed treated with a seed safener such as SCREEN or CONCEP.

DEGREE XTRA 2.0 to 3.7 qt/A [acetochlor:atrazine (1.35:0.67 to 2.5:1.24 lb ai/A)]

Weeds Controlled: Barnyardgrass, crabgrass, fall panicum, foxtails, black nightshade, lambsquarters, pigweed, prickly sida, common ragweed, smartweed.
Remarks: Use sorghum seed treated with a seed safener. Apply preplant incorporated, preemergence surface, or postemergence before crop exceeds 11 inches in height (5 to 6 leaf stage). For grain sorghum forage, allow 60-day preharvest interval.

ENVERSA 2 to 3 qt/A (acetochlor 1.5 to 2.25 lb ai/A)

Weeds Controlled: Barnyardgrass, broadleaf signalgrass, crabgrass, fall panicum, giant foxtail, black nightshade, lambsquarters, smooth pigweed, waterhemp.

Remarks: Use sorghum seed treated with a seed safener. Apply preplant incorporated, preemergence surface, or postemergence before crop exceeds 11 inches in height (5 to 6 leaf stage). For grain sorghum forage, allow 60-day preharvest interval. Do not exceed 4 qts ENVERSA per season when making multiple applications. When applying postemergence to sorghum, Do not use liquid fertilizer as a carrier.

Burndown for No Tillage Grain Sorghum

NOTE: *These treatments include foliar herbicides to kill existing vegetation at or prior to planting and soil residual herbicides for preemergence control of annual grasses and broadleaf weeds. These may be applied either before or after planting but before crop emergence. Depending on the amount of vegetation present and the herbicides used apply in 20 to 40 gallons of liquid per acre. Consult the herbicide labels for specific directions.*

OUTLOOK 6E 14 to 20 oz/A	(dimethenamid-P 0.66 to 0.94 lb ai/A)
+	+
ATRAZINE 4L 1 to 2 qt/A or	(atrazine 1 to 2 lb ai/A)
AATREX NINE-O 1.1 to 2.2 lb/A	
+	+
GRAMOXONE SL 3.0 1.3 to 2.7 pt/A	(paraquat 0.47 to 1.0 lb ai/A)
with NON-IONIC SURFACTANT	
OR	OR
ROUNDUP POWERMAX 3 30 fl oz/A or	
GLYPHOSATE [4 lb ai/gal (*3 lb ae/gal*)] 3 pt/A	(glyphosate 1.5 lb ai/A)

Weeds Controlled: Barnyardgrass, black nightshade, cocklebur, common ragweed, crabgrass, fall panicum, foxtails, jimsonweed, lambsquarters, morningglory, pigweed, prickly sida, smartweed.

Remarks: Use sorghum seed treated with a seed safener.

BICEP II MAGNUM 1.8 to 2.1 qt/A	[S-metolachlor:atrazine (1.1:1.4) to (1.3:1.6) lb ai/A]
OR	OR
DUAL II MAGNUM 1.5 pt/A	(S-metolachlor 1.4 lb ai/A)
+	+
AATREX 4L 1.5 to 1.8 qt/A or	(atrazine 1.5 to 1.8 lb ai/A)
AATREX NINE-O 1.7 to 2 lb/A	
+	+
GRAMOXONE SL 3.0 1.3 to 2.7 pt/A	(paraquat 0.47 to 1.0 lb ai/A)
with NON-IONIC SURFACTANT	
OR	OR
ROUNDUP POWERMAX 3 30 fl oz/A or	
GLYPHOSATE [4 lb ai/gal (*3 lb ae/gal*)] 3 pt/A	(glyphosate 1.5 lb ai/A)

Weeds Controlled: Black nightshade, cocklebur, common ragweed, crabgrass, fall panicum, foxtails, jimsonweed, lambsquarters, morningglories, pigweeds, prickly sida, smartweed.

Remarks: Use CONCEP or SCREEN treated sorghum seed.

SEQUENCE 5.25L 3.5 pt/A	[S-metolachlor:glyphosate (1.3:1.0) lb ai/A]
+	+
AATREX 4L 1.5 to 1.8 qt/A or	(atrazine 1.5 to 1.8 lb ai/A)
AATREX NINE-O 1.7 to 2 lb/A	

Weeds Controlled: Barnyardgrass, cocklebur, common ragweed, crabgrass, fall panicum, foxtails, jimsonweed, lambsquarters, morningglory, black nightshade, pigweed, prickly sida, smartweed.
Remarks: Use CONCEP or SCREEN treated sorghum seed.

Postemergence

AIM EC 0.5 fl oz/A (carfentrazone 0.008 lb ai/A)
+ +
SURFACTANT (Non-Ionic 80%) 0.5 pt/25 gal (additive)

Weeds Controlled: Black nightshade, lambsquarters, morningglories, velvetleaf.

REMARKS: Apply from prior to planting up to 6 leaf collar growth stage of grain sorghum. When weeds are under stress or are larger, higher use rates of AIM at 0.6 to 1 oz/A may be made with directed spray equipment or hooded sprayers.

BICEP II MAGNUM 1.6 to 2.1 qt/A (S-metolachlor:atrazine 1.0:1.2 to 1.3:1.6 lb ai/A)
+
CROP OIL CONCENTRATE (1% v/v) (additive)
[AMS or UAN can be added]

Weeds Controlled: Black nightshade, cocklebur, common ragweed, crabgrass, fall panicum, foxtails, jimsonweed, lambsquarters, morningglories, pigweeds, prickly sida, smartweed. Apply before weeds exceed 2-leaf stage.

Remarks: Use CONCEP III treated sorghum seed. Apply to sorghum from 3-leaf stage (3 visible collars) up to 12 inches in height. The total amount applied during any crop season should not exceed 2.58 qt/A.

2,4-D AMINE 1 pt/A (2,4-D 0.5 lb ai/A)
[4 lb ai/gal formulation]

Weeds Controlled: Black nightshade, cocklebur, common ragweed, giant ragweed, lambsquarters, morningglories, pigweeds, prickly sida, velvetleaf.

Remarks: BROADCAST or DIRECTED. Apply when sorghum is 6 to 15 inches tall. USE DIRECTED applications when sorghum is 8 to 15" tall. Do not apply during flowering or early dough stage.

DICAMBA 4S 8 oz/A (0.5 pt/A) (dicamba 0.25 lb ai/A)
[ie. CLARITY, STERLING BLUE, VISION, etc.]

Weeds Controlled: Black nightshade, cocklebur, common ragweed, giant ragweed, jimsonweed, lambsquarters, morningglories, pigweeds, prickly sida, smartweed, velvetleaf.

Remarks: BROADCAST or DIRECTED. Apply after sorghum is in the 3-leaf stage and before it is 15 inches tall. Use drop nozzles if sorghum is taller than 8 inches. For optimum results, apply when sorghum is in the 3-leaf to 5-leaf stage and weeds are small (less than 3 inches). Do not graze or feed treated sorghum as forage or silage prior to mature grain stage.

FIRSTACT 5 to 10 fl oz/A (quizalofop-P-ethyl 0.032 to 0.065 lb/A)
+ +
CROP OIL CONCENTRATE 1 gal/100 gal (additive)
or NON-IONIC SURFACTANT 1 qt/100 gal
[Nitrogen Fertilizer (UAN or AMS) may also be added]

[For use on **DoubleTeam™ Grain Sorghum varieties ONLY**]

Weeds Controlled: Barnyardgrass, broadleaf signalgrass, foxtails, fall panicum, Italian ryegrass, volunteer corn, volunteer wheat.

Remarks: Apply to emerged grain sorghum containing the Double Team™ trait (4 to 20 inches tall). Apply to weeds before reaching approximately 2 to 6 inches tall (consult label for individual weeds). Do not graze or feed livestock within 45 days of application.

IMIFLEX 6 fl ozA (imazamox 0.047 lb ae/A)
+ +
NON-IONIC SURFACTANT 1 qt/100 gal (additive)
or CROP OIL CONCENTRATE 1 to 2 gal/100 gal
AND
Nitrogen Fertilizer [AMS or UAN]

[For use on **Advanta™ igrowth™ Grain Sorghum varieties ONLY**]

Weeds Controlled: Barnyardgrass, black nightshade, cocklebur, foxtails, jimsonweed, lambsquarters, smooth pigweed, smartweed, velvetleaf.

Remarks: May be applied preemergence to weeds after igrowth™ sorghum planting or postemergence. Do not apply to sorghum taller than 20 inches. Apply before weeds exceed 3 inches (consult label).

MAESTRO 2EC or **MOXY 2E** 1 to 1.5 pt/A (bromoxynil 0.25 to 0.38 lb ai/A)

Weeds Controlled: Black nightshade, cocklebur, common ragweed, jimsonweed, lambsquarters, smartweed, velvetleaf.

Remarks: BROADCAST. Observe label for specific rates and growth stages of crop and weeds. Do not cut for feed or graze within 45 days of application.

PERMIT 75DF 0.67 oz/A (halosulfuron 0.032 lb ai/A)
+ +
NON-IONIC SURFACTANT 1 to 2 qt/100 gal (additive)
or CROP OIL CONCENTRATE 4 qt/100 gal

Weeds Controlled: Cocklebur, common ragweed, pigweed, velvetleaf, yellow nutsedge.

Remarks: BROADCAST. Apply PERMIT to crop after 2-leaf stage but before grain head emergence. Observe label for size of specific weed species. Do not cut for feed or graze within 30 days after application. Rotational crops which may be planted include wheat after 3 months, soybeans after 10 months following application.

WEEDMASTER 1 pt/A [dicamba:2,4-D (0.125:0.36 lb ai/A)]

Weeds Controlled: Black nightshade, cocklebur, common ragweed, giant ragweed, jimsonweed, lambsquarters, morningglories, pigweeds, prickly sida, smartweed, velvetleaf.

Remarks: BROADCAST. Apply to sorghum in the 3–5 leaf stage (4 to 8” tall). For optimum results apply when weeds are small (less than 3” tall). Under periods of rapid growth temporary leaning or rolling of leaves may occur. Sorghum growing under conditions of stress may be sensitive to injury.

ZEST WDG 0.67 to 1.33 oz/A (nicosulfuron 0.031 to 0.062 lb/A)
+ +
CROP OIL CONCENTRATE 1 gal/100 gal (additive)
or NON-IONIC SURFACTANT 1 to 2 qt/100 gal
[Nitrogen Fertilizer (UAN or AMS) may also be added]

[For use on **INZEN™ Grain Sorghum varieties ONLY**]

Weeds Controlled: Barnyardgrass, broadleaf signalgrass, foxtails, fall panicum, Italian ryegrass.

Remarks: Apply to emerged grain sorghum containing the INZEN™ trait (4 to 20 inches tall). Apply to weeds before reaching 2 to 4 inches tall (consult label). Forage may be cut and livestock allowed to graze once the crop has reached the mature forage stage.

SOYBEAN
BURNDOWN

Herbicides used in no-till soybeans include foliar-applied herbicides (often called a "burndown' herbicides) to control emerged weeds and soil–residual herbicides for preemergence weed control. Some herbicides are capable of providing both burndown control of small weeds as well as preemergence control.

No-till soybean herbicide treatments are usually applied as spring-applied Early Preplant (normally 15 to 30 days ahead of planting) or as Preemergence (to the crop) at the time of planting. Fall-applied Early Preplant treatments are occasionally used in no-till to manage cool-season species and generally do not control weeds that emerge after soybean planting.

Early preplant programs may require a sequential herbicide treatment applied at or after planting to provide additional length of weed control. Tillage after application may reduce effectiveness of the herbicide treatments.

Foliar "Burndown" Herbicides for No-Tillage Soybean

2,4-D ESTER

2,4-D ESTER	Rate/A	2,4-D
Small Annuals	0.5 to 1 pt/A	0.25 to 0.5 lb ai/A
Large Annuals	1 to 2 pt/A	0.5 to 1 lb ai/A

(NOTE: Application rates based on 4 lb ai/gal)

Additives: Normally not required with 2,4-D, however, certain tank-mix partners may require an additive.
Weeds Controlled: Common ragweed, dandelion, giant ragweed, hairy vetch, horseweed (marestail), lambsquarters, mustards, prickly lettuce.
Timing: A restrictive interval between application of 2,4-D and soybean planting is required. The interval for most 2,4-D Ester formulations is 7 days for rates up to 0.5 lb ai/A, and 15 to 30 days for rates >0.5 lb to 1.0 lb ai/A. The restrictive interval for rates applied up to 1 lb ai/A may vary for some 2,4-D ester products (examples of products include 2,4-D LV4, Weedone 650, E-99,and Salvo). Consult specific product label for details.
Spray Volume: Apply in a minimum of 10 to 15 gal of water per acre. Check label for use with liquid fertilizer.
General Comments: Not all 2,4-D products are labeled for use prior to planting soybeans (consult product label). Unacceptable crop injury may occur when 2,4-D is applied as a pre-plant treatment to soybean. Plant soybean seed at least 1 ½ to 2 inches deep. Adjust planter press wheels to ensure that soybean seed are completely covered with soil. Applying with paraquat or glyphosate may improve control of horseweed (marestail). Do not exceed 1 lb ai/A/season.
Environmental Statements: Drift of 2,4-D spray or vapor can injure nearby susceptible plants.
Rain Delay: No information on label.
Rotation Restrictions: Do not replant fields treated with 2,4-D in the same growing season with crops other than those labeled for 2,4-D preplant use.
Harvest & Forage Restrictions: Do not cut soybeans for feed or graze fields treated with a 2,4-D pre-plant application. Do not harvest or graze treated cover crops.

CLARITY

CLARITY 4S — 4 to 16 oz/A — dicamba 0.125 to 0.5 lb ae/A
Weeds Controlled: Annual fleabane, marestail (horseweed), prickly lettuce, musk thistle, giant ragweed. Vetch.
Additives: Although not required, adjuvants such as nonionic surfactant, crop oil concentrate, or sprayable fluid fertilizer may improve control of emerged weeds. Use of fertilizer additives such as Ammonium Sulfate may not be recommended when CLARITY is tank mixed with some products (consult all labels).
Timing: *Apply only as an early preplant treatment in the spring*. Following application of dicamba and a minimum accumulation of 1 inch of rain or irrigation, allow a waiting interval of 14 days for <8 fluid oz/A and 28 days for 16 fluid oz/A. Do not exceed 16 fl oz of Clarity/A in spring applications prior to planting soybeans.
Spray Volume: Keep spray volume at or above 20 GPA and pressure at or below 20 psi. Use coarse sprays to limit the risk of drift to nearby sensitive species.
General Comments: Consult label for specific guidelines when used as a preplant treatment on soybean.
Rain Delay: 4 hours
Tank Mixtures for Clarity: Glyphosate, 2,4-D, Outlook, Dual Magnum.
Generic Formulations: Clash, Detonate, Sterling Blue, Strut, Vision

ELEVORE

ELEVORE 1 fl oz/A halauxifen-methyl 0.004 lb ae/A
Weeds Controlled: marestail (horseweed), lambsquarters, common ragweed,
Additives: Crop oil Concentrate (COC) or Methylated seed oil (MSO) at 0.5 to 1% v/v
Timing: Apply preplant at least 14 days prior to soybean planting
General Comments: ELEVORE is recommended for burndown control of herbicide resistant horseweed, other burndown products should be tank mixed with Elevore for control of other weeds present at time of burndown application.
Rotation Restrictions: Corn, Wheat, and Barely can be planted 14 days after application.
Tank Mixtures: Check ElevoreTank Mix website for tank mix restrictions.

ENLIST DUO

ENLIST DUO with Colex D Technology (3.3 L)	Rate/A	2,4-D Choline : glyphosate
Small Annuals	3.5 pt/A	0.7 lb ae/A : 0.75 lb ae/A
Large Annuals	4.75 pt/A	0.95 lb ae/A : 1 lb ae/A

Weeds Controlled: Annual fleabane, barnyardgrass, brome spp., chickweed, common ragweed, crabgrass, dandelion, fall panicum, giant foxtail, giant ragweed, henbit, horseweed (marestail), johnsongrass (seedling), lambsquarters, mustards, prickly lettuce, rye, smartweed, volunteer corn (except glyphosate resistant), wheat.

Timing:

Non-ENLIST Soybean	*ENLIST Soybean*
Apply no less than 30 days preplant prior to soybean planting.	Apply any time before or after planting, but before soybean emerges, to control weed seedlings or existing cover crops

Spray Volume: Apply in a minimum of 10 to 15 gal of water per acre. Do not apply with nitrogen fertilizer as a carrier

General Comments:

Non-ENLIST Soybean	*ENLIST Soybean*
Unacceptable crop injury may occur when Enlist Duo is applied as a pre-plant treatment to non-ENLIST soybean. Plant soybean seed at least 1 to 2 inches deep. Adjust planter press wheels to ensure that soybean seed are completely covered with soil. Do not disturb soil with tillage between application and soybean planting. Do not make more than one burndown application of Enlist Duo per growing season. Do not apply more than 4.75 pt/a Enlist Duo per growing season.	Do not apply more than one preemergence applications. Do not apply more than 4.75 pt/a Enlist Duo per application. Do not apply more than 14.25 pt/a Enlist Duo per season.

Environmental Statements: Drift of Enlist Duo spray or vapor can injure nearby susceptible plants. The following parameters must be followed to assure off-site movement does not occur:
-Applications must be made with approved broadcast nozzles and pressures (See label for details)
-Do Not apply if winds are greater than 15 mph
-Do Not apply during a low level temperature inversion
-Must maintain a 30 ft buffer on the downwind edge of the field to any sensitive areas (See label for details)
Mitigation measures must be implemented to manage surface runoff of ENLIST DUO. Specifics of mitigation measure implementation are outlined on the label as well as at enlist.com/mitigationmeasures
Rain Delay: Rainfast within 4 hours following application. To avoid potential field runoff avoid applications within 48 hours of anticipated rainfall
Rotation Restrictions: Do not replant fields treated with Enlist Duo in the same growing season with crops other than those labeled for use with 2,4-D and glyphosate

Harvest & Forage Restrictions:

Non-ENLIST Soybean	*ENLIST Soybean*
Do not cut soybeans for feed or graze fields treated with a burndown application of Enlist Duo for 8 weeks following application.	Do not graze or harvest treated soybean for forage or hay following application

Tank Mixtures: Refer to www.EnlistTankmix.com

ENLIST ONE

ENLIST ONE with Colex D Technology (3.8 L)	Rate/A	2,4-D Choline
Small Annuals	1.5 pt/A	0.7 lb ae/A
Large Annuals	2 pt/A	0.95 lb ae/A

Weeds Controlled: Common ragweed, dandelion, giant ragweed, hairy vetch, horseweed (marestail), lambsquarters, mustards, prickly lettuce.

Timing:

Non-ENLIST Soybean: Apply no less than 15 days preplant prior to soybean planting for the 1 pt/A rate and 30 days preplant for the 2 pt/A rate.

ENLIST Soybean: Apply any time before or after planting, but before soybean emerges, to control weed seedlings or existing cover crops

Spray Volume: Apply in a minimum of 10 to 15 gal of water per acre. Do not apply with nitrogen fertilizer as a carrier.

General Comments:

Non-ENLIST Soybean: Unacceptable crop injury may occur when Enlist One is applied as a pre-plant treatment to non-ELIST soybean. Plant soybean seed at least 1 to 2 inches deep. Adjust planter press wheels to ensure that soybean seed are completely covered with soil. Do not disturb soil with tillage between application and soybean planting. Do not make more than one burndown application of Enlist One per growing season; do not exceed 2 pt/A per season.

ENLIST Soybean: Do not apply more than one preemergence applications. Do not apply more than 2 pt/a Enlist One per application. Do not apply more than 6 pt/a Enlist One per season.

Environmental Statements: Drift of Enlist One spray or vapor can injure nearby susceptible plants. The following parameters must be followed to assure off-site movement does not occur.
-Applications must be made with approved broadcast nozzles and pressures (See label for details)
-Do Not apply if winds are greater than 15 mph
-Do Not apply during a low level temperature inversion
-Must maintain a 30 ft buffer on the downwind edge of the field to any sensitive areas (See label for details)
Mitigation measures must be implemented to manage surface runoff of ENLIST ONE. Specifics of mitigation measure implementation are outlined on the label as well as at enlist.com/mitigationmeasures

Rain Delay: Rainfast within 4 hours following application. To avoid potential field runoff avoid applications within 48 hours of anticipated rainfall

Rotation Restrictions: Do not replant fields treated with Enlist One in the same growing season with crops other than those labeled for use with 2,4-D.

Harvest & Forage Restrictions:

Non-ENLIST Soybean: Do not cut soybeans for feed or graze fields treated with a Enlist One for 8 weeks following application.

ENLIST Soybean: Do not graze or harvest treated soybean for forage or hay following application

Tank Mixtures: REFER TO WWW.ENLISTTANKMIX.COM. MIXING ENLIST ONE WITH A K-SALT FORMULATED GLYPHOSATE (EG. ROUNDUP POWERMAX, ABUNDIT EDGE) USING AN INDUCTOR TANK OR IN LOW WATER VOLUMES COULD LEAD TO INCOMPATIBLE MIXING. WHEN TANK MIXING ENLIST ONE WITH A K-SALT GLYHOSATE, MIXING SHOULD OCCUR IN A BULK TANK WITH AT LEAST HALF THE CARRIER VOLUME ALREADY IN THE TANK.
REFER TO PAGE 17 FOR A LIST OF POTASSIUM-SALT GLYPHOSATE PRODUCTS.

GLYPHOSATE

Listed below are examples of glyphosate formulations and approximate rates for most burndown applications in no-tillage soybeans. The specific rate of product will vary depending on glyphosate formulation and size and species of weeds.

Glyphosate formulation[1]	**Annuals <6" tall**	**Annuals >6" tall**
3 lb Glyphosate formulation *Numerous products* (3 lb ae/gal)	1.5 to 2 pt/A (24 to 32 fl oz/A) (0.56 to 0.75 lb ae/A)	2 to 3 pt/A (32 to 48 fl oz/A) (0.75 to 1.13 lb ae/A)
Buccaneer 5 (3.75 lb ae/gal)	1.2 to 2 pt/A (19 to 32 oz/A) (0.56 to 0.94 lb ae/A)	1.75 to 2.5pt/A (28 to 40 oz/A) (0.82 to 1.17 lb ae/A)
Durango DMA / Duramax (4 lb ae/gal)	1.13 to 1.5 pt/A (18 to 24 fl oz/A) (0.56 to 0.75 lb ae/A)	1.5 to 2.25pt/A (24 to 36 oz/A) (075 to 1.13 lb ae/A)
Roundup PowerMAX (4.5 lb ae/gal)	1 to 1.4 pt/A (16 to 22 fl oz/A) (0.56 to 0.77 lb ae/A)	1.4 to 2 pt/A (22 to 32 fl oz/A) (0.77 to 1.13 lb ae/A)
Roundup PowerMax 3	0.94 to1.25 pt/A (15 to 20 fl oz/A) (0.56 to 0.75 lb ae/A)	1.25 to 1.88 pt/A (20 to 30 fl oz/A) (0.75 to 1.13 lb ae/A)

[1] **For a detailed list of glyphosate products see page 17**

GLYPHOSATE (continued)

Additives: For products that require a surfactant, a non-ionic surfactant at 0.25% v/v is often used. Consult the herbicide product label to verify if a surfactant is needed and the type and rate of surfactant to include. Dry Ammonium Sulfate at 1 to 2% by weight (8.5 to 17 lb/100 gal) or an equivalent amount of AMS in a liquid formulation may improve glyphosate activity under certain conditions such as dry weather, or when mixed in hard water or with certain herbicides, or applied to certain weed species.

Annual Weeds Controlled: Annual fleabane, barnyardgrass, brome spp., chickweed, common ragweed, crabgrass, fall panicum, giant foxtail, giant ragweed, henbit, johnsongrass (seedling), lambsquarters, mustards, prickly lettuce, rye, smartweed, volunteer corn (except glyphosate resistant), wheat.

Perennial Weeds: *Consult label for glyphosate rate for specific perennial weed species*. Best control of perennial weeds is usually achieved when treated at late growth stages (approaching maturity) and when soil moisture is adequate for active plant growth. At normal application times for no-till soybeans, perennial weeds may not be at the proper growth stage. Control may be reduced if plants are mowed or grazed and not allowed to regrow to recommended growth stage. Perennial weeds may require multiple applications for optimum control.

Spray Volume: Apply in 10 to 20 gallons of clean water/A when mixing with other herbicides. A spray volume of 3 to 10 gallons of water/A is often recommended when glyphosate is used alone at reduced labeled rates for certain annual weed species.

General Comments: Apply before, during, or after planting but before crop emergence Glyphosate is a translocated herbicide. Reduced control may occur if mixed with such products as Micro-Tech. Management programs that rely on repeated use of glyphosate alone without herbicides of other sites of action may lead to the development of populations of glyphosate-resistant biotypes of weeds. Applying with 2,4-D ester (7 to 30 days early preplant) or products containing chlorimuron or cloransulam may be needed for improved control of horseweed(marestail).

Environmental Statements: Take precautions to avoid spray drift to desirable plants.

Rain Delay: Rainfall soon after application may reduce effectiveness. Some labels indicate 4 or 6 hrs.

Rotation Restrictions: There are no rotational restrictions following normal use of glyphosate. Wait at least 30 days before planting of crops not listed on the label.

Harvest & Forage Restrictions: Do not harvest or graze treated vegetation for 8 weeks after application.

Tank Mixtures: Consult label for specific tank mixes.

GLUFOSINATE

INTERLINE, CHEETAH, FORFEIT, SURMISE, TOTAL	29 to 36 fl oz/A	glufosinate 0.53 to 0.66 lb ai/A

Weeds Controlled: Chickweed. marestail (horseweed),giant foxtail, crabgrass, johnsongrass (seedling), lambsquarters, common ragweed, giant ragweed, smartweed, vetch.

Additives: If foaming occurs a silicone-anitfoam based agent may be added. Ammonium sulfate may improve control of weeds that are stressed.

Timing: Apply preplant or prior to crop emergence of any conventional or transgenic soybean varieties. When LIBERTY is used as a burndown, an additional application LIBERY may be used as an in-season application at 22 to 29 fl oz/A overtop soybean varieties designated as “LibertyLink”.

Spray Volume: A minimum of 15 GPA. For dense weed canopies use 20 to 40 GPA. Do not use nozzles or pressures that result in coarse sprays.

General Comments: Weed control may be reduced when applied to weeds stressed from drought or cool temperatures. Heavy dew or fog may reduce weed control. Also, applications should be made between dawn and 2 hours before sunset to avoid potential reduction in control of lambsquarters and velvetleaf. The cumulative rate over the total season rate should not exceed 65 oz/A for soybean.

Rain Delay: 4 hours.

Rotation Restrictions: Rotational crops that may be planted are corn or soybeans anytime, small grains 70 days, and other crops 180 days after application.

Harvest & Forage Restrictions: Do not apply within 70 days of harvesting soybean seed. Do not graze treated fields or harvest for forage or hay.

Tank Mixtures: LIBERTY may be tank mixed with labeled rates of other herbicides provided other products are labeled for burndown applications. No specific products are listed for burndown tank mixes.

LIBERTY ULTRA

LIBERTY ULTRA	19 to 29 fl oz/A	L-glufosinate ammonium
+	+	0.26 to 0.40 lb ai/A
Ammonium sulfate (AMS)	1.5 to 3 lb/A	*glufosinate ammonium equivalent*
		0.52 to 0.80 lb ai/A

(Anti-foam or drift control agents may be added if needed.)

Weeds Controlled: Chickweed. marestail (horseweed),giant foxtail, crabgrass, johnsongrass (seedling), lambsquarters, common ragweed, giant ragweed, smartweed, vetch.

Timing: Apply preplant or prior to crop emergence of any conventional or transgenic soybean varieties. When LIBERTY ULTRA is used as a burndown, an additional 2 applications of LIBERY ULTRA may be applied in-season to soybean varieties designated as "LibertyLink" or glufosinate-resistant up to a maximum of 58 fl oz/A total for the season.

Spray Volume: A minimum of 15 GPA. For dense weed canopies use 20 to 40 GPA. Apply with nozzle and pressure that produce medium to coarse droplets.

General Comments: Weed control may be reduced when applied to weeds stressed from drought or cool temperatures. The cumulative rate over the total season rate should not exceed 58 fl oz/A for soybean.

Rain Delay: 4 hours.

Rotation Restrictions: Rotational crops that may be planted are corn or soybeans anytime, small grains 70 days, and other crops 180 days after application.

Environmental Statements: Liberty Ultra contains a Surface Water Advisory statement on the label.

Endangered Species Mitigations: Downwind Spray Drift Buffer (ground application with medium to coarse droplets): 10 ft; Runoff Mitigation Points: 3

Harvest & Forage Restrictions: Do not apply within 70 days of harvesting soybean seed. Do not graze treated fields or harvest for forage or hay.

PARAQUAT

	Herbicide Rate Based on Height of Annual Weeds		
	1 to 3" weeds	3 to 6" weeds	6" weeds
GRAMAXONE 3.0SL or **HELMQUAT** 3SL	1.3 to 1.7 pt/A	1.7 to 2.0 pt/A	2.0 to 2.7 pt/A
paraquat cation lb/A	*0.5 to 0.63 lb ai/A*	*0.63 to 0.75 lb ai/A*	*0.75 to 1 lb ai/A*

Additives: Non-ionic surfactant at 1 to 2 pt/100 gal of spray mixture or Crop Oil Concentrate at 4 qt/100 gal.

Weeds Controlled: Many small annuals including chickweed, crabgrass, giant foxtail, henbit.

Spray Volume: Apply in 10 to 20 gal of clean water or complete clear liquid fertilizers per acre. Do not use suspension type fertilizers. A spray volume of more than 20 GPA may be needed if weeds exceed 6 inches in height.

General Comments: Paraquat containing products are classified as RESTRICTED USE PESTICIDES due to acute toxicity. *Certified applicators must successfully complete an EPA-approved training program before mixing, loading, and/or applying paraquat*. Apply before, during, or after planting but before crop emergence. Regrowth may occur from perennial grasses and broadleaf weeds, legume sods, or perennial grass sods. Annuals such as marestail, prickly lettuce, smartweed, and giant ragweed may not be controlled. Applying with 2,4-D ester (7 to 30 days early preplant) or Canopy may be needed for improved control of horseweed (marestail). Grass cover crops such as wheat may not be effectively controlled between tillering and boot stage of growth. Split applications may improve control of fescue, orchardgrass, or ryegrass. Do not exceed 6 pt/A of GRAMOXONE SL per season.

Environmental Statements: Drift of spray can desiccate green tissue and result in injury to non-target plants which may render them unfit for sale, use, or consumption.

Rain Delay: 15-30 minutes for GRAMOXONE SL.

Rotation Restrictions: All rotational crops may be planted immediately after last application.

Harvest & Forage Restrictions: Do not graze or use for forage before R3 (early pod stage).

Tank Mixtures GRAMOXONE SL: Canopy, Command, Dual Magnum, Dual II Magnum, FirstRate, Harmony Extra, Prowl, Scepter, 2,4-D ester (7 to 30 days EPP).

REVITON

REVITON 2.83SC	1 to 3 fl oz/A	tiafenacil
+	+	0.022 to 0.066 lb ai/A
Methylated Seed Oil (MSO)	1%v/v	

Additives: The addition ofAmmonium Sulfate (AMS) 8.5 to 17 lb/100gal or Urea Ammonium Nitrate (UAN) at to 2.5 gal/100 gal is allowed. Use AMS when tank-mixing with glyphosate containing herbicides.
Weeds Controlled: common chickweed, henbit, purple deadnettle, common lambsquarters, giant ragweed. Suppression of horseweed (marestail) and established dandelion.
Crop Stage: REVITON can be applied preplant. REVITON may be applied at 1 to 1.5 fl oz/a 0 days prior to soybean planting on soils with greater than 2% organic matter and soils that ARE NOT coarse or sandy clay loam soils. A minimum of 7 days is required between REVITON application and soybean planting on soils with less than 2% organic matter or coarse soils or sandy clay loam soils at all rates. A minimum of 7 days between REVITON application and soybean planting is required on all soils when REVITON is applied at 2 to 3 fl oz/a.
General Comments: Cover seed with soil to avoid washing and concentration of herbicide in seed zone. Do not apply when soybean reach cracking stage. Sequential applications should be separated by at least 14 days. Do not exceed 3 fl oz per acre in a single application. Do not exceed a maximum cumulative rate of 6 oz/A (0.134 lb ai/A of tiafenacil) per year.
Environmental Statements: REVITON has GROUND and SURFACE WATER ADVISORY statements on the label.
Rain Delay: 1 hour.
Rotation Restrictions: Corn and wheat may be planted anytime after application of REVITON at all rates. Consult
label for all other crops for replant restrictions based on rate.
Harvest & Forage Restrictions: Harvest and grazing restrictions are not stated on the label.
Tank Mixtures: Glyphosate is recommended to be tank mixed with REVITON to improve and broaden burndown efficacy.

SHARPEN

SHARPEN 2.85S	1 fl oz/A –0 Days Pre Plant	saflufenacil
	1.5 fl oz/A – 14 Days Pre Plant	0.022 to 0.033 lb ai/A
+	+	
Methylated Seed Oil (MSO)	1% v/v	

Additives: May also include Ammonium Sulfate (AMS) 8.5 to 17 lb/100gal or Urea Ammonium Nitrate (UAN) at 1.25 to 2.5 gal/100 gal. Use AMS when mixing with glyphosate containing herbicides. Do not use surfactants as a substitute for MSO or poor broadleaf control will occur.
Weeds Controlled: Burndown control of common chickweed, horseweed (marestail), prickly lettuce, giant ragweed. Suppression of established dandelion.
Crop Stage: SHARPEN may be applied in the fall or spring.
General Comments: Applications may be made as an early preplant or preemergence when Sharpen is used at a rate of 1 oz/A. Allow a minimum preplant interval of 14 days for 1.5 oz/A rate and 30 days for 2 oz/A rate. A more restrictive preplant interval will be required if Sharpen is applied with other Group 14 (PPO Inhibitor) herbicides (such as sulentrazone or flumioxazin) or when applied to coarse textured soils with $\leq$ 2% organic matter. Cover seed with soil to avoid washing and concentration of herbicide in seed zone. Do not apply when soybean reach cracking stage. Group 14 herbicides labeled for post treatments may be used 14 days after soybean emergence. Do not exceed a maximum cumulative rate of 4 oz/A (0.089 lb ai/A of saflufenacil). Sequential applications of Sharpen must be separated be at least 30 days.
Environmental Statements: SHARPEN has GROUND and SURFACE WATER ADVISORY statements on the label.
Rain Delay: 1 hour.
Rotation Restrictions: When SHARPEN is applied at 1 oz/A field corn, popcorn, grain sorghum, small grains and soybean may be planted anytime (allow 30 days for soybean with coarse soil texture and $\leq$ 2% OM.) Allow a 4 to 6 month rotational interval for other crops (Consult label for specific crop rotation).
Harvest & Forage Restrictions: Do not harvest forage or graze for at least 65 days after application.
Tank Mixtures: Extreme, Prowl, Pursuit, Scepter, Verdict, Zidua, glyphosate.

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76 Soybean *Burndown*

Foliar "Burndown" plus Residual Herbicides for No-tillage Soybean

CANOPY EX

CANOPY EX 29.5 DG	1.1 to 3.3 oz/A*	chlorimuron : tribenuron
+	+	0.016:0.005 to 0.047:0.014 lb ai/A
Crop Oil Concentrate (COC)	1 gal/100gal	

*When using application rates >1.65 to 3.3 oz/A, apply where soil pH ≤ 7.0. There are no pH restrictions for lower application rates.

Additives: If tank mix partner precludes use of crop oil concentrate, use non-ionic surfactant at 1 qt/100 gal of spray mixture.

Weeds Controlled: Chickweed, fleabane, giant ragweed, henbit prickly lettuce. Include 2,4-D LVE for optimum burndown control of horseweed (marestail), wild garlic, lambsquarters and certain other weed species.

Timing: Apply as an early preplant treatment in the fall or spring. The minimum interval between spring application
and soybean planting is 7 days for rates 1.1 to 2.2 oz/A, or 14 days for rates > 2.2 up to 3.3 oz/A. For optimum control apply when annual weeds are up to 3 inches and perennial weeds are up to 6 inches in height or diameter.

General Comments: Soybean stunting may develop if excessive rainfall occurs after application but before plant emergence. CANOPY EX provides burndown and preemergence control of certain weeds. Apply CANOPY EX at 1.5 to 3.3 oz/A in order to achieve acceptable preemergence weed control through normal planting date. CANOPY EX will not provide season-long preemergence control of annual grasses and broadleaf weeds.

Environmental Statements: Do not mix/load, or use within 50 feet of all wells including abandoned wells, drainage wells and sinkholes.

Rain Delay: 2 hours

Rotation Restrictions: When CANOPY EX rate exceeds 1.65 oz/A, the rotation intervals are 4 months for cereal grains and pasture grasses, 10 months for alfalfa, field corn, sorghum, and transplanted tobacco (or 9 months for field corn if chlorimuron rate ≤ 0.64 oz/A) and 18 or 30 months for certain other crops. Consult CANOPY EX label when rate is 1.1 to 1.65 oz/A or if chlorimuron is sequentially applied after August 1.

Harvest & Forage Restrictions: Allow 14 days after application before grazing or feeding forage or hay.

Tank Mixtures with CANOPY: 2,4-D LVE, Gramoxone , glyphosate.

Generic Formulation: CLOAK EX is similar to CANOPY EX. Follow label for rates & preplant intervals.

ENVIVE

ENVIVE 41.3 DG	2.5 to 5.3 oz/A*	chlorimuron: thifensulfuron: flumioxazin
+	+	0.014:0.0045:0.046 to 0.03:0.0096:0.097 lb ai/A
Crop Oil Concentrate (COC)	1 gal/100gal	

*Use >4 to 5.3 oz/A where soil pH ≤ 7.0. There are no pH restrictions for 2.5 to 4 oz/A

Additives: If tank mix partner prohibits use of crop oil concentrate, use non-ionic surfactant at 1 qt/100 gal of spray mixture.

Weeds Controlled: Burndown control of dandelion, prickly lettuce, common ragweed, giant ragweed. Include 2,4-D LVE for optimum burndown control of horseweed (marestail), wild garlic, and certain other weed species. Preemergence control of chickweed, cocklebur, lambsquarters, hophornbeam copperleaf, dandelion, henbit, marestail, nightshade, pigweed, prickly sida, morningglories, common ragweed, giant ragweed, smartweed, velvetleaf.

Timing: Apply as an early preplant treatment in the fall or spring up to 3 days after planting but before crop emergence.. For optimum control apply when annual broadleaf weeds are up to 3 inches and perennial broadleaf weeds are up to 6 inches in height or diameter.

General Comments: Do not exceed 4 oz/A where soil pH >7. Soybean stunting may develop if excessive rainfall occurs after application and for a short period after crop emergence. Risk of injury can be minimized by not using on poorly drained soils, planting seed at least 1.5 inches deep, and covering seed with soil.

Environmental Statements: Do not mix/load, or use within 50 feet of all wells including abandoned wells, drainage wells and sinkholes.

Rain Delay: 1 hour

Rotation Restrictions: Where soil pH is <7, the rotation intervals are 4 months for barley, wheat, 10 months for field corn, popcorn, sorghum, and transplanted tobacco; 12 months for alfalfa and clover, and 18 months for certain other crops. Consult ENVIVE label where soil pH is ≥ 7.

Harvest & Forage Restrictions: Do not graze treated fields or harvest for forage or hay.

Tank Mixtures2,4-D LVE, Assure II, dicamba, Express brands, glyphosate, metribuzin, paraquat, pendimethalin, pyroxasulfone, saflufenacil (refer to label restrictions). Do not tank mix ENVIVE with acetochlor (Warrant), flufenacet (Axiom, Domain), metolachlor (Cinch, Dual), or dimethenamide (Outlook) within 14 days of soybean planting unless soybeans are planted under no-till or minimum till on wheat stubble or no-till field corn stubble.

FIRST SHOT

FIRSTSHOT 50 SG	0.8 oz/A	thifensulfuron:tribenuron-methyl
+	+	0.0125 : 0.0125 lb ai/A
Non-ionic Sufactant (NIS)	0.25 to 0.5% v/v	
or	or	
Crop Oil Concentrate (COC)	1 to 2% v/v	

Weeds Controlled: Common chickweed, henbit, wild garlic, lambsquarters. The addition of 2,4-D ester, dicamba, glyphosate, paraquat, or glufosinate with FIRSTSHOT will enhance burndown control of such weeds as marestail (horseweed).
Additives: Apply with a nonionic surfactant at 0.25 to 0.5% v/v (1 qt/100 gal spray solution); or with a crop oil concentrate or MSO at 1-2% v/v (1-2 gal/100 gal of spray solution). An ammonium nitrogen fertilizer or a high quality, sprayable grade of ammonium sulfate may be added to enhance weed control. When mixing with glyphosate or glufosinate that contain a built-in adjuvant system, no additional surfactant is needed.
Timing: Apply as a burndown 7 days prior to soybean planning.
General Comments: Herbicid activity of FIRSTSHOT may be affected from adverse environmental conditions. FIRSTSHOT will not control weeds that are resistant to ALS-inhibitor herbicides.
Rotation Restrictions: Corn or grain sorghum may be planted 14 days after application. Wheat, barley, and triticale may be planted any time after application. All other crops may be planted after 45 days.
Harvest & Forage Restrictions: Do not graze or feed forage or hay from treated areas.
Tank Mixtures: FIRSTSHOT tank mixtures include 2,4-D ester, dicamba, glyphosate, paraquat, and glufosinate. Consult other labels for approved tank mix partners.

FLEXSTAR GT

FLEXSTAR GT 3.5 (2.8L)	3.5 to 5.3 pt/A	fomesafen: glyphosate 0.25 lb ai/A:0.99lb ae/A to 0.371 lb ai/A:1.48 lb ae/A

Additives: An adjuvant is already included with FLEXSTAR GT and minimizes the need for additional adjuvants. Under certain conditions the addition of one or more of the following may improve control: AMS at 8.5 to 17 lb/100 gal; Crop Oil Concentrate or Methylated Seed oil at 2 to 4 qt/100 gal; or Non Ionic Surfactant at 1 to 2 pt/100 gal.
Weeds Controlled: Burndown control of barnyardgrass, chickweed, common ragweed, crabgrass, fall panicum, giant foxtail, giant ragweed, henbit, johnsongrass (seedling), lambsquarters, mustards, Palmer amaranth, rye, smartweed, volunteer corn (except glyphosate resistant), waterhemp, wheat. Preemergence control of lambsquarters, black nightshade, pigweed, common ragweed.
Timing: Apply as a preplant or preemergence burndown or postemergence over-the-top in glyphosate tolerant soybean.
General Comments: Follow label directions for herbicide rates and optimum stages of weed growth. Do not exceed a maximum of 0.375 lb ai of fomesafen in alternate years.
Environmental Statements: Contamination of groundwater may occur when used on permeable soils.
Rain Delay: Heavy rainfall after application may reduce performance.
Rotation Restrictions: Rotational crops that may be planted are wheat or barley after 4 months; or corn after 10 months (12 months for popcorn) following treatment. Other crops may be planted 18 months after treatment.
Harvest & Forage Restrictions: Do not apply within 45 days of harvest. Do not apply within 45 days of harvest. Treated soybean plants should not be grazed or harvested for forage or hay.
Tank Mixtures for Preplant or Preemergence Applications: 2,4-D, and glyphosate.

INTERMOC

INTERMOC 3.57 L	64 to 80fl oz/A	glufosinate ammonium : S-metolachlor 0.54:1.25 to 067:1.56 lb ai/A

Weeds Controlled: Chickweed, henbit, common ragweed, fall panicum, foxtails, giant ragweed, johnsongrass (seedling), lambsquarters, marestail (horseweed), Palmer amaranth, smooth pigweed, shattercane, smartweed, velvetleaf, waterhemp. Consult label for weed size.
Crop Stage: Preplant surface or preemergence applications may be made prior to the emergence of conventional or transgenic soybean varieties.
General Comments: Do not exceed a total of 122 oz/A per season including the burndown treatment. Heavy dew or fog may reduce weed control. Also, applications should be made between dawn and 2 hours before sunset to avoid reduced control of lambsquarters and velvetleaf. Ammonium sulfate may improve control of weeds that are stressed. If foaming occurs a silicone-antifoam based agent may be added. Use nozzles and pressures that generate MEDIUM spray droplets to assure uniform coverage.
Environmental Statements: Use precautions to avoid drift of spray to nearby crops or sensitive plants.
Rain Delay: 4 hrs
Rotation Restrictions: Corn or soybean may be planted anytime. Allow a minimum interval of 4.5 months after application for wheat, barley, and oats and 12 months for other crops.
Harvest & Forage Restrictions: Do not apply within 90 days of harvest. Do not graze or cut for hay or forage.
Tank Mixtures: Refer to potential tank mix partner label for limitations and restrictions.

LEADOFF or CRUSHER

LEADOFF 33.4 WSG	1.5 oz	rimsulfuron:thifensulfuron
or		0.0156 : 0.0156 lb ai/A
CRUSHER 50 WDG	1 oz	
+	+	
Nonionic Surfactant (NIS)	0.25% v/v	
or	or	
Crop Oil Concentrate (COC)	1 to 2 % v/v	
or	or	
Methylated Seed Oil (MSO)	0.5% v/v	

Additives: An ammonium nitrogen fertilizer or a high quality, sprayable grade of ammonium sulfate may be added to enhance weed control. When mixing with glyphosate or glufosinate that contain a built-in adjuvant system, no additional surfactant is needed.
Weeds Controlled: Common chickweed, curly dock, dandelion, henbit, wild garlic, lambsquarters. The addition of 2,4-D ester, glyphosate, paraquat, or glufosinate with LEADOFF/CRUSHER will enhance burndown control of such weeds as marestail (horseweed).
Timing: When using soybeans without BOLT technology, apply LEADOFF at 1.5 oz/A or CRUSHER at 1 oz/A early preplant in the fall or spring but no later than **30** days before planting soybean. Allow 60 days when applying >1.5 to 2 oz/A LEADOFF or >1.0 to 1.3 oz/A CRUSHER. When planting soybeans with BOLT technology, LEADOFF at1.5 to 2.7 oz/A or CRUSHER at 1.0 to 1.8 oz/A may be applied 0 days or more prior to planting.
Spray Volume: A minimum of 10 to 15 GPA.
General Comments: Crop injury may occur during periods of cold weather and/or wet soils, LEADOFF or CRUSHER will not control weeds that are resistant to ALS-inhibitor herbicides.
Rotation Restrictions: When LEADOFF is applied at 1.5 oz/A or CRUSHER at 1.0 oz/A, the rotational interval is 1 month for soybean, 3 months for winter cereals, 10 months for alfalfa, sorghum, and tobacco. Corn may be planted anytime.
Harvest & Forage Restrictions: Do not graze, feed forage, or grain within 30 days of application.
Tank Mixtures: LEADOFF and CRUSHER tank mixtures include 2,4-D ester, glyphosate, paraquat, and glufosinate. Consult other labels for approved tankmix partners.

SEQUENCE

SEQUENCE 5.25 L	3.5 to 4 pt/A	glyphosate:S-metolachlor 1:1.3 to 1.13:1.5 lb /A

Additives: Dry Ammonium Sulfate (AMS) at 1 to 2% by weight (8.5 to 17 lb/100 gal) may improve activity during dry weather, or when mixed in hard water or with certain herbicides or applied to certain weed species.
Annual Weeds Controlled: Annual fleabane, barnyardgrass, brome spp., chickweed, common ragweed, crabgrass, fall panicum, giant foxtail, giant ragweed, henbit, johnsongrass (seedlings), lambsquarters, mustards, prickly lettuce, rye, smartweed, volunteer corn (except glyphosate resistant), wheat
Timing: Apply up to 30 days before, during, or after planting but before crop emergence. Can also be applied postemergence overtop Roundup Ready soybean from cracking up through third trifoliate..
Spray Volume: Apply in 10 to 40 gallons of clean water/A
General Comments: Glyphosate is a translocated herbicide that controls emerged weeds, whereas, S-metolachlor is a soil-residual herbicide that controls weeds prior to emergence. Rainfall soon after application may reduce control of emerged weeds. Management programs that rely on repeated use of glyphosate alone for burndown control without herbicides of other modes of action may lead to the development of populations of glyphosate-resistant biotypes of weeds. Do not apply products with S-metolachor or metolachlor after soybean emergence if SEQUENCE is applied preemergence. Do not exceed 4 pt/A of SEQUENCE per year.
Environmental Statements: SEQUENCE has GROUND and SURFACE WATER ADVISORY statements on the label. This product should not be mixed or loaded within 50 feet of any wells, sink holes, perennial or intermittent streams and rivers, and natural or impounded lakes and reservoirs, unless an impervious pad is used. Avoid drift of spray as this can result in injury to non-target plants.
Rain Delay: Rainfall soon after application may reduce effectiveness.
Rotation Restrictions: Rotational crops that may be planted include corn or sorghum (with Concep treated seed) immediately; alfalfa after 4 months; wheat, barley, rye, or oats after 4.5 months; clover after 9 months; and tobacco in the spring following treatment.
Harvest & Forage Restrictions: For preplant or preemergence applications, do not feed for forage or hay for 30 days after treatment. For post applications in RR soybean, do not harvest grain for 90 days after treatment and do not graze or feed forage or hay.
Tank Mixtures: Authority, Boundary, Canopy, Command, Dual II Magnum, FirstRate, Prowl, Scepter, 2,4-D.

VERDICT

VERDICT 5.57EC	5 fl oz/A – 0 Days PrePlant 7.5 fl oz/A – 14 Days PrePlant	saflufenacil: dimethenamid -P 0.022:0.195 to 0.033:0.29 lb ai/A
+	+	
Methylated Seed Oil (MSO)	1gal/100gal	
+	+	
Ammonium Sulfate (AMS)	8.5 to 17 lb/100gal	
or	or	
Urea Ammonium Nitrate (UAN)	1.25 to 2.5 gal/100 gal	

Additives: Use AMS when mixing with glyphosate containing herbicides. Do not use surfactants as a substitute for MSO or poor broadleaf control will occur.
Weeds Controlled: Burndown control of common chickweed, horseweed (marestail), lambsquarters, prickly lettuce, giant ragweed. Soil-residual control of common chickweed, smooth pigweed, and prickly sida.
Crop Stage: VERDICT may be applied in the spring at 5 oz/A as an early preplant or preemerence treatment. Allow a minimum of 14 days preplant for 7.5 oz/A rate. Allow a minimum of 30 days preplant for 10 oz/A rate. Verdict may be applied in the fall at 5 to 15 oz/A.
General Comments: When applying 5 to 7.5 oz/A rate to coarse texture soils with $\leq$2% organic matter, allow a minimum interval of 30 days after applications before planting soybean. Cover seed with soil to avoid washing and concentration of herbicide in seed zone. Do not apply VERDICT as a tank mix or sequential application within 30 days (44 days for Verdict at 10 oz/A rate) of other PPO inhibitor herbicides (e.g. sulfentrazone or flumioxazin) because crop injury may occur. PPO inhibitor herbicides labeled for postemergence treatments may be applied 14 days after soybean emergence. Do not exceed a maximum cumulative rate of 20 oz/A (0.089 lb ai/A of saflufenacil)
Environmental Statements: Verdict has GROUND and SURFACE WATER ADVISORY statements on the label.
Rain Delay: 1 hour.
Rotation Restrictions: When VERDICT is applied at 5 oz/A, field corn, popcorn, grain sorghum, or soybean may be replanted immediately after crop failure (allow 30 days for soybean with coarse soil texture and $\leq$ 2% OM). Observe the label when the Verdict rate exceeds 5 oz/A. Fall seeded cereal crops may be planted 4 months after treatment. There are no rotational crop restrictions the spring following the previous year's application.
Harvest & Forage Restrictions: Do not harvest forage or graze treated plants to livestock.
Tank Mixtures: Optill, Sharpen, glyphosate.

ZIDUA PRO

ZIDUA PRO (4.09SL)	6 fl oz/A	saflufenacil:imazethapyr:pyroxasulfone
+	+	0.022:0.062:0.107 lb ai/A
Methylated Seed Oil (MSO)	1 gal/100gal	
+	+	
Ammonium Sulfate (AMS)	8.5 to 17 lb/100gal	
or	or	
Urea Ammonium Nitrate (UAN)	1.25 to 2.5 gal/100gal	

Additives: The use of AMS is highly recommended when mixing with glyphosate-based herbicides. Do not use surfactants as a substitute for MSO or poor broadleaf control will occur.
Weeds Controlled: Burndown control of common chickweed, horseweed (marestail), lambsquarters, prickly lettuce, giant ragweed. Soil-residual control of barnyardgrass, broadleaf signalgrass, crabgrass, fall panicum, foxtails, black nightshade, lambsquarters, smooth pigweed, and smartweed.
Crop Stage: ZIDUA PRO may be applied in the spring as an early preplant through preemerence treatment for burndown and/or residual control prior to crop emergence. May be applied in the fall prior to first killing frost.
General Comments: Do not apply after soybean emergence. When applying on coarse texture soils with ≤2% organic matter, allow a minimum interval of 30 days after applications before planting soybean. Cover seed with soil to avoid washing and concentration of herbicide in seed zone. Do not apply ZIDUA PRO with other PPO inhibiting [Group 14] herbicides (e.g. sulfentrazone or flumioxazin) as a tank mix or sequential application within 30 days of planting because crop injury may result (consult label). Other PPO inhibitor herbicides [Group 14] labeled for postemergence treatments may be applied 14 days after soybean emergence. Do not exceed a maximum amount of 0.089 lb ai/A of saflufenacil or 0.186 lb ai/A of pyroxasulfone per season.
Environmental Statements: ZIDUA PRO has GROUND and SURFACE water advisory statements on the label.
Rain Delay: 1 hour.
Rotation Restrictions: Soybean may be replanted immediately after crop failure (allow 30 days for soybean with coarse soil texture and ≤ 2% OM). For wheat wait 4 months following application; for field corn wait 8.5 months; for alfalfa wait 10 months; for barley and rye wait 11 months; for clover, oats, popcorn, sorghum, sweet corn, and tobacco
wait 18 months. Consult label for other rotational crops which may require waiting 40 months plus a successful field bioassay.
Harvest & Forage Restrictions: Do not graze or feed treated soybean forage, hay or straw to livestock.
Tank Mixtures: Clarity, Outlook, Prowl H20, Sharpen, Zidua, glyphosate.

Relative Response of Cover Crops and Weeds to Burndown Herbicides[1]

HERBICIDE	COVER CROPS									COOL SEASON WEEDS											WARM SEASON WEEDS											
	Alfalfa	Clover, Red	Clover, White	Fescue, Tall	Orchardgrass	Rye	Ryegrass, Annual	Vetch	Wheat	Brome spp.	Chickweed	Dandelion	Dock, Curly	Fleabane	Garlic, Wild	Henbit / Purple Deadnettle	Lettuce, Prickly	Horseweed (Marestail)	Mustard spp.	Musk Thistle	Barnyardgrass	Crabgrass	Foxtail, Giant	Fall Panicum	Johnsongrass (seedling)	Johnsongrass (rhizome)	Lambsquarters	Yellow Nutsedge	Pokeweed	Ragweed, Common	Ragweed, Giant	Smartweed
Paraquat	3	7	5	5	3	7	6	7	7	7	9	4	2	6	7	8	5	4	6	3	7	9	9	6	7	3	6	4	4	7	7	5
Glyphosate[2]	6	6	5	7	6	8	7	6	9	9	9	6	4	8	-	8	8	8*	8	6	8	9	9	8	9	8	9	6	6	9	9	8
Canopy EX	-	-	-	-	-	-	-	-	-	-	9	7	5	8	7	9	9	-	-	-	-	-	-	-	-	-	-	-	-	-	8	-
2,4-D Ester /Enlist One[3]	6	8	5	0	0	0	0	7	0	0	5	7	4	6	7	4	8	8	8	7	0	0	0	0	0	0	8	-	5	9	9	6
Dicamba [3]	8	9	8	0	0	0	0	8	0	0	7	8	7	8	6	6	9	8	7	7	0	0	0	0	0	0	-	-	6	9	9	-
Elevore	-	-	-	0	0	0	0	-	0	0	0	0	0	0	0	0	0	9	0	0	0	0	0	0	0	0	8	0	0	8	0	0
Enlist Duo[3]	6	8	5	7	6	8	7	7	9	9	9	7	4	8	7	8	8	8	8	7	8	9	9	8	9	8	9	6	6	9	9	8
Envive	-	-	-	-	-	-	-	-	-	-	-	8	-	-	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-	9	9	-
FirstShot[3]	-	-	-	-	-	0	0	7	0	0	9	-	8	-	8	8	-	7	-	-	0	0	0	0	0	0	8	-	-	6	4	-
Flexstar GT	6	6	5	7	6	8	7	6	9	9	9	6	4	8	-	8	8	8*	8	6	8	9	9	8	9	8	9	6	6	9	9	8
Glufosinate(Liberty Ultra)[4]	-	-	-	-	-	-	3	8	5	-	9	6	7	-	-	7	-	8	-	-	7	7	8	8	8	-	8	-	-	9	8	9
LeadOff/Crusher [3]	-	-	-	-	-	0	0	7	0	0	9	8	8	-	8	8	-	-	-	-	0	0	0	0	0	0	8	-	-	6	4	-
Reviton	-	-	-	-	-	-	-	-	-	0	8	5	-	-	-	8	-	7	-	-	-	-	-	-	-	-	8	-	-	-	8	-
Sequence	6	6	5	7	6	8	7	6	9	9	9	6	4	8	-	8	8	8*	8	6	8	9	9	8	9	7	9	6	6	9	9	8
Sharpen [3]	4	-	5	-	-	-	-	6	1	-	8	7	7	7	-	7	8	8	-	6	-	-	-	-	-	-	8	-	-	-	8	-
Verdict [3]	4	-	5	-	-	-	-	6	1	-	8	7	7	7	-	7	8	8	-	6	-	-	-	-	-	-	8	-	-	-	8	-
Zidua PRO [3]	4	-	-	-	-	-	-	-	1	-	8	7	-	7	-	7	8	8	-	6	-	-	7	-	-	-	8	-	-	-	8	-

GOOD= 8-9 FAIR = 6-7 POOR = 5 or less - Insufficient Data

1 Information presented in this table is the relative burndown response of emerged plants to herbicides applied at normal rates for no-till soybeans. This information generally does not reflect soil residual effects of these herbicides. The relative response values are based on a numerical scale from 0 to 9 and compare effectiveness of herbicides to control a particular cover crop or weed species. A herbicide may perform better or worse than indicated in the table due to weed size, environmental conditions or when tank mixed with other herbicides. This table should be used only as a guide. If a farmer is achieving satisfactory results under their conditions, they should not necessarily change products as a result of information in this table.

2 See page 17 for list of glyphosate products.

3 Consult label for preplant interval requirements to limit the risk for soybean injury.

4 Environmental stress conditions such as cool temperatures and cloudy weather may limit burndown weed control with glufosinate.

* Marestail populations may be resistant to glyphosate.

Guide to Weed and Crop Response to Soil-Applied Soybean Herbicides [1]

	Barnyardgrass	Broadleaf Signalgrass	Crabgrass	Fall Panicum	Foxtail	Johnsongrass (seedling)	Johnsongrass (rhizome)	Shattercane	Yellow Nutsedge	Black Nightshade	Burcucumber	Cocklebur	Copperleaf, Hophornbeam	Horseweed (Marestail)	Lambsquarters	Morningglory	Palmer amaranth	Pigweed, Smooth	Sida, Prickly	Ragweed, Common	Ragweed, Giant (Horseweed)	Sicklepod	Smartweed	Velvetleaf	Waterhemp	Crop Response[2]
Antares Complete	8	-	9	9	9	5	0	5	7	8	-	6	-	7	9	7	8	9	8	7	6	-	8	7	8	3
Anthem Maxx	8	6	9	8	9	5	0	5	5	8	-	0	-	-	8	5	8	9	-	7	0	0	-	7	8	2
Authority Assist	-	-	-	5	6	5	0	6	7	9	-	7	-	-	9	8	8	9	9	5	5	-	9	8	8	2
Authority Elite / Broadaxe XC	8	-	9	9	9	5	0	5	7	8	-	6	7	7	9	9	8	9	8	6	5	8	8	6	8	2
Authority First / Sonic	-	-	7	6	7	2	0	-	7	8	0	9	8	7	9	9	8	9	7	9	9	-	8	9	8	2
Authority MTZ	6	6	6	6	7	2	0	-	7	8	0	6	8	7	9	9	8	9	9	8	5	7	8	7	8	2
Authority Supreme / Authority Edge	8	8	8	8	8	8	3	6	5	8	-	5	8	7	8	7	9	9	8	8	-	7	7	7	9	3
Authority XL	6	6	6	6	6	5	0	4	8	8	7	9	9	7	9	9	8	9	8	9	8	5	9	9	8	2
Boundary	8	7	9	9	9	5	0	5	6	7	2	6	8	6	9	5	7	9	9	8	6	7	9	7	7	2
Canopy	6	5	6	6	6	5	0	2	2	5	8	9	8	7	9	8	6	9	9	9	8	8	9	8	6	2
Dimetric Charged / Panther MTZ	6	6	7	6	6	5	0	3	2	8	2	6	9	8	9	8	8	9	9	8	6	7	9	7	8	2
Dual II Magnum / EverpreX	8	7	9	9	9	5	0	4	7	8	0	0	4	-	6	0	6	8	3	5	0	3	6	2	6	0
Envive	7	-	6	5	7	-	-	3	7	9	-	8	9	7	9	8	8	8	8	9	7	4	9	8	8	2
Fierce / Fierce EZ	8	8	8	8	8	8	3	6	5	8	-	5	8	7	8	7	8	9	8	8	-	7	5	7	8	3
Fierce MTZ / Kyber Pro	8	8	8	8	8	8	-	6	5	8	2	5	8	7	9	7	9	9	9	8	6	7	9	7	9	3
Fierce XLT	8	-	8	8	8	-	-	-	-	9	6	8	8	7	9	8	9	9	8	9	7	-	9	8	9	2
Intimidator	8	8	9	8	8	6	0	-	8	9	-	5	9	6	7	7	9	9	9	8	-	7	9	6	9	2
Matador-S	8	7	9	9	9	7	0	6	7	8	-	8	8	6	9	5	7	9	9	8	6	7	9	7	7	2
Metribuzin	6	5	6	6	6	5	0	2	2	2	2	6	8	7	9	5	7	9	9	8	6	7	9	7	7	2
Outlook	8	7	9	9	9	5	0	4	6	8	0	0	4	-	7	0	7	8	0	5	0	2	5	0	7	0
Panther Pro	6	6	6	6	7	7	0	6	2	9	2	8	8	8	9	8	8	9	8	9	7	7	9	8	8	2
Perpetuo	8	6	9	8	9	5	0	5	5	8	-	0	-	5	-	5	8	9	-	0	0	0	-	8	8	2
Prefix / Statement /Vise	8	8	9	9	9	5	1	2	6	8	-	3	5	4	7	4	7	8	8	8	6	-	8	6	7	2
Preview / Sonic Boom	6	5	6	6	6	5	0	2	7	8	-	6	8	7	9	8	8	9	9	-	-	-	9	7	8	2
Surveil	7	-	6	5	7	-	-	3	2	9	-	8	9	7	9	8	8	9	8	9	7	4	9	8	8	2
Tendovo	8	7	9	9	9	5	0	4	-	7	-	8	8	5	9	8	7	9	9	9	8	-	9	8	7	2
Tribal	8	-	9	9	9	5	0	5	7	8	-	6	7	7	9	8	8	9	8	7	6	-	8	6	8	2
Trivence	6	-	5	6	6	-	-	3	-	9	6	8	-	8	9	8	8	9	-	9	7	-	9	8	8	2
Valor SX / Valor EZ	7	5	6	5	7	5	-	3	2	8	-	4	9	7	9	8	7	8	8	8	5	4	5	7	7	2
Valor XLT	7	2	6	5	7	-	3	3	2	8	6	4	9	7	9	8	8	8	8	8	5	4	5	7	8	2
Warrant / Enversa	8	7	8	8	8	5	0	5	7	8	0	0	-	0	8	0	7	9	0	6	0	4	5	0	8	0
Zidua	8	8	8	8	9	6	4	6	4	8	-	0	4	6	7	6	7	8	7	6	0	4	5	6	7	1
Zidua PRO	8	8	8	8	9	6	4	6	5	8	-	6	4	7	8	7	7	8	-	7	6	4	8	7	7	2

GOOD = 8 - 9 FAIR = 6 - 7 POOR = 5 or Less - =Insufficient Data Available

[1] *This table should be used only as a guide. The relative response value is based on a numerical scale from 0-9 comparing the effectiveness of herbicides to a particular weed. Under certain weather or environmental conditions, a herbicide may perform better or worse than indicated in the table. Response may be less in no-tillage than in conventional tillage. If a farmer is getting satisfactory results under their conditions, they should not necessarily change products because of the information in this table.*

[2] *A rating of 3 or less will not result in a crop yield loss under normal conditions. Certain soybean varieties vary in their injury response to a herbicide treatment.*

[3] *Apply only to selected GT27 or LLGT27 (isoxaflutole-resistant)soybean varieties.*

Soil Applied Herbicides

ANTARES COMPLETE

ANTARES COMPLETE 2.5 to 3 pt/A — sulfentrazone:metribuzin:S-metolachlor 0.125:0.31:1.47 to 0.15:0.38:1.76 lb ai/A

Weeds Controlled: Barnyardgrass, crabgrass, fall panicum, foxtails, black nightshade, lambsquarters, Palmer amaranth, smooth pigweed, prickly sida, smartweed, waterhemp

Crop Stage: May be applied up to 30 to 45 days early preplant, preplant, preplant incorporated, or preemergence up to 3 days after planting but prior to emergence

General Comments: Soybean stunting and stand loss can occur if cold weather or heavy rainfall occurs following ANTARES COMPLETE application. Consult your seed distributor about soybean tolerance to ANTARES COMPLETE prior to application, as increased soybean variety sensitivity can occur.

DO NOT use on soils classified as sand, which has less than 1% organic matter. Avoid applications to soils a pH of 7.2 or higher. Use caution when applying with in conjunction with soil applied organic phosphate pesticides. Do not apply more than 4 pts/A per crop year.

Environmental Statements: ANTARES COMPLETE has groundwater and surface water advisory statements on the label.

Rain Delay: None

Rotation Restrictions: Corn may be planted 4 months after ANTARES COMPLETE application, 4.5 months for wheat, 12 months for alfalfa, 18 months for sorghum and tobacco.

Harvest & Forage Restrictions: Do not graze or feed treated soybean forage, hay or straw to livestock for 40 days after treatment.

Tank Mixtures: Label defers to restrictions of other herbicide labels for burndown tankmixtures.

ANTHEM MAXX

ANTHEM MAXX 4.3 SC 2.5 to 4.75 oz/A — pyroxasulfone:fluthiacet 0.081:0.0024 to 0.155: 0.047 lb ai/A

Weeds Controlled: Barnyardgrass, black nightshade, crabgrass, fall panicum, foxtails, lambsquarters, Palmer amaranth, smooth pigweed waterhemp,

Crop Stage: May be applied early preplant, preplant, preemergence, or early postemergence from planting through sixth trifoliate.

General Comments: Soybeans should be planted at least one inch deep. The maximum cumulative rate for most soils is 0.266 lb ai /A pyroxasulfone and 0.0089 lb ai/A fluthiacet per year including preplant burndown.

Environmental Statements: ANTHEM MAXX has groundwater and surface water advisory statements on the label.

Rain Delay: 1 hour. Do not irrigate within 4 hours of a post application.

Rotation Restrictions: Corn or soybeans may be planted any time after application. Rotational crops that may be planted after ANTHEM MAXX include wheat after 1 month, grain sorghum after 6 months; alfalfa after 10 months. For certain other crops allow a 18-month interval.

Harvest & Forage Restrictions: Apply no later than 60 days before harvest. Do graze or harvest forage or hay.

Tank Mixtures: Aim, 2,4-D, glyphosate, paraquat, glufosinate, Sharpen, or Verdict,

AUTHORITY ASSIST

AUTHORITY ASSIST 4SC 6 to 12 fl oz/A — sulfentrazone:imazethapyr 0.16:0.031 to 0.31:0.063 lb ai/A

Weeds Controlled: Black nightshade, lambsquarters, morningglories, Palmer amaranth, prickly sida, smooth pigweed, smartweed, velvetleaf, waterhemp

Crop Stage: May be applied preemergence or preplant incorporated from 45 days prior to soybean planting up to 3 days after planting but before crop seed germinate. Soybean injury may occur if applied near or after crop emergence.

General Comments: Do not apply more than 12 fl oz fo Authority Assist per acre per 12 month period.

Environmental Statements: AUTHORITY ASSIST has groundwater and surface water advisory statements on the label.

Rain Delay: None

Rotation Restrictions: Rotational crops that may be planted after AUTHORTIY ASSIST include wheat after 4 months, tobacco after 9.5 months, field corn after 10 months (18 months for sweet corn and pop corn), alfalfa after 12 months, and sorghum after 18 months.

Harvest & Forage Restrictions: Do not feed treated soybean forage, soybean hay, or soybean straw to livestock.

Tank Mixtures: None specified on the label

Generic Products: Zone Assist

AUTHORITY EDGE

AUTHORITY EDGE 4.25SC	6.9 to 11 fl oz	Sulfentrazone : pyroxasulfone 0.15:0.082 to 0.23:0.13 lb ai/a

Weeds Controlled: Barnyardgrass, broadleaf signalgrass, crabgrass, fall panicum, foxtails, seedling johnsongrass, black nightshade, hophornbeam copperleaf, lambsquarters, Palmer amaranth, prickly sida, smooth pigweed, common ragweed, waterhemp
Crop Stage: Preplant, preplant incorporated, and preemergence up to three days after planting but before soybean has started to emerge
General Comments: Applications at 7 fl oz AUTHORITY EDGE at planting will allow for postemergence applications of pyroxasulfone products up to 0.10 lb/a pyroxasulfone.
Crop injury or growth suppression may occur due to stressful environments such as excessive moisture, cold soil temperatures, and compacted soils. Excessive rainfall or prolonged wet soil conditions may increase the risk of soybean injury. Ensure that seed furrows are adequately closed, and seed depth is at least one inch to reduce risk of crop injury.
Environmental Statements: Authority Supreme does have a ground water and surface water advisory.
Rain Delay: None.
Rotation Restrictions: 4 months for corn and wheat. 10 months for sorghum and 12 months for alfalfa.
Tank Mixtures: Not specified on label

AUTHORITY ELITE or BROADAXE XC

AUTHORITY ELITE 7L	25-32 fl oz/A	sulfentrazone:S-metolachor
or		0.137:1.23 to 0.175:1.58 lb ai/A
BROADAXE XC 7L	25-32 floz/A	

Weeds Controlled: Barnyard grass, crabgrass, fall panicum, foxtails, black nightshade, lambsquarters, morningglories, Palmer amaranth, smooth pigweed, prickly sida, sicklepod, smartweed, waterhemp. Incorporation and use of high rate may improve control of yellow nutsedge.
Crop Stage: May be applied preplant surface in spring; preplant incorporated; or preemergence up to 3 days after planting but before crop seed germinate. Soybean injury may occur if applied near or after crop emergence.
General Comments: A limited number of soybean varieties are susceptible to sulfentrazone and may be injured. Consult label for other comments regarding crop injury. When other herbicides with these ingredients are also used, do not exceed 0.375 lb ai sulfentrazone/A or 2.387 lb ai S-metolachlor/A per season.
Environmental Statements: AUTHORITY ELITE and BROADAXE XC has groundwater and surface water advisory statements on the label.
Rain Delay: None.
Rotation Restrictions: Rotational crops that may be planted after AUTHORITY ELITE include wheat or barley, after 4 ½ months; field corn and tobacco after 10 months (18 months for popcorn); 12 months for alfalfa. For certain other crops allow a 12-month interval and a bioassay.
Harvest & Forage Restrictions: Do graze or harvest forage or hay for 30 days after treatment..
Tank Mixtures: None specified on the label.
Generic Products; ZONE ELITE

AUTHORITY FIRST or SONIC

AUTHORITY FIRST 70 DG	6.45 oz/A	sulfentrazone:cloransulam
or		0.25:0.032 lb ai/A
SONIC 70 DG	6.45 oz/A	

Weeds Controlled: Black nightshade, cocklebur, hophornbeam copperleaf, lambsquarters, morningglories, common ragweed, giant ragweed, Palmer amaranth, smooth pigweed, smartweed, velvetleaf, waterhemp. Incorporation and use of high rate may improve control of yellow nutsedge. For burndown and residual control of marestail (not ALS resistant biotypes) use 6.45 to 8 oz/A plus surfactant or crop oil concentrate plus AMS
Crop Stage: May be applied preplant incorporated or preemergence.
General Comments: Do not exceed 8 oz of AUTHORITY FIRST or SONIC per acre per season. When applying AUTHORITY FIRST or SONIC followed by post application of Authority, do not exceed a cumulative rate of 0.055 lb ai of cloransulam per acre per season.
Environmental Statements: AUTHORITY FIRST and SONIC have GROUND and SURFACE WATER ADVISORY statements on the label.
Rain Delay: None.
Rotation Restrictions: Rotational crops include wheat after 4 months; field corn or popcorn after 10 months (18 months if organic matter is < 1.5% and soil pH > 7.0); alfalfa, barley, rye, or sorghum after 12 months after application. Tobacco requires a 30-month interval and a successful field bioassay.
Harvest & Forage Restrictions: Do not harvest soybeans for 65 days after application. Do not feed treated forage or hay.
Tank Mixtures: AUTHORITY FIRST or SONIC: Aim, 2,4-D, glyphosate, paraquat.

AUTHORITY MTZ

AUTHORITY MTZ 45 DG 14 to 18 oz/A — sulfentrazone : metribuzin 0.158:0.24 to 0.2:0.3 lb ai/A

Weeds Controlled: Black nightshade, hophornbeam copperleaf, lambsquarters, morningglories, common ragweed, palmer amaranth, smooth pigweed, prickly sida, smartweed, waterhemp. Incorporation and use of high rate may improve control of yellow nutsedge.
Crop Stage: May be applied in the fall or in the spring (early preplant 30-45 days prior to planting); preplant incorporated; or preemergence up to 3 days after planting but before crop seed germinate.
General Comments: AUTHORITY MTZ is a Restricted Use Pesticide. A limited number of soybean varieties are susceptible to AUTHORITY MTZ and may be injured. Consult label for other comments regarding crop injury.
Environmental Statements: AUTHORITY MTZ has GROUND and SURFACE WATER ADVISORY statements on the label. This product should not be mixed or loaded within 50 feet of any wells, sink holes, perennial or intermittent streams, rivers, and natural or impounded lakes and reservoirs, unless an impervious pad is used.
Rain Delay: None.
Rotation Restrictions: Rotational crops that may be planted after AUTHORITY MTZ include wheat, and barley, after 4 months; field corn or popcorn after 10 months; alfalfa and tobacco after 12 months; and sorghum after 18 months after application. Consult label for reduced intervals for corn & sorghum.
Harvest & Forage Restrictions: Do graze or harvest forage or hay.
Tank Mixtures: None specified on AUTHORITY MTZ label.

AUTHORITY SUPREME

AUTHORITY SUPREME 4.16SC 6 to 9.8 fl oz/a — sulfentrazone : pyroxasulfone 0.098:0.098 to 0.16:0.16 lb ai/a

Weeds Controlled: Barnyardgrass, broadleaf signalgrass, crabgrass, fall panicum, foxtails, seedling johnsongrass, black nightshade, hophornbeam copperleaf, lambsquarters, Palmer amaranth, prickly sida, smooth pigweed, common ragweed, waterhemp
Crop Stage: Fall, Preplant up to 30 days prior to planting, and preemergence up to three days after planting
General Comments: Crop injury or growth suppression may occur due to stressful environments such as excessive moisture, cold soil temperatures, and compacted soils. Excessive rainfall or prolonged wet soil conditions may increase the risk of soybean injury. Ensure that seed furrows are adequately closed and seed depth is at least one inch to reduce risk of crop injury.
Environmental Statements: Authority Supreme does have a ground water advisory.
Rain Delay: None.
Rotation Restrictions: 4 months for corn and wheat. 10 months for sorghum and 12 months for alfalfa.
Tank Mixtures: Not specified on label

AUTHORITY XL

AUTHORITY XL 70DG 6.5 oz/A to 7.5 oz/A — sulfentrazone : chlorimuron 0.25:0.032 to 0.29:0.036 lb ai/A

Weeds Controlled: Black nightshade, cocklebur, hophornbeam copperleaf, lambsquarters, morningglories, prickly sida, common ragweed, giant ragweed, Palmer amaranth, smooth pigweed, smartweed, velvetleaf, waterhemp. Incorporation and use of high rate may improve control of yellow nutsedge.
Crop Stage: May be applied in the fall or in the spring; preplant incorporated; or preemergence up to 3 days after planting but before crop seed germinate.
General Comments: A limited number of soybean varieties are susceptible to AUTHORITY XL and may be injured. Consult label for other comments regarding crop injury. Authority Maxx is a similar premix, yet it provides a lower concentration of chlorimuron, compared to AUTHORITY XL.
Environmental Statements: AUTHORITY XL has groundwater and surface water advisory statements on the label.
Rain Delay: 1 hour.
Rotation Restrictions: For soils with a pH < 6.8 rotational crops that may be planted after AUTHORITY XL include wheat, barley after 4 months; field corn, popcorn, and tobacco after 10 months; alfalfa after 12 months. For sorghum allow 18 months (10 months if rate is 6.4 oz/A). Certain other crops may require 18 or 36 months interval. Consult AUTHORITY XL label when: 1) soil pH >6.8; 2) when using the reduced rate program; 3) or when a successful field bioassay is required.
Harvest & Forage Restrictions: Do not feed treated forage or hay to livestock.
Tank Mixtures: Glyphosate, glufosinate, paraquat, 2,4-D
Generic Products; ZONE MAXX

BOUNDARY

BOUNDARY 6.5EC 2.1 to 3.0 pt/A	S-metolachlor : metribuzin 1.38:0.33 to 1.97:0.47 lb ai/A

Weeds Controlled: Barnyardgrass, common ragweed, crabgrass, fall panicum, foxtails, hophornbeam copperleaf, lambsquarters, smooth pigweed, prickly sida, smartweed.
Crop Stage: May be applied preplant incorporated or preemergence. BOUNDARY may be applied up to 30 days before no-till plantings.
General Comments: Seed should be planted at least 1.5 inches deep. When soil pH > 7.0, apply 1.5 pt/A rate only.
Environmental Statements: BOUNDARY has GROUND and SURFACE WATER ADVISORY statements on the label. This product should not be mixed or loaded within 50 feet of any wells, sink holes, perennial or intermittent streams, rivers, and natural or impounded lakes and reservoirs, unless an impervious pad is used.
Rain Delay: None.
Rotation Restrictions: Alfalfa, winter wheat, and barley may be planted 4.5 months, or corn after 8 months following BOUNDARY treatments. Other crops may require a 12-month rotational interval. Cover crops may be planted any time but stand reductions may occur. Do not graze or harvest cover crops for feed or food.
Harvest & Forage Restrictions: Wait 40 days after application before grazing or feeding soybean forage.
Tank Mixtures: 2,4-D, Canopy, dicamba, Dual II Magnum, Firstrate, glufosinate, glyphosate, Gramoxone, Pursuit, Python, Scepter, Sonic, Synchrony, Prowl.
Generic Formulation: PRESIDUAL, TAILWIND, LEDGER

CANOPY

CANOPY 75DG	Rate/A	chlorimuron:metribuzin
Burndown Control	3 to 4 oz/A	0.02:0.12 to 0.03:0.16 lb ai/A
Burndown & Residual Control	6 to 8 oz/A	0.04:0.24 to 0.053:0.32 lb ai/A

Additives: When used as a "burndown", add Crop Oil Concentrate at 1% (1 gal/ 100 gal) or Non-Ionic Surfactant at 0.25% (1 qt/100 gal).
Weeds Controlled: Burcucumber, chickweed, cocklebur, henbit, hophornbeam copperleaf, lambsquarters, morningglory, prickly lettuce, marestail, mustards, pennycress, pigweed, prickly sida, common ragweed, giant ragweed, sicklepod, smartweed, velvetleaf. The addition of 2,4-D LVE is required for burndown of marestail.
Timing: CANOPY may be applied preemergence or early preplant in the fall or spring up to 45 days prior to planting.
General Comments: Soybean injury may occur if soil pH is greater than 7.5. Do not exceed 3.5 oz/A CANOPY DF if soil pH exceeds 7.0. Treatments will provide some "burndown" of existing broadleaf weeds up to 3" and small annual grasses up to 1" tall. For added postemergence control, apply with 2,4-D, paraquat, or glyphosate. Soybean stunting may occur under certain environmental conditions. Sprayer equipment should be thoroughly cleaned before spraying other crops.
Environmental Statements: The use of metribuzin on permeable soils may result to ground water contamination.
Rain Delay: Rainfast after 1 hour.
Rotation Restrictions: If soil pH is 7.0 or less and the CANOPY rate is less than 10 oz/A, rotational crops which may be planted include wheat or barley after 4 months; or alfalfa, tobacco, grain sorghum, field corn or popcorn after 10 months (9 months for corn if rate is $\leq$ 6 oz/A following treatment). Other crops require a minimum 18 month interval. Consult label for rotation restrictions if pH is greater than 7.0, CANOPY rate exceeds 10 oz/A, or when other long-residual herbicides are used during the same season. Over application can result in injury to rotational crops. When using CANOPY BLEND, consult label for rotation restrictions.
Harvest & Forage Restrictions: Do not graze treated fields or harvest for forage.
Tank Mixtures: metolachlor, pendimethalin, 2,4-D LVE, glyphosate, or paraquat
Generic Formulation: CLOAK is similar to CANOPY. Follow label for rates & preplant intervals.

DIMETRIC CHARGED or PANTHER MTZ

DIMETRIC CHARGED or PANTHER MTZ	15 to 18 fl oz/A	metribuzin:flumioxazin 0.35:0.079 to 0.42:0.094 lb ai/A

Weeds Controlled: Black nightshade, hophornbeam copperleaf, lambsquarters, marestail, morningglory, palmer amaranth, smooth pigweed, prickly sida, common ragweed, smartweed, waterhemp,
Crop Stage: Burndown, Preplant or Preemergence within three days after planting
General Comments: Soybean Injury can occur when soil pH is greater than 7.5, when applied to soybean with sensitivity to metribuzin, applied in conjunction with an OP insecticide, or when soybean are planted less then 1.5 inches deep. Do not apply more than 18 fl oz/a DIMETRIC CHARGED/PANTHER MTZ per growing season. Do not make more than one application per year. Rates are dependent on soil type, please refer to the label if applying to a coarse or low OM soil.
Environmental Statements: DIMETRIC CHARGED/PANTHER MTZ has ground water Advisory statements on the label.
Rain Delay: 1 hour
Rotation Restrictions: 4 months for wheat, barley, corn (field and sweet). 5 months for tilled alfalfa. 18 months for no-till alfalfa and tobacco.
Harvest & Forage Restrictions: Do not graze or feed forage to livestock.
Tank Mixtures: In TILLED SOYBEAN, do not tank mix with S-metolachlor, dimethenamid-P, acetochlor, or other chloroacetamide product within 14 days of soybean planting. Tank mixes of DIMETRIC CHARGED/PANTHER MTZ and chloroacetamide products allowed in NO-TILL or MINIMUM TILL SOYBEAN. For enhanced burndown of existing vegetation, DIMETRIC CHARGED/PANTHER MTZ may be tank mixed with
glufosinate, glyphosate, and/or 2,4-D.

DUAL II MAGNUM (*S*-metolachlor)

DUAL II MAGNUM	1.33 to 1.67 pt/A	S-metolachlor 1.27 to 1.6 lb ai/A
	or	
EverpreX	1.33 to 1.67 pt/A	

Weeds Controlled: Barnyardgrass, black nightshade, crabgrass, fall panicum, foxtails, smooth pigweed, Incorporation and use of high rate may improve control of yellow nutsedge.
Crop Stage: DUAL II MAGNUM may be applied preplant incorporated or preemergence for control of annual grasses and certain broadleaf weeds. They may be applied within 30 days before planting. Postemergence treatments may be applied 1 to 1.33 pt/A before weeds emerge through 3 trifoliate soybean.
General Comments: Similar products include Charger Basic, Charger Max, Medal EC, Medal II EC, Moccasin II Plus, Moccasin, and StreliuSII. Charger Basic, Charger Max, Medal EC, Medal II EC, Moccasin II Plus, and StreliuSII. contain 7.6 lb ai S-metolachlor per gal. Moccasin contains 8 lb ai metolachlor per gal.
Environmental Statements: These products have GROUND and SURFACE WATER ADVISORY statements on the label. They should not be mixed or loaded within 50 feet of any wells, sink holes, perennial or intermittent streams, rivers, and natural or impounded lakes and reservoirs, unless an impervious pad is used.
Rain Delay: None.
Rotation Restrictions: Field corn, popcorn, or grain sorghum (use CONCEP treated seed) or soybeans may be planted anytime following application. Small grains may be planted 4 ½ months, alfalfa 4 months, or clover 9 months after application. Plant other crops in the spring following treatment.
Harvest & Forage Restrictions: No restrictions except when Dual II Magnum is applied postemergence allow a minimum of 90 days before harvest. Do not graze or feed forage or hay to livestock.
Tank Mixtures: Authority MTZ, Authority Fist, Authority Maxx, Canopy, Classic, Firstrate, Flexstar, Flexstar GT,Fusilade DX, Fusion, glyphosate, Gramoxone, Liberty, Prefix, Python, Reflex, Sharpen, Sonic, TriCor, Verdict, .

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88 Soybean *Soil Applied*

FIERCE

		flumioxazin:pyroxasulfone
FIERCE 76 DG	3 to 3.75 oz/A	0.063 : 0.08 to 0.08 : 0.1 lb ai/A
FIERCE EZ	6 to 9 fl oz/A	0.063 : 0.08 to 0.094 : 0.12 lb ai/A

Weeds Controlled: Barnyardgrass, broadleaf signalgrass, large crabgrass, fall panicum, foxtails, seedling johnsongrass, black nightshade, common ragweed, hophornbeam copperleaf, lambsquarters, marestail (horseweed), Palmer amaranth, smooth pigweed, prickly sida, waterhemp.
Crop Stage: May be applied in the fall or in the spring up to 3 days after planting but before crop emerges. Do not
apply if soybeans are cracking.
General Comments: When used for burndown control, consult label for use of additives. Crop injury may occur if treated soil is splashed onto newly emerged plants. Spray equipment must be cleaned each day. To enhance removal of herbicide residue from spray system, use a tank cleaner such as Valent Tank Cleaner.
Environmental Statements: Fierce label has GROUNDWATER AND SURFACE WATER ADVISORY statements
Rain Delay: 1 hour
Rotation Restrictions: The rotational interval when using up to 3 oz/A Fierce or 6 fl oz/A Fierce EZ is 1 month for wheat, 30 days for conventional till field corn (7 days for reduced-till corn), 10 months for alfalfa, 12 months for tobacco,
and 18 months for other crops. Consult label when rate is greater than 3 oz/A Fierce or 6 fl oz/A Fierce EZ.
Harvest & Forage Restrictions: FIERCE : Do not graze or feed treated forage or hay to livestock. FIERCE EZ: Do not graze or feed treated forage or hay to livestock sooner than 21 days after application.
Tank Mixtures: Extreme, , metribuzin, FirstRate, pendimethalin, Python, Scepter, Valor, Valor XLT Command, glyphosate, 2,4-D LVE, Liberty, dicamba. Do not use FIERCE or FIERCE EZ where flufenacet (Axiom), (Micro-Tech), metolachlor (Dual), or dimethenamid (Outlook) are applied or injury may occur.

FIERCE MTZ or KYBER PRO

		flumioxazin:pyroxasulfone:metribuzin
FIERCE MTZ 2.6 SC	1 to 1.5 pt/A	
KYBER PRO 2.6 SC		0.06:0.08:0.19 lb ai/A to 0.094:0.12:0.28 lb ai/A

Weeds Controlled: Barnyardgrass, broadleaf signalgrass, large crabgrass, fall panicum, foxtails, seedling johnsongrass, black nightshade, common ragweed, hophornbeam copperleaf, lambsquarters, marestail (horseweed), Palmer amaranth, smooth pigweed, prickly sida, waterhemp, velvetleaf.
Crop Stage: May be applied in the fall or in the spring up to 3 days after planting but before crop emerges. Do not apply if soybeans are cracking.
General Comments: . Do not apply more than 1.5 pt FIERCE MTZ per year. Soybean Injury can occur when soil pH is greater than 7.5, applied in conjunction with an OP insecticide, when soybean are planted less then
1.5 inches deep or when heavy rains occur soon after applicaiton. Spray equipment must be cleaned each day. To enhance removal of herbicide residue from spray system, use a tank cleaner such as Valent Tank Cleaner.
Environmental Statements: Fierce MTZ label has GROUND AND SURFACE WATER ADVISORYstatements.
Rain Delay: 1 hour
Rotation Restrictions: The rotational interval for wheat is 8 months.. 1 months for corn, 10 months for alfalfa, and 18 months for other crops.
Harvest & Forage Restrictions: Do not graze or feed treated forage or hay to livestock within 40 days of treatment.
Tank Mixtures: When used for burndown control, may be mixed with chlorimuron, cloransulam, 2,4-D, dicamba, glyphosate, and/or glufosinate.

FIERCE XLT

		chlorimuron:flumioxazin:pyroxasulfone
FIERCE XLT 62.41 DG	3.75 to 4.5 oz/A	0.0156:0.0575:0.073 to 0.0187:0.069:0.088 lb ai/A

Weeds Controlled: Barnyardgrass, large crabgrass, fall panicum, foxtails, black nightshade, common ragweed, hophornbeam copperleaf, lambsquarters, marestail (horseweed), Palmer amaranth, smooth pigweed, prickly sida, smartweed, velvetleaf, waterhemp.
Crop Stage: May be applied in the fall or in the spring up to 3 days after planting but before crop emerges. Do not apply if soybeans are cracking.
General Comments: When used for burndown control, consult label for use of additives. Crop injury may occur if treated soil is splashed onto newly emerged plants. Spray equipment must be cleaned each day. To enhance removal
of herbicide residue from spray system, use a tank cleaner such as Valent Tank Cleaner.
Environmental Statements: Fierce XLT label has GROUN AND SURFACE WATER ADVISORY statements.
Rain Delay: 1 hour
Rotation Restrictions: The rotational interval when soil pH is < 7.0 is 10 months for field corn, 18 months for alfalfa, barley, clover rye, and sorghum. Consult label when soil pH is 7.0 or greater.
Harvest & Forage Restrictions: Do not graze or feed treated forage or hay to livestock.
Tank Mixtures: Do not tank mix FIERCE XLT with chloroacetamide products such as flufenacet (Axiom), metolachlor (Dual), or dimethenamid (Outlook) are applied or injury may occur.

INTIMIDATOR

INTIMIDATOR 2.8 to 4.48 pt/A S-metolachlor:metribuzin:fomesafen 1.19:0.26:0.23 to 1.9:0.42:0.38 lb ai /A

Weeds Controlled: Barnyardgrass, broadleaf signalgrass, crabgrass, fall panicum, foxtails, yellow nutsedge, black nightshade, hophornbeam copperleaf, palmer amaranth, smooth pigweed, prickly sida, common ragweed,
smartweed, waterhemp. Incorporation and higher use rates may improve control of yellow nutsedge.

Crop Stage: Preplant incorporated, preplant surface up to 30 days before planting or preemergence surface before soybean emergence.

General Comments: Do not exceed a maximum of 4.48 pt/A pre use season. When using other herbicides with
these ingredients, do not exceed a cumulative rate 2.5 lb/A metolachlor or S-metolachlor; or 0.375 lb fomesafen per acre in alternate years.

Environmental Statements: INTIMIDATOR has ground and surface water advisory statements on the label. It should not be mixed or loaded within 50 feet of wells, sinkholes, perennial intermittent streams, rivers, and natural
impounded lakes and reservoirs, unless an impervious pad is used.

Rain Delay: None.

Rotation Restrictions: Rotational crops include wheat or barley after 4.5 months, field corn after 10 months, (popcorn after 12 months). Other crops require an interval of 18 months.

Harvest & Forage Restrictions: Do not graze or harvest for soybean forage or hay. Do not graze rotated small grains or harvest forage or straw for livestock. Make post applications at least 90 days before harvest.

Tank Mixtures: 2,4-D LVE, Gramoxone, glyphosate, Canopy, FirstRate, Command, Python

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MATADOR-S

MATADOR-S 4.3EC 3 pt/A S-metolachlor:metribuzin:imazethapyr 1.27:0.28:0.064 lb ai/A

Weeds Controlled: Barnyardgrass, black nightshade, cocklebur, common ragweed, crabgrass, fall panicum, foxtails, hophornbeam copperleaf, lambsquarters, smooth pigweed, prickly sida, smartweed.

Crop Stage: May be applied preplant incorporated, preplant, or preemergence.

General Comments: Seed should be planted at least 1.5 inches deep. Applications to soils with a pH > 7.5 can result in soybean injury. Do not apply in conjunction with soil applied organophosphate insecticides. Do not apply more than 3 pts/a MATADOR-S per year.

Environmental Statements: Matador has GROUND and SURFACE WATER ADVISORY statements on the label. This product should not be mixed or loaded within 50 feet of any wells, sink holes, perennial or intermittent streams, rivers, and natural or impounded lakes and reservoirs, unless an impervious pad is used.

Rain Delay: None.

Rotation Restrictions: Barley may be planted after 4 months; alfalfa and winter wheat may be planted 4.5 months; or field corn after 8.5 months following MATADOR-S treatments. Tobacco requires a 12-month rotational interval. Sorghum may be planted 18 months after MATADOR-S. Forage grasses, sweet corn, pop corn, and all other crops may be planted 40 months after MATADOR-S application.
Risk of rotational crop injury is increased if products containing chlorimuron-ethyl, cloransulam-methyl, flumetusulam, or imazaquin are applied in the same season as MATADOR-S

Harvest & Forage Restrictions: Do not Harvest within 85 days of last MATADOR-S application. Do not graze or feed soybean forage, hay or straw that has been treated with Matador

Tank Mixtures: Glyphosate, glufosinate, and/or 2,4-D (LVE) may be tank mixed to enhance burndown of emerged weeds.

METRIBUZIN

METRIBUZIN 75DF 0.5 to 0.7 LB/A — metribuzin
or — 0.38 to 0.5 lb ai/A
MAULER 0.75 to 1 pt/A
Weeds Controlled: Common ragweed, hophornbeam copperleaf, lambsquarters, marestail (horseweed), smooth pigweed, prickly sida, smartweed.
Crop Stage: May be applied preplant incorporated, preemergence, or post directed after soybeans are 8" tall.
General Comments: Seed should be planted at least 1 ½ inches deep.
Environmental Statements: METRIBUZIN has a GROUNDWATER ADVISORY statement on the label.
Rain Delay: None.
Rotation Restrictions: Alfalfa, corn, wheat, barley, and forage grasses may be planted 4 months after METRIBUZIN treatments are applied to soybeans. Before planting grain sorghum or tobacco, wait 12 months after application.
Cover crops may be planted any time but stand reductions may occur. Do not graze or harvest cover crops for feed or food.
Harvest & Forage Restrictions: When METRIBUZIN is soil-applied, wait 40 days before utilizing treated soybean plants for forage, feed, or grazing. For POST-DIRECTED applications of METRIBUZIN, wait 70 days after application before harvesting grain or utilizing treated soybean plants (dry vines) as a forage crop. Do not use green vines for feed.
Tank Mixtures: Consult specific metribuzin product labels.
Generic Formulations: DIMETRIC, GLORY, METRI DF, METRIBUZIN 75, and TRICOR DF are examples of products containing the active ingredient metribuzin and are similar to SENCOR (a former brand name product.)

OUTLOOK

OUTLOOK 6EC 14 to 21 oz/A or — dimethenamid-P
0.66 to 0.98 lb ai/A
Weeds Controlled: Barnyardgrass, black nightshade, crabgrass, fall panicum, foxtails, smooth pigweed. Incorporation and use of high rate may improve control of some weeds.
Crop Stage: Apply preplant incorporated or preemergence for control of annual grasses and certain broadleaf weeds. OUTLOOK may be applied up to 30 days before planting and may also be applied postemergence from cracking to
fifth trifoliate soybeans and before weeds emerge.
General Comments: Incorporation and higher use rates will improve control of certain weeds.
Environmental Statements: OUTLOOK may have the potential to contaminate groundwater and surface water.
This product should not be mixed or loaded within 50 feet of any wells, sink holes, perennial or intermittent streams, rivers, and natural or impounded lakes and reservoirs, unless an impervious pad is used.
Rain Delay: None.
Rotation Restrictions: Soybean, corn, or grain sorghum (with seed safener) may be planted immediately after
application. Allow a 4-month rotational interval for fall-seeded small grains. Other rotational crops may be planted the following spring.
Harvest & Forage Restrictions: Do not use treated plants for feed or forage.
Tank Mixtures: Authority, Canopy, Command, Extreme, FirstRate, glyphosate, Gramoxone, Scepter. Consult label for approved combinations after soybean emergence.

PANTHER PRO

PANTHER PRO 12 to 15 fl oz/A — metribuzin:flumioxazin:imazethapyr 0.28:0.063:0.053 to 0.35:0.079:0.066 lb ai/A
Weeds Controlled: Barnyardgrass, crabgrass, foxtails, seedling johnsongrass, black nightshade, cocklebur, marestail, lambsquarters, morningglory, palmer amaranth, smooth pigweed, common ragweed, smartweed, velvetleaf, waterhemp,
Crop Stage: Fall or Spring Burndown or Preemergence.
General Comments: Soybean Injury can occur when soil pH is greater than 7.5, when applied to soybean with sensitivity to metribuzin, applied in conjunction with an OP insecticide, or when soybean are planted less then 1.5 inches deep. Rates are dependent on soil type, please refer to the label if applying to a coarse or low OM soil.
Environmental Statements: PANTHER PRO has ground water Advisory statements on the label.
Rain Delay: 1 hour
Rotation Restrictions: 4 months for wheat. 8 months for alfalfa. 8.5 months for corn. 9.5 months for Barley. 18 months for sorghum and tobacco.
Harvest & Forage Restrictions: Do not harvest within 85 days of Panther PRO application. Do not graze or feed forage to livestock.

PERPETUO

PERPETUO 2.3 SC 6 to 10 fl oz/A pyroxasulfone:flumiclorac-pentyl
0.080:0.027 to 0.134:0.046 lb ai/A

Weeds Controlled: Barnyardgrass, black nightshade, crabgrass, fall panicum, foxtails, Palmer amaranth, smooth pigweed, velvetleaf, and waterhemp,

Crop Stage: May be applied preplant, preemergence, or early postemergence from planting through six trifoliate
stage.

General Comments: Soybeans should be planted at least one inch deep. Do not apply mor than 10 fl oz/a PERPETUO (0.046 lb flumiclorac-pentyl and 0.134 lb pyroxasulfone) per acre per year.

Environmental Statements: PERPETUO has groundwater and surface water advisory statements on the label.

Rain Delay: 1 hour.

Rotation Restrictions: Corn or soybeans may be planted any time after application. Wheat may be planted after 1 month for PERPETUO rate ≤ 8 fl oz/a and 4 months at a rate of 10 fl oz/a; grain sorghum may be planted after 6 months for rate ≤8 fl oz/a and 8 months at a rate of 10 fl oz/a; alfalfa after 10 months; and 11 months for small grains other than wheat. For certain other crops allow a 18-month interval.

Harvest & Forage Restrictions: Apply no later than 60 days before harvest. Do graze or harvest forage or hay.

Tank Mixtures: dicamba, glyphosate, glufosinate, and 2,4-D. Section 2(ee) Recommendation label available for tank mix of COBRA, PERPETUO, and glyphosate.

PREFIX

PREFIX 5.29L 2.25 to 2.75 pt/A S-metolachlor:fomesafen
1.22 : 0.27 to 1.49:0.33 lb ai/A

Weeds Controlled: Barnyardgrass, black nightshade, crabgrass, fall panicum, foxtails, palmer amaranth, smooth pigweed, waterhemp. Incorporation and higher use rates may improve control of yellow nutsedge.

Crop Stage: PREFIX may be applied early preplant (up to 15 days before planting), preplant incorporated or preemergence for control of annual grasses and certain broadleaf weeds. PREFIX may be applied early postemergence at least 90 days before harvest to soybeans at 2-2.33 pt/A.

General Comments: Do not exceed a maximum of 0.375 lb ai of fomesafen in alternate years. Do not exceed 2.48
lb ai metolachlor per year.

Environmental Statements: PREFIX ground and surface water advisory statements on the label. It should not be mixed or loaded within 50 feet of wells, sinkholes, perennial intermittent streams, rivers, and natural impounded lakes and reservoirs, unless an impervious pad is used.

Rain Delay: None.

Rotation Restrictions: Rotational crops include wheat or barley after 4.5 months, corn after 10 months, (popcorn after 12 months when rate ≥ 2 pt/A). Other crops require an interval of 18 months.

Harvest & Forage Restrictions: Do not graze or harvest for soybean forage or hay. Do not graze rotated small
grains or harvest forage or straw for livestock. Make post applications at least 90 days before harvest.

Tank Mixtures: 2,4-D LVE, Gramoxone , glyphosate. (May be mixed with glyphosate for post applications to RR soybean.)

Generic Formulations: Statement and Vise

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92 Soybean *Soil Applied*

PREVIEW or SONIC BOOM

PREVIEW 2.1SC **SONIC BOOM**	14 to 23 oz/A	sulfentrazone : metribuzin 0.12:0.24 to 0.2:0.4 lb ai/A

Weeds Controlled: Black nightshade, hophornbeam copperleaf, lambsquarters, morningglory, palmer amaranth, smooth pigweed, prickly sida, smartweed, waterhemp. Use of high rate may improve control of yellow nutsedge.

Crop Stage: May be applied in the fall or in the spring (early preplant 30-45 days prior to planting); preplant incorporated; or preemergence up to 3 days after planting but before crop seed germinate.

General Comments: DO Not apply PREVIEW 2.1 SC/SONIC BOOM herbicide on any soybean variety with known sensitivity to sulfentrazone or metribuzin. Consult your seed dealer regarding soybean variety sensitivity. Crop injury can occur especially under the following conditions: applications to soil with a calcareous surace area or pH greater than 7.5; when applied with organophosphate pesticides; when heavy rainfall occurs after application; when soybean are planted less than 1.5 inches deep; on soils with less than 0.5% organic matter. DO NOT apply to soils with less then 1% organic matter. DO NOT apply more than one PREVIEW / SONIC BOOM application per 12 month period and DO NOT apply more than 26 fl oz/a (0.45 lb metribuzin + 0.23 lb sulfentrazone) per 12 month period.

Environmental Statements: PREVIEW / SONIC BOOM has GROUND and SURFACE WATER ADVISORY statements on the label. This product should not be mixed or loaded within 50 feet of any wells, sink holes, perennial or intermittent streams, rivers, and natural or impounded lakes and reservoirs, unless an impervious pad is used.

Rain Delay: None.

Rotation Restrictions: Rotational crops that may be planted after PREVIEW / SONIC BOOM include wheat, barley, and field corn after 4 months; alfalfa and tobacco after 12 months; and sorghum after 18 months after application. Consult label for reduced intervals for sorghum.

Harvest & Forage Restrictions: Do graze or harvest forage or hay.

Tank Mixtures: None specified on label.

SURVEIL

SURVEIL 48% WG	3.5 to 4.2 oz/A	cloransulam : flumioxazin 0.026 : 0.079 to 0.032 : 0.095 lb ai/A

Weeds Controlled: Black nightshade, cocklebur, common ragweed, hophornbeam copperleaf, lambsquarters, marestail (horseweed), morningglories, smooth pigweed, prickly sida, smartweed, velvetleaf, waterhemp.

Crop Stage: May be applied in the fall or in the spring up to 3 days after planting but before crop emerges.

General Comments: When used for burndown control, consult label for use of additives. DO NOT INCORPORATE. Plant seed at least 1.5 inches deep and completely cover seed with soil. Crop injury may occur in poorly drained soils and under cool wet conditions. Crop injury may also occur if treated soil is splashed onto newly emerged plants. Do not tank-mix SURVEIL with group 15 herbicides such as acetochlor, flufenacet, metolachlor, dimethenamide, or pyroxasulfone, within 14 days of planting soybeans unless soybeans are planted no-till or minimum till into wheat or corn stubble. The risk of soybean injury may increase if applications are followed by prolonged periods of cool wet
weather. Spray equipment must be cleaned each day. To enhance removal of herbicide residue from spray system, use a tank cleaner such as All Clear or Valent Tank Cleaner.

Environmental Statements: Cloransulam has the potential to occur in ground water.

Rain Delay: 2 hours

Rotation Restrictions: Rotational crops that may be planted following SURVEIL include wheat after 3 months; field corn, popcorn, and sorghum after 9 months, 10 months for alfalfa. Transplanted tobacco requires a 30-month interval and a successful field bioassay. Consult label for requirements for a 10-months interval for tobacco.

Harvest & Forage Restrictions: Do not feed treated forage or hay to livestock.

Tank Mixtures: glyphosate, paraquat.2,4-D LVE, Liberty, dicamba, pendimethalin

TENDOVO

TENDOVO 4.177ZC 1.2 TO 2.35 qt/A cloransulam-methyl : metribuzin : S-metolachlor 0.0195:0.19:1.04 to 0.038:0.38:2.04 lb ai/A

Weeds Controlled: Barnyardgrass, common ragweed, cocklebur, crabgrass, fall panicum, foxtails, giant ragweed hophornbeam copperleaf, lambsquarters, morningglory, smooth pigweed, prickly sida, smartweed and velvetleaf.

Crop Stage: May be applied preplant incorporated or preemergence. TENDOVO may be applied up to 30 to 45 days before no-till plantings.

General Comments: Consult with your seed supplier for information on soybean variety herbicide tolerance as some varieties are sensitive to metribuzin (an active ingredient in TENDOVO), before using TENDOVO. Injury to soybean may occur when TENDOVO is used under the following conditions: application to calcareous surface area soil or soils with a pH higher than 7.5; when applied with a soil applied organic phosphate pesticide; when applied to a soil with less than 0.5% organic matter; when heavy rains occur soon after application, especially in poorly drained areas; and/or when soybean are planted less than 1.5 inches deep. Use on sandy coarse soils with less than 1% organic matter may result in crop injury. Do not make more than one application of product per year and do not exceed 2.35 qt TENDOVO per acre per year.

Environmental Statements: TENDOVO has GROUND and SURFACE WATER ADVISORY statements on the label. This product should not be mixed or loaded within 50 feet of any wells, sink holes, perennial or intermittent streams, rivers, and natural or impounded lakes and reservoirs, unless an impervious pad is used.

Rain Delay: None.

Rotation Restrictions: Winter wheat may be planted 4.5 months; alfalfa, corn after 9 months; sorghum after 12 months; tobacco after 18 months; and sunflower after 30 months following TENDOVO treatments. Other crops may require a 18-month rotational interval. Cover crops may be planted any time but stand reductions may occur. Do not graze or harvest cover crops for feed or food.

Harvest & Forage Restrictions: Do not graze, feed forage, or harvest hay from treated area for 40 days following application. Preharvest interval for grain is 75 days.

Tank Mixtures: 2,4-D, dicamba, paraquat, glyphosate, and glufosinate.

TRIBAL

TRIBAL 1.9 to 4.5 pt/A sulfentrazone:metribuzin:S-metolachlor 0.083:0.15:0.78 to 0.20:0.45:1.86 lb ai/A

Weeds Controlled: Barnyardgrass, crabgrass, fall panicum, foxtails, black nightshade, morningglory, lambsquarters, Palmer amaranth, smooth pigweed, prickly sida, smartweed, waterhemp

Crop Stage: May be applied up to 30 days early preplant, preplant, preemergence, or after planting but prior to soybean emergence

General Comments: Certain soybean varieties are sensitive to metribuzin, prior to use of TRIBAL consult you soybean seed supplier for more information on tolerance of soybean varieties to TRIBAL.

Soybean injury can occur when TRIBAL is used under the following conditions: application to calcareous surface area soil or soils with a pH higher than 7.5; when applied with a soil applied organic phosphate pesticide; when heavy rains occur soon after application; and/or when seed furrow are not completely closed.

Do Not use at rates greater than 2.5 pt/a on soils with a pH above 7.0. Do not exceed 4.5 pt/a TRIBAL per growing season.

Environmental Statements: TRIBAL has groundwater and surface water advisory statements on the label.

Rain Delay: None

Rotation Restrictions: Winter wheat may be planted 4.5 months after TRIBAL application; 10 months for field corn; 12 months for alfalfa, forage grasses, sorghum, and tobacco.

Harvest & Forage Restrictions: Do not harvest within 90 days of application of TRIBAL. Do not graze or feed treated soybean forage, hay, or straw to livestock.

Tank Mixtures: Glyphosate, 2,4-D LVE

TRIPZIN ZC

TRIPZIN ZC 4 29 to 44 fl oz/A pendimethalin:metribuzin 0.66:0.25 to 1:0.38 lb ai/A

Weeds Controlled: Barnyardgrass, crabgrass, fall panicum, foxtails, johnsongrass (seedling), lambsquarters, smooth pigweed, Common ragweed, hophornbeam copperleaf, marestail (horseweed), prickly sida, smartweed.

Crop Stage: Preplant incorporate up to 60 days prior to planting, incorporation must occur mechanically or by rainfall within 7 days of application. Preemegence up to 2 days after planting.

General Comments: Soybean Injury can occur when soil pH is greater than 7.5, when applied to soybean with sensitivity to metribuzin, applied inconjunction with an OP insecticide, or when soybean are planted less then 1.5 inches deep.

Environmental Statements: TRIPZIN SC has ground water Advisory statements on the label.

Rotation Restrictions: Soybeans may be planted immediately, The rotation interval is 4 months for wheat, barley, field corn, forage grasses, and alfalfa. 18 months for tobacco and all other crops.

Harvest & Forage Restrictions: Do not harvest sooner than 85 days after application.

TRIVENCE

TRIVENCE 61.3WDG 6 to 9 oz/A chlorimuron, flumioxazin, metribuzin 0.014:0.048:0.167 to 0.022:0.072:0.25 lb ai/A

Weeds Controlled: Black nightshade, cocklebur, marestail, lambsquarters, morningglory, palmer amaranth, smooth pigweed, common ragweed, smartweed, velvetleaf, waterhemp,

Crop Stage: Fall through spring up to 3 days after planting. Do not apply at cracking or after soybean emergence.

General Comments: Excessive rainfall in a short period following emergence of soybean may cause leaf burn, crinkling and defoliation of lower leaves. Excessive rain and cool cloudy weather during the growing season may cause temporary stunting. The use of TRIVENCE in same field treated with flufenacet, metolachlor, dimethenamid may result in severe crop injury when applications are followed by prolonged periods of cool wet weather. When using TRIVENCE with these other herbicides allow a minimum of 14 days prior to planting in no-till and reduced till soybeans

Environmental Statements: TRIVENCE has ground water Advisory statements on the label.

Rain Delay: 1 hour

Rotation Restrictions: Soybeans may be planted immediately. Crop rotation interval is 4 months for wheat and barley, 10 months for field corn and alfalfa, 12 months for forage grasses, and 18 months for tobacco and certain other crops.

Harvest & Forage Restrictions: Do not graze or harvest forage for livestock sooner than 40 days after Trivence application.

Tank Mixtures: Assure II, Express, dicamba, glyphosate, glufosinate, paraquat, saflufenacil, or 2,4-D LVE.

VALOR

VALOR SX 51WDG 2 to 2.5 oz/A

or flumioxazin 0.06 to 0.08 lb ai/A

VALOR EZ 4L 2 to 2.5 fl oz/A

Weeds Controlled: Black nightshade, common ragweed, hophornbeam copperleaf, lambsquarters, marestail (horseweed), morningglories, palmer amaranth, smooth pigweed, prickly sida, waterhemp.

Crop Stage: May be applied for preemergence and for burndown control before soybeans emerge.

General Comments: When used for burndown control, consult label for use of additives. DO NOT INCORPORATE. Plant seed at least 1.5 inches deep and completely cover seed with soil. Crop injury may occur in poorly drained soils and under cool wet conditions. Crop injury may also occur if treated soil is splashed onto newly emerged plants. No-till planters that incorporate soil during planting may limit the length of weed control in the spring. Spray equipment must be cleaned each day. To enhance removal of herbicide residue from spray system, use a tank cleaner such as Valent Tank Cleaner.

Environmental Statements: Flumioxazin products have the potential to runoff to surface water and adjacent land.

Rain Delay: 1 hour

Rotation Restrictions: Soybeans may be planted immediately. Rotational intervals for other crops that may be planted following VALOR at rates up to 2 oz/A include: 7 days for no-till wheat; 7 to 14 days for no-till field corn depending on herbicide rate, residue cover, and rainfall; 30 days for conventional field corn, sorghum, and tobacco and a minimum of 1 inch rainfall. Allow 3 months for barley. For alfalfa, clover, and other crops not listed, allow 4 months if soil is tilled before planting and 8 months for no-tillage. A successful soil bioassay is required for other crops not listed. Consult VALOR label when rate is up to 3 oz/A.

Harvest & Forage Restrictions: Do not feed treated forage or hay to livestock.

Tank Mixtures: Command, metribuzin, FirstRate, glyphosate, paraquat, pendimethalin, Python, Scepter, 2,4-D LVE, Weedmaster. Do not use VALOR where flufenacet (Define), metolachlor (Dual), or dimethenamid (Outlook) are applied or injury may occur.

Generic Products: OUTFLANK, PANTHER, PANTHER SC

VALOR XLT

VALOR XLT 40.3WDG 3 to 4 oz/A flumioxazin:chlorimuron 0.056:0.019 to 0.075:0.026 lb ai/A

Weeds Controlled: Black nightshade, common ragweed, hophornbeam copperleaf, lambsquarters, marestail (horseweed), morningglories, palmer amaranth, smooth pigweed, prickly sida, waterhemp.
Crop Stage: May be applied in the fall or spring for preemergence and for burndown control before soybeans emerge.
General Comments: When used for burndown control, consult label for use of additives. Plant seed at least 1.5 inches deep and completely cover seed with soil. Crop injury may occur in poorly drained soils and under cool wet conditions. Spray equipment must be cleaned each day. To enhance removal of herbicide residue from spray system, use a tank cleaner such as Valent Tank Cleaner. Do not use on soils with a composite pH greater than 7.6.
Environmental Statements: Do not apply where runoff is likely to occur.
Rain Delay: 1 hour
Rotation Restrictions: Rotational crops that may be planted where soil pH is less than 7.0 are wheat or barley after 4 months, field corn, popcorn, sorghum, or tobacco after 10 months, or alfalfa after 12 months after application. Other crops require 18 months. Consult label when soil pH $\geq$ 7.0.
Harvest & Forage Restrictions: Do not feed treated forage or hay to livestock.
Tank mixtures: 2,4-D LVE, Express, glyphosate, Harmony GT, linuron, metribuzin, paraquat, pendimethalin, or Command. Tank mixes with chloroacetamide containing products (e.g. Dual II magnum, Outlook, Intrro) may result in crop injury.

WARRANT or ENVERSA

WARRANT 3CS
ENVERSA 3
1.5 qt/A
acetochlor 1.125 lb ai /A

Weeds Controlled: Barnyardgrass, crabgrass, fall panicum, foxtail, black nightshade, lambsquarters, smooth pigweed, waterhemp.
Crop Stage: Preplant, at-planting, and preemergence. Warrant may also be applied postemergence before R2 growth stage. For optimum postemergence control, apply to soybean at V2 to V3 growth stage.
General Comments: Applications followed by inadequate crop growth conditions such as cold wet soils, may result in crop injury. Do not exceed a maximum of 4 qt/A per season. .
Environmental Statements: Warrant has GROUND WATER and SURFACE WATER ADVISORY statements on the label.
Rotation Restrictions: Corn, sorghum (treated with seed protectant or safener), and soybean may be planted anytime. Wheat may be planted 4 months after application. Tobacco, Barley, Millett, and Oats may be planted the following spring after application.
Harvest & Forage Restrictions: .Do not graze or feed treated crop following a postemergence application.
Tank Mixtures: Authority Assist, Authority First, Authority MTZ, Authority XL, Authority MAXX, Enlist One, Enlist Duo, fomesafen, glyphosate, metribuzin, paraquat, and pendimethalin.

ZIDUA

ZIDUA SC 3.25 to 5 fl oz/A
or
ZIDUA 85 WDG 2 to 3 oz/A
pyroxasulfone 0.106 to 0.159 lb ai/A

Weeds Controlled: Barnyardgrass, Broadleaf signalgrass, crabgrass, fall panicum, foxtails, black nightshade, Palmer amaranth, smooth pigweed, waterhemp.
Crop Stage: May be applied in the fall or in the spring preplant surface up to 14 days before planting, preplant incorporated, preemergence, or early postemergence at cracking to six-trifoliate leaf stage. Do not apply from emergence (at-cracking) through unifoliate stage.
General Comments: Do not apply more than one application in the spring. The maximum cumulative rate of Zidua SC for all soils other than coarse texture is 5.75 fl oz/A.
Environmental Statements: Zidua label has GROUNDWATER AND SURFACE WATER ADVISORY statements.
Rain Delay: None
Rotation Restrictions: The rotational interval when using 1 to 3 oz of Zidua/A is up to 4 months for wheat depending on rate of Zidua (11 months for other small grains), 10 months for alfalfa, and 18 months for other crops. Corn and soybean may be planted immediately. Consult label when using other rates of Zidua.
Harvest & Forage Restrictions: No information on label.
Tank Mixtures: Extreme, Outlook, Prowl, Pursuit, Raptor, Scepter, Sharpen, Verdict, glyphosate.

Guide to Weed and Crop Response to Postemergence Soybean Herbicides[1]

	Barnyardgrass	Broadleaf Signalgrass	Crabgrass	Fall Panicum	Foxtail	Johnsongrass (seedling)	Johnsongrass (rhizome)	Shattercane (Wild Cane)	Volunteer Corn [6]	Yellow Nutsedge	Black Nightshade	Burcucumber	Cocklebur	Copperleaf, Hophornbeam	Horseweed (Marestail)	Lambsquarters	Morningglory	Palmer amaranth	Pigweed, Smooth	Prickly sida (Teaweed)	Ragweed, Common	Ragweed, Giant (Horseweed)	Sicklepod	Smartweed	Velvetleaf	Waterhemp	Crop Response [2]
Assure II	8	8	8	9	9	9	8	9	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Classic	0	0	0	0	0	0	0	0	2	7	5	8	9	4	7*	3	7	4*	8*	3	7	7	8	7	7	4*	1
Cheetah Max (LL-soybean)[4]	6	7	8	8	8	8	6	8	7	-	9	8	9	-	8	8	8	8	9	8	9	9	-	9	9	8	2
Cobra / Phoenix[3]	2	2	2	2	3	5	0	4	2	2	9	7	8	9	5	6	7	7*	8	6	9	8	1	7	7	7*	3
Enlist Duo (Enlist soybean)[4]	9	9	9	9	9	9	9	9	9	6	8	8	9	8	7	9	8	8	9	8	9	9	8	8	8	8	0
Enlist One (Enlist soybean)[4]	0	0	0	0	0	0	0	0	0	0	7	3	9	7	7	9	8	8	9	8	9	9	8	8	8	8	0
Extreme (RR-soybean)[4]	9	9	9	9	9	9	9	9	9	7	8	8	9	-	7*	8	7	-	9	7	8*	8	8	8	8	-	1
FirstRate	1	0	1	0	2	2	0	3	2	3	3	7	9	-	8*	3	8	3*	4	4	9	9	7	8	9	5*	1
Flexstar	0	0	3	3	5	5	0	4	2	2	8	6	8	8	5	5	8	7*	9	2	8	8	1	8	7	7*	1
Flexstar GT (RR-soybean)[4]	9	9	9	9	9	9	7	9	9	6	8	-	9	8	7*	8	8	8*	9	7	8	8	9	8	8	8*	1
Fusilade DX	8	8	8	8	8	9	8	9	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fusion	8	9	9	9	9	9	8	9	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Glyphosate (RR-soybean)[4,5]	9	9	9	9	9	9	9	9	9	6	8	8	9	7	7*	8	7	7*	9	7	7*	8*	9	8	8	7*	0
Glufosinate (Liberty Ultra) (LL-soybean)[4]	7	7	7	8	9	8	5	8	7	5	9	7	9	8	8	8	8	8	8	8	9	8	7	9	8	8	0
Poast	9	9	9	9	9	9	7	9	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Prefix	3	3	3	-	-	3	-	-	-	7	8	5	8	8	-	-	8	7*	9	2	6	7	3	7	6	7*	1
Pursuit	6	6	7	6	8	8	5	8	5	4	8	4	9	2	5	6	7	3*	9*	6	7	8	0	8	8	5*	1
Raptor	8	7	7	7	9	8	6	9	7	5	9	6	8	2	5	8	8	5*	9*	6	7	8	0	9	8	5*	2
Resource	0	0	0	0	0	0	0	0	0	0	5	5	7	-	5	6	6	6*	7	7	8	7	-	5	9	6*	2
Select MAX /Select , etc.	9	9	9	9	9	9	8	9	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sequence (RR-soybean)[4]	9	9	9	9	9	9	9	9	9	6	8	8	9	7	7*	8	7	-	9	7	7*	8	9	8	8	-	0
Synchrony XP[4]	0	0	0	0	0	0	0	0	4	6	5	8	9	-	7*	8	6	-	8*	4	7	6	8	8	8	-	1
Ultra Blazer	2	2	4	5	7	6	0	6	4	2	9	6	7	8	4	5	8	7*	8	2	9	8	1	9	6	7*	2
Zalo (LL-soybean)[4]	8	8	8	9	9	9	8	9	9	5	9	7	9	8	8	8	8	8	8	8	9	8	7	9	8	8	0

EXCELLENT = 9+ GOOD = 8-9 FAIR = 6-7 POOR = 5 OR LESS - INSUFFICIENT DATA

1 This table should be used only as a guide. The relative response value is based on a numerical scale from 0-9 comparing the effectiveness of herbicides to a particular weed. Under certain weather or environmental conditions, a herbicide may perform better or worse than indicated in the table. If a farmer is getting satisfactory results under their conditions, they should not necessarily change products as a result of the information in the table.

2 A rating of 3 or less will not result in a crop yield loss under normal conditions. Certain soybean varieties vary in their injury response to a herbicide treatment.

3 Crop response and velvetleaf control may be less with Phoenix than with Cobra.

4 Apply only to selected soybean cultivars designated with GENETIC resistance /tolerance to glyphosate (RR2; RR2Xtend; RR2XtendFlex; LLGT27; or Enlist-soybean) or Sulfonylurea Tolerant (STS-soybean) or glufosinate tolerant (Liberty Link; Enlist; RR2XtendFlex; or LLGT27-soybean) or 2,4-D tolerant (Enlist soybean). Consult label for directions.

5 Examples of specific glyphosate products are listed on page 17.

6 Control of volunteer plants from previous herbicide-resistant corn hybrids may NOT be successful depending on source of herbicide tolerance.

** Will not control biotypes resistant to the class of chemistry associated with this herbicide.*

Response of Perennial Broadleaves to Postemergence Soybean Herbicides[1]

	Bindweed, Field	Dandelion	Dogbane, Hemp	Horsenettle	Milkweed, Common	Milkweed, Honeyvine	Morningglory, Bigroot	Pokeweed, Common	Thistle, Canada	Trumpetcreeper
Cobra [2]	6	-	-	6	6	6	5	-	6	5
Extreme [3]	7	**8**	7	7	7	7	5	7	**8**	7
Enlist Duo[4]	7	**8**	7	6	6	6	5	7	7	7
Enlist One[4]	5	7	5	4	4	4	-	5	5	-
Flexstar or Flexstar GT[5]	6	-	-	6	-	6	-	-	6	5
Glyphosate (RR-soybean)[6]	7	**8**	7	7	7	7	5	**8**	**8**	7
Pursuit [7]	-	-	-	7	-	-	-	-	6	-
Raptor [8]	6	-	-	-	-	-	-	6	7	-
Synchrony (STS soybean) [9]	7	-	-	5	7	7	-	6	7	-
Ultra Blazer [10]	6	-	-	6	6	-	5	-	6	5

GOOD = 8 - 9 FAIR = 6 -7 POOR = 5 or less - Insufficient Data

1 I**n-season herbicide treatments for perennial broadleaf weeds usually provide only partial control or suppression.** The response value indicated is based on a numerical scale from 0 to 9 comparing the relative effectiveness of the herbicides listed to a particular weed. Under certain weather or environmental conditions, a herbicide may perform better or worse than indicated in the table. **Therefore, this table should be used only as a guide for selecting treatments to deal with problem weeds.**

2 Apply Cobra (12.5 oz/A) or Phoenix (12.5 oz/A). Use crop oil concentrate at 4 pt/100 gal with Cobra or 1 pt/A with Phoenix for Canada thistle, bigroot morningglory, common milkweed, climbing milkweed, swamp smartweed, and trumpetcreeper with a maximum of 6 leaves.

3 Apply Extreme (3 pt/A) + NIS (1 pt/100 gal)+ AMS (8.5 to 17lb/100gal) only to on selected soybean cultivars designated as Roundup Ready or glyphosate resistant.

4. Apply Enlist One and Enlist Duo to Enlist E3 soybean varieties only.

5. Apply Flexstar (1.5 pt/A) or + NIS (0.5 to 1 pt/25 gal) or crop oil concentrate (1 to 2 pt/25 gal) + 28% liquid N (2.5 qt/25gal) for field bindweed, honeyvine milkweed, and trumpetcreeper.

6 Apply glyphosate 3L (32 to 64 oz/A); glyphosate 3.75 L (26 to 52 oz/A); glyphosate 4 L (24 to 48 oz/A); or glyphosate 4.5 L (21 to 42 oz/A) **only on selected soybean cultivars designated as Roundup Ready or glyphosate resistant.** Consult herbicide label for use of surfactant and AMS as additives. See page 17 for examples of glyphosate products.

7 Apply Pursuit DG (1.44 oz/A) + Crop Oil Conc. (1.25 gal/100 gal) or NIS (1 qt/100 gal) + 28% Liquid N (1.25 to 2.5 gal/ 100 gal). Apply up to 3" tall Canada thistle.

8 Apply Raptor (5 oz/A) + Crop Oil Conc. (1 to 2 gal/100 gal) + NIS (1 qt/100 gal)+ 28% Liquid N (2.5 gal/100 gal). Apply up to 4" tall field bindweed or 5" tall Canada thistle.

9 Apply Synchrony XP (0.75 oz/A) or Synchrony STS (0.5 oz/A) + Crop Oil Conc. (1 gal/100 gal) + Liquid N (2 qt/A) only to cultivars designated as STS. Apply up to 6" tall common milkweed , up to 4" tall dandelion, up to 6" tall common pokeweed, and up to 4" tall Canada thistle.

10 Apply Ultra Blazer (1.5pt/A) + NIS (1 to 2 pt/100 gal) for field bindweed, common milkweed, climbing milkweed, and trumpetcreeper.

Maximum Weed Size Labeled for Postemergence Soybean Herbicide Applications

Herbicide	Rate	Barnyardgrass	Broadleaf Signalgrass	Crabgrass	Fall Panicum	Foxtai (Giant)	Johnsongrass (seedling)	Johnsongrass (rhizome)	Shattercane (Wildcane)	Volunteer Corn	Volunteer Wheat
ARROW 2 EC	6 to 8 oz	8"	6"	6"	8"	12"	10"	X	18"	24"	6"
	8 to 16 oz	—	—	—	—	—	—	24"[2]	—	—	—
ASSURE II 0.88E	5 oz	X	X	X	X	4"	8"	X	12"	18"	X
	8 oz	6"	X	6"[1]	6"	8"	—	X	—	30"	6"
	10 oz	—	6"	—	—	—	—	24"[2]	—	—	—
CHEETAH MAX **(LL Soybean)**	26 oz	3"	-	3"	3"	6"	3"	-	6"	10"	4"
	34oz	5"	-	5"	5"	12"	5"	-	8"	12"	5"
EXTREME **(RR Soybean)**	3 pt	6"	8"	12"	12"	18"	12"	12"	18"	20"	18"
ENLIST DUO **(Enlist Soybean)**	3.5 -4.75pt	3 – 6"	3 – 6"	3 – 6"	3 – 6"	3 – 6"	3 – 6"	X	3 – 6"	3 – 6"	Prior to boot stage
FLEXSTAR GT **(RR Soybean)**	3 pt	6"	8"	12"	6"	18"	12"	X	12"	24" [3]	18"
	4.5 pt	12"	10"	—	10"	—	18"	X	16"	—	—
FUSILADE DX 2E	8 oz	X	X	X	X	X	—	X	12"	24"	6"
	12 oz	3"	4"	2"	6"	6"	—	18"	—	—	—
FUSION 2.56E	6 oz	X	X	X	X	—	8"	X	12"	24"	X
	8 oz	4"	2"	4"	6"	8"	—	X	—	—	6"
	12 oz	—	4"	—	—	—	—	18"	—	—	—
GLYPHOSATE [5] (3 lb ae/gal) **(RR Soybean)**	24 oz	3"	3"	6"	4"	12"	12	X	12"	12" [3]	6"
	32 oz	6"	6"	12"	6"	20"	18"	Boot Stage [6]	20"	20"	12
	48 oz	9"	9	—	12"	—	24"	—	—	—	18"
Glufosinate **(LL Soybean)**	22 oz	3"	3"	3"	3"	6"	3"	X	6"	10" [3]	4"
	29 oz	5"	5"	5"	5"	12"	5"	X	8"	12"	5"
POAST	1 pt	8"	8"	6"	8"	8"	8"	—	18"	20" [3]	X
	1.5 pt	—	—	—	—	—	—	20"[2-4]	—	—	4"
PURSUIT 2S	4 oz	3"	8"	3"	X	6"	8"	X	8"	X	X
RAPTOR 1S	5 oz	5"	5"	X	6"	6"	8"	X	8"	8" [3]	4"
ROUNDUP POWERMAX 3 [5] (4.8 lb ae/gal) **(RR Soybean)**	15 oz	3"	3"	6"	X	12"	12"	X	12"	12" [3]	6"
	20 oz	6"	6"	12"	6"	20"	18"	Boot Stage [6]	20"	20"	12"
	30 oz	9"	9"	—	12"	—	24"	—	—	—	18"
SELECT MAX 0.97 EC [7]	6 to 12 oz	X	X	X	X	X	X	X	X	12"	X
	9 to 16 oz	8"	6"	6"	8"	12"	10"	X	18"	24"	6"
	12 to 32 oz	—	—	—	—	—	—	24"	—	36"	—
SEQUENCE **(RR Soybean)**	2.5 pt	6"	6"	12"	6"	18"	18"	X	18"	18"[3]	18"
	3.5 pt	12"	12"	—	18"	—	—	Boot Stage [6]	—	—	—
ZALO	32 fl oz	4"	4"	4"	4"	4"	4"	20"	10"	20"	4"
	43 fl oz	5"	5"	5"	5"	5"	5"	30"	12"	30"	5"

X = Not labeled for control **— = same height as indicated above**

1 Maximum length of lateral growth for crabgrass.
2 Two applications may be necessary for acceptable control. Consult the label for specific weed height, timing of application, treating regrowth, and tank mixtures with other herbicides.
3 Control of volunteer plants from previous herbicide-resistant corn hybrids may NOT be successful depending on source of herbicide tolerance.
4 Maximum height for rhizome johnsongrass is 25" in conventional tillage or 20" for no-tillage.
5 Consult labels of other glyphosate products for rates for specific weed species.
6 Rate of glyphosate for rhizome johnsongrass control may vary depending on tillage system.
7 Use the high rate under heavy grass pressure and/or when grasses are at the maximum height.

Herbicide	Rate	Black Nightshade	Burcucumber	Cocklebur	Copperleaf	Horseweed (Marestail)	Lambsquarters	Morningglory	Palmer amaranth	Smooth Pigweed	Prickly Sida	Ragweed, Common	Ragweed, Giant (Horseweed)	Sicklepod	Smartweed	Velvetleaf	Waterhemp	Yellow Nutsedge
CHEETAH MAX **(LL Soybean)**	26 oz	6"	6"	6"	4"	X	4"	6"	X	3"	4"	6"	6"	4"	6"	3"	X	X
	34 oz	8"	10"	14"	6"	12"	6"	8"	4"	4"	5"	10"	12"	6"	14"	4"	5"	X
CLASSIC	0.5 oz	X	X	6"	X	3"	X	2"	X	X	X	X	X	2"	2"	X	X	3"
	0.75 oz	X	6"	12"	X	6"	X	4"	X	X	X	4"	6"	4"	4"	6"	X	4"
COBRA	12.5 oz	6 LF	4 LF	6 LF	6 LF	X	X	2 LF	6 LF	6 LF	4 LF	8 LF	6 LF	X	X	X	6 LF	X
EXTREME **(RR Soybean)**	3 pt	12"	12"	18"	2"	12" *	8"	4"	12" *	18"	2"	9" *	9"	3"	6"	5"	12" *	X
ENLIST DUO **(Enlist Soybean)**	3.5 to 4.75 pt	3-6"	3-6"	3-6"	3-6"	3-6"	3-6"	3-6"	3-6"	3-6"	3-6"	3-6"	3-6"	3-6"	3-6"	3-6"	3-6"	3-6"
ENLIST ONE **(Enlist Soybean)**	1.5 to 2 pt	3-6"	X	3-6"	3-6"	3-6"	3-6"	3-6"	3-6"	3-6"	3-6"	3-6"	3-6"	3-6"	3-6"	3-6"	3-6"	X
FIRSTRATE	0.3 oz	X	X	10"	X	6"	X	4"	X	X	X	8"	10"	<2"	6"	6"	X	X
FLEXSTAR	1 pt	4 LF	X	4 LF	4 LF	X	X	3 LF	4 LF	4 LF	X	4 LF	4 LF	X	4 LF	2 LF	2 LF	X
	1.5 pt	6 LF	X	8 LF	6 LF	X	X	5 LF	6 LF	6 LF	4 LF	8 LF	8 LF	X	6 LF	4 LF	6 LF	X
FLEXSTAR GT **(RR Soybean)**	3 pt	4"	X	4"	2"	X	4"	3"	1"	4"	2"	4"	4"	2"	4"	4"	2"	X
	4.5 pt	8"	X	8"	4"	X	10"	4"	3"	6"	4"	6"	8"	4"	8"	8"	4"	X
GLYPHOSATE [1] (3 lb ae/gal) **(RR Soybean)**	24 oz	4"	6"	18"	2"	6" *	6"	X	12" *	12"	2"	6" *	6"	2"	X	X	X	X
	32 oz	6"	12"	24"	4"	12" *	12"	3"	18" *	18"	4"	12" *	12"	4"	6"	6"	6" *	X
	48 oz	12"	18"	36"	6"	18" *	20"	6"	24" *	24"	6"	18" *	18"	8"	9"	12"	12" *	X
HARMONY SG	0.125 oz	X	X	X	X	X	4"	X	4 " *	8" *	X	X	X	X	6"	6"	X	X
GLUFOSINATE **(LL Soybean)**	22 oz	6"	6"	6"	4"	X	4"	6"	3"	3"	4"	6"	6"	4"	6"	3"	4"	X
	29 oz	8"	10"	14"	6"	6-12"	6"	8"	4"	4"	5"	10"	12"	6"	14"	4"	5"	X
PHOENIX	12.5 oz	3"	X	2"	2"	X	X	X	2"	4"	2"	6"	4"	X	X	X	6"	X
PURSUIT 2S	4 oz	3"	X	8"	X	X	X	2"	X	8" *	X	X	X	X	3"	3"	X	X
RAPTOR 1S	5 oz	5"	X	8"	X	X	5"	4"	4" *	8" *	X	5"	5"	X	5"	8"	X	X
RESOURCE 0.86E	4 oz	X	X	X	X	X	X	X	X	X	X	X	X	X	X	6LF	X	X
	8 oz	X	X	X	X	X	X	X	X	4 LF	4 LF	6 LF	X	X	X	10LF	X	X
ROUNDUP POWERMAX 3[1] **(RR Soybean)** (4.8 lb ae/gal)	15oz	4"	6"	18"	2"	6" *	6"	X	12" *	12"	2"	6" *	6"	2"	X	X	X	X
	20 oz	6"	12"	24"	4"	12" *	12"	3"	18" *	18"	4"	12" *	12"	4"	6"	6"	6" *	X
	30 oz	12"	18"	36"	6"	18" *	20"	6"	24" *	24"	6"	18" *	18"	8"	9"	12"	12" *	X
SEQUENCE **(RR Soybean)**	2.5 pt	6"	12"	18"	3"	12" *	—	3"	X	12"	3"	12" *	12"	3"	6"	6"	6" *	X
	3.5 pt	12"	—	—	—	18" *	18"	6"	X	18"	6"	18" *	18"	6"	12"	12"	12" *	X
SYNCHRONY XP	0.75 oz/A	X	3"	8"	X	5" *	4"	3"	8" *	8" *	X	4"	4"	3"	8"	8"	X	3"
ULTRA BLAZER	1.5 pt	2"	X	2"	4"	X	X	4"	4"	4"	X	3"	3"	X	6"	X	4"	X
ZALO	32 to 43 fl oz	3"	3"	3"	3"	3"	3"	3"	3"	3"	3"	3"	3"	3"	3"	3"	3"	X

X = Not labeled for control **— = Same height as indicated above**

* May not effectively control certain biotypes due to herbicide resistance.

[1] Consult labels of glyphosate products for rates recommended for specific weed species.

Adjuvants, Crop Growth Stages, and Rain-Free Periods for Postemergence Soybean Herbicides

Herbicides	Adjuvant[1]	Crop Stage (Timing of Application)[2]	Rain Delay[3]
Assure II	COC or NIS + (Liquid N or AMS optional)	Before pod set and 80 days prior to harvest.	1 hour
Cheetah Max	AMS Optional	From emergence up to but not including bloom stage. Do not apply within 70 days of harvest.	4 hours
Classic	NIS or COC + (Liq N / AMS optional)	After first trifoliate leaf has expanded but 60 days before maturity.	1 hour
Cobra	COC or NIS (Liq N optional)	Normally when plants are in the one to two trifoliate leaf stage; Do not apply within 45 days before harvest or after stage R6 (full seed).	30 min.
Enlist Duo	---	Emergence to R2 (full flowering)	**** [5]
Enlist One	---	Emergence to R2 (full flowering)	**** [5]
Extreme	NIS + AMS	Before bloom and prior to 85 days of harvest.	1 hour
FirstRate	NIS or COC + Liq N	Before 50% flowering stage & 65 days before harvest for 0.3 oz/A rate	2 hours
Flexstar	NIS or COC + (Liq N optional)	Do not apply within 45 days of harvest.	1 hour
Flexstar GT	AMS, NIS , COC, or MSO optional	Do not apply within 45 days of harvest.	*** [4]
Fusilade EX	COC or NIS + (Liq N optional)	24 oz/A before bloom stage. 6 oz/A after bloom 60 days before harvest	1 hour
Fusion	COC or NIS + (Liq N or AMS optional)	Before bloom stage.	1 hour
Glyphosate (Post Broadcast) (Spot Treat) (Preharvest)	NIS varies with product used. (AMS is optional)	Cracking throughout flowering. Before initial pod set. After pods have set and lost green color.	*** [4]
Gramoxone (Directed) (Preharvest)	 NIS or COC NIS or COC	 ≥ 8- inch tall soybean plants. Consult label.	 15 - 30 min.
Harmony SG	NIS or COC + Liq N	After first trifoliate leaf has expanded until 60 days before harvest	** [3]
Intermoc		After emergence up to but NOT including bloom stage and 70 days before harvest.	4 hours
Liberty Ultra	AMS	After emergence up to but NOT including bloom stage and 70 days before harvest.	4 hours
Phoenix	NIS	Normally when plants are in the one to two trifoliate leaf stage; Do not apply within 45 days before harvest or after stage R6 (full seed).	2 hours
Poast	COC or DASH (Liq. N optional)	Do not apply within 75 days of harvest.	1 hour
Prefix	(Consult label)	Apply at least 90 days before harvest	---

Adjuvants, Crop Growth Stages, and Rain-Free Periods for Postemergence Soybean Herbicides

Herbicides	Adjuvant[1]	Crop Stage (Timing of Application)[2]	Rain Delay[3]
Pursuit	NIS or COC + Liq N or AMS	Before bloom stage and prior to 85 days of harvest.	1 hour
Raptor	NIS or MSO+Liq N (COC for certain situations)	Before bloom stage.	1 hour
Resource	COC + (Liq N optional) (Consult label for using NIS for certain mixes)	Do not apply within 60 days of harvest.	1 hour
Select MAX & other clethodim products	NIS or COC (Consult label for using AMS)	Do not apply within 60 days of harvest.	1 hour
Sequence	AMS	From cracking through 3rd trifoliate for Roundup Ready soybean	*** [4]
Synchrony XP	COC + Liq N (Consult label for using NIS for certain mixes)	After first trifoliate has expanded until 60 days before harvest.	1 hour
Ultra Blazer	NIS (Consult label for using Liq N, AMS, and /or COC for certain mixes	Do not apply within 50 days of harvest.	4 hours
Zalo	COC + AMS (Consult label for use of NIS, MSO, or HSOC)	Emergence up to bloom (R1)	4 hours

1. COC = Crop Oil Concentrate; NIS = Non-Ionic Surfactant (at least 80% active ingredient); Liq N generally involves Urea Ammonium Nitrate or UAN (28% to 32% nitrogen fertilizer) or 10-34-0. Consult label for specific type of adjuvant and rate.

2 This information is based on optimum crop growth stage and/or preharvest interval for grain.

3 ** Rainfall soon after application may reduce effectiveness. Do not apply if weather conditions are favorable for rain.

4 *** A heavy rainfall soon after application of glyphosate may reduce effectiveness. Some product labels indicate that if rainfall occurs within 6 hours after treatment, the effectiveness may be reduced. A heavy rainfall within 2 hours after application may wash chemical off the foliage and thus requiring another treatment.

5 **** Do not make applications of Enlist Duo or Enlist One if rain is expected in the next 48 hours.

Postemergence Herbicides

ASSURE II

ASSURE II 0.88E	5 to 12 oz/A	quizalofop 0.034 to 0.083 lb ai/A
+	+	
Crop Oil Concentrate (COC)	8 pt/100gal	
or	or	
Non-Ionic Surfactant (NIS)	2 pt/100gal	

[28% UAN (2 to 4 qt/A) or AMS (2 to 4 lb/A) may be included with surfactant or crop oil]

Weeds Controlled: Barnyardgrass, broadleaf signalgrass, crabgrass, fall panicum, foxtails, johnsongrass, shattercane, volunteer corn. Will not control volunteer corn from an Enlist corn hybrid.
Crop Stage: Before pod set and 80 days prior to harvest.
General Comments: Follow label directions for herbicide rate and stages of weed growth for optimum results. For volunteer corn (including RR and LL corn) control apply 4 oz/A for plants up to 12" tall; 5 oz/A for plants up to 18" tall; use 8 oz/A for plants 18 to 30" tall.
Environmental Statements: None
Rain Delay: 1 hour.
Rotation Restrictions: Do not plant other crops within 120 days after last application.
Harvest & Forage Restrictions:. Apply no later than 80 days before harvest. Do not use treated soybean plants for feed or forage.
Tank Mixtures: Basagran, Classic, Flexstar, Harmony GT, Pursuit, or Synchrony. Also, glyphosate in glyphosate-resistant soybean. When using ASSURE II tank mixes or as a sequential treatment, follow label directions.
Generic Formulations: Targa

CLASSIC

CLASSIC 25DF	0.5 to 0.75 oz/A	chlorimuron 0.008 to 0.012 lb ai/A
+	+	
Non-Ionic Surctant (NIS)	2 pt/100gal	
or	or	
Crop Oil Concentrate (COC)	8 pt/100gal	

28% UAN (4 to 8 pt/A) or AMS (2 to 4 lb/A) may be included with surfactant or crop oil for certain weed species.
Weeds Controlled: Burcucumber, cocklebur, smooth pigweed, sicklepod.
Crop Stage: After first trifoliate leaf has expanded but no later than 60 days before maturity.
General Comments: Follow label directions for herbicide rate and stages of weed growth for optimum results.
Environmental Statements: Do not mix, load, or use within 50 ft of wells including abandoned wells, drainage wells, and sink holes.
Rain Delay: 1 hour.
Rotation Restrictions: Crops which may be planted after CLASSIC include wheat or barley after 3 months; corn after 8 months; popcorn, sorghum, tobacco, alfalfa or clover after 9 months following treatment. If applied after August 1, extend recrop interval 2 months for alfalfa, clover, corn, popcorn, sorghum, or tobacco. Consult labels when other chlorimuron containing products (i.e. CANOPY), imazaquin (i.e. SCEPTER, etc.), or imazethapyr (i.e. PURSUIT) are applied the same year.
Harvest & Forage Restrictions: Apply no later than 60 days before soybean maturity. Do not use treated plants for feed or forage.
Tank Mixtures: Assure II, Ultra Blazer, Cobra, FirstRate, Flexstar, Harmony GT, Phoenix. Also, glyphosate herbicides for glyphosate-tolerant soybean.

CHEETAH MAX
(Glufosinate tolerant varieties ONLY)

CHEETAH MAX 3L	26 to 34 fl oz/A	glufosinate:fomesafen 0.4:0.2 to 0.53:0.265 lb ai/A

Weeds Controlled: Black nightshade, burcucumber, cocklebur, common ragweed, crabgrass, fall panicum, foxtails, giant ragweed, johnsongrass (seedling), hophornbeam copperleaf, lambsquarters, marestail (horseweed),
morningglories, palmer amaranth, smooth pigweed, prickly sida, shattercane, smartweed, velvetleaf, waterhemp (consult label for weed size).
Crop Stage: Apply postemergence only in LibertyLink soybeans from emergence up to but not including bloom growth stage. Preplant surface or preemergence applications may be made prior to the emergence of conventional or transgenic soybean varieties.
General Comments: Apply only overtop soybean varieties designated as glufosinate-tolerant. On soybeans do not exceed 42 oz of CHEETAH MAX/A per application. A Cumulative maximum of 48 oz of CHEETAH MAX/A (0.375 lb ai /A of fomesafen) may be applied per year in alternate years. Heavy dew or fog may reduce weed control. Also, applications should be made between dawn and 2 hours before sunset to avoid reduced control of lambsquarters and velvetleaf. Ammonium sulfate may be added at 3 lbs/A. When temperatures exceed 85F, reduce AMS rate to 1.5 lb/A. If foaming occurs a silicone-antifoam based agent may be added. Use nozzles
and pressures that generate MEDIUM spray droplets.
Environmental Statements: Cheetah Max has GROUNDWATER and SURFACE WATER statements on the label.
Rain Delay: 4 hrs
Rotation Restrictions: Soybean may be planted anytime. Allow a minimum interval of 4 months for wheat and
barley, 10 months for corn (12 months for popcorn for 32 oz/A rate), 18 months for alfalfa or sorghum and certain other corps..
Harvest & Forage Restrictions: Do not apply within 70 days of harvest. Do not graze or cut for hay.
Tank Mixtures: Consult label.

COBRA or PHOENIX

COBRA 2L	12.5 oz/A	lactofen 0.2 lb ai/A
+	+	
Crop Oil Concentrate (COC)	1 to 2 pt/A	
or	or	
Nonionic Surfactant (NIS)	2 pt / 100gal	

Crop oil concentrate is the preferred additive over a wide range of conditions but may enhance crop response. Consult label for adjuvant recommendations based on relative humidity
Liquid Nitrogen fertilizer 1 qt/A or Ammonium Sulfate 2.5 lb/A may also be included as additives

OR

PHOENIX 2 EC	12.5 oz/A	lactofen 0.2 lb ai/A
+	+	
Nonionic Surfactant (NIS)	1 to 2 pt/100gal	

Consult PHOENIX label for other additives

Weeds Controlled: Black nightshade, cocklebur, common ragweed, giant ragweed, hophornbeam copperleaf, smooth pigweed, waterhemp.
Crop Stage: Normally applied when plants are in the 1- to 2- trifoliate leaf stage; Do not apply within 45 days before harvest or after stage R6 (full seed
General Comments: Follow label directions for herbicide rates and optimum stages of weed growth. Do not apply to soybeans under stress.
Environmental Statements: Lactofen has characteristics similar to other chemicals detected in groundwater.
Rain Delay: 30 minutes for COBRA. 2 hours for PHOENIX.
Rotation Restrictions: No rotational crop restrictions indicated on herbicide label.
Harvest & Forage Restrictions: Do not apply later than 45 days before harvest or after stage R6 (full seed). Do not use treated soybean plants for feed or forage.
Tank Mixtures with COBRA: Assure II, Basagran, Classic, 2,4-DB, FirstRate, Pursuit, Scepter, or Select. Also, glyphosate for glyphosate-tolerant soybean, or Synchrony for STS soybean only).
Tank Mixtures with PHOENIX: Basagran, Classic, 2,4-DB, FirstRate, Harmony GT, Pursuit, Raptor, Resource, Scepter, or Select. Also, glyphosate (RR-soybean), or Synchrony (STS soybean only).

ENLIST DUO
(Enlist soybean varieties ONLY)

ENLIST DUO with Colex D Technology (3.3 L)		2,4-D Choline : glyphosate
Small Annuals	3.5 pt/A	0.7 : 0.75 lb ae/A
Large Annuals	4.75 pt/A	0.95 : 1 lb ae/A

Weeds Controlled: Barnyardgrass, black nightshade, broadleaf signalgrass, burcucumber, cocklebur, common ragweed, crabgrass, dandelion, fall panicum, giant foxtail, giant ragweed, horseweed (marestail), johnsongrass (seedling and rhizome), lambsquarters, Palmer amaranth, shattercane, sicklepod, smartweed, smooth pigweed, velvetleaf, volunteer corn (except glyphosate resistant), waterhemp.
Timing: Apply postemergence to Enlist soybean varieties ONLY from emergence to R2 (full flowering)
Spray Volume: Apply in a minimum of 10 to 15 gal of water per acre. Do not apply with nitrogen fertilizer as a carrier
General Comments: Unacceptable crop injury may occur when Enlist Duo is applied to non-ENLIST soybean. Do not make more than two postemergence application of Enlist Duo per growing season; do not exceed 14.25 pt/A per season.Do not apply more than 4.75 pt/A per application, sequential applications should be made with a minimum of 12 days between applications.
Environmental Statements: Drift of Enlist Duo spray or vapor can injure nearby susceptible plants. The following parameters must be followed to assure off-site movement does not occur.
-Applications must be made with approved broadcast nozzles and pressures (See label for details)
-Do Not apply if winds are greater than 15 mph
-Do Not apply during a low level temperature inversion
-Must maintain a 30 ft buffer on the downwind edge of the field to any sensitive areas (See label for details)
Mitigation measures must be implemented to manage surface runoff of ENLIST DUO. Specifics of mitigation measure implementation are outlined on the label as well as at enlist.com/mitigationmeasures
Rain Delay: Rainfast within 4 hours following application. To avoid potential field runoff avoid applications within 48 hours of anticipated rainfall
Rotation Restrictions: Do not replant fields treated with Enlist Duo in the same growing season with crops other than those labeled for use with 2,4-D and glyphosate
Harvest & Forage Restrictions: Do not apply within 30 days of harvest. Do not graze or harvest soybean for hay or forage.
Tank Mixtures: Refer to www.EnlistTankmix.com

ENLIST ONE
(Enlist soybean varieties ONLY)

ENLIST ONE with Colex D Technology (3.8 L)		2,4-D Choline
Small Annuals	1.5 pt/A	0.7lb ae/A
Large Annuals	2 pt/A	0.95lb ae/A

Weeds Controlled: Common ragweed, dandelion, giant ragweed, hairy vetch, horseweed (marestail), lambsquarters, mustards, prickly lettuce.
Timing: Apply postemergence to Enlist E3 soybean varieties ONLY from emergence to R2 (full flowering)
Spray Volume: Apply in a minimum of 10 to 15 gal of water per acre. Do not apply with nitrogen fertilizer as a carrier.
General Comments: Unacceptable crop injury may occur when Enlist One is applied to non-ENLIST soybean. Do not make more than two postemergence application of Enlist Duo per growing season; do not exceed 6 pt/A per season. Do not apply more than 2 pt/A per application, sequential applications should be made with a minimum of 12 days between applications
Environmental Statements: Drift of Enlist One spray or vapor can injure nearby susceptible plants. The following parameters must be followed to assure off-site movement does not occur.
-Applications must be made with approved broadcast nozzles and pressures (See label for details)
-Do Not apply if winds are greater than 15 mph
-Do Not apply during a low level temperature inversion
-Must maintain a 30 ft buffer on the downwind edge of the field to any sensitive areas (See label for details)
Mitigation measures must be implemented to manage surface runoff of ENLIST ONE. Specifics of mitigation measure implementation are outlined on the label as well as at enlist.com/mitigationmeasures
Rain Delay: Rainfast within 4 hours following application. To avoid potential field runoff avoid applications within 48 hours of anticipated rainfall
Rotation Restrictions: Do not replant fields treated with Enlist One in the same growing season with crops other than those labeled for use with 2,4-D.
Harvest & Forage Restrictions: Do not apply within 30 days of harvest. Do not graze or harvest soybean for hay or forage.
Tank Mixtures: Refer to www.EnlistTankmix.com. MIXING ENLIST ONE WITH A K-SALT FORMULATED GLYPHOSATE (EG. ROUNDUP POWERMAX, ABUNDIT EDGE) USING AN INDUCTOR TANK OR IN LOW WATER VOLUMES COULD LEAD TO INCOMPATIBLE MIXING. WHEN TANK MIXING ENLIST ONE WITH A K-SALT GLYHOSATE, MIXING SHOULD OCCUR IN A BULK TANK WITH AT LEAST HALF THE CARRIER VOLUME ALREADY IN THE TANK. REFER TO PAGE 17 FOR A LIST OF POTASSIUM-SALT GLYPHOSATE PRODUCTS

EXTREME
(Glyphosate-tolerant varieties ONLY)

EXTREME 2.17L	3 pt/A	imazethapyr : glyphosate
+	+	0.064:0.75 lb ai/A
Nonionic Surfactant (NIS)	1 pt/100 gal	
+	+	
Ammonium Sulfate (AMS)	8.5 to 17 lb/A	

Weeds Controlled: Barnyardgrass, black nightshade, broadleaf signalgrass, burcucumber, cocklebur, common ragweed, crabgrass, fall panicum, foxtails, giant ragweed, johnsongrass (seed and rhizomes), lambsquarters, smooth pigweed, shattercane, sicklepod, smartweed, velvetleaf, volunteer corn.
Crop Stage: Before bloom and prior to 85 days of harvest.
General Comments: Apply EXTREME only OVER-THE-TOP OF SOYBEAN VARIETIES DESIGNATED AS "ROUNDUP READY" (glyphosate resistant). Follow label directions for maximum stages of weed growth. EXTREME may also be applied preplant or preemergence for burndown weed control.
Environmental Statements: The EXTREME label has GROUNDWATER ADVISORY statements.
Rain Delay: 1 hour.
Rotation Restrictions: Rotational crops that may be planted include wheat after 3 months; alfalfa, barley, or rye after 4 months; or susceptible field corn hybrids after 8.5 months; or tobacco after 9.5 months; or popcorn, sweet corn, sorghum, and oats after 18 months following EXTREME application. Other crops may require a minimum of 40 months and a successful field bioassay before planting. Over application may result in injury to rotational crops.
Harvest & Forage Restrictions: Do not harvest within 85 days after application. Do not use treated plants for feed or forage.
Tank Mixtures: None.

FIRSTRATE

FIRSTRATE 84 WDG	0.3 oz/A	cloransulam
	[one 0.6 oz water soluble packet per 2 acres]	0.016 lb ai/A
+	+	
Non-ionic Surfactant (NIS)	1 to 2 pt/100 gal	
+	+	
Urea Ammonium Nitrate (UAN)	2.5 gal/100 gal	
or	or	
Ammonium Sulfate (AMS)	8.5 to 17 lb/100 gal	
[consult label for use of crop oil conc with UAN]		

Weeds Controlled: Cocklebur, morningglory, common ragweed, giant ragweed, smartweed, velvetleaf.
Crop Stage: Before 50% flowering stage. Application prior to emergence of first trifoliate leaf may cause temporary yellowing.
General Comments: Consult label for optimum stages of weed growth. FIRSTRATE may be applied postemergence up to 0.6 oz/A for heavy weed infestations or added residual control. Do not exceed 1.05 oz/A in a single season. If soil application is made, no more than 0.3 oz/A may be applied postemergence.
Environmental Statements: FIRSTRATE should not be mixed or loaded within 50 feet of any wells, sink holes, perennial or intermittent streams and rivers, and natural or impounded lakes and reservoirs, unless an impervious pad is used.
Rain Delay: 2 hours.
Rotation Restrictions: Rotational crops that may be planted are wheat after 4 months; or alfalfa, field corn, popcorn, or sorghum after 9 months following treatment. For transplanted tobacco allow 18 months if herbicide rate > 0.3 oz/A and allow 10 months if herbicide rate $\leq$ 0.3 oz/A. For other crops allow an 18-month rotational interval..

Harvest & Forage Restrictions: Do not apply FIRSTRATE within 65 days of harvest. Do not harvest for forage or hay for 14 days after treatment. When FIRSTRATE postemergence rate exceeds 0.3 oz/A, the preharvest interval is 70 days for soybean harvest, and 25 days for forage or hay.
Tank Mixtures: Assure II, Basagran, Blazer, Classic, Cobra, Flexstar, Fusion, Pursuit, Raptor, Resource, Select. Also, glyphosate (glyphosate tolerant soybean), or Synchrony (STS soybean only).

FLEXSTAR

FLEXSTAR 1.88L	1 to 1.5 pt/A	fomesafen 0.235 to 0.35 lb ai/A
+	+	
Non-ionic Surfactant (NIS)	0.5 to 1 pt/25 gal	
or	or	
Crop Oil Concentrate (COC)	1 to 2 pt/25 gal	

[28% liquid N may be included with surfactant or crop oil]

Weeds Controlled: Black nightshade, cocklebur, common ragweed, giant ragweed, hophornbeam copperleaf, morningglories, palmer amaranth, smartweed, smooth pigweed, waterhemp.
Crop Stage: Prior to 45 days before harvest.
General Comments: Follow label directions for herbicide rates and optimum stages of weed growth. Do not exceed a maximum of 0.375 lb ai of fomesafen in alternate years.
Environmental Statements: Contamination of groundwater may occur when used on permeable soils.
Rain Delay: 1 hour.
Rotation Restrictions: Rotational crops that may be planted are wheat or barley after 4 months; or corn after 10 months (12 months for popcorn) following treatment. Other crops may be planted 18 months after treatment.
Harvest & Forage Restrictions: Do not apply within 45 days of harvest. Treated soybean plants or rotated small grain crops should not be grazed or harvested for forage or straw.
Tank Mixtures for FLEXSTAR: Assure II, Basagran, Butyrac 200, Classic, FirstRate, Fusion, Harmony GT, Poast, Pursuit, Raptor, Resource, Scepter, or Select. Also, glyphosate in glyphosate tolerant soybean or Synchrony STS in STS soybean only.
Generic Formulations: Forsyte, Sedona, Top Gun, Vamos, Willowood Fomesafen.

FLEXSTAR GT
(Glyphosate-tolerant Varieties ONLY)

FLEXSTAR GT 3.5 (2.8L)	3.5 to 5.3 pt/A	fomesafen : glyphosate 0.25 lb ai/A:0.99lb ae/A to 0.371 lb ai/A:1.48 lb ae/A

An adjuvant is already included with FLEXSTAR GT and minimizes the need for additional adjuvants. Under certain conditions the addition of one or more of the following may improve control: AMS at 8.5 to 17 lb/100 gal; Crop Oil Concentrate or Methylated Seed oil at 2 to 4 qt/100 gal; Non Ionic Surfactant at 1 to 2 qt/ 100gal.

Weeds Controlled: Black nightshade, barnyardgrass broadleaf signalgrass, cocklebur, common ragweed, crabgrass, fall panicum, giant foxtail, giant ragweed, hophornbeam copperleaf, johnsongrass (seedling), lambsquarters, morningglories, palmer amaranth, smooth pigweed, sicklepod, shattercane, smartweed, volunteer corn (except glyphosate resistant), velvetleaf, waterhemp.
Crop Stage: Preplant or preemergence burndown or postemergence (glyphosate tolerant soybean) prior to 45 days before harvest.
General Comments for Glyphosate Tolerant Soybean Only. Follow label directions for herbicide rates and optimum stages of weed growth. Do not exceed a maximum of 0.375 lb ai of fomesafen in alternate years.
Environmental Statements: Contamination of groundwater may occur when used on permeable soils.
Rain Delay: Heavy rainfall after application may reduce performance.
Rotation Restrictions: Rotational crops that may be planted are wheat or barley after 4 months; or corn after 10 months (12 months for popcorn) following treatment. Other crops may be planted 18 months after treatment.
Harvest & Forage Restrictions: Do not apply within 45 days of harvest. Treated soybean plants should not be grazed or harvested for forage or hay.
Tank Mixtures for Postemergence Applications: Fusilade DX, Fusion, glyphosate.

FUSILADE DX

FUSILADE DX 2E	6 to 12 fl oz/A	fluazifop-P-butyl
+	+	0.093 to 0.188 lb ai/A
Crop Oil Concentrate (COC)	0.5 to 1 gal/100 gal	
or	or	
Non-ionic Surfactant (NIS)	1 to 2 qt/100 gal	

[28% UAN (1 gal/A) may be included with surfactant or crop oil]

Weeds Controlled: Barnyardgrass, broadleaf signalgrass, crabgrass, fall panicum, foxtails, johnsongrass, shattercane, volunteer corn.

Crop Stage: Use up to 24 fl oz/A pre bloom to soybean and up to 6 fl oz/A from bloom through post bloom (R1 growth stage or later). Do not harvest for 60 days after application.

General Comments: Follow label directions for herbicide rate and stages of weed growth for optimum results.

Environmental Statements: FUSILADE DX has GROUNDWATER and SURFACE WATER statements on the label.

Rain Delay: 1 hour.

Rotation Restrictions: Do not plant rotational grass crops such as corn, sorghum, or small grains within 60 days after last application.

Harvest & Forage Restrictions: Do not harvest for 60 days after last application.

Tank Mixtures: Basagran, Ultra Blazer, Classic, Flexstar, Pursuit. Also glyphosate for RR soybeans only. When using FUSILADE DX in tank mixtures or as a sequential application with other herbicides, follow specific directions on the labels.

FUSION

FUSION 2.56E	6 to 12 oz/A	fluazifop-P-butyl:fenoxaprop-P- ethyl
+	+	0.09:0.026 lb ai/A to 0.188:0.053 lb ai/A
Crop Oil Concentrate (COC)	1 to 2 pt/25 gal	
or	or	
Non-ionic Surfactant (NIS)	0.5 to 1 pt/25 gal	

[28% UAN (4 qt/25 gal) or AMS (4 lb/A) may be included with surfactant or crop oil]

Weeds Controlled: Barnyardgrass, broadleaf signalgrass, crabgrass, fall panicum, foxtails, johnsongrass, shattercane, volunteer corn.

Crop Stage: Before bloom stage.

General Comments: Follow label directions for herbicide rate and stages of weed growth.

Environmental Statements: None.

Rain Delay: 1 hour.

Rotation Restrictions: Do not plant rotational grass crops such as corn, sorghum, or small grains within 60 days after last application.

Harvest & Forage Restrictions: Apply FUSION before soybean bloom. Do not graze or harvest treated fields for
forage or hay.

Tank Mixtures: Basagran, Blazer, Classic, Cobra, FirstRate, Flexstar, Pursuit, Scepter, Storm, glyphosate in glyphosate-tolerantsoybean or Synchrony in STS soybean only. When using FUSION in tank mixtures or as a sequential application with other herbicides, follow specific directions on the labels.

GLUFOSINATE
(Glufosinate tolerant varieties ONLY)

INTERLINE, CHEETAH, FORFEIT, SURMISE, TOTAL	29 fl oz/A to 36 fl oz/A	glufosinate ammonium 0.53 to 0.66 lb ai/A

Weeds Controlled: Black nightshade, cocklebur, common ragweed, fall panicum, foxtails, giant ragweed, Johnsongrass (seedling), hophornbeam copperleaf, lambsquarters, marestail (horseweed), morningglories, Palmer
amaranth, smooth pigweed, prickly sida, shattercane, smartweed, velvetleaf, waterhemp. Consult label for weed size.
Crop Stage: Apply postemergence only in LibertyLink soybeans from emergence up to but not including bloom growth stage. Preplant surface or preemergence applications may be made prior to the emergence of conventional or transgenic soybean varieties.
General Comments: Apply only overtop soybean varieties designated as glufosinate-tolerant. Sequential applications should be a minimum of 5 days apart. Do not exceed 43 fl oz/A as a single application or a total of 87 fl oz/A per season including the burndown treatment. Heavy dew or fog may reduce weed control. Also, applications should be made between dawn and 2 hours before sunset to avoid reduced control of lambsquarters and velvetleaf. Ammonium sulfate may improve control of weeds that are stressed. If foaming occurs a silicone-antifoam based agent may be added. Use nozzles and pressures that generate MEDIUM spray droplets.
Spray Volume: A minimum of 15 GPA. For dense weed canopies use 20 to 40 GPA. Do not use nozzles or pressures that result in coarse sprays.
Environmental Statements: Use precautions to avoid drift of spray to nearby crops or sensitive plants.
Rain Delay: 4 hrs
Rotation Restrictions: Corn or soybean may be planted anytime. Allow a minimum interval of 70 days after application for wheat, barley, and oats and 180 days for other crops.
Harvest & Forage Restrictions: Do not apply within 70 days of harvest. Do not graze or cut for hay.
Tank Mixtures: Assure II, Classic, clethodim, Cobra, FirstRate, Flexstar, Fusion, Phoenix, Pursuit, Raptor, Reflex, Resource, SelectMax, Synchrony XP and Ultra Blazer.

GLYPHOSATE

GLYPHOSATE is available in various formulations. The concentration of glyphosate may be expressed as acid equivalent which is based on the parent acid of glyphosate or expressed as active ingredient which is based on the acid plus the salt. Comparing glyphosate rates based on acid equivalents is a common method for evaluating products on equal terms. Some of the different types of formulations of glyphosate available and their application rates in a single application are shown below. Examples of specific glyphosate products are listed on **page 17.**

GLYPHOSATE FORMULATION	PRODUCT RATE / A	ACID EQUIVALENT / A
GLYPHOSATE *(3 lb ae/gal formulation)* **Example of products:** Numerous glyphosate products	2 to 4 pt/A (32 to 64 fl oz/A)	0.75 to 1.5 lb ae/A
GLYPHOSATE *(3.75 lb ae/gal formulation)* **Example of products:** Buccaneer 5	1.6 to 3.2 pt/A (26 to 51.2 fl oz/A)	0.76 to 1.5 lb ae/A
GLYPHOSATE (*4 lb ae/gal formulation)* **Example of products:** Duramax, Durango DMA	1.5 to 3 pt/A (24 to 48 fl oz/A)	0.75 to 1.5 lb ae/A
GLYPHOSATE (*4.5 lb ae/gal formulation*) **Example of products:** Roundup Power MAX, Roundup WeatherMAX	1.38 to 2.75 pt/A (22 to 44 fl oz/A)	0.77 to 1.55 lb ae/A
GLYPHOSATE (*4.8 lb ae/gal formulation*) **Examples of products:** Roundup PowerMAX 3	0.94 to 2.5 pt/A (15 to 40 fl oz/a)	0.56 to 1.5 lb ae/A

Additives: For products that require a surfactant, a non-ionic surfactant at 0.25% v/v is often used. Consult the herbicide product label to verify if a surfactant is needed and the type and rate of surfactant to include. Certain surfactants may cause necrosis, chlorosis, or speckling of leaves. Dry Ammonium Sulfate at 1 to 2% by weight (8.5 to 17 lb/100 gal) or an equivalent amount of AMS in liquid formulation may improve glyphosate activity during dry weather, or when mixed in hard water or with certain herbicides or applied to certain weed species.
Weeds Controlled: Barnyardgrass, black nightshade, broadleaf signalgrass, burcucumber, cocklebur, crabgrass, fall panicum, foxtails, giant ragweed, johnsongrass (seed and rhizomes), lambsquarters, smooth pigweed, shattercane, sicklepod, smartweed, velvetleaf, volunteer corn (except glyphosate tolerant). Consult label for specific troublesome weed species and growth stages.
Crop Stage: Applications may be made to soybeans from the cracking stage through full flowering stage (R2). R2 ends when a pod 5 millimeters (3/16”) long appears at one of the four uppermost nodes on the main stem with a fully expanded leaf.

GLYPHOSATE (continued)

General Comments: Apply glyphosate only OVER-THE-TOP OF SOYBEAN VARIETIES DESIGNATED AS GLYPHOSATE TOLERANT, THIS INCLUDES ROUDNUP READY 2 YIELD, ROUNDUP READY 2 XTEND, ROUNDUP READY 2 XTENDFLEX, ENLIST, AND LLGT27 SOYBEAN. For optimum control of most weed species, plant soybeans in narrow rows (≤15 inches). The general recommended rates for glyphosate are 0.75 lb ae/A for annuals and 0.75 to 1.5 lb ae/A for perennials. A sequential application may be needed to control regrowth or new weed flushes. For optimum control of perennials, apply when broadleaf plants are in the early bud to flowering stage and when grasses are in the boot to seedhead stage. Consult label for rate for specific weeds. The repeated use of glyphosate alone without other herbicides may lead to selection of glyphosate-resistant populations of weeds. The following table summarizes the maximum rate of product for various glyphosate formulations for different applications for weed management in soybeans. Consult label for total combined rate when applied during flowering.

Glyphosate Formulation (acid equivalent)	Maximum Rate Preplant **Before Crop Emergence**	Maximum Rate For **Single In-crop Application***	Combined Total of **Multiple In-crop Applications**	Maximum Rate for **Preharvest Application**	Combined Season Total for **All Applications**
3 lb Glyphosate *Numerous Products* (3 lb ae/gal)	5 qt/A	2 qt/A	3 qt/A	1 qt/A	8 qt/A
Buccaneer 5 (3.75 lb ae/gal)	4 qt/A	1.6 qt/A	2.4 qt/A	0.8 qt/A	6.5 qt/A
Durango DMA / Duramax (4 lb ae/gal)	3.75 qt/A	1.5 qt/A	2.25 qt/A	24 oz/A	6 qt/A
Roundup PowerMAX (4.5 lb ae/gal)	3.3 qt/A	44 oz/A	64 oz/A	22 oz/A	5.3 qt/A
Roundup PowerMAX 3 (4.8 lb ae/gal)	3.1 qt/A	40 oz/a	60 oz/a	20 oz/a	5 qt/A
*Some product labels require a reduced rate of glyphosate when applied during flowering. Consult label.					

Environmental Statements: Take precautions to avoid spray drift to desirable plants.
Rain Delay: Rainfall soon after application may reduce effectiveness. Some labels indicate 4 or 6 hrs.
Rotation Restrictions: There are no rotational restrictions following normal use of glyphosate. Wait at least 30 days before planting of crops not listed on the label.
Harvest & Forage Restrictions: Do not harvest within 14 days after treatment. Consult label for use of treated plants for feed or forage.
Tank Mixtures: Consult specific glyphosate label.

INTERMOC
(Glufosinate tolerant varieties ONLY)

INTERMOC 3.57 L	64 fl oz/A	glufosinate ammonium : S-metolachlor 0.54 : 1.25 lb ai/A

Weeds Controlled: Black nightshade, cocklebur, common ragweed, fall panicum, foxtails, giant ragweed, johnsongrass (seedling), hophornbeam copperleaf, lambsquarters, marestail (horseweed), morningglories, Palmer amaranth, smooth pigweed, prickly sida, shattercane, smartweed, velvetleaf, waterhemp. Consult label for weed size.
Crop Stage: Apply postemergence only in LibertyLink soybeans from emergence up to but not including bloom growth stage. Preplant surface or preemergence applications may be made prior to the emergence of conventional or transgenic soybean varieties.
General Comments: Apply only overtop soybean varieties designated as glufosinate-tolerant. If applying sequential treatments apply applications at least 5 to 7 days apart. Do not exceed 64 fl oz/A as a single application or a total of 122 oz/A per season including the burndown treatment. Heavy dew or fog may reduce weed control. Also, applications should be made between dawn and 2 hours before sunset to avoid reduced control of lambsquarters and velvetleaf. Ammonium sulfate may improve control of weeds that are stressed. If foaming occurs a silicone-antifoam based agent may be added. Use nozzles and pressures that generate MEDIUM spray droplets to assure uniform coverage.
Environmental Statements: Use precautions to avoid drift of spray to nearby crops or sensitive plants.
Rain Delay: 4 hrs
Rotation Restrictions: Corn or soybean may be planted anytime. Allow a minimum interval of 4.5 months after application for wheat, barley, and oats and 12 months for other crops.
Harvest & Forage Restrictions: Do not apply within 90 days of harvest. Do not graze or cut for hay or forage..
Tank Mixtures: Refer to potential tank mix partner label for limitations and restrictions.

LIBERTY ULTRA
(Glufosinate tolerant varieties ONLY)

LIBERTY ULTRA	19 to 29 fl oz/A	L- glufosinate ammonium
+	+	0.26 to 0.40 lb ai/A
Ammonium Sulfate (AMS)	1.5 to 3 lb/A	*glufosinate ammonium equivalent*
		0.52 to 0.80 lb ai/A

Weeds Controlled: Black nightshade, cocklebur, common ragweed, fall panicum, foxtails, giant ragweed, Johnsongrass (seedling), hophornbeam copperleaf, lambsquarters, marestail (horseweed), morningglories, Palmer
amaranth, smooth pigweed, prickly sida, shattercane, smartweed, velvetleaf, waterhemp. Consult label for weed size.
Crop Stage: Apply postemergence only in LibertyLink or glufosinate-resistant soybean from emergence up to but not including bloom growth stage.
General Comments: Liberty Ultra is a refined glufosinate formulation that contains the active L-isomer of glufosinte as compared to racimic glufosinate formulations that contained both the active L- and inactive D-isomers of glufosinate. **Apply only overtop soybean varieties designated as glufosinate-resistant.** Sequential applications should be a minimum of 5 days apart. Do not exceed 2 in-crop applications or a total of 58 fl oz/A per season including the burndown treatment. Ammonium sulfate may improve control of weeds that are stressed. If foaming occurs a silicone-antifoam based agent may be added.
Spray Volume: A minimum of 15 GPA. For dense weed canopies use 20 GPA. Use nozzles and pressures that generate medium to coarse spray droplets.
Environmental Statements: Liberty Ultra contains a Surface Water Advisory on the label. Use precautions to avoid drift of spray to nearby crops or sensitive plants.
Endangered Species Mitigations: Downwind Spray Drift Buffer (ground application with medium to coarse droplets): 10 ft; Runoff Mitigation Points: 3
Rain Delay: 4 hrs
Rotation Restrictions: Corn or soybean may be planted anytime. Allow a minimum interval of 70 days after application for wheat, barley, and oats and 180 days for other crops.
Harvest & Forage Restrictions: Do not apply within 70 days of harvest. Do not graze or cut for hay.
Tank Mixtures: None specified on the label

POAST

POAST 1.5E	1.0 to 1.5 pt/A	sethoxydim 0.18 to 0.28 lb ai/A
+	+	
Crop Oil Concentrate (COC)	2 pt/A	
or	or	
Methylated Seed Oil (MSO)	1.5 pt/A	

[28% UAN (2 to 4 qt/A) or AMS (2.5 lb/A) may also be included to improve control of certain species.]

Weeds Controlled: Barnyardgrass, broadleaf signalgrass, crabgrass, fall panicum, foxtails, johnsongrass, shattercane, volunteer corn.
Crop Stage: Do not apply within 75 days of harvest.
General Comments: Follow label directions for rates and stages of weed growth for optimum results.
Environmental Statements: None.
Rain Delay: 1 hour.
Rotation Restrictions: Do not plant any other crop to be harvested for 30 days after application unless POAST are registered for that crop.
Harvest & Forage Restrictions: Do not apply within 75 days of harvest. Do not graze or feed ensilage from treated soybean plants to livestock. Soybean hay may be fed.
Tank Mixtures: Basagran, Blazer, Classic, Cobra, FirstRate, Flexstar, Pursuit, Raptor, Resource, or Storm. Also, glyphosate (e.g. Roundup) in glyphosate tolerant soybean only or Synchrony in STS soybean only. When using POAST in tank mixes or sequential applications with other herbicides, follow specific directions on label.

PREFIX

PREFIX 2.0 to 2.33 pt/A — S-metolachlor:fomesafen 1.09 : 0.238 to 1.26:0.28 lb ai/A

Weeds Controlled: Black nightshade, cocklebur, hophornbeam copperleaf, morningglories, Palmer amaranth, smooth pigweed, waterhemp.

Crop Stage: PREFIX may be applied early postemergence at least 90 days before harvest. It may also be applied early preplant (up to 15 days before planting), preplant incorporated or preemergence for control of annual grasses and certain broadleaf weeds.

General Comments: Do not exceed 2.33 pt of Prefix/A in a single post application. Do not exceed a maximum of 0.375 lb ai of fomesafen in alternate years. Do not exceed 3.71 lb ai/a of S-metolachlor per year .

Environmental Statements: PREFIX has ground and surface water advisory statements on the label. It should not be mixed or loaded within 50 feet of wells, sinkholes, perennial intermittent streams, rivers, and natural impounded lakes and reservoirs, unless an impervious pad is used.

Rain Delay: None.

Rotation Restrictions: Rotational crops include wheat or barley after 4.5 months, corn after 10 months, (popcorn after 12 months when rate ≥ 2 pt/A). Other crops require an interval of 18 months.

Harvest & Forage Restrictions: Do not graze or harvest for soybean forage or hay. Do not graze rotated small grains or harvest forage or straw for livestock. Make post applications at least 90 days before harvest.

Tank Mixtures: May be mixed with glyphosate for post applications to glyphposate tolerant soybean.

PURSUIT

PURSUIT 2S	4 fl oz/A	imazethapyr 0.063 lb ai/A
+	+	
Non-Ionic Surfactant (NIS)	1 qt/100 gal	
or	or	
Crop Oil Concentrate (COC)	1.25 gal/100 gal	
or	or	
Methylated Seed Oil (MSO)	1 gal/100 gal	
+	+	
Urea Ammonium Nitrate (UAN)	1.25 to 2.5 gal/100 gal	
or	or	
Ammonium Suflate (AMS)	12 to 15 lb/100gal	

Weeds Controlled: Black nightshade, cocklebur, foxtails, giant ragweed, johnsongrass (seedling), smooth pigweed, shattercane, smartweed, velvetleaf.

Crop Stage: Apply PURSUIT any time prior to soybean bloom and 85 days before harvest.

General Comments: Follow label directions for optimum stages of weed growth. Make only one PURSUIT application per growing season.

Environmental Statements: PURSUIT has GROUND WATER advisory statements on the label. It should not be mixed or loaded within 50 feet of any wells, sink holes, perennial or intermittent streams, rivers, and natural or impounded lakes and reservoirs, unless an impervious pad is used.

Rain Delay: 1 hour.

Rotation Restrictions: Rotational crops that may be planted include wheat after 3 months, alfalfa, barley, or rye after 4 months; susceptible field corn hybrids after 8.5 months (Clearfield corn may be planted immediately); tobacco after 9.5 months; or popcorn, sweet corn, sorghum, and oats after 18 months following PURSUIT application. Other crops may require a minimum of 40 months and a successful field bioassay before planting. Consult label for rotation restrictions when other long-residual herbicides are used during the same season. Only rotational crops harvested at maturity may be used for feed or food.

Harvest & Forage Restrictions: Do not harvest within 85 days after PURSUIT application. Do not use treated plants for feed or forage.

Tank Mixtures: Basagran, Ultra Blazer, Cobra, FirstRate, Flexstar, Glyphosate, Harmony GT, Scepter.

RAPTOR

RAPTOR 1S	5 fl oz/A	imazamox 0.039 lb ai/A
+	+	
Methylated Seed Oil (MSO)	1 to 2 gal/100 gal	
or	or	
Crop Oil Concentrate (COC)	1 to 2 gal/100 gal	
or	or	
Non-ionic Surfactant (NIS)	1 qt/100 gal	
+	+	
Urea Ammonium Nitrate (UAN)	2.5 gal/100 gal	
or	or	
Ammonium Sulfate (AMS)	12 to 15 lb/100 gal	

Weeds Controlled: Barnyardgrass, black nightshade, cocklebur, foxtails, giant ragweed, johnsongrass (seedling), lambsquarters, morningglories, smooth pigweed, shattercane, smartweed, velvetleaf.

Crop Stage: Before bloom stage.

General Comments: Follow label for herbicide rates and optimum stages of weed growth. Do not apply RAPTOR more than once per season.

Environmental Statements: None.

Rain Delay: 1 hour.

Rotation Restrictions: Rotational crops that may be planted are Clearfield wheat anytime; alfalfa and non-Clearfield wheat after 3 months; barley or rye after 4 months; or Clearfield and susceptible corn (field or pop) after 8.5 months; or grain sorghum, or tobacco 9 months following treatment. Other crops may be planted 18 months after treatment. Consult label if certain long-residual herbicides have been used.

Harvest & Forage Restrictions: Apply before soybean bloom.

Tank Mixtures: Ultra Blazer, Classic, FirstRate. Also glyphosate for glyphosate-tolerant soybean. Do not tank mix with Extreme.

RESOURCE

RESOURCE 0.86E	4 to 8 fl oz/A	flumiclorac pentyl 0.027 to 0.054 lb ai/A
+	+	
Crop Oil Concentrate (COC)	1 qt/A	

Consult labels when using non-ionic surfactant for certain tank mixes
28% UAN (1 to 2 qt/A) or AMS (2.5 lb/A) may be included with crop oil or surfactant.

Weeds Controlled: Common ragweed, velvetleaf.

Crop Stage: Do not apply within 60 days of harvest.

General Comments: Follow label directions for herbicide rates and optimum stages of weed growth. Soybean leaves open at the time of application may show some burn or spotting. Do not exceed 12 oz/A in a single application or a cumulative amount of 16 oz/A in a season.

Environmental Statements: Do not allow spray drift to food or forage crops that might be damaged and rendered unfit for sale or use for consumption.

Rain Delay: 1 hour.

Rotation Restrictions: Do not rotate to crops other than soybeans or field corn within 30 days after last application

Harvest & Forage Restrictions: Do not apply within 60 days of harvest. Do not feed treated forage.

Tank Mixtures: Assure II, Basagran, Blazer, Classic, Cobra, FirstRate, Flexstar, Fusion, Harmony GT, Poast, Pursuit, Raptor, Scepter, Select, Storm. Also, glyphosate in glyphosate tolerant soybean or Synchrony in STS soybean only.

SELECT MAX, SELECT 2EC, AND CLETHODIM FORMULATIONS

Clethodim Product	lb ai/gal	Adjuvant(s)*	Annual Grasses	Perennial Grasses
			fl oz/a (*lb clethodim/a*)	
Select Max & Intensity One	0.97	Non-ionic surfactant – 0.25% v/v or Crop oil concentrate – 1 qt/A	9 to 16 (*0.068 to 0.121*)	12 to 32 (*0.091 to 0.242)*
Select 2EC & Numerous generic 2lb formulations	2	Crop oil concentrate (required) – 1 qt/a	6 to 8 (*0.094 to 0.125*)	8 to 16 (*0.125 to 0.25*)
Section Three, Shadow 3EC, & Trizenta 3EC	3	Crop oil concentrate (required) – 1 qt/a	4 to 5.33 (*0.094 to 0.125*)	5.33 to 10.67 (*0.125 to 0.25*)
*The use of AMS has shown increased control of certain weeds such as rhizome johnsongrass, consult individual label for AMS rates. See table below for adjuvant requirements for control of volunteer corn with clethodim and glyphosate combinations.				

Weeds Controlled: Barnyardgrass, broadleaf signalgrass, crabgrass, fall panicum, foxtails, johnsongrass, shattercane, volunteer corn.

CLETHODIM PRODUCT RATES WHEN APPLIED IN COMBINATION WITH GLYPHOSATE FOR CONTROL OF VOLUNTEER CORN, INCLUDING GLYPHOSATE-RESISTANT VOLUNTEER CORN
(Glyphosate-tolerant soybean only)

Clethodim Product Example	Volunteer Corn Height (inches)				Adjuvant	
	up to 12	up to 18	up to 24	up to 36	Adjuvant Loaded Glyphosate	Adjuvant Unloaded Glyphosate
Select Max	6 fl oz	-	9 fl oz	12 fl oz	AMS - 8.5 to 17 lb/100 gal	NIS -0.25% v/v + AMS – 8.5 to 17 lb/100gal
Select 2 EC	4 fl oz	5 fl oz	6 fl oz	-	NIS – 0.125 to 0.25% v/v + AMS - 8.5 to 17 lb/100gal	COC – 1 pt/A + AMS – 8.5 to 17 lb/100gal
Section Three	2.67 fl oz	-	4 fl oz	5.33 fl oz	NIS – 0.25% v/v	COC – 1% v/v

Crop Stage: Do not apply within 60 days of harvest.
General Comments: For volunteer corn control without glyphosate, apply at 6 to 12 oz/A SELECT MAX on plants up to 12 inches tall; use 9 to 14 oz/A SELECT MAX when plants are up to 24 inches tall; use 12 to 16 oz/A SELECT MAX when plants are up to 36 inches tall.
Do not apply more than 0.242 lb/a clethodim (32 fl oz Select Max) per application. Do not apply more than 0.485 lb/ a clethodim (64 fl oz Select Max) per season. A minimum of 14 days is required between repeat applications.
Environmental Statements: None.
Rain Delay: 1 hour.
Rotation Restrictions: Do not plant for 30 days after application, unless clethodim is registered for that crop.
Harvest & Forage Restrictions: Apply no later than 60 days before harvest. Do not use treated soybean plants for feed or forage.
Tank Mixtures for Select MAX: COBRA, FIRSTRATE, FLEXSTAR, HARMONY GT, PHOENIX, PURSUIT, RAPTOR, RESOURCE. Also, glyphosate for glyphosate tolerant soybean or SYNCHRONY (STS soybeans only). Consult labels of all clethodim containing products for approved tank mix combinations and recommended adjuvants for each specific tank mix.

SEQUENCE
(Glyphosate-tolerant varieties ONLY)

SEQUENCE 5.25L	2.5 to 3.5 pt/A	glyphosate:S-metolachlor 0.7:0.94 to 1.0:1.3 lb ai/A

Dry Ammonium Sulfate at 1 to 2% by weight (8.5 to 17 lb/100 gal) may be used as an additive to improve glyphosate activity during dry weather, when mixed in hard water or with certain herbicides, or for certain weed species.

Annual Weeds Controlled: Annual fleabane, barnyardgrass, black nightshade, brome spp., burcucumber, chickweed, cocklebur, common ragweed, crabgrass, fall panicum, giant foxtail, giant ragweed, henbit, johnsongrass (seedlings), lambsquarters, mustards, prickly lettuce, rye, sicklepod, smartweed, smooth pigweed, volunteer corn (except glyphosate resistant), velvetleaf, wheat

Crop Stage: Applications may be made preplant, preemergence, all soybeans or postemergence to Roundup Ready soybeans. Apply postemergence at least 90 days before harvest.

General Comments: Only apply OVER-THE-TOP OF SOYBEAN VARIETIES DESIGNATED WITH THE "ROUNDUP READY" GENE. Glyphosate is a translocated herbicide that controls emerged weeds, whereas, S-metolachlor is a soil-residual herbicide that controls weeds prior to emergence. For optimum control of most weed species, plant soybeans in narrow rows (≤15 inches). Consult label for rate for specific weeds. When applied postemergence, do not exceed 3.5 pt/A per season. Do not apply products with S-metolachlor or metolachlor after soybean emergence if SEQUENCE is applied preemergence.

Environmental Statements: SEQUENCE has GROUND and SURFACE WATER ADVISORY statements on the label. This product should not be mixed or loaded within 50 feet of any wells, sink holes, perennial or intermittent streams, rivers, and natural or impounded lakes and reservoirs, unless an impervious pad is used. Avoid drift of spray as this can result in injury to non-target plants.

Rain Delay: Rainfall soon after application may reduce control of emerged weeds.

Rotation Restrictions: Rotational crops that may be planted include corn or sorghum (with Concep treated seed) immediately; alfalfa after 4 months; wheat, barley, rye, or oats after 4.5 months; clover after 9 months; and tobacco in the spring following treatment.

Harvest & Forage Restrictions: For preplant or preemergence applications, do not feed for forage or hay for 30 days after treatment. For post applications in RR soybean, do not harvest grain for 90 days after treatment and do not graze or feed forage or hay.

Tank Mixtures: Dual Magnum, Fusion.

SYNCHRONY XP

SYNCHRONY XP	0.75 oz/A	chlorimuron : thifensulfuron
+	+	0.01 : 0.003 lb ai/A
Crop Oil Concentrate (COC)	8 pt/100 gal	
+	+	
Urea Ammonuim Nitrate (UAN)	4 to 8 pt/A	
or	or	
Ammonium Sulfate (AMS)	2 to 4 lb/A	
[Consult label for using nonionic surfactant]		

Weeds Controlled: Burcucumber, cocklebur, lambsquarters, smooth pigweed, sicklepod, smartweed, velvetleaf.

Crop Stage: Postemergnce after first trifoliate has expanded until 60 days before harvest. May also be applied PRE, PPI or Burndown prior to soybean emergence.

General Comments: SYNCHRONY XP at 0.75 oz/A must be applied only to STS soybeans purchased from an authorized seed dealer; otherwise, severe crop injury and/or yield loss may occur. Applications may be made to non-STS soybeans when using the reduced rate of SYNCHRONY XP is 0.375 oz/A. Follow label directions for herbicide rate and stage of weed growth for optimum results.

Environmental Statements: None

Rain Delay: 1 hour

Rotation Restrictions: When SYPCHRONY is applied at 0.75 oz/A and soil pH is < 7.0, rotational crops which may be planted include wheat, barley, fescue, or ryegrass after 3 months; field corn or alfalfa after 9 months; and popcorn, sorghum or tobacco, after 15 months following treatment. Consult label when maximum rate used for SYNCHRONY XP is 0.375 oz/A; or when applied alone or followed by Classic after August 1. Follow the most restrictive label when SYNCHRONY is used the same season with other long-residual herbicides.

Harvest & Forage Restrictions: Apply no later than 60 days before soybean maturity. Do not use treated plants for feed or forage.

Tank Mixtures: Assure II, Ultra Blazer, Cobra, FirstRate, Flexstar, Harmony GT. Also, glyphosate for glyphosate tolerant soybean.

ULTRA BLAZER

ULTRA BLAZER 2L	1.5 pt/A	acifluorfen 0.38 lb ai/A
+	+	
Non-ionic Surfactant (NIS)	1 to 2 pt/100 gal	

Consult label for using 28% UAN (4 to 8 pt/A), AMS (2.5 lb/A) or Crop Oil Concentrate (1 to 2 pt/A).

Weeds Controlled: Black nightshade, common ragweed, hophornbeam copperleaf, giant ragweed, morningglories, smooth pigweed, smartweed.
Crop Stage: Do not apply within 50 days of harvest.
General Comments: Follow label directions for optimum stages of weed growth
Environmental Statements: ULTRA BLAZER has a GROUND WATER advisory statement on the label.
Rain Delay: 4 hours
Rotation Restrictions: In case of crop failure only soybean may be immediately replanted.
Allow a minimum rotational interval of 40 days for small grains and 100 days for other crops.
Harvest & Forage Restrictions: Do not apply within 50 days of harvest. Do not use treated soybean plants for feed or forage.
Tank Mixtures: Assure II, Basagran, Classic, 2,4-DB, FirstRate, Fusion, Poast, Pursuit, Raptor, Resource, Scepter, Select, glyphosate or Synchrony.

ZALO
(Glufosinate tolerant varieties ONLY)

ZALO	32 to 43 fl oz/A	quizalofop : glufosinate 0.058 : 0.58 to 0.078 : 0.77 lb ai/A
+		
COC	1% v/v	

[NIS (0.25 to 0.5 % v/v), MSO (1% v/v), or HSOC (0.5%) may be used instead of COC, but COC is preferred for maximum control]

+	
AMS	3 lb/A

Weeds Controlled: Barnyardgrass, black nightshade, broadleaf signalgrass, cocklebur, common ragweed, crabgrass, fall panicum, foxtails, giant ragweed, hophornbeam copperleaf, horseweed (marestail), johnsongrass (seedling and rhizome), lambsquarters, morningglory, Palmer amaranth, prickly sida, shattercane, smartweed, smooth pigweed, velvetleaf, volunteer corn, waterhemp. Will not control volunteer corn from an Enlist corn hybrid.
Crop Stage: Soybean emergence up to bloom stage (R1 growth stage)
General Comments: Apply ZALO with a minimum of 15 gal/A carrier volume; a spray volume of 20 gal/A is preferred. DO NOT use liquid fertilizer as a carrier. Apply at a ground speed of less than 15 mph. DO NOT apply more than 43 fl oz/A in a single application, DO NOT exceed 69 fl oz/A ZALO per calendar year. Allow at least 10 days between sequential applications.
Environmental Statements: None
Rain Delay: 4 hours
Rotation Restrictions: soybean and quizalofop – resistant (Enlist) corn may be planted anytime. Corn, wheat, barley, oats, rye, and triticale may be planted 120 days after application. All other crops may be planted 180 days after application.
Harvest & Forage Restrictions: DO NOT harvest within 80 days of application. DO NOT graze or feed forage, hay, or straw from treated areas to livestock.

SPOT-TREATMENTS FOR SOYBEAN

AMOUNT OF PRODUCT PER GALLON OF SPRAY MIXTURE

GRAMINICIDES

PRODUCT	RATE	ADDITIVIES COC	or NIS
Assure II[1]	0.5 fl oz	1.25 fl oz	0.3 fl oz
Fusilade DX[1]	0.75 fl oz	1.5 fl oz	0.5 fl oz
Fusion[1]	0.75 fl oz	1.5 fl oz	0.5 fl oz
Poast[2]	1.3 to 1.9 fl oz	1.3 fl oz[3]	----
Section Three, Shadow 3EC, & Trizenta 3EC	0.44 to 0.85 fl oz	----	----
Select 2EC & generic 2lb clethodim formulations[1]	0.33 to 0.65 fl oz	1.3 fl oz	0.33 fl oz
Select Max & Intensity One[1]	0.44 to 0.85 fl oz	1.3 fl oz	0.33 fl oz

COMMENTS

[1] Label directions for application timing; restrictions for preharvest interval; seasonal maximum rates; and use of forage for spot treatments are the same as those for broadcast applications in soybean.

[2] Do not apply spot treatments of POAST in addition to broadcast treatments.

GLYPHOSATE

GLYPHOSATE FOMULATION	RATE
3 lb ae / gal	0.64 to 2.56 fl oz
3.75 lb ae / gal	0.51 to 2.05 fl oz
4 lb ae / gal	0.48 to 1.92 fl oz
4.5 lb ae / gal	0.42 to 1.7 fl oz
4.8 lb ae / gal	0.38 to 1.66 fl oz

COMMENTS

Apply GLYPHOSATE products as a spot-treatment before initial pod set of soybean. Susceptible plants in the treated area may be killed or injured. Do not treat more than 10% of the total area to be harvested. Mix the low rate for annuals <6" tall and the high rate for certain hard- to-control perennials. Higher rates may be warranted for certain weeds. Consult label for rates for specific weeds. See Page 17 for list of glyphosate products.

PARAQUAT

PRODUCT	RATE	NIS (Non-ionic Surfactant)
Gramoxone 3.0 SL, & Helmquat 3SL	0.33 to 0.66 fl oz	0.33 to 0.5 fl oz

COMMENTS

Thoroughly wet foliage but not to the point of runoff. Do not use around home gardens, schools, recreational areas, golf courses, or playgrounds.

PREHARVEST

GLYPHOSATE

GLYPHOSATE 3 lb ae/gal	Up to 5 or 6 qt/A depending on specific product (for Non Roundup Ready soybean)	3.75 or 4.5 lb ae/)
	1qt/A (for Roundup Ready soybean)	0.75 lb ae/A

The above rates are based on 3 lb ae/gal formulation. See page 17 when comparing rates for other formulations. Consult specific label.

Additives: For products that require a surfactant, a non-ionic surfactant at 0.25% v/v is often used. Consult the herbicide product label to verify if a surfactant is needed and the type and rate of surfactant to include. Dry Ammonium Sulfate at 1 to 2% by weight (8.5 to 17 lb/100 gal) may improve glyphosate activity during dry weather, or when mixed in hard water or with certain herbicides, or applied to certain weed species. The equivalent amount of AMS in a liquid formulation may be used.
Weeds Controlled: To suppress growth or kill certain perennial weeds.
Crop Stage: Apply after pods have set and lost all green color.
General Comments: Do not apply to soybean grown for seed production due to potential for reducing germination or seed vigor. Care should be taken to avoid excessive seed shatter loss caused by ground application equipment. Consult label for applications with airplane
Environmental Statements: Take precautions to prevent spray drift to desirable plants.
Rain Delay: Rainfall soon after application may reduce effectiveness. Some labels indicate 4 or 6 hrs.
Rotation Restrictions: There are no rotational restrictions following normal use of glyphosate. Wait at least 30 days before planting of crops not listed on the label.
Harvest & Forage Restrictions: Consult specific product label for preharvest intervals.

PARAQUAT

GRAMAXONE 3.0SL, **HELMQUAT** 3SL	5.4 to 10.7 oz/A	paraquat 0.126 to 0.25 lb ai/A
	+	
NONIONIC SURFACTANT	1 to 2 pt/100 gal	
	or	
CROP OIL CONCENTRATE	4 qt /100 gal	

Weeds Controlled: For harvest aid and desiccation of green weed foliage.
Crop Stage: Apply to indeterminate varieties when at least 65% of seed pods have a mature brown color or when seed moisture is 30% or less. Apply to determinate varieties when seed are fully developed, at least half of the leaves have dropped, and remaining leaves are turning yellow. Immature soybean will be injured.
General Comments: Paraquat containing products are classified as RESTRICTED USE PESTICIDES due to acute toxicity. *Certified applicators must successfully complete an EPA-approved training program before mixing, loading, and/or applying paraquat*. Mature cocklebur, especially drought stressed plants, may not be completely desiccated
Environmental Statements: Drift of spray can desiccate green tissue and result in injury to non-target plants and render them unfit for sale, use, or consumption.
Rain Delay: 15-30 minutes for GRAMOXONE.
Rotation Restrictions: All rotational crops may be planted after last application.
Harvest & Forage Restrictions: Do not apply within 15 days of harvest. Do not use treated plants for forage or hay.

SMALL GRAINS

WEED MANAGEMENT IN NO-TILLAGE SMALL GRAINS

Cool-season annual weeds such as common chickweed, henbit, and annual ryegrass (Italian) have the potential to emerge in late summer or early fall and gain a competitive advantage over no-tillage small grains. If weeds become established in the fall and are allowed to overwinter, the chances of achieving successful weed control in no-tillage small grains is limited.

Scouting no-tillage small grain fields before planting can help determine if a 'burndown' herbicide is needed. No-tillage treatments include foliar applied herbicides such as glyphosate, or paraquat for 'burndown' control of existing vegetation. The recommended timing of application of no-tillage treatments is before, during, or soon after planting but before crop emergence.

Scouting no-till fields 3 to 4 weeks after planting will determine the presence of problem weeds that emerge with the crop and is especially important if no 'burndown' herbicide is applied. A fall application may be warranted if there is a heavy weed population or if weeds have approached the maximum label size during late fall and before winter. Consider a fall postemergence application of herbicides such as Harmony Extra, Metribuzin (to metribuzin tolerant varieties), or bromoxynil for cool-season annual broadleaf weeds; Axial Bold, Osprey, PowerFlex HL, or Finesse Cereal and Fallow for Italian ryegrass (Osprey, PowerFLex HL, and Finesse C&F will not control ALS-resistant ryegrass).

Preplant Foliar "Burndown" Herbicides for No-Till Wheat

GLYPHOSATE

Listed below are examples of glyphosate formulations and approximate rates for most burndown applications in no-tillage small gains. The specific rate of product will vary depending on glyphosate formulation and size and species of weeds.

Glyphosate formulation[1]	Annuals <6" tall	Annuals >6" tall
3 lb Glyphosate Formulation *Numerous products* (3 lb ae/gal)	1.5 to 2 pt/A (24 to 32 fl oz/A) (0.56 to 0.75 lb ae/A)	2 to 3 pt/A (32 to 48 fl oz/A) (0.75 to 1.13 lb ae/A)
Buccaneer 5 (3.75 lb ae/gal)	1.2 to 2 pt/A (19 to 32 oz/A) (0.56 to 0.94 lb ae/A)	1.75 to 2.5 pt/A (28 to 40 oz/A) (0.82 to 1.17 lb ae/A)
Durango DMA / Duramax (4 lb ae/gal)	1.13 to 1.5 pt/A (18 to 24 fl oz/A) (0.56 to 0.75 lb ae/A)	1.5 to 2.25 pt/A (24 to 36 fl oz/A) (0.75 to 1.13 lb ae/A)
Roundup PowerMAX (4.5 lb ae/gal)	1 to 1.4 pt/A (16 to 22 fl oz/A) (0.56 to 0.77 lb ae/A)	1.4 to 2 pt/A (22 to 32 fl oz/A) (0.77 to 1.13 lb ae/A)
Rounup PowerMAX 3 (4.8 lb ae/gal)	0.94 to 1.25 pt/A (15 to 20 fl oz/A) (0.56 to 0.75 lb ae/A)	1.25 to 1.88 pt/A (20 to 30 fl oz/A) (0.75 to 1.13 lb ae/A)
[1] **For a detailed list of glyphosate products see page 17.**		

Additives: For products that require a surfactant, a non-ionic surfactant at 0.25% v/v is often used. Consult the herbicide product label to verify if a surfactant is needed and the type and rate of surfactant to include. Ammonium Sulfate at 8.5 to 17 lb/100 gal may improve glyphosate activity during dry weather, or when mixed in hard water or with certain herbicides or applied to certain weed species.
Weeds Controlled: Annual fleabane, annual ryegrass, (Italian), brome spp., common chickweed, henbit, johnsongrass, mustards, volunteer small grains.
Perennials: Consult label for glyphosate rate for specific perennial weed species. Best control of perennial weeds is usually achieved when treated at late growth stages (approaching maturity) and when soil moisture is adequate for active plant growth. Control may be reduced if plants are mowed or grazed and not allowed to regrow to recommended growth stage. Perennial weeds may require multiple applications for optimum control.
Spray Volume: A spray volume of 3 to 10 gallons of water/A is often recommended when glyphosate is used alone at reduced labeled rates for certain annual weed species. Consult label when using higher spray volumes.
General Comments: Apply before, during, or after planting but before crop emergence. Glyphosate is a translocated herbicide. Management programs that rely on repeated use of glyphosate alone without herbicides of other sites of action may lead to the development of populations of glyphosate-resistant biotypes of weeds.
Environmental Statements: Take precautions to avoid spray drift to desirable plants.
Rain Delay: Rain soon after application may reduce effectiveness. Some labels indicate 4 or p 6 hrs.
Rotation Restrictions: There are no rotational restrictions following normal use of glyphosate. Wait at least 30 days before planting of crops not listed on the label.
Harvest & Forage Restrictions: Do not harvest or feed vegetation for 8 weeks after application.

PARAQUAT

PRODUCT	Herbicide Rate Based on Height of Annual Weeds		
	1 to 3 " weeds	3 to 6" weeds	6" weeds
GRAMAXONE 3.0SL, or HELMQUAT 3SL	1.3 to 1.7 pt/A	1.7 to 2.0 pt/A	2.0 to 2.7 pt/A
(paraquat cation lb / A)	0.5 to 0.63 lb ai/A	0.63 to 0.75 lb ai/A	0.75 to 1 lb ai/A

Additives: Surfactant at 1 to 2 pt/100 gallons of spray mixture or Crop Oil Conc. at 4 qt/100 gal.
Weeds Controlled: Many small annuals including annual ryegrass (Italian), brome spp., common chickweed, henbit.
Spray Volume: Apply in 10 - 20 gallons of clean water, or complete clear liquid fertilizers per acre. Do not use suspension type fertilizers. A spray volume of more than 20 GPA may be needed if weeds exceed 6" in height. Use a drift control agent if spray volume < 10 GPA.
General Comments: Paraquat containing products are classified as RESTRICTED USE PESTICIDES due to acute toxicity. *Certified applicators must successfully complete an EPA-approved training program before mixing, loading, and/or applying paraquat*. Apply before, during, or after planting wheat or barley but before crop emergence. Regrowth may occur from perennial grasses and broadleaf weeds, legume sods, or perennial grass sods. Certain annuals such as ryegrass or henbit may not be effectively controlled if plants are well established at the time of application.
Environmental Statements: Drift of spray can desiccate green tissue and result in injury to non-target plants and render them unfit for sale, use, or consumption.
Rain Delay: 15 to 30 minutes for GRAMOXONE SL and 30 minutes for HELMQUAT
Rotation Restrictions: All rotational crops may be planted immediately after last application.
Harvest & Forage Restrictions: None.

SHARPEN

Sharpen	1 to 2 fl oz/A	saflufenacil
+	+	0.022 to 0.044 lb ai/A
Methylated Seed Oil (MSO)	1% v/v	

Additives: May also include Ammonium Sulfate (AMS) 8.5 to 17 lb/100gal or Urea Ammonium Nitrate (UAN) at 1.25 to 2.5 gal/100 gal. Use AMS when mixing with glyphosate containing herbicides. Do not use surfactants as a substitute for MSO or poor broadleaf control will occur.
Weeds Controlled: common chickweed, horseweed (marestail), prickly lettuce, field pennycress, shepard's-purse, giant ragweed. Suppression of established dandelion.
Application Timing: Early preplant to preemergence. DO NOT apply after wheat emergence or crop injury will occur
General Comments: Sharpen can be applied preplant or preemergence to wheat at rates from 3 up to 4 fl oz per acre for burndown and residual weed control. DO NOT apply more than 4 fl oz Sharpen (0.089 lb ai/A of saflufenacil) per cropping season. Ensure seed row are sufficiently covered with soil at planting to avoid washing and concentration of herbicide in the seed zone.
Environmental Statements: SHARPEN has GROUND and SURFACE WATER ADVISORY statements on the label.
Rain Delay: 1 hour.
Rotation Restrictions: When SHARPEN is applied at 1 to 2 fl oz/A field corn, grain sorghum, and small grains may be planted anytime. See label for soybean replanting intervals. Allow a 4 to 6 month rotational interval for other crops (Consult label for specific crop rotation).
Harvest & Forage Restrictions: Small grain forage and hay must not be fed or grazed sooner than 30 days after application.
Tank Mixtures: glyphosate

Preplant Soil-Residual for No-Till Wheat

FINESSE CEREAL AND FALLOW

Finesse Cereal and Fallow	0.2 to 0.4 oz/A	(chlorsulfuron + metsulfuron) (0.0078:0.0016 to 0.0156:0.0031 lb ai/A)

Weeds Controlled: Cheat, field brome, henbit, chickweed, shepardspurse, field pennycress.
Crop Stage: Preplant, preemergence
General Comments: Do not apply preplant/preemergence to late fall plantings when cold and/or dry weather is expected to delay seedling emergence. Plant wheat at least 1" deep to minimize crop injury potential. Do not apply where an organophosphate insecticide has been applied or is intended for use in-furrow.
Environmental Statements: None.
Rotation Restrictions: The interval between application and planting rotational crops is 4 months for BOLT soybean, 6 months for STS, SR, and Plenish soybean; or 18 months for field corn, grain sorghum, and non-sulfonylurea tolerant soybean where soil pH is 7.9 or lower. Grain Sorghum can be planted 4 months after application when soil pH is 7.4 or lower. Other crops require a field bioassay.
Harvest & Forage Restrictions: Treated wheat may be grazed anytime.
Tank Mixtures for Wheat: Bromoxynil, dicamba, 2,4-D, MCPA.

VALOR

VALOR SX 51WDG	2 oz/A	flumioxazin (0.064 lb ai/A)
or		
VALOR EZ 4L	2 fl oz	

Weeds Controlled: Marestail (horseweed), common chickweed, henbit, shepardspurse.
Application Timing: Plant no-till wheat no sooner than 7 days after application.
General Comments: *Apply only on no-till or minimum tillage fields where previous crop residue has not been incorporated into the soil.* Wheat seed must be planted a minimum of one inch deep. For control of emerged weeds, VALOR SX must be applied with an appropriate burndown tank mix partner. Treated soil that splashes onto newly emerging crop may result in temporary injury. Do not exceed 2 oz of VALOR SX/ A in a single application or during the growing season. A minimum 30 day waiting period and 1" rainfall is required before planting conventional tillage wheat.
Environmental Statements: VALOR has the potential to runoff to surface water and adjacent land.
Rain Delay: 1 hour.
Rotation Restrictions:. Rotational intervals following VALOR at rates up to 2 oz/A include: 7 days for wheat, 14 days for no-till field corn, and 30 days and one inch of rainfall for conventional till field corn, sorghum, tobacco, and wheat. Soybeans may be planted immediately.
Harvest & Forage Restrictions: Do not graze until wheat reaches 5 inches in height. If VALOR is used as a harvest aid do not harvest within 10 days of application.

Preemergence Herbicides for Ryegrass in Wheat

Axiom, Fierce EZ, Prowl H2O, Zidua, and Anthem Flex provide soil-residual suppression or control of Italian ryegrass. Emerged ryegrass is not affected by Fierce EZ, Prowl H2O, Zidua, or Anthem Flex. These products should be used as a sequential or tank mix partner with foliar-applied herbicides to help provide both preemergence and postemergence control of ryegrass. Depending on the situation, they may also provide an alternative herbicide site of action to help limit the development of herbicide resistant biotypes. Excessive residue from previous crops may limit weed control.

HERBICIDE[1 2]	TIMING [2]	RATE[3]	REMARKS[4]
AXIOM flufenacet (15) metribuzin (5)	Wheat: Spike to 2-leaf wheat Ryegrass: preemergence to 1- leaf	6–8 oz/A	Some wheat varieties are sensitive to Axiom. Plant wheat 1 to 2 Inches deep.
FIERCE EZ flumioxazin (14) pyroxasulfone (15)	14 Day Pre Plant: 14 days prior to no-till wheat planting	6 fl oz	Plant wheat seed at least 1" deep. Fierce EZ has potential to injure wheat, particularly under environmental stress conditions during seed germination through seedling emergence. Fierce does not control germinated or emerged weeds.
	Early Post: 95% of wheat is spiking to 2 leaf stage	3 fl oz/a	
PROWL H2O pendimethalin (3)	1-leaf stage wheat until flag leaf is visible.	1.5 to 2.5 pt/A	Plant wheat seed at least ½" to 1" deep. Crop injury may occur if applied prior to wheat emergence. Seedbed should be firm and free of clods and trash. Emerged ryegrass will not be controlled.
ZIDUA or **ZIDUA SC** pyroxasulfone (15)	Delayed Pre: 80% of germinated wheat seed has at least ½ inch long shoot until wheat spiking	1 to 1.5 oz/A or 1.75 to 2.5 fl oz/A	Zidua has potential to injure wheat, particularly under environmental stress conditions during seed germination through seedling emergence. Zidua does not control germinated or emerged weeds.
	Early Post: When wheat is spiking until 4'th tiller	1 to 2.5 oz/A or 1.75 to 4 fl oz/A	
ANTHEM FLEX pyroxasulfone (15) carfentrazone (14)	Pre: At planting prior to wheat spike. *24(c)*	2.5 to 3 fl oz/A	Anthem Flex has potential to injure wheat, particularly under environmental stress conditions during seed germination through seedling emergence. DO NOT APPLY PRE TO COARSE SOILS. Plant wheat at least 1-inch-deep and ensure soil conditions allow for complete seed furrow closure. Anthem Flex has some foliar activity on certain weeds species; however, it will not control germinated or emerged Italian ryegrass.
	Delayed Pre: 80% of germinated wheat seed has at least ½ inch long shoot until wheat spiking	2.75 to 3.66 fl oz/A	
	Early Post: When wheat is spiking until 4'th tiller	2.75 to 3.65 fl oz/A	

[1]Numbers in parenthesis represent groups of different herbicide modes of action. This classification system can aid in the selection of herbicides to limit the development of herbicide resistance.
[2] Italicized 24(c) indicates product is labeled for use in wheat through a 24(c) special needs label that is only valid in the state of Kentucky. Prior to use of products with a 24(c) assure that the special needs label is still valid and has not expired or been suspended.
[3]Rates based on medium soils. Refer to label for usage rates on fine soils.
[4]Consult labels to achieve optimum results for managing ryegrass and limiting injury to wheat and rotational crops.

Guide to the Relative Response of Weeds and Crop to Herbicides[1]

	Cheat	Downy Brome	Field Brome	Ryegrass, Annual	Common Chickweed	Curly Dock	Henbit	Horseweed (Marestail)	Mustards spp.	Pennycress, Field	Shepherd's-purse	Vetch spp.	Wild Garlic	Crop Response [2]
Axial Bold	P	-	-	**G**	N	N	N	N	N	N	N	N	N	1
2,4-D	N	N	N	N	P	P	P	F	**G**	**G**	**G**	F	F	3
Dicamba (Clarity etc)	N	N	N	N	F	F	P	F	F	F	**G**	**G**	F	3
Broclean/Moxy	N	N	N	N	F	P	F	F	**G**	**G**	F	F	P	2
Finesse Cereal and Fallow[3]	**G**	P	**G**	F	**G**	**G**	**G**	-	**G**	**G**	**G**	-	**G**	2
Harmony Extra SG / Nimble	N	N	N	N	**G**	**G**	**G**	F	**G**	**G**	**G**	F	**G**	1
Harmony SG	N	N	N	N	F	**G**	F	-	**G**	**G**	**G**	F	**G**	1
MCPA	N	N	N	N	P	P	P	F	**G**	**G**	**G**	F	F	3
Metribuzin [4]	F	-	-	F	**G**	-	**G**	**G**	**G**	**G**	**G**	-	-	3
Osprey[3]	F	P	F	F	F	-	F	P	P	-	-	P	N	3
Pixxaro	N	N	N	N	**G**	-	**G**	**G**	F	F	F	-	N	2
PowerFlex HL[3]	-	**G**	**G**	F	**G**	-	F	P	**G**	**G**	-	**G**	F	3
Quelex	N	N	N	N	**G**	-	**G**	**G**	**G**	**G**	**G**	-	N	2

G = Good F = Fair P = Poor N = No Control - = No Information Available

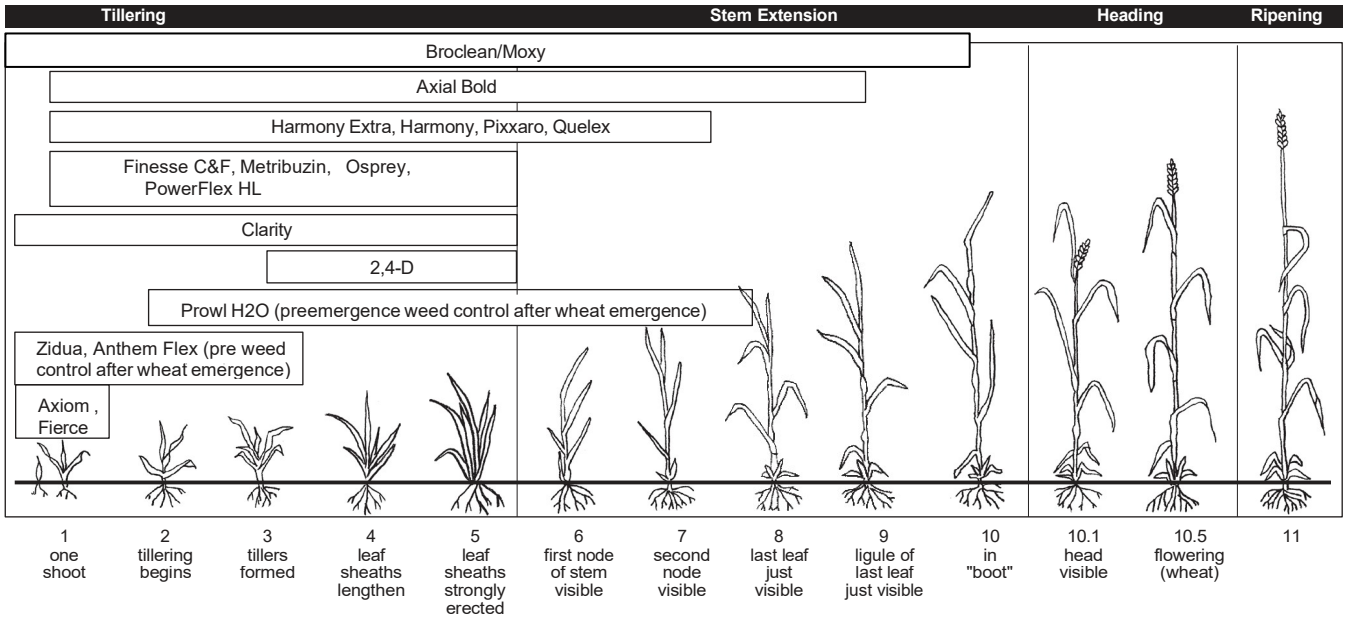
[1] This table should be used only as a guide for comparing the relative effectiveness of herbicides to a particular weed. Under extreme environmental conditions, the herbicides may perform better or worse than indicated in the table. If a farmer is getting satisfactory results under their conditions, they should not necessarily change products as a result of the information in the table.

[2] Crop Response rating is based on a scale from 0 to 9, with 0 being no injury. A rating of 3 or less will not result in a crop yield loss under normal conditions.

[3] Will not control ALS-resistant annual ryegrass biotypes.

[4] Use only wheat or barley varieties recommended on the metribuzin label or CROP INJURY may occur.

Timing of Postemergence Herbicides Relative to Wheat Growth Stage



Feekes scale of wheat development.

Postemergence Herbicides

2,4-D

2,4-D (AMINE) 1 to 1.5 pt/A*	or	2,4-D 0.5 to 0.75 lb ai/A)	or
(2,4-D (ESTER) 0.5 to 1.0 pt/A*		(2,4-D 0.25 to 0.5 lb ai/A)	

[* Rates based on 4 lb/gal formulation]

Weeds Controlled: Pennycress, pepperweed, shepherd's-purse, wild mustard and other broadleaf weeds.
Crop Stage: In spring after crop is at full tillered stage (usually 4 to 8" tall) but before it begins to joint. Risk of injury is least when small grains are at fully tillered stage.
General Comments: Legumes not seeded. For rate to use, follow directions on label of formulation purchased. Wheat is most tolerant followed by rye, barley, and oats.
Environmental Statements: Drift of 2,4-D spray or vapor can injure nearby susceptible plants.
Rain Delay: No information on label.
Rotation Restrictions: Any crop may be planted after 3 months of above freezing soil temperatures following application or until 2,4-D has disappeared. Consult label for preplant applications to corn and soybean.
Harvest & Forage Restrictions: Do not allow meat animals being finished for slaughter or dairy animals to graze or use for forage within 2 weeks after treatment. Do not feed treated straw if 2,4-D is applied as a preharvest treatment.
Tank Mixtures: Consult specific label.

AXIAL BOLD

Axial Bold 0.685 EC	15 fl oz/A	(pinoxaden : fenoxaprop-p-ethyl) (0.054 : 0.027 lb ai/A)

Crop Stage: Apply only one treatment per season from emergence to pre-boot stage.
General Comments: For winter wheat and barley. Apply to Italian ryegrass from 1 to 5-leaf stage on main stem. For optimum control apply prior to emergence of 3rd tiller. Use a spray volume of 10 gallons of water per acre. Do not exceed 10 gallons of water/A as reduced grass control may occur. AXIAL BOLD may not effectively control biotypes of ryegrass that are resistant to ACCase inhibitor herbicides.
Environmental Statements: None.
Rain Delay: 30 minutes.
Rotation Restrictions: There is no waiting interval between application and planting wheat or barley. Other cereal and grain crops require an interval of 90 days between application and planting.
Harvest & Forage Restrictions: Straw may be fed to livestock 70 days after application. Do not harvest grain for 70 days following application.
Tank Mixtures for Wheat: Can be tank-mixed with a wide range or broadleaf herbicides, refer to label for complete list of approved tank mixtures.

BROMOXYNIL

Broclean 2EC Moxy 2E	1.5 to 2 pt/A	(bromoxynil) (0.38 to 0.5 lb ai/A)

Weeds Controlled: Field pennycress, pepperweed, wild mustard, and other broadleaf weeds.
Crop Stage: Apply from emergence to the boot stage of fall-seeded wheat, barley, rye, triticale, or oats
General Comments: Consult label for small grains underseeded with alfalfa Treat emerged weeds up to 4-to 8-leaf stage, or 2 to 4 inches tall or 1 to 2 inches in diameter. Consult label for susceptibility of weed species and rate of herbicide. Do not apply if crop canopy interferes with application as poor control may occur. The cumulative rate should not exceed 2 pt/A.
Environmental Statements: None.
Rain Delay: No information on label.
Rotation Restrictions: Do not plant rotational crops within 30 days after application.
Harvest & Forage Restrictions: Do not graze treated fields for 45 days after treatment.
Tank Mixtures for wheat: 2,4-D, MCPA, dicamba, , Harmony Extra. Consult label for approved tank mixes for barley and other small rains.

CLARITY

CLARITY 4 S 4 oz/A (dicamba 0.125 lb ai/A)

Weeds Controlled: Shepherd's-purse, vetch spp., and certain other broadleaf weeds.
Crop Stage: May be applied before, during, or after planting small grains. The risk of injury may be the least when applied after emergence of fall-seeded wheat, barley, or oats and before jointing stage of growth (apply to spring-seeded oats before plants exceed the 5-leaf stage). Treatments made during periods of rapid growth may temporarily result in crop leaning.
General Comments: Legumes not seeded. For best control apply when broadleaf weeds are in the 2- to 3- leaf stage and rosettes are < 2 inches in across.
Environmental Statements: GROUNDWATER AND SURFACE WATER PROTECTION STATEMENTS ARE INCLUDED ON DICAMBA LABELS.
Rain Delay: 4 hours.
Rotation Restrictions for CLARITY: Corn may be planted anytime. Other corps may be planted after 120 days following application. Sorghum, soybean, and small grains may have a shorter planting interval. Consult restrictions for other dicamba products.
Harvest & Forage Restrictions: The restrictive interval for lactating dairy animals following an application rate ≤ 1 pt/A is 7 days for grazing or 37 days for harvesting hay. There are no grazing restrictions for animals other than lactating dairy animals. Animals cannot be removed for slaughter prior to 30 days after applying Banvel or Sterling.
Tank Mixtures for CLARITY for Wheat & Barley: Buctril, Harmony Extra, MCPA, Sencor, 2,4-D. Consult other dicamba labels for approved tank mixes.
Generic Formulations: Clarifier, Clash, Detonate, Diablo, Rifle, Sterling BlueStrut, Topeka.

FINESSE CEREAL AND FALLOW

Finesse Cereal and Fallow 0.2 to 0.4 oz/A	(chlorsulfuron + metsulfuron) (0.008:0.0015 to0.016:0.003 lb ai/A)
+	+
Non-ionic Surfactant (0.5 to 2 qt/100 gal)	Additive

Weeds Controlled: cheat, field brome, henbit, chickweed.
Crop Stage: After 1-leaf stage, but prior to boot stage
General Comments: Apply to Italian ryegrass from 1 leaf to 3 leaf stage. Crop injury may occur during cool and/or wet conditions. FINESSE CEREAL AND FALLOW will not control ALS-resistant ryegrass
Environmental Statements: None.
Rain Delay: Weed control may be reduced if rainfall occurs within 6 hours after application.
Rotation Restrictions: The interval between application and planting rotational crops is 4 months for BOLT soybean, 6 months for STS, SR, and Plenish soybean; or 18 months for field corn, grain sorghum, and non-sulfonylurea tolerant soybean where soil pH is 7.9 or lower. Grain Sorghum can be planted 4 months after application when soil pH is 7.4 or lower. Other crops require a field bioassay.
Harvest & Forage Restrictions: Treated wheat may be grazed anytime.
Tank Mixtures for Wheat: Bromoxynil, dicamba, 2,4-D, MCPA.

HARMONY EXTRA SG (with TotalSol)

HARMONY EXTRA SG (TotalSol) 50DF 0.45 to 0.9 oz/A	[thifensulfuron:tribenuron (0.009:0.005) to (0.019:0.009) lb ai/A]
+	+
SURFACTANT (NON-IONIC 80%) 1 to 2 qt/100 gal	(additive)

Weeds Controlled: Wild garlic, common chickweed, curly dock, field pennycress, henbit, mustards, shepherd's-purse.
Crop Stage: Apply after the 2-leaf stage of wheat, barley, or winter oats but before the flag leaf is visible. Apply to tolerant varieties of spring-seeded oats after the crop is in the 3-leaf stage and before jointing.
General Comments: Legumes not seeded. For winter or spring oats do not exceed 0.6 oz/A for Harmony Extra TotalSol and do not apply more than one treatment per season. For wild garlic control, apply to actively growing plants that are less than 12 inches tall with 2 to 4 inches of new growth. Apply to annual broadleaf weeds when plants are past the cotyledon stage and are less than 4 inches tall or across. Injury may occur when crop plants are stressed from adverse environmental conditions.
Environmental Statements: None.
Rain Delay: Several hours of dry weather are needed for absorption into weeds.

HARMONY EXTRA SG (Continued)

Rotation Restrictions: Wheat, barley, and oat may be replanted any time. The minimum interval between application and planting is 7 days for soybean;14 days for field corn and grain sorghum; and 45 days for other crops.

Harvest & Forage Restrictions for HARMONY EXTRA: Allow at least 45 days between application and harvesting grain. Allow at least 7 days between application and grazing and at least 7 days between application and feeding of forage from treated areas. Allow at least 30 days between application and feeding hay. Harvested straw may be used for bedding and/or feed.

Tank Mixtures for Wheat & Barley: 2,4-D, Express, MCPA, dicamba, bromoxynil. Reduced weed control or increased crop injury may occur with some tank mixes. Consult the label for tank mixtures with liquid nitrogen.

HARMONY SG (with TotalSol)

HARMONY SG 50DF 0.45 to 0.9 oz/A	thifensulfuron (0.014 to 0.028 lb ai/A)
+	+
SURFACTANT (NON-IONIC 80%) 1 to 2 qt/100 gal	(additive)

Weeds Controlled: Wild garlic, curly dock, field pennycress, mustards, shepherd's-purse.

Crop Stage: Apply after the 2-leaf stage of wheat, barley, or winter oats but before the flag leaf is visible. Apply to tolerant varieties of spring-seeded oats after the crop is in the 3-leaf stage and before jointing.

General Comments: Legumes not seeded. For winter or spring oats do not exceed 0.6 oz/A and do not apply more than one treatment per season. For wild garlic control, apply to actively growing plants that are less than 12 inches tall with 2 to 4 inches of new growth. Injury may occur when crop plants are stressed from adverse environmental conditions.

Environmental Statements: None.

Rain Delay: Several hours of dry weather are needed to absorption.

Rotation Restrictions: Wheat, barley, oat, soybeans, grain sorghum, and field corn may be replanted any time, however, do not plant other crops within 45 days after application.

Harvest & Forage Restrictions for HARMONY SG: Allow at least 7 days between application and grazing and at least 7 days between application and feeding of forage from treated areas. Allow at least 30 days between application and feeding hay. Harvested straw may be used for bedding and/or feed.

Tank Mixtures for Wheat & Barley: 2,4-D, MCPA, dicamba, bromoxynil. Reduced weed control or increased crop injury may occur with some tank mixes. Consult the label for use of adjuvants with tank mixtures and when used with liquid nitrogen.

Generic Formulations: Treaty, Volta. Consult label for recommended rates and other pertinent information.

METRIBUZIN DF

METRIBUZIN 75DF 2 to 8 oz/A	metribuzin (0.094 to 0.38 lb ai/A)

Weeds Controlled: Common chickweed, henbit, mustards, field pennycress, shepherd's-purse.

General Comments: Consult label for information on recommended WHEAT or BARLEY VARIETIES. For optimum control, apply before broadleaf weeds exceed 1 inch in height, or grasses have more than 2 leaves.

Crop Stage: Apply METRIBUZIN DF after crop plants have at least 2 leaves but before jointing. METRIBUZIN DF may be applied to wheat or barley at 2 to 3 oz/A when crop plants have 2 leaves to 2 tillers; or at 4 to 6 oz/A when crop plants have at least 3 to 4 tillers; or at 4 to 8 oz/A when crop plants have more than four tillers but before jointing. When METRIBUZIN DF rate $\geq$ 4 oz/A, secondary roots should be developed and greater than 1 inch long; treatments should not be applied before 75 days after planting; and allow at least 2 weeks for crop to recover from winter dormancy before treatment. Crop injury may occur if METRIBUZIN DF is mixed with fertilizer, applied before specified time, seed are planted less than 1 inch deep, or if the crop is stressed by frost or other factors.

Environmental Statements: Metribuzin containing products have a GROUNDWATER ADVISORY statement on the label.

Rain Delay: No information on label.

Rotation Restrictions: Consult label.

Harvest & Forage Restrictions: Do not graze wheat within 14 days or harvest grain within 21 days after last application. Do not graze or harvest barley before crop maturity.

Tank Mixtures for Wheat & Barley: Consult specific metribuzin product label.

Generic Formulations: DIMETRIC, GLORY, METRICOR DF, and TRICOR DF are examples of products containing the active ingredient metribuzin and are similar to SENCOR (a former brand name product.)

OSPREY

OSPREY 4.5% WDG 4.75 oz/A	mesosulfuron 0.0134 lb ai/A
+	+
Non-Ionic Surfactant (2 qt/100 gal)	Additive
+	+
28% UAN (1 to 2 qt/A) or AMS (1.5 to 3 lb/A)	Additive

(Consult label for using methylated seed oil or basic blend adjuvants)

Weeds Controlled: Annual ryegrass (Italian) and annual bluegrass
Osprey will not effectively control biotypes of ryegrass that are resistant to ALS- inhibitor herbicides.
Crop Stage: Apply only one treatment per season from emergence up to the jointing stage of wheat
General Comments: For wheat only. Apply when annual ryegrass and annual bluegrass plants have 1-leaf to 2 tillers. Osprey may not effectively control biotypes of ryegrass that are resistant to ALS- inhibitor herbicides. Crop injury may occur when topdressing liquid ammonium nitrogen fertilizer within 14 days of OSPREY application.
Environmental Statements: None.
Rain Delay: Do not apply if rainfall is expected less than 4 hours after treatment.
Rotation Restrictions: The interval between application and planting rotational crops is 7 days for wheat, 30 days for barley, 90 days for soybean, 12 months for corn, and 10 months for other crops.
Harvest & Forage Restrictions: Do not apply within 30 days of harvesting wheat forage and 60 days for hay, grain, and straw.
Tank Mixtures: OSPREY may be tank mixed with Buctril, Harmony Extra, or Harmony. When using other herbicides not listed on the OSPREY label, apply sequentially 5 days prior to or 5 days after OSPREY.

PIXXARO

PIXXARO 2.43EC 6 fl oz/A	halauxifen-methyl:fluroxypyr 0.0046:0.0109 lb ai/A

Weeds Controlled: Common chickweed, henbit, lambsquarters, marestail (horseweed).
Crop Stage: Apply in the fall or spring from 2-leaf stage to flag leaf emergence of wheat, barley or triticale.
General Comments: For use on wheat, barley and triticale. Do not allow PIXXARO to come in direct contact with sensitive broadleaf plants growing nearby. For best results apply when weeds are actively growing and less than 4 inches tall. Only weeds emerged at time of treatment will be controlled. Do not apply more than 6 fl oz/A PIXXARO per growing season. Do not apply a product containing halauxifen methyl to the crop field more than two times a growing season per year. Do not compost any plant material from treated area.
Environmental Statements: PIXXARO has groundwater and surface water advisory statements..
Rain Delay: Applications are rainfast within 1 hours after application.
Rotation Restrictions: Barley, wheat, and triticale can be planted anytime. Corn, sorghum, and sweet corn may be planted 14 days after application. Popcorn and soybean after 4 months, and alfalfa after 9 months. Other crops not listed may require a 15 month rotation interval.
Harvest & Forage Restrictions: Do not apply within 60 days of crop harvest. Do not apply closer than 21 days before cutting of hay. Do not allow livestock to graze on treated crops within 7 days following application.
Tank Mixtures: PIXXARO may be tank mixed with herbicides labeled for specific crop use (consult product labels when tank mixing).

POWERFLEX HL

POWERFLEX HL 13% WDG 2 oz/A	pyroxsulam 0.016 lb ai/A
+	+
Non-Ionic Surfactant (1 to 2 qt/100 gal)	Additive
+	+
28% UAN (1 to 2 qt/A) or AMS (1.5 to 3 lb/A)	Additive
(Consult label for using crop oil concentrate)	

Weeds Controlled: Annual ryegrass (Italian), Carolina geranium, cheat, downy brome, field pennycress, hairy chess, hairy vetch. Will also provide suppression of annual bluegrass. POWERFLEX will not effectively control biotypes of ryegrass that are resistant to ALS-inhibitor herbicides.
Crop Stage: Apply in the fall or spring from 3-leaf to jointing stage of wheat or triticale.
General Comments: For wheat and triticale only. Apply when grassy weeds are 2-leaf to 2-tiller stage and before broadleaf weeds exceed 2 inches tall or 2 inches in diameter. Crop injury may occur when topdressing liquid ammonium nitrogen fertilizer within 7 days of POWERFLEX application.
Environmental Statements: May contaminate surface water due to runoff from rain water.
Rain Delay: Do not apply if rainfall is expected less than 4 hours after treatment.
Rotation Restrictions: The interval between application and planting rotational crops is 1 month for wheat; 3 months for soybean or grain sorghum when applied in February or later. However, when applied before February, do not plant grain sorghum or soybean before April 30. Allow 9 months for alfalfa, barley, field corn, popcorn, grasses, and 12 months for certain other crops not listed.
Harvest & Forage Restrictions: Do not harvest within 60 days after application. Do not graze treated crop within 7 days or cut for hay within 28 days following application.
Tank Mixtures: Consult label when tank mixing with other herbicides. Do not mix with dicamba or amine formulations of 2,4-D or MCPA as these may limit grass control.

QUELEX

QUELEX 20.4WDG 0.75 oz/A	halauxifen-methyl:florasulam 0.005:0.005 lb ai/A)
+	+
Non-Ionic Surfactant [0.2-.5% v/v] 1.4 to 6 pt/100 gal or Crop Oil Concentrate [0.5-1% v/v] 4 to 8 pt/100 gal or Methylated Seed Oil [0.5-1% v/v] 4 to 8 pt/100 gal	additive

Weeds Controlled: Common chickweed, henbit, lambsquarters, marestail (horseweed), Carolina geranium, mustard spp., field pennycress, sheperdspurse,
Crop Stage: Apply in the fall or spring from 2-leaf stage to flag leaf emergence of wheat, barley or triticale.
General Comments: For use on wheat, barley and triticale. QUELEX is a premixture containing halauxifen-methyl (10.4%) + florasulam (10%) + cloquintocet (safener) Do not allow Quelex to come in direct contact with sensitive broadleaf plants growing nearby. For best results apply when weeds are actively growing in the 2 to 4 leaf stage, or less than 4 inches. Only weeds emerged at time of treatment will be controlled. Quelex may be applied in a spray solution with liquid nitrogen fertilizers; however, use a non-ionic surfactant instead of crop oil concentrate or methylated seed oil (consult label). Do not apply a product containing halauxifen methyl to the crop field more than two times a growing season per year. Do not compost any plant material from treated area.
Environmental Statements: Quelex has groundwater and surface water advisory statements.
Rain Delay: Applications are rainfast within 4 hours after application.
Rotation Restrictions: Barley, wheat, and triticale can be planted anytime; for corn (all types), oats, rye, sorghum, grasses, and soybeans wait 3 months; for fall-seeded canola wait 5 months; and alfalfa wait 9 months following application. Other crops not listed may require a 15 month rotation interval.
Harvest & Forage Restrictions: Do not apply within 60 days of crop harvest. Do not apply closer than 21 days before cutting of hay. Do not allow livestock to graze on treated crops within 7 days following application.
Tank Mixtures: QUELEX may be tank mixed with herbicides labeled for specific crop use (consult product labels when tank mixing).

2,4-D or MCPA
(*For Wheat Interseeded with Legumes*)

2,4-D (AMINE) 0.5 pt/A*	or	(2,4-D 0.25 lb ai/A) or
MCPA (AMINE) 1 pt/A**		(MCPA 0.25 lb ai/A)

[* 2,4-D rate based on 4 lb/gal formulation]
[** MCPA rate based on 2 lb/gal formulation]

Weeds Controlled: Filed pennycress, pepperweed, shepherd's-purse, wild mustard, and other broadleaf weeds.
Crop Stage: In spring just before jointing.
General Comments: Legumes seeded. Use low spray volume to minimize injury to legumes. Small grain and weeds form a canopy to protect legumes from spray. Injury to legumes will likely occur, therefore do not spray unless fields are extremely weedy. Red clover, ladino and lespedeza are injured less than alfalfa, sweet clover, or vetch. MCPA Amine (e.g. MCPA Amine 4 from Tenkoz) may be used if small grains are underseeded with alfalfa, lespedeza, red and white clovers. Do not apply MCPA to small grains underseeded with vetch or sweetclover. Do not apply 2,4-D Amine to small grains underseeded to alfalfa or sweetclover.
Environmental Statements: Drift of 2,4-D spray or vapor can injure nearby susceptible plants.
Rain Delay: No information on label.
Rotation Restrictions: Any crop may be planted after 3 months of above freezing soil temperatures following application of 2,4-D or until 2,4-D has disappeared. Consult label for preplant applications of 2,4-D to corn and soybean. No information on MCPA label/
Harvest & Forage Restrictions: Do not allow dairy animals or meat animals being finished for slaughter to graze or use forage 7 to 14 days after treatment depending on herbicide product. Some labels prohibit feeding treated straw.
Tank Mixtures: None.

Preharvest

GLYPHOSATE

The following are glyphosate formulations for preharvest applications in wheat (consult label for barley). Glyphosate rate may vary depending on specific product.

Glyphosate Formulation [1]	Rate/A	Remarks
3 lb Glyphosate Formulation *Numerous products* (3 lb ae/gal)	1 qt/A (0.75 lb ae/A)	Dry Ammonium Sulfate at 1 to 2% by weight (8.5 to 17 lb/100 gal) may be included with glyphosate to improve weed control. Recommendations for use of surfactants will vary depending on product. ALWAYS CONSULT THE PRODUCT LABEL FOR SPECIFIC DIRECTIONS. **APPLY TO WHEAT AFTER THE HARD-DOUGH STAGE OF GRAIN (30% OR LESS GRAIN MOISTURE) AND AT LEAST 7 DAYS BEFORE HARVEST OR GRAZING.** Do not treat wheat grown for seed due to possible reduction in germination or vigor. Wheat stubble may be grazed immediately after harvest.
Buccaneer 5 (3.75 lb ae/gal)	26 fl oz/A (0.75 lb ae/A)	
Durango DMA / Duramax (4 lb ae/gal)	24 fl oz/A (0.75 lb ae/A)	
Roundup PowerMAX (4.5 lb ae/gal)	21 fl oz/A (0.75 lb ae/A)	
Roundup PowerMAX 3 (4.8 lb ae/gal)	20 fl oz/A (0.75 lb ae/A)	
Weeds Controlled: Annual fleabane, barnyardgrass, brome spp., chickweed, common ragweed, crabgrass, fall panicum, giant foxtail, giant ragweed, johnsongrass (seedling), lambsquarters, marestail, mustards, prickly lettuce, smartweed, and other weed species.		
[1] **For a detailed list of glyphosate products see page 17.**		

Waiting Period or Limitations Before Utilizing Herbicide Treated Soybean for Grain or Forage Feed[1]

Herbicide	Harvested Grain	Forage (silage, hay, etc.)
Antares Complete	---	40 days
Anthem Maxx	60 days	Do not feed
Assure II	80 days (Do not apply after pod set)	Do not feed
Authority Elite & BroadAxe XC	---	30 days
Authority Assist	----	Do not feed
Authority First / Sonic	65 days	Do not feed
Authority MTZ	---	Do not feed
Authority XL	---	Do not feed
Boundary	----	40 days
Canopy/Canopy Blend	---	Do not feed
Canopy EX	---	14 days
Cheetah Max	70	Do not feed
Classic	60 days before maturity	Do not feed
Cobra / Phoenix	45 days (Do not apply later than R6 stage or full seed)	Do not feed
2,4-D	---	Do not feed
Dimetric Charged /Panther MTZ	---	Do not feed
Dual II Magnum Pre Post	--- 90 days	--- Do not feed
Extreme	85 days (Apply before bloom)	Do not feed
Envive	---	Do not feed
Fierce / Fierce XLT	---	Do not feed
Fierce MTZ / Kyber PRO	---	40 days
FirstRate ≤ 0.3 oz/A > 0.3 oz/A	65 days 70 days	14 days 25 days
Flexstar / Flexstar GT	45 days	Do not feed
Fusion	Apply before bloom	Do not feed
Fusilade DX	60 days	60 days
Glyphosate	Consult product label	Consult product label
Gramoxone At planting Post Directed Harvest Aid	— — 15 days	Early pod stage Do not feed Do not feed
HarmonyExtra/FirstShot	---	Do not feed
Harmony SG	60 days	Do not feed
Intimidator	90 days	Do not feed
LeadOff	30 days	30 days

Herbicide	Harvested Grain	Forage (silage, hay, etc.)
Liberty ULTRA	70 days	Do not feed
Matador-S	85 days	Do not feed
Metribuzin Soil-Applied Post-Directed	— 70 days	40 days* 70 days (dry vines) Do not feed (green vines)
Outlook	---	Do not feed
Perpetuo	60 days	Do not feed
Poast	75 days	Soybean hay may be fed (Do not graze or feed silage)
Prowl	85 days	None*
Prefix Pre Post	— 90 days	Do not feed Do not feed
Preview / Sonic Boom	----	Do not feed
Pursuit	85 days (Apply before bloom)	Do not feed
Python / Accolade	85 days	Do not feed
Raptor	Apply before bloom	None*
Resource	60 days	Do not feed
Reviton	----	----
Scepter	90 days	Do not feed
Select MAX, Select, etc.	60 days	Do not feed
Sequence Preplant or Pre Post	--- 90 days	30 days Do not feed
Sharpen	---	65 days
Surveil	---	Do not feed
Synchrony XP	60 days before maturity	Do not feed
Tendovo	75 days	40 days
Tribal	90 days	Do not feed
Trivence	---	Do not feed
Ultra Blazer	50 days	Do not feed
Valor EZ or Valor SX	----	Do not feed
Valor XLT	----	Do not feed
Verdict	----	Do not feed
Zidua	---	---
Zidua PRO	85 days	Do not feed
Zalo	80 days	Do not feed

*Use as a forage crop may be prohibited when applied in a tank mixture or sequential treatment with other herbicides.---------- No restrictions indicated on herbicide label

[1] This table should be used as guide for herbicide treated soybean when harvested for grain or as a forage crop. Time intervals and limitations are based on the herbicide when used alone. When more than one herbicide has been applied, the most restrictive product should be followed. However, some labeled tank mixtures have more restrictive guidelines. Always refer to the herbicide label(s) for specific information.

Waiting Period or Limitations Before Utilizing Herbicide Treated Corn for Grazing or Forage Feed[1]

Herbicide	Grazing	Forage (silage, hay, etc.)
Accent Q	30 days	30 days
Acuron	45 days	60 days
Acuron Flexi	45 days	45 days
Acuron GT	45 days	45 days
Armezon	45 days	45 days
Armezon PRO	45 days	45 days
Assure II (ENLIST Corn)	30 days	30 days
Atrazine	60 days	60 days
Balance	45 days	45 days
Bicep II Magnum	60 days	60 days
Calibra	45 days	45 days
Callisto (mesotrione)	45 days	45 days
Callisto GT	45 days	45 days
Callisto Xtra	60 days	60 days
Capreno	45 days	45 days
Corvus	45 days	45 days
Degree Xtra	60 days	60 days
Dicamba (eg, Clarity, etc.)	Past "milk" stage	Past "milk" stage
DiFlexx	-----	45 days
DiFlexx Duo	45 days	45 days
Dual II Magnum / Cinch	30 days	30 days
Fierce	None	None
FulTime	60 days	60 days
Glyphosate [eg.Roundup] Burndown	8 weeks	8 weeks
Glyphosate [eg.Roundup] In-crop application	50 days	50 days
Glyphosate [eg.Roundup] Post-harvest	8 weeks	8 weeks
Gramoxone In-crop directed	None	None
Gramoxone Preharvest	7 days	7 days
Halex GT	45 days	45 days
Harness	None	None
Harness MAX	60 days	60 days

Herbicide	Grazing	Forage (silage, hay, etc.)
Harness Xtra	60 days	60 days
Impact	45 days	45 days
Impact Core	----	45 days
Impact Z	60 days	60 days
Instigate	45 days	45 days
Katagon	45 days	45 days
Keystone	60 days	60 days
Kyro	45 days	45 days
Laudis	45 days	45 days
LeadOff	30 days	30 days
Lexar EZ	45 days	60 days
Liberty ULTRA	60 days	60 days
Maverick	45 days	30 days
Outlook	40 days	40 days
Permit	30 days	30 days
Princep	Do not graze	---
Prowl H20	21 days	21 days
Realm Q	45 days	45 days
Resicore/ Resicore XL/ REV	45 days	45 days
Resolve Q	30 days	30 days
Sharpen	80 days	80 days
Shieldex	21 days	21 days
Simazat	Do not graze	---
Sinate	60 days	60 days
Status	----	32 days
Steadfast Q	30 days	30 days
Storen	45 days	45 days
Surpass / TopNotch	None	None
TriVolt	45 days	45 days
Verdict	80 days	80 days

[1] This table should be used as guide for herbicide treated corn when utilized for grazing or as a forage crop. Time intervals and limitations are based on the herbicide when used alone. When more than one herbicide has been applied, the most restrictive product should be followed. However, some labeled tank mixtures have more restrictive guidelines. Always refer to the herbicide label(s) for specific information.

Crop Replanting and Rotation Guide*

Herbicide	Minimum Waiting Period (months) For Replant or Rotation Crops[1]								Remarks
	Corn (field)	Grain Sorghum	Soybean	Wheat & Barley	Alfalfa	Forage Grasses	Tobacco	Other Crops[2]	
Accent Q	0*	10**	0.5	4	10	10***	10***	10***	*Popcorn or sweet corn may be planted 10 months following application. Consult label for sweet corn varieties. **Delay planting sorghum a minimum of 18 months if soil pH >7.5. ***Delay planting forage grasses or tobacco a minimum of 18 months if soil pH >6.5.
Acuron	0	10	10*	4	18	18	18	18	*If applied after June 1, rotating to crops other than corn may result in crop injury.
Acuron Flexi	0	10*	10*	4	10*	18	18	18	*If applied after June 1, rotating to crops other than corn may result in crop injury.
Acuron GT	0	10	10	4.5	10*	18	18	18	*If soil pH is 6.0 or greater and minimum 18" rainfall has been received. Otherwise rotation interval is 18 months for alfalfa.
Antares Complete	10*	18**	0	4.5	12***	18^	18**	18^	*Field Corn may be planted after 4 months if rate ≤ 3 pt/a **Crops that have rotational intervals greater than 12 months are the result of metribuzin residues and crop injury concerns. ***To avoid injury to alfalfa, do not apply more than 1.9 lb/a S-metolachlor in the previous crop. ^For all other crops not listed: A minimum rotational interval of 18 months plus a representative bioassay must be conducted.
Anthem Maxx	0	11	0	4*	10	18	18	18	*Allow 11 months for barley
Anthem Flex	0	18	0	0*	10	18	18	18	Consult label for rates exceeding 3.64 oz/A *Allow 11 months for barley.
Armezon	0	9	9	3	9	18	18	18	Wait 18 months for crops not listed on the label.
Armezon PRO	0	9	9	4	9	18	18	18	Wait 18 months for crops not listed on the label. Consult label for some specialty crops.
Assure II	4	4	0	4	4	4	4	4	Do not rotate to crops other than soybeans or ENLIST field corn within 4 months (120 days) after application.
Atrazine	0	0	S	2F	2F	2F	2S	2S	If applied after June 10, plant only corn or sorghum the following year, or crop injury may occur.
Authority Assist	10*	18	0	4**	12	30***	9.5	30***	*Allow 18 months for popcorn and sweetcorn, when greater than 6 oz/A Authority assist applied. **Allow 9.5 months for Barley ***For crops not listed, the interval is 30 months in addition to a successful field bioassay
Authority Edge	4*	18**	0	4***	12	18	18	18	*For field corn allow 10 months for 15.7 fl oz/a rate. Allow 10 months for popcorn and 12 months for sweet corn. **For sorghum allow 10 months for rates ≤ 8.94 fl oz/a. ***For Wheat allow 10 months for 15.7 fl oz/a rate. For Barley allow 11 months for rates ≤ 13.4 fl oz/a, 18 months for 15.7 fl oz/a rate.
Authority Elite or BroadAxe XC	10*	10	0	4.5	12**	12**	10	12**	*Allow 18 months for popcorn. **For other crops allow 12 months and conduct a representative bioassay.
Authority First	10*	12	0	4**	12	30***	30***	30***	* Field corn and popcorn require 18 months if soil organic matter ≤1.5% and soil pH ≥ 7.0. ** Barley requires a 12 month rotation interval. ***Forage grasses, tobacco, and other crops not listed require a successful field bioassay.

Crop Replanting and Rotation Guide*

Herbicide	Minimum Waiting Period (months) For Replant or Rotation Crops[1]								Remarks
	Corn (field)	Grain Sorghum	Soybean	Wheat & Barley	Alfalfa	Forage Grasses	Tobacco	Other Crops[2]	
Authority MTZ	10*	18**	0	4	12	18	12	18	* For field corn, use a 4-month interval if rate ≤ 14 oz/A. **For sorghum, use a 12 month interval if rate ≤ 20 oz/A.
Authority Supreme	4	12*	0**	6***	12	18	18	18	*For sorghum, use a 10 month interval if rate ≤ 9.8 fl oz/A. **For soybean, use a 4 month interval if rate >9.8 fl oz/A. ***For wheat use 4 month interval if rate ≤ 9.8 fl oz/A; barley 12-18 month interval depending on application rate
Authority XL or Authority MAXX									Crops with intervals >12 months are a result of crop injury concerns. These crops should not be planted without a successful bioassay. * Corn includes grain, silage, popcorn. ** Plant sorghum after 10 months when rate <6.4 oz/A.
pH< 6.8	10*	18**	0	4	12	36	10	36	
pH>6.8 [full use rates]	18*	18	0	4	18	36	18	36	
Axial XL	4	4	4	0	4	4	4	3	There is no waiting interval between application and planting wheat or barley. Allow 30 days for leafy and root crops and 120 days for all other crops.
Axiom	0	12	0	0*	12	12	12	12	*Allow 12 months for barley. Allow 4 months for wheat if Axiom rate exceeds 10 oz/A.
Balance Flexx	0	6	6	4*	10**	18**	18**	18**	*Allow 6-month rotation to barley. **With 15 inches of cumulative precipitation from application to planting of rotational crop; requires a successful field bioassay.
Bicep II Magnum	0	0*	S	2F	2S	2F	2S	2S	If applied after June 10, plant only corn or sorghum the following season. *Use CONCEP or SCREEN treated sorghum seed.
Blazer (Ultra)	-	-	0	-	-	-	-	3.5*	In case of crop failure only soybeans may be immediately replanted. No rotational crop restrictions except for an 18 month interval for root crops. *Minimum wait period of 100 days (~3.5 months).
Boundary	8	12	0	4½	4½	12	12	12	Cover crops may be planted any time, but do not graze or harvest.
Calibra	0	0*	10	4½	10	18	10	18	*Use CONCEP or SCREEN treated sorghum seed.
Callisto (mesotrione)	0	0	10	4*	10	18	10	18	*Small grains may be planted 120 days after application.
Callisto GT	0	0	10	4	10	18	10	18	Other crops not listed may require an 18 month interval
Callisto Xtra	0	0	10	4	10	18	10	18	Other crops not listed may require an 18 month interval
Canopy or Cloak (pH ≤ 7.0 & rate < 10 oz/A)	10*	10	0	4	10	18	10	30	Soybean injury may occur where soils pH is >7.5. * Allow a 9-month rotational interval for field corn if soil pH is ≤ 7.0 and Canopy rate does not exceed 6 oz/A. Cloak is a similar product with the same restrictions.
(pH > 7.0 & rate > 3.5 oz/A)	18	18	0	4	18	30	18	30	
Canopy Blend **									** Consult label for rotational intervals for Canopy Blend
Canopy EX or Cloak EX									If sequential application of chlorimuron is made after August 1, extend interval 2 months for alfalfa, clover, corn, popcorn, sorghum, and tobacco. If fall applied, do not begin counting months until normal soybean planting time. * Field corn may be planted after 9 months if total chlorimuron rate does not exceed 0.64 oz/A. **Allow 7 days for rates at 1.1 to 2.2 oz/A; or 14 days for rates >2.2 up to 3.3 oz/A.
Rate 1.1 - 1.65 oz/A	8	9	7d	3	9	3	9	30	
Rate >1.65 oz/A	10*	10	14d**	4	10	4	10	30	

Crop Replanting and Rotation Guide*

Herbicide	Minimum Waiting Period (months) For Replant or Rotation Crops[1]								Remarks
	Corn (field)	Grain Sorghum	Soybean	Wheat & Barley	Alfalfa	Forage Grasses	Tobacco	Other Crops[2]	
Capreno	0*	10**	10	4***	18**	18^	18^	18^	*Yellow dent field corn can be replanted immediately. White corn, sweet corn, and popcorn require a 10 month interval. ** Rotation interval may be longer if precipitation from application to planting is limited and/or soil pH is 7.5 or above (consult label). **Barley requires a 10 month interval. ^Requires completion of a successful field bioassay
Cheetah Max	10 *	18	0	4	18	18	18	18	* Allow 12 months for popcorn for 32 oz/A rate.
Classic	8*	9	0	3	9	3**	9	30	Consult labels for maximum rate of Classic per season or when imazaquin (Scepter, etc), imazethapyr (Pursuit, etc), or other chlorimuron containing products (Canopy, etc) are applied the same year. If applied after August 1, extend recrop interval 2 months for alfalfa, clover, corn, popcorn, sorghum, and tobacco. *Use a 9-month rotational interval for popcorn. ** A 3 month rotational interval may be used for pasture grasses such as fescue and ryegrass.
Cobra	-	-	-	-	-	-	-	-	No restrictions indicated on herbicide label.
Corvus	0	17	9	4*	17**	17**	17**	17**	*Allow 9-month rotation to barley. **With 30 inches of cumulative precipitation from application to planting of rotational crop. Rotational interval may be longer (24 months) for some crops if soil pH is 7.5 or above.
2,4-D	7d*	-**	1***	-**	-**	-**	-**	-**	Do not replant fields treated with 2,4-D in the same season with crops other than those labeled for 2,4-D pre-plant uses. *Wait 7 to 14 days before planting corn. **Not labeled as a pre-plant use in these crops. Wait a minimum of 3 months or until chemical has disappeared from soil. ***Depending on amount used (if <1 lb ai/A), wait a minimum of 7 to 30 days before planting soybeans. Some 2,4-D products require less than 30 days when using a higher rate.
Degree Xtra	0	0*	S	F**	2S	2S	S	2S	Do not rotate to crops other than soybeans, corn, sorghum, or tobacco. *Use sorghum seed treated with a safener. **Wheat can be planted; do not plant other small grain crops.

Crop Replanting and Rotation Guide*

Herbicide	Minimum Waiting Period (months) For Replant or Rotation Crops[1]								Remarks
	Corn (field)	Grain Sorghum	Soybean	Wheat & Barley	Alfalfa	Forage Grasses	Tobacco	Other Crops[2]	
Dicamba products									
Diablo	0	S*	S*	F**	F	F	S	S	When applying Banvel, Diablo, or Oracle any rotational crop may be planted after normal harvest of treated crop. When applying Clarity, Sterling, or Vision at <24oz/A, any rotational crop may be planted after 120 days. Consult label if herbicide rate exceeds 24 oz/A
Clarity Sterling Blue Vision	0	4*	4*	4**	4	4**	4	4	*.Consult label for preplant applications rates and timing for sorghum and soybean.
DiFlexx	0	4	4	4***	4	4***	4	4#	**Apply before, during or after planting small grains when herbicide rate is ≤4 oz/A. However, allow 20 days per pt/A of Diablo (1.25 days/1 oz/A) for wheat. When applying Clarity, Sterling, or Vision at ≤24oz/A for wheat, barley & other grasses allow 15 days/8 oz/A. ***Consult DiFlexx label for a reduced waiting period when planting wheat, barley, oats, and forage grass seedlings. #4 months for rates <24 fl. oz.
DiFlexx Duo	0	10	8	4	10	18*	12	18*	Planting of cover crops are allowed as long as these crops are not grazed by livestock nor harvested for food *Field bioassay required.
Dimetric Charged / Panther MTZ	4*	18	0	4**	5***	18	18	18	*Field and Sweet Corn **Following Soybean or at up to 24 fl oz/a DIMETRIC CHARGED ***5 months for tilled alfalfa at 18 fl oz/a DIMETRIC CHARGED, 12 months for tilled alfalfa at greater than 18 fl oz/a DIMETRIC CHARGED, 18 months for no-till alfalfa.
Dual II Magnum or EverpreX	0	0*	0	4.5	4**	12	S	12	*Use Concep treated sorghum seed. **Clover may be seeded 9 months following application. Observe maximum restrictions before rotating to alfalfa or clover.
Elevore	14d*	14d*	14d*	14d*	9	--	15**	15**	*Wait 14 days before planting corn, soybean, grain sorghum, wheat, and barley **A field bioassay is recommended prior to planting any broadleaf crop not listed
Enlist Duo	7d*	--**	1***	--**	--**	--**	--**	--**	Do not replant treated fields with crops other than those labeled for use with 2,4-D and glyphosate. *Wait 7 to 14 days before planting corn. **Not labeled for use in this crop. ***For soybean without ENLIST trait wait 30 days (1 month); For soybean with ENLIST trait no waiting period.
Envive (pH < 7.0) (pH ≥ 7.0)	 10 18	 10 18	 0 0	 4 4	 12 18	 18 30	 10 18	 18 18	Do not exceed 4 oz/A where composite soil pH exceeds 7.0.
Enversa	0	0*	0	4**	9	S	S	S	* When replanting sorghum, seed should be properly treated with a protectant or safener ** Barley should be planted the next spring
Extreme	8.5*	18	0	3**	4	40***	9.5	40***	Applying herbicides containing chlorimuron (Classic, Canopy, etc.), flumetsulam (Python, etc.) or imazaquin (Scepter, etc.) the same year may result in injury to rotational crops. * Allow an 18-month rotational interval for popcorn. **Allow a 4- month rotational interval for barley. ***Before rotation to forage grasses and other crops, a successful field bioassay must be completed after the restrictive interval.

Crop Replanting and Rotation Guide*

Herbicide	Minimum Waiting Period (months) For Replant or Rotation Crops[1]								Remarks
	Corn (field)	Grain Sorghum	Soybean	Wheat & Barley	Alfalfa	Forage Grasses	Tobacco	Other Crops[2]	
Fierce and Fierce EZ	1	6**	0	1***	10	18	12	18	Consult label when rate exceeds 3 oz/A *Allow 1 month for conventional till corn or 7 days for minimum and no-till corn following 3 oz/A rate. ** Fierce applications require 18 months for sorghum replant ***Allow 11 months for other crops including barley.
Fierce MTZ	1	18	0	8*	10	18	12	18	* 4 months if following soybean; 12 month rotation interval for Barley
Fierce XLT (Soil pH <7.0)	10*	18	0	10**	18	18	18	18	*Includes corn for grain, silage, popcorn. Consult label for seed corn, and sweet corn.
(Soil pH ≥ 7.0)	18	18	0	18	18	30	18	18	** Allow 18 months for barley
Finesse Cereal & Fallow	18*	--**	*--**	--****	---#	---#	---#	--*#	* Soil pH of 7.9 or lower, Finesse C&F rate of 0.2 to 0.5 oz/A ** Grain Sorghum – 18 months when Soil pH of 7.9 or lower and Finess C&F rate of 0.2 to 0.5 oz/A; 4 months when soil pH of 7.5 or lower and Finesse C&F rate of 0.2 to 0.4 oz/A *** Bolt Soybean – 4 months; STS & SR soybean – 6 months; Plenish soybean – 6 months; All soybean rotations based on soil pH of 7.9 or lower and Finesse C&F application rates of 0.2 to 0.5 oz/A. **** Wheat – 0 months; Barley and Oats – 10 months. Soil pH of 7.9 or lower and Finesse C&F rate of 0.2 to 0.4 oz/A # A field bioassay must be completed for any crop not listed or when soil pH or Finesse C&F rate fall outside of the range listed on the label.
FirstRate	9	9	0	4*	9	18	18**	18	*Allow 12 months for barley. **For transplanted tobacco allow 18 months if herbicide rate is >0.3 oz/A and 10 months if herbicide rate is 0.3 oz/A.
FirstShot	14d	14d	7d	0	45d	45d	45d	45d	Extend interval 7 days when applied to light textured soils.
Flexstar and Flexstar GT	10*	18	0	4**	18	18	18	18	Do not exceed a maximum of 0.375 lb ai/A fomesafen in alternate years. *Use a 12-month rotation interval for popcorn. **Small grain crops should not be grazed/harvested for forage or straw when using Flexstar.
FulTime NXT	0	S	S	15	15	2F	15*	2S	Do not apply FulTime after June 10, unless only corn will be planted the following year. *Injury may occur to tobacco because of atrazine carryover.
Fusilade DX	2	2	-	2	-	2	-	-	Do not rotate to grass crops within 2 months (60 days) after application. No restrictions indicated for other crops.
Fusion	2	2	-	2	-	2	-	-	Do not rotate to grass crops within 2 months (60 days) after application. No restrictions indicated for other crops.
Glyphosate, Roundup, and other products	0	0	0	0	0	0	1	1	Wait 30 days (1 month) prior to planting crops not listed on the label.
Gramoxone SL	0	0	0	0	0	0	- *	-	* Gramoxone is approved for applications made prior to transplanting tobacco. Consult supplemental label.
Halex GT	0	0*	10	4	10	18	10	18	*Use herbicide safener-treated sorghum seed.
Harness	0	S	S	F*	2S*	2F*	S	2S	*Wheat can be planted following normal crop harvest. Label prohibits follow crop planting to barley, alfalfa, forage grasses and other crops.

Crop Replanting and Rotation Guide*

Herbicide	Minimum Waiting Period (months) For Replant or Rotation Crops[1]								Remarks
	Corn (field)	Grain Sorghum	Soybean	Wheat & Barley	Alfalfa	Forage Grasses	Tobacco	Other Crops[2]	
Harness MAX	0	0*	10	4**	10	18	18	18	*Plant only grain sorghum (milo) properly treated with a seed protectant or safener. **Wheat can be planted after 4 months; barley, rye, oats and millet the spring following application.
Harness Xtra	0	S	S*	2F	2S*	2S*	2S*	2S*	*If soybeans or other nonlabeled crops are planted the following year, there is a possibility of crop injury due to atrazine carryover.
Harmony Extra SG with TotalSol	14d	14d	7d	0	45d	45d	45d	45d	Nimble is a similar product but requires 45 days for corn, sorghum, soybean and most other crops.
Harmony SG	0	0	0	0	45d	45d	45d	45d	Most other crops not listed may be planted 45 days after application. Harass is a similar product with same restrictions.
Impact	0	9	9	3	9	18	18	18	Wait 18 months for crops not listed on the label.
Impact Core	0	9	10	4*	9	18	18	18	*Barley, oat, rye, millet require 9 month waiting period
Impact Z	0	9	9	9	9	18	18	18	Wait 18 months for crops not listed on the label.
Instigate	0*	10	10	9	10	18	18	18	Wait minimum of 18 months for rotational crops not listed on label. *Wait a minimum of 10 months for popcorn and sweet corn.
Intermoc	0	12	0	4.5*	12	12	12	12	*Consult label for other small grain crops.
Intimidator	10*	18	0	4.5**	18	18	18	18	Do not exceed 0.375 lb ai/A fomesafen in alternate years. *Use a 12-month rotation interval for popcorn. **Small grain crops should not be grazed/harvested for forage or straw.
Katagon	0	18	9	4	10	18	18	18*	*Consult label for other crops.
Keystone NXT	0	S	S	15	15	2F	15*	2S	Do not apply Keystone after June 10, unless only corn will be planted the following year. *Injury may occur to tobacco because of atrazine carryover.
Kyber Pro	1	18	0	8*	10	18	12	18	* 4 months if following soybean; 12 month rotation interval for Barley
Kyro	0	10.5	10.5	4*	10.5	18	18	18**	*Barley, oats, & rye require 10.5 month prior to planting ** Non-food or non-feed cover crops may be planted following harvest of corn treated with Kyro. Do not graze or harvest rotational cover crops for food or animal feed for 18 months following the last Kyro application.
Laudis	0	10	8	4	10	18*	18*	18*	*Consult label for other crops and completion of a successful field bioassay.
LeadOff	0	10*	1**	3**	10**	18	1.5**	18	*Rotation period for soybean without BOLT technology applied at 1.5 oz/A maximum use rate; may be longer for higher use rates. Allow 0 days prior to planting soybean with BOLT technology. **Rotation period when 1.5 oz/A maximum use rate is applied; waiting period will be longer when maximum use rate is 2.7 oz/A.
Lexar EZ	0	S	S	S	18	18	18	2S	If applied after June 1, do not rotate to crops other than corn or sorghum the next season.
Liberty ULTRA	0	6	0	70d*	6	6	6	6	*Allow a 70-day interval for wheat, barley, rye or oats. Allow 180 days (6 months) for other crops.

Crop Replanting and Rotation Guide*

Herbicide	Minimum Waiting Period (months) For Replant or Rotation Crops[1]								Remarks
	Corn (field)	Grain Sorghum	Soybean	Wheat & Barley	Alfalfa	Forage Grasses	Tobacco	Other Crops[2]	
Matador-S	8.5	18	0	4.5*	4.5	40	12	40	Full-rate applications of chlorimuron-ethyl, cloransulam-methyl, flumetsulam, or imazaquin containing herbicides in the same season as Matador may increase the risk of injury to sensitive rotational crops. *Barley may be planted 4 months after application
Maverick	0	18	4.5	4*	16	18	18	18	If applied after June 1 rotating to crops other than corn or grain sorghum next spring may result in crop injury. *When applied at 32 fl oz/A wait 6 months before planting wheat; Wait a minimum 18 months to plant barley.
Metribuzin DF Metri DF Dimetrtic DF Glory Mauler Sencor DF TriCor	4*	18**	4*	4***	4	4	18**	18**	Cover crops may be planted any time but stand reductions may occur. Do not graze or harvest cover crops for feed or food. *Metribuzin containing products are registered for preplant and preemergence applications to field corn and soybeans. **Some metribuzin products may allow a 12-month interval for grain sorghum, tobacco and certain other crops. ***Allow a 4-month interval for rotating to wheat or barley when metribuzin is applied to soybean; wait a minimum of 8 months if applied to other crops.
Osprey	12	10	3	7 d*	10	10	10	10	*The rotation interval is 7 days for wheat; 30 days for barley.
Outlook	0	0*	0	4	6	S	S	9**	*Use herbicide safener treated sorghum seed. **Rotational interval 6 months if <16 fl oz/A was applied.
Panther Pro	8.5	18	0	4*	4**	40***	18	40***	*For barley waiting interval is 9.5 months. **Wait 8 months for alfalfa if not tillage is performed ***Requires a successful field bioassay.
Permit	1*	2	9	2	9	2	36	36	*IR/IMR field corn varieties can be planted anytime.
Perpetuo	0*	6**	0	1***	10	18	18	18	*For sweet corn wait 8 months. **Wait 10 months for sorghum planting when PERPETUO applied at 10 fl oz/a *** For wheat wait 4 months when PERPETUO applied at 10 fl oz/a. For all other small grains wait 11 months.
Pixxaro	14d*	14d	4	0	9	15	15	15	*For sweet corn wait 14 days; wait 4 months for popcorn
Poast	30d	30d	0	30d	0	30d	0	30d	Do not plant other crops to be harvested for 30 days after application unless POAST is registered for use in that crop.
PowerFlex	9	3*	3*	1 **	9	9	12	12	When soil moisture is abnormally dry, conduct a field bioassay. * When PowerFlex is applied before February, do not plant grain sorghum or soybean before April 30 * Use 9 - month interval for barley and oats.
Prefix	10*	18	0	4,5**	18	18	18	18	* Use a 12 -month interval for popcorn when rate ≥ 2 pt/A. ** Small grain crops should not be grazed or harvested for forage or straw for livestock.
Preview 2.1SC	4*	18**	0	4	12	18	12	18	*Fall application ONLY **Sorghum may be planted 12 months after application where PREVIEW was applied at 19.5 fl oz/a or less in the previous cropping season.
Princep	0	S	S	2F	2F	2F	2S	2S	If rate exceeds 3 lb ai/A, a crop of corn untreated with Princep should precede the next rotational crop.

Crop Replanting and Rotation Guide*

Herbicide	Minimum Waiting Period (months) For Replant or Rotation Crops[1]								Remarks
	Corn (field)	Grain Sorghum	Soybean	Wheat & Barley	Alfalfa	Forage Grasses	Tobacco	Other Crops[2]	
Prowl 3.3 EC or Prowl H2O	S	10	0	4 *	6	10	0	20	Certain rotational crops require an 18-months interval if rainfall was insufficient to produce a crop. Observe label when pendimethalin rate exceeds 2 lb ai/A. * Allow a 12-month interval for wheat if ≤ 12" of rain or irrigation occurs between application and planting. Do not replant back to wheat if initial wheat stand was treated with Prowl H2O.
Pursuit	8.5*	18	0	3**	4	40***	9.5	40***	Observe label when applying other herbicides that persist in soil (e.g. chlorimuron, imazaquin, imazethapyr, flumetsulan). Only rotational crops harvested at maturity may be used for feed or food. * Field corn hybrids which possess genetic resistance/tolerance to Pursuit (CLEARFIELD corn) can be planted anytime. Allow an 18-month rotational interval for popcorn. **Allow a 4 month rotational interval for barley. *** Before rotation to forage grasses and other crops, a successful field bioassay must be completed after the restrictive interval.
Quelex	3	3	3	0	9	3	15*	15*	*For best results conduct a field bioassay prior to planting.
Raptor	8.5*	9	0	3**	3	18	9	18	*Allow 8.5 months for both Clearfield and susceptible corn (field & popcorn). **Clearfield wheat may be planted anytime. Use a 3-month interval for non-Clearfield wheat; a 4-month interval for barley and rye; and a 9-month interval for oat. Applying herbicides containing chlorimuron (CLASSIC, etc.), imazaquin (SCEPTER, etc.), imazethapyr (PURSUIT, etc.), or flumetsulam (PYTHON, etc.) the same year as RAPTOR may result in injury to rotational crops.
Realm Q	0	10	10	4*	10	18	10	18	*Allow a 9 month interval for barley.
Resicore REV	0	10.5	10.5	4*	10.5	18	18	18	*Allow a 10.5 month interval for barley.
Resolve Q	0	10	1	3*	10**	18	10	18	Rotational crop guidelines based on a maximum use rate of 1.25 oz/A per season. Consult label for 2.5 oz/A maximum rate/season. *Barley requires a longer waiting period (consult label). **Extend rotational interval for alfalfa and clover to 18 months if drought conditions prevail.

Crop Replanting and Rotation Guide*

Herbicide	Minimum Waiting Period (months) For Replant or Rotation Crops[1]								Remarks
	Corn (field)	Grain Sorghum	Soybean	Wheat & Barley	Alfalfa	Forage Grasses	Tobacco	Other Crops[2]	
Reviton	0	180d*	0**	7***	180d*	180d*	180d*	180d*	* All other crops not listed on the label may be planted 120 days following 1 fl oz REVITON application; 150 days following 2 fl oz REVITON application; and 180 days following 3 fl oz REVITON application ** Wheat ONLY may be planted 0 days after REVITON application. Barley and all other small grains must follow the "all other crops" restrictions. *** Soybean planting restrictions are based on soil texture, soil organic matter, and REVITON application rate. Soybean may be planted 0 days after application depending on the above factors. See soybean no-tillage section for details.
Roundup & other Glyphosate products	0	0	0	0	0	0	1	1	Wait a minimum of 30 days (1 month) prior to planting crops not listed on the label.
Select MAX, Select & other clethodim products	1	1	0	1	0	1	1	1	Allow a minimum of 30 days after application before planting crops that are not registered for clethodim use.
Sequence	0	0*	0	4 ½	4	-	S	-	
Sharpen	0	0	2*	0	6**	0***	6**	6**	Rotational intervals vary depending on such factors as saflufencil rate, soil texture, and with other PPO inhibitors. *Applied at 1 fl oz/A rotation interval for soybean is 0 months. **For alfalfa, tobacco, and certain other crops rotation interval may be less when applied at 1 fl oz/A or more when applied at >4 fl oz/A. ***Rotational interval 1 month when applied >5 fl oz/A.
Shieldex	0	9	9	3	9	9	12	12*	*Consult label for certain vegetable crops.
Simazat	0	S	S	2F	2F	2F	2S	2S	Plant only corn or sorghum the following year if applied after June 10 or if rate exceeds 4 pt/A. Do not plant tobacco or spring-seeded legumes, grasses, or small grains the year following application of this product or injury may occur.
Sinate	0	9	9	3	9	3	18	18	Consult label for canola and other crops not listed.
Sonic	10*	12	0	4**	12	30***	30***	30***	* Field corn and popcorn require 18 months if soil organic matter ≤1.5% and soil pH ≥ 7.0. ** Barley requires a 12 month rotation interval. ***Forage grasses, tobacco, and other crops not listed require a successful field bioassay.
Sonic Boom	4*	18**	0	4	12	18	12	18	*Fall application ONLY **Sorghum may be planted 12 months after application where SONIC BOOM was applied at 19.5 fl oz/a or less in the previous cropping season.
Status	7d*	4**	4**	4**	4**	4	4	4	Do not plant any crops within 120 days after last application with the following exceptions: *If crop failure, corn can be replanted 7 or more days after application. **May be planted 30 days after rainfall if at least 1 inch of rainfall occurs and less than or equal to 5 oz/A was applied.

Crop Replanting and Rotation Guide*

Herbicide	Minimum Waiting Period (months) For Replant or Rotation Crops[1]								Remarks
	Corn (field)	Grain Sorghum	Soybean	Wheat & Barley	Alfalfa	Forage Grasses	Tobacco	Other Crops[2]	
Steadfast Q	0	10*	15d**	4	10	10*	10*	10*	*Wait 18 months if soil pH>6.5; sorghum 18 months if pH>7.5. **Waiting period for soybeans is 0.5 month (15 days) after application.
Storen	0	10	10	4.5*	18**	18	18	18***	*Barley, oat, and rye require a 11 month wating period. **A 10-month rotation to alfalfa only when Stolen applied at less than 2.1 qt/A and soil pH>6.5 or a minimum of 18" rainfall has been received. ***Cover crops can be planted after a field bioassay has been conducted and provided it is not grazed or fed to livestock.nor harvested for food.
SureStart	0	12	S	4*	S**	2F	18	26***	*Barley, oats, and rye can be planted the following spring. **Wait 18 months after treatment if less than 15 inches of rainfall occurs on soils with <2% organic matter. ***Requires a successful field bioassay.
Surpass	0	S	S	4*	S	2F	S	S	*Wheat may be planted after 4 months. Barley, oats, and rye can be planted the spring following application.
Surtain 11 fl oz/A 14 fl oz/A	 0* 0*	 6 6	 2 3	 1** 1**	 10 10	 18 18	 18 18	 18*** 18***	SURTAIN rotational crop planting intervals are rate dependent. Intervals listed here are based on a rate of 11 to 14 fl oz/a, unless otherwise noted. Refer to SURTAIN label for rotational restrictions for other use rates. * Sweet and popcorn may be planted after 2 months ** Barley, oats, pearl millet, proso millet, rye, and triticale may be planted after 11 months *** Winter cover crops may be planted 4 months after SURTAIN application either interseed prior to corn harvest or after corn harvest. Cover crops stands may be reduced by SURTAIN, depending on the sensitivity of the cover crop species. Cover crops sown prior to 4 months after application should NOT be harvested for food or feed or be allowed to be grazed.
Surveil	9	9	0	3*	10*	30*	30*	30*	*Allow 30 months and conduct a successful field bioassay for barley and forage grasses. Tobacco requires 10-month interval and a successful field bioassay (consult label).
Synchrony XP 0.375 oz/A 0.75 oz/A (soil pH <7.0)	 9* 9*	 9 15	 0 0	 3 3	 9 9	 3** 3**	 9 15	 30 30	For applications of Synchrony alone or followed by Classic after August 1, extend recrop interval 2 months for alfalfa, clover, field corn, popcorn, sorghum or tobacco. Follow the most restrictive label before applying Synchrony with other long-residual herbicides the same season. *For popcorn allow a 9-month interval for 0.375 oz/A or a 15-month interval for 0.75 oz/A. ** Fescue or ryegrass may be seeded following 3-month interval.
Tendovo	9	12	0	4.5*	9	12	18	18**	*Winter wheat may be planted 4.5 months after application. Barley (winter or spring) can be planted after 12 months **Sunflower may be planted 30 months after application.
TopNotch	0	S	S	4*	S	2F	S	S	*Wheat can be planted after 4 months. Barley, oats, and rye can be planted the spring following application.
Tribal	10	18*	0	4.5	12	12	12	12	* Sorghum may be planted after 12 months where tribal was applied at rates ≤5.3 pt/a in the previous season.
Tripzin ZC	4	18	4	4	4	4	18	18	If rainfall was not sufficient to produce a crop, delay planting for 18 months following application.
Trivence	9*	18	0	4	10	12	18	18	* Field corn includes grain, silage, popcorn and seed corn.

Crop Replanting and Rotation Guide*

Herbicide	Minimum Waiting Period (months) For Replant or Rotation Crops[1]								Remarks
	Corn (field)	Grain Sorghum	Soybean	Wheat & Barley	Alfalfa	Forage Grasses	Tobacco	Other Crops[2]	
TriVolt	0	17**	9**	4*	17**	17**	12**	17**	*Allow 12-month rotation to barley. **After 15 or 30 inches of cumulative precipitation from application to planting of rotational crop. Rotational interval may be longer (17 or 24 months) for some crops if soil pH is 7.5 or above [consult label]
Ultra Blazer	100d	100d	0	40d	100d	100d	100d	100d	In case of crop failure only soybeans may be immediately replanted. Allow a minimum rotational interval of 40 days for small grains and 100 days for other crops.
Valor EZ or Valor SX ≤ 2oz/A **	30d	30d	0	30d*	4**	4**	30d	18**	At least 1 inch of rain and 30 days between application and planting is required for field corn (conventional till), sorghum, wheat (conventional till) and tobacco. Allow 7 days for no-till corn providing 25% residue cover and 0.25 inch rain following Valor application at 2 oz/A. *Allow 3 months for barley. ** For alfalfa and other crops not listed allow 4 months if soil is tilled prior to planting and 8 months if no-tilled. ** Consult Valor label for rates ≥3 oz/A.
Valor XLT									
Soil pH < 7.0	10	10	0	4	12	18	10	18	Do not use on soils with a pH >7.6.
Soil pH ≥ 7.0	18	18	0	4	18	30	18	30	
Verdict	0	0	0*	4	S	S	S	S	No rotation crop restrictions the spring following the previous year's application. *When planting soybeans observe the label for additional restrictions concerning rate or soil type.
Warrant	0	0*	0	4**	9	S	S	S	* When replanting sorghum, seed should be properly treated with a protectant or safener ** Barley should be planted the next spring
Zalo	120d*	180d	0	120d	180d	180d	180d	180d	*quizalofop-resistant (Enlist) corn may be planted anytime after application.
Zidua or Zidua SC	0	10*	0	4**	10	18	18	18	* Allow 6 months when applied at 1 to 2 oz/A; wait 10 months when applied at 3 oz/A. **Wheat may be planted immediately after 1 oz/A. Allow 1 month for 2 oz/A and 4 months for 3 oz/A. For barley and other small grains allow 11 months.
Zidua PRO	8.5	18	0*	4**	10	40	18	40^	*Wait a minimum 30 days for course texture soil with <2% OM **Barley and rye requires a 11 month waiting period. ^Requires a successful field bioassay before planting crop.

[1]Numerical values represent time interval (months after application) before replanting or rotating to other crops. Waiting periods designated with a F=the first fall after application; S=the next spring after application; 2F=second fall after application; 2S=second spring after application. A " - " indicates no information on label; following normal crop harvest it is unlikely that carryover of herbicide residues to rotational crops would result under normal conditions.

[2]Waiting time indicated (months) for Other Crops is the minimal time when a rotational crop is not listed on the product label.

**This table provides information for major agronomic crops in Kentucky and does not include horticultural crops. When more than one herbicide is applied the most restrictive product should be followed. Rotational guidelines may become more restrictive when certain tank mixtures or sequential applications are used. Always consult herbicide label(s) before planting or rotating other crops into treated fields.*

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Pesticide Contacts

General Information

Kentucky Department of Agriculture

Division of Environmental Services .....(502) 573-0282
https://www.kyagr.com/consumer/division-of-environmental-services.html

Pesticide Collection and Disposal Program.....(800) 205-6543

Pesticide Complaints……(866) 289-0001
http://kyagr-apps.com/AgComplaint/Public/Complaint/CreatePS

National Pesticide Information Center ..... (800) 858-7378
http://npic.orst.edu

Spills

In the event of a spill, ***Control*** and ***Contain*** the spill. For environmental emergencies call 911. Be prepared to provide specific information on the location, amount, and type of any materials spilled. You may be directed to other agencies.

Kentucky Environmental Response Team .....(800) 928-2380
or (502) 564-2380

Exposure/Injury

If a person has been exposed to a particular pesticide, be prepared to provide medical professionals with specific details and emergency information found on the product label. ***For urgent treatment call 911.***

Kentucky Regional Poison Control Center..... (800) 222-1222

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Disabilities accommodated with prior notification.