

# AUTHORITY<sup>®</sup> XL

## HERBICIDE

EPA Reg. No. 279-3413

EPA Est. No.279-IL-1

Active Ingredients	By Wt.
Sulfentrazone* : .....	62.22%
Chlorimuron Ethyl* .....	7.78%
Other Ingredient .....	30.00%
<b>TOTAL</b>	<b>100.00%</b>

\*AUTHORITY XL contains 0.7 lb active ingredient per pound product (0.62 lb a.i./lb of sulfentrazone and 0.08 lb ai/lb of chlorimuron ethyl)

## KEEP OUT OF REACH OF CHILDREN CAUTION

### FIRST AID

**If Swallowed:** Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by the poison control center or doctor. Do not give anything by mouth to an unconscious person.

**If in Eyes:** Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.

**If Inhaled:** Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth-to-mouth, if possible. Call a poison control center or doctor for further treatment advice.

**If on Skin or Clothing:** Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.

### HOTLINE NUMBER

Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact 1-800-331-3148 for emergency medical treatment information.

Sold By



**FMC Corporation**  
**Agricultural Products Group**  
**1735 Market Street**  
**Philadelphia PA 19103**

Net Weight: 5 lbs.

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## PRECAUTIONARY STATEMENTS HAZARDS TO HUMANS AND DOMESTIC ANIMALS

Harmful if swallowed. Causes moderate eye irritation. Avoid contact with eyes or clothing.

### PERSONAL PROTECTIVE EQUIPMENT (PPE)

**Applicators and other handlers must wear:**

Long-sleeved shirt and long pants.  
Wear protective eyewear.  
Waterproof gloves.  
Shoes plus socks.

Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product. Do not reuse them. Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables exist, use detergent and hot water. Keep and wash PPE separately from other laundry.

### ENGINEERING CONTROL STATEMENTS

When handlers use closed systems or enclosed cabs in a manner that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [40 CFR part 170.240 (d)(4-6)], the handler PPE requirements may be reduced or modified as specified in the WPS.

### USER SAFETY RECOMMENDATIONS

**Users should:** Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco or using the toilet. Users should remove clothing/PPE immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing. Users should remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

### ENVIRONMENTAL HAZARDS

This pesticide is toxic to marine/estuarine invertebrates. Do not apply directly to water, to areas where surface water is present or to intertidal areas below the mean high water mark. Drift and runoff may be hazardous to terrestrial and aquatic plants in neighboring areas. Do not contaminate water when disposing of equipment washwaters or rinsate.

**Groundwater advisory:** This chemical is known to leach through soil into groundwater under certain conditions as a result of label use. Use of this chemical in areas where soils are permeable, particularly where the water table is shallow, may result in groundwater contamination.

Do not use on coarse soils classified as sand which have less than 1% organic matter.

**Surface water advisory:** Sulfentrazone can contaminate surface water through spray drift. Under some conditions, sulfentrazone may also have a high potential for runoff into surface water (primarily via dissolution in runoff water), for several too many months post-application. These include poorly draining or wet soils with readily visible slopes toward adjacent surface waters, frequently flooded areas, and areas overlying extremely shallow groundwater, areas with in-field canals or ditches that drain to surface water, areas not separated from adjacent surface waters with vegetated filter strips, and areas over-lying tile drainage systems that drain to surface waters.

### PHYSICAL/CHEMICAL HAZARDS

Do not use or store near heat or open flame.

## CONDITIONS OF SALE AND LIMITATION OF WARRANTY AND LIABILITY

**Notice:** Read the entire Directions for Use and Conditions of Sale and Limitation of Warranty and Liability before buying or using this product. If the terms are not acceptable, return the product at once, unopened, and the purchase price will be refunded.

The Directions for Use of this product must be followed carefully. It is impossible to eliminate all risks inherently associated with the use of this product. Crop injury, ineffectiveness, or other unintended consequences may result because of such factors as manner of use or application, weather or crop conditions beyond the control of FMC or Seller. All such risks shall be assumed by Buyer and User, and, to the extent permitted by applicable law, Buyer and User agree to hold FMC and Seller harmless for any claims relating to such factors.

**Seller warrants that this product conforms to the chemical description on the label and is reasonably fit for the purposes stated on the Directions for Use when used in accordance with the directions under normal conditions of use. TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, FMC MAKES NO WARRANTIES OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE, NOR ANY OTHER EXPRESS OR IMPLIED WARRANTIES WITH RESPECT TO THE SELECTION, PURCHASE, OR USE OF THIS PRODUCT. Any warranties, express or implied, having been made are inapplicable if this product has been used contrary to label instructions, or under abnormal conditions, or under conditions not reasonably foreseeable to (or beyond the control of) seller or FMC, and, to the extent consistent with applicable law, buyer assumes the risk of any such use.**

To the extent consistent with applicable law, FMC or seller shall not be liable for any incidental, consequential or special damages resulting from the use or handling of this product. TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, THE EXCLUSIVE REMEDY OF THE USER OR BUYER, AND THE EXCLUSIVE LIABILITY OF FMC AND SELLER FOR ANY AND ALL CLAIMS. LOSSES, INJURIES OR DAMAGES (INCLUDING CLAIMS BASED ON BREACH OF WARRANTY, CONTRACT, NEGLIGENCE, TORT, STRICT LIABILITY OR OTHERWISE) RESULTING FROM THE USE OR HANDLING OF THIS PRODUCT, SHALL BE THE RETURN OF THE PURCHASE PRICE OF THE PRODUCT OR, AT THE ELECTION OF FMC OR SELLER, THE REPLACEMENT OF THE PRODUCT.

This Conditions of Sale and Limitation of Warranty and Liability may not be amended by any oral or written agreement.

### DIRECTIONS FOR USE

It is a violation of federal law to use this product in a manner inconsistent with its labeling.

Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application. For any requirements specific to your State or Tribe, consult the agency responsible for pesticide regulation.

### AGRICULTURAL USE REQUIREMENTS

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR part 170. This Standard contains requirements for the protection of agricultural workers on farms, forests, nurseries, and greenhouses, and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification, and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements on this label about personal protective equipment (PPE) and restricted-entry interval. The requirements in this box only apply to uses of this product that are covered by the Worker Protection Standard.

Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 12 hours.

PPE required for early entry to treated areas that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil, or water, is:

Coveralls over long-sleeved shirt and long pants, waterproof gloves, and shoes plus socks.

## Storage and Disposal

Do not contaminate water, food or feed by storage or disposal.

### Pesticide storage

Store product in original container only, away from other pesticides, fertilizer, food or feed. Store in a cool dry place and avoid excess heat.

### In Case of Spill

Avoid contact. Isolate areas and keep out animals and unprotected persons. **Confine Spills. Call CHEMTREC (Transportation and spills): (800) 424-9300.**

### To Confine Spills.

Dike surrounding area; sweep up spillage. Dispose of in accordance with information given under Pesticide Disposal. Wash spill area with water, absorb with sand, cat litter or commercial clay, sweep up and dispose of in an approved manner. Place damaged container in a large holding container. Identify contents per required hazardous waste labeling regulations.

### Pesticide Disposal

Pesticide wastes are toxic. Improper disposal of excess pesticide, spray mixture or rinsate is a violation of Federal law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency or the Hazardous Waste representative of the nearest EPA Regional Office for guidance.

### Container Disposal

**Nonrefillable container.** Do not reuse or refill this container. Triple rinse container (or equivalent) promptly after emptying. Triple rinse as follows: (For containers greater than 5 gallons) Empty the remaining contents into application equipment or a mix tank. Fill the container 1/4 full with water. Replace and tighten closures. Tip container on its side and roll it back and forth, ensuring at least one complete revolution, for 30 seconds. Stand the container on its end and tip it back and forth several times. Empty the rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Repeat this procedure two more times. (For containers 5 gallons or less) Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container 1/4 full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times. Triple rinse (or equivalent). Then offer for recycling if available, or reconditioning, or puncture and dispose of in a sanitary landfill, or incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

**Returnable/Refillable Containers** - Refill this container with pesticide only. Do not reuse this container for any other purpose. Cleaning the container before final disposal is the responsibility of the person disposing of the container. Cleaning before refilling is the responsibility of the refiller. To clean the container before final disposal, empty the remaining contents into application equipment or mix tank. Fill the container about 10% full with water. Agitate vigorously or recirculate water with the pump for 2 minutes. Pour or pump rinsate into application equipment or rinsate collection system. Repeat this rinsing procedure two more times.

## IMPORTANT

Injury to or loss of desirable trees or vegetation may result from failure to observe the following: Do not apply or drain or flush equipment on or near desirable trees or other plants, or on areas where their roots may extend, or in locations where the chemical may be washed or moved into contact with their roots. Do not use on lawns, walks, driveways, tennis courts or similar areas. Prevent drift of spray to desirable plants. Do not contaminate any body of water. Keep from contact with fertilizers, insecticides, fungicides and seeds during storage.

**Prior to using AUTHORITY XL, consideration should be given to crop rotation plans.** Crops other than soybeans may be extremely sensitive to low concentrations of AUTHORITY XL remaining in the soil the next planting season. Choice of rotation crop is restricted following application of AUTHORITY XL. (See "ROTATIONAL CROP GUIDELINES" for your geographical region.)

Thoroughly clean AUTHORITY XL from application equipment immediately after use and prior to spraying crops other than soybeans. Failure to remove even small amounts of AUTHORITY XL from application equipment may result in injury to subsequently sprayed crops.

**Proper handling instructions:** This product may not be mixed or loaded within 50 feet of any wells (including abandoned wells and drainage 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 does not apply to impervious pads or properly diked mixing/loading areas.

Operations that involve mixing, loading, rinsing, or washing of this product into or from pesticide handling or application equipment or containers within 50 feet of any well are prohibited unless conducted on an impervious pad constructed to withstand the weight of the heaviest load that may be positioned on or moved across the pad. Such a pad shall be designed and maintained to contain any product spills or equipment leaks, container or equipment rinse or washwater, and rainwater that may fall on the pad. Surface water shall not be allowed to either flow over or from the pad, which means the pad must be self contained. The pad shall be sloped to facilitate material removal. An unroofed pad shall be of sufficient capacity to contain at a minimum 110% of the capacity of the largest pesticide container or application equipment on the pad. A pad that is covered by a roof of sufficient size to completely exclude precipitation from contact with the pad shall have a minimum containment capacity of 100% of the capacity of the largest pesticide container or application equipment on the pad. Containment capacities as described above shall be maintained at all times. The above specific minimum containment capacities do not apply to vehicles when delivering pesticide shipments to the mixing/loading site. States may have in effect additional requirements regarding wellhead setbacks and operational containment.

Do not apply this product through any type of irrigation system.

Do not use flood irrigation to apply or incorporate this product.

Product must be used in a manner which will prevent back siphoning in wells, spills or improper disposal of excess pesticide, spray mixtures or rinsates.

## PRODUCT INFORMATION

AUTHORITY XL is a dispersible granule formulation to be mixed with water and sprayed for selective preemergence and preplant incorporated weed control in soybeans. When applied according to the instructions on this label, it will control many broadleaf weeds and provide partial control of annual grasses.

Preemergence and preplant incorporated applications of AUTHORITY XL require rainfall or sprinkler irrigation to activate the herbicide. Degree of control and duration of effect depend on: rate used, weed spectrum, growing conditions at and following time of treatment, soil pH, texture, organic matter, moisture and precipitation. This label also contains general use information which is applicable to all AUTHORITY XL use geography.

## BIOLOGICAL ACTIVITY

AUTHORITY XL rapidly inhibits the growth of susceptible weeds. Following application of preplant incorporation or preemergence treatment, susceptible weeds may germinate and emerge, but growth then ceases and leaves become yellow 3-5 days after emergence. Death of leaf tissue and growing point will follow in some species while others will remain green but stunted and noncompetitive. AUTHORITY XL provides partial control of some annual grasses when used preplant or pre-emergence but other products may be needed to ensure adequate grass control.

Poor growing conditions such as excessive moisture, cool temperatures, and soil compaction or the presence of various pathogens may impact seedling vigor. Under these conditions the active ingredients in AUTHORITY XL, like other soil applied herbicides, may injure soybeans.

Best results are obtained if AUTHORITY XL is followed by rainfall or irrigation before weeds germinate. Several small rainfalls of less than 1/4" each are not as beneficial as one large rainfall of 1/2-1". If moisture is insufficient to activate the herbicide, a rotary hoeing or shallow cultivation should be made after emergence of the crop while weeds are small enough to be controlled by mechanical means.

## ROTATIONAL GUIDELINES FOR ALL AUTHORITY XL APPLICATIONS

When used as described, the table describes the minimum length in months from the time of AUTHORITY XL application until AUTHORITY XL treated soil can be replanted to the crops listed in the table. Cover crops for soil health and erosion control can be planted at any time after an application of AUTHORITY XL, but do not use for food or feed. Residual activity of AUTHORITY XL may result in injury to some cover crop species if planted to soon following application. Consult your local University extension service for cover crop sensitivity to AUTHORITY XL. When a recommended tank mix is used, consult the tank mix partner labels for recropping instructions and follow the directions that are most restrictive.

## ROTATIONAL GUIDELINE

### For Full Use Rates – (See Rate Table 1)

Refer to Importance of soil pH for additional information

Crop	Rotation Interval A IN, OH, MO, IL, KS, NE, OK soil pH less than 7.2, (If soil pH is greater than 7.2 use rotation interval B)	Rotation Interval B AL, AR, GA, KY, LA, MI, MS, MO Bootheel, NC, PA, SC, TN, and TX where soil pH is greater than 6.8 (For those States listed above, if soil pH less than 6.8 use rotation interval A)
	Recropping Interval in Months	
Soybeans †	Anytime	Anytime
Wheat, Barley, Rye	4	4
Oats	12	18
Alfalfa	12	18
Rice	10	18
Sorghum*	18 or 10	18
Tobacco	10	18
Tomato (transplant)	12	18
Field Corn **	10	18
Dry Beans	12	18
Clover, Cotton, Cucumber, Flax, Pumpkin, Sunflower, Sweet Corn, Watermelon, Cabbage, Lentils, Mustard	18	18
Canola (rapeseed), Carrot, Onion, Potato, Sugar Beets and any other crop not listed	36	36

\*Sorghum may be planted after 10 months where Authority XL was applied at rates 6.4 oz/acre or less.

\*\* Field corn includes corn grown for grain, silage, popcorn, seed corn.

†Do not feed treated soybean forage or soybean hay to livestock.

Crops that have rotational intervals greater than 12 months after an Authority XL application are the result of crop injury concerns. The crops should be planted with a successful bioassay

## ROTATIONAL GUIDELINE

### For Reduced Use Rates – (See Rate Table 2)

Refer to Importance of soil pH section 16 for additional information

Crop	Rotation Interval A All States, all pH's except those listed in column B	Rotation Interval B DE, IA, MD, MI, MN, NJ, VA, WI, WV soil pH greater than 6.8
	Recropping Interval in Months	
Soybeans †	Anytime	Anytime
Wheat, Barley, Rye	4	4
Oats	12	18
Alfalfa	12	18
Rice	10	18
Sorghum*	10	18
Tobacco	10	18
Tomato (transplant)	12	18
Field Corn**	10	18
Dry Beans	12	18
Cotton***	18 or 12	18 or 12
Clover, Cucumber, Flax, Pumpkin, Sunflower, Sweet Corn, Watermelon, Cabbage, Lentils, Mustard	18	18
Canola (rapeseed), Carrot, Onion, Potato, Sugar Beets and any other crop not listed	36	36

Under rotational interval A of the Reduced Rate Table above, a pre-emergent application of a Chlorimuron ethyl product is not allowed in the states of AL, AR, GA, KY, LA, MO Bootheel, MS, NC, OK, SC, TN and TX where soil pH is greater than 7.0.

Do not use full use rates in the states of DE, IA, MD, MI, MN, NJ, VA, WI and WV.

\* Sorghum may be planted after 10 months where AUTHORITY XL was applied at rates 6.4 oz/acre or less.

\*\* Field corn includes corn grown for grain, silage, popcorn, seed corn.

\*\*\* Cotton may be planted after 12 months where Authority XL was applied at rates of 5 oz/acre or less and meets the following conditions:

- Medium and fine soils
- pH <7.2
- Rainfall or irrigation must exceed 15" after application of Authority XL to rotate to cotton

†Do not feed treated soybean forage or soybean hay to livestock.

Crops that have rotational intervals greater than 12 months after an AUTHORITY XL application are the result of crop injury concerns. The crops should be planted with a successful bioassay

## WEEDS CONTROLLED – PREEMERGE:

When used as directed AUTHORITY XL will provide control of the following weed species:

Carpetweed	Russian Thistle
Cocklebur*	Nutsedge, Purple
Copperleaf, Hophornbeam	Nutsedge, Yellow
Copperleaf, Virginia	Pigweed
Florida beggarweed	Palmer amaranth
Jimsonweed	Redroot
Kochia	Smooth
Lambsquarters	Spiny amaranth
Mallow, Venice	Poinsettia, wild
Marestail	Prickly sida (teaweed)
Morningglory	Purslane, common
Annual	Ragweed, common
Ivyleaf	Ragweed, giant*
Entireleaf	Senna, Coffee
Pitted*	Smartweed (annual)
Smallflower	Spurge, Spotted
Tall	Sunflower, wild
Mustard, wild	Velvetleaf
Nightshade, Black	Waterhemp, common
Nightshade, Eastern Black	Waterhemp, tall
Nightshade, Hairy	Star of Bethlehem

\*Weed species which can germinate deep in the soil such as pitted morningglory, cocklebur, and giant ragweed or other weeds; such as nutsedge, which may emerge at various times during the growing season may require a cultivation or a follow up application of postemergence herbicides for season-long control.

When used as directed AUTHORITY XL will provide partial control of the following weeds:

Barnyardgrass	Mexicanweed
Burcucumber	Panicum, Texas and fall
Crabgrass	Sesbania, Hemp
Foxtail, species	Sicklepod
Goosegrass	Signalgrass, broadleaf
Johnsongrass, seedling	

For additional instructions on weed control, see comments following Tables 1 and 2 on page 6.

## APPLICATION INFORMATION

### Equipment/Spray Volumes

**Ground Application:** Apply uniformly by ground equipment with a properly calibrated sprayer equipped with fan-type nozzles or other appropriate nozzles. Adjust spray pressures to recommendations that are appropriate for the nozzle type being utilized. Sprayer and spray nozzles should be set to minimize the risk of fine droplets (<150 microns), yet achieve adequate coverage of existing weeds. Use nozzles that require screens no finer than 50 mesh. Use 10 to 40 gals of water per acre.

Continuous agitation in the spray tank is required to keep the product in suspension. Avoid overlap and shut off spray booms while starting, turning, slowing or stopping, as injury to the crop may result.

### Aerial Application

AUTHORITY XL may be applied by air using properly calibrated nozzle types and arrangements that will provide optimum coverage while producing minimal amounts of fine droplets. Apply sufficient spray volume to achieve adequate coverage. Apply a minimum of five (5) gallons of finished spray per acre. Do not apply when wind speed favors drift beyond the area intended for treatment.

### Spray Tank Preparation

It is important that spray equipment is clean and free of existing pesticide deposits before using AUTHORITY XL. Follow the spray tank cleanout procedures specified on the label of product previously sprayed. If no cleanout procedure is provided, follow the cleanout procedure in **SPRAYER CLEANUP** section of this label.

### Mixing Instructions

1. Fill the tank 1/4 to 1/3 full of water.
2. While agitating, add the required amount of AUTHORITY XL.
3. Once the AUTHORITY XL is fully dispersed, maintain agitation and continue filling tank with water.
4. AUTHORITY XL should be thoroughly mixed with water in the spray tank before adding any other material. As the tank is filling add (in the following order): other herbicide(s), the required spray adjuvant, ammonium sulfate and/or liquid nitrogen fertilizer where required.
5. Apply AUTHORITY XL spray solution within 24 hours of mixing to avoid product degradation.
6. If the mixture has settled, thoroughly reagituate before using.
7. To improve mixing with liquid fertilizers prepare a slurry in water before adding to spray tank.



## SPRAYER CLEANUP

To avoid subsequent injury to desirable crops, thoroughly clean all mixing and spray equipment immediately following applications of AUTHORITY XL as follows:

1. Drain tank; thoroughly hose down the interior surfaces of the tank; then flush tank, boom, and hoses with clean water for a minimum of 5 minutes.
2. Partially fill the tank with water and add one of the cleaning agents listed below. Complete filling the tank with water, then flush the cleaning solution through the boom, hoses, and nozzles. Add water to completely fill the tank and allow to agitate or recirculate for at least 15 minutes. Again, flush the boom, hoses and nozzles, and drain the tank.
3. Remove the nozzles and screens and clean separately in a bucket containing water and the cleaning agent.
4. Repeat Step 2.
5. Thoroughly rinse the tank with clean water for a minimum of 5 minutes, flushing water through the boom and hoses.

**NOTE:** Use any of the following cleaning agents. Carefully read and follow the individual cleaning agent instructions.

1. One gallon of household ammonia (contains 3% active) per 100 gallons of water.
2. Commercial spray tank cleaner

Do not drain or flush equipment on or near desirable trees or plants.

Do not contaminate any body of water including irrigation water that may be used on other crops.

Should small quantities of AUTHORITY XL remain in inadequately cleaned mixing, loading, and/or spray equipment, they may be released during subsequent applications potentially causing effects to certain crops and other vegetation. FMC accepts no liability for any effects due to inadequately cleaned equipment.

## SPRAY DRIFT MANAGEMENT

The interaction of many equipment and weather-related factors determines the potential for spray drift. The applicator is responsible for considering all these factors when making application decisions.

AVOIDING SPRAY DRIFT IS THE RESPONSIBILITY OF THE APPLICATOR.

## IMPORTANCE OF DROPLET SIZE

The most effective way to reduce drift potential is to apply droplets of size >150 - 200 microns. The best drift management strategy is to apply the largest droplets that provide sufficient coverage and control. The presence of sensitive species nearby, the environmental conditions, and pest pressure may affect how an applicator balances drift control and coverage. **APPLYING LARGER DROPLETS REDUCES DRIFT POTENTIAL, BUT WILL NOT PREVENT DRIFT IF APPLICATIONS ARE MADE IMPROPERLY OR UNDER UNFAVORABLE ENVIRONMENTAL CONDITIONS!** See **Wind, Temperature and Humidity, and Temperature Inversions** sections of this label.

## Controlling Droplet Size - General Techniques

**Volume** - Use high flow rate nozzles to apply the highest practical spray volume. Nozzles with higher rated flows produce larger droplets.

**Pressure** - Use the lower spray pressures recommended for the nozzle. Higher pressure reduces droplet size and does not improve canopy penetration. **WHEN HIGHER FLOW RATES ARE NEEDED, USE A HIGHER-CAPACITY NOZZLE INSTEAD OF INCREASING PRESSURE.**

**Nozzle Type** - Use a nozzle type that is designed for the intended application. With most nozzle types, narrower spray angles produce larger droplets. Consider using low-drift nozzles.

## BOOM HEIGHT

Setting the boom at the lowest labeled height (if specified) which provides uniform coverage reduces the exposure of droplets to evaporation and wind. For ground equipment, the boom should remain level with the crop and have minimal bounce.

## WIND

Drift potential increases at wind speeds of less than 3 mph (due to inversion potential) or more than 10 mph. However, many factors, including droplet size and equipment type determine drift potential at any given wind speed. **AVOID GUSTY OR WINDLESS CONDITIONS.**

**Note:** Local terrain can influence wind patterns. Every applicator should be familiar with local wind patterns and how they affect spray drift.

## TEMPERATURE AND HUMIDITY

When making applications in hot and dry conditions, set up equipment to produce larger droplets to reduce effects of evaporation.

## TEMPERATURE INVERSIONS

Drift potential is high during a temperature inversion. Temperature inversions restrict vertical air mixing, which causes small suspended droplets to remain close to the ground and move laterally in a concentrated cloud. Temperature inversions are characterized by increasing temperature with altitude and are common on nights with limited cloud cover and light to no wind. They begin to form as the sun sets and often continue into the morning. Their presence can be indicated by ground fog; however, if fog is not present, inversions can also be identified by the

movement of smoke from a ground source or an aircraft smoke generator. Smoke that layers and moves laterally in a concentrated cloud (under low wind conditions) indicates an inversion, while smoke that moves upward and rapidly dissipates indicates good vertical air mixing.

## RESISTANCE MANAGEMENT

AUTHORITY XL is a mixture of sulfentrazone (WSSA Group 14) and chlorimuron-ethyl (WSSA Group 2) herbicides. When herbicides with the same mode of action are used repeatedly over several years to control the same weed species in the same field, naturally-occurring resistant weed biotypes may survive a correctly applied herbicide treatment, propagate, and become dominant in that field. These resistant weed biotypes may not be adequately controlled. Cultural practices such as tillage, preventing weed escapes from going to seed, and using herbicides with different modes of action within and between crop seasons can aid in delaying the proliferation and possible dominance of herbicide resistant weed biotypes.

## IMPORTANT PRECAUTIONS

1. Back to back application of ALS or ALS containing herbicides can occasionally result in residual herbicide stacking and potential crop injury. Applicator and/or grower is responsible should be aware of previous herbicide use and potential interaction it may have with AUTHORITY XL application.

2. All direct or indirect contact (such as spray drift) to other crops or to land scheduled to be planted to crops other than soybeans should be avoided.

3. Ensure the seed furrow is closed and the seed covered on acres treated with AUTHORITY XL.

4. Soybean stunting may occur if excessive rainfall occurs after application but before soybeans emerge. Injury is more prevalent under poor drainage or compacted conditions or when soil is saturated for long periods of time. Soybeans rapidly outgrow stunting once favorable growing conditions return.

5. Do not apply AUTHORITY XL if there are visible signs of cracking due to soybean emergence, or serious crop injury such as but not limited to stand loss may result.

6. Seedling disease, nematodes, cold weather, deep planting (more than 2"), excessive moisture, high salt concentration, or drought may weaken soybean seedlings and increase the possibility of crop injury.

7. Do not tank mix AUTHORITY XL with organophosphate insecticides. Do not apply AUTHORITY XL within 14 days before or after an application of an organophosphate insecticide, as severe crop injury may occur.

## IMPORTANCE OF SOIL pH

Soil pH varies greatly, even within the same field. pH variations as much as 2 pH units are common. Composite soil samples taken across an entire field, such as those samples taken for soil fertility recommendations, may not detect areas of high pH. Sub-sampling is recommended for areas likely to have pH values higher than the field average. The following is a non-inclusive list of potential high pH areas where subsampling is recommended.

- Where different soil types are evident within a field, sample soil types separately.
- Where conditions vary within a field, sample areas separately, such as:

- areas bordered by limestone gravel roads,
- river bottoms subject to flooding,
- low areas in hardpan soils where evaporative ponds may occur,
- eroded hillsides,
- along drain tile lines, and
- areas where drainage ditch spoil has been spread.

- Where lime has not been deeply incorporated, soil may exhibit significantly higher pH values in the upper 3 inches of soil. Composite soil samples taken at a 6-8 inch depth may not reflect the elevated pH near the surface. In these cases shallow sampling, the upper 3 inches, is advised.

Determine soil pH by laboratory analysis using a 1:1 soil:water suspension.

## USE DIRECTIONS FOR SOYBEANS

Apply AUTHORITY XL according to Rate Tables 1 or 2 as directed for specific types of application and geographic areas. Do not use the full use rate (Rate Table 1) in DE, IA, MD, MI, MN, NJ, VA, WI and WV.

Follow all label restrictions regarding soil type, soil pH, organic matter, rotational crop intervals, geographic location, and weed pressure, in selecting the rate of AUTHORITY XL from Rate Table 1 or Table 2.

**Use of AUTHORITY XL on soils which exceed pH 6.8 may result in unacceptable injury to the following crop. AUTHORITY XL may be used on fields which are generally pH 6.8 or less, but which may contain isolated areas where the pH exceeds 6.8 only if the following rotational crop is soybeans or a chlorimuron ethyl resistant corn variety. Consult with your local seed supplier for potential resistant/tolerant varieties.**

## Restrictions

- Do not use AUTHORITY XL in CO, WY, ND, NY or SD at any rate. Do not apply AUTHORITY XL in Nebraska west of US Hwy 281 and north of US Hwy 30.
- Do not apply to black belt soil of Alabama or Mississippi with a soil pH >6.8 or history of nutrient deficiency such as iron chlorosis, as injury may occur.
- Do not follow AUTHORITY XL with a post-emergence application of another chlorimuron-ethyl containing herbicide in the same cropping season.
- Do not apply this product through any type of irrigation system.
- Do not feed treated soybean forage or soybean hay to livestock.
- Single application: Do not apply a full rate of AUTHORITY XL more than once per season.
- Split application:** Two applications totaling the full labeled rate of AUTHORITY XL (see Table 1) may be made per season.
- When tank mixing this product with other pesticides, follow the most restrictive of the labeling limitations and precautions of all products used in the mixture.

## FULL USE RATE

### Rate Table 1:

Fall Application, Early Pre-plant, Preplant Burndown, Pre-plant Incorporated, and Preemergence:

No-Till, Minimum-till, Conventional tillage

Soil Texture	Organic Matter	
	0.5 – 2%	2 – 4%
	Ounces Product (lb a.i.) Per Acre	
<b>Coarse*:</b> Loamy Sand, Sandy loam	5.0 (0.219) – 6.0 (0.263)	6.0 (0.263) – 7.0 (0.306)
<b>Medium:</b> Loam, Silt Loam, Silt, Sandy clay loam	6.5 (0.284) – 7.5 (0.328)	7.0 (0.306) – 8.0 (0.350)
<b>Fine:</b> Silty Clay Loam, Clay Loam, Clay	7.0 (0.306) – 8.0 (0.350)	8.0 (0.350) – 9.6 (0.420)

\*Do not use this product in coarse sand soils with <1% organic matter.

Apply AUTHORITY XL according to Rate Tables for types of application and specific geographic areas.

## Limited Residual Rate for Planned Sequential Application Program

### Rate Table 2:

Use rates in Table 2 are to be used in conjunction with an effective planned POST herbicide program; AUTHORITY XL at these reduced rates will provide early season control or suppression to reduce early season weed competition. If resistance with the POST herbicide is documented in your area, use rates in Table 1.

Fall application, Early Pre-plant, Early Pre-plant Burndown, Pre-plant Incorporated, Preemergence:

No-Till, Minimum-till, Conventional Tillage

Soil Texture	Organic Matter	
	0.5 – 2%	2 – 4%
	Ounces Product (lb a.i.) Per Acre	
<b>Coarse*:</b> Loamy Sand, Sandy loam	3.0 (0.131) – 4.0 (0.175)	3.2 (0.140) – 4.0 (0.175)
<b>Medium:</b> Loam, Silt Loam, Silt, Sandy clay loam	3.2 (0.140) – 4.0 (0.175)	3.2 (0.140) – 4.8 (0.210)
<b>Fine:</b> Silty Clay Loam, Clay Loam, Clay	4.0 (0.175) – 5.0 (0.219)	4.0 (0.175) – 5.0 (0.219)

\*Do not use this product in coarse sand soils with <1% organic matter.

## APPLICATION METHODS:

Do not apply AUTHORITY XL after the soybean crop has emerged or severe injury or death of the crop may occur.

AUTHORITY XL may be applied by any of the methods listed below.

## CONSERVATION TILLAGE:

### EARLY PRE-PLANT IN NO-TILL, MINIMUM TILL, OR STALE SEEDBED

AUTHORITY XL applied Early Pre-plant must be applied in combination with the appropriate burndown herbicide such as glyphosate, glufosinate, paraquat, and/or 2,4-D to achieve acceptable control of existing weeds during application. When applied as a burndown treatment, AUTHORITY XL is rainfast after one hour. For burndown or control of existing vegetation, an appropriate burndown herbicide at labeled rates is recommended such as glyphosate, etc. Follow all label directions for the burndown herbicide including application timing, spray volume, adjuvants to achieve control of targeted weeds. For applications of AUTHORITY XL made from 30 – 60 days before planting apply the higher rate in the appropriate soil range from tables 1 or 2 depending on the soybean system being grown.

## PREPLANT INCORPORATED

Uniformly incorporate AUTHORITY XL or AUTHORITY XL tank mixes no deeper than 2" prior to planting soybeans. If tank-mixing AUTHORITY XL with a companion herbicide, follow all label instructions for proper incorporation of the companion herbicide in the top 2" of soil. Improper incorporation can result in erratic weed control or potential crop injury.

## PREEMERGENCE

AUTHORITY XL may be applied at planting time or within 3 days after planting, but before seed emergence. AUTHORITY XL may be applied alone or in tank mix combinations with other registered soybean herbicides. When applied in tank mix combinations, follow applicable use directions, including application rates, precautions and restrictions of each product in the mixture. The seed furrow should be completely closed and seed covered before any applications of AUTHORITY XL.

## FALL APPLICATION AND SPRING PRE-PLANT BURNDOWN OF BROADLEAF WEEDS

AUTHORITY XL can provide for some increased burndown activity on emerged weeds in no-till applications, but is not intended to replace part or all of an appropriate preplant burndown program. For control of the weeds listed below in no-till / minimum till fields, AUTHORITY XL must be tank-mixed or used in combination with a full burndown program. This may include 2,4-D alone or in combination with Aim, dicamba, glyphosate, glufosinate, paraquat, or other appropriate burndown herbicides in tank-mixes at their appropriate rate for the size and species of weeds present. Reduced rates of AUTHORITY XL and/or the corresponding burndown partner herbicides can result in weed escapes and unsatisfactory performance.

Chickweed*	Nightshade species
Dandelion	Pennycress
Garlic, wild	Pigweeds
Henbit	Ragweed, common
Lambsquarters	Ragweed, giant
Lettuce, prickly	Shepherd's-purse
Marestail**	Smartweeds, annual
Mustard, tansy	Sunflower
Mustard, wild	Waterhemp species

\*For chickweed control add glyphosate, Express or Dicamba.

\*\*For glyphosate resistant biotypes, include an alternative and effective mode of action to achieve complete burndown.

For Burndown control, pick the appropriate Authority XL rate from Table 1 or 2 and apply with:

- For complete burndown of emerged annual grasses or broadleaf weeds or for burndown of weeds not listed above, AUTHORITY XL must be tank mixed with: glyphosate, glufosinate, paraquat, 2,4-D alone or in combination with Aim or other appropriate burndown herbicides.**
- Crop Oil Concentrate (COC) or Methylated Seed Oil (MSO) at 1% v/v 1 gallon per 100 gallons of spray solution, or Non-ionic surfactant (NIS) at 1 qt./100 gallon of spray solution.
- In addition to the specific adjuvants above, other adjuvants may be used if they provide the same or similar functions as those previously mentioned. The addition of other adjuvants or fertilizers such as ammonium sulfate (AMS) may aid in control of weeds when used with appropriate companion herbicides. Consult specific companion herbicides for additional adjuvant, and fertilizer recommendations when applying for burndown of existing vegetation.
- Use flat fan nozzles or other appropriate nozzle types and a minimum of 10 gallons of water per acre. Where dense vegetation or heavy crop residues are present, increasing the spray volume to 15-20 gallons per acre or more may improve spray coverage and weed control.
- For burndown of larger annual grasses or broadleaf weeds exceeding 2-3", or for burndown of weeds not listed above, AUTHORITY XL may be tankmixed with glyphosate, glufosinate, paraquat, 2,4-D alone or in combination with Aim.

To select the proper tank mix product, identify the weeds which need to be controlled and consult the product labels to determine which product is needed. Consult the companion tank mix herbicide label for use instructions, rates, precautions, restrictions, and other use information.

For instructions on how to prevent spray drift see section on Spray Drift Management on page 5.

## LABEL TRACKING INFORMATION

Label Code: 08-31-15

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