



# VANDAL<sup>®</sup> XL

**GROUPS 14 2 HERBICIDE**

**ACTIVE INGREDIENTS:**

Sulfentrazone .....	62.2%
Chlorimuron Ethyl .....	7.8%

**OTHER INGREDIENTS:**

.....	30.0%
<b>TOTAL:</b> .....	<b>100.0%</b>

VANDAL XL contains 0.7 lb active ingredient per pound product (0.62 lb ai/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 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.

**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.

Have the product container or label with you when calling a poison control center or doctor, or going for treatment.

**FOR CHEMICAL EMERGENCY: Spill, leak, fire, exposure, or accident call CHEMTREC 1-800-424-9300.**

EPA Reg. No.: 74530-60-89391

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# HERBICIDE



Distributed By:  
**INNICTIS<sup>®</sup> CROP CARE, LLC**  
1880 Fall River Drive, Suite 100  
Loveland, CO 80538

**PRECAUTIONARY STATEMENTS  
HAZARDS TO HUMANS AND DOMESTIC ANIMALS**

Harmful if swallowed. Causes moderate eye irritation. Do not get into eyes, on skin, or on clothing.

**PERSONAL PROTECTIVE EQUIPMENT (PPE)**

Applicators and other handlers must wear:

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

Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product. Do Not Reuse Clothing. Follow manufacturer's label instructions for cleaning/maintaining PPE. In the event there are no instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

**ENGINEERING CONTROL STATEMENTS**

Handlers using enclosed cabs or closed systems 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)], may reduce or modify the handler PPE requirements as specified in the WPS.

**PHYSICAL/CHEMICAL HAZARDS**

Do not mix or allow coming in contact with oxidizing agents. Hazardous chemical reaction may occur.

**USER SAFETY RECOMMENDATIONS**

**Users should:**

Always wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco or using the toilet. Remove clothing/PPE immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing. 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.

**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 to 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.

**Ground Water 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.

**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 at the time of application. For any requirements specific to your State or Tribe, consult the agency responsible for pesticide regulations.

**STORAGE AND DISPOSAL**

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

**Pesticide Storage and Disposal**

Store product in original container only. Keep container closed when not in use, away from food or feed, fertilizer and other pesticides. Store in a cool dry place and avoid excess heat. Do not store below 30°F degrees.

Wastes resulting from the use of this product that cannot be used should be disposed of in a landfill approved for pesticide disposal or in accordance with applicable Federal, State or local procedures. For more information 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 **VANDAL XL HERBICIDE** 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.

### 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.

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

#### IMPORTANT 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. Injury or loss of desirable trees or vegetation may result. Do not use on lawns, walks, driveways, tennis courts or similar areas. Prevent drift of spray to desirable plants. Keep from contact with fertilizers, insecticides, fungicides and seeds during storage. Do not contaminate any body of water.

Thoroughly clean VANDAL XL HERBICIDE from application equipment immediately after use and prior to spraying crops other than soybeans. Injury may result to subsequent crops if failure to remove even small amounts of VANDAL XL HERBICIDE from application equipment.

**Proper Handling Instructions:** Do Not mix or load this product within 50 feet of any well to include abandoned and drainage wells, streams and rivers, lakes and reservoirs. This 50 feet perimeter does not apply to capped or plugged wells. It does not apply to dikes that are properly constructed around mixing or 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. Any such pad used for this purpose must be constructed to be able to contain: Product spills – Equipment leaks – equipment rinsate or wash – container leaks – rain water that collects on the pad. This pad must be self-contained. Pads that are constructed with roofs must be able to provide a minimum containment capacity of 100%. Pads without roofs must have a capacity to contain a minimum of 110% capacity of the largest container or application equipment that may be on the pad. The above mentioned minimum containment capacities do not apply to equipment/vehicles that are delivering pesticide shipments to the loading or mixing site. Always check with your state regulatory official since each state may have different or additional well set-backs and/or containment operation guidelines.

This product must be used in a way to prevent any back siphoning into wells. It must be used in a manner to prevent spills, improper disposal of pesticide, rinsates and/or spray mixtures into wells or any water source.

#### PRODUCT INFORMATION

VANDAL XL HERBICIDE is a dispersible granule formulated to easily mix with water, to be sprayed for selected pre-emergent and pre-plant incorporated weed control in soybeans. Control of many broadleaf weeds and partial control of annual grasses will be attained when applied according to label instructions.

Rainfall or sprinkler irrigation is required to activate Pre-emergence and Pre-plant incorporated applications of VANDAL XL HERBICIDE. The control and duration of effect depend on the following: Use rate, growing conditions at and following time of treatment, weed spectrum, soil pH, moisture and precipitation and organic matter. Use information which is applicable to all VANDAL XL HERBICIDE use geography can be found within the label.

#### ROTATIONAL GUIDELINES FOR ALL VANDAL XL HERBICIDE APPLICATIONS

The table below describes the minimum length in months from the time of VANDAL XL HERBICIDE application until VANDAL XL HERBICIDE treated soil can be replanted to the crops listed in the table. When a recommended tank mix is used, consult the tank mix partner labels for re-cropping 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 section on page 6 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 is less than 6.8 use Rotation Interval A)
	Recropping Interval in Months	Recropping Interval in Months
Soybeans <sup>1</sup>	Anytime	Anytime
Wheat, Barley, Rye	4	4
Oats	12	18 <sup>1</sup>

(continued)

Alfalfa	12	18
Rice	10	18
Tobacco	10	18
Tomato (transplant)	12	18
Field Corn <sup>1</sup>	10	10
Dry Beans	12	18
Clover, Cotton, Cucumber, Flax, Peanuts, Pumpkin, Sunflower, Popcorn, Sweet Corn, Watermelon, Cabbage, Lentils, Mustard	18	18
Canola (rapeseed), Carrot, Onion, Potato, Sugar Beets and any other crop not listed	36	36

#### ROTATIONAL GUIDELINE

For Reduced Use Rates - (See **Rate Table 2**)

Refer to Importance of soil pH section on page 6 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 <sup>4</sup>	Recropping Interval in Months <sup>4</sup>
Soybeans <sup>2</sup>	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 <sup>1</sup>	10	10
Dry Beans	12	18
Clover, Cucumber, Flax, Pumpkin, Sunflower, Sweet Corn, Popcorn, Watermelon, Cabbage, Lentils, Mustard	18	18
Canola (rapeseed), Carrot, Onion, Potato, Sugar Beets and any other crop not listed	36	36
Cotton <sup>2</sup>	18 or 12	18 or 12
Peanuts	12	18

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.

<sup>1</sup> Field corn includes corn grown for grain, silage, and seed corn.

<sup>2</sup> Cotton may be planted after 12 months where **VANDAL XL HERBICIDE** 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 **VANDAL XL HERBICIDE** to rotate to cotton

<sup>3</sup> Do not feed treated soybean forage or soybean hay to livestock.

<sup>4</sup> Crops that have rotational intervals greater than 12 months after an **VANDAL XL HERBICIDE** application are the result of crop injury concerns. The crops should be planted with a successful bioassay.

#### BIOLOGICAL ACTIVITY

**VANDAL XL HERBICIDE** quickly inhibits growth of susceptible weeds. Susceptible weeds may germinate and emerge following an application of pre-plant incorporation or pre-emergence treatment, but leaves become yellow 3-5 days after emergence and growth ceases. Death of growing points and leaf tissue will occur in some species while others will remain green, stunted and non-competitive. **VANDAL XL HERBICIDE** will provide partial control of some annual grasses applied correctly but an additional product(s) may be warranted to provide best grass control. Seedling vigor may be impacted if poor growing conditions prevail. If poor growing conditions are present **VANDAL XL HERBICIDE** (like other soil applied herbicides) may injure soybeans. In the event injury symptoms appear they will disappear rapidly and will not result in reductions of yield. Poor growing conditions, such as cool temperatures, presence of disease pathogens, excessive moisture and soil compaction may cause this temporary injury to soybeans.

#### WEEDS CONTROLLED-PREEMERGE

When used as directed **VANDAL XL HERBICIDE** will provide control of the following weed species:

Carpetweed	Russian Thistle
Cocklebur*	Nutsedge, Purple

(continued)

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.

**VANDAL XL HERBICIDE** will provide partial control of the following weeds when used as directed:

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

For additional instructions on weed control, see comments following **Rate Table 1**.

## APPLICATION GUIDELINES

### 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:** **VANDAL XL HERBICIDE** 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 toward the area intended for treatment.

### PREPARATION OF SPRAY TANK

Before using **VANDAL XL HERBICIDE** it is very important the spray equipment is clean and free of any previous pesticide deposits in the tank. Use the previous product's label that was used and follow Tank Cleanout procedures that are on the label. If no procedure is provided use the cleanout procedure on the **VANDAL XL HERBICIDE** label marked SPRAYER CLEANOUT.

### Mixing Instructions

1. Fill the tank 1/4 to 1/3 full of water.
2. Add the required amount of **VANDAL XL HERBICIDE** while agitating.
3. Maintain agitation and continue filling tank with water to insure **VANDAL XL HERBICIDE** is fully dispersed.
4. Before adding any other material **VANDAL XL HERBICIDE** should be thoroughly mixed with water in the spray tank. Mixing order should be the following: Fill tank half-full and add **VANDAL XL HERBICIDE** – while continue filling with water add other herbicide(s), recommended spray adjuvant and liquid nitrogen fertilizer if recommended.
5. Apply **VANDAL XL HERBICIDE** spray solution within 24 hours of mixing to avoid product degradation.
6. If spray tank has stopped and the mixture has settled, before using re-agitate thoroughly.
7. When tank mixing with liquid fertilizers always prepare a slurry with water before adding to spray tank.

## SPRAYER CLEANOUT

To avoid injury to desirable crops, thoroughly clean all mixing and spray equipment immediately following applications of **VANDAL XL HERBICIDE** 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. Fill spray tank half full of water and add one of the cleaning agents listed below. Finish filling the tank with water, and 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 10 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-nozzles and hoses.

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

- One gallon of household ammonia (contains 3% active) per 100 gallons of water.
- 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 **VANDAL XL HERBICIDE** 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. INNVICTIS CROP CARE, LLC accepts no liability for any effects due to inadequately cleaned equipment.

## IMPORTANCE OF SOIL PH

Always determine soil pH by laboratory analysis using a 1:1 ratio of soil to water suspension.

Variations of soil pH in the same field can vary as much as 2 pH units is not uncommon. Therefore, it is recommended that subsampling for pH values that may be higher than a field average. Do not depend on composite soil samples taken for analysis of soil fertility since they may not detect areas of high pH.

The following is a non-inclusive list of potential high pH areas where sub-sampling 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.

## SPRAY DRIFT MANAGEMENT

AVOIDING SPRAY DRIFT IS THE RESPONSIBILITY OF THE APPLICATOR. Factors relating to the potential for spray drift are many. The most common is the interaction of many equipment and weather-related factors that can determine potential spray drift. Ultimately it is the applicator who is responsible for taking all these factors into consideration when making decisions on applications.

### Importance of Droplet Size

APPLYING LARGER DROPLETS REDUCES SPRAY DRIFT POTENTIAL, BUT IT WILL NOT PREVENT DRIFT IF APPLICATIONS ARE MADE IMPROPERLY OR MADE UNDER UNFAVORABLE ENVIRONMENTAL CONDITIONS. Droplet sizes >150-200 microns applied in a spray is the most effective way to reduce the potential for spray drift. This is the best strategy to manage the potential for spray drift and is based upon larger droplets to provide better coverage and control. Factors that also can affect an applicator's decision on balancing drift control and coverage are: the presence of non-targeted crops nearby – environmental conditions – and pest pressures.

### Controlling Droplet Size- General Techniques

**Volume** - Nozzles with higher rated flows produce larger droplets.

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

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

### 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.

## EFFECTS ON DRIFT POTENTIAL BY – WIND – TEMPERATURE AND HUMIDITY TEMPERATURE INVERSIONS

### Wind

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

### Temperature Inversions

Temperature inversions restrict vertical air mixing, which causes small suspended droplets to remain close to the ground and move laterally in a concentrated cloud. Drift potential is high during a temperature inversion. Temperature inversions are common on nights with limited cloud cover and light to no wind and are characterized by increasing temperature with altitude. 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.

## Temperature and Humidity

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

## RESISTANCE MANAGEMENT

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. Consult your local company representative, state cooperative extension service, professional consultants or other qualified authorities to determine appropriate actions for treating specific resistant weeds.

## Best Management Practices

Proactively implementing diversified weed control strategies to minimize selection for weed populations resistant to one or more herbicides is recommended. A diversified weed management program may include the use of multiple herbicides with different modes of action and overlapping weed spectrum with or without tillage operations and/or other cultural practices. Research has demonstrated that using the labeled rate and directions for use is important to delay the selection for resistance. Scouting after a herbicide application is important because it can facilitate the early identification of weed shifts and/or weed resistance and thus provide direction on future weed management practices. One of the best ways to contain resistant populations is to implement measures to avoid allowing weeds to reproduce by seed or to proliferate vegetatively. Cleaning equipment between sites and avoiding movement of plant material between sites will greatly aid in retarding the spread of resistant weed seed.

## IMPORTANT PRECAUTIONS

- 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.
- 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.
- 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.
- Back to back application of ALS or ALS containing herbicides can occasionally result in residual herbicide stacking and potential crop injury. Grower should be aware of previous herbicide use and potential interaction it may have with **VANDAL XL** HERBICIDE application.
- Thoroughly clean **VANDAL XL** HERBICIDE from application equipment immediately after use and prior to spraying crops other than soybeans. Failure to remove even small amounts of **VANDAL XL** HERBICIDE from application equipment may result in injury to subsequently sprayed crops.

## USE RESTRICTIONS

- Apply **VANDAL XL** HERBICIDE 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.
- Do not use **VANDAL XL** HERBICIDE in CO, WY, ND, NY or SD at any rate. Do not apply **VANDAL XL** HERBICIDE 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 **VANDAL XL** HERBICIDE with a post-emergence application of another chlorimuron-ethyl containing herbicide in the same cropping season.
- Do not apply **VANDAL XL** HERBICIDE if there are visible signs of cracking due to soybean emergence, or serious crop injury may result.
- 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, or injury to desirable trees and plants may occur.
- 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.
- Do not tank mix **VANDAL XL** HERBICIDE with organophosphate insecticides. Do not apply **VANDAL XL** HERBICIDE within 14 days before or after an application of an organophosphate insecticide, as severe crop injury may occur.

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

**Use of **VANDAL XL** HERBICIDE on soils which exceed pH 6.8 may result in unacceptable injury to the following crop. **VANDAL XL** HERBICIDE 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 INNWCITS CROP CARE, LLC recommended a chlorimuron ethyl resistant corn variety.**

## ADDITIONAL USE RESTRICTIONS (For Use on Soybeans)

- 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 **VANDAL XL** HERBICIDE more than once per season.
- Split application: Two applications totaling the full labeled rate of **VANDAL XL** HERBICIDE (see Table 1) may be made per season.
- Do not apply **VANDAL XL** HERBICIDE after the soybean crop has emerged or severe injury or death of the crop may occur. **VANDAL XL** HERBICIDE may be applied by any of the methods listed below.

**Full Use Rate****Rate Table 1: Fall application, Early Pre-plant, Pre-plant Burndown, Pre-plant Incorporated, and Pre-emergence: 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)

Apply **VANDAL XL HERBICIDE** according to Rate Tables for types of application and specific geographic areas.

**Reduced rate for GMO soybean (Roundup Ready, Liberty Link)**

**Rate Table 2: Use rates in Table 2 are to be used in conjunction with a planned POST herbicide program; VANDAL XL HERBICIDE at these reduced rates will provide early season control or suppression to reduce early season weed competition.**

**Fall application, Early Pre-plant, Early Pre-plant Burndown, Pre-plant Incorporated, Pre-emergence: 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)

**APPLICATION METHODS**

Do not apply **VANDAL XL HERBICIDE** after the soybean crop has emerged or severe injury or death of the crop may occur. **VANDAL XL HERBICIDE** may be applied by any of the methods listed below.

**CONSERVATION TILLAGE****Early Pre-Plant in No-Till, Minimum Till, or Stale Seedbed**

**VANDAL XL HERBICIDE** applied Early Pre-plant must be applied in combination with the appropriate burndown herbicide such as glyphosate, glufosinate, gramoxone, and/or 2,4-D to achieve acceptable control of existing weeds during application. **VANDAL XL HERBICIDE** is rainfast after one hour when applied as a burndown treatment. 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 **VANDAL XL HERBICIDE** 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.

**PRE-EMERGENCE**

**VANDAL XL HERBICIDE** may be applied at planting time or within 3 days after planting, but before seed emergence. **VANDAL XL HERBICIDE** 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 **VANDAL XL HERBICIDE**.

**PRE-PLANT INCORPORATED**

Uniformly incorporate **VANDAL XL HERBICIDE** or **VANDAL XL HERBICIDE** tank mixes no deeper than 2" prior to planting soybeans. If tank-mixing **VANDAL XL HERBICIDE** 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.

**FOR HERBICIDE ACTIVATION RAINFALL REQUIREMENT**

Best results are obtained if **VANDAL XL HERBICIDE** 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 not sufficient 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.

**FALL APPLICATIONS**

**VANDAL XL HERBICIDE** may be applied as a fall treatment to the stubble of harvested crops for the burndown of existing vegetation and pre-emergence control of labeled weeds the following spring in no-till and conservation tillage production systems. If weeds are emerged at the time of application, utilize a tank mixture with a suitable burndown herbicide such as glyphosate, or glufosinate at labeled rates. Fall applied burndown treatments should be made with a minimum of 10 gallons per acre to achieve adequate coverage of the weeds being treated. Applications volume should be increased to 15-20 gallons per acre or more where weed density is high or heavy crop residue levels are present. When making burndown applications to emerged weeds, the addition of adjuvants such as CFC, NIS, or MSO to the spray mixture can be used to enhance the burndown activity of the application. Refer to product labels for use rates and instructions. Refer to rates in Table 1 or Table 2. Use the higher rate in the soil type for longer spring residual.



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

**VANDAL XL HERBICIDE** may be used as part of burndown program to provide control or suppression of the following broadleaf weeds. For complete control of emerged weeds follow specific directions under the list of weeds below:

Chickweed <sup>1</sup>	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

<sup>1</sup> For chickweed control add glyphosate or Express or Dicamba.

For Burndown control, pick the appropriate rate from **Rate 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, **VANDAL XL HERBICIDE** must be tank mixed with: glyphosate, glufosinate, paraquat, 2,4-D 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 gallons 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.

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 6.

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