



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, DC 20460

OFFICE OF CHEMICAL SAFETY  
AND POLLUTION PREVENTION

July 28, 2020

Matthew Granahan  
U.S. Regulatory Leader  
Helm Agro US, Inc.  
401 E. Jackson St., Suite 1400  
Tampa, FL 33602

Subject: Registration Review Label Mitigation for Sulfentrazone & Chlorimuron-Ethyl /  
Label Amendment – Minor Changes, Including Spray Drift Language  
Product Name: Zone Herbicide  
EPA Registration Number: 74530-60  
Application Date: 12/06/2017; 10/04/2018  
Decision Numbers: 551426; 563238; 563731

Dear Mr. Granahan:

The Agency, in accordance with the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA), as amended, has completed reviewing all of the information submitted with your applications to support the Registration Review of the above referenced product in connection with the Sulfentrazone & Chlorimuron-Ethyl Interim Decisions, and have concluded that your submissions are acceptable. The agency also completed review of your amended label referred to above, submitted in connection with registration under FIFRA, as amended, and has determined the label is also acceptable.

Should you wish to add/retain a reference to the company's website on your label, then please be aware that the website becomes labeling under the Federal Insecticide Fungicide and Rodenticide Act and is subject to review by the Agency. If the website is false or misleading, the product would be misbranded and unlawful to sell or distribute under FIFRA section 12(a)(1)(E). 40 CFR 156.10(a)(5) list examples of statements EPA may consider false or misleading. In addition, regardless of whether a website is referenced on your product's label, claims made on the website may not substantially differ from those claims approved through the registration process. Therefore, should the Agency find or if it is brought to our attention that a website contains false or misleading statements or claims substantially differing from the EPA approved registration, the website will be referred to the EPA's Office of Enforcement and Compliance.

A stamped copy of your labeling is enclosed for your records. This labeling supersedes all previously accepted labeling. You must submit one copy of the final printed labeling before you release the product for shipment with the new labeling. Products shipped after 12 months from the date of this amendment must bear the new revised label. Your release for shipment of the product bearing the amended label constitutes acceptance of these conditions. If these conditions are not complied with, the registration will be subject to cancellation in accordance with FIFRA section 6.

Page 2 of 2  
EPA Reg. No. 74530-60  
Decision No. 551426; 563238; 563731

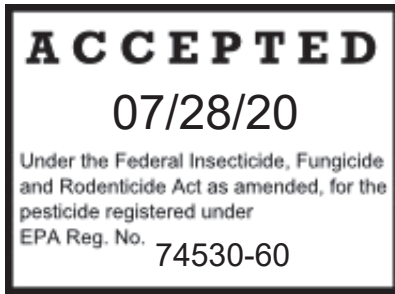
If you have any questions about this letter, please contact Kable Bo Davis by phone at 703-306-0415, or via email at [davis.kable@epa.gov](mailto:davis.kable@epa.gov).

Sincerely,

A handwritten signature in black ink, appearing to be 'MO' followed by a flourish, with the word 'for' written to its right.

Mindy Ondish  
Product Manager 23  
Herbicide Branch  
Registration Division (7505P)  
Office of Pesticide Programs

Enclosure



CHLORIMURON ETHYL	GROUP	2	HERBICIDE
SULFENTRAZONE	GROUP	14	HERBICIDE

## ZONE HERBICIDE

ACTIVE INGREDIENTS:	% BY WT.
Sulfentrazone .....	62.2%
Chlorimuron Ethyl .....	7.8%
OTHER INGREDIENTS: .....	30.0%
TOTAL .....	100.0%

ZONE HERBICIDE 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)

EPA Reg. No. 74530-60  
Net Contents: 10 Pounds

EPA Est. No xxx-xx-xxx

### 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.**

#### 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
- chemical-resistant gloves (Barrier laminate, Butyl rubber > 14 mils, Nitrile rubber > 14 mils, Neoprene rubber > 14 mils, Natural rubber > 14 mils, Polyvinyl chloride >14 mils or Viton > 14 mils)

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:** This product may impact surface water quality due to runoff of rain water. This is especially true for poorly draining soils and soils with shallow ground water. This product is classified as having high potential for reaching surface water via runoff for several months or more after application. A level, well-maintained vegetative buffer strip between areas to which this product is applied and surface water features such as ponds, streams, and springs will reduce the potential loading of chlorimuron-methyl from runoff water and sediment. Runoff of this product will be greatly reduced by avoiding applications when rainfall or irrigation is expected to occur within 48 hours.

**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. Chlorimuron-methyl is known to leach through soil into groundwater under certain conditions as a result of label use. This chemical may leach into groundwater if used in areas where soils are permeable, particularly where the water table is shallow.

### Runoff Prevention

To protect the environment, do not allow pesticide to enter or run off into storm drains, drainage ditches, gutters or surface waters. Applying this product in calm weather when rain is not predicted for the next 24 hours will help to ensure that wind or rain does not blow or wash pesticide off the treatment area. Rinsing application equipment over the treated area will help avoid run off to water bodies or drainage systems.

### Windblown Soil Particles

Understanding the risks associated with the application of ZONE HERBICIDE essential to aid in preventing off-site injury to desirable vegetation and agricultural crops. The risk of off-site movement both during and after application may be affected by a number of site specific factors such as the nature, texture and stability of the soil, the intensity and direction of prevailing winds, vegetative cover, site slope, rainfall, drainage patterns, and other local physical and environmental conditions. A careful evaluation of the potential for off-site movement from the intended application site, including movement of treated soil by wind or water erosion, must be made prior to using ZONE HERBICIDE. This evaluation is particularly critical where desirable vegetation or crops are grown on neighboring land for which the use of ZONE HERBICIDE is not labeled. If prevailing local conditions may be expected to result in off-site movement and cause damage to neighboring desirable vegetation or agricultural crops, do not apply ZONE HERBICIDE.

Leave treated soil undisturbed to reduce the potential for ZONE HERBICIDE movement by soil erosion due to wind or water.

Before applying ZONE HERBICIDE the user must read and understand all label directions, precautions and restrictions completely, including these requirements for a site specific evaluation. If you do not understand any of the instructions or precautions on the label, or are unable to make a site specific evaluation yourself, consult your local agricultural dealer, cooperative extension service, land managers, professional consultants, or other qualified authorities familiar with the area to be treated. If you still have questions regarding the need for site specific considerations, please call HELM Agro US Inc.

## 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.

**This product may only be used to control weeds listed on this label in use sites on this label.**

## 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 ZONE 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 ZONE HERBICIDE, consideration should be given to crop rotation plans.** Crops other than soybeans may be extremely sensitive to low concentrations of ZONE HERBICIDE remaining in the soil the next planting season. Choice of rotation crop is restricted following application of ZONE 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 ZONE 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 ZONE 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**

ZONE 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 ZONE 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 ZONE HERBICIDE use geography can be found within the label.

**ROTATIONAL GUIDELINES FOR ALL ZONE HERBICIDE APPLICATIONS**

The table below describes the minimum length in months from the time of ZONE HERBICIDE application until ZONE 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 8 for additional information*

Crop	<b>Rotation Interval A</b> 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)	<b>Rotation Interval B</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>3</sup>	Anytime	Anytime
Wheat, Barley, Rye	4	4
Oats	12	18 <sup>4</sup>
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 8 for additional information*

Crop	<b>Rotation Interval A</b> All States, all pH's except those listed in column B	<b>Rotation Interval B</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>3</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 ZONE 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 ZONE 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 ZONE HERBICIDE application are the result of crop injury concerns. The crops should be planted with a successful bioassay.

## BIOLOGICAL ACTIVITY

ZONE 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. ZONE 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 ZONE 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 ZONE HERBICIDE 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
	Ragweed, giant*



Ivyleaf	Senna, Coffee
Entireleaf	Smartweed (annual)
Pitted*	Spurge, Spotted
Smallflower	Sunflower, wild
Tall	
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.

ZONE HERBICIDE will provide partial control of the following weeds when used as directed:

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

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

## APPLICATION GUIDELINES

### SPRAY DRIFT

#### Ground Boom Applications

- When using ground application equipment, apply with nozzle height no more than 2 feet above the ground or crop canopy.
- Applicators are required to use an Extremely Coarse droplet size (ASABE S572.1).
- Do not apply when wind speeds exceed 10 miles per hour at the application site.
- Do not apply during temperature inversions.
- When tank mixed with a contact burndown herbicide, ground applicators must use a minimum spray volume of 15 gallons 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 Applications

- Aerial application is allowed only when environmental conditions prohibit ground application.
- When applying aerially to crops, do not release spray at a height greater than 10 ft above the crop canopy, unless a greater application height is necessary for pilot safety.
- Applicators are required to use an Extremely Coarse droplet size (ASABE S572.1).
- When applying to crops via aerial application equipment, the spray boom must be mounted on the aircraft so as to minimize drift caused by wing tip or rotor blade vortices. The boom length must not exceed 75% of the wingspan or 90% of the rotor blade diameter.
- When applying to crops via aerial application equipment, applicators must use ½ swath displacement upwind at the downwind edge of the field.
- Nozzles must be oriented so the spray is directed toward the back of the aircraft.
- Do not apply when wind speeds exceed 10 miles per hour at the application site.

- Do not apply during temperature inversions.
- Apply a minimum of five (5) gallons of finished spray per acre.

## **SPRAY DRIFT ADVISORIES**

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.

### **IMPORTANCE OF DROPLET SIZE**

The most effective way to reduce drift potential is to apply large droplets. 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 – Ground Boom**

- 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.
- Ground applicators must use a minimum finished spray volume of 10 gallons per acre.

#### **Controlling Droplet Size – Aircraft**

- Number of Nozzles - Use the minimum number of nozzles with the highest flow rate that provide uniform coverage.
- Nozzle Orientation - Orienting nozzles so that the spray is emitted backwards, parallel to the airstream will produce larger droplets than other orientations. **AVOIDING SPRAY DRIFT IS THE RESPONSIBILITY OF THE APPLICATOR.**
- Nozzle Type - Solid stream nozzles (such as disc and core with swirl plate removed) oriented straight back produce larger droplets than other nozzle types.
- Boom Length - Longer booms increase drift potential. Therefore, a shorter boom length is recommended.
- Application Height - Application more than 10 ft. above the canopy increases the potential for spray drift.

## **BOOM HEIGHT**

Setting the boom at the lowest referenced 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 APPLICATIONS DURING GUSTY OR WINDLESS CONDITIONS.**

Note: Local terrain can influence wind patterns. Every applicator needs to 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.

### **SHIELDED SPRAYERS**

Shielding the boom or individual nozzles can reduce the effects of wind. However, it is the responsibility of the applicator to verify that the shields are preventing drift and not interfering with uniform deposition of the product.

### **POLLINATOR ADVISORY STATEMENT**

This product may adversely impact the forage and habitat of local pollinators, including the monarch butterfly (and its larvae), birds, or bats if reaches non-target areas. Protect pollinators by following label directions to minimize spray drift.

### **PREPARATION OF SPRAY TANK**

Before using ZONE 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 ZONE 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 ZONE HERBICIDE while agitating.
3. Maintain agitation and continue filling tank with water to insure ZONE HERBICIDE is fully dispersed.
4. Before adding any other material ZONE HERBICIDE should be thoroughly mixed with water in the spray tank. Mixing order should be the following: Fill tank half-full and add ZONE HERBICIDE – while continue filling with water add other herbicide(s), recommended spray adjuvant and liquid nitrogen fertilizer if recommended.
5. Apply ZONE 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 ZONE 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 ZONE 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. HELM Agro 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.

### WEED RESISTANCE MANAGEMENT

CHLORIMURON ETHYL	GROUP	2	HERBICIDE
SULFENTRAZONE	GROUP	14	HERBICIDE

Sulfentrazone and chlorimuron ethyl, the active ingredients in this product, are Group 14 and Group 2 herbicides, respectively, based on the mechanism of action classification system of the Weed Science Society of America.

Any weed population may contain plants naturally resistant to Group 14 or Group 2 herbicides. The resistant individuals may dominate the weed population if these herbicides are used repeatedly in the same fields. Appropriate resistance management strategies should be followed.

Consult your local company representative, state cooperative extension agent, professional consultant or other qualified authority to determine appropriate actions for controlling specific resistant weeds.

### Weed Management Practices

Resistant populations arise when rare individual plants are uncontrolled by a normal dose of a given herbicide under normal environmental conditions. In the absence of other control measures these individuals survive, produce seed, and eventually become the dominant biotype in the field through continuous selection.

To delay herbicide resistance take one of the following steps:

- Rotate the use of ZONE HERBICIDE or other Group 14 or Group 2 herbicides within a growing season sequence or among growing seasons with different herbicide groups that control the same weeds in a field.
- Use tank mixtures with herbicides from a different group if such use is permitted; where information on resistance in target weed species is available, use the less resistance-prone partner at a rate that will control the target weed(s) equally as well as the more resistance-prone partner. Consult your local extension service or certified crop advisor if you are unsure as to which active ingredient is currently less prone to resistance.

- Adopt an integrated weed-management program for herbicide use that includes scouting and uses historical information related to herbicide use and crop rotation, and that considers tillage (or other mechanical control methods), cultural (e.g., higher crop seeding rates; precision fertilizer application method and timing to favor the crop and not the weeds), biological (weed-competitive crops or varieties) and other management practices.

Scout for weeds before ZONE HERBICIDE application for identification and growth stage

- Scout after herbicide application to monitor weed populations for early signs of resistance development. Indicators of possible herbicide resistance include: (1) failure to control a weed species normally controlled by the herbicide at the dose applied, especially if control is achieved on adjacent weeds; (2) a spreading patch of non-controlled plants of a particular weed species; (3) surviving plants mixed with controlled individuals of the same species. If resistance is suspected, prevent weed seed production in the affected area by an alternative herbicide from a different group or by a mechanical method such as hoeing or tillage. Prevent movement of resistant weed seeds to other fields by cleaning harvesting and tillage equipment when moving between fields, and planting clean seed.
- If weed pest population continues to progress after treatment with this product, discontinue use of this product, and switch to another management strategy or herbicide with a different mode of action, if available.
- Contact your local extension specialist or certified crop advisors for additional pesticide resistance-management and/or integrated weed-management recommendations for specific crops and weed biotypes.
- For further information or to report suspected resistance, contact your HELM Agro representative at 813-621-8846.

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

#### **USE RESTRICTIONS**

- Apply ZONE 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 ZONE HERBICIDE in CO, WY, ND, NY or SD at any rate. Do not apply ZONE 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 ZONE HERBICIDE with a post-emergence application of another chlorimuron-ethyl containing herbicide in the same cropping season.
- Do not apply ZONE 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 ZONE HERBICIDE with organophosphate insecticides. Do not apply ZONE 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 ZONE HERBICIDE from **Rate Table 1** or **Table 2**.

**Use of ZONE HERBICIDE on soils which exceed pH 6.8 may result in unacceptable injury to the following crop. ZONE 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 HELM Agro 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 ZONE HERBICIDE more than once per season.
- Split application: Two applications totaling the full labeled rate of ZONE HERBICIDE (see Table 1) may be made per season.
- Do not apply ZONE HERBICIDE after the soybean crop has emerged or severe injury or death of the crop may occur. ZONE HERBICIDE may be applied by any of the methods listed below.
- DO NOT** apply more than 9.6 ounces (0.42 lb active) per acre of ZONE HERBICIDE in a single application.
- DO NOT** make more than two applications of ZONE HERBICIDE per acre per 12 month period. The maximum allowable ZONE HERBICIDE use rate in this 12 month period is 9.6 ounces (0.42 lb active) per acre. The twelve month period is considered to begin upon the initial Zone application.

#### **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 ZONE 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; ZONE 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 ZONE HERBICIDE after the soybean crop has emerged or severe injury or death of the crop may occur. ZONE HERBICIDE may be applied by any of the methods listed below.

### CONSERVATION TILLAGE

#### Early Pre-Plant in No-Till, Minimum Till, or Stale Seedbed

ZONE 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. ZONE 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 ZONE 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

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

### PRE-PLANT INCORPORATED

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

ZONE 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 COC, 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**

ZONE 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, ZONE 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 SPRAY DRIFT section.

**LIMITATION OF WARRANTY AND DAMAGES**

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