

Sale, use, and distribution of this product in Nassau and Suffolk Counties in the State of New York is prohibited.

GROUP 15 27 HERBICIDES



# Zemax<sup>TM</sup>

## Selective Herbicide



syngenta®

A Preemergence and Postemergence Herbicide for Control of Annual Grass and Broadleaf Weeds in Field Corn, Seed Corn, Sweet Corn, Yellow Popcorn and Grain Sorghum

**Active Ingredients\*:**

S-metolachlor: (CAS No. 87392-12-9)	36.80%
Mesotrione: (CAS No. 104206-82-8)	3.68%
Other Ingredients:	59.52%
<b>Total:</b>	<b>100.00%</b>

\*Active ingredients per gallon: S-metolachlor 3.34 pounds, mesotrione 0.33 pounds.

**KEEP OUT OF REACH OF CHILDREN.**  
**CAUTION**

See additional precautionary statements and directions for use inside booklet.

**EPA Reg. No. 100-1410**

**SCP 1410A-L1 1111**  
**356264**



TM

<b>FIRST AID</b>	
<b>If in eyes</b>	<ul style="list-style-type: none"> <li>• Hold eye open and rinse slowly and gently with water for 15-20 minutes.</li> <li>• Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye.</li> <li>• Call a poison control center or doctor for treatment advice.</li> </ul>
<b>If swallowed</b>	<ul style="list-style-type: none"> <li>• Call a poison control center or doctor immediately for treatment advice.</li> <li>• Have person sip a glass of water if able to swallow.</li> <li>• Do not induce vomiting unless told to do so by the poison control center or doctor.</li> <li>• Do not give anything by mouth to an unconscious person.</li> </ul>
<b>If on skin or clothing</b>	<ul style="list-style-type: none"> <li>• Take off contaminated clothing.</li> <li>• Rinse skin immediately with plenty of water for 15-20 minutes.</li> <li>• Call a poison control center or doctor for treatment advice.</li> </ul>
<b>If inhaled</b>	<ul style="list-style-type: none"> <li>• Move person to fresh air.</li> <li>• If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth-to-mouth, if possible.</li> <li>• Call a poison control center or doctor for further treatment advice.</li> </ul>
Have the product container or label with you when calling a poison control center or doctor, or going for treatment.	
<b>HOT LINE NUMBER</b> For 24 Hour Medical Emergency Assistance (Human or Animal) or Chemical Emergency Assistance (Spill, Leak, Fire or Accident), Call <b>1-800-888-8372</b>	

## PRECAUTIONARY STATEMENTS

### Hazards to Humans and Domestic Animals

#### CAUTION

Causes moderate eye irritation. Avoid contact with eyes or clothing. Wear protective eyewear. Remove and wash contaminated clothing before reuse. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco or using the toilet.

#### Personal Protective Equipment (PPE)

Some materials that are chemical resistant to this product are listed below. If you want more options, follow the instructions for Category A on an EPA chemical resistance category selection chart.

#### Mixers, Loaders, Applicators and other handlers must wear:

- Protective eyewear
- Long-sleeved shirt and long pants
- Chemical-resistant gloves - Category A (e.g. barrier laminate, butyl rubber  $\geq 14$  mils, nitrile rubber  $\geq 14$  mils, neoprene rubber  $\geq 14$  mils, natural rubber  $\geq 14$  mils, polyethylene, polyvinyl chloride (PVC)  $\geq 14$  mils or Viton<sup>®</sup>  $\geq 14$  mils)
- Shoes plus socks

Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

#### User Safety Recommendations

##### Users should:

- Wash hands 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.

### **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 170.240(d)(4-6)], the handler PPE requirements may be reduced or modified as specified in the WPS.

### **Environmental Hazards**

For terrestrial uses: Do not apply directly to water, to areas where surface water is present, or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment wash water or rinsate.

### **Ground Water Advisory**

The active ingredient, S-metolachlor, has the potential to leach through soil into ground water under certain conditions as a result of agricultural use. Use of this product in areas where soils are permeable, particularly where the water table is shallow, may result in ground water contamination.

### **Surface Water Advisory**

The active ingredients in this product have the potential to contaminate surface water through ground spray drift. Under some conditions, the active ingredients may also have a high potential for runoff into surface water (primarily via dissolution in runoff water) for several months post-application. These include poorly drained or wet soils with readily visible slopes toward adjacent surface waters, frequently flooded areas, areas overlaying extremely shallow ground water, 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 overlaying tile drainage systems that drain to surface water.

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 for contamination of water from runoff. Runoff of this product will be reduced by avoiding applications when rainfall is forecasted to occur within 48 hours. Sound erosion control practices will reduce this product's contribution to surface water contamination.

## **PRECAUTIONARY STATEMENTS *(continued)***

### **Mixing/Loading Instructions**

Care must be taken when using this product to prevent back siphoning into wells, spills, or improper disposal of excess pesticide, spray mixtures, or rinsates.

Check valves or antisiphoning devices must be used on mixing equipment.

This product may not be mixed/loaded or used within 50 ft. of wells, including abandoned wells, drainage wells, and sink holes. Operations that involve mixing, loading, rinsing, or washing of this product into or from pesticide handling or application equipment or containers within 50 ft. 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 wash water, and rain water 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-specified minimum containment capacities do not apply to vehicles when delivering pesticide shipments to the mixing/loading site.

### **Physical and 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, presence of other materials or other influencing factors in the use of the product, which are beyond the control of SYNGENTA CROP PROTECTION, LLC or Seller. To the extent permitted by applicable law, Buyer and User agree to hold SYNGENTA and Seller harmless for any claims relating to such factors.

SYNGENTA warrants that this product conforms to the chemical description on the label and is reasonably fit for the purposes stated in the Directions for Use, subject to the inherent risks referred to above, when used in accordance with directions under normal use conditions. To the extent permitted by applicable law: (1) this warranty does not extend to the use of the product contrary to label instructions or under conditions not reasonably foreseeable to or beyond the control of Seller or SYNGENTA, and, (2) Buyer and User assume the risk of any such use. To the extent permitted by applicable law, SYNGENTA MAKES NO WARRANTIES OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE NOR ANY OTHER EXPRESS OR IMPLIED WARRANTY EXCEPT AS WARRANTED BY THIS LABEL.

To the extent permitted by applicable law, in no event shall SYNGENTA be liable for any incidental, consequential or special damages resulting from the use or handling of this product. **TO THE EXTENT PERMITTED BY APPLICABLE LAW, THE EXCLUSIVE REMEDY OF THE USER OR BUYER, AND THE EXCLUSIVE LIABILITY OF SYNGENTA 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 SYNGENTA OR SELLER, THE REPLACEMENT OF THE PRODUCT.**

SYNGENTA and Seller offer this product, and Buyer and User accept it, subject to the foregoing Conditions of Sale and Limitation of Warranty and Liability, which may not be modified except by written agreement signed by a duly authorized representative of SYNGENTA.

## 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 24 hours.** Exception: If the product is soil-injected or soil-incorporated, the Worker Protection Standard, under certain circumstances, allows workers to enter the treated area if there will be no contact with anything that has been treated.

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 and water, wear:

- Protective eyewear
- Coveralls
- Chemical-resistant gloves - Category A (e.g. barrier laminate, butyl rubber ≥14 mils, nitrile rubber ≥14 mils, neoprene rubber ≥14 mils, natural rubber ≥14 mils, polyethylene, polyvinyl chloride (PVC) ≥14 mils or Viton ≥14 mils), and
- Shoes and socks

**FAILURE TO FOLLOW THE DIRECTIONS FOR USE AND PRECAUTIONS ON THIS LABEL MAY RESULT IN POOR WEED CONTROL, CROP INJURY, OR ILLEGAL RESIDUES.**

Note: It is illegal to sell, use or distribute this product within, or into, Nassau County or Suffolk County, New York.

## PRODUCT INFORMATION

Zemax is used in field corn and seed corn for preemergence and early postemergence control of many annual grass and broadleaf weeds.

Zemax is also used in yellow popcorn, sweet corn and grain sorghum for preemergence control of many annual grass and broadleaf weeds.

See Tables 1 and 2 for a list of weeds controlled. This product must be used prior to weed emergence to effectively control most grass weeds.

Applied according to use directions and under normal growing conditions, Zemax will not harm the treated crop. During germination and early stages of growth, environmental conditions or other factors that favor poor or slow growth can weaken crop seedlings. Zemax used under these conditions can result in crop injury.

### Use Restrictions and Precautions

1. Do not apply this product through any type of irrigation system.
2. Do not use flood irrigation to apply or incorporate this product.
3. Do not use aerial application to apply Zemax.
4. Do not contaminate irrigation water used for non-labeled crops or water used for domestic purposes.
5. Do not apply under conditions which favor runoff or wind erosion of soil containing this product to non-target areas.
6. To prevent off-site movement due to runoff or wind erosion:
  - a. Avoid treating powdery dry or light sandy soils when conditions are favorable for wind erosion. Under these conditions, the soil surface should first be settled by rainfall or irrigation.
  - b. Do not apply to impervious substrates such as paved or highly compacted surfaces or frozen or snow covered soils.



## **Resistance Management**

Zemax is a combination of mesotrione and S-metolachlor (Group 15 and 27 Herbicides).

Naturally occurring biotypes of certain broadleaf weed species with resistance to triazines, ALS, PPO, Glycine (glyphosate) and HPPD herbicides are known to exist. If biotypes of weeds resistant to triazines, ALS, PPO and glycine inhibitors are present in the field, this herbicide should control them if they are listed in Tables 1 and 2.

To reduce the risk of weeds developing resistance to HPPD inhibitors, implement a program including both preemergence and postemergence herbicides that provide effective control of all weeds using multiple modes of action. Consider weed resistance management strategies that includes two or more modes of action where a minimum of two modes of action are effective at controlling the target weed when either are applied alone. Scout fields and eliminate weed escapes. Read and follow all label recommendations.

Zemax Herbicide contains two herbicide active ingredients and two modes of action and can be an effective component of a weed resistance management strategy.

## **Integrated Pest (Weed) Management**

Zemax may be integrated into an overall weed and pest management strategy. Practices known to reduce weed development (tillage, crop competition) and herbicide use (weed scouting, proper application timing, banding and rotations) should be followed wherever possible. Consult local agricultural and weed authorities for additional Integrated Pest Management strategies established for your area.

# **APPLICATION INFORMATION**

## **Ground Application**

Spray nozzles should be uniformly spaced, the same size and type, and should provide accurate and uniform application. Use spray nozzles that deliver medium to coarse droplet size to provide good coverage and avoid drift.

Ensure that all in-line strainer and nozzle screens in the sprayer are 50-mesh or coarser.

Always ensure that agitation is maintained until spraying is completed, even if stopped for brief periods of time. If the agitation is stopped for more than 5 minutes, resuspend the spray solution by running on full agitation prior to spraying.

### **Preemergence Applications**

Apply Zemax preemergence with a carrier volume of 10-80 gals./A.

### **Postemergence Applications**

Good weed coverage is essential for optimum weed control. Apply in a spray volume of 10-30 gals./A. When weed foliage is dense, use a minimum spray volume of 20 gals/A. Flat fan nozzles are recommended for optimum postemergence coverage. Do not use floodjet or venturi type nozzles or controlled droplet application equipment for postemergence applications. Use only clean water as the carrier when applying Zemax after crop emergence.

### **Aerial Application**

Do not use aerial application to apply Zemax.

### **Spray Drift**

AVOIDING SPRAY DRIFT AT THE APPLICATION SITE IS THE RESPONSIBILITY OF THE APPLICATOR. The interaction of equipment and weather related factors determine the potential for drift. The applicator is responsible for considering these factors when making an application decision.

Do not apply when weather conditions may cause drift to non-target areas. Drift may result in injury to adjacent crops and vegetation. To avoid spray drift, DO NOT apply when the wind speed is greater than 10 mph or during periods of temperature inversions.

Leave a sufficient buffer to avoid drift to sensitive crops. This buffer may be untreated corn rows or field border species maintained for this purpose. The width of the buffer needed for a specific application will depend on the wind speed, distance to sensitive crops, and application equipment parameters.

### **Information on Droplet Size**

The most effective way to reduce spray drift potential is to apply larger droplets. The best drift management strategy is to apply the largest droplets that provide sufficient coverage and control. Applying larger droplets reduces drift potential, but will not prevent drift if applications are made improperly, or under unfavorable environmental conditions.

### **Controlling Droplet Size**

1. Application Volume - Use high flow rate nozzles to apply the highest practical spray volume. Nozzles with higher rated flows produce larger droplets.
2. Pressure - Do not exceed the nozzle manufacturer's recommended pressures. For many nozzle types, lower pressure produces larger droplets. When higher flow rates are needed, use higher rate nozzles instead of increasing pressure.
3. Number of Nozzles - Use the minimum number of nozzles that provide uniform coverage.

### **Application Height**

Applications should be made at the lowest height above the target area that still provides uniform coverage of the target. Making applications at the lowest yet effective height reduces exposure of droplets to wind.

### **Sensitive Areas**

Zemax herbicide should only be applied when the potential for drift to adjacent sensitive areas (e.g., residential areas, bodies of water, known habitat for threatened or endangered species, nontarget crops) is minimal (e.g., when wind is blowing away from the sensitive areas).

## **ADDITIVES**

### **Applications After Corn Has Emerged**

When applying Zemax postemergence to corn, add either a non-ionic surfactant (NIS) or crop oil concentrate (COC). When using a NIS, add at 0.25% v/v (1 qt./100 gals.). When using a COC, add at a rate of 1% v/v (1 gal./100 gals.) or the equivalent of 1 gal./100 gals. The use of COC will provide more consistent weed control than an NIS but may also result in temporary crop injury.

In addition to NIS or COC, a nitrogen based adjuvant may also be added to increase consistency of weed control. The use of nitrogen based adjuvants (AMS or UAN) will increase the risk of crop injury and can result in temporary crop injury.

Do not use methylated seed oil (MSO) with Zemax when applied alone to emerged field corn, or when Zemax is applied as a post-emergence tank mixture with other products.

## **Applications Prior to Corn Emergence**

Any of the adjuvants may be used at a preemergence or preplant timing, i.e. where the corn crop has not yet emerged, to increase burndown activity on existing weeds.

## **MIXING PROCEDURES**

Either water or liquid fertilizers excluding suspension fertilizers may be used as carriers for preemergence applications. If fluid fertilizers are used, a compatibility test must be done. Even if Zemax is physically compatible with a fluid fertilizer, constant agitation is necessary to maintain a uniform mixture during application. Use only clean water as the carrier when applying Zemax after crop emergence.

The spray tank must be clean, thoroughly rinsed and decontaminated before adding either Zemax alone or with tank-mix partners. If water is used as the carrier, use clean water.

Always refer to labels of other pesticide products for mixing directions and precautions which may differ from those outlined here. Use in accordance with the most restrictive of label limitations and precautions. No label dosage rates should be exceeded. This product cannot be mixed with any product containing a label prohibition against such mixing. Do not tank mix Zemax with any other insecticide, fungicide, fertilizer solution, or adjuvant not recommended on the label without testing compatibility, as poor mixing may result. It is recommended that the compatibility of any tank-mix combination be tested on a small scale such as a jar test before actual tank mixing.

### **Use the Following Mixing Instructions for Adding Zemax to the Spray Tank**

1. Only use sprayers in good operating condition with adequate agitation. Ensure the sprayer is cleaned according to instructions on label of the product used prior to use of Zemax.
2. Begin to fill sprayer tank or premix tank with clean water and engage agitator. Agitation must be continued throughout the entire mixing and spraying procedure.
3. When the sprayer or premix tank is half full of water, begin to add the mixture components
4. If ammonium sulfate (AMS) is used, continue agitation until completely dispersed.

5. If a wettable powder or dry flowable formulation is used, add it slowly to the tank. Mixing and compatibility may be improved when a wettable powder or dry flowable is diluted with water before adding to the tank. Agitate during the procedure.
6. If a flowable formulation is used, add slowly to the tank.
7. Add Zemax slowly to the tank.
8. Add any other liquid tank-mix products next with emulsifiable concentrates last.
9. Add an adjuvant last, if needed.
10. Complete filling the sprayer tank and continue agitation.
11. Apply as soon as possible after spray mixture is prepared. Do not leave mixture in spray tank overnight without agitation.

If Zemax is added to the spray tank via induction, compatibility may be compromised. If an induction tank (or similar equipment) is used, add each product separately and allow each to disperse into the spray tank before adding the next product. For best tank-mix compatibility, rinse the induction tank with water before adding each component.

It is recommended that Zemax not be added to the spray tank via in-line injection.

### **Compatibility Test**

A compatibility test is recommended before tank mixing to ensure compatibility of Zemax with fertilizer carriers or other pesticides. The following test assumes a spray volume of 25 gals./A. For other spray volumes, make appropriate changes in the ingredients.

Nitrogen solutions or complete liquid fertilizers, excluding suspension fertilizers, may replace all or part of the water in the spray. Because liquid fertilizers vary, even within the same analysis, always check compatibility with pesticide(s) before use. Incompatibility of tank mixtures is more common with mixtures of fertilizer and pesticides.

### **Compatibility Test Procedure**

1. Add 1.0 pt. of carrier (fertilizer or water) to each of two 1 qt. jars with tight lids. Use the same source of water that will be used for the tank mix and conduct the test at the temperature the tank mix will be applied.
2. To one of the jars, add ¼ tsp. or 1.2 milliliters of a compatibility agent approved for this use (¼ tsp. is equivalent to 2.0 pts./100 gals. spray). Shake or stir gently to mix.

3. To both jars, add the appropriate amount of pesticide(s) in their relative proportions based on recommended label rates. If more than one pesticide is used, add them separately as described in the Mixing Procedures section of this label. After each addition, shake or stir gently to thoroughly mix.
4. After adding all ingredients, put lids on and tighten, and invert each jar ten times to mix. Let the mixtures stand 15-30 minutes and then look for separation, large flakes, precipitates, gels, heavy oily film on the jar, or other signs of incompatibility. Determine if the compatibility agent is needed in the spray mixture by comparing the two jars. If either mixture separates, but can be remixed readily, the mixture can be sprayed as long as good agitation is used. If the mixtures are incompatible, test the following methods of improving compatibility: (a) slurry the dry pesticide(s) in water before addition, or (b) add  $\frac{1}{2}$  the compatibility agent to the fertilizer or water and the other  $\frac{1}{2}$  to the emulsifiable concentrate or flowable pesticide before addition to the mixture. If incompatibility is still observed, do not use the mixture.
5. After compatibility testing is complete, dispose of any pesticide wastes in accordance with the Storage and Disposal section in this label.

### **Cleaning Equipment After Application**

Special attention must be given to cleaning equipment before spraying a crop other than field corn. Mix only as much spray solution as needed.

### **Equipment Cleaning Procedure**

1. Flush tank, hoses, boom, and nozzles with clean water.
2. Prepare a cleaning solution of 1 gal. of household ammonia per 25 gals. of water. Many commercial spray tank cleaners may be used.
3. Use a pressure washer to clean the inside of the spray tank with this solution. Take care to wash all parts of the tank, including the inside top surface. If a pressure washer is not available, completely fill the sprayer with the cleaning solution to ensure contact of the cleaning solution with all internal surfaces of the tank and plumbing. Start agitation in the sprayer and thoroughly recirculate the cleaning solution for at least 15 minutes. All visible deposits must be removed from the spraying system.
4. Flush hoses, spray lines, and nozzles for at least 1 minute with the cleaning solution.

5. Remove boom end caps and flush dead space areas, with water, then replace caps.
6. Dispose of rinsate from steps 1-5 in an appropriate manner, according to all local State and federal regulations.
7. Repeat steps 2-6.
8. Remove nozzles, screens, and strainers and clean separately in the ammonia solution after completing the above procedures.
9. Rinse the complete spraying system with clean water.

## WEEDS CONTROLLED

Zemax applied as directed in this label will control or suppress the weeds listed in Tables 1 and 2. Optimum weed control will be obtained if Zemax is applied according to all label directions.

If a significant rainfall does not occur within 7 days after a preemergence application, weed control may be decreased.

When weeds are stressed or not actively growing due to drought, heat, lack of fertility, flooding, or prolonged cool temperatures, postemergence control can be reduced or delayed.

**Table 1. Weeds Controlled or Partially Controlled Preemergence by Zemax**

Common Name	Scientific Name	C = Control PC = Partial Control
Amaranth, Palmer	<i>Amaranthus palmeri</i>	C
Amaranth, Powell	<i>Amaranthus powellii</i>	C
Barnyardgrass	<i>Echinochloa crus-galli</i>	C
Buffalobur	<i>Solanum rostratum</i>	C
Carpetweed	<i>Mollugo verticillata</i>	C
Cocklebur, common	<i>Xanthium strumarium</i>	PC
Crabgrass, large	<i>Digitaria sanguinalis</i>	C
Crowfootgrass	<i>Dactyloctenium aegyptium</i>	C
Cupgrass, prairie	<i>Eriochloa contracta</i>	C
Cupgrass, Southwestern	<i>Eriochloa acuminata</i>	C
Cupgrass, woolly	<i>Eriochloa villosa</i>	PC

Common Name	Scientific Name	C = Control PC = Partial Control
Foxtail, giant	<i>Setaria faberi</i>	C
Foxtail, green	<i>Setaria viridis</i>	C
Foxtail, robust (purple, white)	<i>Setaria viridis</i>	C
Foxtail, yellow	<i>Setaria pumila</i>	C
Galinsoga	<i>Galinsoga parviflora</i>	C
Goosegrass	<i>Eleusine indica</i>	C
Jimsonweed	<i>Datura stramonium</i>	C
Johnsongrass, seedling	<i>Sorghum halepense</i>	PC
Kochia	<i>Kochia scoparia</i>	PC
Lambsquarters, common	<i>Chenopodium album</i>	C
Millet, foxtail	<i>Setaria italica</i>	C
Millet, wild proso	<i>Panicum miliaceum</i>	PC
Morningglory, ivyleaf	<i>Ipomoea hederacea</i>	PC
Morningglory, entireleaf	<i>Ipomoea hederacea</i>	PC
Nightshade, black	<i>Solanum nigrum</i>	C
Nightshade, Eastern black	<i>Solanum ptycanthum</i>	C
Nightshade, hairy	<i>Solanum sarachoides</i>	C
Nutsedge, yellow	<i>Cyperus esculentus</i>	C
Panicum, browntop	<i>Panicum fasciculatum</i>	C
Panicum, fall	<i>Panicum dichotomiflorum</i>	C
Panicum, Texas	<i>Panicum texanum</i>	PC
Pigweed, redroot	<i>Amaranthus retroflexus</i>	C
Pigweed, smooth	<i>Amaranthus hybridus</i>	C
Purslane, common	<i>Portulaca oleracea</i>	C

continued...



**Table 1. Weeds Controlled or Partially Controlled Preemergence by Zemax (continued)**

Common Name	Scientific Name	C = Control PC = Partial Control
Pusley, Florida	<i>Richardia scabra</i>	C
Ragweed, common	<i>Ambrosia artemisiifolia</i>	PC
Ragweed, giant	<i>Ambrosia trifida</i>	PC
Rice, red	<i>Oryza sativa</i>	C
Sandbur, field	<i>Cenchrus incertus</i>	PC
Shattercane	<i>Sorghum bicolor</i>	PC
Sida, prickly	<i>Sida spinosa</i>	PC
Signalgrass, broadleaf	<i>Brachiaria platyphylla</i>	PC
Smartweed, ladythumb	<i>Polygonum persicaria</i>	C
Smartweed, Pennsylvania	<i>Polygonum pennsylvanicum</i>	C
Sprangletop, red	<i>Leptochloa filiformis</i>	C
Velvetleaf	<i>Abutilon theophrasti</i>	C
Waterhemp, common	<i>Amaranthus rudis</i>	C
Waterhemp, tall	<i>Amaranthus tuberculatus</i>	C
Witchgrass	<i>Panicum capillare</i>	C

**Table 2: Weeds Controlled or Partially Controlled by Early Postemergence Applications of Zemax**

Zemax applied early postemergence will provide control or partial control of small emerged broadleaf weeds (less than 3 inches) but will not provide consistent or effective control of weeds identified as resistant to postemergence HPPD inhibitors.

Common Name	Scientific Name	C = Control PC = Partial Control
Amaranth, Palmer	<i>Amaranthus palmeri</i>	C
Amaranth, Powell	<i>Amaranthus powellii</i>	C
Buffalobur	<i>Solanum rostratum</i>	C
Carpetweed	<i>Mollugo verticillata</i>	C
Cocklebur, common	<i>Xanthium strumarium</i>	C
Dandelion	<i>Taraxacum officinale</i>	PC
Galinsoga	<i>Galinsoga parviflora</i>	C
Hemp	<i>Cannabis sativa</i>	C
Horsenettle	<i>Solanum carolinense</i>	C
Horseweed (marestail)	<i>Conyza canadensis</i>	C
Jimsonweed	<i>Datura stramonium</i>	C
Kochia	<i>Kochia scoparia</i>	PC
Lambsquarters, common	<i>Chenopodium album</i>	C
Morningglory, entireleaf	<i>Ipomoea hederacea</i>	PC
Morningglory, ivyleaf	<i>Ipomoea hederacea</i>	PC
Mustard, wild	<i>Brassica kaber</i>	C
Nightshade, black	<i>Solanum nigrum</i>	C
Nightshade, Eastern black	<i>Solanum ptycanthum</i>	C
Nightshade, hairy	<i>Solanum sarachoides</i>	C
Nutsedge, yellow	<i>Cyperus esculentus</i>	PC
Pigweed, redroot	<i>Amaranthus retroflexus</i>	C

continued...

**Table 2: Weeds Controlled or Partially Controlled by Early Postemergence Applications of Zemax (continued)**

Common Name	Scientific Name	C = Control PC = Partial Control
Pigweed, smooth	<i>Amaranthus hybridus</i>	C
Pokeweed	<i>Phytolacca americana</i>	C
Potatoes, volunteer	<i>Solanum</i> spp.	C
Purslane, common	<i>Portulaca oleracea</i>	PC
Pusley, Florida	<i>Richardia scabra</i>	C
Ragweed, common	<i>Ambrosia artemisiifolia</i>	C
Ragweed, giant	<i>Ambrosia trifida</i>	C
Sida, prickly	<i>Sida spinosa</i>	PC
Smartweed, ladythumb	<i>Polygonum persicaria</i>	C
Smartweed, Pennsylvania	<i>Polygonum pennsylvanicum</i>	C
Thistle, Canada	<i>Cirsium arvense</i>	PC
Velvetleaf	<i>Abutilon theophrasti</i>	C
Waterhemp, common	<i>Amaranthus rudis</i>	C
Waterhemp, tall	<i>Amaranthus tuberculatus</i>	C

## ROTATIONAL CROPS

When Zemax is applied as directed on this label, follow the crop rotation intervals in Table 3. If Zemax is tank mixed with other products, follow the most restrictive product's crop rotation interval.

**Table 3. Crop Rotational Intervals**

Crop	Rotational Interval <sup>1</sup>
All corn types and grain sorghum <sup>2</sup>	Anytime
Cereals (barley, oats, rye, wheat)	4.5 months
Cotton, peanuts, potatoes, and soybeans	The spring following application
Beans (dry and snap), cucurbits, peas, red clover, sugar beets, tomatoes and all other rotational crops	18 months

<sup>1</sup>Time between Zemax application and replanting of the rotational crop

<sup>2</sup>Grain sorghum must be seed treated with a safener to tolerate S-metolachlor

## **CORN USE DIRECTIONS**

Apply Zemax for preemergence control of many annual grass and broadleaf weeds in field corn, seed corn, sweet corn and yellow popcorn. Zemax may also be applied early postemergence for the control of broadleaf weeds in field corn and seed corn. Do not apply Zemax to yellow popcorn or sweet corn after the crop has emerged, or crop injury may occur. Refer to Tables 1 and 2 for a list of weeds controlled or partially controlled by Zemax.

### **Zemax Application Timings**

#### **Burndown for Reduced Tillage Situations**

In reduced or no-till corn and before the crop has emerged, Zemax can be applied alone or in tank mixture with Gramoxone Inteon, Touchdown brands, Roundup brands or other registered herbicide for burndown of existing weeds. Refer to Tables 1 and 2 for specific weeds controlled by Zemax. Read and follow all product labels for specific use directions and information on weeds controlled. Refer to the **ADDITIVES** and **TANK MIX** sections on this label for additional recommendations.

### Early Preplant and Preemergence

Zemax may be applied early preplant (up to 14 days prior to planting) or preemergence in field corn, seed corn, sweet corn and yellow popcorn.

### Postemergence

Zemax may be applied in field or seed corn after emergence until the plants reach 30 inches in height or up to the 8-leaf stage of corn growth. Use only clean water as the carrier when applying Zemax after crop emergence. Do not apply postemergence in liquid fertilizer or severe crop injury will occur. Do not apply Zemax to emerged yellow popcorn or sweet corn, or severe crop injury may occur. Refer to the **ADDITIVES** section on this label for burndown adjuvant recommendations.

### Zemax Use Rates

Apply Zemax at a rate of 2.0-2.4 qts./A for control or partial control of the weeds listed in Tables 1 and 2. The soil organic matter content of the field on which Zemax is to be applied must be known.

**Table 4. Zemax Use Rates in Corn**

% Organic Matter	Zemax Use Rate
<3%	2.0 qts./A
≥3%	2.4 qts./A

Zemax is not recommended on soils with greater than 10% organic matter or poor weed control may result.

### Tank-Mix Combinations

#### Preemergence (Applied Before the Crop has Emerged)

Tank-mix partners listed in Table 5 may be used in conventional, reduced, or no-till systems and be applied by the same methods and at the same timings as Zemax unless otherwise specified in the tank-mix product label. Follow all tank-mix product labels for use rates and restrictions.

**Table 5: Zemax Tank Mixtures for Preemergence Applications in Corn**

Tank Mix <sup>1</sup>	Objective
AAtrex® or other solo atrazine products	Improved broadleaf and grass weed control
Gramoxone Inteon®	Burndown existing weeds
Metribuzin 75DF or other metribuzin solo products	Improved broadleaf weed control
Princep®	Improved broadleaf and grass weed control
Touchdown® Brands	Burndown existing weeds
Roundup® Brands	Burndown existing weeds
2,4-D	Burndown existing weeds
Warrior II with Zeon Technology®	To control insects, such as cutworm

<sup>1</sup>Refer to tank-mix product label for use rates.

**Early Postemergence (Applied After the Crop has Emerged)**

Tank-mix products listed in Table 6 may be used in conventional, reduced, or no-till systems and be applied by the same methods and at the same timings as Zemax unless otherwise specified in the tank-mix product label. Follow all tank-mix product labels for use rates and restrictions. Perform a compatibility test.

**Table 6: Zemax Tank Mixtures for Postemergence Applications in Field Corn**

<b>Tank Mix<sup>1,2</sup></b>	<b>Objective</b>
AAtrex or other solo atrazine products	Improved broadleaf and annual grass weed control
Accent® Q	Emerged grass control
Basis®	Emerged grass control
Ignite®	See instructions under “Zemax Programs in LibertyLink® Corn” section of this label
NorthStar®	Improved broadleaf and grass weed control
Peak®	Improved broadleaf and grass weed control
Resolve® Q	Emerged grass control
Roundup Brands	See instructions under “Zemax Programs in glyphosate tolerant Corn” section of this label
Spirit®	Improved broadleaf and grass weed control
Status®	Emerged grass control
Steadfast® Q	Emerged grass control
Touchdown Brands	See instructions under “Zemax Programs in glyphosate tolerant Corn” section of this label
Warrior II with Zeon Technology	To control insects, such as cutworm

<sup>1</sup>Refer to tank-mix product label for use rates.

<sup>2</sup>Consult the “Additives” section of this label for recommendations when applying Zemax in tank mixture to emerged field corn.

### **Zemax Programs in Glyphosate Tolerant Corn**

Zemax may be applied early postemergence at a rate down to 1.6 qts./A in tank mixture with a solo glyphosate product (e.g. Touchdown or Roundup brands) that is registered for use over-the-top in glyphosate tolerant field corn (e.g. Roundup Ready or Agrisure® GT Corn). To minimize weed competition with the crop, target the application of this mixture to weeds in the 1 to 2 inch range. If the glyphosate product has a built-in adjuvant system (i.e. the product label does not ask for additional adjuvant), only spray-grade ammonium sulfate (AMS) at 8.5 lbs./100 gal. should be added to this mixture. If the glyphosate product label calls for an adjuvant in addition to AMS, add a non-ionic surfactant (NIS) at 0.25% v/v and AMS to this spray mixture. Do not add urea ammonium nitrate (UAN), crop oil concentrate (COC), or methylated seed oil (MSO) type adjuvants to these mixtures, or crop injury may occur. Follow all directions for use and restrictions on the glyphosate product label.

Alternatively, Zemax may be applied preemergence at a rate down to 1.6 qts./A as part of a two-pass weed control system when followed by a postemergence application of a glyphosate based product in glyphosate tolerant corn (e.g. Roundup Ready or Agrisure GT Corn). When used in this way, Zemax will provide reduced competition of the weeds listed in Table 1 for a period of 30 or more days, thus improving the timing flexibility and effectiveness of the glyphosate based product application. Follow all directions for use and restrictions on the glyphosate product label.

Zemax may be applied preemergence at 1.0-1.2 qts./A as part of a two-pass weed control system when followed by Halex™ GT in glyphosate tolerant corn (e.g. Roundup Ready or Agrisure GT Corn). Apply Zemax at 1.0 qt/A on soils with <3% OM and 1.2 qt/A on soils with ≥3% OM. Follow all directions for use and restrictions on each product label.

### **Zemax Programs in LibertyLink Corn**

Zemax may be applied early postemergence at a rate down to 1.6 qts./A in tank mixture with Ignite and applied over-the-top in field corn designated as LibertyLink. To minimize weed competition with the crop, target the application of this mixture to weeds in the 1 to 2 inch range. Ammonium sulfate (AMS) may be added as a spray adjuvant as directed on the Ignite label. However, AMS should be the only adjuvant added to this tank mixture. Do not add urea ammonium nitrate (UAN), crop oil concentrate (COC), non-ionic surfactants (NIS), or methylated seed oil (MSO) type adjuvants to these mixtures, or crop injury may occur. Follow all directions for use and restrictions on the Ignite product label.



Alternatively, Zemax may be applied preemergence at a rate down to 1.6 qts./A as part of a two-pass weed control system when followed by a postemergence application of Ignite in field corn designated as LibertyLink. When used in this way, Zemax will provide reduced competition of the weeds listed in Table 1 for a period of 30 or more days, thus improving the timing flexibility and effectiveness of the Ignite application. Follow all directions for use and restrictions on the Ignite product label.

### **Restrictions and Precautions for all Corn Uses**

1. Do not apply more than 2.4 qts. of Zemax per growing season.
2. Do not apply Zemax to corn that is greater than 30 inches tall or corn that is larger than the 8-leaf stage of growth.
3. Do not graze or feed corn forage from treated areas for 45 days following postemergence application.
4. Do not harvest corn for forage, grain, or stover within 45 days after a postemergence application of Zemax.
5. Do not make postemergence applications of Zemax in a tank mix with any organophosphate or carbamate insecticide, or severe corn injury may occur.
6. Zemax applied postemergence to corn that has received an at-planting application of Counter® or other organophosphate insecticide can result in severe corn injury. Environmental conditions that favor poor or slow corn growth will increase the risk or severity of the corn injury.
7. Postemergence corn applications of any organophosphate or carbamate insecticide within 7 days before or 7 days after a Zemax application can result in severe corn injury. Environmental conditions that favor poor or slow corn growth will increase the risk or severity of the corn injury.

## **GRAIN SORGHUM USE DIRECTIONS**

Zemax can be applied preplant nonincorporated (up to 21 days before planting) up through preemergence for weed control in sorghum that was seed-treated with a safener that provides tolerance to S-metolachlor (e.g. Concep® III). For a listing of weeds controlled or partially controlled, refer to Table 1.

Apply Zemax at a rate of 2.0 qts./A as a broadcast nonincorporated spray beginning at 21 days before planting and up through planting but prior to sorghum emergence. Applying Zemax less than 7 days before sorghum planting will increase the risk of crop injury, especially if irrigation or rainfall is received following the application. Injury symptoms include temporary bleaching of newly emerging sorghum leaves or, in extreme conditions, stunting or partial stand loss. Applying Zemax more than 7 days (but not more than 21) prior to sorghum planting will reduce the risk of crop injury.

If Zemax is applied prior to planting, minimize disturbance of the herbicide-treated soil barrier during the planting process in order to lessen the potential for poor weed control in the disturbed soil zone.

Zemax may also be applied as a split application to grain sorghum. For a split application program, apply 1.0-1.25 qts./A of Zemax as a non-incorporated early preplant (7-21 days before planting), followed by a second Zemax application at a rate of 0.75-1.0 qts./A as a preemergence application prior to sorghum emergence. The total amount of Zemax applied in the split application program cannot exceed 2.0 qts./A.

If weeds are present at the time of application, it is recommended that a nonionic surfactant (NIS) type adjuvant at a rate of 0.25% v/v or a crop oil concentrate (COC) at a rate of 1% v/v be added to the spray solution. In addition to COC or NIS, a spray grade UAN at a rate of 2.5% v/v or AMS at a rate of 8.5 lbs./100 gals. of spray may be added to the solution for improved control of emerged weeds. If weeds are not emerged at the time of application, no additives are recommended.

### **Restrictions and Precautions for Grain Sorghum Uses**

1. Do not apply more than 2.0 quarts of Zemax per growing season.
2. Do not apply Zemax to sorghum grown on sandy soils (sand, sandy loam, or loamy sand).
3. Do not apply Zemax to emerged grain sorghum or severe injury will occur.
4. Do not use Zemax in the production of forage sorghum, sweet sorghum (sorgo), sudangrass, sorghum-sudangrass hybrids, or dual-purpose sorghum.
5. Sorghum seed must be treated with a seed safener that provides tolerance to S-metolachlor (e.g. Concep III) prior to planting, or severe crop injury may occur.
6. In the state of Texas, do not apply Zemax to sorghum grown south of Interstate 20 (I-20) or east of Highway 277.

## STORAGE AND DISPOSAL

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

### **Pesticide Storage**

Keep container tightly closed when not in use. Do not store near seeds, fertilizers, or food stuffs. Can be stored at temperatures as low as -10°F. Keep away from heat and flame.

### **Pesticide Disposal**

Open dumping is prohibited. Waste resulting from the use of this product may be disposed of on site or at an approved waste disposal facility. Rinse spray equipment. Pesticide wastes are acutely hazardous. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of Federal law. If these wastes cannot be disposed of as described above, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste Representative at the nearest EPA Regional Office for guidance.



### **Container Handling [less than 5 gallons]**

Non-refillable container. Do not reuse or refill this container. Offer for recycling if available. Triple rinse container (or equivalent) promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank. Drain for 10 seconds after the flow begins to drip. Fill the container ¼ full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use and disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times. Then offer for recycling if available or puncture and dispose of in a sanitary landfill, or by incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

## Container Handling [greater than 5 gallon]

Refillable container. 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 person refilling. To clean container before final disposal, empty the remaining contents from this container into application equipment or mix tank. Fill the container about 10 percent 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. Then offer for recycling if available or puncture and dispose of in a sanitary landfill, or by incineration, or by other procedures approved by state and local authorities.

**DO NOT USE CONTAINERS FOR THE STORAGE OF FOOD, FEED, OR DRINKING WATER!**

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