PYROXASULFONE | GROUP 15 | HERBICIDE

Zannis™ SC

Contains Pyroxasulfone, the active ingredient used in Zidua® SC.

A Selective Residual Herbicide For Use in Agricultural Crops.

ACTIVE INGREDIENT:	**(% by weight)**
Pyroxasulfone: 3-[[[5-(difluoromethoxy)-1-methyl-3-(trifluoromethyl)-1*H*-pyrazol-4-yl]methyl]sulfonyl]-4,5-dihydro-5,5-dimethylisoxazole	41.46%
OTHER INGREDIENTS:	58.54%
TOTAL:	100.00%

Contains 4.17 pounds of pyroxasulfone per gallon.
Formulated as a water-based suspension concentrate.

EPA Reg. No.: 91234-430

KEEP OUT OF REACH OF CHILDREN

CAUTION/PRECAUCIÓN

Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle.
(If you do not understand the label, find someone to explain it to you in detail.)

See below for additional Precautionary Statements.

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 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 in eyes:	• Hold eye open and rinse slowly and gently with water for 15 - 20 minutes. • Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. • Call a poison control center or doctor for treatment advice.
If inhaled:	• Move person to fresh air. • If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth, if possible. • Call a poison control center or doctor for further treatment advice.
HOT LINE NUMBER	
Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact SafetyCall at **1-844-685-9173** for emergency medical treatment information.	

For Chemical Emergency: Spill, Leak, Fire, Exposure, or Accident, Call CHEMTREC Day or Night
Within USA and Canada: 1-800-424-9300 or +1 703-527-3887 (collect calls accepted)

Zannis™ SC is not manufactured, or distributed by BASF Corporation, seller of Zidua® SC.

Shake container well before use.

Manufactured for:
Atticus, LLC
940 NW Cary Parkway, Suite 200
Cary, NC 27513

PRECAUTIONARY STATEMENTS

HAZARDS TO HUMANS AND DOMESTIC ANIMALS

CAUTION

Harmful if swallowed. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco, or using the toilet.

PERSONAL PROTECTIVE EQUIPMENT (PPE)

Applicators and other handlers must wear:

- Long-sleeved shirt and long pants
- Chemical-resistant gloves made of any waterproof material for example barrier laminate, butyl rubber ≥ 14 mils, nitrile rubber ≥ 14 mils, neoprene rubber ≥ 14 mils, natural rubber ≥ 14 mils, polyethylene, polyvinyl chloride ≥ 14 mils, or Viton ≥ 14 mils
- Shoes plus socks

For aerial application, mixers and loaders must also wear:

- A minimum of a NIOSH approved filtering face piece respirator with any N filter (TC-84A). You can also use other NIOSH approved particulate respirators that offer more protection, including a half face or full face respirator with any filter or a powered air purifying respirator with an HE filter. For more information about these options, see www.epa.gov/pesticide-respirators.

User Safety Requirements

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

ENGINEERING CONTROLS

When handlers use closed systems or enclosed cabs that meet the requirements listed in the Worker Protection Standards (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.

USER SAFETY RECOMMENDATIONS

Users should:

- 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

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 washwater or rinsate. Drift and runoff may be hazardous to aquatic organisms in water adjacent to treated areas.

GROUNDWATER ADVISORY

This chemical has properties and characteristics associated with chemicals detected in groundwater. This chemical may leach into groundwater if used in areas where soils are permeable, particularly where the water table is shallow.

SURFACE WATER ADVISORY

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 aquatic organisms in water adjacent to treated areas. **DO NOT** contaminate water when disposing of equipment washwater or rinsate. This product may impact surface water quality due to runoff or rainwater. This is especially true for poorly draining soils and soils with shallow groundwater. This product is classified as having a 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 including ponds, streams, and springs will reduce potential loading of pyroxasulfone and its degradation product, [5-(difluoromethoxy)-1-methyl-3-(trifluoromethyl)-1*H*-pyrazol-4-yl]methanesulfonic acid (M1), from runoff water and sediment. Runoff of this product will be reduced by avoiding application when rainfall is forecast to occur within 48 hours.

POINT-SOURCE CONTAMINATION

To prevent point-source contamination, **DO NOT** mix or load this or any other pesticide within 50 feet of wells (including abandoned wells and drainage wells, sinkholes, perennial or intermittent streams and rivers, and natural or impounded lakes and reservoirs). This setback does not apply to properly capped or plugged abandoned wells and does not apply to impervious pad or dike mixing/loading areas as described below. Mixing, loading, rinsing, or washing operations performed within 50 feet of a well are allowed only when conducted on an impervious pad constructed to withstand the weight of the heaviest load that may be on or move across the pad. The pad must be self-contained to prevent surface water flow over or from the pad. The pad capacity must be maintained at 110% of that of the largest pesticide container or application equipment used on the pad and have sufficient capacity to contain all product spills, equipment or container leaks, equipment washwater, and rainwater that may fall on the pad. The containment capacity does not apply to vehicles delivering pesticide shipments to the mixing/loading site. States may have in effect additional requirements regarding wellhead setbacks and operational containment. Care must be taken when using this product to prevent back-siphoning into wells, spills, or improper disposal of excess pesticide, spray mixes, or rinsates. Check valves or anti-siphoning devices must be used on all mixing equipment.

ENDANGERED SPECIES PROTECTION REQUIREMENTS

This product may have effects on federally listed threatened or endangered plant species or their critical habitat. When using this product, you must follow the measures contained in the Endangered Species Protection Bulletin for the county or parish in which you are applying the pesticide. To determine whether your county or parish has a Bulletin, and to obtain that Bulletin, consult http://www.epa.gov/espp/, or call 1-844-447-3813 no more than 6 months before using this product. Applicators must use Bulletins that are in effect in the month in which the pesticide will be applied. New Bulletins will be available from the above sources 6 months before their effective dates.

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DIRECTIONS FOR USE

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

Read the entire label. Use strictly in accordance with precautionary statements and directions and with applicable state and federal regulations.

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.

Failure to follow directions and precautions on this label may result in crop injury, poor weed control, and/or illegal residues.

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, 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 intervals. 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, including plants, soil or water, is:

- Coveralls
- Chemical-resistant gloves made of any waterproof material for example barrier laminate, butyl rubber ≥ 14 mils, nitrile rubber ≥ 14 mils, neoprene rubber ≥ 14 mils, natural rubber ≥ 14 mils, polyethylene, polyvinyl chloride ≥ 14 mils, or Viton ≥ 14 mils
- Shoes plus socks

PRODUCT INFORMATION

Zannis SC is a selective rate-dependent residual preemergence herbicide for controlling annual grass weeds, sedges, and annual broadleaf weeds (including biotypes resistant to ACCase inhibitors, ALS inhibitors, and glyphosate) that infest celery, chickpea, corn, cotton, dry bulb onions, fallow, leek, mint, peanut, perennial cool-season grasses grown for seed production, potato, safflower, soybean, and sunflower listed in **TABLE 1** and wheat listed in **TABLE 2**. Refer to **CROP-SPECIFIC INFORMATION** section for use directions specific to each labeled crop.

Periods of dry weather following application of **Zannis SC** may reduce herbicidal effectiveness. **Zannis SC** must be activated by at least 1/2 inch of rainfall or irrigation before weed germination and emergence. When **Zannis SC** is not activated and weeds emerge, a labeled postemergence herbicide or shallow cultivation may be needed to control weed escapes. **Zannis SC** DOES NOT control emerged weeds.

Herbicidal activity of **Zannis SC** may be reduced if trash on the soil surface from the previous crop covers more than 25% of the application area. Manage trash levels if needed with combined straw shredder/spreaders, earlier burndown of emerged weeds, or light tillage.

TABLE 1. WEEDS CONTROLLED WITH A RESIDUAL APPLICATION OF ZANNIS SC IN ALL CROPS OTHER THAN WHEAT

Common Name	Scientific Name
Annual Grass Weeds	
Barley, hare	*Hordeum murinum* spp. *leporinum*
Barnyardgrass	*Echinochloa crus-galli*
Bluegrass, annual	*Poa annua*
Brome, downy[1]	*Bromus tectorum*
Brome, Japanese[1]	*Bromus japonicus*
Canarygrass	*Phalaris canariensis*
Cheat[1]	*Bromus secalinus*
Crabgrass, large	*Digitaria sanguinalis*
Crabgrass, smooth	*Digitaria ischaemum*
Crowfootgrass	*Dactyloctenium aegyptium*
Cupgrass, southwestern	*Eriochloa acuminata*
Cupgrass, woolly[1]	*Eriochloa villosa*
Foxtail, giant	*Setaria faberi*
Foxtail, green	*Setaria viridis*
Foxtail, yellow	*Setaria pumila*
Goosegrass	*Eleusine indica*
Johnsongrass, seedling	*Sorghum halepense*
Millet, Texas[1]	*Urochloa texana*
Millet, wild-proso[1]	*Panicum miliaceum*
Oat, wild[1]	*Avena fatua*
Panicum, fall	*Panicum dichotomiflorum*
Red rice	*Oryza sativa*
Ryegrass, Italian	*Lolium perenne* spp. *multiflorum*
Ryegrass, rigid	*Lolium rigidum*
Sandbur, longspine[1]	*Cenchrus longispinus*
Shattercane[1]	*Sorghum bicolor* spp. *arundinaceum*
Signalgrass, broadleaf	*Urochloa platyphylla*
Sedges	
Nutsedge, yellow[1]	*Cyperus esculentus*
Annual Broadleaf Weeds	
Amaranth, Palmer	*Amaranthus palmeri*
Amaranth, Powell	*Amaranthus powellii*
Buckwheat, wild[1]	*Polygonum convolvulus*
Carpetweed	*Mollugo verticillata*
Chickweed, common[1]	*Stellaria media*
Fleabane, hairy[1]	*Conyza bonariensis*
Groundsel, common[1]	*Senecio vulgaris*

(continued)

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TABLE 1. WEEDS CONTROLLED WITH A RESIDUAL APPLICATION OF ZANNIS SC IN ALL CROPS OTHER THAN WHEAT *(continued)*

Common Name	Scientific Name
Annual Broadleaf Weeds *(continued)*	
Henbit[1]	*Lamium amplexicaule*
Horseweed (Marestail)[1]	*Conyza canadensis*
Jimsonweed[1]	*Datura stramonium*
Kochia[1]	*Kochia scoparia*
Lambsquarters, common[1]	*Chenopodium album*
Morningglory, entireleaf[1]	*Ipomoea hederacea*
Morningglory, pitted[1]	*Ipomoea lacunosa*
Nightshade, black	*Solanum nigrum*
Nightshade, Eastern black	*Solanum ptycanthum*
Pigweed	*Amaranthus* spp.
Pigweed, redroot	*Amaranthus retroflexus*
Pigweed, smooth	*Amaranthus hybridus*
Pigweed, tumble	*Amaranthus albus*
Purslane, common	*Portulaca oleracea*
Pusley, Florida	*Richardia scabra*
Ragweed, common[1]	*Ambrosia artemisiifolia*
Shepherd's-purse[1]	*Capsella bursa-pastoris*
Sida, prickly (Teaweed)	*Sida spinosa*
Velvetleaf[1]	*Abutilon theophrasti*
Waterhemp	*Amaranthus tuberculatus*

[1]Partial control or suppression only. **Zannis SC** may be used in tank mixes or sequential applications with other labeled herbicides that provide additional control of noted weeds.

TABLE 2. WEEDS CONTROLLED[1] OR SUPPRESSED[2] WITH A RESIDUAL APPLICATION OF ZANNIS SC IN WHEAT

Common Name	Scientific Name	**C = Control** (only at the maximum application rate per soil texture) **S = Suppression** See **CROP-SPECIFIC INFORMATION** section for specific rates.
Annual Grass Weeds		
Barley, hare	*Hordeum murinum* spp. *leporinum*	S
Barnyardgrass	*Echinochloa crus-galli*	S
Bluegrass, annual	*Poa annua*	C
Brome, downy	*Bromus tectorum*	S

(continued)

TABLE 2. WEEDS CONTROLLED[1] OR SUPPRESSED[2] WITH A RESIDUAL APPLICATION OF ZANNIS SC IN WHEAT *(continued)*

Common Name	Scientific Name	**C = Control** (only at the maximum application rate per soil texture) **S = Suppression** See **CROP-SPECIFIC INFORMATION** section for specific rates.
Annual Grass Weeds *(continued)*		
Brome, Japanese	*Bromus japonicus*	S
Canarygrass	*Phalaris canariensis*	C
Cheat	*Bromus secalinus*	S
Foxtail, giant	*Setaria faberi*	S
Foxtail, green	*Setaria viridis*	S
Foxtail, yellow	*Setaria pumila*	S
Oat, wild	*Avena fatua*	S
Rattail fescue	*Vulpia myuros*	C
Ryegrass, Italian	*Lolium perenne* spp. *multiflorum*	C
Ryegrass, rigid	*Lolium rigidum*	S
Annual Broadleaf Weeds		
Buckwheat, wild	*Polygonum convolvulus*	S
Carpetweed	*Mollugo verticillata*	S
Chickweed, common	*Stellaria media*	S
Flixweed	*Descurainia sophia*	S
Groundsel, common	*Senecio vulgaris*	S
Henbit	*Lamium amplexicaule*	S
Horseweed (Marestail)	*Conyza canadensis*	S
Kochia	*Kochia scoparia*	S
Lambsquarters, common	*Chenopodium album*	S
Mustard, wild	*Sinapis arvensis L.*	S
Pigweed spp.	*Amaranthus* spp.	S
Ragweed, common	*Ambrosia artemisiifolia*	S
Shepherd's-purse	*Capsella bursa-pastoris*	S

[1]Weeds including annual bluegrass and Italian ryegrass have the ability to adapt to several different herbicide sites of action. Even though **Zannis SC** will control these species, some weed escapes are possible. Multiple herbicides with multiple different effective sites of action MUST be used in tank mixtures or sequentially to limit these weed escapes to prevent or delay the onset of herbicide-resistant weed biotypes.

[2]For control of these weeds, a tank mix partner or a sequentially applied herbicide partner is needed.

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MODE OF ACTION

Zannis SC acts to inhibit very long-chain fatty acid synthesis as a Group 15 herbicide. It is a root-and-shoot growth inhibitor that controls susceptible germinating seedlings before or soon after they emerge from the soil.

WEED RESISTANCE MANAGEMENT

Zannis SC is a Group 15 herbicide. Any weed population may contain or develop plants naturally resistant to **Zannis SC** and other Group 15 herbicides. Weed species with resistance to Group 15 may eventually dominate the weed population if Group 15 herbicides are used repeatedly in the same field or in successive years as the primary method of control for targeted species. This may result in partial or total loss of control of those species by **Zannis SC** or other Group 15 herbicides.

To delay herbicide resistance consider:

- Avoiding the consecutive use of **Zannis SC** or other target-site-of-action Group 15 herbicides that have a similar target site of action on the same weed species.
- Using tank mixes or premixes with herbicides from different target-site-of-action groups as long as the involved products are all registered for the same use, have different sites of action, and are both effective at the tank mix or prepack rate on the weed(s) of concern.
- Basing herbicide use on a comprehensive IPM (Integrated Pest Management) program including cultural and mechanical methods.
- Monitoring treated weed populations for loss of field efficacy, and control of escapes with effective alternative herbicides or mechanical methods.
- Identify weeds present in the field through scouting and field history and understand their biology. The weed control program needs to consider all of the weeds present.
- Scout fields prior to application to identify the weed species present and their growth stage to determine if the intended application will be effective.
- Scout fields after application to verify the treatment was effective.
- Suspected herbicide-resistant weeds may be identified by these indicators:
  (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; and
  (3) Surviving plants mixed with controlled individuals of the same species. If resistance is suspected, treat weed escapes with an herbicide with a different MOA and/or use non-chemical methods to remove escapes, as practical, with the goal of preventing further seed production.
- Report any incidence of non-performance of this product against a particular weed species to your local Atticus, LLC representative at 984-465-4800.
- Contacting your local extension specialist, certified crop advisors, and/or manufacturer for herbicide resistance management and/or integrated weed management directions for specific crops and resistant weed biotypes.

CROP RESPONSE

No crop injury is expected when **Zannis SC** is applied according to label directions and under normal environmental conditions. Application to crops under stress because of inadequate or excess of moisture for normal crop development, cool and hot temperatures, sodic soils, poorly drained soils, hail damage, flooding, pesticide injury, mechanical injury, or widely fluctuating temperatures may result in crop injury.

APPLICATION INSTRUCTIONS

Application rates of **Zannis SC** may vary depending on soil texture. Refer to **TABLE 3** for soil texture groups used in this label unless a specific soil texture is mentioned. When use rates are in ranges, apply the low rate for soils with coarse texture or low organic matter; apply the high rates for fine soil textures, high organic matter, heavy soil surface plant residue, or heavy weed pressure.

TABLE 3. SOIL TEXTURE GROUPS

Coarse	Medium	Fine
Sand Loamy sand Sandy loam	Loam Silt loam Silt Sandy clay loam	Sandy clay Silty clay loam Silty clay Clay loam Clay

Zannis SC may be used on peat soils and muck soils, and mineral soils with 10% or more organic matter, but weed control may be inconsistent and/or reduced. Use maximum labeled use rate allowed in the specific crop. Use **TABLE 5** to determine the corresponding amounts of active ingredient (pyroxasulfone) from **Zannis SC** product use rates.

APPLICATION TIMING

Zannis SC may be applied preplant surface, preplant incorporated, preemergence, early postemergence, postemergence-directed (layby), or in the fall. Refer to the **CROP-SPECIFIC INFORMATION** section for specific application instructions (timings, rates, restrictions and precautions) by crop.

Preplant Surface Application

Apply **Zannis SC** alone or in tank mix within 45 days of planting. If weeds are present at the time of application, use additional weed control methods, for example a tank mix with an appropriate postemergence herbicide(s), to control emerged weeds.

Preplant Incorporated (PPI) Application

Incorporate **Zannis SC** into the upper (1 to 2 inches) soil surface within 14 days of planting. Deeper incorporation may increase the potential for crop injury and also may result in reduced weed control. Use appropriate equipment for uniform shallow incorporation, including a field cultivator, harrow, rolling cultivator, or finishing disc.

Preemergence Surface Application

After planting and before crop emergence, apply a uniform broadcast treatment to the soil surface. Apply **Zannis SC** only to a uniform seedbed which is firm and free of clods, cracks, excess trash (previous crop residue), and weed growth. If weeds are present, apply **Zannis SC** in a tank mix with an appropriate postemergence herbicide, for example a glyphosate-containing product.

Early Postemergence Application

Zannis SC must be applied and activated before weed seedling emergence or in a tank mixture that controls emerged weeds. **Zannis SC** will not control emerged weeds. Weeds that are already emerged at the time of application must be controlled with cultivation, tank mix or sequential application of another herbicide labeled for postemergence control of the target weeds in the crop.

Postemergence-directed (Layby) Application

Zannis SC must be applied as a directed spray between crop rows and activated before weed seedling emergence or in a tank mix that controls emerged weeds. **Zannis SC** will not control emerged weeds. Weeds that are already emerged at the time of application must be controlled with cultivation, tank mix or sequential application of another herbicide labeled for postemergence control of the target weeds in the crop.

Fall/Winter Application for Controlling Weeds Germinating in the Fall, or Winter Weeds

Zannis SC may be broadcast surface applied in the fall or winter after crop harvest. **DO NOT** apply to frozen or snow-covered soil. Tillage operations may be conducted before or after applying **Zannis SC**. If tillage is used following an application, tillage must be shallow (no more than 2-inches deep) to uniformly incorporate the herbicide into the upper soil surface.

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APPLICATION METHODS AND EQUIPMENT

Zannis SC may be applied by aerial or ground application or by chemigation application via sprinkler or drip irrigation.

Thorough spray coverage is required for optimum weed control and can be improved with proper nozzle and spray volume selection. Use and configure application equipment to provide an adequate spray volume, an accurate and uniform distribution of spray droplets over the treated area. Adjust equipment to maintain continuous agitation during spraying with good mechanical or bypass agitation.

Avoid overlaps that will increase rates above the use rates specified in this label.

Zannis SC may be applied using water or sprayable fluid nitrogen fertilizer solutions as the spray carrier. **DO NOT** apply this product without dilution in a spray carrier.

Aerial Spray Carrier Volume

Use 3 or more gallons of water per acre. The actual minimum spray volume per acre is determined by the spray equipment used. Use adequate spray volume to provide accurate and uniform distribution of spray particles over the treated area.

Ground Spray Carrier Volume

Use 5 or more gallons of water per treated acre or 15 or more gallons of sprayable fluid nitrogen fertilizer per treated acre for weed control application.

MANDATORY SPRAY DRIFT MANAGEMENT

Aerial Applications

- **DO NOT** release spray at a height greater than 10 ft. above the vegetative canopy unless a greater application height is necessary for pilot safety.
- For all applications, applicators are required to use a medium to ultra coarse spray droplet size (ASABE S572.1).
- The boom length must not exceed 65% of the wingspan for airplanes or 75% of the rotor blade diameter for helicopters.
- Applicators must use 1/2 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.

Ground Applications

- Apply with the nozzle height advised by the manufacturer, but no more than 3 feet above the ground or crop canopy.
- For all applications, applicators are required to use a medium to ultra coarse spray 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.

SPRAY DRIFT ADVISORIES

The applicator is responsible for avoiding off-site spray drift. Be aware of nearby non-target sites and environmental conditions.

Importance of Droplet Size

An effective way to reduce spray drift is to apply large droplets. Use the largest droplets that provide target pest control. While applying larger droplets will reduce spray drift, the potential for drift will be greater if applications are made improperly or under unfavorable environmental conditions.

Controlling Droplet Size - Ground Boom

- **Volume** - Increasing the spray volume so that larger droplets are produced will reduce spray drift. Use the highest practical spray volume for the application. If a greater spray volume is needed, consider using a nozzle with a higher flow rate.
- **Pressure** - Use the lowest spray pressure advised for the nozzle to produce the target spray volume and droplet size.
- **Spray Nozzle** - Use a spray nozzle that is designed for the intended application. Consider using nozzles designed to reduce drift.

Controlling Droplet Size - Aircraft

- **Adjust Nozzles** - Follow nozzle manufacturer's directions for setting up nozzles. Generally, to reduce fine droplets, nozzles must be oriented parallel with the airflow in flight.

Boom Height - Ground Boom

Use the lowest boom height that is compatible with the spray nozzles that will provide uniform coverage. For ground equipment, the boom must remain level with the crop and have minimal bounce.

Release Height - Aircraft

Higher release heights increase the potential for spray drift. When applying aerially to crops, **DO NOT** release spray at a height greater than 10 feet above the crop canopy, unless a greater application height is necessary for pilot safety.

Shielded Sprayers

Shielding the boom or individual nozzles can reduce spray drift. Consider using shielded sprayers. Verify that the shields are not interfering with the uniform deposition of the spray on the target area.

Temperature and Humidity

When making applications in hot and dry conditions, use larger droplets to reduce the effects of evaporation.

Temperature Inversion

Drift potential is high during a temperature inversion. Temperature inversions are characterized by increasing temperature with altitude and are common on nights with limited cloud cover and light to no wind. The presence of an inversion can be indicated by ground fog or 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. Avoid applications during temperature inversions.

Wind

Drift potential generally increases with wind speed. AVOID APPLICATIONS DURING GUSTY WIND CONDITIONS. Applicators need to be familiar with local wind patterns and terrain that could affect spray drift.

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CHEMIGATION APPLICATION VIA SPRINKLER AND DRIP IRRIGATION SYSTEMS

Zannis SC may be applied as a chemigation treatment through sprinkler irrigation systems. Apply this product ONLY through a sprinkler irrigation system of the following type: center pivot, end tow, hand move, lateral move, side (wheel) roll, or solid set. **DO NOT** apply this product through any other type of sprinkler irrigation system.

Zannis SC may also be applied as a chemigation treatment through drip irrigation systems. All chemigation precautions mentioned in this label for sprinkler irrigation systems also apply for drip irrigation systems.

Application may be made alone or in tank mixtures with other herbicides on this label registered for use in specified sprinkler or drip irrigation systems. Application must be made within specific crop stage timings and product use rates given in the container label Directions For Use.

Uniform distribution of **Zannis SC**-treated irrigation water is the sole responsibility of the applicator and is required to avoid crop injury, lack of herbicide effectiveness, or illegal pesticide residue in the crop. If you have questions about calibration, contact State Extension Service specialists, equipment manufacturers, or other experts.

Proper calibration is the responsibility of the applicator. The system must be properly calibrated (with water only) to ensure the amount of **Zannis SC** applied corresponds to the specified rate. Apply **Zannis SC** in volume minimums of 0.33 to 0.67 inch of water using the lower volume for coarse-texture soils and the higher volume for fine-texture soils. Application made in high volumes of water (more than 1 inch) may result in reduced weed control.

Meter herbicide dilution into irrigation water through the entire time of water application for center pivot and lateral move sprinkler systems. For solid-set and hand-move sprinkler irrigation systems and drip irrigation systems, apply **Zannis SC** through the system at the beginning of the set; then follow with additional water to reach volume minimums as listed by soil type. To increase calibration accuracy of injection metering equipment, dilute **Zannis SC** in a minimum of 3 parts water to 1 part **Zannis SC**. Maintain agitation in injection nurse tanks to keep a uniform herbicide suspension during application.

Special Restrictions for Chemigation:

1. **DO NOT** apply when wind speed favors drift beyond the area intended for treatment.
2. **DO NOT** connect an irrigation system used for pesticide application to a public water system unless the pesticide label-prescribed safety devices for public water systems are in place.
3. A person knowledgeable of the chemigation system and responsible for its operation, or under the supervision of the responsible person, shall shut the system down and make necessary adjustments if the need arises.
4. Tail water (runoff water) from chemigation that contains **Zannis SC** needs be recirculated and/or contained in the field in a cistern or holding reservoir from the initial application and/or used only on adjacent, approved crops for which **Zannis SC** is registered for this type of application.
5. The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection pump. It must also contain a functional, normally closed, solenoid-operated valve located on the intake side of the injection pump and connected to the system interlock to prevent fluid from being withdrawn from the supply tank when the irrigation system is either automatically or manually shut down.
6. The sprinkler chemigation system must contain a functional check valve, vacuum-relief valve, and low-pressure drain appropriately located on the irrigation pipeline to prevent water-source contamination from backflow. In addition, systems must use a metering pump, including a positive displacement injection pump (e.g., diaphragm pump) effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock.
7. The sprinkler chemigation system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops, or in cases where there is no water pump, when the water pressure decreases to the point where pesticide distribution is adversely affected.
8. The irrigation line or water pump must include a functional pressure switch that will stop the water pump motor when the water pressure decreases to the point where pesticide distribution is adversely affected.

Chemigation Systems Connected to Public Water Systems:

1. Public water system means a system for the provision to the public of piped water for human consumption if such system has at least 15 service connections or regularly serves an average of at least 25 individuals daily at least 60 days out of the year.
2. Chemigation systems connected to public water systems must contain a functional, reduced-pressure zone backflow preventer (RPZ) or the functional equivalent in the water supply line upstream from the point of pesticide introduction. As an option to the RPZ, the water from the public water system needs be discharged into a reservoir tank prior to pesticide introduction. There shall be a complete physical break (air gap) between the outlet end of the fill pipe and the top or overflow rim of the reservoir tank of at least twice the inside diameter of the fill pipe.
3. All chemigation systems connected to public water systems must also follow restrictions listed in the preceding section.

CLEANING SPRAY EQUIPMENT

Clean application equipment thoroughly by using a strong detergent or commercial sprayer cleaner according to the manufacturer's directions. Triple rinse the equipment before and after applying **Zannis SC**.

ADDITIVES

Zannis SC is formulated to provide optimal residual preemergence weed control. However, several tank mixes with **Zannis SC** may require an adjuvant to improve burndown of emerged weeds. Therefore, an adjuvant may be used with **Zannis SC** tank mixes that are applied fall, preplant, preemergence, or early postemergence. Follow the adjuvant directions for the tank mix partner of **Zannis SC**.

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TANK MIXING INFORMATION

It is the pesticide user's responsibility to ensure that all products in the mixtures are registered for the intended use. Read and follow the applicable restrictions and limitations and directions for use on all product labels involved in tank mixing. Users must follow the most restrictive directions for use and precautionary statements of each product in the tank mixture.

Zannis SC may be tank mixed or applied sequentially with other herbicide products registered for use in any labeled crop found in this label for a broader spectrum of residual weed control and/or control of emerged weeds. Refer to the tank mix product labels to confirm that the respective tank mix products are registered for use on the labeled crop. Follow the adjuvant directions for the tank mix partner of **Zannis SC**. Read and follow tank mix product labels for application instructions, use restrictions and precautions, and rotational cropping guidance.

Physical incompatibility, reduced weed control, or crop injury may result from mixing **Zannis SC** with other pesticides, additives, or fertilizers.

COMPATIBILITY TEST FOR TANK MIX PRODUCTS

Before mixing components, always perform a compatibility jar test.

1. For 20 gallons per acre spray volume, use 3.3 cups (800 mL) of water. For other spray volumes, adjust rates accordingly. Only use water from the intended source at the source temperature.
2. Add components in the sequence indicated in the mixing order using 2 teaspoons for each pound or 1 teaspoon for each pint of label rate per acre.
3. Always cap the jar and invert 10 cycles between component additions.
4. When the components have all been added to the jar, let the solution stand for 15 minutes.
5. Evaluate the solution for uniformity and stability. The spray solution must not have free oil on the surface, or fine particles that precipitate to the bottom, or thick (clabbered) texture. If the spray solution is not compatible, repeat the compatibility test with the addition of a suitable compatibility agent. If the solution is then compatible, use the compatibility agent as directed on its label. If the solution is still incompatible, **DO NOT** mix the ingredients in the same tank.

MIXING ORDER

Shake **Zannis SC** container well before use.

Maintain agitation throughout mixing and application until spraying is completed.

1. **Water** - Fill tank 1/2 to 3/4 full with clean water and start agitation.
2. **Inductor** - If an inductor is used, rinse it thoroughly after each component has been added.
3. **Products in PVA bags** - Place any product contained in water-soluble PVA bags into the mixing tank. Wait until all water-soluble PVA bags have fully dissolved and the product is evenly mixed in the spray tank before continuing.
4. **Water-soluble additives** (dry and liquid fertilizers including ammonium sulfate or urea ammonium nitrate)
5. **Water-dispersible products** (including dry flowables, wettable powders, suspension concentrates, or suspoemulsions) - Add **Zannis SC** at this point in the mixing process.
6. **Water-soluble products**
7. **Emulsifiable concentrates** (including methylated seed oil adjuvants)
8. **Remaining quantity of water**

If the spray mixture is allowed to settle for any period of time, thorough agitation is essential to resuspend the mixture before spraying is resumed. Continue agitation while spraying.

USE PRECAUTIONS

- **Crop Rotation Intervals** - Use **TABLE 4** to determine the proper interval between **Zannis SC** application and the planting of rotational crops. Determine the crop rotation interval for tank mix products, and use the most restrictive interval of all products applied.

USE RESTRICTIONS

- **Maximum Use Rate** - Refer to **CROP-SPECIFIC INFORMATION** section for maximum application use rates of **Zannis SC** in each crop and use pattern.
- Refer to **CROP-SPECIFIC INFORMATION** for additional crop use restrictions.
- **DO NOT** contaminate irrigation ditches or water used for domestic purposes.
- **Irrigation** - **DO NOT** use flood irrigation to apply, activate, or incorporate **Zannis SC**.
- **Zannis SC** is not for sale, distribution, or use in Nassau and Suffolk counties in New York State.
- **Emergency Replanting Intervals** - If a labeled crop treated with **Zannis SC** is lost to crop failure (because of environmental factors including drought, frost, hail, etc.), the crop may be replanted immediately. However, **DO NOT** repeat application of **Zannis SC** after crop failure. A sequential application can be made as long as the maximum cumulative rate for the crop and soil per year is not exceeded.

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TABLE 4. ROTATIONAL CROP PLANTING INTERVALS BY ZANNIS SC APPLICATION RATE

Crop	Zannis SC Use Rate (Fl. Oz./A)			
	1.75 (0.057 lb. a.i.)	3.25 (0.106 lb. a.i.)	5.00 (0.163 lb. a.i.)	6.50 (0.212 lb. a.i.)
	Rotational Crop Interval (Months After Application)			
Alfalfa	10	10	10	10
Beans, edible dry	11	11	11	11
Beans, edible-podded and succulent shelled	11	11	11	11
Bulb onion	2	4	4	4
Canola (Rapeseed)	12	12	15	18
Chickpea	1	1	1	2
Corn	0	0	0	0
Cotton	1	2	4	4
Flax	2	4	6	8
Garlic	0	0	4	4
Grain sorghum	6	6	10	12
Cool-season grasses grown for seed*	11**	11**	18	18
Warm-season grasses grown for seed	18	18	18	18
Green onion	4	6	8	12
Lentil	1	1	2	4
Peanut	1	2	4	4
Peas, edible-podded and succulent shelled	9	9	11	11
Peas, field (dry)	1	1	1	2
Potato	1	2	3	3
Rice	10	12	18	24
Safflower	1	2	3	3
Small grains (other than wheat)	11	11	11	18
Soybean	0	0	0	4
Sugar beet	12	12	15	15
Sugarcane	4	4	4	4
Sunflower	1	2	3	3
Sweet potato	4	4	4	9
Tobacco (grown in states of FL, GA, KY, NC, SC, TN, and VA)	9	9	12	12
Tobacco (grown in all other states)	18	18	18	18
Wheat	1	1	4	6
Other Crops	18	18	18	18

* Only when grown in states of Idaho, Oregon and Washington, for all other states see rotational crop intervals for **Other Crops**.

** An 11 month rotational crop interval only when greater than 15 inches of precipitation (rainfall/irrigation) has occurred from time of application to planting of grass grown for seed. If less than 15 inches of precipitation has occurred, the rotational crop interval is 18 months.

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TABLE 5. USE RATE EQUIVALENCY

Amount of Zannis SC (Fl. Oz./A)	Amount of Pyroxasulfone (Lb. a.i./A)
1.00	0.033
1.25	0.041
1.50	0.049
1.75	0.057
2.00	0.065
2.50	0.081
2.75	0.090
3.00	0.098
3.25	0.106
3.50	0.114
4.00	0.130
4.50	0.147
5.00	0.163
5.75	0.187
6.50	0.212
8.25	0.269

CROP-SPECIFIC INFORMATION

Read **PRODUCT INFORMATION**, **MIXING**, **APPLICATION**, **WEEDS CONTROLLED**, and **ADDITIVE** instructions in preceding sections of the label.

CELERY

Zannis SC may be applied to transplanted celery as an early post-transplant application for residual preemergence control of listed weeds (**TABLE 1**). Use **Zannis SC** as part of a weed control program in celery either in combination or sequentially with other herbicides for a broader spectrum of weed control and/or control of emerged weeds. Before applying to celery, verify with your local seed company (supplier) the selectivity of **Zannis SC** on your variety to avoid potential injury.

Application Timing	Use Rate (Fl. Oz./A)	Application Instructions
	Muck or Peaty Muck Soils (> 20% organic matter)	
Early Post-transplant (1 to 6 days after transplanting)	3.25	**Early Post-transplant Application:** Apply **Zannis SC** at the residual rates as a broadcast spray to the soil surface 1 to 6 days after transplanting. Apply **Zannis SC** only to a uniform transplant bed which is firm and free of clods and cracks. The transplant bed must be prepared to ensure good transplant row closure.
Zannis SC may only be applied in a single application. There is no required preharvest interval for **Zannis SC** when applied after transplanting.		
Crop-specific Precautions • The use of **Zannis SC** may result in temporary growth suppression, leaf burn, and/or other injury or stand reduction in transplanted celery under stressful conditions including inadequate or excessive moisture, extended periods of water-saturated soil occur during early transplant growth and development, cool and hot temperatures, compacted soils, injury from other pesticides, disease or other pest damage, mechanical injury, nutrient imbalances, or other conditions known to cause plant stress.		
Crop-specific Restrictions • **DO NOT** apply more than 3.25 fl. oz. of **Zannis SC** (0.106 lb. a.i.) per acre in a single application. • **Maximum Number of Applications per Year:** 1 • **DO NOT** apply more than 3.25 fl. oz. of **Zannis SC** (0.106 lb. a.i.) per acre per year. • **DO NOT** apply **Zannis SC** seven or more days after transplanting. • Only apply **Zannis SC** to transplanted celery. • Only apply **Zannis SC** to celery grown on muck or peaty muck soils with greater than 20% organic matter.		

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CHICKPEA

Zannis SC may be applied to chickpea (garbanzo bean) for residual preemergence control of listed weeds (**TABLE 1**). Use **Zannis SC** as part of a weed control program in chickpea either in combination or sequentially with other herbicides for a broader spectrum of weed control and/or control of emerged weeds. Before applying to chickpea, verify with your local seed company (supplier) the selectivity of **Zannis SC** on your variety to avoid potential injury.

Application Timing	Use Rate by Soil Texture[1] (Fl. Oz./A)			Application Instructions
	Coarse	Medium	Fine	
Preplant Surface	**DO NOT USE**	2.5	2.5 - 3.25	**Preplant Surface Application:** Apply **Zannis SC** at the specified use rates as a broadcast spray to the soil surface within 30 days of planting.
Preemergence	**DO NOT USE**	2.5	2.5 - 3.25	**Preemergence Surface Application:** Apply **Zannis SC** at specified use rates as a broadcast spray to the soil surface after planting and before crop emergence.

Zannis SC may only be applied in a single application.
There is no required (preharvest) interval between a preplant or preemergence application of **Zannis SC** and the harvest of chickpea.
Legume vegetable forage and hay may be fed to or grazed by livestock.

Crop-specific Restrictions

- **Medium Soils:**
  - o **DO NOT** apply more than 2.5 fl. oz. of **Zannis SC** (0.081 lb. a.i.) per acre in a single application.
  - o **DO NOT** apply more than 2.5 fl. oz. of **Zannis SC** (0.081 lb. a.i.) per acre per year.
- **Fine Soils:**
  - o **DO NOT** apply more than 3.25 fl. oz. of **Zannis SC** (0.106 lb. a.i.) per acre in a single application.
  - o **DO NOT** apply more than 3.25 fl. oz. of **Zannis SC** (0.106 lb. a.i.) per acre per year.
- **Maximum Number of Applications per Year:** 1
- **DO NOT** apply **Zannis SC** in combination with other pyroxasulfone-containing products in chickpea.
- **DO NOT** apply **Zannis SC** to emerging or emerged chickpea as severe crop injury will occur.
- **DO NOT** apply **Zannis SC** to chickpea grown on coarse soils.

[1]Refer to **TABLE 3** for definition of soil-texture groups.

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CORN

Zannis SC may be applied to corn for residual preemergence control of listed weeds (**TABLE 1**). Use **Zannis SC** as part of a weed control program in corn either in combination or sequentially with other herbicides for a broader spectrum of weed control and/or control of emerged weeds. Corn in this label refers to field corn (grown for grain, seed, or silage), popcorn, and sweet corn (grown for fresh, processing, or seed). Before applying to seed corn, sweet corn, or popcorn, verify with your local seed company (supplier) the selectivity of **Zannis SC** on your inbred line or hybrid to avoid potential injury.

Application Timing	Use Rate by Soil Texture[1] (Fl. Oz./A)			Application Instructions
	Coarse	Medium	Fine	
Early Preplant Surface (within 15 to 45 days of planting)	2.5 - 4.5	3.25 - 5.0	4.0 - 6.5	**Early Preplant Surface Application:** Use listed application rates when making preplant surface applications, using the highest application rate for a given soil texture. Preplant surface applications are not advised on coarse soils, in areas where average annual rainfall (or rainfall plus irrigation) typically exceeds 40 inches, or for popcorn or sweet corn.
Preplant Surface (within 14 days of planting) **Preplant Incorporated** (within 14 days of planting)	2.5 - 4.5	3.25 - 5.0	4.0 - 6.5	**Preplant Surface or Preplant Incorporated Application:** Apply **Zannis SC** at the specified use rates as a broadcast spray to the soil surface or incorporated before planting on all soil types.
Preemergence	2.5 - 4.5	3.25 - 5.0	4.0 - 6.5	**Preemergence Surface Application:** Apply **Zannis SC** at specified use rates as a broadcast spray to the soil surface after planting and before crop emergence.
Early Postemergence	1.75 - 4.5	2.5 - 5.0	3.25 - 6.5	**Early Postemergence Application:** Apply **Zannis SC** at specified use rates as a broadcast spray to corn at spiking up to the V8 stage (visible eighth leaf collar).

Zannis SC may be applied in a single application or in sequential applications.

Fall/Winter Application for Controlling Weeds Germinating in the Fall, or Winter Annual Weeds: Zannis SC may be broadcast surface applied in the fall or winter to control winter annual weeds and other weeds germinating in the fall. Use on coarse, medium, or fine soils at rates listed for preplant surface timing. A sequential preemergence or postemergence application can be made, but **DO NOT** exceed the maximum cumulative rate allowed by soil type per year. See the main **APPLICATION TIMING** section of this label for further application instructions.

Sequential Application: If a sequential application program of **Zannis SC** is used (e.g., fall application followed by spring application, or sequential applications in the spring), the maximum combined rate of **Zannis SC** that may be applied in corn per year is 4.5 fl. oz./A (0.147 lb. a.i./A) on coarse soils or 8.25 fl. oz./A (0.269 lb. a.i./A) on all medium-to-fine soils.

Crop-specific Precautions

- **Seeding Depth** - Corn seed must be planted a minimum 1-inch deep.

Crop-specific Restrictions

- **Coarse Soil:**
  - o **DO NOT** apply more than 4.5 fl. oz. of **Zannis SC** (0.147 lb. a.i.) per acre in a single application or as a maximum cumulative amount from sequential applications in corn per year.
- **Medium Soil:**
  - o **DO NOT** apply more than 5.0 fl. oz. of **Zannis SC** (0.163 lb. a.i.) per acre in a single application.
  - o **DO NOT** apply more than a maximum cumulative amount of 8.25 fl. oz. of **Zannis SC** (0.269 lb. a.i.) per acre from sequential applications in corn per year.
- **Fine Soil:**
  - o **DO NOT** apply more than 6.5 fl. oz. of **Zannis SC** (0.212 lb. a.i.) per acre in a single application.
  - o **DO NOT** apply more than a maximum cumulative amount of 8.25 fl. oz. of **Zannis SC** (0.269 lb. a.i.) per acre from sequential applications in corn per year.
- **Maximum Number of Applications per Year:** 2 (when applying less than single application maximum rate)
- Separate sequential applications by at least 14 days.
- **DO NOT** harvest sweet corn ears for human consumption less than 37 days after application of **Zannis SC**.

[1]Refer to **TABLE 3** for definition of soil-texture groups.

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COTTON

Zannis SC can be applied to cotton prior to weed emergence for residual preemergence control of listed weeds (**TABLE 1**), by the timing and methods described in the following table. Use **Zannis SC** as part of a weed control program in cotton either in combination or sequentially with other herbicides for a broader spectrum of weed control and/or control of emerged weeds. Before applying to cotton, verify with your local seed company (supplier) the selectivity of **Zannis SC** on your variety to avoid potential injury.

No crop injury is expected when **Zannis SC** is applied postemergence-directed (layby). However, some visual cotton response is possible when **Zannis SC** is applied under stressful conditions including inadequate or excessive moisture, cool or hot temperatures, compacted soils, injury from other pesticides, disease or other pest damage, mechanical injury, nutrient imbalances, or other conditions known to cause plant stress.

Application Methods and Timing	Use Rate by Soil Texture[1] (Fl. Oz./A)			Application Instructions
	Coarse	Medium	Fine	
Postemergence – Directed (Layby)	2.5 - 3.5	2.5 - 3.5	2.5 - 3.5	**Postemergence - Directed (Layby) Application:** Apply **Zannis SC** at specified use rates as a broadcast-directed spray between cotton rows from 5-leaf stage to beginning bloom stage. The use of hooded or shielded sprayers is advised when applying **Zannis SC** as postemergence-directed (layby) spray. Avoid contacting cotton leaves with **Zannis SC** spray solution or injury may occur.

Zannis SC may only be applied in a single application.

Cotton gin byproducts may be fed to livestock.

There is no required (preharvest) interval between a postemergence application of **Zannis SC** and the harvest of cotton.

Crop-specific Precautions

- The use of **Zannis SC** may result in temporary growth suppression in cotton if extreme conditions of high rainfall and extended periods of water-saturated soil occur during cotton germination or early seedling development.
- **Zannis SC** applied early postemergence can cause cotton injury. Under stressful conditions (including inadequate or excessive moisture, cool or hot temperatures, compacted soils, injury from other pesticides, disease or other pest damage, mechanical injury, nutrient imbalances, or other conditions known to cause plant stress), **Zannis SC** injury will be in intensified.

Crop-specific Restrictions

- **DO NOT** apply **Zannis SC** as a preplant or preemergence treatment, or as a postemergence over-the-top spray treatment in cotton.
- **DO NOT** apply **Zannis SC** to cotton from emergence (at-cracking) through cotyledon stage or injury will occur.
- **DO NOT** apply more than 3.5 fl. oz. of **Zannis SC** (0.114 lb. a.i.) per acre in a single application.
- **Maximum number of applications per year:** 1
- **DO NOT** apply more than 3.5 fl. oz. of **Zannis SC** (0.114 lb. a.i.) per acre per year.

[1] Refer to **TABLE 3** for definition of soil-texture groups.

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FALLOW

Zannis SC may be used as a residual treatment to control listed weeds at any time of the year during the fallow period following crop harvest and before the following crop is planted (**Application Instructions** for information pertaining to rotational crop planting intervals).

Application Timing	Use Rate (Fl. Oz./A)	Application Instructions
Fallow period following crop harvest and before the following crop is planted	1.75 - 6.5	Apply **Zannis SC** as a broadcast spray at labeled rates. Sequential applications may be made with a minimum of 30 days between applications. Best product performance is obtained when weeds are not emerged before application. Specific rotational crop planting intervals must be observed between an application of **Zannis SC** and planting of the following crops (see **TABLE 4** for rotational crop planting intervals).
Crop-specific Restrictions • **DO NOT** apply more than 6.5 fl. oz. of **Zannis SC** (0.212 lb. a.i.) per acre in a single application. • **DO NOT** apply more than a maximum cumulative amount of 8.25 fl. oz. of **Zannis SC** (0.269 lb. a.i.) from sequential applications per year. • **Maximum Number of Applications per Year:** 3 (when applying less than single application maximum rate) • Separate sequential applications by at least 30 days.		

LEEK

Zannis SC may be applied to leek (transplanted only) as a postemergence application for residual preemergence weed control. Use **Zannis SC** as part of a weed control program in leek either in combination or sequentially with other herbicides for a broader spectrum of weed control and/or control of emerged weeds.

Application Timing	Use Rate by Soil Texture[1] (Fl. Oz./A)			Application Instructions
	Coarse	Medium to Fine	Muck (> 20% organic matter)	
Postemergence 2 to 6 true leaves	**DO NOT USE**	2.0 - 2.75	2.75	**Zannis SC** may only be applied in a single application. Apply **Zannis SC** at the specified use rates as a broadcast spray to leek that have 2 to 6 true leaves.
Crop-specific Precautions • **Crop Response** - The use of **Zannis SC** may result in temporary growth suppression, leaf burn, and/or other injury or stand reduction to leek under stressful conditions including inadequate or excessive moisture, extended periods of water-saturated soil occur during early transplant growth and development, cool and hot temperatures, compacted soils, injury from other pesticides, disease or other pest damage, mechanical injury, nutrient imbalances, or other conditions known to cause plant stress.				
Crop-specific Restrictions • **DO NOT** apply more than 2.75 fl. oz. of **Zannis SC** (0.090 lb. a.i.) per acre in a single application. • **Maximum Number of Applications per Year:** 1 • **DO NOT** apply more than 2.75 fl. oz. of **Zannis SC** (0.090 lb. a.i.) per acre per year. • **DO NOT** apply **Zannis SC** within 60 days of harvest of leek. • **DO NOT** apply **Zannis SC** to directed-seeded leek.				

[1]Refer to **TABLE 3** for definition of soil-texture groups.

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MINT*

(Peppermint and Spearmint)

* Mint (peppermint and spearmint tops) includes peppermint and spearmint harvested for fresh mint leaves or for stems and leaves processed into mint oil. Peppermint and spearmint tops hereafter referred to as mint.

For use only in Idaho, Montana, Oregon, Washington, and Wisconsin.

Zannis SC may be applied to dormant established mint for residual preemergence control of listed weeds (**TABLE 1**). Use **Zannis SC** as part of a weed control program in mint either in combination or sequentially with other herbicides for a broader spectrum of weed control and/or control of emerged weeds.

Application Timing	Use Rate by Soil Texture[1] (Fl. Oz./A)	Application Instructions
	Medium to Fine	
Preemergence Dormant established mint	3.0	**Preemergence Application:** Apply **Zannis SC** at specified rates (on medium and fine texture soils only) as a broadcast spray to dormant established mint before target-weed germination.
Zannis SC may only be applied in a single application. There is no required (preharvest) interval between a dormant application of **Zannis SC** and the harvest of mint.		
Crop-specific Precautions • After **Zannis SC** application, temporary crop injury may be observed in the growing season as mint breaks dormancy and begins to grow. • The use of **Zannis SC** may result in growth suppression of mint if extreme conditions of high rainfall, high winds, and/or extended periods of water-saturated soil occur right before or soon after mint breaks dormancy.		
Crop-specific Restrictions • **DO NOT** apply more than 3.0 fl. oz. of **Zannis SC** (0.098 lb. a.i.) per acre in a single application. • **Maximum Number of Applications per Year:** 1 • **DO NOT** apply more than 3.0 fl. oz. of **Zannis SC** (0.098 lb. a.i.) per acre per year. • **DO NOT** apply **Zannis SC** to mint in the first year of growth and establishment. • **DO NOT** apply **Zannis SC** to mint that has broken dormancy. Application to mint that is near dormancy break can result in crop injury. The risk of crop injury increases the closer application is to mint dormancy break. • **DO NOT** apply **Zannis SC** to mint stands that have been weakened by age, disease, cold weather, excessive moisture, or other factors that reduce crop vigor. Mint growing under stress is more susceptible to herbicide damage. • **DO NOT** apply **Zannis SC** to mint grown on soils with less than 1% organic matter. • **DO NOT** apply **Zannis SC** to mint grown on coarse soils. • **DO NOT** use roots from **Zannis SC**-treated mint for human consumption. Roots treated with **Zannis SC** can be used for root propagation.		

[1] Refer to **TABLE 3** for definition of soil-texture groups.

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ONIONS, DRY BULB

Zannis SC may be applied to dry bulb onions (direct seeded and transplanted) as a postemergence application for residual preemergence weed control. Use **Zannis SC** as part of a weed control program in dry bulb onions either in combination or sequentially with other herbicides for a broader spectrum of weed control and/or control of emerged weeds.

Application Timing	Use Rate by Soil Texture[1] (Fl. Oz./A)			Application Instructions
	Coarse	Medium to Fine	Muck (> 20% organic matter)	
Postemergence 2 to 6 true leaves	**DO NOT USE ID, OR, WA:** 2.0 - 2.75	2.0 - 2.75	2.75	**Postemergence Application:** Apply **Zannis SC** at the specified use rates as a broadcast spray to dry bulb onions that have 2 to 6 true leaves. See **State-specific Use Instructions** for applications in Idaho, Oregon, and Washington.

Zannis SC may only be applied in a single application.

State-specific Use Instructions for use only in Idaho, Oregon, and Washington: Apply **Zannis SC** postemergence in dry bulb onion for residual weed control. Apply **Zannis SC** at 2.0 - 2.75 fl. oz./A (0.063 - 0.090 lb. a.i./A) on coarse soils. Avoid application to soils with less than 0.5% organic matter and/or pH greater than 7.5 because unacceptable crop injury may occur.

Crop-specific Precautions

- **Crop Response** - The use of **Zannis SC** may result in temporary growth suppression, leaf burn, and/or other injury or stand reduction to dry bulb onions under stressful conditions including inadequate or excessive moisture, extended periods of water-saturated soil during early transplant growth and development, cool and hot temperatures, compacted soils, injury from other pesticides, disease or other pest damage, mechanical injury, nutrient imbalances, or other conditions known to cause plant stress.

Crop-specific Restrictions

- **DO NOT** apply more than 2.75 fl. oz. of **Zannis SC** (0.090 lb. a.i.) per acre in a single application.
- **Maximum Number of Applications per Year:** 1
- **DO NOT** apply more than 2.75 fl. oz. of **Zannis SC** (0.090 lb. a.i.) per acre per year.
- **DO NOT** apply **Zannis SC** within 60 days of harvest of dry bulb onions.

[1] Refer to **TABLE 3** for definition of soil-texture groups.

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940 NW Cary Parkway, Suite 200
Cary, NC 27513

PEANUT

Zannis SC may be applied early postemergence to peanut for residual preemergence control of listed weeds (**TABLE 1**). Use **Zannis SC** as part of a weed control program in peanut either in combination or sequentially with other herbicides for a broader spectrum of weed control and/or control of emerged weeds. Before applying to peanut, verify with your local seed company (supplier) the selectivity of **Zannis SC** on your variety to avoid potential injury.

Application Timing	Use Rate by Soil Texture[1] (Fl. Oz./A)			Application Instructions
	Coarse	Medium	Fine	
Early Postemergence (at-cracking through first leaf stage)	2.5 - 3.5	2.5 - 3.5	2.5 - 3.5	**Early Postemergence Application:** Apply **Zannis SC** at specified use rates as a broadcast spray to peanut from "at-cracking" stage to first true leaf stage through beginning of pod development stage. **Zannis SC** applications to emerged peanut may result in temporary leaf burn and stunting, but a reduction in peanut yield is unexpected. Tank mixes of **Zannis SC** with other crop protection products or adjuvants may significantly enhance this effect. Depending upon growing conditions, recovery from this injury begins immediately but may take several weeks for the injury to dissipate entirely. Adjuvants may be applied with **Zannis SC** when making early postemergence applications. See **State-specific Use Instructions** for applications in Texas in areas west of Interstate 35.

Zannis SC may be applied in a single application or in sequential applications.

There is no required (preharvest) interval between an early postemergence application of **Zannis SC** and the harvest of peanut.

State-specific use in Texas in areas west of Interstate 35: Apply **Zannis SC** early postemergence at 2.5 fl. oz./A (0.081 lb. a.i./A). Use of **Zannis SC** may result in growth suppression if heavy rainfall or irrigation (> 2 inches) occur after application. If a sequential application program of **Zannis SC** is used (e.g., consecutive postemergence applications), the maximum combined rate of **Zannis SC** that may be applied in peanut per year is 5.0 fl. oz./A (0.163 lb. a.i./A) on all soils. Separate sequential applications by at least 21 days.

Sequential Applications: If a sequential application program of **Zannis SC** is used (e.g., consecutive postemergence applications), the maximum combined rate of **Zannis SC** that may be applied per year is 8.25 fl. oz./A (0.269 lb. a.i./A) on all soils.

Crop-specific Precautions

- **Zannis SC** applied early postemergence may result in temporary growth suppression in peanut if extreme conditions of high rainfall and extended periods of water-saturated soil occur during peanut germination or early seedling development.

Crop-specific Restrictions

- **DO NOT** apply more than 3.5 fl. oz. of **Zannis SC** (0.114 lb. a.i.) per acre in a single application.
- **DO NOT** apply more than a maximum cumulative amount of 8.25 fl. oz. of **Zannis SC** (0.269 lb. a.i.) per acre from sequential applications in peanut per year.
- **Maximum Number of Applications per Year:** 3 (when applying rates less than single application maximum rate)
- Separate sequential applications by at least 14 days.

[1]Refer to **TABLE 3** for definition of soil-texture groups.

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PERENNIAL COOL-SEASON GRASSES GROWN FOR SEED PRODUCTION

For use only in Oregon and Washington.

Zannis SC may be applied to established (defined as planted in fall or spring which has gone through a first grass seed harvest or spring-planted grass that have developed at least 8-tillers) stands of perennial cool-season grasses (including fine fescue, perennial ryegrass, and tall fescue) grown for seed production for residual preemergence control of listed weeds (**TABLE 1**). Use **Zannis SC** as part of a weed control program in perennial cool-season grasses grown for seed production either in combination or sequentially with other herbicides for a broader spectrum of weed control and/or control of emerged weeds. Before applying to perennial cool-season grass grown for seed production, verify with your local seed company (supplier), university extension specialist (e.g., weed scientist, county agent, etc.), or Atticus, LLC representative the selectivity of **Zannis SC** on your variety to avoid potential injury.

Application Timing	Use Rate by Soil Texture[1] (Fl. Oz./A)			Application Instructions
	Coarse	Medium	Fine	
Established Stands	3.0	3.0	3.0	**Established Stands Application:** Apply **Zannis SC** at the specified use rate as a broadcast spray to the soil surface in postharvest grass during regrowth at the beginning of significant fall rains or in winter by January 31, or as a fall application to spring-planted grass crops that have developed at least 8-tillers. Apply **Zannis SC** before target-weed germination.
Zannis SC may only be applied in a single application. **Fall Application in Carbon-Planting of Grass Seed:** Apply **Zannis SC** at 1.5 - 3.0 fl. oz./A (0.049 - 0.098 lb. a.i./A) as a broadcast spray to soil surface immediately after grass seed has been planted using standard carbon-planting practices (i.e., activated carbon applied at minimum 300 lbs./acre in minimum one inch band over grass seed row). Apply **Zannis SC** before target weed germination.				
Crop-specific Precautions • Application made in periods of cold temperatures that temporarily limit normal crop growth or in extended cold temperature periods that initiate winter dormancy in grass crops may result in injury.				
Crop-specific Restrictions • **DO NOT** apply more than 3.0 fl. oz. of **Zannis SC** (0.098 lb. a.i.) per acre in a single application. • **Maximum Number of Applications per Year:** 1 • **DO NOT** apply more than 3.0 fl. oz. of **Zannis SC** (0.098 lb. a.i.) per acre per year. • **DO NOT** apply **Zannis SC** in combination with other pyroxasulfone-containing products in perennial cool-season grasses grown for seed production. • **Preharvest Interval (PHI) for Seed of Perennial Grasses:** 60 days • **Pre-grazing Interval (PGI) to Livestock for Zannis SC-Treated Grass Forage and Hay:** 60 days				

[1]Refer to **TABLE 3** for definition of soil-texture groups.

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POTATO

Zannis SC may be applied to potato for residual preemergence control of listed weeds (**TABLE 1**). Use **Zannis SC** as part of a weed control program in potato either in combination or sequentially with other herbicides for a broader spectrum of weed control and/or control of emerged weeds. Before applying to potato, verify with your local seed company (supplier) the selectivity of **Zannis SC** on your variety to avoid potential injury.

Application Timing	Use Rate by Soil Texture[1] (Fl. Oz./A)			Application Instructions
	Coarse	Medium	Fine	
Preemergence	2.5 **ID, OR, WA:** 2.5 - 3.25	2.5 - 3.25 **ID, OR, WA:** 3.25 - 4.0	2.5 - 3.25 **ID, OR, WA:** 3.25 - 4.0	**Preemergence Surface Application:** Apply **Zannis SC** at specified use rates as a broadcast spray to the soil surface after planting or drag off, but before crop emergence. Where "drag off" is practiced, **DO NOT** apply **Zannis SC** until the "drag off" process is complete and there is a minimum of 2 inches of soil covering the vegetative portion of the potato plants, or **Zannis SC** may be applied after hilling but prior to potato or weed emergence, or **Zannis SC** may be applied where potato hills are harrowed and re-hilled and sprayed, but application must be prior to potato and weed emergence. There must be 2 inches of soil covering the seed piece and/or sprout/vegetation. Care must be exercised so that "drag off" implements do not injure the plants. Efficacy will be reduced if later cultural practices expose untreated soil. Apply **Zannis SC** only to a uniform seedbed which is firm and free of clods and cracks. The seedbed must be prepared to ensure good seed piece row closure and soil coverage of the seed pieces. See **State-specific Use Instructions** for applications in Idaho, Oregon, and Washington.

Zannis SC may only be applied in a single application.

There is no required (preharvest) interval between preemergence application and harvest of potato.

State-specific Use Instructions for Preemergence Surface Application in Idaho, Oregon, and Washington: Apply **Zannis SC** preemergence at 2.5 - 3.25 fl. oz./A (0.081 - 0.106 lb. a.i./A) on coarse soils, and at 3.25 - 4.0 fl. oz./A (0.106 - 0.130 lb. a.i./A) on medium soils and fine soils. Avoid application to soils with less than 0.5% organic matter and/or pH greater than 7.5 because unacceptable crop injury may occur. Follow all other application instructions and restrictions for preemergence surface applications of **Zannis SC** in potato.

Crop-specific Precautions

- The use of **Zannis SC** may result in temporary growth suppression in potato under stressful conditions, including inadequate or excessive moisture or rainfall, cool and hot temperatures, compacted or crusted soils, improper planting depth, injury from other pesticides, disease or other pest damage, mechanical injury, nutrient imbalances, or other conditions known to cause plant stress.

Crop-specific Restrictions

- **Coarse Soils:**
  - o **DO NOT** apply more than 2.5 fl. oz. of **Zannis SC** (0.081 lb. a.i.) per acre in a single application (excluding Idaho, Oregon, and Washington).
  - o **In Idaho, Oregon, and Washington: DO NOT** apply more than 3.25 fl. oz. (0.106 lb. a.i.) per acre in a single application.
- **All Soils Other than Coarse:**
  - o **DO NOT** apply more than 3.25 fl. oz. of **Zannis SC** (0.106 lb. a.i.) per acre in a single application (excluding Idaho, Oregon, and Washington).
  - o **In Idaho, Oregon, and Washington: DO NOT** apply more than 4.0 fl. oz. (0.130 lb. a.i.) per acre on medium or fine soils in a single application.
- **Maximum Number of Applications per Year:** 1
- **DO NOT** apply more than 4.0 fl. oz. of **Zannis SC** (0.130 lb. a.i.) per acre per year.
- **DO NOT** apply **Zannis SC** prior to planting potato seed pieces.
- **DO NOT** apply **Zannis SC** to emerging or emerged potato as severe crop injury will occur.

[1]Refer to **TABLE 3** for definition of soil-texture groups.

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SAFFLOWER

Zannis SC may be applied to safflower for residual preemergence weed control. Use **Zannis SC** as part of a weed control program in safflower either in combination or sequentially with other herbicides for a broader spectrum of weed control and/or control of emerged weeds. Before applying to safflower, verify with your local seed company (supplier), university extension specialist (e.g., weed scientist, county agent, etc.), or Atticus, LLC representative the selectivity of **Zannis SC** on your hybrid/variety to avoid potential injury.

Application Timing	Use Rate by Soil Texture[1] (Fl. Oz./A)			Application Instructions
	Coarse	Medium	Fine	
Preemergence	**DO NOT USE**	1.75 - 2.5	1.75 - 2.5	**Preemergence Surface Application:** Apply **Zannis SC** at specified use rates as a broadcast spray to the soil surface after planting and before crop emergence.
Zannis SC may only be applied in a single application. There is no required (preharvest) interval between a preemergence application and safflower harvest.				
Crop-specific Precautions • **Safflower seed quality** - Plant high quality seed. • **Seedbed preparation** - The seedbed MUST be prepared to ensure good seed row closure and soil coverage of the seed. • The use of **Zannis SC** may result in temporary growth suppression or leaf burn in safflower under stressful conditions including inadequate or excessive soil moisture or rainfall, cool and hot temperatures, compacted or crusted soils, improper planting depth, injury from other pesticides, disease or other pest damage, mechanical injury, nutrient imbalances, or other conditions known to cause plant stress. • If **Zannis SC** is tank mixed with another herbicide other than glyphosate or a graminicide, use a lower rate within the **Zannis SC** rate range for the application timing and soil texture specified.				
Crop-specific Restrictions • **DO NOT** apply more than 2.5 fl. oz. of **Zannis SC** (0.081 lb. a.i.) per acre in a single application. • **Maximum Number of Applications per Year:** 1 • **DO NOT** apply more than 2.5 fl. oz. of **Zannis SC** (0.081 lb. a.i.) per acre per year. • **DO NOT** apply **Zannis SC** preplant or preplant incorporated to safflower. • **DO NOT** apply **Zannis SC** to safflower at cracking or cotyledon stage.				

[1] Refer to **TABLE 3** for definition of soil-texture groups.

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SOYBEAN

Zannis SC may be applied to soybean for residual preemergence control of listed weeds (**TABLE 1**). Use **Zannis SC** as part of a weed control program in soybean either in combination or sequentially with other herbicides for a broader spectrum of weed control and/or control of emerged weeds. Before applying to soybean, verify with your local seed company (supplier) the selectivity of **Zannis SC** on your variety to avoid potential injury.

Application Timing	Use Rate by Soil Texture[1] (Fl. Oz./A)			Application Instructions
	Coarse	Medium	Fine	
Early Preplant Surface (within 15 to 45 days of planting)	2.5 - 3.5	3.25 - 5.0	4.0 - 5.75	**Early Preplant Surface Application:** Use listed application rates when making preplant surface applications, using the highest application rate for a given soil texture. Preplant surface applications are not advised on coarse soils or in areas where average annual rainfall (or rainfall plus irrigation) typically exceeds 40 inches.
Preplant Surface (within 14 days of planting) **Preplant Incorporated** (within 14 days of planting)	2.5 - 3.5	3.25 - 5.0	4.0 - 5.75	**Preplant Surface or Preplant Incorporated Application:** Apply **Zannis SC** at the specified use rates as a broadcast spray to the soil surface or incorporated before planting on all soil types.
Preemergence Surface	2.5 - 3.5	3.25 - 5.0	4.0 - 5.75	**Preemergence Surface Application:** Apply **Zannis SC** at specified use rates as a broadcast spray to the soil surface after planting and before crop emergence.
Early Postemergence Emergence (cracking stage) to sixth-trifoliate leaf stage	1.75 - 3.5	2.5 - 5.0	3.25 - 5.75	**Early Postemergence Application:** Apply **Zannis SC** at specified use rates as a postemergence broadcast spray to soybean from emergence (cracking stage) to sixth-trifoliate leaf stage. **Zannis SC** applications to emerged soybeans may result in temporary leaf burn and stunting, but a reduction in soybean yield is unexpected. Tank mixes of **Zannis SC** with other crop protection products or adjuvants may significantly enhance this effect. Depending upon growing conditions, recovery from this injury begins immediately but may take several weeks for the injury to dissipate entirely.

Zannis SC may be applied in a single application or in sequential applications.

There is no required (preharvest) interval between a preplant, preemergence, or early postemergence application of **Zannis SC** and the harvest of soybean grain.

Fall/Winter Application for Controlling Weeds Germinating in the Fall, or Winter Annual Weeds: Zannis SC may be broadcast surface applied in the fall or winter to control winter annual weeds and other weeds germinating in the fall. Use on coarse, medium, or fine soils at rates listed for the preplant surface timing. Sequential preemergence and/or postemergence applications can be made, but **DO NOT** exceed the maximum cumulative rate allowed by soil type per year. See the main **APPLICATION TIMING** section of this label for further application instructions.

Sequential Application: If a sequential application program of **Zannis SC** is used (e.g., fall application followed by spring application, or sequential applications in the spring), the maximum combined rate of **Zannis SC** that may be applied per year is 3.5 fl. oz./A (0.114 lb. a.i./A) on coarse soils or 5.75 fl. oz./A (0.187 lb. a.i./A) on medium-to-fine soils.

Crop-specific Precautions

- **Seeding Depth** - Soybean seed must be planted a minimum of 1-inch deep.
- The use of **Zannis SC** may result in temporary growth suppression in soybean if extreme conditions of high rainfall and extended periods of water-saturated soil occur during soybean germination or early seedling development.

Crop-specific Restrictions

- **Coarse Soil:**
  - o **DO NOT** apply more than 3.5 fl. oz. of **Zannis SC** (0.114 lb. a.i.) per acre in a single application or as a maximum cumulative amount from sequential applications in soybean per year.
- **Medium Soil:**
  - o **DO NOT** apply more than 5.0 fl. oz. of **Zannis SC** (0.163 lb. a.i.) per acre in a single application.
  - o **DO NOT** apply more than a maximum cumulative amount of 5.75 fl. oz. of **Zannis SC** (0.187 lb. a.i.) per acre from sequential applications in soybean per year.
- **Fine Soil:**
  - o **DO NOT** apply more than 5.75 fl. oz. of **Zannis SC** (0.187 lb. a.i.) per acre in a single application or as a maximum cumulative amount from sequential applications in soybean per year.
- **Maximum Number of Applications per Year:** 2 (when applying less than single application maximum rate)
- Separate sequential applications by at least 14 days.

[1]Refer to **TABLE 3** for definition of soil-texture groups.

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SUNFLOWER

Zannis SC may be applied to sunflower for residual preemergence control of listed weeds (**TABLE 1**). Use **Zannis SC** as part of a weed control program in sunflower either in combination or sequentially with other herbicides for a broader spectrum of weed control and/or control of emerged weeds. Before applying to sunflower, verify with your local seed company (supplier), university extension specialist (e.g., weed scientist, county agent, etc.), or Atticus, LLC representative the selectivity of **Zannis SC** on your hybrid/variety to avoid potential injury.

Application Timing	Use Rate by Soil Texture[1] (Fl. Oz./A)			Application Instructions
	Coarse	Medium	Fine	
Early Preplant Surface (within 15 to 45 days of planting)	1.75 - 2.5	2.5 - 5.0	5.0 - 6.5	**Early Preplant Surface Application:** Use application rates specified when making preplant surface applications, using the highest application rate within the rate range for a given soil texture. Preplant surface applications are not advised on coarse soils or in areas where average annual rainfall (or rainfall plus irrigation) typically exceeds 40 inches.
Preplant Surface (within 14 days of planting)	1.75 - 2.5	2.5 - 5.0	5.0 - 6.5	**Preplant Surface Application:** Apply **Zannis SC** at the specified use rates as a broadcast spray to the soil surface before planting on all soil types.
Preemergence	1.75 - 2.5	2.5 - 5.0	5.0 - 6.5	**Preemergence Surface Application:** Apply **Zannis SC** at specified use rates specified as a broadcast spray to the soil surface after planting and before crop emergence.
Early Postemergence first true leaf (leaf at least 1.5 inches long, V1 stage) through eight leaf stage (V8)	1.75 - 2.5	1.75 - 3.25	1.75 - 3.25	**Early Postemergence Application:** Apply **Zannis SC** at specified use rates as a broadcast spray to sunflower from first true leaf (leaf at least 1.5 inches long, V1 stage) through eight leaf stage (V8). **Zannis SC** applications to emerged sunflower may result in temporary leaf burn and stunting, but a reduction in sunflower yield is unexpected. Adjuvants may be applied with **Zannis SC** when making early postemergence applications.

Zannis SC may be applied in a single application or in sequential applications.

There is no required (preharvest) interval between preplant and preemergence applications and sunflower harvest.

Fall/Winter Application for Controlling Weeds Germinating in the Fall, or Winter Annual Weeds: Zannis SC may be broadcast surface applied in the fall or winter to control winter annual weeds and other weeds germinating in the fall. Use on coarse, medium, or fine soils at rates listed for the preplant surface timing. Sequential preemergence and/or postemergence applications can be made, but **DO NOT** exceed the maximum cumulative rate allowed by soil type per year. See the main **APPLICATION TIMING** section of this label for further application instructions.

Sequential Applications: If a sequential application program of **Zannis SC** is used (e.g., fall application followed by spring application, or sequential spring applications including preplant surface or preemergence application followed by postemergence application or consecutive postemergence applications), the maximum combined rate of **Zannis SC** that may be applied per year is 2.5 fl. oz./A (0.081 lb. a.i./A) on coarse soils and 8.25 fl. oz./A (0.269 lb. a.i./A) on medium-to-fine soils.

Crop-specific Precautions

- **Sunflower Seed Quality** - Plant high quality seed.
- **Seedbed Preparation** - The seedbed MUST be prepared to ensure good seed row closure and soil coverage of the seed.
- The use of **Zannis SC** may result in temporary growth suppression or leaf burn in sunflower under stressful conditions including inadequate or excessive soil moisture or rainfall, cool and hot temperatures, compacted or crusted soils, improper planting depth, injury from other pesticides, disease or other pest damage, mechanical injury, nutrient imbalances, or other conditions known to cause plant stress.
- If **Zannis SC** is tank mixed with another herbicide other than glyphosate or a graminicide, use a lower rate within the **Zannis SC** rate range for the application timing and soil texture.

Crop-specific Restrictions

- **Coarse Soil:**
  - o **DO NOT** apply more than 2.5 fl. oz. of **Zannis SC** (0.081 lb. a.i.) per acre in a single application or as a maximum cumulative amount from sequential applications in sunflower per year.
- **All Soils Other Than Coarse:**
  - o **DO NOT** apply more than 6.5 fl. oz. of **Zannis SC** (0.212 lb. a.i.) per acre in a single application.
- **DO NOT** apply more than a maximum cumulative amount of 8.25 fl. oz. of **Zannis SC** (0.269 lb. a.i.) per acre from sequential applications in sunflower per year.
- **Maximum Number of Applications per Year:** 3 (when applying less than single application maximum rate)
- Separate sequential applications by at least 14 days.
- **DO NOT** apply **Zannis SC** preplant incorporated to sunflower.
- **DO NOT** apply **Zannis SC** to sunflower at cracking or cotyledon stage.
- **DO NOT** apply a tank mix of **Zannis SC** and imazamox on glyphosate-resistant (Clearfield®) sunflower hybrids/varieties.
- **DO NOT** apply **Zannis SC** postemergence less than 60 days before harvest of sunflower seed.

[1]Refer to **TABLE 3** for definition of soil-texture groups.

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WHEAT

Zannis SC may be applied in fall-seeded or spring-seeded wheat for residual preemergence control or suppression of listed weeds (**TABLE 2**) and suppression of other listed weeds (**TABLE 1**). Use **Zannis SC** as part of a weed control program in wheat either in combination or sequentially with other herbicides for a broader spectrum of weed control and/or control of emerged weeds.

Crop Response

Zannis SC applied preplant surface or preemergence can cause wheat injury. Under stressful conditions (including inadequate or excessive moisture, cool or hot temperatures, compacted soils, injury from other pesticides, disease or other pest damage, mechanical injury, nutrient imbalances, low soil pH induced aluminum toxicity, or other conditions known to cause plant stress), **Zannis SC** injury will be intensified.

No crop injury is expected when **Zannis SC** is applied delayed preemergence or early postemergence. However, some visual wheat response is possible when **Zannis SC** is applied to wheat under stressful conditions including inadequate or excessive moisture, cool or hot temperatures, compacted soils, injury from other pesticides, disease or other pest damage, mechanical injury, nutrient imbalances, or other conditions known to cause plant stress.

Wheat response is most often visible as stunting and/or discoloration of leaf tissue (e.g., chlorosis), but in its most severe form can result in stand loss and yield reduction. The greatest potential for wheat response occurs when **Zannis SC** concentrates in the crop row. Unacceptable wheat response may be caused by uneven application, soil clods or disturbances, an open/cracked seed furrow that allows herbicide to directly contact the seed, or a deep seed furrow that allows herbicide concentration after a rain/irrigation event during wheat germination.

Certain wheat varieties can be more sensitive to **Zannis SC**. Before applying to wheat, verify sensitivity with your local seed company (supplier), university extension specialist (e.g., wheat breeder, weed scientist, county agent, etc.), or Atticus, LLC representative.

Application Timing	Use Rate by Soil Texture[1] (Fl. Oz./A)			Application Instructions
	Coarse	Medium	Fine	
Preplant Surface or **Preemergence Surface**	1.0 - 2.0	1.75 - 2.5 **ID, MT, OR, WA:** 1.75 - 3.25	1.75 - 3.0 **ID, MT, OR, WA:** 2.0 - 3.25	**Preplant Surface Application:** Apply **Zannis SC** at the specified use rates as a broadcast spray to the soil surface no more than 14 days before planting on all soil types. Soil disturbance after application from planters/drills may result in herbicide incorporation that can result in unacceptable crop injury, or displacement of **Zannis SC** that can result in inconsistent weed control. **Preemergence Surface Application:** Apply **Zannis SC** at the specified use rates after planting but before wheat spiking as a broadcast spray to the soil surface with uniform seedbed that is firm and free of clods. Ensure good seed row closure and soil coverage to avoid contact with **Zannis SC**. As the interval from planting to application increases, the potential for crop injury decreases. See **State-specific Use Instructions** for applications in Idaho, Montana, Oregon, and Washington.
Delayed Preemergence Surface	1.25 - 1.75	1.75 - 2.5	1.75 - 3.25	**Delayed Preemergence Surface Application:** Apply **Zannis SC** at the specified use rates as a broadcast spray to the soil surface following wheat planting when 80% of germinated wheat seeds have a shoot at least 1/2-inch long until wheat spiking.
Early Postemergence	1.75 - 4.0	1.75 - 4.0	1.75 - 4.0	**Early Postemergence Application:** Apply **Zannis SC** at the specified use rates as a broadcast spray to wheat at spiking up to the 4th-tiller growth stage. **Zannis SC** will only suppress or control labeled weeds that germinate after the early postemergence application and rainfall/irrigation activation. Apply **Zannis SC** as early as possible after wheat emergence to prevent weed emergence.

Zannis SC may be applied in a single application or in sequential applications relative to the growth stage of wheat.

Sequential Application: Zannis SC may be applied as a sequential or split application program where a preplant, preemergence, or delayed preemergence application is followed by an early postemergence application or where multiple early postemergence applications are made. **DO NOT** apply more than a maximum cumulative amount of 4.0 fl. oz./A (0.130 lb. a.i./A) per year.

State-specific Use Instructions for Preplant and Preemergence Applications in Idaho, Montana, Oregon, and Washington: Apply **Zannis SC** preplant surface or preemergence in fall-seeded winter wheat for residual weed control. Apply **Zannis SC** only to a uniform seedbed that is firm and free of clods, cracks, excess trash (previous crop residue), and weed growth. The seedbed MUST be prepared to ensure good seed row closure and soil coverage of the seed. Open furrows or poor furrow closure can result in crop injury. Use high quality seed. Plant seed at least 1-inch deep, but not greater than 1.5-inches deep to avoid crop injury. Avoid planting seed into loose, powdery soil because unacceptable crop injury may result if soil settles and final planting depth is less than 1-inch. Apply **Zannis SC** preplant surface or preemergence at 1.75 - 3.25 fl. oz./A (0.057 - 0.106 lb. a.i./A) on medium soils and at 2.0 - 3.25 fl. oz./A (0.063 - 0.106 lb. a.i./A) on fine soils. Avoid application to soils with less than 2% organic matter and/or pH greater than 7.5 because unacceptable crop injury may occur. Follow all other application instructions and restrictions and limitations for preplant and preemergence applications of **Zannis SC** in wheat.

State-specific Use Restrictions:

- **DO NOT** apply on spring wheat.
- **DO NOT** apply on coarse soils.

(continued)

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Crop-specific Precautions

- Apply **Zannis SC** only to a uniform seedbed that is firm and free of clods, cracks, excess trash (previous crop residue), and weed growth. The seedbed MUST be prepared to ensure good seed row closure and soil coverage of the seed. Open furrows or poor furrow closure can result in crop injury. Use high quality seed. Plant seed at least 3/4-inch deep to avoid crop injury.
- The use of **Zannis SC** in wheat may result in temporary or sustained growth suppression and chlorosis if high rainfall or irrigation leads to extended periods of water-saturated soil during early seedling development. To reduce crop response, avoid applying **Zannis SC** if a long period of rain is expected before wheat emergence.

Crop-specific Restrictions

- **DO NOT** apply more than 4.0 fl. oz. of **Zannis SC** (0.130 lb. a.i.) per acre in a single application or as a maximum cumulative amount of from sequential applications in wheat per year.
- **Maximum Number of Applications per Year:** 2 (when applying less than single application maximum rate)
- Separate sequential applications by at least 14 days.
- **DO NOT** apply **Zannis SC** to durum wheat.
- **DO NOT** seed wheat deeper than 1.5 inches after a preplant application or before a preemergence or delayed preemergence application.
- **DO NOT** apply **Zannis SC** to flooded fields or saturated soils.
- **DO NOT** apply preemergence if 1/4 inch or more rain is expected within 48 hours after application.
- **DO NOT** irrigate fields after a preemergence or delayed preemergence application until wheat spiking.
- **DO NOT** apply preplant, preemergence, or delayed preemergence to broadcast-seeded wheat.
- **DO NOT** apply **Zannis SC** preplant incorporated in wheat.
- Wheat forage and hay can be fed or grazed 7 or more days after application.

[1]Refer to **TABLE 3** for definition of soil-texture groups.

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STORAGE AND DISPOSAL

DO NOT contaminate water, food or feed by storage or disposal.

PESTICIDE STORAGE: DO NOT use or store near heat or open flame. Store in a tightly closed container in a cool, dry place. Store in original container and out of reach of children, preferably in a locked storage area.

PESTICIDE DISPOSAL: Pesticide spray mixture or rinsate that cannot be used should be disposed of in a landfill approved for pesticides. Improper disposal of excess pesticide spray mixture or rinsate is a violation of Federal law. If these wastes cannot be disposed of by the use according to label instructions, contact your State Pesticide or Environmental Control Agency or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

CONTAINER HANDLING:

For plastic containers ≤ 5 gallons: Nonrefillable container: DO NOT reuse or refill this container. Triple rinse or pressure rinse container (or equivalent) promptly after emptying. Triple rinse as follows: 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. Pressure rinse as follows: Empty the remaining contents into application equipment or mix tank and continue to drain for 10 seconds after the flow begins to drip. Hold container upside down over application equipment or mix tank, or collect rinsate for later use or disposal. Insert pressure rinsing nozzle in the side of the container and rinse at about 40 PSI for at least 30 seconds. Drain for 10 seconds after the flow begins to drip. Then offer for recycling if available or puncture and dispose of in a sanitary landfill, or by other procedures allowed by state and local authorities.

For plastic containers > 5 gallons: Nonrefillable container: DO NOT reuse or refill this container. Triple rinse or pressure rinse container (or equivalent) promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank. Fill the container 1/4 full with water. Recap 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. Turn the container over onto its other 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. Pressure rinse as follows: Empty the remaining contents into application equipment or mix tank and continue to drain for 10 seconds after the flow begins to drip. Hold container upside down over application equipment or mix tank, or collect rinsate for later use or disposal. Insert pressure rinsing nozzle in the side of the container and rinse at about 40 PSI for at least 30 seconds. Drain for 10 seconds after the flow begins to drip. Then offer for recycling if available or puncture and dispose of in a sanitary landfill, or by other procedures allowed by state and local authorities.] Then offer for recycling if available or puncture and dispose of in a sanitary landfill, or by other procedures allowed by state and local authorities.

LIMITATION OF WARRANTY AND LIABILITY

IMPORTANT: READ BEFORE USE. Read the entire Directions for Use, Conditions of Warranties and Limitations of Liability before using this product. If these terms and conditions are not acceptable, return the unopened product container at once. By using this product, user or buyer accepts the following Disclaimer of Warranties and Limitations of Liability. **CONDITIONS:** The directions for use of this product are believed to be adequate and must be followed carefully. However, it is impossible to eliminate all risks associated with the use of this product. Ineffectiveness, injury, and other unintended consequences may result because of such factors as manner of use or application (including misuse), the presence of other materials, weather conditions, and other unknown factors, all of which are beyond the control of ATTICUS, LLC. To the extent consistent with applicable law, all such risks shall be assumed by the user or buyer.

DISCLAIMER OF WARRANTIES: To the extent consistent with applicable law, ATTICUS, LLC makes no other warranties, express or implied, of merchantability or of fitness for a particular purpose or otherwise, that extend beyond statements on this label. **LIMITATIONS OF LIABILITY:** To the extent consistent with applicable law, neither ATTICUS, LLC the manufacturer, nor the Seller shall be liable for any indirect, special, incidental or consequential damages resulting from the use, handling, application, storage, or disposal of this product. To the extent consistent with applicable law, the exclusive remedy of the user or buyer for any and all losses, injuries or damages resulting from the use, handling, application, or storage of this product, whether in contract, warranty, tort, negligence, strict liability or otherwise, shall not exceed the purchase price paid.

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