

# **FOR USE IN SOYBEAN GROWN IN NORTH DAKOTA AND IN MINNESOTA NORTH OF HIGHWAY #210**

## General Information

## Product Information

Zidua PRO herbicide provides both contact burndown and residual preemergence control of annual grass weeds and annual broadleaf weeds (including biotypes resistant to ACCase inhibitors, ALS inhibitors, triazine herbicides, and glyphosate) (refer to Table 1 for lists of weeds controlled) in soybean. Refer to Crop-specific Information section for instructions on herbicide tank mixes.

Make burndown application of Zidua PRO when weeds are small and actively growing. An adjuvant is required with Zidua PRO for optimum burndown activity (refer to Additives section for details). Burndown activity may be slowed or reduced under cloudy and/or foggy or cooler weather conditions or when weeds are growing under drought or other stress conditions. When targeting dense weed populations and/or larger broadleaf weeds, use higher spray volumes. Angling nozzles forward (to 45 degrees) may improve penetration of denser weed canopies.

Periods of dry weather following application of Zidua PRO may reduce herbicidal effectiveness. Residual preemergence applications of Zidua PRO must be activated by at least 1/2 inch of rainfall or sprinkler irrigation prior to weed seedling emergence. When Zidua PRO is not activated, a labeled postemergence herbicide or cultivation may be needed to control weed escapes.

## Mode of Action

Zidua PRO herbicide contains three herbicide active ingredients. Saflufenacil is a potent inhibitor of protoporphyrinogen-oxidase, belonging to herbicide mode-of-action Group 14 (WSSA)/Group E (HRAC). Imazethapyr is a potent inhibitor of acetohydroxyacid synthase, belonging to herbicide mode-of-action Group 2 (WSSA)/Group B (HRAC). Pyroxasulfone is a potent inhibitor of very long chain fatty acid (VLCFA) synthesis, belonging to the mode-of-action Group 15 (WSSA)/Group K3 (HRAC). The Group 14/Group E and Group 2/Group B herbicides of Zidua PRO are rapidly absorbed by roots and foliage. Plant death is the result of membrane

damage and inhibition of the production of branched chain amino acids. Under active growing conditions, susceptible emerged weeds usually develop chlorotic and necrotic injury symptoms within hours and die within a few days. Susceptible emerging weed seedlings will usually die as they reach the soil surface or shortly after emergence. The Group 15/Group K3 herbicide of Zidua PRO is absorbed by roots and shoots of weeds following germination. Plant death is the result of very long chain fatty acid synthesis inhibition; susceptible weeds typically do not emerge.

### Resistance Management

While weed resistance to protoporphyrinogen-oxidase-inhibiting herbicide is relatively infrequent, populations of resistant biotypes to protoporphyrinogen-oxidase or acetohydroxyacid-synthase-inhibiting herbicides are known to exist. Weed resistance to VLCFA synthesis-inhibiting herbicides is rare. Resistance management practices include:

1. Following labeled application rate and weed growth stage instructions
2. Avoiding repeated applications of herbicides with the same mode of action
3. Utilizing tank mixes and sequential applications with other effective herbicides possessing different modes of action
4. Using crop rotation so crop competition, tillage or herbicides with alternative modes of action can be used to control weed escapes

### Crop Tolerance

Soybeans are tolerant to Zidua PRO when applied according to label directions as a preplant to preemergence treatment and under normal environmental conditions. Crop injury may occur under stressful growing conditions (e.g. seedling disease, extreme hot or cold weather, excessive moisture, high soil pH, high soil salt concentration, or drought).

Severe crop injury will result if Zidua PRO is applied postemergence (over the top) to soybeans.

### Application Instructions

Apply Zidua PRO prior to crop emergence only.

## Application Methods and Equipment

Zidua PRO may be applied by ground or air. DO NOT apply through any type of irrigation system.

Thorough spray coverage is required for optimum weed control and can be improved with proper adjuvant, 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, and to avoid spray drift to nontarget areas.

Equipment should be adjusted 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.

Zidua PRO may only be applied using water as the spray carrier.

## Aerial Application Requirements

Water 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 and to avoid spray drift.

The following measures must be followed to reduce the potential of spray drift to nontarget areas from aerial applications:

1. The distance of the outermost nozzles on the boom must not exceed  $\frac{3}{4}$  the length of the fixed wingspan or 90% of rotor blade diameter.
2. Use low-drift nozzles such as straight-stream nozzles (D-8 or larger). DO NOT use nozzles producing a mist droplet spray.
3. Nozzles must always point backward parallel with the airstream and never be pointed downward more than 45 degrees.

4. Without compromising aircraft safety, applications should be made at a height of 10 feet or less above the crop canopy or tallest plants.
5. DO NOT apply during periods of temperature inversions or stable atmospheric conditions.
6. Avoid potential adverse effects to nontarget areas by maintaining a 30-foot buffer between the point of direct application and the closest downwind edge of sensitive terrestrial habitats (such as grasslands, forested areas, shelter belts, woodlots, hedgerows, riparian areas, and shrub lands).

### Ground Application Requirements

**Water Volume.** Use 5 or more gallons of water per treated acre for weed control applications. Thorough spray coverage is required for control of emerged broadleaf weeds.

High populations and/or variations in size can prevent adequate spray coverage. Controlling fall-germinated weeds in the spring (e.g. horseweed/marestail) will also require thorough spray coverage. Use higher spray volumes (e.g. 15 to 20 gallons of water per acre) in these situations to increase spray coverage and optimize burndown activity.

The following measures must be followed to reduce the potential of spray drift to nontarget areas from ground applications:

1. Apply this product using nozzles which deliver medium-to-coarse spray droplets as defined by ASAE standard S-572 and as shown in nozzle manufacturer's catalogs. Flat-fan nozzles are recommended for burndown applications while flood-jet type nozzles are recommended for residual soil surface applications.

Nozzles that deliver coarse spray droplets may be used to reduce spray drift provided spray volume per acre (GPA) is increased to maintain coverage of target (i.e. weeds or soil surface). DO NOT use nozzles that produce fine (e.g. cone) spray droplets.

2. Apply this product only when the potential for drift to adjacent nontarget areas is minimal (e.g. when the wind is 10 MPH or less and is blowing away from sensitive areas). DO NOT apply during periods of temperature inversions or stable

atmospheric conditions.

3. Avoid potential adverse effects to nontarget areas by maintaining a 13-foot buffer between the application area and the closest downwind edge of sensitive terrestrial habitats (such as grasslands, forested areas, shelter belts, woodlots, hedgerows, riparian areas, and shrub lands).

#### Use Restrictions

- DO NOT apply Zidua PRO after crop emergence or severe crop injury will occur.
- DO NOT contaminate irrigation ditches or water used for domestic purposes.
- DO NOT apply Zidua PRO through any type of irrigation system (e.g. chemigation).
- Zidua PRO is not for sale, distribution, or use in Nassau and Suffolk counties in New York State, or in California.

#### Use Precautions

- Maximum seasonal use rate - Refer to the Crop-specific Information section for maximum cropping seasonal application use rates. A cropping season is defined as the period following harvest of the preceding crop through the harvest of the planned or current crop.
- Rainfastness - Zidua PRO is rainfast 1 hour after application. Burndown activity may be reduced if rain or irrigation occurs within 1 hour of application.
- Full-rate application of products containing chlorimuron ethyl, chloransulam-methyl, flumetsulam, or imazaquin in the same year as Zidua PRO may increase the risk of injury to sensitive follow crops. Consult the respective labels of these products for recommended uses of these products in combinations.
- When organophosphate or carbamate insecticides are tank mixed with Zidua PRO, temporary injury may result to the treated crops.
- Only rotational crops harvested at maturity may be used for feed or food.

#### Rotational Crop Restrictions, Crop Rotation, and Emergency Replanting Intervals

Use Table 2 and its exceptions in the paragraphs following the table to determine the proper interval between Zidua PRO application and rotational crop planting. This

interval can be used to determine the acceptable planting interval for rotational crops as well as replanting after crop failure (because of environmental factors such as drought, frost or hail, etc.). Be sure to determine the rotational crop interval for tank mix products and utilize the most restrictive interval of all products applied.

Rotational Crop Restrictions, Crop Rotation, and Emergency Replanting Intervals, a successful field bioassay must be completed. The field bioassay consists of a test strip of the intended rotational crop planted across the previously treated field and grown to maturity. The test strip should include low areas and knolls and include variations in soil such as type and pH. If no crop injury is evident in the test strip, the intended rotational crop may be planted the following year. Sugar beet production can be reduced when grown in soil conditions with a pH less than 6.5. If the field is limed to adjust Ph prior to planting rotational crops not listed in Rotational Crop Restrictions, Crop Rotation, and Emergency Replanting Intervals, apply the lime at least 12 months prior to planting the rotational crop.

Use of Zidua PRO in accordance with label directions is expected to result in normal growth of rotational crops in most situations. However, various environmental and agronomic factors make it impossible to eliminate all risks associated with the use of this product and, therefore, rotational crop injury is always possible.

#### Exceptions to Crop Rotation Restrictions Corn Inbred Lines

Corn inbred seed lines may be planted the year following an application of Zidua PRO. Growers are directed to contact the seed company for information and recommendations regarding the planting of corn grown for seed in fields treated with Zidua PRO the previous year. Because growing conditions, environmental conditions, and grower practices are beyond the control of BASF, all risks and consequences associated with planting seed corn inbreds into fields treated previously with Zidua PRO shall be assumed by the user.

#### Sweet Corn and Popcorn Varieties

(Illinois, Indiana, Iowa, Minnesota, Ohio, Tennessee, and Wisconsin only)

Sweet corn and popcorn varieties may be planted the year following an application of Zidua PRO. Some sweet corn and popcorn varieties may be injured when planted at less than 18 months following an application of Zidua PRO.

Before planting sweet corn for processing, contact the processor company for information and recommendations regarding the tolerance of sweet corn varieties planned for fields treated with Zidua PRO the previous year. DO NOT plant fresh market sweet corn varieties prior to 18 months after Zidua PRO use. Before planting popcorn, contact the popcorn company for information and recommendations regarding the tolerance of popcorn varieties planned for fields treated with Zidua PRO the previous year. Because growing conditions, environmental conditions, and grower practices are beyond the control of BASF, all risks and consequences associated with planting sweet corn or popcorn varieties into fields treated previously with Zidua PRO shall be assumed by the user. Stunting and maturity-delay or other adverse effects may result when sweet corn or popcorn are planted following Zidua PRO use.

#### Certain Vegetable Crops

(Alabama, Delaware, Florida, Georgia, Indiana, Kentucky, Maryland, New Jersey, North Carolina, Pennsylvania, South Carolina, and Virginia only)

The following crops may be planted 18 months following the last application of Zidua PRO: Bahiagrass, cabbage, cantaloupe, cucumber, Irish potato, onion, sweet pepper transplants, sweet potato transplants, tomato transplants and watermelon.

#### Field Corn and Field Corn Grown for Seed

(Arizona, Hawaii, Idaho, Montana, Nevada, Oregon, Utah, Washington, and Wyoming)

Plant 9.5 months after Zidua PRO herbicide application.

#### Crop-specific Information

This section provides use directions for Zidua PRO. Be sure to read about product information, mixing, application, weeds controlled and adjuvant instructions in preceding sections of the label. Read and follow tank mix product labels for restrictions, precautions, instructions and rotational crop restrictions.

Depending on specific application directions, Zidua PRO may be applied for burndown control of emerged weeds and/or residual control of germinating weeds (refer to Table 1 for list of weeds controlled) before planting (preplant/preseed) or

after planting but before crop emergence.

Depending on the time between Zidua PRO application and planting, a followup in-crop herbicide application may be needed for complete weed control throughout the growing season.

Thorough spray coverage is required for control of emerged broadleaf weeds. High populations and/or variations in size can prevent adequate spray coverage.

Controlling fall-germinated weeds in the spring (e.g. horseweed/marestail) will also require thorough spray coverage. Use higher spray volumes (e.g. 15 to 20 gallons of water per acre) in these situations to increase spray coverage and optimize burndown activity.

### Limitations, Restrictions, and Exceptions

For use in soybean grown in North Dakota and in Minnesota north of Highway #210

### Product Information

Zidua PRO provides both contact burndown and residual preemergence control of annual grass weeds and annual broadleaf weeds (including biotypes resistant to ACCase inhibitors, ALS inhibitors, triazine herbicides, and glyphosate). Refer to Table 1 in product container label for full list of weeds controlled.

### Application Information

Zidua PRO may be applied in the fall or in the spring as a preplant or preemergence burndown application in conventional, reduced-till, or no-till soybean for weed control. An adjuvant system (refer to Additives section in product container label for details) is required for optimum burndown activity.

### Fall Application

Apply Zidua PRO at 4.5 fl ozs/A for burndown and/or residual weed control after the prior crop is harvested. Applications must be made prior to first killing frost. Fall applications can be made to all soil types.

### Spring Application

Apply Zidua PRO at 4.5 fl ozs/A early preplant through preemergence for burndown and/or residual weed control prior to crop emergence.

Refer to the Zidua PRO container label for further use instructions in soybean pertaining to Soybean Planting Interval, Crop-specific Restrictions, Use Precautions,



and Tank Mixes.

#### Method

[Broadcast/Foliar Air](#)

[Broadcast/Foliar Ground](#)

[Broadcast/Foliar Air](#)

[Broadcast/Foliar Ground](#)

[Broadcast/Foliar Air](#)

[Broadcast/Foliar Ground](#)

[Broadcast/Foliar Air](#)

[Broadcast/Foliar Ground](#)

#### Rates

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#### Restricted Entry Interval

12 hours

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

#### Timings

[Preemergence \(Crop\)](#)

[Preplant](#)

[Preemergence \(Weed\)](#)

[Preemergence \(Weed\)](#)