

MISCANTHUS AND OTHER NON-FOOD PERENNIAL BIOENERGY CROPS

General Information

PRODUCT INFORMATION

The product is recommended for control of yellow nutsedge and many annual grasses and broadleaf weeds listed in the "WEEDS CONTROLLED" section of the label. The product alone will not control emerged seedlings. The product may be applied either as a surface application before or after planting, or after crop emergence. The product may also be shallowly incorporated prior to planting to blend the herbicide treatment into the upper 1 to 2 inches of soil. Except for minimum or conservation tillage systems, the seedbed should be fine, firm and free of clods and trash.

Read and carefully observe cautionary statements and all other information appearing on the labeling of all products used in mixtures and sequential treatments. Use according to the most restrictive label directions in the mixture.

NOTE: Use the product for weed control in corn only. CORN (ALL TYPES INCLUDING SWEET CORN), MILO (SORGHUM), OR SOYBEANS CAN BE PLANTED THE YEAR FOLLOWING THE USE OF THE PRODUCT. IF SOYBEANS ARE TO BE PLANTED THE FOLLOWING YEAR, THERE IS THE POSSIBILITY OF CROP INJURY DUE TO CARRYOVER OF ATRAZINE.

Use Restrictions

Do not flood irrigate to apply or incorporate the product.

Product must be used in a manner that will prevent back siphoning into wells, spills or improper disposal of excess pesticide, spray mixtures or rinsates.

Do not apply the product through any type of irrigation system, unless otherwise directed by approved supplemental labeling in possession of the user at the time of application.

Disposal of excess pesticide, spray mixtures or rinsate should be according to label

use instructions or according to the State Pesticide or Environmental Control Agency or the

Hazardous Waste representative at the nearest EPA regional office.

Do not apply under conditions that favor runoff or wind erosion of soil containing the product to non-target areas. To prevent off-site movement due to runoff or wind erosion:

- Avoid treating powdery dry or light sandy soils when conditions are favorable for wind erosion. Under these conditions, the soil surface should first be settled by rainfall or irrigation.
- Do not apply to impervious substrates such as paved or highly compacted surfaces or frozen or snow covered soils.
- Do not use tailwater from the first flood or furrow irrigation of treated fields to treat non-target crops unless at least 1/2 inch of rainfall has occurred between application and the first irrigation.

Do not apply the product using aerial application equipment, unless otherwise directed by approved supplemental labeling in possession of the user at the time of application. Do not apply when wind conditions favor drift to non-target sites. To minimize spray drift to non-target areas:

- Use low-pressure application equipment capable of producing a large droplet spray.
- Do not use nozzles that produce a fine droplet spray. Minimize drift by using sufficient spray volume to ensure adequate coverage with large droplet size sprays.
- Keep ground driven spray boom as low as possible above the target surface.
- Make application when the wind velocity favors on-target product deposition (approximately 3 to 10 miles per hour). Do not apply when wind velocity exceeds 15 miles per hour. Avoid application when gusts approach 15 miles per hour.

- Low humidity and high temperatures increase the likelihood of spray drift to sensitive areas. Avoid spraying during conditions of low humidity and/or high temperatures. Do not apply during inversion conditions.

Use of the product not consistent with the label may result in injury to persons, animals or crops, or other unintended consequences.

For field corn forage use, allow 60-day preharvest interval.

For sweet corn forage use, allow 45-day preharvest interval.

Flush sprayer with clean water after use.

WEED RESISTANCE MANAGEMENT

Atrazine and acetochlor, the active ingredients in the product, are Group 5 and Group 15 herbicides, respectively, based on the mode of action classification system of the Weed Science Society of America. Any weed population can contain plants naturally resistant to Group 5 or Group 15 herbicides. Weed species resistant to Group 5 or Group 15 herbicides may be effectively managed utilizing another herbicide from a different Group, or by using other cultural or mechanical practices.

General principles of herbicide resistance management

1. Apply integrated weed management practices. Use multiple herbicide modes-of-action with overlapping weed spectrums in rotation, sequences, or mixtures.
2. Use the full specified herbicide rate and proper application timing for the hardest to control weed species present in the field.
3. Scout fields after herbicide application to ensure control has been achieved. Avoid allowing weeds to reproduce by seed or to proliferate vegetatively.
4. Monitor site and clean equipment between sites.

For annual cropping situations also consider the following:

- Start with a clean field and control weeds early by using a burndown treatment or tillage in combination with a preemergence residual herbicide as appropriate.

- Use cultural practices such as cultivation and crop rotation, where appropriate.
- Use good agronomic principles that enhance crop competitiveness.
- Use new commercial seed that is as free of weed seed as possible.

Report any incidence of repeated non-performance of the product on a particular weed to your Monsanto representative, local retailer, or county extension agent.

SOIL TEXTURE

Applicators should evaluate soil conditions carefully to assure that they choose the correct label rate. The use rates of the product and the other herbicides labeled for use in tank mixtures with the product vary with soil texture. Unless soil texture is specifically named, rate tables throughout the label refer to only three soil textural groups: coarse, medium and fine. The following is a complete listing of soil textures included in each of these three soil textural groups:

SOIL TEXTURAL GROUP SOIL TEXTURE

COARSE: sand, loamy sand, sandy loam

MEDIUM: loam, silt loam, silt, sandy clay loam

FINE: silty clay loam, clay loam, sandy clay, silty clay, clay

Refer to the above table to determine the corresponding soil textural group for the soil to be treated.

APPLICATION SYSTEMS

Ground Broadcast Treatment

- Apply the product and the labeled tank mixtures in 10 or more gallons of solution per acre using broadcast boom equipment. The carrier may be either water or sprayable fluid fertilizer as specified for the crop to be treated in the "DIRECTIONS FOR USE" section of the label. Do not apply during periods of gusty winds, when winds are in excess of 15 miles per hour or when other conditions favoring drift exist.

Ground Band Treatment

- Apply a broadcast equivalent rate and volume per acre.(See formula on the label)

APPLICATION TIMING AND METHODS

NOTE: The maximum total per crop season of the product is 2.7 quarts per acre.

Early Preplant Surface Application

The product and some labeled tank mixtures of the product may be applied in no-till and other conservation tillage systems before weeds emerge and up to 45 days before planting field corn or silage corn. Split applications can be made 30 to 45 days prior to planting with 60 percent of the broadcast rate applied initially and the remaining 40 percent applied at planting. Applications made less than 30 days prior to planting can be made either as a split or as a single application. If weeds are present at the time of application, apply the product in a tank mixture with an appropriate contact herbicide. Observe directions for use, precautions and restrictions on the label of the contact herbicide. During the planting operation, be careful not to move untreated soil to the surface or move treated soil out of the row, as weed control may be reduced.

Preplant Incorporation Application

The product and many of the labeled tank mixtures may be mixed into the soil using shallow incorporation equipment any time within 14 days prior to planting. Apply the product to the soil surface as a broadcast application. Either existing soil moisture or subsequent precipitation or irrigation is required to bring incorporated herbicide treatments into contact with germinating weed seedlings. If weeds emerge after treatment, rotary hoe or shallowly cultivate immediately to improve performance. Shallowly incorporate the treatment into the upper 1 to 2 inches of the soil. Equipment should be operated at manufacturer's designed speed for incorporation to ensure adequate mixing and distribution of the herbicide treatment in the soil. Equipment design including any drag attachments must be adequate to avoid soil ridging which may result in streaked or reduced weed control. Equipment should be set to work the soil NO DEEPER THAN 4 INCHES. Soil conditions, including moisture content and crop residue levels, must be suitable to allow thorough and uniform mixing.

Preemergence Surface Application

The product and all labeled tank mixtures may be applied to the soil surface after planting and prior to either crop or weed emergence. Apply within 5 days of last preplant tillage. If weeds emerge after treatment, or if treatment is applied more than 5 days after last preplant tillage, rotary hoe or shallowly cultivate immediately to improve performance. Precipitation or overhead sprinkler irrigation is required after application to move the herbicide treatment into the weed germination zone. The amount of precipitation or overhead sprinkler irrigation required depends on existing soil mixture, soil type and percent organic matter content, but 1/4 to 3/4 inch is normally adequate. Performance is improved when moisture is received within 7 days after application and prior to weed emergence. High intensity or excessive rainfall or excessive irrigation after application may reduce control.

Postemergence Surface Application

The product and certain tank mixtures may be applied postemergence until corn reaches 11 inches in height. Application must be made prior to the 2-leaf grass stage or in a tank mixture that controls emerged weeds. Read and follow all restrictions and directions on tank-mix product labels. Refer to the specific treatment intended in the "DIRECTIONS FOR USE" section of the label to determine if postemergence applications to corn are recommended and determine the proper

weed and corn growth stage limitations. Precipitation or overhead sprinkler irrigation is required after application to move the herbicide treatment into the weed germination zone to control unemerged weeds. The amount of precipitation or irrigation required depends on existing soil moisture, soil type and percent organic matter content, but 1/4 to 3/4 inch is normally adequate. If weeds emerge after treatment, rotary hoe or shallowly cultivate to improve performance.

DO NOT apply postemergence to sweet corn.

DO NOT make postemergence surface applications using sprayable fluid fertilizer as the carrier because severe crop injury may occur.)

Cultivation Information

Delay cultivation after application for as long as possible unless weeds or grasses emerge. Shallowly cultivate or rotary hoe immediately if weeds or grasses emerge. If cultivation is necessary because of soil crusting or compaction, set equipment shallow and minimize lateral soil movement to avoid dilution or displacement of the herbicide treatment. If a band application is used and weeds have emerged in the treated band, set cultivator to throw soil into the row covering the band.

NOTE: For hard-to-control weeds, additional amounts of Harness herbicide and/ or atrazine may be added to provide improved control. For more consistent control of common cocklebur, annual morningglory or velvetleaf, additional atrazine may be applied so that the total atrazine rate is at least 1.5 quarts per acre on medium-textured soil with less than 3 percent organic matter, and 1.5 to 2 quarts on medium- and fine-textured soils with 3 percent or greater organic matter content. For more consistent control of woolly cupgrass additional Harness herbicide may be applied so that the total acetochlor rate is 3.0 pounds per acre. The following table shows the amounts of Harness herbicide and/or atrazine that can be added to specific treatment rates of the product.

Do not use more than 2.7 quarts of the product per acre per calendar year.

The maximum atrazine broadcast application rates for corn:

- If no atrazine was applied prior to corn emergence, apply a maximum of 2 pounds active ingredient per acre broadcast. If a postemergence treatment is required following an earlier herbicide application, the total atrazine applied may not exceed

2.5 pounds active ingredient per acre per calendar year.

- Apply a maximum of 2.0 pounds active ingredient per acre as a single preemergence application on soils that are not highly erodible or on highly erodible soils (as defined by the Natural Resources Conservation Service) if at least 30 percent of the soil is covered with plant residues, or

- Apply a maximum of 1.6 pounds active ingredient per acre as a single preemergence application on highly erodible soils (as defined by the Natural Resources Conservation Service) if less than 30 percent of the surface is covered with plant residues; or 2.0 pounds active ingredient per acre if only applied postemergence.

Limitations, Restrictions, and Exceptions

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For weed control in Miscanthus and other non-food perennial bioenergy crops, apply Harness Xtra herbicide at 2.1-2.8 pints per acre (after the crop has been transplanted or after fully emerged to a height of at least 2-3 inches). Up to two applications of Harness Xtra herbicide may be made each year. The total amount of the product applied each year must not exceed 5.6 pints per acre.

RESTRICTIONS: Do not allow the Miscanthus or other non-food perennial bioenergy crop treated with Harness Xtra herbicide to be grazed or used as animal feed.

WEEDS:

- Cupgrass woolly: Apply 2.7 quarts of the product per acre to control this weed. Control of this weed can be erratic especially under dry weather conditions. Control escaped weeds with cultivation or application of an appropriate EPA-registered postemergence herbicide.

- Cocklebur, Morningglory, annual, Velvetleaf, Buttonweed: Use the higher rate in the rate range within each Application Rate table. Control of these weeds can be erratic especially under dry weather conditions. Control escaped weeds with cultivation or application of an appropriate EPA-registered postemergence herbicide.

- Kochia: Triazine-resistant biotypes may require a post sequential application of a non-triazine herbicide for control.
- Nutsedge yellow: Preplant incorporate for control.
- When applied immediately after planting and within 5 days of last tillage, the product at a rate of 2.3 to 2.7 quarts per acre on a broadcast basis will reduce competition from the following HARD-TO-CONTROL weeds.

Method

[Broadcast/Foliar Ground](#)

[Band](#)

Rates

[field rates 0](#)

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Restricted Entry Interval

12 hours

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

[After the crop has been transplanted or after fully emerged to a height of at least 2-3 inches.](#)