

PERENNIAL WEEDS - HORSERADISH

General Information

PRODUCT INFORMATION

Product Description: This product is a postemergence, systemic herbicide with no soil residual activity. It is generally non-selective and gives broad-spectrum control of many annual weeds, perennial weeds, woody brush and trees. It is formulated as a water-soluble liquid. It may be applied using most standard industrial or field sprayers after dilution and thorough mixing with water or other carriers according to label directions.

Do not add surfactants, additives containing surfactants, buffering agents or pH adjusting agents to the spray solution when DuPont ABUNDIT Edge herbicide is the only pesticide being applied unless otherwise directed. See the "MIXING" section of the label for instructions regarding other additives.

Time to Symptoms: This product moves through the plant from the point of foliage contact to and into the root system.

Visible effects are a gradual wilting and yellowing of the plant that advances to complete browning of aboveground growth and deterioration of underground plant parts. Effects are visible on most annual weeds within 2 to 4 days, but on most perennial weeds, effects might not be visible for 7 or more days after application. Extremely cool or cloudy weather following application could slow activity of this product and delay development of visual symptoms.

Stage of Weeds: Annual weeds are easiest to control when they are small. Best control of most perennial weeds is obtained when this product is applied at late growth stages approaching maturity. Refer to the "ANNUAL WEEDS RATE SECTION," "PERENNIAL WEEDS RATE SECTION," and "WOODY BRUSH AND TREES RATE SECTION" for more information on controlling specific weeds.

Always use the higher product application rate within the given range when weed growth is heavy or dense, or when weeds are growing in an undisturbed (non-cultivated) area.

Reduced weed control could result when this product is applied to weeds that show signs of disease or insect damage, are heavily covered with dust, or are surviving under poor growing conditions.

Cultural Considerations: Reduced weed control could result when this product is applied to annual or perennial weeds that have been mowed, grazed or cut, and have not been allowed to re-grow to the specified stage prior to application.

Rainfastness: Heavy rainfall soon after application could wash this product off of the foliage and a second application might then be required for adequate weed control.

Spray Coverage: For best results, spray coverage must be uniform and complete. Do not spray foliage to the point of runoff.

Mode of Action: The active ingredient in this product inhibits an enzyme found only in plants and microorganisms that is essential to the formation of specific amino acids.

No Soil Activity: Weeds must be emerged at the time of application to be controlled by this product. Weed seeds in the soil will not be affected by this product and will continue to germinate. Plants arising from unattached underground rhizomes or root stocks of perennials that have not yet emerged at the time of application will not be affected by this product and will continue to grow.

Biological Degradation: Degradation of this product is primarily a biological process carried out by soil microbes.

Maximum Application Rates: The maximum application or use rates stated throughout the label are given in units of volume (fluid ounces or quarts) of this product per acre. However, the maximum allowed application rates apply to this product combined with the use of any and all other herbicides containing the active ingredient glyphosate, whether applied separately or in a tank mixture, on a basis of total pounds of glyphosate (acid equivalents) per acre. If more than one glyphosate-containing product is applied to the same site within the same year, you must ensure that the total use of glyphosate (pounds acid equivalents) does not exceed the maximum allowed. See the "INGREDIENTS" section of the label for necessary product information.

Except as otherwise specified in a crop section of the label, the combined total

application of this product on a site must not exceed 5.3 quarts (6 pounds of glyphosate acid) per acre per year. For applications on non-crop sites, or on tree, vine or shrub crop production sites, the combined total application of this product must not exceed 7 quarts (8 pounds of glyphosate acid) per acre per year.

NOTE: Use of this product in any manner not consistent with the label could result in injury to persons, animals or crops, or have other unintended consequences.

WEED RESISTANCE MANAGEMENT

Glyphosate, the active ingredient in this product, is a Group 9 herbicide 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 9 herbicides.

Weed species resistant to Group 9 herbicides can be effectively managed by using another herbicide from a different Group, or by using other cultural or mechanical methods.

Weed Management Practices

To minimize the occurrence of glyphosate-resistant biotypes, observe the following weed management practices:

- Scout your fields before and after herbicide application.
- Start with a clean field, using either a burndown herbicide application or tillage.
- Control weeds early when they are relatively small.
- Incorporate other herbicides (e.g., a selective and/or a residual herbicide) and cultural practices (e.g., tillage or crop rotation) into your weed management program, where appropriate.
- One method for adding other herbicides into a continuous Roundup Ready system is to rotate to other Roundup Ready crops.
- Use the application rate for the most difficult to control weed in your field. Avoid tank mixtures with other herbicides that reduce the efficacy of this product (through antagonism) or with ones that encourage application of this product at rates less than those specified on the label.

- Control weed escapes and prevent weeds from setting seeds.
- Clean equipment before moving from field to field to minimize the spread of weed seed or plant parts.
- Use new commercial seed that is as free of weed seed as possible.
- Report any incidence of repeated non-performance of this product on a particular weed to your DuPont Company representative, local retailer, or county extension agent.

Management of Glyphosate-Resistant Biotypes

Appropriate testing is needed to determine if a weed is resistant to glyphosate. Call 1-888-638-7668 or contact your DuPont Company representative to determine if resistance in any particular weed biotype has been confirmed in your area, or visit on the Internet www.weedresistancemanagement.com or www.weedscience.org. For more information see the "ANNUAL WEEDS RATE SECTION" and "PERENNIAL WEEDS RATE SECTION" of the label.

Since the occurrence of new glyphosate-resistant weeds cannot be determined until after product use and scientific confirmation, DuPont Company is not responsible for any losses that result from the failure of this product to control glyphosate-resistant weed biotypes.

The following good agronomic practices can reduce the spread of confirmed glyphosate-resistant biotypes:

- If a naturally occurring resistant biotype is present in your field, apply this product in a tank-mix or sequentially with an appropriately labeled herbicide with a different mode of action to achieve control.
- Cultural and mechanical control practices (e.g., crop rotation or tillage) can also be used as appropriate.
- One method for adding other herbicides into a continuous Roundup Ready system is to rotate to other Roundup Ready crops.

- Scout fields after herbicide application and control weed escapes, including resistant biotypes, before they set seed.
- Thoroughly clean equipment before leaving fields known to contain resistant biotypes.

APPLICATION EQUIPMENT AND TECHNIQUES

Do not apply this product through any type of irrigation system.

This product may be applied with the following application equipment:

Aerial Application Equipment □ Fixed-wing and helicopter

Ground Application Equipment □ Boom or boomless systems, pull-type sprayers, floaters, pick-up sprayers, spray coupes and other ground broadcast application equipment

Handheld and Backpack Sprayers □ Backpack sprayers, pump-up pressure sprayers, handguns, handwands, mistblowers*, lances and other hand-held and motorized spray equipment used to direct the spray onto weed foliage * This product is not registered in California or Arizona for use in mistblowers.

Selective Application Equipment □ Shielded and hooded sprayers, wiper applicators and sponge bars

Injection Systems □ Aerial or ground injection sprayers

Controlled Droplet Applicator (CDA) □ Handheld or boom-mounted applicators that produce a spray consisting of a narrow range of droplet sizes

APPLY SPRAY SOLUTIONS OF THIS PRODUCT USING PROPERLY MAINTAINED AND CALIBRATED EQUIPMENT CAPABLE OF DELIVERING THE DESIRED VOLUMES.

Aerial Application Equipment

Unless otherwise prohibited, all applications of this product described on the label may be made using aerial application equipment where appropriate, provided that the applicator complies with the precautions and restrictions specified on the label and on separate supplemental labeling published for this product.

DO NOT APPLY THIS PRODUCT USING AERIAL APPLICATION EQUIPMENT EXCEPT UNDER CONDITIONS SPECIFIED ON THE LABEL.

Apply this product at the appropriate rate in 3 to 15 gallons of water per acre unless otherwise directed on the label or on separate supplemental labeling or Fact Sheet published for this product. Unless otherwise directed, the maximum single application rate of this product is 44 fluid ounces per acre when using aerial application equipment. Refer to the individual use area sections of the label for application rates, spray volumes and additional directions for use.

FOR AERIAL APPLICATION IN ARKANSAS AND CALIFORNIA, OR SPECIFIC COUNTIES THEREIN, REFER TO THE LIMITATIONS FOR AERIAL APPLICATION OF THIS PRODUCT IN THAT STATE OR COUNTY LISTED IN THIS SECTION FOR SPECIFIC INSTRUCTIONS, RESTRICTIONS AND REQUIREMENTS.

Ensure uniform application. To avoid streaked, uneven or overlapped application, use appropriate marking devices.

Do not allow the herbicide solution to mist, drip, drift, or splash onto desirable vegetation, as minute quantities of this product can cause severe damage or destruction to the crop, plants or other areas on which application was not intended.

State Specific Limitations on Aerial Application

LIMITATIONS ON AERIAL APPLICATION IN CALIFORNIA ONLY, INCLUDING FRESNO COUNTY,
CALIFORNIA

AVOID DRIFT - DO NOT APPLY WHEN WINDS ARE GUSTY OR UNDER ANY OTHER CONDITION THAT FAVORS DRIFT. DRIFT CAN CAUSE DAMAGE TO ANY VEGETATION CONTACTED TO WHICH APPLICATION WAS NOT INTENDED. TO PREVENT INJURY TO ADJACENT DESIRABLE VEGETATION, APPROPRIATE BUFFER ZONES MUST BE MAINTAINED.

Use the following guidelines when making an aerial application near crops or desirable perennial vegetation after bud break and before total leaf drop, and/or near other desirable vegetation or annual crops.

1. Do not apply this product within 100 feet of all desirable vegetation or crop(s).

2. If winds up to 5 miles per hour are blowing toward desirable vegetation or crop(s), do not apply this product within 500 feet of the desirable vegetation or crop(s).
3. Winds blowing from 5 to 10 miles per hour toward desirable vegetation or crop(s) could require buffer zones in excess of 500 feet.
4. Do not apply this product when winds are in excess of 10 miles per hour or when inversion conditions exist.

When applied as directed under the conditions described, this product controls annual and perennial weeds listed on the label.

When tank-mixing this product with 2,4-D, only 2,4-D amine formulations may be used for aerial application in California.

Tank mixtures with 2,4-D amine formulations may be applied by air in California for fallow and reduced tillage systems, and for alfalfa and pasture renovation applications only.

This product, when tank-mixed with dicamba, may not be applied by air in California.

ADDITIONAL LIMITATIONS FOR AERIAL APPLICATION IN FRESNO COUNTY, CALIFORNIA ONLY

The following information applies only from February 15 through March 31 within the following boundaries of Fresno County, California:

North: Fresno County line

South: Fresno County line

East: State Highway 99

West: Fresno County line

Always read and follow the label directions and precautionary statements for all products used in the aerial application.

Observe the following directions to minimize off-site movement during aerial application of this product. Minimization of off-site movement is the responsibility of the grower, Pest Control Advisor and aerial applicator.

Written directions MUST be submitted by or on behalf of the applicator to the Fresno County Agricultural Commissioner 24 hours prior to the application. These written directions MUST state the proximity of surrounding crops, and that conditions of each manufacturer's product label and the label have been satisfied.

Aerial Applicator Training and Equipment

Aerial application of this product is limited to pilots who have successfully completed a Fresno County Agricultural Commissioner and California Department of Pesticide Regulation approved training program for aerial application of herbicides. All aircraft must be inspected, critiqued in flight and certified at a Fresno County Agricultural Commissioner approved fly-in. Test and calibrate spray equipment at intervals sufficient to insure that proper rates of herbicides and adjuvants are being applied during commercial use. Applicator must document such calibrations and testing. Demonstration of performance at Fresno County Agricultural Commissioner approved fly-ins constitutes such documentation, or other written records showing calculations and measurements of flight and spray parameters acceptable to the Fresno County Agricultural Commissioner.

Applications at Night – Do not apply this product by air earlier than 30 minutes prior to sunrise and/or later than 30 minutes after sunset without prior permission from the Fresno County Agricultural Commissioner.

To report known or suspected misuse of this product, call 1-888-638-7668.

For additional information on the proper aerial application of this product, call 1-888-638-7668.

LIMITATIONS ON AERIAL APPLICATION IN ARKANSAS ONLY

AVOID DRIFT. DO NOT APPLY INTO STILL AIR WHERE THERE IS A TEMPERATURE INVERSION LAYER LOW ENOUGH FOR FINE SPRAY PARTICLES TO BECOME SUSPENDED AND MOVE OUTSIDE THE TARGET AREA WHEN THE INVERSION LAYER MOVES. DO NOT APPLY WHEN WINDS ARE GUSTY OR UNDER ANY OTHER CONDITION THAT FAVORS DRIFT. DRIFT IS LIKELY TO CAUSE DAMAGE TO ANY VEGETATION CONTACTED. TO PREVENT INJURY TO ADJACENT DESIRABLE

VEGETATION, APPROPRIATE BUFFER ZONES MUST BE MAINTAINED.

Apply this product at the appropriate rate in 3 to 15 gallons of water per acre.

Use sufficient carrier volume and appropriate equipment set-up to form droplets large enough to avoid drift potential.

Coarse droplets in the 300 to 500 (VMD) micron range have a lower drift potential.

Applications are typically to be made with the nozzle release point at 8 to 15 feet above the top of the target plants unless a greater height is required for aircraft safety.

The distance of the outermost nozzles on the boom must not exceed 75 percent of the length of the wingspan or rotor. In many cases, reducing this distance to 65 percent of the length of the wingspan or rotor will improve drift control without affecting the swath width.

Nozzles must always discharge backward parallel with the air stream and never discharge downwards more than 45 degrees on fixed wing aircraft or forward of the prevailing airflow on rotary winged aircraft. Avoid the use of nozzles with wideangle discharge.

Do not apply this product when winds are in excess of 10 miles per hour.

Do not apply when there is a low-level inversion where fine spray particles could be suspended in still air and move outside the target area when the inversion layer moves. These conditions can occur when wind speeds are less than 2 miles per hour.

Use the following guidelines when application is made near crops or other desirable vegetation:

1. Do not apply this product within 100 feet of any desirable vegetation or crops.
2. If wind up to 5 miles per hour is blowing toward desirable vegetation or crops, do not apply this product within 500 feet upwind of the desirable vegetation or crops.
3. Winds blowing from 5 to 10 miles per hour toward desirable vegetation or crops will likely require buffer zones in excess of 500 feet.

Ground Application Equipment

Apply this product at the appropriate rate in 3 to 40 gallons of water per acre when making a broadcast application using ground application equipment, unless otherwise directed on the label or on separate supplemental labeling or Fact Sheets published for this product. As the weed density increases, increase the spray volume towards the upper end of this range to ensure complete coverage. Use nozzles that will avoid generating a fine mist. For best results with ground application equipment, use flat-fan nozzles. Check spray pattern for uniform distribution.

Handheld and Backpack Sprayers

Apply spray solutions of this product uniformly and completely to foliage of vegetation to be controlled using a coarse droplet spectrum and a spray-to-wet technique; do not spray to the point of runoff. For the appropriate concentration of this product in the spray solution and timing of application, refer to the “ANNUAL WEEDS RATE SECTION” of the label, under Annual Weeds—Handheld and Backpack Sprayers.

Spot treatment application of this product for weed control in a cropping system using a handheld sprayer may be made only when specifically directed on the label. The crop sprayed with this product will be killed along with the weeds.

Take care not to spray or allow spray to drift outside the target area in order to avoid unwanted crop destruction.

Selective Application Equipment

This product may be diluted in water and applied using a shielded sprayer, hooded sprayer, wiper applicator or sponge bar to weeds listed on the label growing on any non-crop site listed on the label.

In cropping systems, a shielded sprayer, hooded sprayer, or wiper applicator may be used in between rows of crop plants (row middles). A wiper applicator may be used over the top of crops only when specifically directed on the label.

Selective equipment must be capable of preventing all contact of the herbicide solution with the crop and operated without spray mist escape, leakage, or dripping

of the herbicide solution onto the crop.

AVOID CONTACT OF THIS HERBICIDE WITH DESIRABLE VEGETATION. Contact of this product with desirable vegetation could result in unwanted plant damage or destruction.

Shielded and Hooded Sprayers

This product, when applied at rates specified on the label using a shielded or hooded sprayer according to the directions described in this section, will control the weeds listed in the “ANNUAL WEEDS RATE SECTION” and “PERENNIAL WEEDS RATE SECTION” of the label.

A shielded sprayer directs the herbicide solution to the target weeds while protecting desirable vegetation from being contacted by the herbicide spray with an impervious material or shield. Use nozzles that provide uniform coverage within the application area. Keep shields on these sprayers properly adjusted to protect desirable vegetation.

A hooded sprayer is a type of shielded sprayer where the spray pattern is fully enclosed, including the top, sides, front and back, thereby shielding the crop from the spray solution. Adjust the shields on these sprayers to protect desirable vegetation. When applying around crops grown on raised beds, ensure that the hood is capable of completely enclosing the spray pattern. If necessary, extend the front and rear flaps of the hooded sprayer downward to reach the ground in deep furrows.

USE EXTREME CARE TO AVOID CONTACT OF SPRAY SOLUTIONS OF THIS PRODUCT WITH DESIRABLE VEGETATION. Contact of this product in any manner to any vegetation to which application is not intended could cause damage. To the extent consistent with applicable law, such damage shall be the sole responsibility of the applicator.

A hooded sprayer must be configured and operated in a manner that minimizes bouncing and avoids raising the hood up off the ground surface at any time. If the hood is raised, spray particles can escape and come into contact with the crop, causing damage to or destruction of the crop. Avoid operating this equipment on rough or sloping terrain where the spray hood is likely to rise up off the ground surface.

Use hoods designed to minimize excessive dripping or runoff down the inside of the hood, such as a single, low pressure, low-drift, flat-fan nozzle with an 80- to 95-degree spray angle positioned at the top center of the hood, with a spray volume of 20 to 30 gallons per acre.

The following procedures will reduce the potential for crop injury when using a hooded sprayer:

- Spray hood must be operated on the ground or skimming across the ground surface.
- Leave at least an 8-inch untreated strip over the drill row. (For example, if the crop row width is 38 inches, make the maximum width of the spray hood 30 inches.)
- Operate at a ground speed of no greater than 5 miles per hour to avoid bouncing of the spray hood.
- Apply when wind speed is 10 miles per hour or less.
- Use low-drift nozzles that will provide uniform coverage within the application area.

Crop injury can occur when application is made to foliage of weeds that come into direct contact with the crop. Do not apply this product when crop leaves are growing in direct contact with weeds. Droplets, mist, foam or splatter of the herbicide solution settling onto desirable vegetation can result in discoloration, stunting or destruction.

Wiper Applicator

A wiper applicator is a device that physically wipes this product directly onto the weed. Equipment must be designed, maintained and operated to prevent the herbicide solution from contacting desirable vegetation.

Adjust the height of the wiper applicator to ensure adequate contact with weeds and so that the wiper contact point is at least 2 inches above the desirable vegetation. Better results can be obtained when more of the weed is exposed to the herbicide solution and weeds are a minimum of 6 inches above the desirable vegetation. Weeds that do not come into contact with the herbicide solution will not be affected. Poor contact can occur when weeds are growing in dense clumps, when operating in an area of severe weed infestation or when weed height varies dramatically. In these situations, more than one application of this product might be necessary.

Operate wiper applicators at a ground speed of no greater than 5 miles per hour. Performance in areas of heavy weed infestation can be improved by reducing speed, which will provide more time for re-saturation of the wiper with the herbicide solution. Better results can be obtained when two applications are made in opposite directions.

Droplets, mist, foam or splatter of the herbicide solution settling onto desirable vegetation can result in discoloration, stunting or destruction. Avoid leakage or dripping onto desirable vegetation. Keep wiper surfaces clean. Be aware that on sloping ground the herbicide solution can migrate to one side, causing dripping on the lower end and drying of the wiper on the upper end of the applicator.

Do not apply this product using a wiper applicator when weeds are wet.

Mix only the amount of this product that will be used during a 1-day period, as reduced product performance can result from the use of solutions held in storage. Clean wiper parts promptly after using this product by thoroughly flushing with water.

Do not add surfactant to the herbicide solution when using a wiper applicator.

For Rope and Sponge Wick Applicators—use solutions ranging from 33 to 75 percent of this product in water.

For Panel Applicators—use solutions ranging from 33 to 100 percent (undiluted) of this product in water.

Injection Systems

This product may be used in aerial and ground injection spray systems. It may be

used as a liquid concentrate or diluted prior to injecting into the spray stream. Do not mix this product with the concentrate of other products for use in injection systems.

Controlled Droplet Applicator (CDA)

The amount of this product applied per acre using a controlled droplet applicator (CDA) must be no less than the rate specified on the label for application using conventional broadcast application equipment. Apply the appropriate amount of this product in 2 to 15 gallons of water per acre when using a vehicle-mounted CDA.

For control of annual weeds using a handheld CDA, apply a 20-percent solution of this product at a flow rate of 2 fluid ounces per minute and a walking speed of 1.5 miles per hour (1 quart per acre). For the control of perennial weeds, apply a 20- to 30-percent solution of this product at a flow rate of 2 fluid ounces per minute and a walking speed of 0.75 mile per hour (2 to 3 quarts per acre).

A controlled droplet applicator produces a spray pattern that is not easily visible. Use extreme care to avoid spray or drift from contacting the foliage or any other green tissue of desirable vegetation, as plant damage or destruction could result.

Limitations, Restrictions, and Exceptions

PERENNIAL WEEDS

Apply to actively growing perennial weeds. If weeds have been mowed or tilled, do not apply this product until plants have resumed active growth and have reached the specified stage.

More than one application of this product might be necessary to control weeds regenerating from underground parts or seed, but must be made prior to crop emergence, except where in-crop application is allowed.

Unless otherwise directed, allow a minimum of 7 days after application before soil tillage.

Best results are obtained when soil moisture is adequate for active weed growth.

Method

[Broadcast/Foliar Air](#)

[Broadcast/Foliar Ground](#)

[Hand-Held Spray](#)

[Broadcast/Foliar Air](#)

[Broadcast/Foliar Ground](#)

[Hand-Held Spray](#)

Rates

[field rates 0](#)

[field rates 1](#)

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Restricted Entry Interval

4 hours

Timings

[When most plants have reached the late bud to flower stage of growth.](#)

[In late summer or fall.](#)