HOLLOW STEM INJECTION - CASTORBEAN

General Information

PRODUCT INFORMATION

Product Description: This product is a postemergence, systemic herbicide with no soil residual activity. It gives broad-spectrum control of many annual weeds, perennial weeds, woody brush and trees. It is formulated as a water-soluble liquid containing surfactant and no additional surfactant is needed or recommended.

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, which 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 may not be visible for 7 or more days. Extremely cool or cloudy weather following treatment may 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 treatment is made at late growth stages approaching maturity.

Mode of Action in Plants: 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.

Cultural Considerations: Reduced control may result when applications are made to annual or perennial weeds that have been mowed, grazed or cut, and have not been allowed to regrow to the specified stage for treatment.

Rainfastness: Heavy rainfall soon after application may wash this product off of the foliage and a repeat application may be required for adequate weed control.

No Soil Activity: Weeds must be emerged at the time of application to be controlled by this product. Weeds germinating from seed after application will not be controlled. Plants arising from unattached underground rhizomes or rootstocks of perennials that have not yet emerged at the time of application will not be affected.
by this herbicide and will continue to grow.

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 as tank mixtures, 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. The combined total of all treatments must not exceed 7 quarts of this product (8 pounds of glyphosate acid) per acre per year. See the INGREDIENTS section of the label for necessary product information.

ATTENTION

AVOID CONTACT OF HERBICIDE WITH FOLIAGE, STEMS, EXPOSED NON-WOODY ROOTS OR FRUIT OF CROPS, DESIRABLE PLANTS AND TREES, BECAUSE SEVERE INJURY OR DESTRUCTION MAY RESULT.

AVOID DRIFT. EXTREME CARE MUST BE USED WHEN APPLYING THIS PRODUCT TO PREVENT INJURY TO DESIRABLE PLANTS AND CROPS.

Do not allow the herbicide solution to mist, drip, drift or splash onto desirable vegetation since minute quantities of this product can cause severe damage or destruction to the crop, plants or other areas on which treatment was not intended. The likelihood of injury occurring from the use of this product increases when winds are gusty, as wind velocity increases, when wind direction is constantly changing or when there are other meteorological conditions that favor spray drift. When spraying, avoid combinations of pressure and nozzle type that will result in splatter or fine particles (mist) that are likely to drift. AVOID APPLYING AT EXCESSIVE SPEED OR PRESSURE.

NOTE: Use of this product in any manner not consistent with the label may 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 may contain plants naturally resistant to Group 9 herbicides. Weed species resistant to Group 9 herbicides may be effectively managed utilizing another herbicide from a different Group or using other cultural or mechanical practices.

To minimize the occurrence of glyphosate-resistant biotypes observe the following general weed management recommendations:

- Scout your application site before and after herbicides applications.
- Control weeds early when they are relatively small.
- Incorporate other herbicides and cultural or mechanical practices as part of your weed control system where appropriate.
- Utilize the labeled rate for the most difficult weed in the site. Avoid tank-mixtures with other herbicides that reduce this product’s efficacy (through antagonism) or tank mixture recommendations which encourage rates of this product below the labeled rate.
- Control weed escapes and prevent weeds from setting seeds.
- Clean equipment before moving from site to site to minimize spread of weed seed.
- Use new commercial seed as free of weed seed as possible.
- Report any incidence of repeated non-performance of this product on a particular weed to your Monsanto representative, local retailer, or county extension agent.

Management Recommendations for Glyphosate-Resistant Weed Biotypes

NOTE: Appropriate testing is critical in order to confirm weed resistance to glyphosate. Call 1-800-ROUNDUP (1-800-768-6387) or contact your Monsanto 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.

Directions for the control of biotypes confirmed to be resistant to glyphosate are made available on separately published supplemental labeling or Fact Sheets for this product and may be obtained from your local retailer or Monsanto.
Since the occurrence of new glyphosate-resistant weeds cannot be determined until after product use and scientific confirmation, Monsanto Company is not responsible for any losses that may result from the failure of this product to control glyphosate-resistant weed biotypes.

The following good weed management practices are recommended to reduce the spread of confirmed glyphosate-resistant biotypes:

- If a naturally occurring resistant biotype is present at your site, this product may be tank-mixed or applied sequentially with an appropriately labeled herbicide with a different mode of action to achieve control.

- Cultural and mechanical control practices may also be used as appropriate.

- Scout treated sites after herbicide applications and control escapes, including resistant biotypes, before they set seed.

- Thoroughly clean equipment before leaving sites known to contain resistant biotypes.

Mixing with Water

NOTE: PRODUCT PERFORMANCE MAY BE SIGNIFICANTLY REDUCED IF WATER CONTAINING SOIL SEDIMENT IS USED AS CARRIER. DO NOT MIX THIS PRODUCT WITH WATER FROM PONDS AND DITCHES THAT IS VISIBLY MUDDY OR MURKY.

This product mixes readily with water. Mix spray solutions of this product as follows: Begin filling the mixing tank or spray tank with clean water. Add the proper amount of this product near the end of the filling process and mix gently. During mixing and application, foaming of the spray solution may occur. To prevent or minimize foaming, mix gently, terminate by-pass and return lines at the bottom of the tank and, if necessary, use an anti-foam or defoaming agent.

APPLICATION EQUIPMENT AND TECHNIQUES

Do not apply this product through any type of irrigation system.
APPLY SPRAY SOLUTIONS IN PROPERLY MAINTAINED AND CALIBRATED EQUIPMENT CAPABLE OF DELIVERING DESIRED VOLUMES.

Aerial Equipment

DO NOT APPLY THIS PRODUCT USING AERIAL SPRAY EQUIPMENT EXCEPT UNDER CONDITIONS AS SPECIFIED WITHIN THE LABEL.

FOR AERIAL APPLICATION IN CALIFORNIA, REFER TO THE FEDERAL SUPPLEMENTAL LABEL FOR AERIAL APPLICATIONS IN THAT STATE FOR SPECIFIC INSTRUCTIONS, RESTRICTIONS AND REQUIREMENTS.

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

Avoid direct application to any body of water.

Use the labeled rates of this herbicide in 3 to 25 gallons of water per acre unless otherwise specified on the label, or in separate supplemental labeling or fact sheets published by Monsanto for this product.

Coarse sprays are less likely to drift; therefore, do not use nozzles or nozzle configurations that dispense spray as fine spray droplets. Do not angle nozzles forward into the airstream and do not increase spray volume by increasing nozzle pressure. Drift control additives may be used. When a drift control additive is used, read and carefully observe the cautionary statements and all other information appearing on the additive label.

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

Aircraft Maintenance: Thoroughly wash aircraft, especially landing gear, after each day of spraying to remove residues of this product accumulated during spraying or from spills. PROLONGED EXPOSURE OF THIS PRODUCT TO UNCOATED STEEL SURFACES MAY RESULT IN CORROSION AND POSSIBLE FAILURE OF THE PART. LANDING GEAR IS MOST SUSCEPTIBLE. Maintaining an organic coating (paint) that
meets aerospace specification MIL-C-38413 may prevent corrosion.

Ground Broadcast Equipment

Apply the labeled rates of this product in 3 to 40 gallons of water per acre as a broadcast spray unless otherwise specified on the label, or in separate supplemental labeling or fact sheets published by Monsanto for this product. As density of weeds increases, spray volume should be increased within the specified range to ensure complete coverage. Carefully select proper nozzles to avoid spraying a fine mist. For best results with ground application equipment, use flat-fan nozzles. Check spray pattern for uniform distribution of spray droplets.

Hand-Held or Backpack Equipment

Apply to foliage of vegetation to be controlled. For applications made on a spray-to-wet basis, spray coverage should be uniform and complete. Do not spray to the point of runoff. Use coarse sprays only.

For low-volume directed spray applications, spray coverage should be uniform with at least 50 percent of the foliage contacted. Coverage of the top one-half of the plant is important for best results. To ensure adequate spray coverage, spray both sides of large or tall woody brush and trees, when foliage is thick and dense, or where there are multiple sprouts.

Selective Equipment

This product may be diluted in water and applied through shielded applicators, hooded sprayers, wiper applicators or sponge bars to weeds listed on the label growing in any non-crop site specified on the label.

AVOID CONTACT OF HERBICIDE WITH DESIRABLE VEGETATION, AS SERIOUS INJURY OR DEATH OF THE DESIRABLE VEGETATION IS LIKELY TO OCCUR.

Application equipment used above desired vegetation should be adjusted so that the lowest spray stream or wiper contact point is at least 2 inches above the desirable vegetation. Droplets, mist, foam or splatter of the herbicide solution settling on desirable vegetation is likely to result in discoloration, stunting or destruction.

Better results may be obtained when more of the weed is exposed to the herbicide
solution. Weeds not contacted by the herbicide solution will not be affected. This may
occur in dense clumps, severe infestations or when the height of the weeds varies
so that not all weeds are contacted. In these instances, repeat treatment may be
necessary.

Shielded and Hooded Applicators

A shielded or hooded applicator directs the herbicide solution onto weeds, while
shielding desirable vegetation from the herbicide. Use nozzles that provide uniform
coverage within the treated area. Keep shields on these sprayers adjusted to
protect desirable vegetation. EXTREME CARE MUST BE EXERCISED TO AVOID
CONTACT OF HERBICIDE WITH DESIRABLE VEGETATION.

Wiper Applicators

Wiper applicators are devices that physically wipe the appropriate amounts of this
product directly onto the weed. Equipment must be designed, maintained and
operated to prevent the herbicide solution from contacting desirable vegetation.

Application equipment used over the top of desirable vegetation should be adjusted
so that the wiper contact point is at least 2 inches above the desirable vegetation.
Better results may be obtained when more of the weed is exposed to the herbicide
solution. Weeds should be a minimum of 6 inches above the desirable vegetation.
Adjust the height of the applicator to ensure adequate contact with weeds. Weeds
not contacted by the herbicide solution will not be affected. Poor contact may occur
when weeds are growing in dense clumps, in severe weed infestations or when
weed height varies dramatically. In these instances, repeat treatments may be
necessary.

Operate this equipment at ground speeds no greater than 5 miles per hour.
Performance may be improved by reducing speed in areas of heavy weed
infestations to provide adequate wiper saturation with the herbicide solution. Better
results may be obtained when two applications are made in opposite directions.

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

Do not use wiper applicators when weeds are wet.

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

For Rope or Sponge Wick Applicators—Solutions ranging from 25 to 70 percent of this product in water may be used.

For Panel Applicators and Pressure-Feed Systems—Solutions ranging from 25 to 100 percent of this product in water may be used.

Injection Systems

This product may be used in aerial or 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 undiluted concentrate of ot

CDA Equipment

The rate of this product applied per acre by controlled droplet application (CDA) equipment must not be less than the amount directed in the label when applied by conventional broadcast equipment. For vehicle-mounted CDA equipment, apply 2 to 15 gallons of water per acre.

CDA equipment produces a spray pattern that is not easily visible. Extreme care must be exercised to avoid spray or drift contacting the foliage or any other green tissue of desirable vegetation, as damage or destruction is likely to result.

WEEDS CONTROLLED

Always use the higher rate of this product per acre within the specified range when weed growth is heavy or dense or weeds are growing in an undisturbed (noncultivated) area.
Reduced results may occur when treating weeds heavily covered with dust. For weeds that have been mowed, grazed or cut, allow regrowth to occur prior to treatment.

Refer to the following label sections for rates to control annual and perennial weeds and woody brush and trees. For difficult to control perennial weeds and woody brush and trees, where plants are growing under stressed conditions, or where infestations are dense, this product may be used at 4 to 7 quarts per acre for enhanced results.

Refer in the label regarding tank mix information.

See Supplemental label for the LIMITATIONS ON AERIAL APPLICATION IN CALIFORNIA ONLY, INCLUDING FRESNO COUNTY, CALIFORNIA.

See Supplemental label for the TANK MIXTURES FOR TOUGH TO CONTROL WEEDS.

Limitations, Restrictions, and Exceptions

Hollow-Stem Injection

This product may be applied through hand-held injection devices that deliver recommended amounts of this product into targeted hollow-stem plants growing in any site specified on the label.

Castorbean, Ricinus communis

Inject 4 mL per plant of this product into the lower portion of the main stem.

NOTE: The combined total for all treatments must not exceed 7 quarts of this product per acre. At 5 mL per stem, 7 quarts should treat approximately 1300 stems per acre.

Method

Stem-injection

Rates

field_rates 0

Restricted Entry Interval
4 hours

Timings

N.A.