

352-609

03/21/2001

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

MAR 21 2001

OFFICE OF
PREVENTION, PESTICIDES
AND TOXIC SUBSTANCES

Mr. J. H. Cain
DuPont Agricultural Products
Stine-Haskell Research Center 5300/421
P.O. Box 30
Newark, DE 19714-0030

Dear Mr. Cain:

Subject: DuPont Glyphosate VMF Herbicide (Revised Label)
EPA Registration No. 352-609
Your Application Dated January 22, 2001

The labeling referred to above, submitted in connection with registration under the Federal Insecticide, Fungicide, and Rodenticide Act, as amended is acceptable, provided you make the following change.

-In the Agricultural Use Requirements box, "waterproof gloves" must be changed to read "Chemical Resistant Gloves Category A."

Please submit three (3) copies of your final printed labeling bearing the above change before you release the product for shipment. Amended labeling supercedes all previously submitted ones. A stamped copy of labeling is enclosed for your records.

For future submissions, labels requiring revisions will not be stamped "accepted". Labeling requiring revisions will be rejected pending submissions of corrected labels.

Sincerely,

Dan Rosenblatt for
Dan Rosenblatt
Acting Product Manager 25
Herbicide Branch
Registration Division (7505C)



Glyphosate VMF

herbicide

Active Ingredient *By Weight*

*Glyphosate, N-(phosphonomethyl) glycine,
in the form of its isopropylamine salt 53.8%

Inert Ingredients 46.2%

TOTAL 100.0%

*Contains 648 grams per liter or 5.44 pounds per U.S. gallon of the active ingredient glyphosate, in the form of its isopropylamine salt.

EPA Reg. No. 352-609

Net Contents: _____

KEEP OUT OF REACH OF CHILDREN

CAUTION!

FIRST AID

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.

Have the product container label with you when calling a poison control center or doctor, or going for treatment. You may also contact 1-800-441-3637 for medical emergencies involving this product.

PRECAUTIONARY STATEMENTS

**HAZARD TO HUMANS AND DOMESTIC ANIMALS
CAUTION!**

PRECAUTIONARY STATEMENTS (CONT'D)

PERSONAL PROTECTIVE EQUIPMENT (PPE)

Applicators and other handlers must wear:

- Long-sleeved shirt and long pants.
- Shoes plus socks.

Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

Engineering Control Statement: When handlers use closed systems, enclosed cabs, or aircraft in a manner that meets the requirements listed in Worker Protection Standard (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: Wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet. Remove contaminated clothing and wash clothing before reuse.

ENVIRONMENTAL HAZARDS

Do not contaminate water when disposing of equipment washwaters. Treatment of aquatic weeds can result in oxygen depletion or loss due to decomposition of dead plants. This oxygen loss can cause fish suffocation.

In case of: SPILL or LEAK, soak up and remove to a landfill.

PHYSICAL/CHEMICAL HAZARDS

Spray solutions of this product should be mixed, stored and applied using only stainless steel, aluminum, fiberglass, plastic or plastic-lined steel containers.

DO NOT MIX, STORE OR APPLY THIS PRODUCT OR SPRAY SOLUTIONS OF THIS PRODUCT IN GALVANIZED STEEL OR UNLINED STEEL (EXCEPT STAINLESS STEEL) CONTAINERS OR SPRAY TANKS. This product or spray solutions of this product react with such containers and tanks to produce hydrogen gas which may form a highly combustible gas mixture. This gas mixture could flash or explode, causing serious personal injury, if ignited by open flame, spark, welder's torch, lighted cigarette or other ignition source.

ACCEPTED

MAR 21 2001

Under the Federal Insecticide, Fungicide, and Rodenticide Act, as amended, for the pesticide registered under EPA Reg. No 352-609

DIRECTIONS FOR USE

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

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, and 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 interval. 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 4 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, such as plants, soil, or water, is:

- Coveralls.
- Waterproof gloves.
- Shoes plus socks.

NON-AGRICULTURAL USE REQUIREMENTS

The requirements in this box apply to uses of this product that are NOT within the scope of the Worker Protection Standard for agricultural pesticides (40 CFR Part 170). The WPS applies when this product is used to produce agricultural plants on farms, forests, nurseries or greenhouses.

Uses of this product in utility rights-of-way and all other utility sites are not switching the scope of the Worker Protection Standard requirements. Requirements in the Agricultural Use Requirement box do not apply to utility sites. Follow all other label requirements for applications to utility sites. Keep people and pets off treated areas until spray solution has dried to prevent transfer of this product onto desirable vegetation.

GENERAL INFORMATION

This product is a postemergent, 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 without surfactant and additional surfactant is needed and recommended.

Environmental Fate: When this product comes in contact with the soil it is bound to soil particles. When used in accordance with label directions, once this product is bound it is not available for plant uptake and will not harm off-site vegetation where roots grow into the treatment area or if the soil is transported off-site. The strong affinity of this product to soil particles prevents this product from leaching out of the soil profile and entering ground water. The affinity between this product and soil particles remains until this product is degraded, which is primarily a biological degradation process carried out under both aerobic and anaerobic conditions by soil microflora.

Stage of Growth: Annual weeds are easiest to control when they are small. Apply to actively growing woody brush and trees after full leaf expansion and before fall color, leaf drop or frost. Best control of most perennial weeds, brush and trees is obtained after they reach the seedhead or flower formation stage of growth. For non-flowering plants, best results are obtained when the plants reach a mature stage of growth. In many situations, treatments are required prior to these growth stages. Under these conditions, use the higher application rate within the recommended range.

In arid areas, best results are obtained when applications are made in the spring to early summer when brush species are at high moisture content and are flowering.

Always use the higher rate of this product per acre within the recommended range when vegetation growth is heavy or dense and growing in undisturbed areas.

Time to Symptoms: This product moves through the plant from the point of foliage contact to and into the root system. Visible effects on most annual weeds occur within 2 to 4 days, but on most perennial weeds may not occur for 7 days or more. Symptoms on woody plants and trees may not occur for 30 days or more. Symptoms may not appear prior to frost or senescence with fall treatments. Extremely cool or cloudy weather following treatment may slow activity of this product and delay development of visual symptoms. Visible effects are a gradual wilting and yellowing of the plant which advances to complete browning of above-ground growth and deterioration of underground plant parts.

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

Cultural Considerations: Reduced control may result when applications are made to annual or perennial weeds, woody brush and trees that have been disturbed through tillage, mowing, grazing, or cutting. After any site disturbance, allow sufficient regrowth of weeds, brush and trees to recommended stage of growth for treatment before making foliar treatments.

Reduced control may result under poor growing conditions such as drought stress, disease or insect damage. Reduced results may also occur when treating vegetation heavily covered with dust.

Allow 7 or more days after application before tillage, mowing or removal of herbaceous weeds. Allow 4 to 6 weeks after application before mowing or mechanical removal of treated brush and trees.

Rainfastness: Heavy rainfall soon after application may wash this product off of the foliage and a repeat application may be required for adequate 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. Unemerged plants arising from unattached underground rhizomes or root stocks of perennials will not be affected by the herbicide.

Volatility: GLYPHOSATE VMF is non-volatile. Therefore, it cannot move as a vapor after application to affect nearby vegetation.

Toxicology: Exposure to workers and other applicators generally is expected to pose minimal risks based on results of short-term toxicity studies. Glyphosate has been thoroughly tested and determined not to cause cancer or other adverse long-term health effects.

Tank Mixing: This product does not provide residual weed control. For subsequent residual weed control, follow a label-approved herbicide program. Read and carefully observe the cautionary statements and all other information appearing on the labels of all herbicides used. Use according to the most restrictive label directions for each product in the mixture.

Grazing Restrictions: This product may be used to treat undesirable vegetation in utility rights-of-way that pass through pastures, rangeland and on forestry sites that are being grazed. For tank mix applications, comply with all restrictions appearing on the tank mix product label.

There are no grazing restrictions for the following labeled applications of this product:

- Where the spray can be directed onto undesirable woody brush and trees, such as in handgun spray-to-wet or low volume directed spray treatments.
- For tree injection or frill applications and for cut stump treatments.

For broadcast applications, observe the following restrictions:

- For application rates of greater than 4.5 but not to exceed 7.5 quarts per acre, no more than 15 percent of the available grazing area may be treated.
- For application rates that do not exceed 4.5 quarts per acre, no more than 25 percent of the available grazing area may be treated.
- All restrictions outlined above apply to lactating dairy animals. No other restrictions apply to lactating dairy animals.

These recommendations do not apply to rangeland outside of utility rights-of-way.

Annual Maximum Use Rate: This product has no herbicidal or residual activity in the soil. If repeat treatments are necessary the combined total of all treatments must not exceed 8 quarts of this product per acre per year.

ATTENTION

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

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) which are likely to drift. **AVOID APPLYING AT EXCESSIVE SPEED OR PRESSURE.**

NOTE: Use of this product in any manner not consistent with this label may result in injury to persons, animals or crops, or other unintended consequences. Keep container closed to prevent spills and contamination.

INFORMATION ON RESISTANT WEEDS

When herbicides with the same mode of action are used repeatedly over several years to control the same weed species in the same field, naturally-occurring resistant weed biotypes may survive a correctly applied herbicide treatment, propagate, and become dominant in that field. These resistant weed biotypes may not be adequately controlled. Cultural practices such as tillage, preventing weed escapes from going to seed, and using herbicides with different modes of action within and between crop seasons can aid in delaying the proliferation and possible dominance of herbicide resistant weed biotypes.

APPLICATION INFORMATION

MIXING

Clean sprayer parts after using this product by thoroughly flushing with water.

NOTE: REDUCED RESULTS MAY OCCUR IF WATER CONTAINING SOIL IS USED, SUCH AS VISIBLY MUDDY WATER OR WATER FROM PONDS AND DITCHES THAT IS NOT CLEAR.

Mixing with Water

This product mixes readily with water. Mix spray solutions of this product as follows: Fill the mixing or spray tank with the required amount of water. Add the recommended amount of this product near the end of the filling process and mix well. Use caution to avoid siphoning back into the carrier source. Use approved anti-back-siphoning devices where required by state or local regulations. During mixing and application, foaming of the spray solution may occur. To prevent or minimize foam, avoid the use of mechanical agitators, terminate by-pass and return lines at the bottom of the tank and, if needed, use an approved anti-foam or defoaming agent.

Tank Mixing Procedure

When tank mixing, read and carefully observe label directions, cautionary statements and all information on the labels of all products used. Add the tank-mix product to the tank as directed by the label. Maintain agitation and add the recommended amount of this product.

Maintain good agitation at all times until the contents of the tank are sprayed. If the spray mixture is allowed to settle, thorough agitation may be required to re-suspend the mixture before spraying is resumed.

Keep by-pass line on or near the bottom of the tank to minimize foaming. Screen size in nozzle or line strainers should be no finer than 50 mesh.

Always predetermine the compatibility of labeled tank mixtures of this product with water carrier by mixing small proportional quantities in advance.

Refer to the "Tank Mixing" section of "GENERAL INFORMATION" for additional precautions.

Surfactant

This product requires use of a nonionic surfactant. When using this product, mix 0.5% or more of a nonionic surfactant. Increasing the rate of surfactant up to 2 1/2 percent may enhance performance on hard to control woody brush, trees and vines. Other examples of when to use more than 2 1/2 quarts of surfactant include, but are not limited to: high water volumes, adverse environmental conditions, plants under stress, surfactants with less than 70% active ingredient, tank mixes, etc.

For forestry conifer release the use of Entry II surfactant is recommended to avoid possible injury with this product.

Colorants or Dyes

Agriculturally-approved colorants or marking dyes may be added to this product. Colorants or dyes used in spray solutions of this product may reduce performance, especially at lower rates or dilution. Use colorants or dyes according to the manufacturer's recommendations.

Drift Control Additives

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.

APPLICATION EQUIPMENT, TECHNIQUES AND USE RECOMMENDATIONS

APPLY THESE SPRAY SOLUTIONS IN PROPERLY MAINTAINED AND CALIBRATED EQUIPMENT CAPABLE OF DELIVERING DESIRED VOLUMES.

AERIAL EQUIPMENT

This product is recommended for aerial application in all uses by helicopter. Fixed wing may be used for applications to Industrial, Rangeland and Pasture sites in CO, ID, IA, KS, MT, NE, ND, OR, SD, UT, WA and WY. Apply the recommended rate of this product in 5 to 30 gallons of water per acre. Use the higher recommended spray volumes where weeds, brush and trees are dense or form multiple canopy layers.

For aerial broadcast applications, unless otherwise specified, use this product at the rate of 3/4 to 1 1/2 quarts per acre for annual weeds, 1 1/2 to 3 3/4 quarts per acre for perennial weeds and 3 3/4 to 7 1/2 quarts per acre for woody brush and trees. When used according to label directions this product will give control or partial control of herbaceous weeds, woody brush and trees listed in the "WEEDS CONTROLLED" section of this label.

Coarse sprays are less likely to drift; therefore, do not use nozzles or nozzle configurations which dispense spray as fine spray droplets

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

AERIAL EQUIPMENT AND APPLICATION IN CALIFORNIA

If aquatic sites are present in the noncrop area or use sites described in this label and are part of the intended treatment area, read and observe the following directions:

There is no restriction on the use of treated water for irrigation, recreation or domestic purposes.

Consult local public water control authorities before applying this product in and around public water. Permits may be required to treat in such areas.

NOTE: Do not apply this product directly to water within 1/2 mile up-stream of an active potable water intake in flowing water (i.e., river, stream, etc.) or within 1/2 mile of an active potable water intake in a standing body of water such as lake, pond or reservoir. To make aquatic applications around and within 1/2 mile of active potable water intakes, the water intake must be turned off for a minimum period of 48 hours after the application. These aquatic applications may be made ONLY in those cases where there are alternative water sources or holding ponds which would permit the turning off of an active potable water intake for a minimum period of 48 hours after the applications. This restriction does NOT apply to intermittent inadvertent overspray of water in terrestrial use sites.

Do not spray open bodies of water where woody brush, trees and herbaceous weeds do not exist. The maximum application rate of 7 1/2 pints per acre must not be exceeded in a single over-water broadcast application except as follows, where any recommended rate may be applied:

- Stream crossings in utility rights-of-way
- Where applications will result in less than 20 percent of the total water area being treated.

Aerial applications of this product are allowed in the following situations:

1. Forestry sites
2. Aid to burning for establishment and maintenance of fuel breaks
3. Establishing fire perimeters and black lines
4. Aid to prescribed burning
5. Along fire roads
6. Range conversion
7. Habitat restoration and management
8. Wildlife food plots
9. Chaparral areas

AERIAL APPLICATIONS

Aerial applications may be made with helicopters only and only in non-residential areas.

Use the following guidelines when aerial applications are made 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 within 100 feet of any desirable vegetation or crop(s).
2. If wind up to 5 miles per hour is blowing toward desirable vegetation or crop(s), do not apply within a minimum of 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) may require buffer zones in excess of 500 feet.
4. Do not apply when winds are in excess of 10 miles per hour or when inversion conditions exist.

Coarse sprays are less likely to drift; therefore, do not use nozzles or nozzle configurations which dispense spray as fine spray droplets. Do not angle nozzles forward into the air stream 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 streaking, uneven, or overlapped application, use appropriate marking devices.

PROLONGED EXPOSURE OF THIS PRODUCT TO UNCOATED STEEL SURFACES MAY RESULT IN CORROSION AND POSSIBLE FAILURE OF THE PART. The maintenance of an organic coating (paint) which meets aerospace specification MIL-C-38413 may prevent corrosion. To prevent corrosion of exposed parts, thoroughly wash aircraft after each day of spraying to remove residues of this product accumulated during spraying or from spills. Landing gear are most susceptible.

GROUND BROADCAST EQUIPMENT

For broadcast ground applications, unless otherwise specified use this product at the rate of 3/4 to 1 1/2 quarts per acre for annual weeds, 1 1/2 to 3 3/4 quarts per acre for perennial weeds and 3 3/4 to 7 1/2 quarts per acre for woody brush and trees. When used according to label directions this product will give control or partial control of herbaceous weeds, woody brush and trees listed in the "WEEDS CONTROLLED" section of this label.

Apply the recommend rate in 10 to 60 gallons per acre. As density of herbaceous weeds and woody brush increases, spray volume should be increased within the recommended range to ensure complete coverage. Carefully select proper nozzles to avoid spraying a fine mist. Check for even distribution of spray droplets.

HAND-HELD DIRECTED SPRAY EQUIPMENT

Use a coarse spray only.

Unless otherwise specified, use the recommended rates listed in the following "APPLICATION RATES" table for various methods of foliar application using high volume, backpack, knapsack and similar types of hand-held equipment. When used according to label directions this product will give control or partial control of herbaceous weeds, woody brush and trees listed in the "WEEDS CONTROLLED" section of this label.

APPLICATION RATES

Application	GLYPHOSATE VMF	Spray Volume GAL/A
SPRAY-TO-WET		
Handgun or Backpack,	3/4% to 1 1/2% by volume	spray-to-wet*
LOW VOLUME DIRECTED SPRAY		
Backpack	3 3/4% to 7 1/2% by volume	15 to 25**
Modified High Volume	1 1/2% to 3% by volume	40 to 60**

* For applications made on a spray-to-wet basis, spray coverage should be uniform and complete. Do not spray to the point of runoff.

**For low volume directed spray applications, coverage should be uniform with at least 50 to 75 percent of the foliage contacted. Coverage of the top one-half of the plant is important for best results. Low volume directed applications with backpacks work best when treating weeds and brush less than 10' tall. For taller weeds and brush, high volume handguns can be modified by reducing nozzle size and spray pressure to produce a low volume directed spray. 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.

Prepare the desired volume of spray solution by mixing the amount of this product in water as shown in the following "SPRAY SOLUTION TABLE":

SPRAY SOLUTION TABLE

Amount of GLYPHOSATE VMF

Desired Volume	0.75%	1.0%	1.5%	2.0%	3.0%	5.0%	7.5%
1 Gal	1 oz	1 1/3 oz	2 oz	2 1/2 oz	4 oz	6 1/2 oz	9 1/2 oz
25 Gal	1 1/2 pt	1 qt	1 1/2 qt	2 qt	3 qt	5 qt	7 1/2 qt
100 Gal	3 qt	1 gal	1 1/2 gal	2 gal	3 gal	5 gal	7 1/2 gal

2 tablespoons = 1 fluid ounce

For use in backpack, knapsack or pump-up sprayers, it is suggested that the recommended amount of this product be mixed with water in a larger container. Fill sprayer with the mixed solution.

CUT STUMP APPLICATION

Cut stump treatments may be made on any site listed on this label. This product will give control or partial control of woody brush and trees, some of which are listed below. Apply this product using suitable equipment to ensure coverage of the entire cambium. Cut trees or resprouts close to the soil surface. Apply a 50 to 100 percent solution of this product to the freshly-cut surface immediately after cutting. Delays in application may result in reduced performance. For best results, applications should be made during periods of active growth and full leaf expansion.

- | | |
|---------------|-------------|
| Alder | Poplar* |
| Coyote brush* | Reed, giant |
| Dogwood* | Saltcedar |
| Eucalyptus | Sycamore* |
| Hickory* | Sweetgum |
| Madrone | Tan oak |
| Maple* | Willow |
| Oak | |

*GLYPHOSATE VMF is not approved for this use on these species in the state of California

DO NOT MAKE CUT STUMP APPLICATIONS WHEN THE ROOTS OF DESIRABLE WOODY BRUSH OR TREES MAY BE GRAFTED TO THE ROOTS OF THE CUT STUMP. INJURY RESULTING FROM ROOT GRAFTING IS LIKELY TO OCCUR IN ADJACENT WOODY BRUSH OR TREES.

INJECTION AND FRILL APPLICATION

This product will control woody brush and trees by injection or frill applications. Apply this product using suitable equipment which must penetrate into the living tissue. Apply the equivalent of 1 ml of this product per each 2 to 3 inches of trunk diameter at breast height (DBH). This is best achieved by applying a 50 to 100 percent concentration of this product either to a continuous frill around the tree or as cuts evenly spaced around the tree below all branches. As tree diameter increases in size, better results are achieved by applying diluted material to a continuous frill or more closely spaced cuttings. Avoid application techniques that allow runoff to occur from frilled or cut areas in species that exude sap freely. In species such as this, make the frill or cuts at an oblique angle to produce a cupping effect and use a 100 percent concentration of this product. For best results, application should be made during periods of active growth and after full leaf expansion. Injection or frill applications of this product will control many woody brush and tree species, some of which are listed below:

- | | |
|----------------|------------------------|
| <u>Control</u> | <u>Partial Control</u> |
| Oak | Black gum |
| Poplar | Dogwood |
| Sweetgum | Hickory |
| Sycamore | Maple, red |

SELECTIVE EQUIPMENT

This product may be applied through recirculating spray systems, shielded applicators, hooded sprayers, wiper applicators or sponge bars after dilution and thorough mixing with water to listed weeds growing in any utility site specified on this label.

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

Applicators 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.

Best results are obtained when the foliage of herbaceous weeds and woody brush is contacted by the herbicide solution. Vegetation not contacted by the herbicide solution will not be affected. Poor contact may occur in dense clumps, severe infestations or when the height of the plants varies so that not all of the undesirable plant foliage is contacted. In these instances, repeat treatment may be necessary.

Shielded and hooded applicators

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 and sponge bars

Equipment must be designed, maintained and operated to prevent the herbicide solution from contacting desirable vegetation. Operate this equipment at ground speeds no greater than 5 mph. Performance may be improved by reducing speed in areas of heavy weed infestations to ensure adequate wiper saturation. Better results may be obtained if 2 applications are made in opposite directions.

Avoid leakage or dripping onto desirable vegetation. Adjust height of applicator to ensure adequate contact with weeds. 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 a wiper applicator.

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

For Rope or Sponge Wick Applicators--Solutions ranging from 33 to 75 percent of this product in water may be used.

For Porous-Plastic Applicators and pressure-feed systems--Solutions ranging from 33 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 other products when using injection systems unless specifically recommended.

WEEDS CONTROLLED

When applied as recommended under the conditions described, this product CONTROLS, or PARTIALLY CONTROLS most herbaceous weeds, woody brush and trees, some of which are listed below:

WOODY BRUSH AND TREES:

Alder
 Ash*
 Aspen, quaking
 Bearclover (Bearnat)
 Beech*
 Birch
 Blackberry
 Blackgum
 Bracken
 Broom; French, Scotch
 Buckwheat, California*
 Cascara*
 Catsclaw*
 Ceanothus*
 Chamise*
 Cherry; Bitter, Black, Pin
 Cottonwood, eastern
 Coyotebrush,
 Cypress, swamp, bald
 Deerweed
 Dogwood
 Elderberry.
 Elm*
 Eucalyptus
 Gallberry
 Gorse*
 Hackberry, western
 Hasardia*
 Hawthorn
 Hazel
 Hickory*
 Honeysuckle
 Hornbeam, American*
 Huckleberry
 Kudzu**
 Locust, black*
 Madrone
 Magnolia, sweetbay
 Madrone resprouts*
 Manzanita*
 Maple, red
 Maple, sugar
 Monkey Flower*
 Oak, black, white
 Oak, post
 Oak, northern, pin
 Oak, scrub*
 Oak, southern red
 Orange, Osage
 Peppertree, Brazilian (Florida holly)*
 Persimmon*
 Pine
 Poison Ivy**
 Poison Oak**
 Poplar, yellow*
 Prunus
 Raspberry
 Redbud, eastern
 Redcedar, eastern
 Rose, multiflora
 Russian Olive*

Sage; black
 Sage; white*
 Sagebrush, California
 Salmonberry
 Saltbrush, Sea myrtle
 Saltcedar*
 Sassafras*
 Sourwood*
 Sumac, laurel, poison, smooth, sugarbush, winged*
 Sweetgum
 Swordfern*
 Tallowtree, Chinese
 Tan Oak resprouts*
 Thimbleberry
 Tobacco, tree*
 Toyon*
 Trumpet creeper
 Vine maple*
 Virginia creeper
 Waxmyrtle, southern*
 Willow
 Yerbasenta, California

* Partial control

**Use a minimum of 4 quarts per acre

PERENNIAL WEEDS

Alfalfa*
 Alligatorweed*
 Anise (fennel)
 Artichoke, Jerusalem
 Bahiagrass
 Beachgrass, European (Ammophila arenaria)
 Bentgrass*
 Bermudagrass
 Bermudagrass, water (knotgrass)
 Bindweed, field
 Bluegrass, Kentucky
 Blueweed, Texas
 Brackenfern
 Bromegrass, smooth
 Bursage, woolly-leaf
 Canarygrass, reed
 Cattail
 Clover; red, white
 Cogongrass
 Cordgrass
 Cutgrass, giant*
 Dallisgrass
 Dandelion
 Dock, curly
 Dogbane, hemp
 Fescue (except tall)
 Fescue, tall
 Guineagrass
 Hemlock, poison
 Horsenettle
 Horseradish
 Iceplant
 Ivy, German, cape
 Johnsongrass
 Kikuyugrass
 Knapweed
 Lantana
 Lespedeza
 Loosestrife, purple
 Lotus, American
 Maidencane
 Milkweed, common
 Muhly, wirestem
 Mullein, common
 Napiergrass

- Nightshade, silverleaf
- Nutsedge; purple, yellow
- Orchardgrass
- Pampasgrass
- Paragrass
- Pepperweed, perennial
- Phragmites*
- Quackgrass
- Redvine*
- Reed, giant
- Ryegrass, perennial
- Smartweed, swamp
- Spatterdock
- Spurge, leafy*
- Starthistle, yellow
- Sweet potato, wild*
- Thistle, artichoke
- Thistle, Canada
- Timothy
- Torpedograss*
- Trumpet creeper*
- Tules, common
- Vaseygrass
- Velvetgrass
- Waterhyacinth
- Waterlettuce
- Waterprimrose
- Wheatgrass, western

* Partial Control

ANNUAL WEEDS

- Annoda, spurred
- Balsam apple*
- Barley
- Barnyardgrass
- Bassia, fivehook
- Bittercress
- Black nightshade
- Bluegrass, annual
- Bluegrass, bulbous
- Bassia, fivehook
- Brome, downy
- Brome, Japanese
- Broomsedge
- Browntop panicum
- Buttercup
- Carolina foxtail
- Carolina geranium
- Castor bean
- Cheatgrass
- Cheeseweed (Malva parviflora)
- Chervil
- Chickweed
- Cocklebur
- Copperleaf, hophornbeam
- Corn
- Corn speedwell
- Crabgrass
- Dwarf dandelion
- Eastern manna grass
- Eclipta
- Fall panicum
- Falsedandelion
- Falseflax, smallseed
- Fiddleneck
- Field pennycress
- Filaree
- Fleabane, annual
- Fleabane, hairy (Conyza bonariensis)
- Fleabane, rough
- Florida pusley

- Foxtail
- Goatgrass, jointed
- Goosegrass
- Grain sorghum (milo)
- Groundsel, common
- Hemp sesbania
- Henbit
- Horseweed/Marestail (Conyza canadensis)
- Italian Ryegrass**
- Itchgrass
- Johnsongrass, seedling
- Junglerice
- Knotweed
- Kochia
- Lambsquarters
- Little barley
- London rocket
- Mayweed
- Medusahead
- Morningglory (Ipomoea spp.)
- Mustard, blue
- Mustard, tansy
- Mustard, tumble
- Mustard, wild
- Oats
- Pigweed***
- Plains/Tickseed coreopsis
- Prickly lettuce
- Puncturevine
- Purslane, common
- Ragweed, common
- Ragweed, giant
- Red rice
- Russian thistle
- Rye
- Ryegrass
- Sandbur, field
- Shattercane
- Shepherd's-purse
- Sicklepod
- Signalgrass, broadleaf
- Smartweed, ladysthumb
- Smartweed, Pennsylvania
- Sowthistle, annual
- Spanishneedles
- Speedwell, purslane
- Sprangletop
- Spurge, annual
- Spurge, prostrate
- Spurge, spotted
- Spurry, umbrella
- Stinkgrass
- Sunflower
- Teaweed/Prickly sida
- Texas panicum
- Velvetleaf
- Virginia copperleaf
- Virginia pepperweed
- Wheat
- Wild oats
- Witchgrass
- Woolly cupgrass
- Yellow rocket

* Apply with hand-held equipment only

** Apply 3 pints per acre

*** Partial Control

Annual weeds will generally continue to germinate from seed throughout the growing season. Repeat treatments will be necessary to control later germinating weeds.

SITE RECOMMENDATIONS

Unless otherwise specified, applications of this product may be made for control or partial control of herbaceous weeds, woody brush and trees listed in the "WEEDS CONTROLLED" section of this label.

FORESTRY SITE PREPARATION

This product is recommended for the control or partial control of woody brush, trees and herbaceous weeds in forestry. This product is also recommended for use in preparing or establishing wildlife openings within these sites and maintaining logging roads.

This product is recommended for use in site preparation prior to planting any tree species, including Christmas trees, eucalyptus, hybrid tree cultivars and silvicultural nursery sites.

TANK MIXTURES

Tank mixtures of this product may be used to increase the spectrum of vegetation controlled. When tank mixing, read and carefully observe the label claims, cautionary statements and all information on the labels of all products used. Use according to the most restrictive precautionary statements for each product in the mixture.

NOTE: For forestry site preparation, make sure the tank-mix product is approved for use prior to planting the desired species. Observe planting interval restrictions.

Any recommended rate of this product may be used in a tank mix with the following products for forestry site preparation.

PRODUCT	BROADCAST RATE
"Arsenal" Applicators Concentrate	2 to 16 fl oz/a
"Chopper"	4 to 32 oz/a
ESCORT®	1/2 to 3 1/2 oz/a
"Garlon" 4	1 to 4 qts/a
OUST®	1 to 4 oz/a

PRODUCT	SPRAY-TO-WET RATES
"Arsenal" Applicators Concentrate	1/32% to 1/2% by volume

PRODUCT	LOW VOLUME DIRECTED SPRAY RATES
"Arsenal" Applicators Concentrate	1/8% to 1/2% by volume

For control of herbaceous weeds, use the lower recommended tank mixture rates. For control of dense stands or tough-to-control woody brush and trees, use the higher recommended rates.

CONIFER AND HERBACEOUS RELEASE

This product can be used for conifer release as a broadcast spray at rates of 3/4 to 1 1/2 quarts per acre, unless otherwise stated below for control, partial control or suppression of herbaceous weeds and hardwoods listed in the "WEEDS CONTROLLED" section of this label. Use only where conifers have been established for more than one year unless otherwise stated below. This product may be applied as a directed spray or by using selective equipment in forestry hardwood and conifer sites, including Christmas tree plantations and silvicultural nurseries.

In Maine and New Hampshire this product can be applied at rates up to 2 1/4 quarts per acre for control and suppression of difficult hardwood species.

Note: This product may require use with a surfactant. To avoid possible conifer injury use of Entry™II surfactant at 5 to 30 fluid ounces per acre is recommended. Entry II rates should not exceed 20 fluid ounces per acre at elevations above 1500 feet, or 10 fluid ounces per acre in coastal range or at elevations below 1500 feet in Washington and Oregon. Use of a surfactant is not recommended for release of hemlock species or California redwood. In mix conifer stands injury to these species may result if a surfactant is used.

APPLICATION MUST BE MADE AFTER FORMATION OF FINAL CONIFER RESTING BUDS IN THE FALL OR PRIOR TO INITIAL BUD SWELLING IN THE SPRING.

Injury may occur to conifers treated for release, especially where spray patterns overlap or the higher rates are applied. Damage can be accentuated if applications are made when conifers are actively growing, or are under stress from drought, flood water, improper planting, insects, animal damage or diseases.

For release of the following conifer species outside the Southeastern United States:

Douglas fir, Fir, Hemlock, Pines*, California Redwood, Spruce

*includes all species except loblolly pine, longleaf pine, shortleaf pine or slash pine.

Use 3/4 to 1 1/2 quarts of this product per acre as a broadcast spray.

To release Douglas fir, and pine and spruce species at the end of the first growing season (except in California), this product can be used at the lower recommended rates of 3/4 to 1 1/8 quarts per acre. Ensure that the conifers are well hardened off before application.

For release of Spruce (picea spp.) in Michigan, Minnesota and Wisconsin, up to 2 1/4 quarts per acre of this product may be used for the control of difficult woody brush and tree species and application must be made after formation of final conifer resting buds in the fall.

For release of the following conifer species in the Southeastern United States:

Loblolly pine, Slash pine, Eastern white pine, Virginia pine, Shortleaf pine, Longleaf pine

Apply 1 1/8 to 1 7/8 quarts of this product per acre as a broadcast spray during late summer or early fall after the pines have hardened off.

For applications made at the end of the first growing season, use 3/4 quart per acre of this product.

TANK MIXTURES

This product may be tank mixed with the following products for conifer or herbaceous release.

When tank mixing, read and carefully observe the label claims, cautionary statements and all information on the labels of all products used. Use according to the most restrictive precautionary statements and label uses for each product in the mixture.

When applied as directed, this product plus listed residual herbicides provides postemergence control of the annual weeds and control or suppression of the perennial weeds listed in this label, and residual control of the weeds listed in the residual herbicide label. Use only on conifer species that are labeled for over-the-top sprays for both products.

ATRAZINE

"ARSENAL" APPLICATORS CONCENTRATE

OUST®

Late Summer and Fall after Resting Bud Formation

For release of jack pine, white pine and white spruce, apply 3/4 to 1 1/2 quarts of this product plus 1 to 3 ounces of OUST® per acre. For white pine tank mix a maximum of 1 to 1 1/2 ounces of OUST® per acre.

For conifer release of Douglas fir, use 3/4 to 1 1/8 fluid ounces of this product plus 2 to 6 ounces of "Arsenal" Applicators Concentrate per acre. For conifer release of balsam fir and red spruce, apply 1 1/2 quarts of this product plus 1 to 2 1/2 ounces of "Arsenal" Applicators Concentrate per acre.

Herbaceous Release

For spring and early summer herbaceous release of loblolly pine, Virginia and longleaf pine apply 12 to 18 ounces of this product with 2 to 4 ounces of OUST®. Add up to 3.2 ounces per acre of Entry II as the nonionic surfactant.

For early spring release of Douglas fir, prior to bud swell, apply 3/4 quart of this product plus 4 pounds a.i. of atrazine per acre. Allow one full growing season before application. Do not add surfactant to this treatment.

UTILITY RIGHTS OF WAY SITES

In utilities, this product is recommended for use along electrical power, pipeline and telephone rights-of-way, and in other sites associated with these rights-of-way, such as substations, roadsides, railroads or similar rights-of-way that run in conjunction with utilities.

This product is also recommended for use in preparing or establishing wildlife openings within these sites, maintaining access roads and for side trimming along utility rights-of-way.

TANK MIXTURES

Tank mixtures of this product may be used to increase the spectrum of control for herbaceous weeds, woody brush and trees. When tank mixing, read and carefully observe the label claims, cautionary statements and all information on the labels of all products used. Use according to the most restrictive precautionary statements for each product in the mixture. Any recommended rate of this product may be used in a tank mix.

For control of herbaceous weeds, use the lower recommended tank mixture rates. For control of dense stands or tough-to-control woody brush and trees, use the higher recommended rates.

NOTE: For side trimming treatments, it is recommended that this product be used alone or in tank mixture with Garlon 4.

PRODUCT	BROADCAST RATE
"Arsenal" 2WSL	6 to 32 fl oz/a
ESCORT®	1 to 2 oz/a
"Garlon" 3A*, "Garlon" 4	1 to 4 qts/a
OUST®	1 to 4 oz/a

PRODUCT	SPRAY-TO-WET RATES
"Arsenal" 2WSL	1/16% to 1/8% by volume
ESCORT®	1 to 2 oz/acre

PRODUCT	LOW VOLUME DIRECTED SPRAY RATES
"Arsenal" 2WSL	1/8% to 1/2% by volume
ESCORT®	1 to 2 oz/acre

*Ensure that Garlon 3A is thoroughly mixed with water according to label directions before adding this product. Have spray mixture agitating at the time this product is added to avoid spray compatibility problems.

Bare Ground and Trim-and-edge

This product may be used in utility sites and substations for bare ground, trim-and-edge around objects, spot treatment of unwanted vegetation and to eliminate unwanted weeds growing in established shrub beds or ornamental plantings. This product may be used prior to planting a utility site to ornamentals, flowers, turfgrass (sod or seed), or beginning construction projects.

Repeated applications of this product may be used, as weeds emerge, to maintain bare ground.

This product may be tank mixed with the following products. Refer to these products' labels for approved noncrop sites and application rates.

- | | |
|------------------|-----------------|
| "Arsenal" | "Plateau" |
| "Banvel" | "Princep DF" |
| "Barricade 65WG" | "Prince" Liquid |
| Diuron | "Ronstar 50WP" |
| "Endurance" | "Sahara" |
| ESCORT® | Simazine |
| "Garlon 3A" | "Surflan" |

WETLAND SITES

This product may be used in and around water and wetlands found in forestry and in power, telephone and pipeline rights-of-way sites, including where these sites are adjacent to or surrounding domestic water supply reservoirs, supply streams, lakes and ponds. Read and observe the following before making applications in and around water.

Consult local public water control authorities before applying this product in and around public water. Permits may be required to treat in such areas.

There is no restriction on the use of treated water for irrigation, recreation or domestic purposes.

NOTE: Do not apply this product directly to water within 1/2 mile up-stream of an active potable water intake in flowing water (i.e., river, stream, etc.) or within 1/2 mile of an active potable water intake in a standing body of water such as lake, pond or reservoir. To make aquatic applications around and within 1/2 mile of active potable water intakes, the water intake must be turned off for a minimum period of 48 hours after the application. These aquatic applications may be made ONLY in those cases where there are alternative water sources or holding ponds which would permit the turning off of an active potable water intake for a minimum period of 48 hours after the applications. This restriction does NOT apply to intermittent inadvertent overspray of water in terrestrial use sites.

Do not spray open bodies of water where woody brush, trees and herbaceous weeds do not exist. The maximum application rate of 7 1/2 pints per acre must not be exceeded in a single over-water broadcast application except as follows, where any recommended rate may be applied:

- Stream crossings in utility rights-of-way
- Where applications will result in less than 20 percent of the total water area being treated.

AQUATIC AND OTHER NON-CROP SITES

When applied as directed and under the conditions described in the "Weeds Controlled" section in this label, this product will control or partially control the labeled weeds growing in the following industrial, recreational and public areas or other similar aquatic and terrestrial sites.

This product may be applied to emerged weeds, woody brush and trees in all bodies of fresh and brackish water which may be flowing, nonflowing or transient. This includes lakes, rivers, streams, ponds, estuaries, rice levees, seeps, irrigation and drainage ditches, canals, reservoirs, wastewater treatment facilities, wetlands, wildlife habitat restoration and management areas, and similar sites.

This product may also be used to control weeds, woody brush and trees in other terrestrial noncrop sites or in aquatic sites associated with these areas. These use areas include airports, apartment complexes, ditch banks, dry ditches, dry canals, fence rows, golf courses, habitat restoration and management areas, industrial sites, lumber yards, manufacturing sites, natural areas, office complexes, parks, parking areas, petroleum tank farms and pumping installations, railroads, recreational areas, roadsides, schools, storage areas, utility rights-of-way, utility

substations, warehouse areas, other public areas, and similar industrial and noncrop sites.

If aquatic sites are present in the noncrop area or use sites described in this label and are part of the intended treatment area, read and observe the following directions:

This product does not control plants which are completely submerged or have a majority of their foliage under water.

NOTE: All restrictions and use instructions contained in WETLAND SITES apply also to AQUATIC SITES.

For treatments after drawdown of water or in dry ditches, allow 7 or more days after treatment before reintroduction of water to achieve maximum weed control. Apply this product within 1 day after drawdown to ensure application to actively growing weeds.

Floating mats of vegetation may require retreatment. Avoid wash-off of sprayed foliage by spray boat or recreational boat backwash or by rainfall within 6 hours of application. Do not retreat within 24 hours following the initial treatment.

Applications made to moving bodies of water must be made while traveling upstream to prevent concentration of this herbicide in water. When making any bankside applications, do not overlap more than 1 foot into open water. Do not spray in bodies of water where weeds do not exist.

When emerged infestations require treatment of the total surface area of impounded water, treating the area in strips may avoid oxygen depletion due to decaying vegetation. Oxygen depletion may result in fish kill.

HABITAT MANAGEMENT

Habitat restoration and management

This product may be used to control exotic and other undesirable vegetation in habitat management and natural areas, including rangeland and wildlife refuges. Applications can be made to allow recovery of native plant species, prior to planting desirable native species, and for similar broad spectrum vegetation control requirements. Spot treatments can be made to selectively remove unwanted plants for habitat management and enhancement.

Wildlife food plots

This product may be used as a site preparation treatment prior to planting wildlife food plots. Any wildlife food species may be planted after applying this product, or native species may be allowed to repopulate the area. If tillage is needed to prepare a seedbed, wait 7 days after application before tillage to allow translocation into underground plant parts.

ROADSIDES

RELEASE OF DORMANT BERMUDAGRASS AND BAHIAGRASS

When applied as directed, this product will provide control or suppression of many winter annual weeds and tall fescue for effective release of dormant bermudagrass or bahiagrass. Make applications to dormant bermudagrass or bahiagrass.

For best results on winter annuals, treat when weeds are in an early growth stage (below 6 inches in height) after most have germinated. For best results on tall fescue, treat when fescue is in or beyond the 4- to 6-leaf stage.

WEEDS CONTROLLED

Rate recommendations for control or suppression of winter annuals and tall fescue are listed below.

Apply the recommended rates of this product in 10 to 25 gallons of water per acre plus 2 quarts nonionic surfactant per 100 gallons of total spray volume.

WEEDS CONTROLLED OR SUPPRESSED*

NOTE: C = Control
S = Suppressed

Weed Species	GLYPHOSATE VMF FLUID OZ/A					
	6	9	12	18	24	48
Barley, little, <i>Hordeum pusillum</i>	S	C	C	C	C	C
Bedstraw, catchweed <i>Galium aparine</i>	S	C	C	C	C	C
Bluegrass, annual <i>Poa annua</i>	S	C	C	C	C	C
Chervil <i>Chaerophyllum tainturieri</i>	S	C	C	C	C	C
Chickweed, common <i>Stellaria media</i>	S	C	C	C	C	C
Clover, crimson <i>Trifolium incarnatum</i>	•	S	S	C	C	C
Clover, large hop <i>Trifolium canpestre</i>	•	S	S	C	C	C
Speedwell, corn <i>Veronica arvensis</i>	S	C	C	C	C	C
Fescue, tall <i>Festuca arundinaceae</i>	•	•	•	•	S	S
Geranium, Carolina <i>Geranium carolinianum</i>	•	•	S	S	C	C
Henbit <i>Lamium amplexicaule</i>	•	S	C	C	C	C
Ryegrass Italian <i>Lolium multiflorum</i>	•	•	S	C	C	C
Vetch, common <i>Vicia sativa</i>	•	•	S	C	C	C

* These rates apply only to sites where an established competitive turf is present.

RELEASE OF ACTIVELY GROWING BERMUDAGRASS

NOTE: USE ONLY ON SITES WHERE BAHIAGRASS OR BERMUDAGRASS ARE DESIRED FOR GROUND COVER AND SOME TEMPORARY INJURY OR YELLOWING OF THE GRASSES CAN BE TOLERATED.

When applied as directed, this product will aid in the release of bermudagrass by providing control of annual species listed in the "WEEDS CONTROLLED" section in this label, and suppression or partial control of certain perennial weeds.

For control or suppression of this annual species listed in this label, use 3/4 to 2 1/4 pints of this product as a broadcast spray in 10 to 25 gallons of spray solution per acre, plus 2 quarts of a nonionic surfactant per 100 gallons

of total spray volume. Use the lower rate when treating annual weeds below 6 inches in height (or length of runner in annual vines). Use the higher rate as size of plants increases or as they approach flower or seedhead formation.

Use the higher rate for partial control or longer-term suppression of the following perennial species. Use lower rates for shorter-term suppression of growth.

- Bahiagrass
- Dallisgrass
- Fescue (tall)
- Johnsongrass**
- Trumpet creeper*
- Vaseygrass

*Suppression at the higher rate only.
**Johnsongrass is controlled at the higher rate.

Use only on well-established bermudagrass. Bermudagrass injury may result from the treatment but regrowth will occur under moist conditions. Repeat applications in the same season are not recommended, since severe injury may result.

BAHIAGRASS SEEDHEAD AND VEGETATIVE SUPPRESSION

When applied as directed in the "NONCROP SITES" section in this label, this product will provide significant inhibition of seedhead emergence and will suppress vegetative growth for a period of approximately 45 days with single applications and approximately 120 days with sequential applications.

Apply this product 1 to 2 weeks after full green-up of bahiagrass or after the bahiagrass has been mowed to a uniform height of 3 to 4 inches. Applications must be made prior to seedhead emergence. Apply 5 fluid ounces per acre of this product, plus 2 quarts of an approved nonionic surfactant per 100 gallons of total spray volume in 10 to 25 gallons of water per acre.

Sequential applications of this product plus nonionic surfactant may be made at approximately 45-day intervals to extend the period of seedhead and vegetative growth suppression. For continued vegetative growth suppression, sequential applications must be made prior to seedhead emergence.

Apply no more than 2 sequential applications per year. As a first sequential application, apply 3 fluid ounces of this product per acre plus nonionic surfactant. A second sequential application of 2 to 3 fluid ounces per acre plus nonionic surfactant may be made approximately 45 days after the last application.

ANNUAL GRASS GROWTH SUPPRESSION

For growth suppression of some annual grasses, such as annual ryegrass, wild barley and wild oats growing in coarse turf on roadsides or other industrial areas, apply 3 to 4 ounces of this product in 10 to 40 gallons of spray solution per acre. Mix 2 quarts of a nonionic surfactant per 100 gallons of spray solution. Applications should be made when annual grasses are actively growing and before the seedheads are in the boot stage of development. Treatments made after seedhead emergence may cause injury to the desired grasses.

INDUSTRIAL, RANGELAND AND PASTURE SITES

For the control or suppression of Bromus spp. and Medusahead found in CO, ID, IA, KS, MT, NE, ND, OR, SD, UT, WA and WY.

APPLICATION EQUIPMENT AND TECHNIQUES

Applications may be made using ground or aerial equipment. Aerial applications for these uses may be made using fixed wing or helicopter equipment. For aerial applications, apply in 2 to 10 gallons of water per acre. For applications using ground equipment, apply in 10 to 20 gallons of water per acre. Mix 0.5 to 1.0 percent nonionic surfactant (2 to 4 quarts per 100 gallons of spray solution) with the spray solution. The surfactant should be at least 80 percent active ingredient.

Bromus Species: This product may be used to treat downy brome (*Bromus tectorum*), Japanese brome (*Bromus japonicus*), soft chess (*Bromus mollis*) and cheatgrass (*Bromus secalinus*) found in industrial, rangeland and pasture sites. Apply 8 to 16 fluid ounces of product per acre on a broadcast basis.

For best results, treatment should coincide with early seedhead emergence of the most mature plants. Delaying the application until this growth stage will maximize the emergence of other weedy grass flushes. Applications should be made to the same site each year until seed banks are depleted and the desirable perennial grasses are able to become reestablished on the site.

Medusahead: To treat medusahead, apply 16 fluid ounces of this product per acre as soon as plants are actively growing, and prior to the 4 leaf stage. Applications may be made in the fall or spring.

For best results, treatment should coincide with early seedhead emergence of the most mature plants. Delaying the application until this growth stage will maximize the emergence of other weedy grass flushes. Applications should be made to the same site each year until seed banks are depleted and the desirable perennial grasses are able to become reestablished on the site.

SPRAYER PREPARATION

It is important that spray equipment is clean and free of existing pesticide deposits before using GLYPHOSATE. Follow the cleanup procedures specified on the label of the product(s) previously used. If no cleanout procedure is provided, follow this cleanout procedure for all application equipment before using GLYPHOSATE:

1. Thoroughly rinse sprayer, tanks, boom and hoses with clean water.
2. Partially fill tank with water and add ammonia (1 gal. of ammonia per 100 gal. of tank volume) or a tank cleaner. Complete filling the tank and flush the cleaning solution through the boom hoses. Let solution stand for 15 minutes while agitating/recirculating, and then drain the tank by flushing the hoses, booms and nozzles.

3. Thoroughly rinse the sprayer, tanks, boom and hoses with clean water.
4. Follow label directions on product(s) previously sprayed for disposal.

PRECAUTION: Do not use chlorine bleach with ammonia. See Sprayer Cleanup Section for more information.

SPRAYER CLEANUP

Spray equipment must be clean and free of previous pesticide deposits before applying. Using the cleanup procedures specified on the label of the previously used product, clean all application equipment before applying. If no cleanup procedure is provided, use the procedure that follows. Immediately following applications thoroughly clean all mixing and spray equipment according to the following instructions:

1. Drain Tank: Thoroughly hose down the interior surfaces of the tank; then flush tank, boom and hoses with clean water for a minimum of 5 minutes. Loosen and physically remove any visible deposits.
2. Fill the tank with clean water and add one gal. of household ammonia* (3% active) for every 100 gal. of water. Flush the cleaning solution through the boom, hoses and nozzles. Add more water to completely fill the tank and allow to agitate/recirculate for at least 15 minutes. Again, flush the boom, hoses and nozzles with the cleaning solution, then drain the tank.
3. Remove the nozzles and screens and clean separately in a bucket containing the cleaning agent and water.
4. Repeat step 2.
5. Thoroughly rinse the tank with clean water for a minimum of 5 minutes, flushing the water through the hoses and boom.
6. Dispose of the rinsate on site or at an approved waste disposal facility.

* Equivalent amounts of an alternate-strength ammonia solution or DuPont approved cleaner can be used in the cleanout procedure. Carefully read and follow the individual cleaner instruction.

PRECAUTION

Do not use chlorine bleach with ammonia when cleaning out spray tanks. All traces of liquid fertilizer containing ammonia, ammonia nitrate or ammonium sulphate must be rinsed with water from the mixing and application equipment before adding any chlorine bleach solution. Failure to do so will release a gas with a musty chlorine odor which can cause eye, nose, throat and lung irritation. Do not clean equipment in an enclosed area.

SPRAY DRIFT MANAGEMENT

The interaction of many equipment and weather-related factors determines the potential for spray drift. The applicator is responsible for considering all these factors when making application decisions. Avoiding spray drift is the responsibility of the applicator.

IMPORTANCE OF DROPLET SIZE

The most effective way to reduce drift potential is to apply large droplets (greater than 150-200 microns). The best drift management strategy is to apply the largest droplets that provide sufficient coverage and control. The presence of sensitive species nearby, the environmental conditions, and pest pressure may affect how an applicator balances drift control and coverage. Applying larger droplets reduces drift potential, but will not prevent drift if applications are made improperly or under unfavorable environmental conditions! See the Wind, Temperature and Humidity, and Temperature Inversions sections below.

CONTROLLING DROPLET SIZE

GENERAL TECHNIQUES

- Volume - Use high flow rate nozzles to apply the highest practical spray volume. Nozzles with higher rated flows produce larger droplets.
- Pressure - Use the lower spray pressures recommended for the nozzle. Higher pressure reduces droplet size and does not improve canopy penetration. When higher flow rates are needed, use a higher-capacity nozzle instead of increasing pressure.
- Nozzle Type - Use a nozzle type that is designed for the intended application. With most nozzle types, narrower spray angles produce larger droplets. Consider using low-drift nozzles.

AIRCRAFT

- Number of Nozzles - Use the minimum number of nozzles with the highest flow rate that provide uniform coverage.
- Nozzle Orientation - Orienting nozzles so that the spray is emitted backwards, parallel to the airstream will produce larger droplets than other orientations.
- Nozzle Type - Solid stream nozzles (such as disc and core with swirl plate removed) oriented straight back produce larger droplets than other nozzle types.

BOOM LENGTH AND HEIGHT

- **Boom Length (aircraft)** - The boom length should not exceed 3/4 of the wing length, using shorter booms decreases drift potential. For helicopters use a boom length and position that prevents droplets from entering the rotor vortices.
- **Boom Height (aircraft)** - Application more than 10 ft above the canopy increases the potential for spray drift.
- **Boom Height (ground)** Setting the boom at the lowest labeled height (if specified) which provides uniform coverage reduces the exposure of droplets to evaporation and wind. The boom should remain level with the crop and have minimal bounce.

WIND

Drift potential increases at wind speeds of less than 3 mph (due to variable direction and inversion potential) or more than 10 mph. However, many factors, including droplet size and equipment type determine drift potential at any given wind speed. **AVOID GUSTY OR WINDLESS CONDITIONS.**

Note: Local terrain can influence wind patterns. Every applicator should be familiar with local wind patterns and how they effect spray drift.

TEMPERATURE AND HUMIDITY

When making applications in hot and dry conditions, set up equipment to produce larger droplets to reduce effects of evaporation.

SURFACE TEMPERATURE INVERSIONS

Drift potential is high during a surface temperature inversion. Surface inversions restrict vertical air mixing, which causes small suspended droplets to remain close to the ground and move laterally in a concentrated cloud. Surface inversions are characterized by increasing temperature with altitude and are common on nights with limited cloud cover and light to no wind. They begin to form as the sun sets and often continue into the morning. Their presence can be indicated by ground fog; however, if fog is not present, inversions can also be identified 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 a surface inversion, while smoke that moves upward and rapidly dissipates indicates good vertical air mixing.

SHIELDED SPRAYERS

Shielding the boom or individual nozzles can reduce the effects of wind. However, it is the responsibility of the applicator to verify that the shields are preventing drift, and not interfering with uniform deposition of the product.

STORAGE AND DISPOSAL

Do not contaminate water, foodstuffs, feed or seed by storage or disposal. Keep container closed to prevent spills and contamination.

PRODUCT DISPOSAL: Wastes resulting from the use of this product that cannot be used or chemically reprocessed should be disposed of in a landfill approved for pesticide disposal or in accordance with applicable Federal, state or local procedures.

CONTAINER DISPOSAL: Emptied container retains vapor and product residue. Observe all labeled safeguards until container is cleaned, reconditioned or destroyed.

Bulk Containers: Triple rinse emptied bulk containers. Then offer for recycling or reconditioning, or dispose of in a manner approved by state and local authorities.

Plastic 1-Way Containers: Do not reuse container. Triple rinse container, then puncture and dispose of in a sanitary landfill, or by incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

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