

5905-529

3/13/2000

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

MAR 13 2000

Ms. Beverley Neale  
Helena Chemical Company  
6075 Poplar Avenue, Suite 500  
Memphis, TN 38119

OFFICE OF  
PREVENTION, PESTICIDES AND  
TOXIC SUBSTANCES

Dear Ms. Neale:

Subject: Label Amendment Extending 2,4-D Use in Reduced or No-Tillage Soybeans  
(Pre-plant Only)  
Barrage HF  
EPA Reg. No. 5905-529  
Your Application Dated January 13, 2000

The Agency is conditionally approving an amendment to the registration of the above-referenced product under the authority of section 3(c)(7)(B) of the Federal Insecticide, Fungicide Act (FIFRA). This amendment allows use of the subject product on reduced or no-tillage soybeans (pre-plant only) with a maximum permissible level for residues of the herbicide in or on soybeans of 0.1 ppm. This amendment will expire automatically on December 31, 2001. In addition, during the period that this amendment is effective, it will be subject to the conditions listed below:

- 1) This acceptance is based on your certification that the submitted labeling on preplant soybean use is an exact copy of the labeling accepted by the Agency on April 3, 1998. Please note that the acceptance of this labeling pertains to the previously approved preplant soybean use only and does not signify the acceptance of any other labeling revisions. No other label revisions are being reviewed or considered with this action. You should also note that if you fail to satisfy the conditions imposed in this certification, EPA may issue a notice to cancel this amendment under FIFRA section 6(e).
- 2) This conditional registration will expire automatically on December 31, 2001. Sale or distribution of the subject product bearing labeling for this use on reduced or no-tillage soybeans (pre-plant only) after December 31, 2001 will be illegal. The tolerance authorizing residues of the subject product will also expire on December 31, 2001. After that date, sale or distribution of food in interstate commerce containing any residue of the subject product will be a violation of the Federal Food, Drug, and Cosmetic Act.

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- 3) Finally, if and when a permanent tolerance is established, EPA will entertain an application to amend the registration of the subject product without any special limitations on the duration of the amendment.

A stamped copy of the labeling is enclosed for your records. Please submit one copy of your final printed labeling before you release the product for shipment.

Sincerely yours,

Joanne I. Miller  
Product Manager (23)  
Herbicide Branch  
Registration Division (7505C)

Enclosure

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# BARRAGE® HF

LOW VOLATILE HERBICIDE

**ACTIVE INGREDIENT:**

2-Ethylhexyl Ester of 2,4-Dichlorophenoxyacetic Acid..... 78.1%

**INERT INGREDIENTS:**..... 21.9%

TOTAL.....100.0%

Equivalent to 51.8% 2,4-D Acid or 4.7 lb./gal.

Isomer specific by AOAC Method 6.D01-5 (12th Ed.)

**KEEP OUT OF REACH OF CHILDREN**

**CAUTION**

**SEE INSIDE PANEL FOR ADDITIONAL PRECAUTIONARY STATEMENTS.**

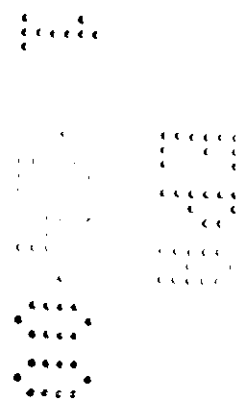
ACCEPTED  
with COMMENTS  
In EPA Letter Dated

MAR 13 2000

Under the Federal Insecticide,  
Fungicide, and Rodenticide Act  
as amended, for the pesticide  
registered under EPA Reg. No.  
5905-529

EPA REG. NO. 5905-529  
EPA EST. NO.

NET CONTENTS:



**MANUFACTURED BY  
HELENA CHEMICAL COMPANY  
MEMPHIS, TN 38119**

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## PRECAUTIONARY STATEMENTS

### HAZARDS TO HUMANS AND DOMESTIC ANIMALS

## CAUTION

Avoid contact with skin, eyes, or clothing. Harmful if swallowed. Avoid inhaling vapor or spray mist.

This product may cause skin irritation.

### PERSONAL PROTECTIVE EQUIPMENT

Some materials that are chemical-resistant to this product are listed below. If you want more options, follow the instructions for category F on an EPA chemical resistance category selection chart.

#### Applicators and other handlers must wear:

- Long-Sleeved shirt and long pants
- Chemical-resistant gloves, such as Barrier Laminate, Nitrile Rubber, Neoprene Rubber, or Viton.
- Shoes plus socks
- Protective Eyewear
- Chemical-resistant apron when cleaning equipment, mixing or loading

If this container contains over 1 gallon and less than 5 gallons, mixers and loaders who do not use a mechanical system (probe and pump) to transfer the contents of this container must wear coveralls or a chemical-resistant apron in addition to the other required PPE.

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. After each day of use, clothing or PPE must not be re-used until it has been cleaned.

#### Engineering Control Statements

If this container contains 5 gallons or more in capacity, do not open pour. A mechanical system (such as a probe and pump or spigot) must be used for transferring the contents of this container. If the contents of a non-refillable pesticide container are emptied, the probe must be rinsed before removal. If the mechanical system is used in a manner that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.240 (d) (4)], the handler PPE requirements may be reduced or modified as specified in the WPS.

When handlers use enclosed cabs, or aircraft in a manner that meets the requirements listed in the 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 clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.

Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

### STATEMENT OF PRACTICAL TREATMENT

**IF ON SKIN:** Wash with plenty of soap and water. Get medical attention if irritation persists.

**IF SWALLOWED:** Call a physician or poison control center. Drink 1 or 2 glasses of water and induce vomiting by touching back of throat with finger. If person is unconscious, do not give anything by mouth and do not induce vomiting.

**IF IN EYES:** Flush with plenty of water. Get medical attention if irritation persists.

**IF INHALED:** Move victim to fresh air. Give artificial respiration if needed. Get medical attention.

### ENVIRONMENTAL HAZARDS

For terrestrial uses, do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. Do not apply when weather conditions favor drift from target area. Spray equipment used in applying this product should be thoroughly cleaned before using for any other purpose. Use repeated flushing with soap and warm water or suitable chemical cleaner. It is best to use a separate sprayer for application of insecticides and fungicides. Do not contaminate water by cleaning of equipment or disposal of washwaters.

This product is toxic to aquatic invertebrates. Drift or runoff may adversely affect aquatic invertebrates and nontarget plants. Do not apply directly to water except as specified on this label.

**Groundwater Contamination:** Most cases of groundwater contamination involving phenoxy herbicides such as 2,4-D have been associated with mixing/loading and disposal sites. Caution should be exercised when handling 2,4-D pesticides at such sites to prevent contamination of groundwater supplies. Use of closed systems for mixing or transferring this pesticide will reduce the probability of spills. Placement of the mixing/loading equipment on an impervious pad to contain spills will help prevent groundwater contamination.

This product may cause injury to desirable plants by contacting foliage, stems or roots. Use care in all applications to avoid surface water or soil transport to nontarget plant areas. Avoid contamination of irrigation or domestic water supplies. Although this product is a low volatile formulation, at high temperatures (about 85 degrees or higher), vapors from this product may injure susceptible plants growing nearby such as cotton, grapes, tobacco, fruit

trees, legumes, vegetables, and ornamentals. Avoid applications in the vicinity of susceptible plants or when winds are blowing toward nearby susceptible plants or when temperature inversions are expected. Avoid direct application or spray drift to susceptible plants since very small quantities of this herbicide can cause severe injury in the growing or dormant period. Plants contacted may be killed or suffer significant injury resulting in grade or yield losses. Do not apply in greenhouses.

The following steps may be helpful in reducing possible spray drift from ground or aerial applications:

- 1) keep the spray discharge as near to the target as possible while getting good coverage,
- 2) increase the volume of spray mixture per acre,
- 3) use low spraying pressures (as measured at the nozzle tips),
- 4) use nozzles which produce coarse spray droplets while still providing adequate weed coverage,
- 5) limit applications when wind is blowing toward nearby susceptible crops or valuable plants,
- 6) make applications when wind velocity is more favorable for on-target deposition - a general guide for application would be a) wind velocity of 0-2 mph may indicate a temperature inversion which can permit drift; b) wind velocity of 3-7 mph usually indicates good conditions, but check wind direction relative to nearby susceptible crops always allowing for wind shift, c) wind velocity 7-10 mph is acceptable if wind direction is favorable and no susceptible crops are in the vicinity always allowing for wind shift, d) wind velocity of 10-15 mph is usually not desirable except in areas of stronger prevailing winds when direction is favorable and no susceptible crops are in the vicinity always allowing for wind shift; an agriculturally accepted drift retardant is suggested, and e) if wind velocity is over 15 mph do not spray,
- 7) properly maintain and calibrate all spray equipment,
- 8) for aerial applications, use an effective spray boom length that is no more than 75% of the wingspan or rotor diameter, and
- 9) use an agriculturally accepted drift retardant designed to increase droplet size.

**CHEMIGATION PROHIBITION**

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

**DIRECTIONS FOR USE**

It is a violation of Federal law to use this product in a 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 regulation.

**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 emer-

gency 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 12 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
- Chemical-resistant gloves such as Barrier Laminate, Nitrile Rubber, Neoprene Rubber, or Viton.
- Shoes plus socks
- Protective Eyewear

**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.

**USE REQUIREMENTS FOR PASTURES, PERENNIAL GRASSLANDS, RANGELAND, FALLOW LAND AND NONCROP AREAS:** Do not enter treated areas until spray has dried. For early entry to treated areas, wear eye protection, chemical-resistant gloves, long-sleeved shirt, long pants, shoes and socks.

**TURF USE REQUIREMENTS:** Do not allow persons (other than applicator) or pets on treated area during application. Do not enter treated areas until spray has dried. NOTE: For application to turf being grown for sale or other commercial use as sod, or for commercial seed production, or for research purposes, follow AGRICULTURAL USE REQUIREMENTS on this label.

**STORAGE AND DISPOSAL**

**PROHIBITIONS:** Do not contaminate water, food, or feed by storage or disposal. Do not store under conditions which might adversely affect the container or its ability to function properly.

**STORAGE:** Do not store below temperature of 0°F. If frozen, warm to 40°F and redissolve before using by rolling or shaking container. This product can be stored in an unheated building. Store in a safe manner. Store in original container only. Keep container tightly closed when not in use. Reduce stacking height where local conditions can affect package strength.

**PESTICIDE DISPOSAL:** Pesticide wastes are toxic. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of Federal law and may contaminate groundwater. If

these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

#### CONTAINER DISPOSAL:

**Metal:** Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or by other procedures approved by state and local authorities.

**Plastic:** Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

**Returnable-Refillable Container (Drum):** After use, return the container to the point of purchase or designated locations. This container must only be filled with **BARRAGE HF**. **DO NOT RE-USE THIS CONTAINER FOR ANY OTHER PURPOSE.** Prior to refilling, inspect thoroughly for damage such as cracks, punctures, abrasions, and damaged or worn out threads on closure devices. Do not refill or transport damaged or leaking containers. Check for leaks after refilling and before transportation. If the container is not being refilled, return to the point of purchase.

#### WEEDS CONTROLLED

**BARRAGE HF** will control or partially control the following as well as many other noxious plants susceptible to 2,4-D:

Alligatorweed	Marshelder
Arrowhead	Mexican weed
Artichoke	Milk vetch
Blue Thistle	Momingglory (annual, common, ivy, woolly)
Blueweed, Texas	Mousetail
Boxelder	Mustards (except blue), prior to bolting
Bitter wintercress	Nutgrass
Bittercress, smallflowered	Parrotfeather
Blue lettuce	Pennycress (fanweed)
Broomweed, common	Pennywort
Buckhorn	Pepperweeds (except perennial)
Bull nettle	Plantains
Bulrush	Poison ivy
Bur ragweed	Pokeweed
Burdock, common	Poorjoe
Burhead	Proverty weed
Buttercup, smallflowered	Puncture vine
Carolina geranium	Purslane, common
Carpetweed	Quickweed
Catnip	Ragweeds (common, giant)
Chickweed	Redstem
Chicory	Rough fleabane
Cinquefoil, common & rough	Rush
Cocklebur, common	Shepherdspurse



Offweed  
 Cornflower  
 Creeping jenny  
 Cotton (Texas, woolly)  
 Curly indigo  
 Dogfennel (mayweed)  
 Duckweed  
 Elderberry  
 Evening primrose, common  
 Evening primrose, cutleaf  
 Fanweed  
 Figwort  
 Four o'clock  
 Galinsoga (elderberry, hairy)  
 Goatsbeard  
 Healall  
 Hemp  
 Hoary Cress  
 Honeysuckle  
 Horsetail  
 Indigo  
 Ironweed  
 Jerusalem artichoke  
 Jewelweed  
 Jimsonweed  
 Klamathweed  
 Ladysthumb  
 Lambsquarters, common  
 Loco, Bigbend  
 Mallow (Venice, dwarf, little)  
 Maretail

Sicklepod  
 Sneezeweed, bitter  
 Sowthistle (annual, spiny)  
 Spanishneedles  
 Speedwell  
 Stinkweed  
 Sumacs  
 Sunflower  
 Sweetclover (annual)  
 Tumbleweed  
 Velvetleaf  
 Vetches, except hairy  
 Virginia copperleaf  
 Virginia creeper  
 Water hyacinth  
 Water lily  
 Water primrose  
 Wild hemp  
 Wild lettuce  
 Wild mustard  
 Wild parsnip  
 Wild radish  
 Wild rape  
 Wild sweet potato  
 Willow  
 Witchweed  
 Wormwood  
 Yellow goatsbeard  
 Yellow rocket  
 Yellow starthistle

Weeds Partially Controlled (Higher rates and/or repeated applications may be needed):

Alfalfa  
 Beggarticks  
 Bindweeds (hedge, European)  
 Buckbrush  
 Bull thistle  
 Canada thistle  
 Chamise  
 Clover, red  
 Corn gromwell  
 Coyotebrush  
 Dandelion  
 Docks  
 Dogbanes  
 Goldenrod

Manzanita  
 Musk thistle  
 Nettles  
 Peppergrass  
 Prickly lettuce  
 Rabbitbrush  
 Russian thistle  
 Sage, coastal  
 Sagebrush (big, sand)  
 Salsify (western, common)  
 Sand shinnery oak  
 Smartweed, annual  
 Smartweed, Pennsylvania  
 Tansyragwort

Ground ivy  
Hawkweed  
Henbit  
Hoary cress  
Knotweed  
Many-flowered aster

Vervains  
Vetch, hairy  
Western ironweed  
Wild carrot  
Wild garlic  
Wild onion

Weeds Partially Controlled And For Which Locally Resistant Biotypes May Occur:  
Pigweed

Weeds Suppressed When Another Labeled Herbicide Is Also Applied:  
Bindweed (field)  
Russian knapweed

### MIXING INSTRUCTIONS

**BARRAGE HF** is an emulsifiable concentrate formulation intended for dilution in water for many applications. For certain specified applications, liquid fertilizer or oil may replace part or all of the water as diluent.

If dry flowable (DF), wettable powder (WP) or flowable (F) tank mix products are to be used, these should generally be added to the spray tank first. Refer to the mixing directions on the labels of the tank mix products.

For best results, thoroughly clean sprayer immediately after use by flushing system with water and heavy duty detergent such as Helena Chemical Company Wipeout.

**Water Spray:** To prepare a water spray mixture, fill clean spray tank about 1/2 to 2/3 full with clean water. With agitation turned on, add the required amount of **BARRAGE HF**. Continue agitation while adding balance of water and during spray operations. **NOTE:** In water this product forms an emulsion and can separate upon prolonged standing. If spray mixture is allowed to stand, agitate again to assure uniformity.

**Liquid Fertilizer Spray:** Due to increased risk of crop foliage burn with fertilizer, use only as recommended on this label or supplemental labeling distributed for **BARRAGE HF**. Use fertilizer rate recommended locally. Fill clean spray tank about 1/2 to 2/3 full with liquid nitrogen fertilizer (UAN or urea) solution. Add required amount of product with vigorous agitation running. Continue agitation while adding balance of liquid fertilizer and during spray operations. Application should be made immediately. Overnight storage of mixture is not recommended. Application during very cold (near freezing) temperatures is not advisable because of the likelihood of crop injury. This product is formulated to be compatible with most liquid nitrogen solutions, however, due to variability in fertilizers, users may wish to perform a jar compatibility test before large scale mixing.

**Oil Spray:** Use only as recommended on this label or supplemental labeling distributed for **BARRAGE HF**. Fill clean spray tank about 1/2 to 2/3 full with diesel oil, fuel oil, stove oil, or other suitable oil. Add required amount of product with agitation turned on. Continue agitation while adding balance of oil. The resulting mixture is a solution and will generally

remain uniform without agitation once mixed. However, agitation is suggested if available. Do not allow any water to get into the spray mixture to avoid formation of an invert emulsion (mayonnaise consistency).

**Water Spray With Oil:** Use only as recommended on this label or supplemental labeling distributed for **BARRAGE HF**. Where a combination of water and oil diluent is recommended, the use of emulsifiable crop oil or crop oil concentrate is suggested since mild agitation will be sufficient. Mix in the sequence of water, product, and oil. If diesel or other nonemulsified oils listed above under "Oil Spray" are desired for use with water, add no more than 1 quart of such oil per 1 gallon of water and agitate vigorously until tank is emptied. If possible, premix nonemulsified oil with this product and add this premix to a mostly filled spray tank with agitation on. Follow these procedures carefully to avoid formation of an invert emulsion (mayonnaise consistency).

### APPLICATION PROCEDURES

Use calibrated spray equipment for all types of applications to assure applying the recommended amount of spray mixture per acre. Use sufficient spray volume within the ranges specified to obtain good coverage of weeds. **BARRAGE HF** is absorbed sufficiently within 1 hour after application to provide adequate weed control.

**Ground Broadcast Spray:** Unless otherwise specified in the appropriate crop or noncrop directions, apply in 5 or more gallons of spray solution per acre. Use enough spray volume to provide uniform coverage of weeds, taking into account the amount of vegetation present and the type of application equipment to be used. As crop canopy and weed density increase, a higher spray volume may be needed for equivalent coverage and weed control. Typical crop applications utilize 10 to 50 gallons of spray per acre while certain high volume noncrop applications may utilize more than 100 gallons per acre. Use coarse sprays to minimize potential spray drift. Do not apply with hollow cone nozzles or other nozzles that produce fine spray droplets. Boom spraying with flat fan or low volume nozzles are generally most suitable for ground broadcast applications.

**Ground Band Spray:** Determine band equivalents to broadcast rates and volumes by the following formulas:

$$\frac{\text{Band width in inches}}{\text{Row width in inches}} \times \text{Broadcast rate per acre} = \text{Band rate per acre}$$

$$\frac{\text{Band width in inches}}{\text{Row width in inches}} \times \text{Broadcast volume per acre} = \text{Band volume per acre}$$

**Aerial Broadcast Spray:** Unless otherwise specified in the appropriate crop or noncrop directions, apply in 1 to 10 gallons of spray solution per acre. For best coverage and weed control, as well as reduced potential for spray drift, a minimum of 3 gallons per acre is suggested. Avoid using nozzles or nozzle configurations that generate fine droplets. One configuration usually found to be suitable includes straight stream nozzles (such as disk with no swirl plate) directed straight back along the windstream. Mechanical flagging or

GPS (Global Positioning Systems) systems are suggested to obtain more uniform application.

With fixed-wing or helicopter application, an exactly even swath deposition may not be achieved, and consequently, crop injury or pesticide nonperformance may result wholly or in part. Do not apply by air during periods of thermal inversion. Avoid application if potential for drift is excessive and/or susceptible crops are growing in the vicinity.

**TANK MIXES**

Unless otherwise prohibited on this label or the label of an intended tank mix product, this product may be applied in combination with any herbicide registered for the same crop, timing, and method of application. Observe the most restrictive label statements of various tank mix products used. **LIABILITY FOR CROP INJURY RESULTING FROM A TANK MIXTURE NOT SPECIFIED ON THIS LABEL, OR SUPPLEMENTAL LABELING DISTRIBUTED FOR BARRAGE HF, IS SPECIFICALLY DISCLAIMED BY HELENA CHEMICAL COMPANY.**

**COMPATIBILITY**

Before full-scale mixing of this product with other herbicides, fertilizer solutions and adjuvants, it is advisable to determine the compatibility of the proposed mixture. Use proportionate quantities of each ingredient and mix in a small container. Always mix one product thoroughly with the diluent before adding another product. If no incompatibility is evident after 30 minutes, the mixture is generally compatible for spraying.

**PLANTING IN TREATED AREAS**

**Labeled Crops:** Within 29 days following an application of this product, plant only those crops named as use sites on this or other registered 2,4-D labels. Follow more specific limitations, if any, provided in the directions for individual crops. Labeled crops may be at risk for crop injury or loss when planted soon after application, especially in the first 14 days. Degradation factors described below should be considered in weighing this risk.

**Other Crops:** All other crops may be planted 30 or more days following an application without concern for illegal residues in the planted crop. However, under certain conditions, there may be a risk of injury to susceptible crops. Degradation factors described below should be considered in weighing this risk. Under normal conditions, any crop may be planted without risk of injury if at least 90 days of soil temperatures above freezing have elapsed since application.

**Degradation Factors:** When planting into treated areas, the risk of crop injury is less if lower rates of product were applied and conditions following application have included warm, moist soil conditions that favor rapid degradation of 2,4-D. Risk is greater if higher rates of product were applied and soil temperatures have been cold and/or soils have been excessively wet or dry in the days following application. Consult your local Agricultural Extension Service for information about susceptible crops and typical soil conditions in your area.

**APPLICATIONS**

Read all preceding general sections of label and Warranty before use.

Unless otherwise specified, applications may be made by ground or air equipment. Ground applications may provide more thorough coverage and better weed control. For selective postemergent weed control in crops, do not add oil, surfactant, fertilizer or other additives unless specifically recommended on this label or supplemental labeling.

**CORN (Field, Sweet and Pop)**

This product may be applied to corn at several different timings. In all cases, plant corn to a uniform depth of at least 1½ inches. Avoid applying this product with Accent® SP Herbicide because severe grass control antagonism may occur. Apply this product at least 7 days before or 3 days after Accent SP Herbicide.

Accent® is a registered trademark of E. I. DuPont de Nemours & Co., Inc.

**Preplant:** To control existing broadleaf weed seedlings or burn down susceptible cover crops prior to planting, apply from 7 to 14 days before planting. To control grasses and certain other problem weeds, it may be desirable to use a tank mixture with other herbicides. Liquid fertilizers and agriculturally approved surfactants may be added. Observe the most restrictive label statements of various tank mix products used.

**Corn Preplant Application Rates:** Do not apply on fine or medium textured soils (silt & clay loams) with less than 1% organic matter or on coarse textured soils (sand, sandy loam, loamy sand) with less than 2% organic matter. For fine or medium textured soils with 1% or more organic matter, apply at a rate of 6 to 19 fluid ounces per acre. On coarse\* textured soils with 2% or more organic matter, apply 6 to 13 fluid ounces per acre.

**Preemergence:** To control small broadleaf weeds, apply after planting, but before corn emerges. Liquid fertilizers and agriculturally approved surfactants may be added. Do not apply preemergence if a preplant application of this product was made.

**Corn Preemergence Application Rates:** Do not apply on fine or medium textured soils (silt & clay loams) with less than 1% organic matter or on coarse textured soils (sand, sandy loam, loamy sand) with less than 2% organic matter. For fine or medium textured soils with 1% or more organic matter, apply at a rate of 6 to 16 fluid ounces per acre. On coarse\* textured soils with 2% or more organic matter, apply 6 fluid ounces per acre.

\*Due to the lower rate, partial weed control may result on coarse soils.

**Postemergence: General Information -** Do not apply with liquid fertilizer or oil. Many types of adjuvants will increase risk of crop injury. Where an adjuvant is required because of a tank mixing with another herbicide, use the lowest recommended concentration of a non-ionic surfactant (often 0.25% vol./vol. or less) to minimize such risk. Treated crop may be brittle and subject to breaking by wind and/or cultivation, especially in the 2 weeks following application.

**Early Postemergence:** To control small broadleaf weeds, apply broadcast from spike to 4-leaf stage of crop or up to 8 inches tall, whichever comes first. Avoid spraying just after corn leaves unfold. Postemergence application should not follow a preplant or preemergence application by less than 3 weeks. Use rates stipulated under "Corn Postemergence Application Rates" below.

Late Postemergence: Typical timing for this application is when most broadleaf weeds are no more than 4 to 6 inches tall and corn is between 8 and 16 inches tall. The timing can extend until corn is 36 inches tall or to tasseling, whichever comes first, but weeds usually become too large and hard to control. Perennial weeds should be in the bud to bloom stage for best results. Apply as a directed spray using drop nozzles to keep spray off crop foliage. Do not apply from tasseling to hard dough stage. Use the following rates.

Corn Postemergence Application Rates: Spike to 4-leaf or up to 8 inches tall apply by ground or aerially as an early postemergence over-the-top broadcast spray at 3 to 10 fluid ounces per acre. When corn is 8-36 inches tall, before tasseling, apply by ground only as a late postemergence directed spray using drop nozzles at 5 to 10 fluid ounces per acre. Lowest rates may not provide adequate weed control unless used in a tank mix with another registered herbicide.

Preharvest: After the hard dough (or denting) stage when silks have turned brown, apply 13 to 26 fluid ounces per acre to suppress perennial weeds such as hemp dogbane or field bindweed, and many tall weeds such as cocklebur, pigweed, and sunflower that interfere with harvest. Weed seed production will also be suppressed if application is prior to the flowering stage of weeds. The high rate is recommended under dry conditions. Do not forage or feed corn fodder for 7 days following application.

Postharvest: Following the harvest of corn, perennial or biennial weeds produce new fall growth. To aid in suppressing these weeds before a hard freeze, product may be applied at the rate of 13 to 26 fluid ounces per acre either alone or in a combination with other registered herbicides such as certain formulations of dicamba and picloram. See "Planting in Treated Areas" section. If products to be tank mixed have more restrictive limitations, these limitations should be followed.

### **SORGHUM (Milo-Grain)**

Postemergence: To control small broadleaf weeds, apply when sorghum is 6 to 15 inches tall to top of canopy. If sorghum is taller than 8 inches to top of canopy, use drop nozzles to keep spray off crop foliage. Do not treat during the boot, flowering or early dough stages. Do not forage or feed fodder for 7 days following application. Use rates that follow.

Sorghum (Milo) Postemergence Application Rates: When crop is 6 to 8 inches tall use as an over-the-top broadcast spray by ground or air at 3 to 10 fluid ounces per acre. When corn reaches 8 to 15 inches tall, use as a directed spray using drop nozzles with application by ground only at 5 to 10 fluid ounces per acre. The lowest rates may not provide adequate weed control unless used in a tank mixture with another registered herbicide. Highest rates may increase risk of injury.

### **SORGHUM-SUDAN GRASS HYBRIDS (Forage Crop Only)**

Postemergence: To control small broadleaf weeds, apply when sorghum-sudan has at least 6 leaves, is well established, and is 5 to 10 inches tall at the rate of 6 to 13 fluid ounces per acre. Do not treat crop over 10 inches tall through maturity.

Plant Response: Even when sprayed at the proper stage, some crop injury is likely, includ-

ing reduced seed production. If risk of crop injury is unacceptable, do not use this product. The lower rate may reduce the risk of crop injury, but will result in reduced weed control.

Livestock Feeding Restrictions: Do not feed fodder for 7 days following application. Do not graze meat animals on treated areas within 3 days before slaughter. Do not graze dairy animals on treated areas within 7 days after application.

Sorghum-Sudan Grass Postemergence Application Rates: When crop has at least 6 leaves, is well established, and is 5 to 10 inches tall, apply 6 to 13 fluid ounces per acre.

**SMALL GRAINS (Wheat, Oats, Barley, Rye) NOT UNDERSEEDED WITH A LEGUME**  
Apply as directed below.

Livestock Feeding Restrictions: Do not permit dairy animals or meat animals being finished for slaughter to forage or graze treated grain fields within 2 weeks after treatment. Do not feed treated straw to livestock if an emergency and/or preharvest treatment is applied.

Liquid Nitrogen Fertilizers: At full tiller, product may be combined with liquid nitrogen fertilizers suitable for foliar application to small grains. Refer to "Mixing Instructions" section of this label for further information. Fertilizers can increase foliage contact burn of herbicides. Reducing the fertilizer rate and concentration will reduce the hazard of foliage burn.

Tank Mixtures: **BARRAGE HF** may be tank mixed with other herbicides for control of certain weeds in small grains. Use tank mix directions appearing on the labels of the specific herbicides when tank mixing with this product. Observe all precautions and limitations on labeling of product used in a particular tank mix.

Suggested 2-way tank mix combinations are listed below:

- BARRAGE HF + Ally® (Use on Wheat & Barley only)
- BARRAGE HF + Amber® (Use on Wheat & Barley only)
- BARRAGE HF + Canvas® (Use on Wheat & Barley only)
- BARRAGE HF + Express® (Use on Wheat & Barley only)
- BARRAGE HF + Finesse® (Use on Wheat & Barley only)
- BARRAGE HF + Glean® (Use on Wheat, Oats & Barley only)
- BARRAGE HF + Harmony Extra® (Use on Wheat, Oats & Barley only)
- BARRAGE HF + Peak® (Use on Wheat, Oats, Barley & Rye)
- BARRAGE HF + Bromoxynil (Use on Wheat, Oats, Barley & Rye)
- BARRAGE HF + Dicamba (Use on Wheat, Oats & Barley only)
- BARRAGE HF + Diuron (Use on Wheat, Oats & Barley only)
- BARRAGE HF + Metribuzin (Use on Wheat & Barley only)

\*Suggested 3-way tank mixes include:

- BARRAGE HF + Bromoxynil or Dicamba or Diuron or Metribuzin + Ally
- BARRAGE HF + Bromoxynil or Dicamba or Diuron or Metribuzin + Amber
- BARRAGE HF + Bromoxynil or Dicamba or Diuron or Metribuzin + Canvas
- BARRAGE HF + Bromoxynil or Dicamba or Diuron or Metribuzin + Express
- BARRAGE HF + Bromoxynil or Dicamba or Diuron or Metribuzin + Finesse
- BARRAGE HF + Bromoxynil or Dicamba or Diuron or Metribuzin + Glean

BARRAGE HF + Bromoxynil or Dicamba or Diuron or Metribuzin + Harmony Extra  
 BARRAGE HF + Bromoxynil or Dicamba or Diuron or Metribuzin + Peak  
 BARRAGE HF + Diuron + Metribuzin  
 BARRAGE HF + Diuron + Dicamba  
 BARRAGE HF + Diuron + Bromoxynil  
 BARRAGE HF + Dicamba + Metribuzin  
 BARRAGE HF + Dicamba + Bromoxynil  
 BARRAGE HF + Metribuzin + Bromoxynil

\*Refer to the previous section (Suggested 2-way tank mix combinations) and the registered product labels to determine the specific small grain crops which may be treated.

### **Spring Wheat and Barley**

**Onset of Tillering Stage:** Grains are generally tolerant of these treatments, but risk of crop injury is greater than at full tillering stage. Do not make application if the risk of injury is unacceptable. The onset of tillering stage is defined as grain having 1 or more tillers as well as 3 or more leaves.

Apply 6 to 10 fluid ounces per acre in the spring when grain has 1 or more tillers as well as 3 or more leaves. Do not apply from boot to dough stage.

**Full Tillering Stage:** For these applications, full tillering stage is defined as grain that has 3 or more tillers and the flag leaf should not be visible.

Apply 6 to 13 fluid ounces of product per acre when grain is in the full tiller stage (usually 4 to 8 inches tall). Do not apply from boot to dough stage.

**Emergency Weed Control:** To control difficult weed problems in certain area, such as under dry conditions especially in Western areas, higher rates, up to 26 fluid ounces per acre, may be needed. Higher rates increase the risk of crop injury. The severity of the weed problem should be balanced against the possibility of crop injury. Do not apply before the tiller stage nor from boot to dough stage.

### **Winter Wheat, Barley and Rye**

**Onset of Tillering Stage:** Grains are generally tolerant of these treatments, but risk of crop injury is greater than at full tillering stage. Do not make application if the risk of injury is unacceptable.

Apply 6 to 13 fluid ounces per acre in the spring when grain has 1 or more tillers as well as 3 or more leaves. Do not apply from boot to dough stage.

**Full Tillering Stage:** For these applications, grain should have 3 or more tillers and the flag should not be visible.

Apply 6 to 13 fluid ounces per acre when grain is in the full tiller stage (usually 4 to 8 inches tall). Do not apply from boot to dough stage.

**Emergency Weed Control:** For improved control of difficult weeds and heavy weed infesta-



tions, apply up to 26 fluid ounces per acre. Higher rates increase the risk of crop injury. The severity of the weed problem should be balanced against the possibility of crop injury. Do not apply before the tiller stage nor from boot to dough stage.

### **Spring Seeded Oats**

Full Tillering Stage: Grains should have 3 or more tillers and the flag leaf should not be visible. Oats are less tolerant to **BARRAGE HF** than wheat or barley and present a greater risk of crop injury. The severity of the weed problem should be balanced against the possibility of crop injury. Larger weeds and hard-to-kill weeds may be poorly controlled, especially under dry conditions.

Apply 6 fluid ounces per acre when grain is in the full tiller stage as specified above. Do not apply before the tiller stage nor from boot to dough stage.

### **Fall Seeded Oats (Southern) Grown for Grain**

Apply 6 to 13 fluid ounces per acre after full tillering, but prior to joints forming in the stem. Do not apply until after full tillering nor from jointing to dough stage. Oats are less tolerant to **BARRAGE HF** than wheat or barley and present a greater risk of crop injury. The severity of the weed problem should be balanced against the possibility of crop injury, especially at higher rates. Avoid spraying during or immediately following cold weather.

### **Preharvest Treatment (Wheat, Oats, Barley, Rye)**

Apply 13 to 26 fluid ounces per acre when grains are in the hard dough stage to control large weeds that may interfere with harvest. In tank mixtures with other herbicides registered for preharvest application, a rate of 6 to 10 fluid ounces per acre may be desired. Best results will be obtained when soil moisture is sufficient to cause succulent weed growth. Addition of a nonionic surfactant, such as Induce® or Dyne-Amic®, usually improves weed control.

### **Postharvest (Wheat, Oats, Barley, Rye)**

Following harvest, a flush of new weed growth may occur. For control of many annual broadleaf species, apply at up to 13 fluid ounces per acre. Certain perennial or biennial weeds may produce new fall growth in stubble grain fields. To aid in suppressing these weeds, product may be applied at the rate of 13 to 26 fluid ounces per acre either alone or in combination with other registered herbicides such as dicamba or picloram. See "Planting In Treated Areas" section. Follow more restrictive limitations for tank mix products used.

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Amber® and Peak® are registered trademarks of Novartis.

Induce® and Dyne-Amic® are registered trademarks of Helena Chemical Company.

### **FALLOW LAND**

Fallowland or land idle between crops may be subject to unwanted weed growth. For control of many annual broadleaf species, apply at the rate of 6 to 13 fluid ounces per acre. To aid in suppressing certain perennial or biennial broadleaf weeds, this product may be applied at the rate of 13 to 26 fluid ounces per acre either alone or in combination with other

registered herbicides such as dicamba or picloram. Use the high rate on older plants, drought stressed plants or for hard to kill species. See "Planting In Treated Areas" section. Follow more restrictive limitations for tank mix products used. **BARRAGE HF** may be used to kill fall alfalfa stands in preparation for spring planting of row crops under conservation tillage. The treated alfalfa crop cannot be grazed, fed to livestock or cut for hay.

**SOYBEANS (PREPLANT ONLY)**

For use in crop residue management systems: Apply 9.6 to 12.8 ounces not less than 7 days prior to planting soybeans or 12.8 to 25.6 ounces not less than 30 days prior to planting. For best weed control, apply to postemergent weeds when small, actively growing, and free of stress caused by extremes in climatic conditions, diseases, or insect damage. The response of individual weed species is variable. Consult your local county agent or state Agricultural Extension Service or crop consultant for advice. Use the higher rate on larger weeds when perennials are present.

**WEEDS CONTROLLED**

alfalfa*	horseweed or marestalk	ragweed, giant
bindweed*	ironweed	shepherdspurse
bullnettle	lambsquarters, common	smartweed, Pennsylvania*
bittercress, smallflowered	lettuce, prickly	sowthistle, annual
buttercup, smallflowered	morningglory, annual	speedwell
Carolina geranium	mousetail	thistle, Canada*
cinquefoil, common & rough	mustard, wild	thistle, bull
clover, red*	onion, wild*	velvetleaf
cocklebur, common	pennycress, field	vetch, hairy*
dandelion*	peppergrass*	Virginia copperleaf
dock, curly	plantains	
evening primrose, cutleaf	purslane, common	
garlic, wild	ragweed, common	

\*Partially controlled

Apply using air or ground equipment in sufficient gallonage to obtain adequate coverage of weeds. Use 2 or more gallons of water per acre in aerial equipment and 10 or more gallons of water per acre in ground equipment.

After applying, plant soybean seed as deep as practical or at least 1-1/2 to 2 inches deep. Adjust the planter press wheel, if necessary, to ensure that planted seed is completely covered.

If desired, this product may be applied preplant to soybeans in tank mixtures with other herbicides such as Poast, Poast Plus, Roundup, Roundup D-Pak, Honcho, Gramoxone Extra, Prowl, Pursuit Plus, Scepter 70DG, Squadron, and others that are registered for preplant soybean use.

Compatible crop oil concentrates, agricultural surfactants, and fluid fertilizers approved for use on growing crops may increase the herbicidal effectiveness of 2,4-D on certain weeds and may be added to the spray tank. Read and follow all directions and precautions on this label and on all labels of adjuvants or fertilizers mixed with this product.

NOTE: Unacceptable injury to soybeans planted in treated fields may occur. Whether or not soybean injury occurs and the extent of the injury will depend on weather (temperature and rainfall) from herbicide application until soybean emergence and agronomic factors such as the amount of weed vegetation and previous crop residue present. Injury is more likely under cool, rainy conditions and where there is less weed vegetation and crop residue present.

Not registered for use in California.

### USE RESTRICTIONS AND LIMITATIONS

Do not apply this product prior to planting soybeans if you are not prepared to accept the results of soybean injury, including the possible loss of stand and yield.

Do not use on low organic sandy soils (less than 1%).

Do not apply this product when weather conditions such as temperature, air inversions, or wind favor drift from treated areas to susceptible plants.

Do not mow or cultivate weeds prior to treating with this product as poor control may result.

Do not use any tillage operations between application and planting.

Do not feed treated hay, forage, or fodder. Restrict livestock from grazing treated fields. Do not feed or graze treated cover crops to livestock.

Only one application may be made prior to planting soybeans per growing season.

Do not replant fields treated with this product in the same growing season with crops other than those labeled for 2,4-D use.

### GRASS PASTURES

To control many emerged broadleaf weeds, apply 6 to 19 fluid ounces per acre. Addition of a nonionic surfactant, such as Induce® or Dyne-Amic®, usually improves weed control. Preferred timing is in the early spring when sufficient weeds have emerged, and when weeds are small and actively growing, but before weeds are too mature. Summer applications to older, drought stressed weeds are less effective. However, weeds are more susceptible again in the fall when cooler, wetter conditions support active growth before a killing frost. For fall treatment of mature weeds or perennial weed regrowth, use up to 26 fluid ounces per acre. Several seasons of spring plus fall treatments may be necessary to control certain perennials.

Plant Response: Injury may result to bent grass, other warm season or southern grasses, and alfalfa, clover or other legumes. Do not use if this risk of injury is unacceptable. Clovers may recover from early spring applications. If grass seed production is desired, do not apply when grass is in boot to milk stage or after heading begins. Do not apply to newly seeded areas until grass is well established. Reseeding is not recommended for at least 30 days following application. Addition of a surfactant may increase the risk of injury to newly seeded grasses.

Livestock Feeding Restrictions: Do not graze dairy animals on treated areas within 7 days after application. Do not graze meat animals on treated areas within 3 days before slaughter. Do not cut treated grass for hay within 30 days of application.

**GRASS SEED CROPS**

To control many emerged broadleaf weeds, apply 6 to 19 fluid ounces per acre. Use on established stands of cool season grass seed crops, such as bentgrass, bluegrass, fine fescue, tall fescues, orchard grass, annual ryegrass, and perennial ryegrass. Make applications in the spring from the tiller to early boot stage. Do not spray in boot stage. New spring seedings may be treated after the grasses have more than 5 true leaves. On established stands that have had the seed crop removed, perennial weed regrowth may be treated in the fall at up to 26 fluid ounces per acre. Refer to "Plant Response" and "Livestock Feeding Restrictions" under **GRASS PASTURES** section above.

**SOD FARMS**

For best results, do not mow turf 1 to 2 days before or after application. Turf watering should be delayed until the day after application. Do not apply to newly seeded areas until grass is well established and has been mowed several times. A period of about 30 days after application is usually a sufficient interval before reseeding. Seeding a small area and observing response is recommended before large scale seeding.

Cool Season Grasses: To control many emerged broadleaf weeds in cool season turfgrasses such as tall fescue, bluegrass, or perennial ryegrass, apply 6 to 19 fluid ounces per acre. Apply when weeds are small and actively growing under good moisture conditions. Do not use on centipede, carpetgrass, St. Augustine, bentgrass, or Dichondra turf, or where desirable clovers are present.

**RANGELAND PASTURES AND PERENNIAL GRASSLANDS NOT IN AGRICULTURAL PRODUCTION**

**BARRAGE HF** can be used to control or suppress a number of susceptible broadleaf weeds in rangeland or perennial grasslands that are set aside from agricultural use such as in the Conservation Reserve Program (CRP) or similar government programs. Consult program rules to determine whether grass and hay may be used. For best results, apply when broadleaf weeds are small. Adequate moisture is needed for best grass tolerance and weed control. Addition of a nonionic surfactant, such as Induce® or Dyne-Amic®, usually improves weed control.

Plant Response: Injury to legumes, bentgrass, and other warm season grasses is likely to

occur. Grasses may be discolored following treatment. If grass seed production is desired, do not apply when grass is in boot to milk stage or after heading begins.

**New Stands:** Preseeding applications should be made at least 30 days prior to seeding. Newly seeded stands should only be treated after they are well established (more than 5 true leaves) or injury may occur. Apply 6 to 13 fluid ounces per acre when weeds are small and actively growing. Addition of a surfactant may increase the risk of injury at this stage of growth.

**Established Stands:** For optimum results, weeds must be actively growing. Apply 13 to 19 fluid ounces per acre for annual weeds and up to 26 fluid ounces per acre for biennial or perennial weeds. Treat biennial when they are in the seedling to rosette stage and before flower stalks become apparent. Treat perennial weeds in the bud to bloom stage. For brush species in rangeland, apply up to 51 fluid ounces per acre in an oil spray (see "Mixing Instructions"). Another option is to add 1 gallon of oil per acre to a **BARRAGE HF** water spray (see "Mixing Instructions"). Repeat applications in the same or subsequent year may be needed to control brush species.

**Livestock Feeding Restrictions:** Do not graze dairy animals on treated areas within 7 days of application. Do not graze meat animals within 3 days of slaughter. Treated grass cut for hay should not be cut within 30 days of application. For government program grasslands, follow program grazing restrictions if more restrictive than those stated above.

**FOREST MANAGEMENT**

**Forest Site Preparation**

**Budbreak Spray:** For control of alder, susceptible broadleaf weeds, and susceptible woody plants before planting forest seedlings, apply up to 96 fluid ounces per acre in a minimum of 10 gallons spray mixture per acre. Apply as an oil spray (see "Mixing Instructions") after alder buds break, but before foliage is 1/4 full size. A water spray including 2 to 4 quarts per acre of diesel oil, fuel oil, stove oil, or crop oil concentrate may also be used.

**Foliage Spray:** To control alder and susceptible woody plants before planting forest seedlings, apply up to 96 fluid ounces per acre in a minimum of 10 gallons spray mixture per acre. If desired, apply as a water spray including up to 1 quart of diesel oil, fuel oil, stove oil, or crop oil concentrate per gallon of water (see "Mixing Instructions"). For best results, apply after alder foliage has reached full size.

**Conifer Release:** To control alder, susceptible broadleaf weeds, and susceptible woody plants in young conifer stands, apply up to 51 fluid ounces per acre in a minimum of 10 gallons spray mixture per acre. This spring foliage treatment should be applied as a water spray when 3/4 of the brush foliage has full size leaves and before new conifer growth reaches 2 inches in length. Such stages usually occur between early May and mid-June, but application timing should be based on growth stages of brush and conifers. Application

may cause leader deformation and other conifer injury, but trees should overcome it during the next growing season.

To control tanoak, madrone, ceanothus, canyon live oak, and manzanita, and to release Douglas fir, hemlock, Sitka spruce or grand fir, apply up to 77 fluid ounces per acre in a minimum of 10 gallons spray mixture per acre. This spring foliage treatment should be applied as a water spray including, if desired, up to 1 quart of diesel oil, fuel oil, stove oil, or crop oil concentrate per gallon of water (see "Mixing Instructions"). Make application before new growth on Douglas fir is 2 inches long. To release ponderosa pine from the same species, treat before new pine growth begins in the spring. Addition of oil or oil concentrate may cause unacceptable injury to pines. For dormant applications in late winter or early spring for control of susceptible woody species such as alder, willow, poplars, cherry, vine maple, ceanothus, tanoak, madrone, and manzanita, apply up to 77 fluid ounces per acre in a minimum of 10 gallons spray mixture per acre. This dormant treatment should be applied in diesel oil, fuel oil, stove oil, or other suitable diluent such as water plus crop oil concentrate (see "Mixing Instructions"). Do not use in plantations where pine and larch are among the desired crop species.

To control hazel brush in the Lake states, apply up to 51 fluid ounces per acre in a minimum of 10 gallons spray mixture per acre. Apply as a water spray when new shoot growth of hazel is complete (usually mid-July).

After conifer species such as white pine, ponderosa pine, jack pine, red pine, black spruce, white spruce, red spruce, and balsam fir cease growth and harden off and brush is still actively growing in late summer, apply up to 74 fluid ounces per acre in a minimum of 10 gallons spray mixture per acre. Apply as a water spray to control certain competing hardwoods such as alder, aspen, birch, hazel and willow. However, if possible injury cannot be tolerated, do not use since this treatment may cause conifer injury.

Forest Roadsides: To control susceptible broadleaf weeds and woody plants on forest roadsides, apply 26 to 77 fluid ounces per acre in a minimum of 10 gallons spray mixture per acre. Apply as a water spray and, if desired, include up to 3 quarts per acre of diesel oil, fuel oil, stove oil, or crop oil concentrate (see "Mixing Instructions"). Apply when sufficient foliage is present for absorption.

Established Conifers (including Christmas trees)

**Directed Spray or Spot Spray:** To control susceptible broadleaf weeds, mix up to 51 fluid ounces per 100 gallons of water and apply to emerged weeds in the spring with ground equipment. Avoid contacting conifer foliage with spray or drift as injury may result. For brush, mix 96 fluid ounces per 100 gallons of water. Thoroughly spray brush in full foliage, but avoid contacting conifer foliage with spray or drift. Do not apply more than the equivalent of 96 fluid ounces per acre.

**Over-the-Top Broadcast Application -** To control susceptible broadleaf weeds, apply 26 fluid ounces per acre in a minimum of 10 gallons spray mixture per acre. To decrease the potential for injury to firs, apply only before budbreak in the spring and/or after complete bud set

and hardening in the late summer or fall. Avoid treatment during the year of intended harvest.

**ROADSIDES; MEDIANS; HIGHWAY, RAILROAD, UTILITY AND PIPELINE RIGHTS-OF-WAY; VACANT LOTS; AROUND UTILITY INSTALLATIONS, TRANSFORMERS, PUMP HOUSES, AND BUILDINGS; STORAGE AREAS; FENCES; GUARDRAILS; LUMBER YARDS; INDUSTRIAL SITES; AIRPORTS; TANK FARMS; FARMSTEADS; AND SIMILAR NONCROP AREAS**

For control of many broadleaf weeds and small woody plants, apply 13 to 51 fluid ounces per acre. Use the high rate for woody plants. Applications may be as broadcast sprays, small area sprays or spot treatments. For small areas or spot spraying, use 3 fluid ounces per gallon of water and spray weeds to runoff. Regardless of the method of application, use adequate spray volume for full coverage of weeds. Preferred application timing is in the early spring when sufficient weeds have emerged, and when weeds are small and actively growing, but before weeds are too mature. Summer applications to older, drought stressed weeds are less effective. However, weeds are more susceptible again in the fall when cooler, wetter conditions support active growth before a killing frost. For fall treatment of mature weeds or perennial weed regrowth, use up to 26 fluid ounces per acre. Several seasons of spring plus fall treatments may be necessary to control certain perennials. Use of oil sprays or the addition of spray adjuvants improves weed control, but also increases the risk of damage to desirable ground covers.

Plant Response: Bent grass, other warm season or southern grasses, alfalfa, clover, or other legumes may be killed or injured. Do not apply when grass is in boot to milk stage, or after heading begins, if grass production is desired. Do not apply to newly seeded areas until grass is well established. Reseeding is not recommended for at least 30 days following application.

**ORNAMENTAL AND RECREATIONAL TURFGRASSES, LAWNS, GOLF COURSES (Fairways, Aprons, Tees, and Roughs), PARKS AND CEMETERIES**

Refer to "Turf Use Requirements" in the "Non-Agricultural Use Requirements" section. The maximum number of broadcast applications per treatment site is 2 per year. For best results, do not mow turf 1 to 2 days before or after application. Turf watering should be delayed for at least 1 hour after application. Avoid contacting desirable trees, shrubs, flowers or vegetables since plant injury may result. Do not apply to newly seeded areas until grass is well established and has been mowed several times. A period of about 30 days after application is usually a sufficient interval before reseeding grasses (or other plants). Seeding a small area and observing response is recommended before large scale seeding.

Cool Season Grasses: To control many emerged broadleaf weeds in cool season turfgrasses such as tall fescue, bluegrass, or perennial ryegrass, apply 13 to 19 fluid ounces per acre (0.3 to 0.44 fluid ounces per 1,000 square feet). Preferred application timing for broadcast treatment is in the early spring when small weeds have emerged and are actively growing under good moisture conditions. For very weedy turf, a follow-up broadcast or spot application may be needed from 2 to 4 weeks later. Summer applications are typically spot

treatments of individual weeds that have emerged after a spring broadcast treatment. In the fall when cooler, wetter conditions factor active weed growth, broadcast application may be appropriate for very weedy turf, such as an area that had no spring broadcast treatment. Do not use on centipede, carpetgrass, St. Augustine, bentgrass or Dichondra turf, or where desirable clovers are present.

**CONDITIONS OF SALE - LIMITED WARRANTY  
AND LIMITATIONS OF LIABILITY AND REMEDIES**

The directions on this label are believed to be reliable and should be followed carefully. Insufficient control of pests and/or injury to the crop to which the product is applied may result from the occurrence of extraordinary or unusual weather conditions, the failure to follow the label directions, or good application practices, all of which are beyond the control of Helena Chemical Company (the "Company") or seller. In addition, failure to follow label directions may cause injury to crops, animals, man, or the environment. The Company warrants that this product conforms to the chemical description on the label and is reasonably fit for the purpose referred to in the directions for use subject to the factors noted above which are beyond the control of the Company. The Company makes no other warranties or representations of any kind, express or implied, concerning the product, including no implied warranty of merchantability or fitness for any particular purpose, and no such warranty shall be implied by law.

The exclusive remedy against the Company for any cause of action relating to the handling or use of this product is a claim for damage and in no event shall damages or any other recovery of any kind against the Company exceed the price of the product which causes the alleged loss, damage, injury, or other claim. The Company shall not be liable and any and all claims against the Company are waived for special, indirect, incidental, or consequential damages or expense of any nature, including, but not limited to, loss of profits or income.

The Company and the seller offer this product and the buyer and user accept it, subject to the foregoing conditions of sale and limitation of warranty, liability, and remedies.