

# BARRAGE<sup>®</sup> 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 lbs./gal.

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

Patent No. 6,232,272

Use of this product in certain portions of California, Oregon, and Washington is subject to the January 22, 2004 Order for injunctive relief in Washington Toxics Coalition, et. al. v. EPA, C01-0132C, (W.D. WA). For further information please refer to <http://www.epa.gov/esp/wtct/>.

### KEEP OUT OF REACH OF CHILDREN CAUTION

**FIRST AID**

<b>IF ON SKIN OR CLOTHING:</b>	<ul style="list-style-type: none"> <li>Take off contaminated clothing.</li> <li>Rinse immediately with plenty of water for 15-20 minutes.</li> <li>Call a poison control center or doctor for treatment advice.</li> </ul>
<b>IF SWALLOWED:</b>	<ul style="list-style-type: none"> <li>Call a poison control center or doctor immediately for advice.</li> <li>Do not give any liquid to the person.</li> <li>Do not induce vomiting unless instructed to do so by poison control center or doctor.</li> <li>Do not give anything by mouth to an unconscious person.</li> </ul>
<b>IF IN EYES:</b>	<ul style="list-style-type: none"> <li>Hold eye open and rinse slowly and gently with water for 15-20 minutes.</li> <li>Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye.</li> <li>Call a poison control center or doctor immediately for advice.</li> </ul>
<b>IF INHALED:</b>	<ul style="list-style-type: none"> <li>Move person to fresh air.</li> <li>If person is not breathing, call 911 or an ambulance, then give artificial respiration preferably mouth-to-mouth, if possible.</li> <li>Call a poison control center or doctor immediately for further treatment advice.</li> </ul>

Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact 1-800-424-9300 (ChemTrec) for emergency medical treatment information.

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

#### PRECAUTIONARY STATEMENTS HAZARDS TO HUMANS AND DOMESTIC ANIMALS CAUTION

Harmful if absorbed through skin. Causes moderate eye irritation. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals.

#### NET CONTENTS:

### 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- NONREFILLABLE METAL CONTAINER (EQUAL TO OR LESS THAN 5 GALLONS):** Do not reuse or refill this container. Triple rinse container (or equivalent) promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container 1/4 full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times. Offer for recycling, if available, or puncture and dispose of in a sanitary landfill, or by other procedures approved by state and local authorities. **NONREFILLABLE METAL CONTAINER (GREATER THAN 5 GALLONS):** Do not reuse or refill this container. Triple rinse container (or equivalent) promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank. Fill the container 1/4 full with water. Replace and tighten closures. Tip container on its side and roll it back and forth, ensuring at least one complete revolution, for 30 seconds. Stand the container on its end and tip it back and forth several times. Turn the container over onto its other end and tip it back and forth several times. Empty the rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Repeat this procedure two more times. Offer for recycling, if available, or puncture and dispose of in a sanitary landfill, or by other procedures approved by state and local authorities. **NONREFILLABLE PLASTIC CONTAINER (EQUAL TO OR LESS THAN 5 GALLONS):** Do not reuse or refill this container. Triple rinse container (or equivalent) promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container 1/4 full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times. Offer for recycling, if available, or puncture and dispose of in a sanitary landfill, or incineration if allowed by state and local authorities, by burning. If burned, stay out of smoke. **NONREFILLABLE PLASTIC CONTAINER (GREATER THAN 5 GALLONS):** Do not reuse or refill this container. Triple rinse container (or equivalent) promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank. Fill the container 1/4 full with water. Replace and tighten closures. Tip container on its side and roll it back and forth, ensuring at least one complete revolution, for 30 seconds. Stand the container on its end and tip it back and forth several times. Turn the container over onto its other end and tip it back and forth several times. Empty the rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Repeat this procedure two more times. Offer for recycling, if available, or puncture and dispose of in a sanitary landfill, or incineration if allowed by state and local authorities, by burning. If burned, stay out of smoke. **REFILLABLE CONTAINER:** Refill this container with pesticide only. Do not reuse 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. Cleaning the container before final disposal is the responsibility of the person disposing of the container. Cleaning before refilling is the responsibility of the refiller. To clean the container before final disposal, empty the remaining contents from this container into application equipment or mix tank. Fill the container about 10 percent full with water. Agitate vigorously or recirculate water with the pump for 2 minutes. Pour or pump rinsate into application equipment or rinsate collection system. Repeat this rinsing procedure two more times. If the container is not being refilled, return to the point of purchase or designated location.

EPA Reg. No. 5905-529

AD 112112

EPA Est. No. 228-IL-01

U.S. Patent No. 6,232,672

Manufactured For  
**HELENA CHEMICAL COMPANY**  
225 SCHILLING BOULEVARD, SUITE 300  
COLLIERSVILLE, TENNESSEE 38017

PEEL BACK BOOK HERE AND RESEAL AFTER OPENING

12514000

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**IF SWALLOWED:**

- Call a poison control center or doctor immediately for advice.
- Do not give any liquid to the person.
- Do not induce vomiting unless instructed to do so by poison control center or doctor.
- Do not give anything by mouth to an unconscious person.

**IF IN EYES:**

- Hold eye open and rinse slowly and gently with water for 15-20 minutes.
- Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye.
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**IF INHALED:**

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 225 SCHILLING BOULEVARD, SUITE 300 • COLLIERVILLE, TN 38017



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## PRECAUTIONARY STATEMENTS

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### HAZARDS TO HUMANS AND DOMESTIC ANIMALS

# CAUTION

Harmful if absorbed through skin. Causes moderate eye irritation. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals.

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## PERSONAL PROTECTIVE EQUIPMENT

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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.

**All mixers, loaders, applicators, flaggers, and other handlers must wear:**

- Long-sleeved shirt and long pants
- Shoes plus socks
- Chemical-resistant gloves, such as Barrier Laminate, Nitrile Rubber, Neoprene Rubber, or Viton.
- Chemical-resistant apron when applying postharvest dips or sprays to citrus, mixing or loading, cleaning up spills or equipment, or otherwise exposed to the concentrate.

See ENGINEERING CONTROLS for additional requirements.

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

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## ENGINEERING CONTROL STATEMENTS

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Pilots must use an enclosed cockpit that meets the requirements listed in the WPS for agricultural pesticides [40 CFR 170.240(d)(6)].

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## USER SAFETY RECOMMENDATIONS

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**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.

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## ENVIRONMENTAL HAZARDS

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This product may be toxic to fish and aquatic invertebrates. Do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. Drift and runoff may be hazardous to aquatic organisms in water adjacent to treated areas. Do not contaminate water when disposing of equipment wash waters or rinsate.

This chemical has properties and characteristics associated with chemicals detected in groundwater. The use of this chemical in areas where soils are permeable, particularly where the water table is shallow, may result in groundwater contamination. Application around a cistern or well may result in contamination of drinking water or groundwater.

**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.

*(continued)*



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.

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## CHEMIGATION PROHIBITION

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

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## DIRECTIONS FOR USE

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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 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 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. Do not enter or allow people (or pets) to enter the treated area until sprays have dried.

## 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.

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**NONREFILLABLE METAL CONTAINER (EQUAL TO OR LESS THAN 5 GALLONS):** Do not reuse or refill this container. Triple rinse container (or equivalent) promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container 1/4 full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times. Offer for recycling, if available, or puncture and dispose of in a sanitary landfill, or by other procedures approved by state and local authorities.

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*(continued)*

## STORAGE AND DISPOSAL (cont.)

**REFILLABLE CONTAINER:** Refill this container with pesticide only. Do not reuse 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. Cleaning the container before final disposal is the responsibility of the person disposing of the container. Cleaning before refilling is the responsibility of the refiller. To clean the container before final disposal, empty the remaining contents from this container into application equipment or mix tank. Fill the container about 10 percent full with water. Agitate vigorously or recirculate water with the pump for 2 minutes. Pour or pump rinsate into application equipment or rinsate collection system. Repeat this rinsing procedure two more times. If the container is not being refilled, return to the point of purchase or designated location.

## SPRAY DRIFT MANAGEMENT

A variety of factors including weather conditions (e.g., wind direction, wind speed, temperature, relative humidity), and method of application (e.g., ground, aerial, airblast, chemigation) can influence pesticide drift. The applicator must evaluate all factors and make appropriate adjustments when applying this product.

### **Droplet Size**

When applying sprays that contain 2,4-D as the sole active ingredient, or when applying sprays that contain 2,4-D mixed with active ingredients that require a Coarse or coarser spray, apply only as a Coarse or coarser spray (ASAE standard 572) or volume mean diameter of 385 microns or greater for spinning atomizer nozzles.

When applying sprays that contain 2,4-D mixed with other active ingredients that require a Medium or more fine spray, apply only as a Medium or coarser spray (ASAE standard 572) or a volume mean diameter of 300 microns or greater for spinning atomizer nozzles.

### **Wind Speed**

Do not apply at wind speeds great than 15 mph. Only apply this product if the wind direction favors on-target deposition and there are not sensitive areas (including, but not limited to, residential areas, bodies of water, known habitat for nontarget species, nontarget crops) within 250 feet downwind. If applying a Medium spray, leave one swath unsprayed at the downwind edge of the treated field.

### **Temperature Inversions**

If applying at wind speeds less than 3 mph, the applicator must determine if: a) conditions of temperature inversion exist, or b) stable atmospheric conditions exist at or below nozzle height. Do not make applications into areas of temperature inversions or stable atmospheric conditions.

### **Susceptible Plants**

Do not apply under circumstances where spray drift may occur to food, forage, or other plantings that might be damaged or crops thereof rendered unfit for sale, use or consumption. Susceptible crops include, but are not limited to, cotton, okra, flowers, grapes (in growing stage), fruit trees (foliage), soybeans (vegetable stage), ornamentals, sunflowers, tomatoes, beans, and other vegetables, or tobacco. Small amounts of spray drift that might not be visible may injure susceptible broadleaf plants.

### **Other State and Local Requirements**

Applicators must follow all state and local pesticide drift requirements regarding application of 2,4-D herbicides. Where states have more stringent regulations, they must be observed.

### **Equipment**

All aerial and ground application equipment must be properly maintained and calibrated using appropriate carriers or surrogates. The boom length must not exceed 75% of the wingspan or 90% of the rotor blade diameter.

Release spray at the lowest height consistent with efficacy and flight safety. Do not release spray at a height greater than 10 feet above the crop canopy unless a greater height is required for aircraft safety. This requirement does not apply to forestry or rights-of-way applications.



When applications are made with a crosswind, the swath will be displaced downwind. The applicator must compensate for this by adjusting the path of the aircraft upwind.

Do not apply with a nozzle height greater than 4 feet above the crop canopy.

2,4-D esters may volatilize during conditions of low humidity and high temperatures. Do not apply during conditions of low humidity and high temperatures.

## WEEDS CONTROLLED

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

Artichoke	Coffeeweed	Ironweed	Pepperweeds	Sumacs
Bitter wintercress	Cornflower	Jerusalem artichoke	(except perennial)	Sunflower
Bittercress, smallflowered	Creeping jenny	Jewelweed	Plantains	Sweetclover (annual)
Blue lettuce	Croton (Texas, woolly)	Jimsonweed	Poison ivy	Tumbleweed
Blue thistle	Curly indigo	Klamathweed	Pokeweed	Velvetleaf
Blueweed, Texas	Devil's claw	Ladysthumb	Poorjoe	Vetches, except hairy
Boxelder	<i>Proboscidea louisianica</i>	Lambsquarters, common	Poverty weed	Virginia copperleaf
Broomweed, common	Dogfennel (mayweed)	Loco, Bigbend	Puncture vine	Virginia creeper
Buckhorn	Elderberry	Mallow	Purslane, common	Wild hemp
Bullnettle	Evening primrose, common	(Venice, dwarf, little)	Quickweed	Wild lettuce
Bur ragweed	Evening primrose, cutleaf	Marestail (Horseweed)	Ragweeds	Wild mustard
Burdock, common	Fanweed	Marshelder	(common, giant)	Wild parsnip
Burhead	Figwort	Mexican weed	Redstem	Wild radish
Buttercup, smallflowered	Four o'clock	Milk vetch	Rough fleabane	Wild rape
Carolina geranium	Galinsoga	Morningglory (annual,	Shepherdspurse	Wild sweet potato
Carpetweed	(elderberry, hairy)	common, ivy, woolly)	Sicklepod	Willow
Catnip	Goatsbeard	Mousetail	Sneezeweed, bitter	Witchweed
Chickweed	Healall	Mustards (except blue),	Sowthistle	Wormwood
Chicory	Hemp	prior to bolting	(annual, spiny)	Yellow goatsbeard
Cinquefoil,	Hoary cress	Nutgrass	Spanishneedles	Yellow rocket
common & rough	Honeysuckle	Pennywort	Speedwell	Yellow starthistle
Cocklebur, common	Indigo		Stinkweed	

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

Alfalfa	Dandelion	Manzanita	Sand shinnery oak
Beggarticks	Docks	Musk thistle	Smartweed, annual
Bindweeds	Dogbanes	Nettles	Smartweed, Pennsylvania
(hedge, European)	Goldenrod	Peppergrass	Tansyragwort
Buckbrush	Ground ivy	Prickly lettuce	Vervains
Canada thistle	Hawkweed	Rabbitbrush	Vetch, hairy
Chamise	Henbit	Russian thistle	Western ironweed
Clover, red	Hoary cress	Sage, coastal	Wild carrot
Corn gromwell	Knotweed	Sagebrush (big, sand)	Wild garlic
Coyotebrush	Many-flowered aster	Salsify (western, common)	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 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:

$\frac{\text{Band width in inches}}{\text{Row width in inches}}$	X	Broadcast rate per acre	=	Band rate per acre
$\frac{\text{Band width in inches}}{\text{Row width in inches}}$	X	Broadcast volume per acre	=	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 wind-stream. 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.

PLANTBACK RESTRICTIONS					
Crop	Corn	Sorghum	Small Grains	Soybeans	All Other Crops
Days Following Last Application	7-14	29	29	7* 15**	30***
*Maximum of 13.6 ounces (0.5 lb a.e.)/acre per preplant application					
**Maximum of 27 ounces (1 lb a.e.)/acre per preplant application					
***30 days for residue tolerance, under normal conditions any crop may be planted without risk of injury after 90 days.					

**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 and Pop)

Weeds in Crops	Amount of BARRAGE® HF per Acre	Directions for Use
Preplant	6 to 19 ounces	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.
Preemergence	6 to 16 ounces	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.
Early Postemergence	3 to 10 ounces	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.
Late Postemergence	5 to 10 ounces	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.
Preharvest	13 to 26 ounces	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.
Postharvest	13 to 26 ounces	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.

*(continued)*

**CORN (Field and Pop) (cont.)****RESTRICTIONS AND LIMITATIONS FOR USE ON CORN (Field and Pop):**

- **Preharvest interval (PHI) is 7 days.**
- Do not use treated crop as fodder for 7 days following application.
- Maximum Use rate per acre per crop cycle is 82 ounces.
  - Preplant or Preemergence:
    - Limited to one preplant or preemergent application per crop cycle.
    - Maximum of 27 ounces per acre per application.
  - Postemergence:
    - Limited to one postemergent application per crop cycle.
    - Maximum of 13.6 ounces per acre per application.
    - Due to the lower rate, partial weed control may result in coarse soils.
  - Preharvest:
    - Limited to one Preharvest application per crop cycle.
    - Maximum of 40 ounces per acre per application.

**CORN (Sweet)**

Weeds in Crops	Amount of BARRAGE® HF per Acre	Directions for Use
Preplant	6 to 19 ounces	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.
Preemergence	6 to 16 ounces	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.
Early Postemergence	3 to 10 ounces	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.
Late Postemergence	5 to 10 ounces	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 control. Apply as a directed spray using drop nozzles to keep spray off crop foliage. Do not apply from tasseling to hard dough stage.

**RESTRICTIONS AND LIMITATIONS FOR USE ON CORN (Sweet):**

- Preharvest interval (PHI) is 45 days.
- Do not use treated crop as fodder for 7 days following application.
- Minimum of 21 days between applications.
- Maximum Use rate per acre per crop cycle is 41 ounces.
  - Preplant or Preemergence:
    - Limited to one preplant or preemergent application per crop cycle.
    - Maximum of 27 ounces per acre per application.
  - Postemergence:
    - Limited to one postemergent application per crop cycle.
    - Maximum of 13.6 ounces per acre per application.
    - Due to the lower rate, partial weed control may result in coarse soils.





## SORGHUM (Milo-Grain)

Weeds in Crops	Amount of BARRAGE® HF per Acre	Directions for Use
Postemergence	<p>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.</p> <p>When crop reaches 8 to 13.6 inches tall, use as a directed spray using drop nozzles with application by ground only at 5 to 10 fluid ounces per acre.</p>	<p>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.</p> <p>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.</p>

### RESTRICTIONS AND LIMITATIONS FOR USE ON SORGHUM (Milo):

- Preharvest interval (PHI) is 30 days.
- Do not permit meat or dairy animals to consume treated crop as fodder or forage for 30 days following application.
  - Postemergence:
    - Limited to one application per crop cycle.
    - Maximum of 13.6 ounces per acre per application.
- Do not treat during the boot, flowering, or early dough stages.

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

Weeds in Crops	Amount of BARRAGE® HF per Acre	Directions for Use
Postemergence	6 to 13 ounces	<p>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.</p> <p><b>Plant Response:</b> Even when sprayed at the proper stage, some crop injury is likely, including 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.</p>

### RESTRICTIONS AND LIMITATIONS FOR USE ON SORGHUM-SUDAN GRASS HYBRIDS (Forage Crop Only):

- Preharvest interval (PHI) is 30 days.
- Do not permit meat or dairy animals to consume treated crop as fodder or forage for 30 days following application.
  - Postemergence:
    - Limited to one application per crop cycle.
    - Maximum of 13.6 ounces per acre per application.
- Do not treat during the boot, flowering, or early dough stages.



## SMALL GRAINS (Wheat, Oats, Barley, Rye) NOT UNDERSEEDED WITH A LEGUME

Weeds in Crops	Amount of BARRAGE® HF per Acre	Directions for Use
Not underseeded with legumes Postemergence Annual and biennial broadleaf weeds	6 to 10 fl. oz.*	<p><b>Spring Wheat</b>  <b>Onset of Tillering Stage:</b> Apply when grain has 1 or more tillers as well as 3 or more leaves. 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. Do not apply from boot to dough stage.</p>
Perennial broadleaf weeds	6 to 13 fl. oz.*  6 fl. oz.  6–13 fl. oz.	<p><b>Winter Wheat, Barley, Millet and Rye</b>  <b>Full Tillering Stage:</b> Apply when grain has 3 or more tillers and the flag leaf is not visible.</p> <p><b>Emergency Weed Control:</b> To control difficult weed problems in certain areas, such as under dry conditions especially in Western areas, 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.</p> <p><b>Spring Seeded Oats</b>  <b>Full Tillering Stage:</b> Apply when grains have 3 or more tillers and the flag leaf is not visible. Oats are less tolerant to <b>BARRAGE® HF</b> 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. Do not apply before the tiller stage nor from boot to dough stage.</p> <p><b>Fall Seeded Oats (Southern) Grown for Grain</b>  Apply 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 <b>BARRAGE® HF</b> 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.</p>

\*Use the lower rate if small annual and biennial weeds are the major problem. Use the higher rate if perennial weeds or annual and biennial weeds are present which are in the hard-to-kill categories as determined by local experience. The higher rates increase the risk of grain injury and should be used only where the weed control problem justifies the grain damage risk. Do not apply **BARRAGE® HF** to grain in the seedling stage.

### RESTRICTIONS AND LIMITATIONS FOR USE ON SMALL GRAINS (Wheat, Oats, Barley, Millet, Rye)

- Do not permit meat or dairy animals to consume treated crop as fodder or forage for 30 days following application.
- **Postemergence:**
  - Limited to one postemergent application per crop cycle.
  - Maximum of 34 ounces per acre per application.
- **Preharvest:**
  - Limited to one Preharvest application per crop cycle
  - Maximum of 13.6 ounces per acre per application.
- Preharvest interval (PHI) is 14 days.
- Limited to 48 ounces per acre per crop cycle.



**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:

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

**FALLOW LAND**

<b>Weeds in Crop</b>	<b>Amount of BARRAGE® HF per Acre</b>	<b>Directions for Use</b>
Annual broadleaf weeds	6–13 fl. oz.	Fallowland or land idle between crops may be subject to unwanted weed growth. To aid in suppressing certain perennial or biennial broadleaf weeds (including cotton regrowth), this product may be applied 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. <b>BARRAGE® HF</b> 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.
Perennial and biennial broadleaf weeds	12–20 fl. oz.	

**RESTRICTIONS AND LIMITATIONS FOR USE IN FALLOWLAND**

- Only labeled crops can be planted within 29 days of application.
- Limited to 2 applications per year.
- Maximum of 54 ounces per acre per application.
- Minimum of 30 days between applications.

## SOYBEANS (Preplant Only)

Weeds in Crop	Amount of BARRAGE® HF per Acre	Directions for Use
Pre-plant burndown (before 7 days of planting)	1/2 to 2/3 pint	<p><b>For use in crop residue management systems:</b> For best weed control, apply to postemergent weeds when small, actively growing, and free of stress caused by extremes in climatic conditions, disease, 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.</p> <p>Apply in 2 or more gallons of water per acre in aerial equipment and 10 or more gallons of water per acre in ground equipment.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p><b>NOTE:</b> 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.</p>
Pre-plant burndown (before 15 days of planting)	2/3 to 1 1/3 pint	<p>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.</p> <p><b>NOTE:</b> 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.</p>

### USE RESTRICTIONS AND LIMITATIONS FOR USE IN SOYBEANS (Preplant)

- Preplant:
  - Preplant for two (2) applications per crop cycle.
    - Limited to 2 preplant applications per crop cycle.
    - Maximum of 13.6 ounces per acre per preplant application.
    - Apply not less than 7 days prior to planting soybeans.
  - Preplant for Single (1) application per crop cycle.
    - Limited to 1 preplant application per crop cycle.
    - Maximum of 27 ounces per acre per preplant application.
    - Apply not less than 15 days prior to planting soybeans.
- Do not apply **BARRAGE® HF** when weather conditions such as temperature, air inversions, or wind favor drift from treated areas to susceptible plants.
- Do not apply **BARRAGE® HF** prior to planting soybeans if you are not prepared to accept the results of soybean injury, including the possible loss of stand and yield.

*(continued)*




**USE RESTRICTIONS AND LIMITATIONS FOR USE IN SOYBEANS (Preplant) (cont.)**

- Do not replant fields treated with **BARRAGE® HF** in the same growing season with crops other than those labeled for 2,4-D pre-plant use.
- Do not mow or cultivate weeds prior to treating with **BARRAGE® HF** as poor control may result.
- Do not cut for feed treated hay, forage, or fodder or graze treated soybeans to livestock.
- Do not apply **BARRAGE® HF** pre-plant to soybeans in fields having a coarse-textured soil where the percent organic matter is less than 1.0%.
- Only one application of **BARRAGE® HF** may be made prior to planting soybeans per growing season.
- Do not feed treated hay, forage or fodder. Livestock should be restricted from feeding/grazing of treated cover crops.
- Not currently registered for use in California.

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**GRASS PASTURES**


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Weeds in Crop	Amount of BARRAGE® HF per Acre	Directions for Use
Annual broadleaf weeds	6 to 19 ounces	Apply 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. Addition of a nonionic surfactant, such as Induce® or Dyne-Amic®, usually improves weed control.
Biennial and perennial broadleaf weeds	26 ounces	

**RESTRICTIONS AND LIMITATIONS FOR USE IN PASTURES AND RANGELANDS**

- Do not graze (dairy) cattle in treated areas for 7 days after application.
- Do not cut forage for hay within 30 days of application.
- Do not permit dairy animals or meat animals being finished for slaughter to forage treated fields within 3 days of slaughter.
- Postemergence:
  - Limited to 2 applications per year.
  - Maximum of 108 ounces per acre per year.
  - Minimum of 30 days between applications.
  - If grass is to be cut for hay, agricultural use requirements for the worker protection standards are applicable.
  - For program lands such as the Conservation Reserve Program, consult the program rules to determine whether grass or hay may be used. The more restrictive requirements of the program rules or this label must be followed.

**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.



## GRASS SEED CROPS

Weeds in Crop	Amount of BARRAGE® HF per Acre	Directions for Use
Cool season grass seed crops, such as bentgrass, bluegrass, fine fescue, fall fescues, orchard grass, annual ryegrass, and perennial ryegrass	6–19 fl. oz.	Apply to established stands in spring from tiller to early boot stage. New spring seedlings may be treated with the lower rate after grass seedlings have at least 5 leaves. Perennial weed regrowth may be treated in the fall. Make applications in the spring from the tiller to early boot stage. Do not spray in boot stage. New spring seedlings 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.

### RESTRICTIONS AND LIMITATIONS FOR USE ON GRASS SEED CROPS

- Do not graze dairy animals on treated areas for 7 days after application.
- Do not cut forage for hay within 30 days of application.
- Do not graze meat animals on treated fields within 3 days of slaughter.
  - Limited to 2 applications per year.
  - Maximum of 54 ounces per acre per application.
  - Minimum of 21 days between applications.

## 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.

### RESTRICTIONS AND LIMITATIONS FOR USE ON SOD FARMS

- Limited to 2 applications per year.
- Maximum of 54 ounces per acre per application
- Minimum of 21 days between applications.

**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

Turf maturity	Amount of BARRAGE® HF per Acre	Directions for Use
Newly seeded pastures	6 to 13 ounces	<p>Apply when broadleaf weeds are small. Adequate moisture is needed for best grass tolerance and weed control. Addition of a non-ionic surfactant, such as Induce® or Dyne-Amic®, usually improves weed control.</p> <p>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.</p> <p><b>New Stands:</b> 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. Addition of a surfactant may increase the risk of injury at this stage of growth.</p> <p><b>Established Stands:</b> For optimum results, weeds must be actively growing. 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. Repeat applications in the same or subsequent year may be needed to control brush species.</p>
Established stands	13 to 19 ounces per acre and up to 26 ounces per acre for biennial or perennial weeds	<p><b>Established Stands:</b> For optimum results, weeds must be actively growing. 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. Repeat applications in the same or subsequent year may be needed to control brush species.</p>

### RESTRICTIONS AND LIMITATIONS FOR USE IN PASTURES AND GRASSLANDS NOT IN AGRICULTURAL PRODUCTION

- Do not graze (dairy) cattle in treated areas for 7 days after application.
- Do not cut forage for hay within 30 days of application.
- Do not permit dairy animals or meat animals being finished for slaughter to forage treated fields within 3 days of slaughter.
- Treated grass cut for hay should not be cut within 30 days of application.
- Postemergence
  - Limited to 2 applications per year.
  - Maximum of 108 ounces per acre per year.
  - Minimum of 30 days between applications.
  - If grass is to be cut for hay, agricultural use requirements for the worker protection standards are applicable.
  - For program lands, such as the Conservation Reserve Program, consult the program rules to determine whether grass or hay may be used. The more restrictive requirements of the program rules or this label must be followed.

## FOREST MANAGEMENT

### Forest Site Preparation

Weeds in Crop	Amount of BARRAGE® HF per Acre	Directions for Use
Alder, Susceptible broadleaf weeds and Susceptible Woody Plants	<p>Up to 96 fl. oz. per acre in a minimum of 10 gallons spray mixture per acre</p> <p>Up to 51 fl. oz. per acre in a minimum of 10 gallons spray mixture per acre</p>	<p><b>Budbreak Spray:</b> 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.</p> <p><b>Foliage Spray:</b> 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.</p> <p><b>Conifer Release:</b> 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 over come it during the next growing season.</p>
Tanoak, madrone, ceanothus, canyon live oak, and manzanita, and to release Douglas fir, hemlock, Sitka spruce, and grand fir	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.
Susceptible woody species such as alder, willow, poplars, cherry, vine, maple, ceanothus, tanoak, madrone, and manzanita	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.
Hazel brush in the Lake states	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).

(continued)

## FOREST MANAGEMENT

### Forest Site Preparation (cont.)

Weeds in Crop	Amount of BARRAGE® HF per Acre	Directions for Use
Conifer species such as white pine, ponderosa pine, jack pine, red pine, black spruce, white spruce, red spruce, and balsam fir	Up to 74 fluid ounces per acre in a minimum of 10 gallons spray mixture per acre	Apply after growth has ceased and hardened off and brush is still actively growing in late summer. If possible injury cannot be tolerated, do not use since this treatment may cause conifer injury.
Competing hardwoods such as alder, aspen, birch, hazel and willow		
Susceptible broadleaf weeds and woody plants on forest roadsides	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.
Susceptible broadleaf weeds	Up to 51 fluid ounces per 100 gallons of water  96 fluid ounces per 100 gallons of water	<b>ESTABLISHED CONIFERS (including Christmas trees)</b> <b>Directed Spray or Spot Spray:</b> Apply to emerged weeds in the spring with ground equipment. Avoid contacting conifer foliage with spray or drift as injury may result.  For brush, 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.
Susceptible broadleaf weeds	26 fluid ounces per acre in a minimum of 10 gallons spray mixture per acre	<b>Over-the-Top Broadcast Application</b> – 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.

#### RESTRICTIONS AND LIMITATIONS FOR USE IN FOREST MANAGEMENT

- Limit 1 broadcast application per year.
- Maximum of 109 ounces per acre per broadcast application.

**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**

Weeds in Crop	Amount of BARRAGE® HF per Acre	Directions for Use
Annual broadleaf weeds	13 to 51 ounces	Apply in 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.  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.
Biennial and perennial broadleaf weeds	26 ounces	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.

**RESTRICTIONS AND LIMITATIONS FOR USE ON 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**

- Postemergence (annual and perennial weeds):
  - Limited to 2 applications per year
  - Maximum of 54 ounces per acre per application
  - Minimum of 30 days between applications.
- Postemergence (woody plants):
  - Limited to 1 application per year
  - Maximum of 108 ounces per acre per year
- Do not graze dairy animals for 7 days following application.
- Use sufficient spray volume for thorough and uniform coverage.
- Applications to non-cropland areas are not applicable for treatment of commercial timber or other plants being grown for sale or other commercial use, or for commercial seed production, or for research purposes.

**SPOT TREATMENT IN NON-CROP AREAS**

Mix 2 to 3 fluid ounces of **BARRAGE® HF** in 3 gallons of water. Wet all weeds and stems thoroughly. For best results, treat when weeds are actively growing.

**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**

Weeds in Crop	Amount of BARRAGE® HF per Acre	Directions for Use
Annual broadleaf weeds  Biennial and perennial broadleaf weeds	13 to 19 ounces	<p>Use sufficient spray volume for thorough and uniform coverage. 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.</p> <p><b>For Cool Season Grasses:</b> To control many emerged broadleaf weeds in cool season turfgrasses such as tall fescue, bluegrass, or perennial ryegrass, apply 16 to 32 fluid ounces per acre (0.38 to 0.75 ounce 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.</p>

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

- Postemergence (annual and perennial weeds):
  - Limited to 2 applications per year
  - Maximum of 41 ounces per acre per application
  - The maximum seasonal rate is 82 ounces per acre.
- Do not allow people (other than the applicator) or pets on treatment area during application.
- Do not enter treatment areas until sprays have dried.

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## **CONDITIONS OF SALE – LIMITED WARRANTY AND LIMITATIONS OF LIABILITY AND REMEDIES**

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**Read the Conditions of Sale – Warranty and Limitations of Liability and Remedies before using this product. If the terms are not acceptable, return the product, unopened, and the full purchase price will be refunded.**

The directions on this label are believed to be reliable and must 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 or 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.

To the extent consistent with applicable law, the exclusive remedy against the Company for any cause of action relating to the handling or use of this product shall be limited to, at Helena Chemical Company's election, one of the following:

1. Refund of the purchase price paid by buyer or user for product bought, or
2. Replacement of the product used

To the extent allowed by law, 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.

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**NOTES**

