

# HELENA BRAND

## 4.8 LB. DIURON FLOWABLE HERBICIDE

FOR CROP AND NON-CROP WEED CONTROL

**ACTIVE INGREDIENTS:**

Diuron 3-(3,4-dichlorophenyl)-1,1-dimethylurea.....47.5%

**INERT INGREDIENTS:**.....52.5%

**TOTAL**.....100.0%

This product contains 4.8 pounds diuron per gallon

**KEEP OUT OF REACH OF CHILDREN**

### WARNING - AVISO

Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle. (If you do not understand the label, find someone to explain it to you in detail.)

**PRECAUTIONARY STATEMENTS**  
**HAZARDS TO HUMANS AND DOMESTIC ANIMALS**

#### WARNING

Causes substantial but temporary eye injury. Harmful if swallowed, inhaled, or absorbed through skin. Avoid breathing spray mist. Avoid contact with eyes, skin, or clothing.

#### FIRST AID

**IF IN EYES:**

- Hold eyelid 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.
- Call a poison control center or doctor immediately for treatment advice.

**IF SWALLOWED:**

- Call a poison control center or doctor immediately for treatment advice.
- Do not induce vomiting unless told to do so by a poison control center or doctor.
- Do not give anything to an unconscious or convulsing person.

**IF INHALED:**

- Move victim to fresh air.
- If not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible.
- Call a poison control center or doctor immediately for treatment advice.

**IF ON SKIN OR CLOTHING:**

- Take off contaminated clothing.
- Rinse skin immediately with water for 15-20 minutes.
- Call a poison control center or doctor immediately for treatment advice.

#### HOT LINE NUMBER

Have the product container or label with you when calling a poison control center or doctor or going for treatment. In case of emergency, call ChemTrec at 1-800-424-9300.

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

EPA REG NO. 5905-482

NET CONTENTS:

EPA EST. NO. First letters of product batch code indicate producing establishment:

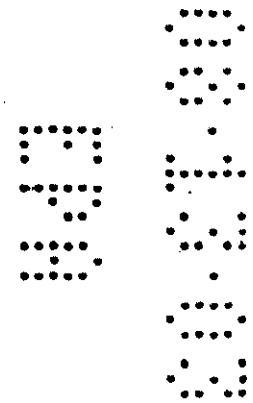
5905-FL-1 TF • 5905-GA-1 CG • 5905-AR-1 WA • 5905-IA-1 DI • 5905-CA-1 KC

**ACCEPTED**

OCT 29 2003

Under the Federal Insecticide, Fungicide, and Rodenticide Act, as amended for the products registered under EPA Reg. No. 5905-482

MANUFACTURED BY  
HELENA CHEMICAL COMPANY  
225 SCHILLING BOULEVARD, SUITE 300  
COLLIERVILLE, TN 38018



### PERSONAL PROTECTIVE EQUIPMENT

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

#### Applicators and other handlers must wear:

- Long-sleeved shirt and long pants
- Chemical-resistant gloves made of any waterproof material, such as polyethylene or polyvinyl chloride
- Shoes plus socks
- Protective eyewear

Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product's concentrate. Do not reuse them. Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

#### Engineering Controls Statement

When handlers use closed systems, 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

User 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.

#### ENVIRONMENTAL HAZARDS

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 contaminate water when cleaning equipment or disposing of equipment washwaters.

#### 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 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. Exception: If the product is soil-injected, the Worker Protection Standard, under certain circumstances, allows workers to enter treated area if there will be no contact with anything that has been treated.

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 made of any waterproof material
- 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 others to enter until sprays have dried.

#### STORAGE AND DISPOSAL

Do not contaminate with water, food, or feed by storage and disposal.

**Pesticide Storage:** Do not store at temperatures below 32°F. If product freezes, expose to room temperature and shake well before using.  
**Pesticide Disposal:** Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility.  
**Container Disposal:** 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.

### SPRAY DRIFT MANAGEMENT

Avoiding spray drift at the application site is the responsibility of the applicator. The interaction of many equipment-and-weather-related factors to determine the potential for spray drift. The applicator and the grower are responsible for considering all these factors when making decisions. The following drift management requirements must be followed to avoid off-target drift movement from aerial applications to agricultural field crops. These requirements do not apply to forestry applications, public health uses or to applications using dry formulations.

1. The distance of the outer most nozzles on the boom must not exceed 3/4 the length of the wingspan or rotor.
2. Nozzles must always point backward parallel with the air stream and never be pointed downwards more than 45 degrees.

Where states have more stringent regulations, they should be observed.

The applicator should be familiar with and take into account the information covered in the Aerial Drift Reduction Advisory Information.

### Importance of Droplet Size

The most effective way to reduce droplet potential is to apply large droplets. The best drift management strategy is to apply the largest droplets that provide sufficient coverage and control. Applying larger droplets reduces drift potential, but will not prevent drift if applications are made improperly, or under unfavorable environmental conditions (see Wind, Temperature, and Humidity, and Temperature Inversions).

### Controlling Droplet Size

- **Volume-** Use high flow rate nozzles to apply the highest practical spray volume. Nozzles with higher rated flows produce larger droplets.
- **Pressure-** Do not exceed the nozzle manufacturer's recommended pressures. For many nozzle types, lower pressure produces larger droplets. When higher flow rates are needed, use higher flow rate nozzles instead of increasing pressure.
- **Number of nozzles-** Use the minimum number of nozzles that provide uniform coverage.
- **Nozzle orientation-** Orienting nozzles so that the spray is released parallel to the airstream produces larger droplets than other orientations and is the recommended practice. Significant deflection from the horizontal will reduce droplet size and increase drift potential.
- **Nozzle type-** Use a nozzle type that is designed for the intended application. With most nozzle types, narrower spray angles produce larger droplets. Consider using low-drift nozzles. Solid stream nozzles oriented straight back produce the largest droplets and the lowest drift.
- **Boom Length** - For some use patterns, reducing the effective boom length to less than 3/4 of the wingspan or rotor length may further reduce drift without reducing swath width.
- **Application** - Applications should not be made at a height greater than 10 feet above the top of the largest plants unless a greater height is required for aircraft safety. Making applications at the lowest height that is safe reduces exposure of droplets to evaporation and wind.

### Swath Adjustment

When applications are made with a cross-wind, the swath will be displaced downwind. Therefore, on the up and downwind edges of the field, the applicator must compensate for this displacement by adjusting the path of the aircraft upwind. Swath adjustment distance should increase, with increasing drift potential (higher wind, smaller drops, etc.).

### Wind

Drift potential is lowest between wind speeds of 2-10 mph. However, many factors, including droplet size and equipment type determine drift potential at any given speed. Application should be avoided below 2 mph due to variable wind direction and high inversion potential. NOTE: Local terrain can influence wind patterns. Every applicator should be familiar with local wind patterns and how they affect drift.

### Temperature and Humidity

When making applications in low relative humidity, set up equipment to produce larger droplets to compensate for evaporation. Droplet evaporation is most severe when conditions are both hot and dry.

### Temperature Inversions

Application should not occur during a temperature inversion, because drift potential is high. Temperature inversions restrict vertical air mixing, which causes small suspended droplets to remain in a concentrated cloud. This cloud can move in unpredictable directions due to the light variable winds common during inversions. Temperature inversions are characterized by increasing temperatures with altitude and are common on nights with limited cloud cover and light to no wind. They begin to form as the sun sets and often continue into the morning. Their presence can be indicated by

ground fog; however, if fog is not present, the movement of smoke from a ground source or an aircraft smoke generator can also identify inversions. Smoke that layers and moves laterally in a concentrated cloud (under low wind conditions) indicates an inversion, while smoke that moves upwards and rapidly dissipates indicates good vertical air mixing.

**Sensitive Areas**

The pesticide should only be applied when the potential for drift to adjacent sensitive areas (e.g., residential areas, bodies of water, known habitat for threatened or endangered species, non-target crops) is minimal (e.g., when wind is blowing away from the sensitive areas).

**GENERAL INFORMATION**

**HELENA BRAND 4.8 LB. DIURON FLOWABLE HERBICIDE** is a flowable formulation to be mixed in water and applied as a spray for selective control of weeds in certain crops and for nonselective control of weeds in certain crops and for nonselective weed control on non-cropland areas. It is non-corrosive to equipment, nonflammable and nonvolatile.

**HELENA BRAND 4.8 LB. DIURON FLOWABLE HERBICIDE** may be applied to soil prior to emergence of weeds to control susceptible weed seedlings for an extended period of time; the degree of control and duration of effect will vary with the amount of chemical applied, soil texture, rainfall and other conditions. Soils high in clay or organic matter require higher dosages than soil low in clay or organic matter to obtain equivalent herbicide performance. Moisture is required to activate the chemical; best results occur if rainfall (or sprinkler irrigation) occurs within 2 weeks of application.

**HELENA BRAND 4.8 LB. DIURON FLOWABLE HERBICIDE** may also be used to control emerged weeds. Results vary with rate applied and environmental conditions; best results are obtained on succulent weeds growing under conditions of high humidity and temperatures of 70°F or higher. Addition of a nonionic surfactant increases contact effects of **HELENA BRAND 4.8 LB. DIURON FLOWABLE HERBICIDE**. Since the effect of **HELENA BRAND 4.8 LB. DIURON FLOWABLE HERBICIDE** varies with soils, uniformity of application, and environmental conditions, it is suggested that growers limit their first use to small areas. Observe all cautions and limitations on labeling of all products used in mixtures.

**SELECTIVE USE IN CROPS**

**PREEMERGENCE USE (Germinating Weeds): HELENA BRAND 4.8 LB. DIURON FLOWABLE HERBICIDE**, at recommended rates, controls annual weeds such as:

**Broadleaves**

<u>1/2 - 2/3 qt/acre</u>	<u>1 - 1 1/3 qts./acre</u>	<u>1 1/2 - 4 qts./acre</u>
Lambquarters	Annual groundcherry	Ageratum
Pigsweed	Annual morningglory	Annual smartweed
Purslane	Chickweed	Annual sowthistle
Ragweed	Corn spurry	Corn speedwell
	Dogfennel	Dayflower
	Fiddleneck	Flora's paintbrush
	(amsinckia)	Hawksbeard
	Gromwell	Horseweed
	Knawel	Kochia
	Pennycress	Marigold
	Shepherdspurse	Mexican clover
	Tansy-mustard	Pineappleweed
	Wild bucket	Pokeweed
	Wild lettuce	Rabbit tobacco
	Wild mustard	Spanishneedles
		Velvetleaf
		(buttonweed)
		Wild radish

**Grasses**

<u>1/2 - 2/3 qt/acre</u>	<u>1 - 1 1/3 qts./acre</u>	<u>1 1/2 - 4 qts./acre</u>
Barnyardgrass	Annual bluegrass	Annual lovegrass
(watergrass)	Annual sweet	Annual ryegrass
Crabgrass	vernalgrass	Kyllinga
	Foxtail	Orchardgrass
	Rattail fescue	Peppergrass
	Red sprangletop	Ricegrass
	Velvetgrass	Sandbur
		Seedling johnsongrass

Partial control of the following weeds usually occurs at rates stated:

**Broadleaves**

2/3 qt/acre

- Annual morningglory
- Cocklebur
- Prickly sida (teaweed)
- Sesbania
- Sicklepod

2 2/3 qts./acre

- Horsenettle

**Grasses**

2 2/3 qts./acre

- Quackgrass

5 1/2 - 6 2/3 qts./acre

- Guineagrass
- Maidencane
- Pangolagrass

**POSTEMERGENCE USE (Emerged Seedling Weeds):** HELENA BRAND 4.8 LB. DIURON FLOWABLE HERBICIDE at recommended rates, controls annual weeds such as annual morningglory, barnyardgrass (watergrass), crabgrass, crowfoot, goosegrass, pigweed and purslane. Addition of a nonionic surfactant to the spray (where recommended) increases contact effects of HELENA BRAND 4.8 LB. DIURON FLOWABLE HERBICIDE. Best results are obtained on succulent weeds growing under conditions of high humidity and temperatures of 70°F or higher.

**EQUIPMENT - Spray volumes and Pressures:** Use a tractor-mounted fixed-boom power sprayer properly calibrated to a constant speed and rate of delivery. Openings in screens should be equal to or larger than 50 mesh. Continuous agitation in the spray tank is required to keep the material in suspension. Agitate by mechanical or hydraulic means; if by-pass or return lines is used, it should terminate at bottom of tank to minimize foaming. Avoid overlapping, and shutoff spray booms while starting, turning, slowing or stopping, or injury to the crop may result.

For preemergence application, use 25 to 40 gallons per acre and spray pressure of 30 to 40 psi. For postemergence application, use sufficient volume (min. 25 gals per acre) for thorough coverage of weed foliage; use spray pressure of 20 to 25 psi to keep drift to a minimum.

**Aerial:** For alfalfa, asparagus, barley (winter), cotton (preplant or preemergence only), grass seed crops, pineapple, sugarcane and wheat (winter), application may be made by aircraft (5 to 10 gals. Per acre); avoid overlapping of spray swath and avoid application under conditions where excessive drift may occur. Where land is bedded, make application parallel to rows.

**SPRAY PREPARATION:** Mix proper amount of HELENA BRAND 4.8 LB. DIURON FLOWABLE HERBICIDE into necessary volume of water; where use of nonionic surfactant is recommended, dilute with 10 parts of water and add as last ingredient to nearly full tank.

**Use Rates:** All dosages of HELENA BRAND 4.8 LB. DIURON FLOWABLE HERBICIDE are expressed as broadcast rates; for band treatment, use proportionately less. For example, use 1/3 of the broadcast rate when treating a 14" band where row spacing is 42". Where a range of dosages is given, use the lower rate on coarse textured soils (low in clay or organic matter) and the higher rate on fine textured soils (high in clay or organic matter); for postemergence application, use the lower rate on smaller weeds and the higher rate on larger weeds.

**SOIL LIMITATIONS:** Crop injury may result from failure to observe the following:

Unless otherwise directed, do not use on sand, loamy sand, gravelly soils or exposed subsoils; nor on pecans where organic matter is less than 1/2%; nor on alfalfa, apples, artichoke, barley (winter), bermudagrass pasture, citrus, cotton, grapes, oats, olives, papayas, peaches, pears, plumosus fern, sorghum, sugarcane, walnuts and wheat (winter) where organic matter is less than 1%; nor on blueberries, birdsfoot trefoil, caneberries, gooseberries, macadamia nuts and peppermint where organic matter is less than 2%.

**REPLANTING:** Unless otherwise directed, do not replant treated areas to any crop within 2 years after last application as injury to subsequent crops may result.

**FIELD CROPS (See Soil Limitations)**

A good seedbed must be prepared before preemergence use of HELENA BRAND 4.8 LB. DIURON FLOWABLE HERBICIDE as crop injury may result if application is made to ground which is cloddy or compacted resulting in improperly planted seed. Plant seed to depth specified. Unless otherwise directed, surface of the soils should not be cultivated or disturbed after application of HELENA BRAND 4.8 LB. DIURON FLOWABLE HERBICIDE and before emergence of the crop as weed control may be reduced and crop injury may result. However, if moisture is insufficient to activate the herbicide, a shallow cultivation (rotary hoe preferred) should be made after emergence of crops while weeds are small enough to be controlled by mechanical means.

**ALFALFA:** Treat only stands established for 1 year or more. Do not apply to seedling alfalfa nor to alfalfa-grass mixtures; do not apply to alfalfa under stress from disease, insect damage, shallow root penetration (such as on shallow hard pans), alkali spots; nor to flooded fields as crop injury may result. Do not spray on snow covered or frozen ground.

**Idaho, Oregon, Washington:** Use 1 to 2 qts. per acre; for control of volunteer alfalfa, use 2 $\frac{2}{3}$  qts. per acre. Apply in fall after alfalfa becomes dormant no later than mid-December.

**California (Dormant and Semi-Dormant Varieties):** Use 1 to 2 qts. per acre; for control of volunteer alfalfa, use 2 $\frac{2}{3}$  qts. per acre. Apply in fall or winter after alfalfa becomes dormant or semi-dormant, but before growth begins in the spring. Crop injury may result if application is made to actively growing alfalfa. For best results, apply before weeds have emerged or become established (2" in height or diameter). Control of established **HELENA BRAND 4.8 LB. DIURON FLOWABLE HERBICIDE** with a suitable contact herbicide registered for such use. Sufficient rainfall for soil activation of **HELENA BRAND 4.8 LB. DIURON FLOWABLE HERBICIDE** is unlikely in California after February 1. Treated areas may be replanted to any crop after one year from last application if rate does not exceed 1  $\frac{1}{3}$  qts. per acre.

**Arizona, Nevada:** Use 1 to 2 qts. per acre; apply in fall after alfalfa becomes dormant but no later than January.

**Eastern Colorado, Kansas:** For control of tansymustard, apply  $\frac{2}{3}$  qts. per acre shortly after emergence of mustard in the fall or winter; use 1  $\frac{1}{4}$  qts. per acre if weeds are 2" to 4" in height. Alternatively, if other annual weeds are present, apply 1 $\frac{1}{2}$  to 2 qts. per acre in February or March.

**Other Areas Where Alfalfa Becomes Winter Dormant:** Use 1 to 2 qts. per acre (1 to 1 $\frac{1}{2}$  qts. per acre East of Appalachian Mountains). Apply in March or early April, but before spring growth begins.

**ARTICHOKE – California:** Apply 1 $\frac{1}{2}$  to 2 $\frac{2}{3}$  qts. per acre in late fall to early winter after the last cultivation. Apply before weeds germinate or to emerging seedlings. Direct spray to cover the areas between the rows and at the base of the artichoke plants, keeping contact with crop plants at a minimum.

**ASPARGUS:** Apply as a band or broadcast treatment. Do not apply to young plants during the first growing season (except as noted below), nor to newly seeded asparagus, nor on plants with exposed roots as severe injury may result.

**Established Plantings:** On lightly sandy soils and other soils low in clay or organic matter, apply  $\frac{2}{3}$  to 1 $\frac{1}{2}$  qts. per acre. On soils high in clay or organic matter, use 1 $\frac{1}{2}$  to 2 $\frac{2}{3}$  qts. per acre. Two applications may be used; the first application should be made before weeds become established but no earlier than 4 weeks before spear emergence and no later than the early cutting period (if weeds are controlled into the cutting period by cultural practices, application may be delayed until immediately after the last cultivation); a second application may be made immediately following completion of harvest provided rainfall is expected. When two applications are used in one season, do not exceed 2 qts. per acre per application. In Washington (irrigated crops); apply a single treatment of 2 $\frac{2}{3}$  qts. per acre. If treatment is delayed until late winter or early spring, incorporation of the chemical in the top 1" to 2" of soil may substitute for lack of rain to activate the herbicide.

**Newly Planted Crowns – California (San Joaquin Delta):** Make a single application of 1 $\frac{1}{2}$  to 2 $\frac{2}{3}$  per acre on soils high in clay or organic matter; use the lower rate on clay loams and the higher rate on peat soils. Do not use on soils containing less than 2% organic matter. Soil must be settled by rainfall or irrigation prior to treatment. Do not treat crowns planted to depth of less than 2".

**BARLEY, WINTER (Drill-Planted) – Western Oregon and Western Washington:** Make a single application of 1 to 1 $\frac{1}{2}$  qts. per acre as soon as possible after planting but before emergence of barley. Do not replant treated areas to any crop within 1 year after last application as injury to subsequent crops may result.

**BERMUDAGRASS PASTURES (Newly Sprigged):** Apply  $\frac{2}{3}$  to 2 qts. after planting and before emergence of bermudagrass or weeds. Alternatively, for control of emerged annual weeds up to 4" in height, apply  $\frac{1}{2}$  to  $\frac{2}{3}$  qts. per acre; add 1 pt of an approved non-ionic surfactant per 25 gals. of spray. If bermudagrass has emerged at time of treatment, temporary burn of exposed plant parts may occur.

Plant sprigs (stolons) 2" deep in a well-prepared seed bed; do not treat areas where springs are planted less than 2" deep as crop injury may result. Do not graze or feed foliage from treated areas to livestock within 70 days after application.

**BIRDSFOOT TREFOIL (Lotus) – Western Oregon:** Treat only stands, established for at least 1 year; do not apply to seedling trefoil as injury may result. Make a single application of 1 $\frac{1}{4}$  qt per acre when trefoil is dormant (October 15 to December 15). Do not replant treated areas to any crop within 1 year after last application as injury to subsequent crops may result.

**CORN (FIELD)**

**Postemergence –** Make a single application of 1 qt per acre in combination with non-ionic pressure nitrogen solution. If nitrogen solution is not used, apply  $\frac{2}{3}$  qt per acre; add 1 pt of an approved non-ionic surfactant per 25 gals of spray. Apply as a directed spray when corn is at least 20" high and weeds are not taller than 3". DO NOT APPLY OVER THE TOP OF CORN. Do not replant to any crop within 1 year except that cotton, corn, and grain sorghum may be replanted the spring following treatment.

**PREEMERGENCE – Arkansas, Louisiana, Mississippi, and Tennessee:** Make a single application of 4/9 to  $\frac{2}{3}$  qt per acre as a broadcast or band treatment after planting but before corn emerges. Plant corn at least 1  $\frac{1}{2}$ " deep. Do not replant treated areas to crops other than corn and cotton within 4 months of following band treatment and 6 months following broadcast treatment as crop injury may result.

**COTTON:** During a single crop season, do not exceed the following amount of **HELENA BRAND 4.8 LB. DIURON FLOWABLE HERBICIDE** per acre as injury to subsequent crops may result:  $\frac{3}{8}$  qt on loamy sand; 1 qt on sandy loam;  $1\frac{1}{8}$  qt on clay loam;  $1\frac{4}{5}$  qt on clay. Injury may occur if **HELENA BRAND 4.8 LB. DIURON FLOWABLE HERBICIDE** is used in conjunction with soil-applied organic phosphate pesticides. Do not allow livestock to graze treated cotton.

**Preplant - Arizona and California:** Use **HELENA BRAND 4.8 LB. DIURON FLOWABLE HERBICIDE** alone, or apply as a separate operation following preplant broadcast treatment with Treflan® (incorporated according to directions on Treflan® label). Apply **HELENA BRAND 4.8 LB. DIURON FLOWABLE HERBICIDE** as a broadcast spray after beds are formed, preirrigated, and final seed beds prepared. Prior to planting, drag-off the tops of the beds and plant in moist soil not treated with **HELENA BRAND 4.8 LB. DIURON FLOWABLE HERBICIDE**. Treated soil is returned to the bed after planting when irrigation furrows are reformed after cotton has emerged. If more than two furrowing-out operations are made prior to lay-by, or deep furrows are made early, weed control may be reduced in furrow bottoms. Use at the following rates:

**HELENA BRAND 4.8 LB. DIURON FLOWABLE HERBICIDE Alone:**  $\frac{3}{8}$  to  $1\frac{3}{8}$  qts. per acre.

**HELENA BRAND 4.8 LB. DIURON FLOWABLE HERBICIDE Following Treflan®:**

Soil Texture	Product Per Acre Preplant	
	Treflan®	HELENA BRAND 4.8 LB. DIURON FLOWABLE HERBICIDE
Sandy loam, loam, silt loam, silt	1 pt.	$\frac{9}{10}$ to $1\frac{1}{8}$ pts
Sandy clay loam, clay loam, silty clay loam, sandy clay, clay	$1\frac{1}{2}$ pts	$1\frac{1}{8}$ to $1\frac{3}{8}$ pts

**Note:** Seedling disease may weaken plants and increase the possibility of injury from the use of Treflan® followed by **HELENA BRAND 4.8 LB. DIURON FLOWABLE HERBICIDE**. These treatments should be used only in conjunction with a standard fungicide seed treatment plus a good supplemental soil fungicide program such as Captan-PCNB mixture.

**Preemergence - U.S. except Arizona, California, and areas west of Interstate 85 or 35W in Texas and Oklahoma:** Use **HELENA BRAND 4.8 LB. DIURON FLOWABLE HERBICIDE** alone, or apply as a separate operation following preplant treatment with Treflan®. Apply **HELENA BRAND 4.8 LB. DIURON FLOWABLE HERBICIDE** after planting but before cotton emerges. Do not treat cotton in deep furrows as crop injury may result; use only where cotton is planted on flat or raised seedbeds. Shallow incorporated (no deeper than  $\frac{1}{4}$ " ) with a rotary hoe or similar equipment following planting usually improves results especially during dry weather. A wide press wheel should be used on the planter to provide a level seed bed for subsequent early season postemergence treatments. If moisture is insufficient to activate **HELENA BRAND 4.8 LB. DIURON FLOWABLE HERBICIDE** or if soil becomes crusted before crop emerges, a shallow rotary hoeing (no deeper than  $\frac{1}{4}$ " /  $\frac{1}{4}$ " ) should be made before weeds become established.

**HELENA BRAND 4.8 LB. DIURON FLOWABLE HERBICIDE Alone:** Make a single application as a broadcast or band spray, using the following broadcast rates; for band treatment, use proportionately less.

Soil Texture**	Pts HELENA BRAND 4.8 LB. DIURON FLOWABLE HERBICIDE Per Acre
Loamy sand	$\frac{9}{10}$
Sandy loam, loam, silt loam, clay	$1\frac{1}{8}$
Sandy clay loam, clay loam, silty clay loam, sandy clay	$1\frac{3}{8}$
Silty clay, clay	$2\frac{3}{8}$

\*\*Do not use on soils with less than 1% organic matter as crop injury may result.

**HELENA BRAND 4.8 LB. DIURON FLOWABLE HERBICIDE Following Treflan® Preplant:** Apply Treflan® prior to planting as a broadcast or band treatment; incorporate according to directions on Treflan® label. As a separate operation, apply Karmex® as a band treatment ( $14"$  to  $20"$  wide) after planting but before cotton emerges. Use at the following broadcast rates; for band treatment, use proportionately less. See "Note" under Preplant above.

Soil Texture**	Product Per Acre	
	Preplant Treflan®	Preemergence HELENA BRAND 4.8 LB. DIURON FLOWABLE HERBICIDE
Loamy sand	$\frac{1}{2}$ pt	$\frac{9}{10}$ pt

Sandy loam, loam, silt loam, silt	1 pt	1 1/3 pt
Sandy clay loam, clay loam, silty clay loam, sandy clay silty clay, clay	1 1/2 pts	1 2/3 - 2 2/3 pt

\*\*Do not use on soils with less than 1% organic matter as crop injury may result.

**Postemergence U.S.:** Apply only as a directed spray to cover weed foliage; adjust nozzles to minimize contact of cotton leaves with spray or drift or crop injury may result. DO NOT SPRAY OVER TOP OF COTTON.

**Early Season –** Apply when cotton is at least 6" tall (at least 12" tall for Western irrigated cotton), and when weeds are actively growing and do not exceed 2" in height. Apply as a band treatment at following rates; for each 25 gals of spray, add 1 pt of an approved nonionic surfactant. Two applications may be made if needed.

Weed Problem (Up to 2" Tall)	Pts HELENA BRAND 4.8 LB. DIURON FLOWABLE HERBICIDE Per Acre (Broadcast Basis)
Annual grasses	2/3
Pigweed	1/3

For control of seedling perennial grasses such as johnsongrass and partial control of nutsedge or when weed growth is under drought stress or as high as 4", add 2 to 3 1/2 lbs. of disodium methylarsonate (DSMA; 63% anhydrous or equivalent) to above spray mixture. If DSMA is used, do not apply after first bloom.

**Late Season (Lay-By) –** Apply 2/3 to 1 qt per acre (2/3 to 1 1/3 qts. in Arizona and California) when cotton is at least 12" tall (at least 20" tall for Pima S-2). For control of germinating weed seedlings, apply to soil beneath cotton plants and between rows immediately after last cultivation. In irrigated cotton, best weed control is obtained if the field is irrigated within 3 to 4 days after application; thoroughly wet the surface of the ground over the row to carry the herbicide into the root zone of germinating weeds. Alternatively, for control of emerged annual weeds (up to 4" height) at layby time, make a single application in combination with an approved nonionic surfactant (1 pt per 25 gals. Spray), or use 1/3 to 1/2 qt of HELENA BRAND 4.8 LB. DIURON FLOWABLE HERBICIDE (plus surfactant) per acre and repeat later if needed.

**Replanting:** If initial seeding fails to produce a stand, cotton may be replanted in soil treated preplant or preemergence with HELENA BRAND 4.8 LB. DIURON FLOWABLE HERBICIDE, alone or following Treflan®. Wherever possible, avoid disturbing original bed. If necessary to rework soil before replanting, use shallow cultivation such as discing; do not relist nor move soil into the original drill area. Plant seed at least 1" deep. Do not retreat field with a second preplant or preemergence application during the same crop year as injury to the crop may result.

HELENA BRAND 4.8 LB. DIURON FLOWABLE HERBICIDE – Type of Application	Crops That May Follow Treated Cotton
Band preemergence or postemergence	Any crop 4 months after last application
Band preemergence plus postemergence - or - Broadcast preemergence (and preplant) - or - Broadcast preemergence plus band postemergence	Cotton, soybeans, corn or grain sorghums (not sorghos, or forage sorghums nor grass sorghums) the next spring. Do not replant treated area within one year after last application as injury to subsequent crops may result.
Broadcast postemergence (lay-by)	Cotton, corn, grain sorghums (not sorghos, or forage sorghums nor grass sorghums) the next spring. Do not replant treated areas to any other crop within one year after last application as injury to subsequent crops may result.

For subsequent crops in fields where Treflan® is used, follow instructions on Treflan® label.

**GRASS SEED CROPS (Perennial):** Except as noted, apply only to established plantings at least 1 year old.

**Colorado, Kansas, New Mexico and Oklahoma:** On sand bluestem, side oats grama and switchgrass, apply 1 1/3 to 2 qts. per acre during the dormant period shortly before weed seedlings emerge. Do not apply after crop begins growth in the spring as crop injury may result. In fields where ash residues have accumulated from burning straw, use 2 qts. per acre; spread unburned chaff or straw with a harrow or chopper before application.

**Western Oregon:** On alta fescue, Astoria bentgrass, Highland bentgrass, Kentucky bluegrass (Merion bluegrass) and orchardgrass, apply 1 1/3 to 2 2/3 qts. per acre between October 1 and November 15. In fields where ash residues have accumulated from burning straw, use 2 to 2 2/3 qt. per acre; spread unburned chaff or straw with a harrow or chopper before application. If perennial velvetgrass (Holcus lanatus) is a problem, use 2 2/3 qts. per acre. For best results, apply as soon as possible after fall rains start. Established weeds (beyond 2 to 4 leaf stage) should be removed prior to treatment.



Well established vigorous stands of spring-planted alta fescue, Kentucky bluegrass and orchardgrass may be treated the following fall provided the crop is planted before April 1 and treatment is not applied before October 15; 1 1/3 qt per acre.

**Oregon:** For use in newly planted bentgrass, Chewings fescue, Kentucky bluegrass, perennial ryegrass, orchardgrass and tall fescue. During planting operation, spray Aqua Nu Chart™ or Gro-Safe™ or other suitable brand of activated charcoal as a 1" band on soil surface at rate of 300 lbs. per acre (broadcast basis; equivalent to 15 lbs. per acre of crop where row spacing is 20"). Mount nozzles to apply directly over seed rows to prevent crop injury. Follow with **HELENA BRAND 4.8 LB. DIURON FLOWABLE HERBICIDE** as a single broadcast spray at rate of 1 2/3 to 2 qts. per acre; apply as soon as possible after planting but before crops or weeds emerge rains or sprinkler irrigation. Fall or spring plantings may be treated; best results usually occur with early fall plantings. Treatment will not control downy brome or wild oats.

**OATS (Drill-Planted):** Do not replant treated areas to any crop within one year after last application as injury to subsequent crops may result.

**Spring Oats – Idaho, Eastern Oregon, Eastern Washington:** Use in areas where average annual rainfall exceeds 16". Make a single application of 2/3 to 1 qt per acre after planting, either or after oats emerge but within 6 weeks of planting. Best results are usually obtained when application is made 3 to 4 weeks after planting. Apply before weeds are 3" to 4" tall.

**Winter Oats and Mixtures with Peas or Vetch – Western Oregon and Western Washington:** Make a single application of 1 to 1 1/2 qts. per acre as soon as possible after planting but before emergence of the crop.

**PEPPERMINT – Pacific Northwest:** Apply 2 qts. per acre just after the last cultivation in the spring prior to emergence of peppermint. Do not apply to newly planted (less than 1 year) not to emerged peppermints as injury may result.

**SORGHUM (GRAIN) – Southwestern States:** Apply 1/3 to 2/3 pt per acre; add 1 pt of an approved nonionic surfactant per 25 gals of spray. Apply as a directed postemergence broadcast or band spray after sorghum is 15" tall to control weeds 2" to 4" in height. **DO NOT SPRAY OVER TOP OF SORGHUM.** Use the lower rate on broadleaved weeds up to 2" tall; use the higher rate on grasses up to 2" and broadleaved weeds up to 4" tall. When the lower rate is used, a second application may be made if needed provided the amount applied in one crop year does not exceed 2/3 pt per acre. Treatment of weeds under drought stress is usually ineffective.

Do not replant treated areas to crops other than cotton or corn within 4 months following band treatment and 6 months following broadcast treatment as crop injury may result.

**SUGARCANE:** To prevent possible crop injury on new cane varieties, tolerance to **HELENA BRAND 4.8 LB. DIURON FLOWABLE HERBICIDE** should be determined prior to adoption as field practice. Do not treat sugarcane growing on thinly covered subsoils or rocky areas as crop injury may result. Temporary chlorosis of the crop may result from application over emerged cane; to minimize chlorosis, use directed postemergence sprays.

**Florida Preemergence –** For high organic soils, apply 1 1/2 to 2 1/2 qts. per acre as a broadcast or band spray prior to weed emergence after planting or after harvesting plant crop (for ratoon crop). **Postemergence –** Make 1 or 2 application of 1 1/2 qt. per acre as needed by directed spray inter-row. Alternatively, for panicum control make up to 3 applications of 1/2 to 3/4 qts. per acre as a directed spray after cane has emerged but before panicum exceeds 2" in height; add 1qt. of an approved nonionic surfactant per 100 gals of spray. Adjust nozzles to spray beneath cane plants and between rows to cover weed foliage and to minimize contact of cane leaves with spray or drift. Do not apply more than 6 lbs. total per acre between planting (or ratooning) and harvest.

**Hawaii and Puerto Rico:** Apply 2 1/2 to 5 1/2 qts. per acre as a broadcast spray prior to weed emergence after planting or after harvesting plant crop (for ratoon crop). A second and third application of 1 1/2 to 2 1/2 qts. per acre may be made as a broadcast spray over emerged cane or by directed spray inter-row.

If weeds are emerged, add a surfactant to the spray at the rate of 1 to 2 qts. per 100 gals and apply as a directed spray. **DO NOT SPRAY OVER TOP OF CANE.**

Do not apply more than 3 treatments nor more than (Puerto Rico) or 6 3/4 qts. (Hawaii) total per acre between planting (or ratooning) and harvest. Treated areas may be planted to sugarcane or pineapple one year after last application.

**Louisiana:** Use on plant cane seeded on fallowed ground. Make a single application of 2 to 2 1/2 qts. per acre at either of the following times. **Fall Treatment (August through October) –** Treat a 2 ft band over the row after planting of cane, but before weeds or cane emerge. **Spring Treatment (January through April) –** If shaving and off-barring are practiced, treat a 2 ft band over the row before weeds or cane emerge.

**WHEAT, WINTER (Drill-Planted):** Crop injury may result where severe winter stress, disease or insect damage follows application; winter-sensitive varieties such as McDermid and Hyslop may be less tolerant of **HELENA BRAND 4.8 LB. DIURON FLOWABLE HERBICIDE** than winter-hardy varieties such as Gaines and Nugaines. Crop injury may also result from failure to observe the following: Do not use on sand or loamy sand soils, nor on gravelly or sandy loams low in organic matter (less than 1%), nor on thinly covered or exposed sub-soil areas (clay knobs); do not treat wheat planted less than 1" deep; do not treat wheat where winter climatic conditions have caused "heaving" of plants; do not treat wheat plants lacking in

vigor due to poor emergence, insect damage, disease, high alkalinity or other causes; do not apply after wheat has reached the "boot" stage of maturity; do not use with surfactants, or nitrogen solution. Do not replant treated areas to any other crop within 1 year after last treatment (except as noted) as injury to subsequent crops may result.

**Idaho, Oregon and Washington – East of Cascade Range: Areas Where Average Annual Rainfall Exceeds 16 Inches:** Make a single application of 2/3 to 1 qt per acre.

**Fall Treatment:** For early fall-planted wheat (seeded before September 10) apply 3 to 6 weeks after planting but before September 10, apply 3 to 6 weeks after planting but before weeds are 3" to 4" tall. Treatment after October 1 has generally given best result. Application should not be made after soil freezes in the fall. Wheat planted in late October should not be treated until the following spring.

**Spring Treatment:** Apply as soon as wheat starts to grow in the spring. Treatment made prior to April 10 will usually give good results provided week growth is less than 4" tall. Application later than May 1 may give poor results. Alternatively, make a single application of 1/3 to 2/3 qts. plus 1/4 lb. bromoxynil per acre as a tank mixture, either in the fall after wheat has emerged but before soil freezes or in the spring as soon as soil thaws; apply before weeds are 2" tall or across.

**Areas Where Average Annual Rainfall is 10 to 16 Inches:** After wheat is planted in the fall, make a single application of 2/3 to 1 qt. per acre when sufficient moisture is available to germinate wheat seed. Apply before solid freezes and before weeds are 2" tall. Application later than March 1 may give poor results.

Note – if fall-planted wheat fails to grow due to winter kill or adverse growing conditions after fall treatment, only fields treated before November 1 may be replanted to spring wheat. Spring wheat should not be planted before April 1, and only after deep discing and plowing to a depth of 4" to 6" prior to planting. Do not retreat field with a second application during the same crop year as injury to the crop may result.

**Oregon and Washington – West of Cascade Range:** Make a single application of 1 to 1 1/2 qt. per acre as soon as possible after planting; if wheat and weeds have emerged, apply before weeds are 3" to 4" tall. Alternatively, apply a tank mixture of HELENA BRAND 4.8 LB. DIURON FLOWABLE HERBICIDE plus bromoxynil as detailed above for "East of Cascade Range."

**Other Areas:** Make a single application in the spring as soon as wheat (fall-planted) starts to grow and before weeds are 2" tall. Application later than May 1 may give poor results.

**Central Plains and Midwest:** Use 2/3 to 1 1/3 qts. per acre.

**Kansas, Oklahoma and Texas:** Use 1 to 1 1/3 qt per acre.

**Northeast:** Use 2/3 to 1 qt per acre.

**FRUIT AND NUT CROPS (See Soil Limitations)**

Unless otherwise directed, make a single application per year as a directed spray; avoiding contact of foliage and fruit with spray or drift. Do not graze livestock in treated orchards or groves.

**APPLES:** Use HELENA BRAND 4.8 LB. DIURON FLOWABLE HERBICIDE alone, or apply as a tank mixture with Sinbar® Weed Killer.

**HELENA BRAND 4.8 LB. DIURON FLOWABLE HERBICIDE Alone –** Use only under trees established in the orchard for at least 1 year; do not treat varieties grafted on full-dwarf root stocks. Apply 2 2/3 qts. per acre in the spring (March through May). In the Far West, treatment may be made in winter (December through February), or apply 1 1/2 qts. per acre as postharvest treatment followed by 1 1/2 qts. in the spring.

**HELENA BRAND 4.8 LB. DIURON FLOWABLE HERBICIDE + Sinbar® –** Use only trees established in the orchard for at least 2 years. Apply either in the spring or after harvest in the fall before weeds emerge or during early seedling stage of weed growth.

Soil Texture	Product Per Acre	
	1 to 2% Organic Matter HELENA BRAND 4.8 LB. DIURON FLOWABLE HERBICIDE + Sinbar®	More than 2% Organic Matter HELENA BRAND 4.8 LB. DIURON FLOWABLE HERBICIDE + Sinbar®
Sandy loam	2/3 qt. + 1 lb.	1 qt. + 1 1/2 lbs.
Loam, silt loam, silt	1 qt. + 1 1/2 lbs.	1 1/3 qts. + 2 lbs.
Clay loam, clay	1 1/3 qts. + 2 lbs.	1 1/3 qts. + 2 lbs.

Where crop is grown under furrow irrigation or under raised-berm flood irrigation (trees 4" to 6" above waterline), apply only as a band treatment. Do not treat trees planted in the bottom of irrigation furrows, nor trees grown under flat flood or basin irrigation, as injury to trees may result. Where complete weed control to harvest is desired, additional weed control measures may be required during the growing season.

**BANANAS AND PLANTAINS – New Plantings:** To control annual weeds, apply 1 to 2 qts. per acre after planting but before weeds emerge. Do not apply to loose soil directly over the planting material.

**Established Plantings:** For control of annuals and for top-kill of perennials such as bermudagrass, birdseed grass and Guineagrass, apply 2 to 4 qts. per acre plus 1 pt. of an approved non-ionic surfactant (or suitable equivalent) per 25 gals of spray; avoid contact of plants with spray or drift as injury may result. When tall, dense weed growth is present, remove weed growth before application. If application is made to soil free of weeds, omit the surfactant from the spray. Repeat treatment as needed, but do not apply more often than 6-week intervals nor more than a total of 8 qts. Per acre (broadcast basis) in a 12-month period.

**NOTE:** Do not replant treated areas to any crop within 2 years after last application as injury to subsequent crops may result, except that sugarcane or pineapple may be planted one year after last application.

**BLUEBERRIES, CANEBERRIES AND GOOSEBERRIES:** Use only in fields which have been established for at least 1 year. Do not apply to berries interplanted with fruit trees; do not apply to plants whose roots are exposed as injury may result. Apply as a band treatment at base of canes or brushes; for spring application, apply before germination and growth of annual weeds.

**INDIANA, MICHIGAN AND OHIO – BLUEBERRIES:** Apply 1½ to 2½ qts. Per acre in late spring, alternatively, apply 1½ qts. per acre in fall and repeat at same rate in the spring. **RASPBERRIES:** Apply 2 qts. per acre in the spring.

**MASSACHUSETTS – BLUEBERRIES:** Apply 1½ qts. per acre in late spring.

**NEW JERSEY – BLUEBERRIES:** For control of winter annuals, apply 1½ qts. per acre in October, November or December, or a single application of 1½ qts. per acre may be applied in early to mid spring.

**CALIFORNIA – RASPBERRIES, BLACKBERRIES, BOYSENBERRIES, DEWBERRIES AND LOGANBERRIES:** For control of winter annuals, apply 1½ qts. per acre in October and November; repeat at same rate in late spring or control summer annuals. A single application of 2 qts. per acre in January or February will control both winter and summer annuals in some areas, but the separate fall and spring schedule is preferred.

**WESTERN OREGON AND WESTERN WASHINGTON – BLUEBERRIES, CANEBERRIES AND GOOSEBERRIES:** Use same schedule as recommended for California.

**CITRUS:** Use only under trees established in the grove for at least 1 year. Time application as indicated for specific areas, except application may be made any time of the year where sprinkler or flood irrigation can be timed to activate the herbicide. Established perennial weeds require other special control procedures. Do not apply under citrus trees that have been subjected to freezing within 6 months.

**ARIZONA (EXCEPT YUMA AREA) AND CALIFORNIA (EXCEPT IMPERIAL AND COACHELLA VALLEYS) – ORANGES, LEMONS AND GRAPEFRUIT:** Apply 2 to 2½ qts. per acre shortly after grove has been laid-up in final form (non-tillage program) in late fall or early winter. Alternatively, apply 1½ qts. per acre in October or November and repeat at the same rate in March and April. Subsequent annual applications of 1½ to 2 qts. per acre will usually give adequate weed control.

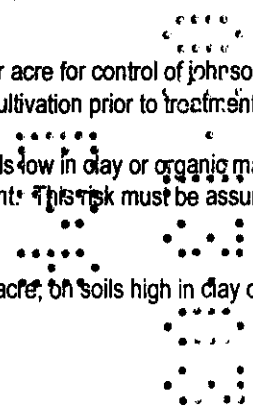
**FLORIDA – ORANGES, GRAPEFRUIT, TANGELOS AND TANGERINES:** Make a single application of 2½ to 5½ qts. per acre, or apply 2 to 2½ qts. per acre followed by the same rate 4 to 6 months later. On bearing citrus, apply any time when seasonal rains are expected; on nonbearing trees, apply when winter banks are pulled down.

For control of Guineagrass, loosestrife, Maidencane, paragrass, primrose willow and seamyrtle in ditches adjacent to citrus groves, use ¾ qt. per 1000 sq. ft. (40 lbs. per acre) in sufficient water (min. 4 gals. Per 1000 sq. ft.) to provide thorough and uniform coverage. Apply in the spring before weed growth starts or after removal of vegetation. Repeat treatment on a spot basis to control hard-to-kill species such as Guineagrass. In bedded groves, do not treat water furrows between the beds as injury to the trees may result.

**TEXAS – ORANGES AND GRAPEFRUIT:** Apply 1½ to 2½ qt. per acre for annual weeds; use 2½ to 4 qt. per acre for control of johnsongrass seedlings. Best results accompany application in the spring; well-established weeds should be eliminated by cultivation prior to treatment.

**GRAPES:** Apply only in established vineyards (at least 3 years old) as a band treatment to grape rows. On soils low in clay or organic matter (1 to 2%) severe plant injury may result if heavy rainfall or more than one inch of irrigation occurs soon after treatment. This risk must be assumed by the user.

**EAST OF THE ROCKY MOUNTAINS:** On soils low in clay or organic matter (1 to 2%), apply 1½ to 2 qts. per acre, on soils high in clay or organic matter, apply 2 to 4 qts. per acre. Apply in the spring just prior to germination and growth of annual weeds.



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**WEST OF THE ROCKY MOUNTAINS:** Apply in November, December or January. For initial treatment, apply 2 to 2½ qt. per acre; subsequent annual applications of 1½ qts. per acre will usually give adequate weed control. Do not apply to vines with trunks less than 1½" in diameter as injury may result.

**NEW YORK AND PENNSYLVANIA – PERENNIAL GRASSES:** Use only in established vineyards (at least 4 years old) for spot control of perennial grasses such as orchardgrass, quackgrass and ryegrass. Apply in the spring as a band treatment to ridged soil (2" to 4" high) under the trellis at the rate of 5½ to 8 qts. per acre. Band width should not exceed 30". Do not apply more than once every 4 years. Use only on heavy soils such as loams, silt loams, clay loams. Do not use in areas where grape roots are shallow or exposed because of high bedrock, poor drainage, or erosion as injury to grapes may result.

**MACADAMIA NUTS – HAWAII:** Use only under trees established in the orchard for at least 1 year. Apply 1½ to 4 qts. per acre immediately after harvest, preferably before weeds emerge; if weeds have emerged, add 1 pt. of an approved non-ionic surfactant per 25 gals. of spray. Retreat as needed but do not exceed 6¾ qts. per acre per year.

**OLIVES – CALIFORNIA:** Use only under trees established in the grove for at least 1 year. Apply 1½ qt. per acre after grove has been laid-up in final form in late October or November; repeat at same rate in March or April. Remove weed growth prior to treatment.

**PAPAYAS:** Use only under trees established in the orchard for at least 1 year. Apply 1½ to 3½ qt. per acre, preferably before weeds emerge; if weeds have emerged, add 1 pt. of an approved non-ionic surfactant per 25 gals. of spray.

**PEACHES:** Use HELENA BRAND 4.8 LB. DIURON FLOWABLE HERBICIDE alone, or apply as a tank mixture with Sinbar®.

**HELENA BRAND 4.8 LB. DIURON FLOWABLE HERBICIDE Alone –** Use only under trees established in the orchard for at least 3 years. Apply 1½ to 3½ qts. per acre in the early spring before weeds emerge or during the early seedling stage of weed growth. Do not apply within 3 months of harvest; in the Far West, do not apply within 8 months of harvest.

**HELENA BRAND 4.8 LB. DIURON FLOWABLE HERBICIDE + Sinbar® –** Use only under trees established in the orchard for at least 2 years. Apply wither in the spring or after harvest in the fall before weeds emerge or during early seedling stage of weed growth.

Soil Texture	Product Per Acre	
	1 to 2% Organic Matter HELENA BRAND 4.8 LB. DIURON FLOWABLE HERBICIDE + Sinbar®	More than 2% Organic Matter HELENA BRAND 4.8 LB. DIURON FLOWABLE HERBICIDE + Sinbar®
Sandy loam	¾ qt. + 1 lb.	1 qt. + 1½ lbs.
Loam, silt loam, silt	1 qt. + 1½ lb.	1½ qt. + 2 lbs.
Clay loam, clay	1½ + 2 lbs.	1½ qt. + 2 lbs.

Where crop is grown under furrow irrigation or under raised-berm flood irrigation (trees 4" to 6" above waterline), apply only as a band treatment. Do not treat trees planted in the bottom of irrigation furrows, nor trees grown under flat flood or basin irrigation; as injury to trees may result. Where complete weed control to harvest is desired, additional weed control measures may be required during the growing season.

**PEARS:** Use only under trees established in the orchard for at least 1 year; do not treat varieties grafted on full-dwarf root stocks. Apply 2½ qts. per acre in the spring (March through May). In the Far West, treatment may be made in winter (December through February), or apply 1½ qts. per acre as a postharvest followed by 1½ qts. in the spring.

**PECANS:** Use HELENA BRAND 4.8 LB. DIURON FLOWABLE HERBICIDE alone or apply as a tank mixture with Sinbar®. Make a single band or broadcast application as a directed spray using a minimum of 30 gals. of water per acre. Apply in the spring before weeds emerge or during the early seedling stage of growth.

Soil Texture	Product Per Acre	
	HELENA BRAND 4.8 LB. DIURON FLOWABLE HERBICIDE Alone*	Tank Mixture HELENA BRAND 4.8 LB. DIURON FLOWABLE HERBICIDE + Sinbar® *
Sandy loam	1½ qts.	1 qt. + 1½ lbs.
Loam, silt loam, silt	2 qts.	1 1/6 qt. + 1¾ lbs.
Clay loam, clay	2¾ qts.	1½ qt. + 2 lbs.

\* Use only on trees established in the grove for at least 3 yrs. and on soils with at least ½% organic matter.

\*\*Use on trees established in the grove for at least 1 yr. and on soils with at least 1% organic matter.

NOTE: Do not use on eroded areas where subsoil or roots are exposed, nor on trees that are diseased or lacking in vigor or on trees planted in irrigation furrows as injury to the trees may result.

**PINEAPPLE – HAWAII AND FLORIDA:** Apply 2½ to 5½ qts. per acre as a broadcast spray just before or immediately after planting but prior to weed emergence. Use 2½ qts. per acre after harvesting plant crop (for ratoon crop). For plant crop only, a second and third broadcast or interspace application may be made prior to differentiation at the rate of 1½ qts. per acre. Do not apply more than 3 broadcast sprays (maximum 8 qts. per acre) prior to differentiation not more than 10½ qts. total per acre per plant crop. Treated areas may be planted to pineapple or sugarcane 1 year after last application.

**WALNUTS (ENGLISH) – CALIFORNIA:** Use only under trees established in the orchard for at least 1 year. As an initial treatment, apply 2 to 3½ qts. per acre after the orchard has been laid-up in final form (nontillage program) in late fall or early winter; retreat annually with 1½ to 2 qts. per acre. Alternatively, apply 1½ qts. per acre in October or November and repeat at same rate in March or April.

**ORNAMENTAL CROPS (See Soil Limitations)**

**ORNAMENTAL BULB CROPS (BULBOUS IRIS, NARCISSUS) – WESTERN WASHINGTON:** Make a single application of 2½ qts. per acre. Apply after planting but no later than 4 weeks prior to bulb emergence (usually late September or October). Do not replant treated areas to any crop within 1 year after last application as injury to subsequent crops may result.

**PLUMOSUS FERN – FLORIDA:** Hand weed and mow fern; then make a single application of 2 qts. per acre within 3 to 5 days. Do not cultivate or disturb soil after application as crop injury may result. Treat only established stands at least 1 year old.

**TREE PLANTINGS – COLORADO, MONTANA, NEBRASKA, NORTH DAKOTA, SOUTH DAKOTA, WYOMING:** Use only under established plantings (1 year or older) of American elm, caragana, cottonwood, Douglas Fir, green ash, honeysuckle, Ponderosa pine, redcedar, Russian olive and Siberian elm. Use 1½ to 3½ qts. per acre; apply as a band 4 ft. wide in the tree row (2 ft. on each side of row).

For example, 1 oz. of **HELENA BRAND 4.8 LB. DIURON FLOWABLE HERBICIDE** (4 level tablespoonfuls) treats 135 ft. of tree row (2 ft. on each side of row) at the rate of 3½ qts. per acre. Apply as directed spray in early spring before weeds emerge and before trees leaf out. Do not apply to foliage of trees, nor under trees growing in low areas as injury to the trees may result.

**NON-CROP WEED CONTROL**

**AROUND FARM BUILDINGS, STORAGE AREAS, INDUSTRIAL PLANT SITES, PETROLEUM TANK FARMS, UTILITY HIGHWAY PIPELINE, LUMBER YARDS, IRRIGATION AND DRAINAGE DITCHES**

**HELENA BRAND 4.8 LB. DIURON FLOWABLE HERBICIDE** is an effective herbicide for the control of many annual and perennial grasses and herbaceous weeds on non-cropland areas where bare ground is desired. The degree of control and duration of effect will vary with the amount of chemical applied, soil type, rainfall and other conditions.

**HELENA BRAND 4.8 LB. DIURON FLOWABLE HERBICIDE** may be used as a pre-emergence treatment at any time of the year except when ground is frozen, provided adequate moisture is supplied by rainfall or artificial means to activate the herbicide. Best results are obtained if application is made to the soil shortly before weed growth begins. If dense growth is present, remove tops and spray the ground.

Increase contact activity on established weeds may be obtained by the addition of an approved non-ionic surfactant at the rate of 2 qts. per 100 gals. of spray mixture. Apply as a drenching spray to actively growing weeds during warm weather when daily temperature will exceed 70 degrees F. Observe all cautions and limitations on labeling of all products used in mixtures.

**GROUND APPLICATION:** Apply in enough water to insure good coverage.

**AERIAL APPLICATION:** For lower rates, 3½ to 13½ qts. of **HELENA BRAND 4.8 LB. DIURON FLOWABLE HERBICIDE** per acre, apply in 10-15 gallons of water per acre. For higher rates, 13½ qts. to 10 gallons of **HELENA BRAND 4.8 LB. DIURON FLOWABLE HERBICIDE**, apply in a minimum of 15 gallons of total spray mixture.

**GENERAL WEED CONTROL:** To control most weeds for an extended period of time on non-cropland such as utility, highway, pipeline and railroad right of ways, petroleum tank farms, lumberyards, storage areas, industrial plant sites, and around farm buildings.

Apply to these areas at the rate of 3½ to 13½ qts. of **HELENA BRAND 4.8 LB. DIURON FLOWABLE HERBICIDE** per acre to control most annual weeds. Use 13½ qts. to 10 gallons per acre for perennial weeds; additional treatment may be required where a longer period of control is desired or when hard to kill, deep-rooted perennial weeds such as Johnsongrass are present. In low rainfall areas, **HELENA BRAND 4.8 LB. DIURON FLOWABLE HERBICIDE** may not provide satisfactory control of deep-rooted perennial weeds.

For weed control on small areas, use one-half cupful of **HELENA BRAND 4.8 LB. DIURON FLOWABLE HERBICIDE** per 100 sq. ft. for a dosage of approximately 8½ gallons per acre.

**IRRIGATION AND DRAINAGE DITCHES:** Apply 3½ to 13½ qts. per acre to control most annual weeds; use 13½ qts. to 10 gallons per acre to control both annual and perennial weeds. For irrigation ditches and during the non-crop season, and when ditch is not in use. To minimize

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movement of HELENA BRAND 4.8 LB. DIURON FLOWABLE HERBICIDE with irrigation water (to avoid possible crop injury), it is essential that the herbicide be fixed in the soil by moisture. Apply before expected seasonal rainfall (if possible when soil in the ditch is still moist). Following treatment, if rainfall has not totaled at least 4 inches, fill ditch with water and allow the water to stand for 72 hours, then drain off the water before using ditch. Do not treat any ditch into which roots of trees or other desirable plants may extend as injury may result.

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

**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 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 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.

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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