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62719-311

8/5/99

1 of 30



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

AUG - 5 1999

Mr. Alan C. Katz  
Agent of Dow AgroSciences LLC  
Sanachem USA, Inc.  
P.O. Box 363  
Gainesville, VA 20156

OFFICE OF  
PREVENTION, PESTICIDES AND  
TOXIC SUBSTANCES

Dear Mr. Katz:

Subject: Diuron 4L  
EPA Registration No. 62719-311  
Your Letter Dated May 21, 1999

The labeling referred to above submitted in connection with registration under the Federal Insecticide, Fungicide, and Rodenticide Act, as amended is acceptable provided you make the following changes to your label before you release the product for shipment.

1. A statement must be added to the label underneath the active ingredient statement stating the amount active ingredient per gallon of product.
2. Refer to the enclosed Spray Drift Management attachment for statements required on the labels of all products that are applied by aerial application. Incorporate these changes into your label.

Please submit three(3) copies of your final printed labeling bearing the above changes. A stamped copy of labeling is enclosed for your records.

Please note it is recommended that you revise your first aid statements to read as in the attachment "Standard First Aid Statements for Pesticide Products."

Sincerely,

*James A. Tompkins*  
James A. Tompkins  
Product Manager 25  
Herbicide Branch  
Registration Division (7505C)



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

OFFICE OF  
PREVENTION, PESTICIDES  
AND TOXIC SUBSTANCES

Attachment-Spray Drift Management

Under the heading Spray Drift Management the text should read as follows:

Avoiding spray drift at the application site is the responsibility of the applicator. The interaction of many equipment-and-weather-related factors 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 drift 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 Inversion section of this label).

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**-Use the lower spray pressures recommended for the nozzle. Higher pressure reduces droplet size and does not improve canopy protection. 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 backwards, parallel to the airstream will produce larger droplets than other orientations. 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 larger droplets than other nozzle types.

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

Applications 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 set and often continue into the morning. Their presence can be indicated by ground fog; however, if fog is not present, inversions can also be identified by the movement of smoke from a ground source or an aircraft smoke generator. Smoke that layers and moves literally in a connected 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).

Attachment 2 to the Guidance Document

Standard First Aid Statements for Pesticide Products\*

Route of Exposure and Toxicity Category	First Aid Statement*
Ingestion treatment for acute oral toxicity categories 1, 2 and 3	If swallowed: -Call a poison control center or doctor immediately for treatment advice -Have person sip a glass of water if able to swallow. -Do not induce vomiting unless told to by a poison control center or doctor.
Acute oral toxicity category 4	Statement is not required. Registrants may use toxicity category 1-3 statements if they choose.
Skin exposure treatment for acute dermal toxicity, and irritation categories 1, 2 and 3	If on skin: -Take off contaminated clothing. -Rinse skin immediately with plenty of water for 15-20 minutes. -Call a poison control center or doctor for treatment advice.
Dermal and skin irritation toxicity category 4	Statement is not required. Registrants may use toxicity category 1-3 statements if they choose.
Inhalation treatment for acute toxicity categories 1, 2 and 3	If inhaled: -Move person to fresh air. -If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. -Call a poison control center or doctor for further treatment advice.
Inhalation toxicity category 4	Statement is not required. Registrants may use toxicity category 1-3 statements if they choose.
Eye exposure treatment for eye irritation categories 1, 2 and 3	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. -Call a poison control center or doctor for treatment advice.
Eye irritation toxicity category 4	Statement is not required. Registrants may use toxicity category 1-3 statements if they choose.
General information to include either near the first aid statement or emergency phone number.	-Have the product container or label with you when calling a poison control center or doctor or going for treatment.

\* Some chemicals may require different first aid statements than the ones shown in this table.

ACCEPTED  
with COMMENTS  
In EPA Letter Dated

AUG - 5 1999

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

62719-311

(Base Label):

(Logo) Dow AgroSciences LLC

# DIURON 4L

For selective control of many annual and perennial grasses and herbaceous weeds in certain crops and for nonselective weed control in noncropland areas.

Active Ingredient:

Diuron: 3-(3, 4-dichlorophenyl)- 1,1-dimethylurea	40.0%
Inert Ingredients .....	<u>60.0%</u>
Total .....	100.0%

### Keep Out of Reach of Children

## CAUTION PRECAUCION

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.)

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### Precautionary Statements

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#### Hazards to Humans and Domestic Animals

**Causes Moderate Eye Irritation • Harmful If Swallowed Or Absorbed Through The Skin • May Irritate Nose Throat And Skin**

Avoid contact with eyes, skin or clothing. Avoid breathing spray mist. Wash thoroughly with soap and water after handling.

#### Personal Protective Equipment (PPE)

Applicators and other handlers must wear:

- Long-sleeved shirt and long pants
- Waterproof gloves
- Shoes plus socks

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

#### Engineering Controls

When handlers use closed systems, enclosed cabs or aircraft in a manner that meets the requirements listed in the Worker Protections Standard (WPS) for agricultural pesticides [40 CFR 170.240 (d) (4-6)], the handler PPE requirements may be reduced or modified as specified in the WPS.

#### User Safety Recommendations

Users should:

- Wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet.
- Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.

**First Aid**

**If in eyes:** Flush eyes with plenty of water. Get medical attention if irritation persists.

**If swallowed:** Contact a physician or Poison Control Center. Drink 1 or 2 glasses of water and induce vomiting by touching back of throat with finger. If person is unconscious, do not give anything by mouth and do not induce vomiting.

**If on skin:** Wash with plenty of soap and water. Get medical attention if irritation persists.

**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 by cleaning of equipment or disposal of wastes. Do not apply when weather conditions favor drift from areas treated.

**Important:** Injury to or loss of desirable trees or other plants may result from failure to observe the following:

Do not apply (except as recommended for crop use), or drain or flush equipment on or near desirable trees or other plants, or on areas where their roots may extend, or in locations where the chemical may be washed or moved into contact with their roots. Do not use on home plantings of trees, shrubs, or herbaceous plants, or on lawns, walks, driveways, tennis courts, or similar areas. Prevent drift of dry powder or spray to desirable plants. Do not contaminate any body of water. Keep from contact with fertilizers, insecticides, fungicides, and seeds.

Thoroughly clean all traces of DIURON 4L from application equipment immediately after use. Flush tank, pump, hoses, and boom with several changes of water after removing nozzle tips and screens (clean these parts separately).

**Agricultural Use Requirements**

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR part 170. Refer to the label booklet under "Agricultural Use Requirements" in the Directions for Use section for information about this standard.

**Refer to label booklet for Directions for Use including Storage and Disposal.**

**Notice:** Read the entire label. Use only according to label directions. **Before buying or using this product, read Warranty Disclaimer and Limitation of Remedies.**

In case of emergency endangering health or the environment involving this product, call 1-800-992-5994. If you wish to obtain additional product information, visit our web site at [www.dowagro.com](http://www.dowagro.com).

Agricultural Chemical: Do not ship or store with food, feeds, drugs or clothing.

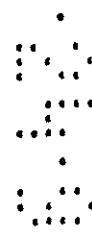
EPA Reg. No. 62719-311

EPA Est. \_\_\_\_\_

**Dow AgroSciences LLC • Indianapolis, IN 46268 USA**

**Herbicide**

Net Contents  gallons.



(Datapack Cover)

(Logo) Dow AgroSciences LLC

# DIURON 4L

**For selective control of many annual and perennial grasses and herbaceous weeds in certain crops and for nonselective weed control in noncropland areas.**

**Active Ingredient:**

Diuron: 3-(3, 4-dichlorophenyl)- 1,1-dimethylurea	40.0%
Inert Ingredients .....	60.0%
Total .....	100.0%

**Keep Out of Reach of Children**

## CAUTION PRECAUCION

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.)

**Agricultural Use Requirements**

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR part 170. Refer to the label booklet under "Agricultural Use Requirements" in the Directions for Use section for information about this standard.

**Refer to inside of label booklet for additional precautionary information including Personal Protective Equipment (PPE), User Safety Recommendations and Directions for Use including Storage and Disposal.**

**Notice:** Read the entire label. Use only according to label directions. **Before buying or using this product, read Warranty Disclaimer and Limitation of Remedies.**

In case of emergency endangering health or the environment involving this product, call 1-800-992-5994. If you wish to obtain additional product information, visit our web site at [www.dowagro.com](http://www.dowagro.com).

Agricultural Chemical: Do not ship or store with food, feeds, drugs or clothing.

EPA Reg. No. 62719-311

EPA Est. \_\_\_\_\_

**Dow AgroSciences LLC • Indianapolis, IN 46268 USA**

## Herbicide

**Net Contents \_\_ gallons.**



(page 1 through end):

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## Precautionary Statements

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### Hazards to Humans and Domestic Animals

# CAUTION

**Causes Moderate Eye Irritation • Harmful If Swallowed Or Absorbed Through The Skin • May Irritate Nose Throat And Skin**

Avoid contact with eyes, skin or clothing. Avoid breathing spray mist. Wash thoroughly with soap and water after handling.

### Personal Protective Equipment (PPE)

**Applicators and other handlers must wear:**

- Long-sleeved shirt and long pants
- Waterproof gloves
- Shoes plus socks

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

### Engineering Controls

When handlers use closed systems, enclosed cabs or aircraft in a manner that meets the requirements listed in the Worker Protections Standard (WPS) for agricultural pesticides [40 CFR 170.240 (d) (4-6)], the handler PPE requirements may be reduced or modified as specified in the WPS.

### User Safety Recommendations

Users should:

- Wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet.
- Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.

### First Aid

**If in eyes:** Flush eyes with plenty of water. Get medical attention if irritation persists.

**If swallowed:** Contact a physician or Poison Control Center. Drink 1 or 2 glasses of water and induce vomiting by touching back of throat with finger. If person is unconscious, do not give anything by mouth and do not induce vomiting.

**If on skin:** Wash with plenty of soap and water. Get medical attention if irritation persists.

### Environmental Hazards

For terrestrial uses, do not apply directly to water, or to areas where surface water is present, or to intertidal areas below the mean high water mark. Do not contaminate water by cleaning of equipment or disposal of wastes. Do not apply when weather conditions favor drift from areas treated

**Important:** Injury to or loss of desirable trees or other plants may result from failure to observe the following:

Do not apply (except as recommended for crop use), or drain or flush equipment on or near desirable trees or other plants, or on areas where their roots may extend, or in locations where the chemical may be washed or moved into contact with their roots. Do not use on home plantings of trees, shrubs, or herbaceous plants, or on lawns, walks, driveways, tennis courts, or similar areas. Prevent drift of dry powder or spray to desirable plants. Do not contaminate any body of water. Keep from contact with fertilizers, insecticides, fungicides, and seeds.

Thoroughly clean all traces of DIURON 4L from application equipment immediately after use. Flush tank, pump, hoses, and boom with several changes of water after removing nozzle tips and screens (clean these parts separately).

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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 of 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
- Waterproof gloves
- Shoes plus socks

### Non-Agricultural Use Requirements

The requirements of 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.

**Entry Restrictions for Non-WPS Uses:** For applications to non-cropland, do not enter or allow worker entry into treated areas until sprays have dried, unless applicator and other handler PPE is worn.

### Storage and Disposal

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

**Storage Instructions:** Storage should be under lock and key and secure from access by unauthorized persons and unknowledgeable persons. Storage should be in a cool, dry area away from any heat or ignition source. Avoid storage at high temperatures. Do not stack over 2 pallets high to prevent crushing. Move containers carefully so as not to puncture. Do not move containers from one area to another unless they are securely sealed. Keep container tightly sealed when not in use. Keep away from any puncture source. Avoid storage near water supplies, food, feed and fertilizer to avoid contamination. Store in original container only.

If the contents are leaking or material is spilled follow these steps:

1. Collect and place in suitable containers for disposal.
2. Wash area with water and soap to remove remaining pesticide.
3. Follow washing with clean water rinse.
4. Do not allow run-off to enter sewer or contaminate water supplies.
5. Dispose of waste as indicated below.

**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, if allowed if allowed by State and local authorities, by burning. If burned, stay out of smoke.

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## GENERAL INFORMATION

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DIURON 4L is to be mixed with water and applied as a spray for selective control of weeds in certain crops and for nonselective weed control on noncropland areas. It is non-corrosive to equipment, non-flammable and non-volatile.

DIURON 4L 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 two weeks of application.

DIURON 4L applied pre-emergence, before emergence of crop and weeds, is an effective procedure because susceptible weeds are controlled in an early, vulnerable seedling state before they compete with the crop. With favorable moisture conditions, DIURON 4L continues to control weeds for some time as the crop becomes better able to compete. Should weed seedlings begin to break through the pre-emergence treatment in significant numbers, secondary weed control procedures should be implemented; these include cultivation and postemergence herbicide application.

DIURON 4L 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 surfactant such as Surf-Ac 820 to the spray (where recommended) increases contact effects of DIURON 4L.

DIURON 4L may be used as a directed post-emergence application. Adjust spray nozzles so that weeds are sprayed but contact of crop foliage and/or fruit with spray or mist is avoided, as injury may occur, on the following crops: artichoke, corn (field), cotton, sorghum (grain), sugarcane, and established plantings of apples, bananas, plantains, blueberries, caneberries, gooseberries, citrus, grapes, macadamia nuts, olives, papayas, peaches, pears, pecans, walnuts and certain tree plantings.

Under specified conditions (see Directions for Use), DIURON 4L without surfactant may be applied over the top of alfalfa (established, dormant or semi-dormant), asparagus (established), birdsfoot trefoil (established, dormant), grass seed crops (established), oats, red clover (established, dormant), sugarcane, wheat, pineapple and plumosus fern (established, mowed).

Weed species vary in susceptibility to DIURON 4L and they may be more difficult to control when under stress. Combinations of DIURON 4L with other herbicides (as registered) increase the number of weed species controlled; consult labels of the companion product for this and other information. Observe all cautions and limitations on labeling of all products used in mixtures.

Since the effect of DIURON 4L varies with soils, uniformity of application, and environmental conditions, it is suggested that growers limit their first use to small areas.

**RE-PLANTING:** Unless otherwise directed, do not re-plant treated areas to any crop within 2 years after last application as injury to subsequent crops may result.

Failure to follow the directions for use and precautions on this label may result in poor weed control, crop injury or illegal residue.

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## APPLICATION PROCEDURES

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### **CHEMIGATION (Except California)**

Apply this product only through sprinklers including center pivot, lateral move, end tow, side (wheel) roll, traveler, big gun, solid set, or hand move irrigation system(s). Do not apply this product through any other type of irrigation system.

Crop injury, lack of effectiveness, or illegal pesticide residues in the crop can result from non-uniform distribution of treated water.

If you have questions about calibration, you should contact State Extension Service specialists, equipment manufacturers or other experts.

Do not connect an irrigation system (including greenhouse systems) used for pesticide application to a public water system unless the pesticide label-prescribed safety devices for public water systems are in place.

A person knowledgeable of the chemigation system and responsible for its operation, or under the supervision of the responsible person, shall shut the system down and make necessary adjustments should the need arise.

Public water system means a system for the provision to the public of piped water for human consumption if such system has at least 15 service connections or regularly serves an average of at least 25 individuals daily at least 60 days out of the year.

Chemigation systems connected to public water systems must contain a functional, reduced-pressure zone, back-flow preventer (RPZ) or the functional equivalent in the water supply line upstream from the point of pesticide introduction. As an option to the RPZ, the water from the public water system should be discharged into a reservoir tank prior to pesticide introduction. There shall be a complete physical break (air gap) between the outlet end of the fill pipe and the top or overflow rim of the reservoir tank of at least twice the inside diameter of the fill pipe.

The pesticide injection pipeline must contain a functional, automatic, quick closing check valve to prevent the flow of fluid back toward the injection pump.

The pesticide injection pipeline must contain a functional, normally closed, solenoid-operated valve located on the intake side of the injection pump and connected to the system interlock to prevent fluid from being withdrawn from the supply tank when the irrigation system is either automatically or manually shut down.

The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops, or in cases where there is no water pump, when the water pressure decreases to the point where pesticide distribution is adversely affected.

The system must use a metering pump, such as a positive displacement injection pump (e.g., diaphragm pump) effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock.

Do not apply when wind speed favors drift beyond the area intended for treatment.

Continuous agitation of the pesticide supply tank for the duration of the application period is recommended.

The pesticide is to be applied continuously for the duration of the water application.

#### **Mixing Instructions**

Prepare mixture with a minimum of 1 part water to 1 part product.

#### **Sprinkler Chemigation (Except California)**

The system must contain a functional check valve, vacuum relief valve, and low pressure drain appropriately located on the irrigation pipeline to prevent water source contamination from back-flow.

The pesticide injection pipeline must contain a functional, automatic, quick closing check valve to prevent the flow of fluid back toward the injection pump.

The pesticide injection pipeline must also contain a functional, normally closed, solenoid-operated valve located on the intake side of the injection pump and connected to the system interlock to prevent fluid from being withdrawn from the supply tank when the irrigation system is either automatically or manually shut down.

The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops.

The irrigation line or water pump must include a functional pressure switch which will stop the water pump motor when the pressure decreases to the point where pesticide distribution is adversely affected.

Systems must use a metering pump, such as a positive displacement injection pump (e.g. diaphragm pump) effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock.

#### **Pre-Emergence or Post-Emergence**

Apply this product alone, or in tank mixtures with other herbicides on this label which are registered for center pivot application, with irrigation water. Apply either after planting before crop and weeds emerge, or after crop emergence, but before lay-by (20 to 30 inches) and before weeds exceed 1½ inches in height. Apply at rates recommended on this label. Prepare mixture with a minimum of 1 part water to 1 part product. Injecting a larger volume of a more dilute slurry per hour will assure more accurate calibration of metering equipment. Maintain sufficient agitation to keep herbicide in suspension. Meter slurry into irrigation water during entire period. Apply in ½ - 1 inch of water. Use the lower water volume on coarser textured soils, the higher volume on finer textured soils. More than 1 inch of water may reduce weed control by moving herbicide below the effective zone in the soil. Inject dilute slurry into system through a positive displacement pump.

**Precautions**

1. Apply only through irrigation systems containing anti-siphon and check valves to prevent contamination of well during shutdown and overflow of solution.
2. Inject ahead of any right angle turn in the main line to insure adequate mixture.
3. Chemical injection pumps and water pumps must have interlocking controls to insure simultaneous shut-off.
4. Application when drift may occur from windy conditions, when system joints and connections are leaking, or when nozzles are not providing uniform distribution may cause crop injury.
5. Where sprinkler distribution patterns do not overlap sufficiently, unacceptable weed control may result. Where sprinkler distribution patterns overlap excessively, crop injury may result.

DIURON 4L should be used only in accordance with recommendations on this label.

Seller will not be responsible for losses or damages resulting from use of this product in any manner not specifically recommended. User assumes all risk associated with such non-recommended use.

**PRE-EMERGENCE USE (Germinating Weeds)**

DIURON 4L at recommended rates controls annual weed such as listed below.

**Broadleaf Weeds Controlled**

1 - 1.5 Pints per Acre	2.0 - 3.0 Pints per Acre	3.0 - 9.0 Pints per Acre
Lambsquarters Pigweed Purslane Ragweed	Annual groundcherry Annual morning glory Chickweed Corn spurry Dogfennel Fiddleneck (amsinckia) Gromwell Knawel Pennycress Shepherdspurse Tansymustard Wild buckwheat Wild lettuce Wild mustard	Ageratum annual smartweed Annual sowthistle Corn speedwell Dayflower Flora's paintbrush Hawksbeard Horseweed Kochia Marigold Mexican clover Pineappleweed Pokeweed Rabbit tobacco Spanishneedles Velvetleaf (buttonweed) Wild radish

**Grasses Controlled**

1 - 1.5 Pints per Acre	2.0 - 3.0 Pints per Acre	3.0 - 9.0 Pints per Acre
Barnyardgrass (watergrass) Crabgrass	Annual bluegrass Annual sweet vernalgrass Foxtail Rattail fescue Red sprangletop Velvetgrass	Annual lovegrass Annual ryegrass Johnsongrass seedling Kyllinga Orchardgrass Peppergrass Ricegrass Sandbur

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

#### Broadleaf Weeds Partially Controlled

1.5 Pints per Acre	6 Pints per Acre
Annual morning glory Cocklebur Prickly sida (teaweed) Sesbania Sicklepod	Horsenettle

#### Grasses Partially Controlled

6 Pints per Acre	12 - 15 Pints per Acre
Quackgrass	Guineagrass Maidencane Pangolagrass

#### POST-EMERGENCE USE (Emerged Seedling Weeds)

DIURON 4L at recommended rates controls annual weeds such as annual morning glory, barnyardgrass (watergrass), crabgrass, crowfoot, goosegrass, pigweed and purslane. Addition of a non-ionic surfactant to the spray (where recommended) increases contact effects of DIURON 4L. Best results are obtained on succulent weeds growing under conditions of high humidity and temperatures of 70°F or higher.

#### AERIAL APPLICATION

For alfalfa, asparagus, barley (winter), cotton (preplant or pre-emergence only), grass seed crops, pineapple, sugarcane and wheat (winter) application may be made by aircraft (5 - 10 gallons 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.

#### GROUND APPLICATION

**Equipment - Spray Volumes and Pressures:** Use a 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 bypass or return line is used, it should terminate at bottom of tank to minimize foaming. Avoid overlapping, and shut off spray booms while starting, turning, slowing or stopping, or injury to the crop may result.

For **pre-emergence application**, use 25 to 40 gallons per acre and spray pressure of 30 to 40 psi. For **post-emergence application**, use sufficient volume (minimum 25 gallons per acre) for thorough coverage of weed foliage; use spray pressure of 20 to 25 psi to keep spray drift to a minimum.

**Spray Preparation:** Mix required amount of DIURON 4L into necessary volume of water and, where use of a surfactant is recommended, dilute with 10 parts of water and add as last ingredient to nearly full tank.

**Use Rates:** All dosages of DIURON 4L are expressed as broadcast rates; for band treatment, use proportionately less. For example, use 1/3 of the broadcast rate when treating a 14 inches band where row spacing is 42 inches. 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 post-emergence application, use the lower rate on small 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; or on pecans where organic matter is less than ½%; or 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%; or on blueberries,



birdsfoot trefoil, caneberries, gooseberries, macadamia nuts and peppermint where organic matter is less than 2%.

On high organic matter soils (greater than 5%) such as peat or muck, **pre-emergence** weed control will be reduced.

**Re-planting:** Unless otherwise directed, do not re-plant treated areas to any crop within 2 years after last application as injury to subsequent crops may result.

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### **FIELD CROPS (See Soil Limitations)**

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A good seedbed must be prepared before pre-emergence use of DIURON 4L 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 soil should not be cultivated or disturbed after application of DIURON 4L 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 crop 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 or 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; or to flooded fields as crop injury may result. Do not spray on snow-covered or frozen ground.

**Idaho, Oregon, Washington:** Use 2.25 - 4.5 pints per acre for control of annual weeds. For control of volunteer alfalfa, use 6 pints per acre. Apply in fall after alfalfa becomes dormant but no later than mid-December.

**California (Dormant and Semi-Dormant Varieties):** Use 2.25 - 4.5 pints per acre. For control of volunteer alfalfa, use 6 pints 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 inches in height or diameter). Control of established weeds is improved by applying DIURON 4L with a suitable contact herbicide registered for such use. Sufficient rainfall for soil activation of DIURON 4L is unlikely in California after February 1. Treated areas may be re-planted to any crop after one year from last application if rate does not exceed 3 pints per acre.

**Arizona, Nevada:** Use 2.25 - 4.5 pints per acre; apply in Fall after alfalfa becomes dormant but no later than January.

**Eastern Colorado, Kansas:** For control of tansy-mustard, apply 1.5 pints per acre shortly after emergence of mustard in the Fall or Winter; use 3 pints per acre if weeds are 2 to 4 inches in height. Alternatively if other annual weeds are present, apply 3 - 4.5 pints per acre in February or March.

**Other Areas where Alfalfa Becomes Winter Dormant:** Use 2.25 - 4.5 pints per acre (2.25 - 3 pints per acre East of Appalachian Mountains). Apply in March or early April, but before Spring growth begins.

#### **ARTICHOKE**

**California:** Apply 3 - 6 pints per acre in late Fall or early Winter after the last cultivation. Apply before weeds germinate or to emerging seedlings. Direct spray to cover the area between the rows and at the base of artichoke plants, keeping contact with crop plants at a minimum.

## ASPARAGUS

Apply as a band or broadcast treatment. Do not apply to young plants during the first growing season (except as noted below), or to newly seeded asparagus, or on plants with exposed roots as severe injury may result. Pre-emergence weed control will be reduced on high organic matter soils (greater than 5%).

**Established Plantings:** On light sandy soils and other soils low in clay or organic matter, apply 1.5 - 3 pints per acre. On soils high in clay or organic matter, use 3 - 6 pints 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 4.5 pints per acre per application. In Washington (irrigated crop), apply a single treatment of 6 pints per acre. If treatment is delayed until late winter or early Spring, incorporation of the chemical in the top 1 to 2 inches of soil may substitute for lack of rain to activate the herbicide.

**Newly Planted Crowns - (San Joaquin Delta, California):** Make a single application of 3 - 6 pints 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. Soils must be settled by rainfall or irrigation prior to treatment. Do not treat crowns planted to a depth of less than 2 inches.

## BARLEY, WINTER (Drill-Planted)

**Western Oregon and Western Washington:** Make a single application of 2.25 - 3 pints per acre as soon as possible after planting but before emergence of barley. Do not re-plant treated areas to any crop within one year after last application as injury to subsequent crops may result.

## BERMUDAGRASS PASTURES (Newly Sprigged)

Apply 1.5 - 4.5 pints after planting and before emergence of bermudagrass or weeds. Alternatively, for control of emerged annual weeds up to 4 inches in height apply 0.75 - 1.5 pints per acre plus surfactant. If bermudagrass has emerged at time of treatment, temporary burn of exposed plant parts may occur.

Plant sprigs (stolons) 2 inches deep in a well-prepared seedbed; do not treat areas where sprigs are planted less than 2 inches 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 one year; do not apply to seedling trefoil as injury may result. Make a single application of 3 pints per acre when trefoil is dormant (October 15 to December 15). Do not re-plant treated areas to any crop within one year after last application as injury to subsequent crops may result.

## CORN (Field)

### Post-emergence

Make a single application of 1 pint per acre in combination with non-pressure nitrogen solution. If nitrogen solution is not used, apply 1.5 pints per acre plus surfactant. Apply as a directed spray when corn is at least 20 inches high and weeds are not taller than 3 inches. **Do not apply over top of corn.** Do not re-plant to any crop within one year except that cotton, corn and grain sorghum may be planted the Spring following treatment.

**Pre-Emergence**

**Arkansas, Louisiana, Mississippi and Tennessee:** Make a single application of 1 - 1.5 pints per acre as a broadcast or band treatment after planting but before corn emerges. Plant corn at least 1½ inches deep. Do not re-plant treated areas to crops other than corn or cotton within 4 months following band treatment and 6 months following broadcast treatment as crop injury may result.

**COTTON**

**Do not apply over the top of cotton plants.** During a single crop season, do not exceed the following amounts of DIURON 4L per acre as injury to subsequent crops may result: 1.5 pints on loamy sand; 2 pints on sandy loam; 3 pints on clay loam; 4 pints on clay.

Injury may occur if DIURON 4L is used in conjunction with soil-applied organic phosphate pesticides.

Do not allow livestock to graze treated cotton.

**Preplant**

**Arizona and California:** Use DIURON 4L alone, or apply as a separate operation following preplant broadcast treatment with trifluralin (incorporated according to directions on the trifluralin label). Apply DIURON 4L as a broadcast spray after beds are formed, pre-irrigated and final seedbeds prepared. Prior to planting, drag-off the tops of the beds and plant in moist soil not treated with DIURON 4L. 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:

**DIURON 4L alone:** 1.5 - 3.75 pints per acre.

**DIURON 4L following trifluralin:**

Product per Acre - Preplant		
Soil Texture	Trifluralin	DIURON 4L
Sandy loam, Loam, Silt loam, Silt	1 pint	1 - 1.5 pints
Sandy clay loam, Clay loam, Silty clay loam, Sandy clay, Clay	1.5 pints	1.5 - 1.87 pints

**Note:** Seedling disease may weaken plants and increase the possibility of injury from the use of trifluralin followed by DIURON 4L. 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.

**Pre-Emergence - U.S., Except Arizona and California:** Use DIURON 4L alone or apply as a separate operation following preplant treatment with trifluralin. Apply DIURON 4L 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 incorporation (no deeper than ¼ inch) 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 seedbed for subsequent early season post-emergence treatments. If moisture is insufficient to activate DIURON 4L or if soil becomes crusted before crop emerges, a shallow rotary hoeing (no deeper than ¼ inch) should be made before weeds become established.

Do not use on sand or loamy sand soils.

**DIURON 4L Alone:** Make a single application as a broadcast or band spray, using the following broadcast rates; for band treatment, use proportionately less.

Soil Texture†	Pints DIURON 4L per Acre
Sandy loam, Loam, Silt loam, Silt	1.5
Sandy clay loam, Clay loam, Silty clay loam, Sandy clay	1.87
Silty clay, Clay	3

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

**DIURON 4L Following Trifluralin Pre-Plant:** Apply trifluralin prior to planting as a broadcast or band treatment; incorporate according to directions on the trifluralin label. As a separate operation, apply DIURON 4L as a band treatment of 14 to 20 inches after planting but before cotton emerges. Use proportionately less for band treatment. See "Notes" under Pre-Plant above. Use the following rates:

Soil Texture†	Product per Acre	
	Pre-Plant Trifluralin	Pre-Emergence DIURON 4L
Sandy loam, Loam, Silt loam, Silt	1 pint	1.5 pint
Sandy clay loam, Clay loam, Silty clay loam, Sandy clay, Silty clay, Clay	1.5 pints	1.87 - 3 points

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

**Post-Emergence - U.S.:** Apply only as a directed spray to cover weed foliage; adjust nozzles to minimize contact of cotton leaves with spray or drift as crop injury may result. **Do not spray over top of cotton.**

**Early Season:** Apply when cotton is at least 6 inches tall and when weeds are actively growing and do not exceed 2 inches in height. Add a suitable surfactant and apply as a band treatment at the following rates:

Weed Problem (Up to 2 Inches Tall)	Pints DIURON 4L per Acre (Broadcast Basis)
Annual weeds	0.75
Pigweed	0.375

Two applications may be made if needed.

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 inches, add 1.5 - 2.5 pints of DSMA to above spray mixture. If DSMA is used, do not apply after first bloom.

**Late Season (Lay-by):** 1.5 - 2.25 pints per acre (1.5 - 3 pints in Arizona and California) when cotton is at least 12 inches tall (at least 20 inches 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 inches in height) at lay-by time, make a single application in combination with a surfactant, or use 0.75 - 1 pint DIURON 4L (plus surfactant) per acre and repeat later if needed.

**Re-planting:** If initial seeding fails to produce a stand cotton may be re-planted in soil treated preplant or pre-emergence with DIURON 4L, alone or following trifluralin. Wherever possible, avoid disturbing original bed. If necessary to rework soil before re-planting, use shallow cultivation such as disking; do not relist or move soil into the original drill area. Plant seed at least 1 inch deep. Do not re-treat field with a second preplant or pre-emergence application during the same crop year as injury to the crop may result.

**Subsequent crops**

DIURON 4L Type of Application	Crops that May Follow Treated Cotton
Band pre-emergence or post-emergence	Any crop 4 months after last Application
Band pre-emergence plus post-emergence or Broadcast pre-emergence (and Preplant) or Broadcast pre-emergence plus band post-emergence	Cotton, soybeans, corn or grain sorghums (not sorghos or forage sorghums or grass sorghums) the next Spring. Do not re-plant treated areas to any other crop within one year after last application as injury to subsequent crops may result.
Broadcast post-emergence (lay-by)	Cotton, corn, grain sorghums (not sorghos or forage sorghums or grass sorghums) the next Spring. Do not re-plant 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 trifluralin is used, follow instructions on trifluralin 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 3 - 4.5 pints 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 4.5 pints 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 3 - 6 pints per acre between October 1 and November 15. In fields where ash residues have accumulated from burning straw, use 4.5 - 6 pints per acre. Spread unburned chaff or straw with a harrow or chopper before application. If perennial velvetgrass (*Holcus lanatus*) is a problem, use 6 pints per acre. For best results, apply as soon as possible after Fall rains start. Established weed (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. Use 3 pints per acre.

**Oregon, Idaho and Washington:** For use in newly planted bentgrass, chewing fescue, Kentucky bluegrass, perennial ryegrass, orchardgrass and tall fescue. During planting operation spray Aqua Nu-Char® or Gro-Safe® or other suitable brands of activated charcoal as a 1-inch band on soil surface at a rate of 300 pounds per acre (broadcast basis: equivalent to 15 pounds per acre of crop where row spacing is 20 inches). Mount nozzles to apply directly over seed rows to prevent crop injury. Follow with DIURON 4L as a single broadcast spray at the rate of 3.75 - 4.5 pints per acre. Apply as soon as possible after planting but before crops or weeds emerge and before 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.

**Eastern Washington, Oregon and Idaho:** For use in established perennial bluegrass grown for seed, broadcast 0.75 - 2 pints of DIURON 4L per acre in enough diluent to ensure even distribution. Apply in Spring before rapid growth of the bluegrass begins and when the windgrass is still small (1 - 4 leaf stage). Do not use on coarse or sandy textured soils.

**OATS (Drill Planted)**

Do not re-plant 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 inches. Make a single application of 1.5 - 2 pints per acre after planting, either before 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 inches tall.

**Winter Oats and Mixtures With Peas or Vetch (Western Oregon and Western Washington):** Make a single application of 2.25 - 3 pints per acre as soon as possible after planting but before emergence of the crop.

**PEPPERMINT**

**Pacific Northwest:** Apply 3.75 pints per acre just after the last cultivation in the Spring prior to emergence of peppermint. Do not apply to newly planted (less than one year) or to emerged peppermint as injury may result.

**RED CLOVER**

**Western Oregon:** Make a single application of 3 pints per acre on red clover stands established for at least 9 months. Apply DIURON 4L when red clover is dormant (October 15 to December 15). Do not apply to seedling red clover, and do not re-plant treated area to any crop within one year after last application.

Treatment will control annual weeds such as bluegrass, chickweed, hawksbeard, rattail fescue, rye grass, and velvet grass.

**SORGHUM (GRAIN)**

**Southwestern States:** Apply 0.3 - 0.75 pints per acre; add surfactant. Apply as a directed post-emergence broadcast or band spray after sorghum is 15 inches tall to control weeds 2 to 4 inches in height. Do not spray over top of sorghum. Use the lower rate on broadleaf weeds up to 2 inches tall. Use the higher rate on grasses up to 2 inches and broadleaf weeds up to 4 inches 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 0.75 pints per acre. Treatment of weeds under drought stress is usually ineffective.

Do not re-plant 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 DIURON 4L 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 post-emergence sprays.

**Pre-emergence - Florida:** For high organic soils, apply 3 - 6 pints per acre as a broadcast or band spray prior to weed emergence after planting or after harvesting plant crop (for ratoon crop).

**Post-emergence - Florida:** Make 1 or 2 applications of 3 pints per acre as needed by directed inter-row spray. Alternatively, for panicum control, make up to 3 applications of 0.75 - 1.5 pints per acre, plus surfactant, as a directed spray after cane has emerged but before panicum exceeds 2 inches in height. 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 9 pints total per acre between planting (or ratooning) and harvest.

**Hawaii and Puerto Rico:** Apply 6 - 12 pints 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 3 - 6 pints per acre may be made as a broadcast spray over emerged cane or by directed inter-row spray.

If weeds are emerged, add a non-ionic surfactant to the spray at the rate of 2 - 4 pints per 100 gallons and apply as directed spray. **Do not spray over top of cane.**

Do not apply more than 3 treatments or more than 7.5 quarts (Puerto Rico) or 9 quarts (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 fallowing ground. Make a single application of 4.5 - 5.6 pints per acre at either of the following times.

**Fall Treatment (August through October):** Treat a 2-foot 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-foot 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 diuron 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, or on gravelly or sand loams low in organic matter (less than 1%).
- Do not use on thinly covered or exposed subsoil areas (clay knolls).
- Do not treat wheat planted less than 1 inch 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 re-plant treated areas to any other crop within 1 year after last treatment (except as noted) as injury to subsequent crops may result.

Check with your county agent or state extension specialist before using DIURON 4L in combination with surfactants or nitrogen solutions.

**Idaho, Oregon and Washington - East of Cascade Range:** In areas where average annual rainfall exceeds 16 inches, make a single application of 1.5 - 2.25 pints per acre.

**Fall Treatment:** For early Fall-planted wheat (seeded before September 10), apply 3 to 6 weeks after planting but before weeds are 3 to 4 inches tall. Treatment after October 1 has generally given best results. 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 weed growth is less than 4 inches tall. Application later than May 1 may give poor results.

Alternatively, make a single application of 0.75 - 1.5 pints DIURON 4L plus 0.25 pound 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 inches 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 1.5 - 2.25 pints per acre when sufficient moisture is available to germinate wheat seed. Apply before soil freezes and before weeds are 2 inches 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 re-planted 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 inches prior to planting. Do not re-treat 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 2.25 - 3 pints per acre as soon as possible after planting; if wheat and weeds have emerged, apply before weeds are 3 to 4 inches tall. Alternatively, apply a tank mixture of DIURON 4L plus bromoxynil as detailed above for "East of Cascade Range".

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

**Kansas, Oklahoma and Texas:** Do not use on sand or sandy loam soils. Use 1.5 pints per acre on silt and silt loam soils and 2.25 - 3 pints per acre on clay, clay loam, and silty clay loam soils.

**Central Plains and Midwest:** Use 1.5 - 3 pints per acre.

**Northeast:** Use 1.5 - 2.25 pints per acre.

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

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

#### **APPLES**

Use DIURON 4L alone, or apply as a tank mixture with Sinbar.

**DIURON 4L 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 6 pints per acre in the Spring (March through May). In the Far West, treatment may be made in Winter (December through February), or apply 3 pints per acre as a post-harvest treatment followed by 3 pints in the Spring.

**Georgia:** Apply 3 - 4.5 pints per acre in the Spring. Repeat application in the Fall but do not use more than 6 pints per acre per year. Add a surfactant to the spray mixture to improve control of small, emerged weeds.

**DIURON 4L plus Sinbar:** Use only under 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	Amount of Product Per Acre	
	1 to 2% Organic Matter DIURON 4L Plus Sinbar	More than 2% Organic Matter DIURON 4L + Sinbar
Sandy loam	1.5 pints + 1 pound	2.25 pints + 1.5 pounds
Loam, Silt loam, Silt	2.25 pints + 1.5 pounds	3 pints + 2 pounds
Clay loam, Clay	3 pints + 2 pounds	3 pints + 2 pounds

Where crop is grown under furrow irrigation or under raised-berm flood irrigation (trees 4 to 6 inches above waterline), apply only as a band treatment. Do not treat trees planted in the bottom of irrigation furrows, or 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 2.25 - 4.5 pints 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 4.5 - 9 pints per acre plus surfactant. Avoid contact of banana and plantain 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 or more than a total of 2.25 gallons per acre (broadcast basis) in a 12-month period.

**Note:** Do not re-plant 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 inter-planted 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 bushes. For Spring application, apply before germination and growth of annual weeds.

**Arkansas, Florida, Georgia, New Hampshire, North Carolina - Blueberries:** Apply 2.25 - 3 pints per acre in the Spring and repeat treatment after harvest in the Fall. Add a non-ionic surfactant to the spray mixture to improve control of small, emerged weeds.

**California - Blackberries, Boysenberries, Dewberries, Loganberries and Raspberries:** For control of winter annuals, apply 3 pints per acre in October or November. Repeat at same rate in late Spring to control summer annuals. A single application of 4.5 pints 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.

**Indiana, Michigan and Ohio - Blueberries:** Apply 3 - 6 pints per acre in late Spring. Alternatively, apply 3 pints per acre in the Fall and repeat at same rate in the Spring.

**Raspberries:** Apply 4.5 pints per acre in the Spring.

**Maine and Massachusetts - Blueberries:** Apply 3 pints per acre in late Spring.

**Maryland and New Jersey - Blueberries:** For control of winter annuals, apply 3 pints per acre in October, November or December, or a single application of 3.75 pints per acre may be applied in early to mid-Spring.

**Western Oregon and Western Washington - Blueberries, Caneberries, and Gooseberries:** For control of winter annuals, apply 3 pints per acre in October or November. Repeat at same rate in late Spring to control summer annuals. A single application of 4.5 pints 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.

**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 Cochella Valleys):** Apply 4.5 - 6 pints per acre shortly after grove has been laid-up in the final form (non-tillage program) in late Fall or early Winter. Alternatively, apply 3 pints per acre in October or November and repeat at the same rate in March or April. Subsequent annual applications of 3 - 4.5 pints per acre will usually give adequate weed control.

**Florida:** Use only as a band application. Do not use "trunk to trunk". Do not use more often than 60 days between applications.

**East Coast/Flatwoods Areas (Low permeable soils):** Do not use more than 6.4 quarts per treated acre in any one application. Do not apply more than 9.6 quarts per treated acre per year. This is equivalent to 9.6 pounds diuron, the maximum allowable use rate for the active ingredient per treated acre per year inclusive of all diuron formulations used within 1 year.

**Ridge Areas - Except Highland County (Highly permeable soils):** Do not use more than 6.4 pints per treated acre in any one application. Do not apply more than 12.8 pints per treated acre per year. This is equivalent to 6.4 pounds of active ingredient, the maximum allowable use rate per acre per year inclusive of all diuron formulations used within 1 year.

**Ridge Areas - Highland County (Highly permeable soils):** Do not use more than 6.4 pints per acre in any one application. Do not apply more than 9.6 pints per treated acre per year. This is equivalent to 4.8 pounds of active ingredient, the maximum allowable use rate per acre per year inclusive of all diuron formulations used within 1 year.

**Puerto Rico:** Make a single application of 6 - 12 pints per acre or apply 4.5 - 6 pints per acre followed by the same rate 4 to 6 months later. On bearing citrus, apply any time when seasonal rains are expected. On non-bearing trees, apply when Winter banks are pulled down.

**Texas:** Apply 3 - 6 pints per acre for annual weeds. Use 6 - 9 pints per acre for control of johnsongrass seedlings. Application in the Spring gives best results. Well established weeds should be eliminated by cultivation prior to treatment.

**GRAPES**

Apply only to 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 1 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 3 - 4.5 pints per acre. On soils high in clay or organic matter, apply 4.5 - 9 pints per acre. Apply in the Spring just prior to germination and growth of annual weeds.

**West of the Rocky Mountains:** Apply in November, December, or January. For initial treatment, apply 4.5 - 6 pints per acre. Subsequent annual applications of 3 pints per acre will usually give adequate weed control. Rainfall or overhead sprinkler irrigation sufficient to wet the soil to a depth of 2 inches is necessary to activate the herbicide. Do not apply to vines with trunks less than 1½ inches 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 inches high) under the trellis at the rate of 12 - 18 pints per acre. Band width should not exceed 30 inches. 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 3 - 9 pints per acre immediately after harvest preferably before weeds emerge. If weeds have emerged, add surfactant to the spray. Re-treat as needed but do not exceed 7.5 quarts per acre per year.

### **OLIVES**

**California:** Use only under trees established in the grove for at least 1 year. Apply 3 pints 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 3.75 - 7.5 pints per acre, preferably before weeds emerge. If weeds have emerged, add surfactant to the spray.

### **PEACHES**

Use DIURON 4L alone or apply as a tank mixture with Sinbar.

**DIURON 4L Alone:** Use only under trees established in the orchard for at least 3 years. Apply 3 - 7.5 pints 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.

**Georgia:** On trees established for at least 2 years, apply 3 - 4.5 pints per acre in the Spring. Repeat application in the Fall but do not exceed 7.5 pints per acre per year. Add surfactant to improve control of small emerged weeds.

Where crop is grown under furrow irrigation or under raised-berm flood irrigation (trees 4 to 6 inches above waterline), apply only as a band treatment. Do not treat trees planted in the bottom of irrigation furrows or 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.

**DIURON 4L plus Sinbar:** Use only under 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	Rate Per Acre	
	1 to 2% Organic Matter DIURON 4L Plus Sinbar	More than 2% Organic Matter DIURON 4L + Sinbar
Sandy loam	1.5 pints + 1 pound	2.25 pints + 1.5 pounds
Loam, Silt loam silt	2.25 pints + 1.5 pounds	3 pints + 2 pounds
Clay loam, Clay	3 pints + 2 pounds	3 pints + 2 pounds

Where crop is grown under furrow irrigation or under raised-berm flood irrigation (trees 4 to 5 inches above waterline), apply only as a band treatment. Do not treat trees planted in the bottom of irrigation furrows, or 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 6 pints per acre in the Spring (March through May). In the Far West treatment may be made in winter (December through February when the trees are dormant), or apply 3 pints per acre as a post-harvest treatment followed by 3 pints in the Spring before bud-break.

### PECANS

Use DIURON 4L 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 gallons of water per acre. Apply in the Spring before weeds emerge or during the early seedling stage of growth.

Soil Texture	DIURON 4L Alone (pints per acre)†	Tank Mixture DIURON 4L (pints) plus Sinbar (pounds per acre)††	
		DIURON 4L (pints)	Sinbar (pounds)
Sandy loam	3	2.25	1.5
Loam, Silt loam, Silt	4.5	2.62	1.75
Clay loam, Clay	6	3	2

†Use only on trees established in the grove for at least 3 years and on soil with at least ½% organic matter.

††Use on trees established in the grove for at least 1 year and on soil with at least 1% organic matter.

**Note:** Do not use on eroded areas where subsoil roots are exposed, or on trees that are diseased or lacking in vigor or trees planted in irrigation furrows as injury may occur.

### PINEAPPLE

**Hawaii and Florida:** Apply 6 - 12 pints per acre as a broadcast spray just before or immediately after planting but prior to weed emergence. Use 6 pints 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 3 pints per acre at intervals of not less than 2 months. Additional applications to plant crop may be made as needed, to interspace only, using 3 pints per acre. Do not apply more than 3 broadcast sprays (maximum 2.4 gallons per acre) prior to differentiation nor more than 3.2 gallons total per acre per plant crop. Treated areas may be planted to pineapple or sugarcane 1 year after last application.

**Puerto Rico:** Apply 5.5 - 9.4 pints per acre as a broadcast spray just before or immediately after planting but prior to weed emergence. 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 4.5 - 7.5 pints per acre after the orchard has been laid-up in final form (non-tillage program) in late Fall or early Winter; re-treat annually with 3 - 4.5 pints per acre. Alternatively, apply 3 pints per acre in October or November and repeat at same rate in March or April.

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## ORNAMENTAL CROPS (See Soil Limitations)

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### ORNAMENTAL BULB CROPS (Bulbous Iris, Narcissus)

**Western Washington:** Make a single application of 6 pints per acre. Apply after planting but no later than 4 weeks prior to bulb emergence (usually late September or October). Do not re-plant 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 4.5 pints 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, red cedar, Russian olive and Siberian elm. Use 3.75 - 7.5 pints per acre. Apply as a band 4 feet wide in the tree row (2 feet on each side of row). For example, 1½ ounces DIURON 4L treats 135 feet of tree row (2 feet on each side of row) at the rate of 7.5 pints per acre. Apply as a directed spray in early Spring before weeds emerge and before trees leaf out. Do not apply to foliage of trees, or under trees growing in low areas as injury to the trees may result.

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## NON-CROP WEED CONTROL

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DIURON 4L 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 texture rainfall and other conditions. DIURON 4L may be used as a pre-emergence treatment at anytime 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.

Increased contact activity on established weeds may be obtained by the addition of a non-ionic surfactant. Apply as a drenching spray to actively growing weeds during warm weather when daily temperature will exceed 70°F.

Except for small areas, use a fixed-boom power sprayer properly calibrated to insure a constant rate of application. Mix proper amount of DIURON 4L into volume of water necessary to obtain uniform coverage. If surfactant is used, dilute with 10 parts of water and add as last ingredient to nearly full tank. Material must be kept in suspension at all times. Agitate by mechanical or hydraulic means in the spray tank; if by-pass or return line is used, it should terminate at bottom of tank to minimize foaming. Openings in screens should be equal to or larger than 50 mesh.

**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 1 - 3.75 gallons per acre to control most annual weeds. Use 4 - 11.25 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, DIURON 4L may not provide satisfactory control of deep-rooted perennial weeds.

**Irrigation and Drainage Ditches:** Apply 1 - 3 gallons per acre to control most annual weeds. Apply only when water is not in the ditch. For irrigation ditches, apply during the non-crop season, and when ditch is not in use. To minimize movement of DIURON 4L 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 to stand for 72 hours, drain off and waste remaining water before using ditch. Do not treat any ditch into which roots of trees or other desirable plants may extend as injury may result.

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### Warranty Disclaimer

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Dow AgroSciences warrants that this product conforms to the chemical description on the label and is reasonably fit for the purposes stated on the label when used in strict accordance with the directions, subject to the inherent risks set forth below. Dow AgroSciences MAKES NO OTHER EXPRESS OR IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR ANY OTHER EXPRESS OR IMPLIED WARRANTY.

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### Inherent Risks of Use

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It is impossible to eliminate all risks associated with use of this product. Crop injury, lack of performance, or other unintended consequences may result because of such factors as use of the product contrary to label instructions (including conditions noted on the label, such as unfavorable temperatures, soil conditions, etc.), abnormal conditions (such as excessive rainfall, drought, tornadoes, hurricanes), presence of other materials, the manner of application, or other factors, all of which are beyond the control of Dow AgroSciences or the seller. All such risks shall be assumed by buyer.

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### Limitation of Remedies

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The exclusive remedy for losses or damages resulting from this product (including claims based on contract, negligence, strict liability, or other legal theories), shall be limited to, at Dow AgroSciences' election, one of the following:

- (1) Refund of purchase price paid by buyer or user for product bought, or
- (2) Replacement of amount of product used.

Dow AgroSciences shall not be liable for losses or damages resulting from handling or use of this product unless Dow AgroSciences is promptly notified of such loss or damage in writing. In no case shall Dow AgroSciences be liable for consequential or incidental damages or losses.

The terms of the Warranty Disclaimer above and this Limitation of Remedies cannot be varied by any written or verbal statements or agreements. No employee or sales agent of Dow AgroSciences or the seller is authorized to vary or exceed the terms of the Warranty Disclaimer or this Limitation of Remedies in any manner.

EPA-Accepted:   /  /