

1812-362

07/21/2005

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

WASHINGTON, D.C. 20460

JUL 21 2005

OFFICE OF  
PREVENTION, PESTICIDES  
AND TOXIC SUBSTANCES

Mr. J. H. Cain  
Griffin L.L.C.  
c/o DuPont Crop Protection  
Stine-Haskell Research Center  
P. O. Box 30  
Newark, DE 19714-0030

Dear Mr. Cain:

Subject: Griffin Karmex XP Herbicide (Revised Labeling Incorporating Diuron RED Comments)  
EPA Registration No. 1812-362  
Application Dated April 26, 2005 and Labeling Submitted July 11, 2005

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 before you release the product for shipment.

1. Under Filberts, revise the second and third sentence to read similar to below, since the maximum rate per application the Diuron RED allows for filberts is 2.2 pounds active ingredient per acre.

“ Make an initial treatment of **2.75** pounds per acre in the late fall or early winter after harvest. Repeat annually with **2.75** pounds per acre, or apply 2 pounds per acre in October or November after harvest and repeat with the same rate in March or April.”

2. Under Grapes, add the statement “Apply a maximum of two applications per year.”

Submit two (2) copies of your final printed labeling incorporating the above changes before you release the product for shipment. Amended labeling will supercede all previously accepted ones. A stamped copy of labeling is enclosed for your records.

Sincerely,

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

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# Karmex<sup>®</sup> XP

## herbicide

Diuron Dry Flowable Herbicide

ACCEPTED  
with COMMENTS  
In EPA Letter Dated:

JUL 21 2005

Under the Federal Insecticide,  
Fungicide, and Rodenticide Act,  
as amended, for the pesticide  
registered under EPA Reg. No.  
1812-362

Active Ingredients	By Weight
Diuron: 3- [3,4-dichlorophenyl]-1, 1-dimethylurea	80.0%
Inert Ingredients	20.0%
TOTAL	100.0%

EPA Reg. No. 1812-362

EPA Est. No. 1812-GA-3

### KEEP OUT OF REACH OF CHILDREN

## CAUTION

### FIRST AID

**IF ON SKIN OR CLOTHING:** Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.

**IF IN EYES:** Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.

**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.

**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 do so by the poison control center or doctor. Do not give anything by mouth to an unconscious person.

Have the product container or label with you when calling a poison control center or doctor, or going for treatment.

For medical emergencies involving this product, call toll free 1-800-441-3637.

### PRECAUTIONARY STATEMENTS

#### HAZARDS TO HUMANS AND DOMESTIC ANIMALS

**Caution!** Harmful if swallowed or absorbed through skin. Causes moderate eye irritation. Avoid contact with eyes, skin, or clothing.

#### 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-resistant 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 polyvinylchloride
- Dust mist respirator
- Shoes plus socks

#### Mixers and loaders must also wear:

- Apron

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.

### 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.

### ENVIRONMENTAL HAZARDS

Do not apply directly to water, to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment washwaters. Cover or incorporate spills.

## GENERAL INFORMATION

KARMEX® XP herbicide should be used only in accordance with recommendations on this label, or in separate published recommendations.

KARMEX® XP is a dispersible granule to be mixed with water and applied as a spray for selective control of weeds in certain crops and for nonselective weed control on non-cropland areas. It is non-corrosive to equipment, non-flammable and non-volatile.

KARMEX® XP 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 for equivalent herbicide performance. Moisture is required to activate the herbicide. Best results occur if rainfall (or sprinkler irrigation) occurs within 2 weeks of application.

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

KARMEX® XP 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 to the spray (where recommended) increases contact effects of KARMEX® XP.

KARMEX® XP may be used as a directed postemergence application. Contact of crop foliage and/or fruit with spray or mist must be avoided 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 as injury may occur.

Under specified conditions (see RECOMMENDED USES), KARMEX® XP 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 and pineapple.

Weed species vary in susceptibility to KARMEX® XP and they may be more difficult to control when under stress. Combinations of KARMEX® XP 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 precautions and limitations on labeling of all products used in mixtures.

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

## IMPORTANT PRECAUTIONS

Do not use on home plantings of trees, shrubs or herbaceous plants or lawns, walks, driveways, tennis courts or similar areas.

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

Thoroughly clean all traces of KARMEX® XP from application equipment immediately after use. Flush tank, pumps, hoses and boom with several changes of water after removing nozzle tips and screens (clean these parts separately).

Draining or flushing equipment on or near desirable trees or other plants or in areas where their roots may extend or in locations where the chemical may be washed or moved into contact with their roots may injure these plants.

Trees or other desirable plants whose roots extend into a treated crop use area may be injured.

## RESISTANCE

When herbicides that affect the same biological site of action are used repeatedly over several years to control the same weed species in the same field, naturally-occurring resistant biotypes may survive a correctly applied herbicide treatment, propagate, and become dominant in that field. Adequate control of these resistant weed biotypes cannot be expected. If weed control is unsatisfactory, it may be necessary to retreat the problem area using a product affecting a different site of action.

To better manage herbicide resistance through delaying the proliferation and possible dominance of herbicide resistant weed biotypes, it may be necessary to change cultural practices within and between crop seasons such as using a combination of tillage, retreatment, tank-mix partners and/or sequential herbicide applications that have a different site of action. Weed escapes that are allowed to go to seed will promote the spread of resistant biotypes.

It is advisable to keep accurate records of pesticides applied to individual fields to help obtain information on the spread and dispersal of resistant biotypes. Consult your agricultural dealer, consultant, applicator, and/or appropriate state agricultural extension service representative for specific alternative cultural practices or herbicide recommendations available in your area.

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## INTEGRATED PEST MANAGEMENT

This product may be used as part of an Integrated Pest Management (IPM) program that can include biological, cultural, and genetic practices aimed at preventing economic pest damage. IPM principles and practices include field scouting or other detection methods, correct target pest identification, population monitoring, and treating when target pest populations reach locally determined action thresholds. Consult your state cooperative extension service, professional consultants or other qualified authorities to determine appropriate action treatment threshold levels for treating specific pest/crop systems in your area.

## 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.

*(The following text appears on product subset labeling specific to non-crop use only.)*

For use on plants in non-crop and non-timber areas only. Not for use on crops, timber, or other plants being grown for sale or other commercial use, or for commercial seed production, or for research purposes.

### AGRICULTURAL USE REQUIREMENTS

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR part 170. This Standard contains requirements for the protection of agricultural workers on farms, forests, nurseries, and greenhouses and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements on this label about personal protective equipment (PPE) and restricted-entry interval. The requirements in this box only apply to uses of this product that are covered by the Worker Protection Standard.

Do not enter or allow worker entry into treated areas during the restricted-entry interval (REI) of 12 hours.

PPE required for early entry to treated areas that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil, or water, is:

- Coveralls
- Chemical-resistant gloves made of any waterproof material.
- Shoes plus socks

## SELECTIVE USE IN CROPS

Preemergence Use (Germinating Weeds): KARMEX® XP, at recommended rates, controls annual weeds and grasses such as:

<b>0.75 to 1 Pound/Acre</b>	<b>1.5 to 2 Pounds/Acre</b>	<b>2 to 6 Pounds/Acre</b>
Barnyardgrass (Watergrass)	Bluegrass, Annual	Ageratum
Crabgrass	Chickweed	Corn Speedwell
Lambsquarter	Corn Spurry	Dayflower
Pigweed	Dogfennel	Flora's Paintbrush
Purslane	Fiddleneck (Amsinckia)	Hawksbeard
Ragweed	Foxtail	Johnsongrass (Seedling)
	Gromwell	Kyllinger (Kyllinga)
	Groundcherry, Annual	Lovegrass, Annual
	Knawel	Marigold
	Morningglory, Annual	Mexican Clover
	Pennycress	Orchardgrass
	Rattail Fescue	Pepperglass
	Red Sprangletop	Pineappleweed
	Shepherdspurse	Pokeweed
	Tansymustard	Rabbit Tobacco
	Velvetgrass	Ricegrass
	Vernalgrass, Sweet, Annual	Ryegrass, Annual
	Wild Buckwheat	Sandbur
	Wild Lettuce	Smartweed, Annual
	Wild Mustard	Sowthistle, Annual
		Spanish Needles
		Velvetleaf (Buttonweed)
		Wild Radish

### PARTIAL CONTROL

<b>1 Pound/Acre</b>	<b>4 Pounds/Acre</b>	<b>8 to 10 Pounds/Acre</b>
Cocklebur	Horsenettle	Guineagrass
Morningglory, Annual	Quackgrass	Maidencane
Prickly Sida (Teaweed)		Pangolagrass
Sesbania		
Sicklepod		

### APPLICATION INFORMATION

**AERIAL APPLICATION:** For alfalfa, barley (winter), cotton (preplant or preemergence only), grass seed crops (PNW only), sugarcane and wheat (winter), application may be made by aircraft at 5 to 10 gallons of water 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:** Use a boom power sprayer properly calibrated to a constant speed and rate of delivery. Openings in screen should be 50 mesh or larger. 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 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 crop may result.

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**PREEMERGENCE:** For preemergence application, use sufficient spray volume and pressure to uniformly distribute the spray solution over treated soil. Preemergence weed control will be reduced on high organic matter soils such as peat or muck.

**POSTEMERGENCE:** For postemergence application, use sufficient spray volume and pressure for thorough coverage of weed foliage. For selective applications and applications near sensitive crops, use low spray pressure to keep spray drift to a minimum. KARMEX® XP at recommended rates controls seedling annual weeds such as annual morningglory, barnyardgrass (watergrass), crabgrass, crowfoot, goosegrass, pigweed and purslane. Addition of a surfactant to the spray (where recommended) increases contact effects of KARMEX® XP. Best results are obtained on succulent weeds growing under conditions of high humidity and temperatures of 70°F or higher.

**SPRAY PREPARATION:** Mix proper amount of KARMEX® XP into necessary volume of water. Where use of a surfactant is recommended, dilute with ten parts of water and add as last ingredient to nearly full spray tank.

**TANK MIXTURES:** DIREX® 4L may be tank mixed with other herbicides and/or adjuvants registered for crop or non-crop use in this label. Refer to the label of the tank mixture partner(s) for any additional use instructions or restrictions.

**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.

**NOTE:** For crops grown in the arid west, reductions in normal irrigation practices for the crop in production or a summer fallow period without supplemental irrigation may require the crop rotation intervals to be extended.

When such conditions occur, a field bioassay should be completed prior to planting any desired crop. A successful bioassay means growing to maturity a test strip of the crop(s) intended for production. The test crop(s) strip should cross the entire field including knolls, low areas and areas where any berms were located. The results of this bioassay may require the rotation intervals to be extended.

**RATES:** All rates of KARMEX® XP are expressed as broadcast rates. Where band applications are specified use proportionately less. For example, use 1/3 of the broadcast rate when treating a 14 inch 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 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 0.5%; nor on alfalfa, apples, artichoke, barley (winter), citrus, cotton, grapes, oats, olives, papayas, peaches, pears, sorghum, sugarcane,

walnuts and winter wheat 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%.

**FIELD CROPS (SEE SOIL LIMITATIONS):** A good seedbed must be prepared before preemergence use of KARMEX® XP, 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, the surface of the soil should not be cultivated or disturbed after application of KARMEX® XP 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.

**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.

## RECOMMENDED USES

### 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. In alfalfa, KARMEX® XP may only be applied once per year. Do not exceed 3 pounds per acre per year.

**ARIZONA, NEVADA:** Use 1.5 to 3 pounds per acre. Apply in fall after alfalfa becomes dormant but no later than January.

### CALIFORNIA

**(DORMANT AND SEMI-DORMANT VARIETIES)**  
Use 1.5 to 3 pounds 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 KARMEX® XP with a suitable contact herbicide registered for such use. Sufficient rainfall for soil activation of KARMEX® XP is unlikely in California after February 1. Treated areas may be replanted to any crop after 1 year from last application if rate does not exceed 2 pounds per acre.

**EASTERN COLORADO, KANSAS:** For control of tansymustard, apply 1 pound per acre shortly after emergence of mustard in the fall or winter. Use 2 pounds per acre if weeds are 2 to 4 inches in height. Alternatively,

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if other annual weeds are present, apply 2 to 3 pounds per acre in February or March.

**IDAHO, OREGON, WASHINGTON:** For control of annual weeds, use 1.5 to 3 pounds per acre. Apply in fall after alfalfa becomes dormant but no later than mid-December.

**OTHER AREAS WHERE ALFALFA BECOMES WINTER DORMANT:** Use 1.5 to 3 pounds per acre (1.5 to 2 pounds per acre East of Appalachian Mountains). Apply in March or early April, but before spring growth begins.

## APPLE

Use KARMEX® XP alone, or apply as a tank mixture with "Sinbar" herbicide.

Do not apply more than 4 pounds per acre per year. When using KARMEX® XP in a sequential treatment program, allow a minimum of 90 days between applications. Do not make more than two applications of KARMEX® XP per year.

**KARMEX® XP 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 4 pounds per acre in the spring from March through May. In the Far West, apply 4 pounds per acre to small weeds less than 2 inches in height or diameter under dormant trees. Alternatively, treatments to small weeds may be applied at 2 pounds per acre postharvest followed by 2 pounds per acre prior to budbreak.

**GEORGIA:** Apply 2 to 3 pounds per acre in the spring. Repeat application in the fall but do not use more than 4 pounds per acre per year. Add a surfactant to improve control of small, emerged weeds.

**KARMEX® XP 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.

### RATES POUNDS PER ACRE

Soil Texture	1 to 2 % Organic Matter		More Than 2% Organic Matter	
	Karmex® XP	"Sinbar"	Karmex® XP	"Sinbar"
Sandy loam	1.0	+ 1.0	1.5	+ 1.5
Loam, Silt loam, Silt	1.5	- 1.5	2.0	+ 2.0
Clay loam, Clay	2.0	- 2.0	2.0	+ 2.0

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, 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.

## ARTICHOKE (CALIFORNIA)

Apply 2 to 4 pounds 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), nor to newly seeded asparagus, nor on plants with exposed roots, as severe injury may result. Preemergence weed control will be reduced on soils with greater than 5% organic matter.

**ESTABLISHED PLANTINGS:** On light soils and other soils low in clay or organic matter, apply 1 to 2 pounds per acre. On soils high in clay or organic matter, use 2 to 4 pounds 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 3 pounds per acre per application. In Washington (irrigated crop), apply a single treatment of 4 pounds 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 treatment of 2 to 4 pounds 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 a depth of less than 2 inches.

## BANANA and PLANTAIN

**NEW PLANTINGS:** To control annual weeds, apply 1.5 to 3 pounds per acre after planting but before weed or crop emergence. 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 3 to 6 pounds 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 surfactant from the spray mixture. Repeat treatment as

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needed. Apply at 6 week intervals or longer for a maximum of 12 pounds of KARMEX® XP per acre (broadcast basis) in 12 months.

Do not replant treated areas to any crop within 2 years after last application as injury to subsequent crops may result. Exception: sugarcane or pineapple may be planted after 1 year.

## **BARLEY**

### **(WINTER)**

#### **WESTERN OREGON AND WESTERN**

**WASHINGTON:** For drill planted barley, make a single application of 1.5 to 2 pounds 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.

## **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 2 pounds 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.

## **BLUEBERRY, CANEBERRY, GOOSEBERRY**

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 the base of canes or bushes. For spring application, apply before germination and growth of annual weeds.

### **AR, FL, GA, MS, MO, NH, NC, SC**

**BLUEBERRY:** Apply 1.5 to 2 pounds per acre in the spring and repeat treatment after harvest in the fall. Add a surfactant to improve control of small, emerged weeds.

### **CALIFORNIA**

**BLACKBERRY, BOYSENBERRY, DEWBERRY, LOGANBERRY, RASPBERRY:** For control of winter annual weeds, apply 2 pounds per acre in October or November. Repeat at the same rate in late spring to control summer annuals. A single application of 3 pounds per acre in January or February will control annual weeds in some areas, but the separate fall and spring schedule is preferred.

### **INDIANA, MICHIGAN, OHIO**

**BLUEBERRY:** Apply 2 to 4 pounds per acre in late spring. Alternatively, apply 2 pounds per acre in the fall and repeat at the same rate in the spring.

**RASPBERRY:** Apply 3 pounds per acre in late spring.

### **MAINE, MASSACHUSETTS**

**BLUEBERRY:** Apply 2 pounds per acre in late spring.

## **MARYLAND, NEW JERSEY**

**BLUEBERRY:** For control of winter annual weeds, apply 2 pounds per acre from October to December, or make a single application of 2.5 pounds per acre in early to mid-spring.

## **WESTERN OREGON, WESTERN WASHINGTON**

**BLUEBERRY, CANEBERRY, GOOSEBERRY:** For control of winter annual weeds, apply 2 pounds per acre in October or November. Repeat at the same rate in late spring to control summer annual weeds. A single application of 3 pounds per acre in January or February will control both winter and summer annual weeds in some areas, but the separate fall and spring schedule is preferred.

## **CITRUS**

Time application as indicated for specific areas. However, 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.

KARMEX® XP may be applied in citrus in combination with registered paraquat and glyphosate formulations. Read and follow specific label instructions, precautions, and restrictions on the label of the tankmix partner when applying KARMEX® XP in combination with other products.

**NOTE:** For citrus trees 4 or less years of age, make a maximum of 2 applications per year. When KARMEX® XP is used in a sequential treatment program, allow a minimum of 60 days between applications.

For citrus trees 4 or more years of age, make a maximum of 2 applications per year. When KARMEX® XP is used in a sequential treatment program, allow a minimum of 80 days between applications.

## **ARIZONA (EXCEPT YUMA AREA) AND CALIFORNIA (EXCEPT IMPERIAL AND COACHELLA VALLEYS)**

Apply 3 to 4 pounds per acre shortly after the grove has been laid-up in final form (non-tillage program) in late fall or early winter. Alternatively, apply 2 pounds per acre in October or November and repeat at the same rate in March or April. Subsequent annual applications of 2 to 3 pounds per acre will usually give adequate weed control.

**FLORIDA:** Use only as a band application. Do not use "Trunk to Trunk."

## **EAST COAST/FLATWOODS AREAS (LOW PERMEABLE SOILS)**

Apply from 2 pounds per acre to a maximum of 8 pounds per acre for control of annual broadleaf weeds and annual grasses. Addition of an approved surfactant will improve control of emerged weeds.

Do not use more than 8 pounds per treated acre in any one application.

Do not apply more than 8 pounds per treated acre per year.

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This amount corresponds to 6.4 pounds of diuron, the active ingredient in KARMEX® XP.

The maximum allowable use rate for diuron is 6.4 pounds per treated acre per year inclusive of all diuron formulations used within 1 year.

**RIDGE AREAS - EXCEPT HIGHLAND COUNTY (HIGHLY PERMEABLE SOILS)**

Apply from 2 pounds per acre to a maximum of 4 pounds per acre for control of annual broadleaf weeds and annual grasses. Addition of an approved surfactant will improve control of emerged weeds.

Do not use more than 4 pounds per treated acre in any one application.

Do not apply more than 8 pounds per treated acre per year. This amount corresponds to 6.4 pounds of diuron, the active ingredient in KARMEX® XP.

The maximum allowable use rate for diuron is 6.4 pounds per treated acre per year inclusive of all diuron formulations used within 1 year.

**RIDGE AREAS - HIGHLAND COUNTY ONLY (HIGHLY PERMEABLE SOILS)**

Apply from 2 pounds per acre to a maximum of 4 pounds per acre for control of annual broadleaf weeds and annual grasses. Addition of an approved surfactant will improve control of emerged weeds.

Do not use more than 4 pounds per treated acre in any one application.

Do not apply more than 6 pounds per treated acre per year. This amount corresponds to 4.8 pounds of diuron, the active ingredient in KARMEX® XP.

The maximum allowable use rate of diuron is 4.8 pounds per treated acre per year inclusive of all diuron formulations used within 1 year.

Do not use at less than 60 day intervals.

**PUERTO RICO:** Make a single application of 4 to 8 pounds per acre or apply 3 to 4 pounds 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 2 to 4 pounds per acre for annual weeds. Use 4 to 6 pounds per acre for control of seedling johnsongrass. Spring treatments give best results. Well established weeds should be eliminated by cultivation prior to treatment.

**CORN**

**(FIELD)**

**POSTEMERGENCE:** Make a single application of 0.75 pound per acre in combination with non-pressure nitrogen solution. If nitrogen solution is not used, apply 1 pound per acre with surfactant. Apply as directed spray when corn is at least 20 inches high and weeds are no taller than 3 inches.

**DO NOT APPLY OVER TOP OF CORN.**

Do not replant to any crop within 1 year after last application as injury to subsequent crops may result. Exception: cotton, corn, and grain sorghum may be planted the spring following treatment.

**PREEMERGENCE**

**AR, LA, MS, TN:** Make a single application of 0.67 to 1 pound per acre as a broadcast or band treatment after planting but before corn emerges. Plant corn at least 1.5 inches deep.

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

**COTTON**

**USE PRECAUTIONS**

During a single crop season, do not exceed the following amount of KARMEX® XP per acre as injury to subsequent crops may result; 1.0 pounds on sandy loam, 1.8 pounds on clay loam, and 2.75 pounds on clay. Do not make more than 3 applications of KARMEX® XP per year.

**DO NOT SPRAY OVER THE TOP OF COTTON PLANTS.**

Do not apply to sand or loamy sand soils.

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

Seedling disease may weaken plants and increase the possibility of injury from the use of trifluralin products followed by KARMEX® XP. 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.

**Do not use KARMEX® XP in preplant or preemergence applications where soil-applied organophosphate insecticides are used due to potential for severe cotton injury and possible stand loss.**

Do not allow livestock to graze treated cotton.

**NOTE:** When using KARMEX® XP in a sequential treatment program, allow a minimum of 21 days between applications.

**PREPLANT**

**ARIZONA, CALIFORNIA:** Use KARMEX® XP alone or apply as a separate operation following preplant broadcast treatment with trifluralin products (incorporated according to directions on the trifluralin product label). Apply KARMEX® XP as a broad-cast 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 KARMEX® XP. 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 performed prior to lay-by, or deep furrows are made early, weed control may be reduced in the furrow bottoms.



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**KARMEX® XP ALONE:** Apply at 1 to 2 pounds per acre.

**KARMEX® XP FOLLOWING TRIFLURALIN PRODUCTS:**

Soil Texture	RATE / ACRE	
	trifluralin products	KARMEX® XP
Sandy loam, Loam, Silt loam, Silt	0.5 quart	0.67-1 pound
Sandy clay loam, Clay loam, Silty clay loam, Sandy clay, Clay	0.75 quart	1-1.25 pounds

**PREPLANT**

**(EXCEPT ARIZONA AND CALIFORNIA):** KARMEX® XP may be used for burndown of existing annual weeds and residual control of weeds prior to planting cotton. Complete any planned tillage prior to application. Apply herbicide treatments before weeds germinate or before weed seedlings are more than 2 inches tall. If weeds are emerged prior to application, the addition of a non-ionic surfactant is recommended. Tillage following application should be avoided to prevent incorporation of the herbicide into the cotton seed germination zone which may result in crop injury. Dragging treated soil from beds will concentrate the herbicide in middles and reduce residual weed control on the beds.

Apply KARMEX® XP at 1.0 to 2.0 pounds/acre from 15 to 45 days prior to anticipated planting. Refer to the table below for use rates in preplant applications. Do not exceed suggested use rates for individual soil textures shown in the table below. If less than the maximum rate of application for a given soil is applied preplant, subsequent preemergence applications of KARMEX® XP may be made. However, the total combined application rate for KARMEX® XP applied preplant and preemergence may not exceed the maximum suggested use rate for either application method.

**KARMEX® XP ALONE:**

SOIL TEXTURE	RATE / ACRE
Sandy loam, Loam, Silt loam, Silt	1 pound
Sandy clay loam, Clay loam, Silty clay loam, Sandy clay	1.25 pounds
Silty clay, Clay	2 pounds

Preemergence application of herbicides with a similar mode of action to that of diuron following preplant application of KARMEX® XP may result in cotton injury. When preplant applications of KARMEX® XP are followed by preemergence applications of herbicides with a similar

mode of action, e.g., or other products containing fluometuron, the product containing fluometuron should be used at the minimum rate of application for the soil under consideration in order to reduce potential for crop injury. This is most critical where applications of KARMEX® XP are made less than 30 days preplant. On coarse textured soils, and on soils low in organic matter. The risk of injury from preplant applications of KARMEX® XP is reduced where substantial rainfall (> 0.5") occurs between application and planting. Read and follow any additional precautions on the KARMEX® XP label when using this product for preplant weed control in cotton.

**PREPLANT TANK MIXES:** When emerged weeds taller than 2 inches or weeds not listed on the KARMEX® XP label are present, KARMEX® XP may be tank mixed with other products registered for preplant applications in cotton. The addition of dry spray grade ammonium sulfate at the rate of 2.0% w/w (17 pounds per 100 gallons finished spray solution) is suggested to enhance performance of KARMEX® XP plus glyphosate tank mixes.

**REPLANTING:** Only cotton and corn may be planted within 6 months of preplant applications of KARMEX® XP. To avoid crop injury following replanting, avoid disturbing the original bed.

**PREEMERGENCE**

**(EXCEPT ARIZONA AND CALIFORNIA):** Use KARMEX® XP alone or apply as a separate operation following preplant treatment with trifluralin products. Apply KARMEX® XP 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 0.25 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 postemergence treatments. If moisture is insufficient to activate KARMEX® XP or if soil becomes crusted before crop emerges, a shallow rotary hoeing (no deeper than 0.25) inch should be made before weeds become established.

KARMEX® XP should not be applied preemergence following application of the maximum rate for a given soil applied preplant. If less than the maximum rate is used preplant, additional KARMEX® XP may be applied preemergence. However, the total amount of KARMEX® XP applied preplant and preemergence must not exceed the maximum suggested use rate for either preplant or preemergence applications.

**KARMEX® XP ALONE:** Make a single application as a broadcast or band spray, using the following broadcast rates. Use proportionately less for band treatment.

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SOIL TEXTURE	RATE / ACRE
Sandy loam, Loam, Silt loam, Silt	1 pound
Sandy clay loam, Clay loam, Silty clay loam, Sandy clay	1.25 pounds
Silty clay, Clay	2 pounds

**PREEMERGENCE APPLICATIONS OF KARMEX® XP FOLLOWING TRIFLURALIN PRODUCTS:** Apply trifluralin products prior to planting as a broadcast or band treatment. Incorporate according to the directions on the trifluralin label. As a separate operation apply KARMEX® XP after planting, but before cotton emerges. Use the following broadcast rates. For band treatment, use proportionately less.

Soil Texture	RATE / ACRE	
	trifluralin products	KARMEX® XP
Sandy loam, Loam, Silt loam, Silt	0.5 quart	1 pound
Sandy clay loam, Clay loam, Silty clay loam, Sandy clay, Clay, Silty clay	0.75 quart	1.25-2 pounds

**POSTEMERGENCE:** Apply KARMEX® XP 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. Applications may also be made in hooded/shielded sprayers.

**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. Apply as a band or broadcast treatment at the following rates. Two applications may be made if needed.

**ANNUAL WEED PROBLEM**

(UP TO 2 INCHES TALL)	RATE / ACRE
Cotton 6 - 8 inches	0.5 pound
Cotton 8 - 12 inches	0.75 pound

For control of seedling perennial grass such as johnsongrass in directed sprays and partial control of nutsedge or when weed growth is under drought stress or over 2 inches in height, add 2.0 to 3.5 pounds active DSMA or 1.65 to 2.0 pounds active MSMA to above spray mixture. If DSMA or MSMA are used, do not apply after first bloom.

For enhanced weed control in hooded/shielded sprayer applications add MSMA or DSMA as suggested above; or add registered paraquat or glyphosate formulations according to label recommendations. Consult product labels for specific recommendations and precautions for hooded sprayer applications.

**LATE SEASON (LAY-BY)**

Apply 1 to 1.5 pounds per acre (1.0 to 2.0 pounds per acre in Arizona and California) when cotton is at least 12 inches high (at least 20 inches 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 to 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 (4 inches or less in height) at lay-by time, make a single application in combination with surfactant, or use 0.5 to 0.75 pound per acre plus surfactant and repeat later if needed.

**REPLANTING:** If initial seeding fails to produce a stand, cotton may be replanted in soil treated preemergence with KARMEX® XP alone or following preplant application of trifluralin products. Wherever possible, avoid disturbing original bed. If necessary to rework soil before replanting, use shallow cultivation such as disking. Do not relist nor move soil into the original drill area. Plant seed at least 1 inch deep. Do not retreat field with a second preplant or preemergence application of herbicide during the same crop year as injury to crop may result.

**SUBSEQUENT CROPS**

**KARMEX® XP HERBICIDE**

Type of Application	That May Follow Treated Cotton
Band pre or postemergence	Any crop 4 months after last application
Band pre 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 areas to any other crop within 1 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 1 year after last application as injury may result.

For subsequent crops in fields where trifluralin products are used, follow instructions on the trifluralin product label.

**FILBERTS**

**(EXCEPT CA)**

KARMEX® XP is recommended for control of certain weeds in filbert orchards established for at least one year.

Do not apply more than 4 pounds per acre per year. When using KARMEX® XP in a sequential treatment program, allow a minimum of 150 days between applications.

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Apply KARMEX® XP as a directed spray, avoiding contact on the foliage and fruit with spray or drift. Make an initial treatment of 4 pounds per acre in the late fall or early winter after harvest. Repeat annually with 3 to 4 pounds per acre, or apply 2 pounds per acre in October or November after harvest and repeat at the same rate in March or April.

Do not apply when nuts are on the ground.

Do not graze livestock in treated orchards.

Do not use on light sandy soils.

If trees are planted on hillsides, the elimination of weeds and ground cover may cause excessive soil erosion. Under these conditions strip applications of KARMEX® XP (at proportionately lower rates) may be made near the trees or to the tree rows perpendicular to the slope.

## GRAPE

Apply only as a band treatment to established vineyards at least 3 years old. 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.

Do not apply more than 5 pounds per acre as a single maximum use rate. Do not apply more than 10 pounds per acre per year. When using KARMEX® XP in a sequential treatment program, allow a minimum of 90 days between applications.

Avoid direct or indirect spray contact to foliage and green bark (non-barked vines, with the exception of undesirable suckers).

## NEW YORK AND PENNSYLVANIA

**(PERENNIAL GRASSES):** Use only in established vineyards (at least 4 years old) for spot control of perennial grasses such as orchard-grass, quackgrass and ryegrass. Apply in the spring as a band treatment to ridged soil (2 to 4 inches high) under trellis at the rate of 8 to 10 pounds per acre. Band width should not exceed 30 inches. Do not apply more than once every 4 years. Use only on heavy soils types 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 grapevines may result.

**EAST OF THE ROCKY MOUNTAINS:** On soils low in clay or organic matter (1 to 2%), apply 2 to 3 pounds per acre. On soils high in clay or organic matter, apply 3 to 6 pounds per acre. Apply in the spring just prior to germination of annual weeds.

**WEST OF THE ROCKY MOUNTAINS:** For best results, apply during the winter months when weeds are less than 2 inches in height or diameter. Rainfall or overhead sprinkler irrigation sufficient to wet the soil to a depth of 2 inches is necessary to activate the herbicide. Abnormally heavy rainfall following application just before spring growth may move the herbicide into the root zone of grapes which could result injury. For initial treatment, apply 3 to 4 pounds per acre. Subsequent annual applications of 2

pounds per acre will usually give adequate weed control. Do not apply to vines with trunks less than 1.5 inches in diameter as injury may result.

## GRASS SEED CROPS

**(PERENNIAL EXCEPT WHERE SPECIFICALLY INDICATED)**

Except as noted, apply only to established plantings at least 1 year old.

**NOTE:** Apply a single application per year at up to 3 pounds per acre. May be applied by aerial application in the Pacific Northwest only.

## COLORADO, KANSAS, NEW MEXICO,

**OKLAHOMA:** On sand bluestem, side oats grama and switchgrass apply 2 to 3 pounds 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 3 pounds per acre. Spread unburned chaff or straw with a harrow or chopper before application.

## EASTERN OREGON, EASTERN

**WASHINGTON:** On perennial bluegrass and fescue apply 1.0 to 3.0 pounds per acre as broadcast in enough diluent to get even distribution. Apply in spring before rapid growth of the crop begins and when the windgrass is still small (1-4 leaf). DO NOT use on coarse (sand) textured soils.

## WESTERN OREGON/WESTERN

**WASHINGTON:** On alta fescue, Astoria bentgrass, Highland bentgrass, Kentucky bluegrass (Merion bluegrass) and orchardgrass apply 2 to 3 pounds per acre between October 1 and November 15. In fields where ash residues have accumulated from burning straw, use 3 pounds per acre. Spread unburned chaff or straw with a harrow or chopper before application. For best results apply as soon as possible after fall rains start. Established weeds beyond two to four 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; apply 2 pounds per acre.

**OREGON, WASHINGTON:** Apply in the fall to perennial ryegrass at the rate of 1 to 2 pounds per acre and to tall fescue at the rate of 2 to 3 pounds per acre. Use a sufficient volume of water, a minimum of 25 gallons per acre, for thorough coverage of weed foliage. For best results, make applications at the onset of the fall rains and before weeds have become established (typically October 1 through November 15). Established weeds beyond the 2-4 leaf stage should be removed prior to treatment.

Apply only to well established, vigorous stands. Do not apply to perennial ryegrass stands less than 1 year old. Use mechanical agitation and avoid overlap of spray patterns. Weed control efficacy may be reduced in fields where ash

residues have accumulated from burning straw.

#### **ANNUAL RYEGRASS FOR THE CREATION OF**

**ROWS:** Apply 1 to 2 pounds per acre as a directed or shielded spray so the intended crop row area is not treated. These applications should be made where excessive populations of annual ryegrass are anticipated to volunteer from previous crops. Applications can be made as a directed/shielded spray during seeding or after emergence of annual ryegrass. These applications generally will occur between October 1 and January 15. KARMEX® XP is most effective when applied before annual ryegrass volunteer plants have been more than 2 leaves. If larger plants are to be treated, addition of a labeled postemergence herbicide, will provide more effective control.

Adjust nozzle heights and spacing to allow the establishment of the desired row width (generally about 3 inches) and spacing (generally 9 to 12 inches). Use of low pressure nozzles, shielded nozzles, or drop nozzles to reduce spray movement into the intended crop row area is recommended.

#### **FINE FESCUE GRASS SEED CROPS (INCLUDING CHEWINGS, CREEPING RED AND HARD FESCUE TYPES):**

For the suppression of raitail fescue, apply at 1.0 to 2.0 pounds per acre on soils having at least 1% organic matter. Do not use on sand, loamy sand, gravelly soils or exposed subsoils.

**APPLICATION INFORMATION:** KARMEX® XP is recommended for use on healthy, vigorous stands of fine fescue. KARMEX® XP can be applied to stands established at least 1 year or to new plantings that have been established for at least 6 months and have a minimum of eight tillers at time of application.

Apply in fall before grass weeds are beyond the one to two leaf stage and before broadleaf weeds are larger than 1 to 2 inches tall or across. Use the high end of the rate range for large weeds or where weed populations are high.

Approximately 1/2 to 1 inch of rainfall or sprinkler irrigation is needed to move KARMEX® XP into the weed zone before weeds develop an established root system. Weeds larger than the size indicated or those having a well established root system before KARMEX® XP is properly activated by rainfall/irrigation may not be adequately controlled.

Weed control may be reduced by heavy straw residues or ash from field burning.

**TANK MIXTURES:** KARMEX® XP can be applied either alone or in a program involving tank mixes with other herbicides and adjuvants. When using a tank mix with other herbicides, use 1 to 1 1/2 pounds per acre unless prior experience indicates it is safe to use higher rates. Tank mixes with other herbicides can increase the risk of crop injury. When using certain tank mix for the first time, limit use to a small area to determine safety before treating large areas.

## **USE PRECAUTIONS**

Do not replant treated areas to any crop within 2 years of last application as injury to subsequent crops may result.

Do not apply to snow covered or frozen ground as injury to the crop or poor weed control may result.

Do not treat stands lacking in vigor due to poor fertility, environmental stress, insect or disease or damage from other herbicides.

## **NEW PLANTINGS**

**OREGON, WASHINGTON:** For use in newly planted bentgrass, chewing fescue, Kentucky bluegrass, perennial ryegrass, orchardgrass and tall fescue. During planting operation, spray a suitable brand of activated charcoal as a 1 inch band on soil surface at 15 pounds per acre of crop where row spacing is 20 inches (300 pounds per acre broadcast basis). Mount nozzles to apply directly over seed rows to prevent crop injury. Follow with KARMEX® XP as a single broadcast spray at the rate of 2.5 to 3 pounds 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.

## **MACADAMIA NUT**

**HAWAII:** Use only under trees established in the orchard for at least 1 year. Apply at 2 to 6 pounds per acre immediately after harvest, preferably before weeds emerge. If weeds have emerged, add surfactant. Retreat as needed but do not exceed 10 pounds per acre per year.

## **OATS**

Do not replant treated areas to any crop within 1 year after last application as injury to subsequent crops may result.

### **SPRING OATS - DRILL PLANTED**

#### **IDAHO, EASTERN OREGON, EASTERN**

**WASHINGTON:** Use in areas where average annual rainfall exceeds 16 inches. Make a single application of 1 to 1.5 pounds 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 in height.

### **WINTER OATS - DRILL PLANTED MIXED WITH PEAS OR VETCH**

#### **WESTERN OREGON, WESTERN WASHINGTON:**

Make a single application of 1.5 to 2 pounds per acre as soon as possible after planting but before crop emergence.

## **OLIVE**

### **(CALIFORNIA)**

Use only under trees established in the grove for at least 1 year. Apply 2 pounds per acre after the 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.

## PAPAYA

Use only under trees established in the orchard for at least 1 year. Apply 2.5 to 5 pounds per acre, preferably before weeds emerge. If weeds have emerged, add surfactant.

## PEAS

### (AUSTRIAN FIELD)

**WESTERN OREGON:** KARMEX® XP is recommended for selective control of certain weeds in Austrian field peas.

Apply 1.5 to 2 pounds KARMEX® XP per acre as a broadcast spray with air or ground equipment as soon as possible after planting but before crop emerges for control of weeds such as chickweed, sheperdspurse, wild mustard, fiddleneck, lambsquarters, pigweed and annual bluegrass. Use lower rate on coarse-textured soils and higher rate on fine-textured soils.

Do not use KARMEX® XP on sand, sandy loam, gravelly soils or exposed subsoils or on soils having less than 1% organic matter as crop injury may result. Do not replant treated area to another crop within one year of application. Crop injury may result if severe winter stress, disease or insect damage to the crop follows application.

## PEACH

KARMEX® XP may be applied alone or as a tank mix with "Sinbar".

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, 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.

**KARMEX® XP ALONE:** Use only under trees established in the orchard for at least 3 years. Apply 2 to 2.75 pounds per acre in the early spring before weeds emerge or during the early seedling stage of weed growth. In California, apply 2 to 3.75 pounds per acre. 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 2 to 2.75 pounds per acre in the spring. Repeat application in the fall but do not exceed 5.0 pounds per acre per year. Add surfactant to improve control of small, emerged weeds.

**KARMEX® XP 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.

### RATE POUNDS PER ACRE

Soil Texture	1 to 2 % Organic Matter		More Than 2% Organic Matter	
	Karmex® XP	"Sinbar"	Karmex® XP	"Sinbar"
Sandy loam	1.0 +	1.0	1.5 +	1.5
Loam, Silt loam, Silt	1.5 +	1.5	2.0 +	2.0
Clay loam, Clay	2.0 +	2.0	2.0 +	2.0

## PEAR

Use only under trees established in the orchard for at least 1 year. Do not treat varieties grafted on full-dwarf root stocks. Apply 4 pounds per acre in the spring from March through May. In the Far West, apply 4 pounds per acre to weeds less than 2 inches in height or diameter under dormant trees. Alternatively, apply to small weeds at 2 pounds per acre postharvest followed by 2 pounds per acre prior to budbreak.

## PECAN

Use KARMEX® XP alone or as a tank mix 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.

### RATE POUNDS PER ACRE

Soil Texture	Tank mix **		
	Karmex® XP Alone*	OR Karmex® XP +	"Sinbar"
Sandy loam	2.0	1.5	1.5
Loam, Silt loam, Silt	3.0	1.75	1.75
Clay loam, Clay	4.0	2.0	2.0

\* Use only under trees established in the grove for at least 3 years, and on soils with at least 0.5% organic matter.

\*\*Use only under trees established in the grove for at least 1 year, 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 may occur.

## PEPPERMINT

### WASHINGTON, OREGON, IDAHO

Apply KARMEX® XP at 0.75 to 1.0 pound per acre on soils having 1.0% to 2.0% organic matter.

Apply KARMEX® XP at 1.0 to 2.0 pounds per acre on soils having 2.1% to 3.0% organic matter.

Apply KARMEX® XP at 2.0 to 3.0 pounds per acre on soils having more than 3.0% organic matter.

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## USE PRECAUTIONS

Do not apply to stands of mint suffering from stress due to low fertility, drought, winter injury, insects, disease or damage from other herbicides or other causes.

Do not apply to snow covered or frozen ground as injury to the crop or poor weed control may result.

Do not apply to sand, loamy soil, gravelly soils or exposed subsoils. Do not apply to soils that have a high salt content and/or high water table or poor drainage that retards mint root development resulting in a shallow root system. Do not apply to soils having less than 1% organic matter.

**APPLICATION TIMING:** Apply KARMEX® XP to established (at least one year) stands of mint during the late winter dormant period or after flaming in the spring prior to the emergence of new growth. Do not cultivate after application.

If weeds are present at time of application, the use of a surfactant at 0.25% volume/volume or crop oil concentrate at 1.0% volume/volume may be used to increase the performance of KARMEX® XP postemergence to weeds.

**TANK MIXES AND SEQUENTIAL TREATMENTS:** KARMEX® XP can be applied either alone or in a program involving tank mixes and/or sequential treatments with other herbicides and adjuvants providing KARMEX® XP is not applied to actively growing mint plant.

When using a tank mix with other herbicides, use the lower end of the KARMEX® XP use rate range unless prior experience indicates it is safe to use higher rates. Tank mixes and sequential treatments with other herbicides can increase the risk of crop injury. When using a certain tank mix or sequential treatment for the first time, limit use to a small area to determine safety before treating large areas.

## PINEAPPLE

**HAWAII:** Apply 2 to 6 pounds per acre as a broadcast spray just before or immediately after planting but prior to weed emergence. Use 2 to 4 pounds per acre after harvesting the plant crop or ratoon crop (for first ratoon crop as well as subsequent ratoon crops) but before differentiation.

For plant crop only, additional broadcast or interspace applications may be made prior to differentiation at the rate of 2 pounds per acre at intervals of not less than 2 months. Additional applications to plant crop may be made as needed to interspace only using 2 pounds per acre. Do not apply more than 12 pounds per acre as broadcast sprays nor more than 16 pounds total per acre per plant crop. Treated areas may be planted to pineapple or sugarcane 1 year after last application.

**FLORIDA:** Apply 4 to 8 pounds per acre as a broadcast spray just before or immediately after planting but prior to weed emergence. For ratoon crop use 4 pounds per acre after harvesting plant crop. For plant crop only, a second and third broadcast or interspace application may be made prior to differentiation at the rate of 2 pounds per acre at

intervals of not less than 2 months. Additional applications to plant crop may be made as needed to interspace only using 2 pounds per acre. Do not apply more than three broadcast sprays (maximum 12 pounds per acre) prior to differentiation nor more than 16 pounds total per acre per plant crop. Treated areas may be planted to pineapple or sugarcane 1 year after last application.

**PUERTO RICO:** Apply 3.75 to 6.25 pounds per acre as a broadcast spray before or immediately after planting but prior to weed emergence. Preemergence application controls weeds such as pigweed, crotalaria, morningglory, purslane, crabgrass, foxtail, goosegrass, fall panicum and sourgrass.

## RED CLOVER

**WESTERN OREGON:** Make a single application of 2 pounds per acre on established red clover stands at least 9 months old. Apply when red clover is dormant between October 15 and December 15. Do not apply to seedling red clover. Do not replant treated area to any crop within 1 year after last application as injury to subsequent crops may result.

Treatment will control annual weeds such as bluegrass, chickweed, hawksbeard, rattail fescue, ryegrass and velvetgrass.

## SORGHUM

### (GRAIN)

**SOUTHWESTERN STATES:** Apply 0.25 to 0.5 pounds per acre plus surfactant. Apply as a directed postemergence spray after sorghum is 15 inches tall to control weeds 2 to 4 inches in height. Use 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. Do not exceed 0.5 pound 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 injury to subsequent crops may result.

**DO NOT SPRAY OVER THE TOP OF SORGHUM.**

## SUGARCANE

To prevent possible crop injury on new cane varieties, test tolerance to KARMEX® XP prior to adoption as field practice. Do not treat sugarcane growing on thinly covered sub-soils or rocky areas as crop injury may result. Temporary chlorosis and stunting of the crop may result from application over emerged cane. Application over emerged cane should be made only as directed below, without the addition of a surfactant or crop oil concentrate. To minimize chlorosis and stunting, use directed postemergence sprays.

KARMEX® XP may be applied as a directed spray (including hooded and shielded spray) in combination with "Boa" and other formulations of paraquat. Consult the label

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of the tankmix partner for rates and timings of application, restrictions, and precautions.

**PREEMERGENCE - FLORIDA:** For high organic soils, apply 2 to 4 pounds per acre as a broadcast or band spray prior to weed emergence after planting or after harvesting plant crop (for ratoon crop).

**POSTEMERGENCE - FLORIDA:** Make one or two applications of 2 pounds per acre as needed by directed spray inter-row. Alternatively, for panicum control, make up to three applications of 0.5 to 1 pound 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 6 pounds total per acre between planting (or ratooning) and harvest.

**HAWAII:** Apply 2 to 6 pounds per acre as a broadcast spray prior to weed emergence after planting or after harvesting plant crop or ratoon crop. Sequential applications of 2 to 4 pounds 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 and apply as a directed spray.

Do not apply more than three treatments nor more than 12 pounds per acre in Hawaii between planting (or ratooning) and harvest. Treated areas may be replanted to sugarcane or pineapple 1 year after last application.

**PUERTO RICO:** Apply 4 to 8 pounds per acre as a broadcast spray prior to weed emergence after planting or after harvesting plant crop or ratoon crop. A second and third application of 2 to 4 pounds 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 and apply as a directed spray.

Do not apply more than three treatments nor more than 10 pounds per acre in Puerto between planting (or ratooning) and harvest. Treated areas may be replanted to sugarcane or pineapple 1 year after last application.

**LOUISIANA, TEXAS:** Apply at 3 - 3.75 pounds per acre. KARMEX® XP may be applied as a broadcast spray after planting and following the harvest of sugarcane. KARMEX® XP may also be applied broadcast in late winter. Application is best when made prior to weed emergence.

KARMEX® XP may be applied as a post-directed spray immediately after the last cultivation. Direct the spray application to the base (no more than 1/3 the plant height) of the sugarcane plants. When small weeds (3 inches or less) are present at application, add a surfactant at 0.25% V/V or crop oil concentrate at 1.0% V/V to the spray mix.

## USE PRECAUTIONS

Temporary leaf yellowing may occur following application. Do not apply more than 7.5 pounds per acre broadcast per year. Use proportionately less for band applications.

## TREE PLANTINGS

**CO, MT, NE, ND, SD, WY:** 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 2.5 to 5 pounds per acre. Apply as a band 4 feet wide in the tree row (2 feet on each side of row). For example, 1 ounce KARMEX® XP treats 135 feet of tree row (2 feet on each side of row) at the rate of 5 pounds 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, nor under trees growing in low areas as injury may result.

**ID, OR, WA:** KARMEX® XP is recommended for control of weeds to aid in the establishment of hybrid poplar plantings. Apply at 1.0 to 3.0 pounds per acre depending upon soil texture and organic matter content. Use 1.0 to 2.0 pounds per acre on coarse textured soils and 2.0 to 3.0 pounds per acre on medium to fine textured soils. Do not use on gravelly soils or on any soil having less than 0.5% organic matter as injury to trees may result. **Injury may result from applications to poplar plantings grown on sandy soil with low organic matter with sprinkler irrigation.** When applied in a band, the application rate will be in proportion to the area banded on a per acre basis.

Apply in late winter or early spring as a uniform broadcast spray before or after planting but prior to bud swell, or as a directed spray after bud swell. Apply before weeds emerge or after emergence while weeds are small. Some rainfall or water is necessary to move KARMEX® XP into the weed root zone before weeds become well established. If weeds are present at time of treatment, add a surfactant at 1 to 2 quarts per 100 gallons of spray solution.

**PRE-PLANT:** Take precautions to prevent treated soil (usually top 1 inch) from coming into contact with roots of trees during the planting process as injury may result.

**POST-PLANT (BROADCAST):** It is best to wait until rain or irrigation has settled the soil around the newly planted trees before applying KARMEX® XP. If trees are dormant, a broadcast application can be made.

**POST-PLANT (DIRECTED):** If buds have started to swell, use a directed spray pattern that prevents KARMEX® XP from contact with trees as injury may result. During the growing season (from bud swell to leaf drop) KARMEX® XP may be applied (alone or with tank mix) between tree rows in a shielded and directed sprays.

KARMEX® XP can be tank mixed with a registered glyphosate herbicide pre-plant and as a directed spray to broaden the spectrum of weeds controlled and improve post-emergence activity. Use 1.0 to 3.0 pounds KARMEX® XP plus glyphosate herbicide (according to label recommendations) depending upon soil type and weeds to be

controlled. Note: There are several formulations of glyphosate herbicide. Check the glyphosate herbicide label to verify that the intended use as a pre-plant or post-directed spray on hybrid poplar plantations is allowed. Avoid contact of glyphosate herbicide with foliage, green stems, trees or other desirable vegetation because severe damage or destruction may result.

## **WALNUT**

### **(ENGLISH)**

#### **CALIFORNIA, OREGON, WASHINGTON**

Use only under trees established in orchards for at least 1 year. As an initial treatment, apply 2.75 pounds per acre after the orchard has been laid-up in final form (non-tillage program) in late fall or early winter. Retreat annually with 2 to 2.75 pounds per acre. In California apply 2 to 3.75 pounds per acre. Alternatively, apply 2 pounds per acre in October or November and repeat at the same rate in March or April.

Do not use on sand, loamy sand, gravelly soils or exposed sub-soils, nor where organic matter is less than 1%. Do not graze livestock in treated orchards and groves.

Do not make more than two applications per year. Do not apply more than 4 pounds per acre per year. In California, do not apply more than 3.75 pounds per acre per year. When using KARMEX® XP in a sequential treatment program, allow a minimum of 150 days between applications.

## **WHEAT**

### **(WINTER)**

#### **USE PRECAUTIONS**

Crop injury may result where severe winter stress, disease or insect damage follows application. Winter-sensitive varieties may be less tolerant of KARMEX® XP than winter-hardy varieties. Crop injury may result from failure to observe the following: Do not use on sand or loamy sand soils, nor on gravelly or sandy loams with less than 1% organic matter. Do not use on thinly covered or exposed sub-soil 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 the wheat has reached the "boot" stage of maturity. Unless specified otherwise, 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, WASHINGTON**

**EAST OF CASCADE RANGE:** Where average annual rainfall exceeds 16 inches, make a single application of 1 to 1.5 pounds 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

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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. 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 0.5 to 1 pound KARMEX® XP 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 more than 2 inches tall or across.

Where average annual rainfall is 10 to 16 inches following fall planting, make a single application of 1 to 1.5 pounds per acre when sufficient moisture is available to germinate wheat seed. Apply before soil freezes and weeds are 2 inches tall. Application later than March 1 may give poor results.

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 inches prior to planting. Do not make a second application during the same crop year or injury to the crop may result.

#### **OREGON, WASHINGTON**

**WEST OF CASCADE RANGE:** Make a single application of 1.5 to 2 pounds 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 KARMEX® XP 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, TEXAS:** Do not use on sand or sandy loam soils. Use 1 pound per acre on silt and silt loam soils and 1.5 to 2 pounds per acre on clay, clay loam and silty clay loam soils.

**CENTRAL PLAINS, MIDWEST:** Use 1 to 2 pounds per acre.

**NORTHEAST:** Use 1.0 to 1.5 pounds per acre.



## NON-AGRICULTURAL USES

### 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. Non-crop weed control is not within the scope of the Worker Protection Standard.

Keep unprotected persons out of treated areas until sprays have dried.

### NON-CROP WEED CONTROL

KARMEX® XP is an effective herbicide for the control of listed weeds. The degree of control and duration of effect will vary with amount of chemical applied, soil texture, rainfall and other conditions. KARMEX® XP may be used as a preemergence 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 applied 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.

Use a fixed-boom power sprayer properly calibrated to insure a constant rate of application. Mix proper amount of KARMEX® XP into volume of water necessary to obtain uniform coverage. If surfactant is used, dilute with ten parts of water and add as last ingredient to nearly full tank. KARMEX® XP must be kept in suspension at all times. Agitate by mechanical or hydraulic means in the spray tank. If bypass or return line is used, it should terminate at bottom of tank to minimize foaming. Use 50 mesh screen or larger.

**NOTE:** KARMEX® XP may be applied by either aerial or ground application equipment for weed control in rights-of-way sites.

Do not exceed an application rate of 10 pounds per acre except in areas of high rainfall (more than 40 inches/year) or dense vegetation (more than 90% weed ground cover). In areas with high rainfall or dense vegetation, a maximum application of 15 pounds per acre is allowed. Do not exceed 15 pounds per acre per year. Do not make more than two applications per year. If KARMEX® XP is used in a sequential application program, allow a minimum of 90 days between applications.

**GENERAL WEED CONTROL:** KARMEX® XP is recommended for general weed control as follows: uncultivated non-agricultural areas (such as, airports,

highway, railroad and utility rights-of-way, sewage disposal areas); uncultivated agricultural areas (non-crop producing, which includes: farmyards, fuel storage areas, fence rows, barrier strips); industrial sites (outdoor, such as, lumberyards, pipeline and tank farms).

Apply 5 to 15 pounds per acre to control most annual weeds including:

### BROADLEAVES 5 TO 15 POUNDS/ACRE

Ageratum  
Chickweed  
Cocklebur  
Corn Speedwell  
Corn Spurry  
Dayflower  
Dogfennel  
Fiddleneck (Amsinckia)  
Flora's Paintbrush  
Gromwell  
Groundcherry, Annual  
Hawksbeard  
Horsenettle  
Knawel  
Lambsquarter  
Marigold  
Mexican Clover  
Morningglory, Annual  
Pennycress  
Pigweed  
Pineappleweed  
Pokeweed  
Prickly Lettuce  
Prickly Sida (Teaweed)  
Purslane  
Rabbit Tobacco  
Ragweed  
Sesbania  
Shepherdspurse  
Sicklepod  
Smartweed, Annual  
Sowthistle, Annual  
Spanish Needles  
Tansymustard  
Velvetleaf (Buttonweed)  
Wild Buckwheat  
Wild Lettuce  
Wild Mustard  
Wild Radish

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**GRASSES**

**5 TO 8 POUNDS/ACRE**

- Barnyardgrass (Watergrass)
- Bluegrass, Annual
- Crabgrass
- Foxtail
- Johnsongrass (Seedling)
- Kyllinger (Kyllinga)
- Lovegrass, Annual
- Orchardgrass
- Peppergrass
- Quackgrass
- Rattail Fescue
- Red Sprangletop
- Ricegrass
- Ryegrass, Annual
- Sandbur
- Velvetgrass
- Vernalgrass, Sweet, Annual

**8 TO 15 POUNDS/ACRE**

- Guineagrass
- Maidencane
- Pangolagrass

**IRRIGATION AND DRAINAGE DITCHES:** Apply 5 to 15 pounds per acre to control most annual weeds as shown above. Apply only when water is not in the ditch. For irrigation ditches, apply during the non-crop season and when the ditch is not in use. To avoid crop injury, it is essential to minimize movement of KARMEX® XP in irrigation water. The herbicide must 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 any waste water remaining before using ditch. Trees or other desirable plants whose roots extend into the ditch area may be injured.

**DRY APPLICATION:** KARMEX® XP may be applied dry for control of the listed weeds on non-crop sites. Apply KARMEX® XP granules using dry application (ground) equipment to distribute the granules uniformly to the target area.

*(The following text appears on product packaging distributed in the State of California.)*

**ATTENTION:** This product contains diuron, a chemical known to the State of California to cause cancer in laboratory animals.

**ADDITIONAL USE INFORMATION**

**SPRAY DRIFT MANAGEMENT**

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

AVOIDING SPRAY DRIFT IS THE RESPONSIBILITY OF THE APPLICATOR.

**IMPORTANCE OF DROPLET SIZE**

The most effective way to reduce drift potential is to apply large droplets (>150 - 200 microns). The best drift management strategy is to apply the largest droplets that provide sufficient coverage and control. The presence of sensitive species nearby, the environmental conditions, and pest pressure may affect how an applicator balances drift control and coverage. **APPLYING LARGER DROPLETS REDUCES DRIFT POTENTIAL, BUT WILL NOT PREVENT DRIFT IF APPLICATIONS ARE MADE IMPROPERLY OR UNDER UNFAVORABLE ENVIRONMENTAL CONDITIONS!** See **Wind, Temperature and Humidity, and Surface Temperature Inversions** sections of this label.

**CONTROLLING DROPLET SIZE - GENERAL TECHNIQUES**

- **Volume** - Use high flow rate nozzles to apply the highest practical spray volume. Nozzles with higher rated flows produce larger droplets.
- **Pressure** - Use the lower spray pressures recommended for the nozzle. Higher pressure reduces droplet size and does not improve canopy penetration. **WHEN HIGHER FLOW RATES ARE NEEDED, USE A HIGHER-CAPACITY NOZZLE INSTEAD OF INCREASING PRESSURE.**
- **Nozzle Type** - Use a nozzle type that is designed for the intended application. With most nozzle types, narrower spray angles produce larger droplets. Consider using low-drift nozzles.

**CONTROLLING DROPLET SIZE - AIRCRAFT**

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

**BOOM LENGTH AND HEIGHT**

- **Boom Length (aircraft)** - The boom length should not exceed 3/4 of the wing length, using shorter booms decreases drift potential. For helicopters use a boom length and position that prevents droplets from entering the rotor vortices.
- **Boom Height (aircraft)** - Application more than 10 ft above the canopy increases the potential for spray drift.

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- **Boom Height (ground)** Setting the boom at the lowest height which provides uniform coverage reduces the exposure of droplets to evaporation and wind. The boom should remain level with the crop and have minimal bounce.

**WIND**

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

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

**TEMPERATURE AND HUMIDITY**

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

**SURFACE TEMPERATURE INVERSIONS**

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

**SHIELDED SPRAYERS**

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

**STORAGE AND DISPOSAL**

**PESTICIDE STORAGE:** Store product in original container only, away from other pesticides, fertilizer, food or feed.

**PESTICIDE DISPOSAL:** Do not contaminate water, food or feed by storage or disposal. Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility.

**CONTAINER DISPOSAL:** Completely empty bag into application equipment. Then dispose of empty bag in a sanitary landfill, or incineration, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

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Valdosta, GA 31601

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## LIMITATION OF WARRANTY AND LIABILITY

NOTICE: Read This Limitation Of Warranty And Liability Before Buying Or Using This Product. If The Terms Are Not Acceptable, Return The Product At Once, Unopened, And The Purchase Price Will Be Refunded.

It is impossible to eliminate all risks associated with the use of this product. Such risks arise from weather conditions, soil factors, off target movement, unconventional farming techniques, presence of other materials, the manner of use or application, or other unknown factors, all of which are beyond the control of Griffin. These risks can cause: ineffectiveness of the product, crop injury, or injury to non-target crops or plants. Griffin does not agree to be an insurer of these risks. **WHEN YOU BUY OR USE THIS PRODUCT, YOU AGREE TO ACCEPT THESE RISKS.**

Griffin warrants that this product conforms to the chemical description on the label thereof and is reasonably fit for the purpose stated in the Directions for Use, subject to the inherent risks described above, when used in accordance with the Directions for Use under normal conditions.

**GRIFFIN MAKES NO OTHER EXPRESS OR IMPLIED WARRANTY OF FITNESS OR OF MERCHANTABILITY OR ANY OTHER EXPRESS OR IMPLIED WARRANTY.**

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