

SPECIMEN LABEL

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Karmex®

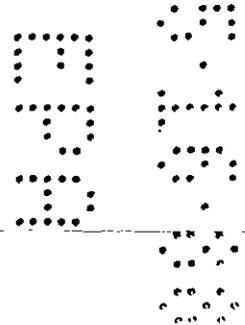
HERBICIDE

ACCEPTED

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Under the Federal Insecticide,
Fungicide, and Rodenticide Act,
as amended, for the pesticide
registered under
EPA Reg. No. 352-247

WETTABLE POWDER





259

Karmex[®] HERBICIDE

ACTIVE INGREDIENT: Diuron [3-(3,4-dichlorophenyl)-1,1-dimethylurea] 80%
INERT INGREDIENTS 20%

EPA Reg. No. 352-247

**Keep out of reach of children
PRECAUTIONARY STATEMENTS
HAZARDS TO HUMANS AND DOMESTIC ANIMALS**

CAUTION! MAY IRRITATE EYES, NOSE, THROAT AND SKIN.

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

Do not apply this product in such a manner as to directly or through drift expose workers, or other persons. The area being treated must be vacated by unprotected persons.

STATEMENT OF PRACTICAL TREATMENT

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

If in eyes: Flush with plenty of water; get medical attention if irritation persists.

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

ENVIRONMENTAL HAZARDS

Do not apply directly to water. Do not contaminate water by cleaning of equipment or disposal of wastes. Cover or incorporate spills.

STORAGE AND DISPOSAL

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

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.

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

NOTICE OF WARRANTY

Du Pont warrants that this product conforms to the chemical description on the label thereof and is reasonably fit for purposes stated on such label only when used in accordance with the directions under normal use conditions. It is impossible to eliminate all risks inherently associated with the use of this product. Crop injury, ineffectiveness or other unintended consequences may result because of such factors as weather conditions, presence of other materials, or the manner of use or application, all of which are beyond the control of Du Pont. In no case shall Du Pont be liable for consequential, special or indirect damages resulting from the use or handling of this product. All such risks shall be assumed by the Buyer. DU PONT MAKES NO WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE NOR ANY OTHER EXPRESS OR IMPLIED WARRANTY EXCEPT AS STATED ABOVE.

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, nor 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. Do not apply this product through any type of irrigation system.

Thoroughly clean all traces of "Karmex" 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).

GENERAL INFORMATION

Du Pont "Karmex" Herbicide is a dispersible granule to be mixed in 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 noncorrosive to equipment, nonflammable and nonvolatile.

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

"Karmex" applied preemergence, 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, "Karmex" 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" 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 Du Pont Surfactant WK to the spray (where recommended) increases contact effects of "Karmex".

"Karmex" 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, careberries, gooseberries, citrus, grapes, macadamia nuts, olives, papayas, peaches, pears, pecans, walnuts and certain tree plantings.

Under specified conditions (see Directions for Use), "Karmex" without surfactant may be applied over the top of alfalfa (established, dormant or semidormant), 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 "Karmex" and they may be more difficult to control when under stress. Combinations of "Karmex" with other herbicides (as registered) increase the number of weed species controlled; consult labels of the companion product for this and other information.

Since the effect of "Karmex" varies with soils, uniformity of application, and environmental conditions, it is suggested that growers limit their first use to small areas. Observe all cautions and limitations on labeling of all products used in mixtures.

DIRECTIONS FOR USE

It is a violation of federal law to use this product in a manner inconsistent with its labeling.

Du Pont "Karmex" Herbicide should be used only in accordance with recommendations on this label, or in separate published Du Pont recommendations available through local dealers.

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

Do not apply this product in such a manner as to directly or through drift expose workers or other persons. The area being treated must be vacated by unprotected persons.

Farm workers performing hand labor operations should not enter treated cropland areas without protective clothing until sprays have dried. Because certain states may require more restrictive reentry intervals for various crops treated with this product, consult your State Department of Agriculture for further information.

Written or oral warnings must be given to farm workers performing hand operations who are expected to be in a treated cropland area or in an area about to be treated with this product. When oral warnings are given, warnings shall be given in a language customarily understood by workers. Oral warnings must be given if there is reason to believe that written warnings cannot be understood by workers. Warnings must include the following information: "CAUTION. Area treated with "Karmex" on (date of application). Do not enter without appropriate protective clothing until sprays have dried. In case of contact, wash skin with plenty of soap and water, flush eyes with plenty of water. Get medical attention if irritation to skin or eyes persists."

Do not use in Kern County, California, except for non cropland and citrus weed control.

SELECTIVE USE IN CROPS

PREEMERGENCE USE (Germinating Weeds): "Karmex", at recommended rates, controls annual weeds such as:

Broadleaves			Grasses		
1/4 to 1 Lb/Acre	1 1/2 to 2 Lbs/Acre	2 to 6 Lbs/Acre	1/4 to 1 Lb/Acre	1 1/2 to 2 Lbs/Acre	2 to 6 Lbs/Acre
Lambsquarters	Annual groundcherry	Ageratum	Barnyardgrass (watergrass)	Annual bluegrass	Annual lovegrass
Pigweed	Annual morningglory	Annual smartweed	Crabgrass	Annual sweet vernalgrass	Annual ryegrass
Purslane	Chickweed	Annual scabious		foxtail	Kyrga
Ragweed	Corn spurry	Corn speedwell		Rattail fescue	Orchardgrass
	Dogfennel	Dayflower		Red sprangletop	Peppergrass
	Fiddleneck (fennel)	Floras		vinegrass	Ryegrass
	Gromwell	Paintbrush			Sandspur
	Knapel	Hawkbeard			Seeding johnson grass
	Pennycress	Horseweed			
	Spanglerspurse	Kochia			
	Tansey mustard	Margold			
	Wild buckwheat	Mexican clover			
	Wild lettuce	Pineappleweed			
	Wild mustard	Poleweed			
		Rabbit tobacco			
		Spanish needle			
		Velvetleaf			
		(buttonweed)			
		Wild radish			

Partial control of the following weeds usually occurs at rates stated

Broadleaves		Grasses	
1 Lb/Acre	4 Lbs/Acre	4 Lbs/Acre	8 to 10 Lbs/Acre
Annual morningglory	Horseweed	Quackgrass	Guineagrass
Cockspur			Mexicanryegrass
Rocky foxtail (weedy)			Fieldgrass
Sesbania			
Scorched			

(Continued)

POSTEMERGENCE USE (Emerged Seedling Weeds)

"Karmex" at recommended rates, controls annual weeds such as annual morningglory, barnyardgrass (watergrass), crabgrass, crowfoot, goosegrass, pigweed and purslane. Addition of Surfactant WK to the spray (where recommended) increases contact effects of "Karmex". Best results are obtained on succulent weeds growing under conditions of high humidity and temperatures of 70°F or higher.

EQUIPMENT—SPRAY VOLUMES AND PRESSURES

Use a boom power sprayer properly calibrated to a constant speed and rate of delivery. Openings in screens should be equal to or larger than 50 mesh. Continuous agitation in the spray tank is required to keep the material in suspension. Agitate by mechanical or hydraulic means; if by-pass or return 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 preemergence application, use 25 to 40 gals per acre and spray pressure of 30 to 40 psi. For postemergence application, use sufficient volume (min 25 gals per acre) for thorough coverage of weed foliage; use spray pressure of 20 to 25 psi to keep spray drift to a minimum.

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

SPRAY PREPARATION

Mix proper amount of "Karmex" into necessary volume of water; where use of Du Pont Surfactant WK is recommended, dilute with 10 parts of water and add as last ingredient to nearly full tank.

USE RATES:

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

SOIL LIMITATIONS:

Crop injury may result from failure to observe the following:

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

Preemergence weed control will be reduced on high organic matter soils (greater than 5%, such as peat or muck).

REPLANTING

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

• FIELD CROPS (See Soil Limitations)

A good seedbed must be prepared before preemergence use of "Karmex" 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 "Karmex" and before emergence of the crop as weed control may be reduced and crop injury may result. However, if moisture is insufficient to activate the herbicide, a shallow cultivation (rotary hoe preferred) should be made after emergence of crops while weeds are small enough to be controlled by mechanical means.

• ALFALFA

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

Idaho, Oregon, Washington: Use 1 1/2 to 3 lbs per acre; for control of volunteer alfalfa, use 4 lbs per acre. Apply in fall after alfalfa becomes dormant but no later than mid-December.

California (Dormant and Semi-Dormant Varieties): Use 1 1/2 to 3 lbs per acre for control of volunteer alfalfa, use 4 lbs per acre. Apply in fall or winter after alfalfa becomes dormant or semi-dormant, but before growth begins in the spring. Crop injury may result if application is made to actively growing alfalfa. For best results, apply before weeds have emerged or become established (2" in height or diameter). Control of established weeds is improved by applying "Karmex" with a suitable contact herbicide registered for such use. Sufficient rainfall for soil activation of "Karmex" is unlikely in California after February 1. Treated areas may be replanted to any crop after one year from last application if rate does not exceed 2 lbs per acre.

Arizona, Nevada: Use 1 1/2 to 3 lbs per acre; apply in fall after alfalfa becomes dormant but no later than January.

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

Other Areas Where Alfalfa Becomes Winter Dormant: Use 1 1/2 to 3 lbs per acre (1 1/2 to 2 lbs per acre East of Appalachian Mountains). Apply in March or early April, but before spring growth begins.

• ARTICHOKE—California

Apply 2 to 4 lbs 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 high organic matter soils (greater than 5%).

Established Plantings: On light sandy soils and other soils low in clay or organic matter, apply 1 to 2 lbs per acre. On soils high in clay or organic matter, use 2 to 4 lbs 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 lbs per acre per application. In Washington (irrigated crop), apply a single treatment of 4 lbs per acre. If treatment is delayed until late winter or early spring, incorporation of the chemical in the top 1" to 2" of soil may substitute for lack of rain to activate the herbicide.

Newly Planted Crowns—California (San Joaquin Delta): Make a single application of 2 to 4 lbs 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".

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• **BARLEY, WINTER (Drill-Planted)—Western Oregon and Western Washington**
 Make a single application of 1½ to 2 lbs per acre as soon as possible after planting but before emergence of barley. Do not replant treated areas to any crop within 1 year after last application as injury to subsequent crops may result.

• **BERMUDAGRASS PASTURES (Newly Sprigged)**
 Apply 1 to 3 lbs after planting and before emergence of bermudagrass or weeds. Alternatively, for control of emerged annual weeds up to 4" in height, apply ½ to 1 lb per acre; add 1 pt Surfactant WK per 25 gals of spray. If bermudagrass has emerged at time of treatment, temporary burn of exposed plant parts may occur.

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

• **BIRDSFOOT TREFOIL (Lotus)—Western Oregon**
 Treat only stands established for at least 1 year, do not apply to seedling trefoil as injury may result. Make a single application of 2 lbs per acre when trefoil is dormant (October 15 to December 15). Do not replant treated areas to any crop within 1 year after last application as injury to subsequent crops may result.

• **CORN (FIELD)**
Postemergence—Make a single application of ½ lb per acre in combination with non pressure nitrogen solution. If nitrogen solution is not used, apply 1 lb per acre; add 1 pt Surfactant WK per 25 gals of spray. Apply as a directed spray when corn is at least 20" high and weeds are no taller than 3". DO NOT APPLY OVER TOP OF CORN. Do not replant to any crop within 1 year, except that cotton, corn and grain sorghum may be planted the spring following treatment.

Preemergence—Arkansas, Louisiana, Mississippi and Tennessee: Make a single application of 2/3 to 1 lb per acre as broadcast or band treatment after planting but before corn emerges. Plant corn at least 1½" 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 crop injury may result.

• **COTTON**
 During a single crop season, do not exceed the following amounts of "Karmex" per acre as injury to subsequent crops may result: 1 lb on loamy sand; 1½ lbs on sandy loam, 2 lbs on clay loam; 2½ lbs on clay. Injury may occur if "Karmex" is used in conjunction with soil-applied organic phosphate pesticides. Do not allow livestock to graze treated cotton.

Preplant—Arizona and California: Use "Karmex" alone, or apply as a separate operation following preplant broadcast treatment with "Treflan" (incorporated according to directions on "Treflan" label). Apply "Karmex" as a broadcast spray after beds are formed, preirrigated, and final seedbeds prepared. Prior to planting, drag-off the tops of the beds and plant in moist soil not treated with "Karmex". 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:

"Karmex" Alone: 1 to 2½ lbs per acre.

"Karmex" Following "Treflan":

Soil Texture	Product Per Acre—Preplant	
	"Treflan"	"Karmex"
Sandy loam, loam, silt loam, silt	1 pt	¾ to 1 lb
Sandy clay loam, clay loam, silty clay loam, sandy clay, clay	1½ pts	1 to 1¼ lbs

Note: Seedling disease may weaken plants and increase the possibility of injury from the use of "Treflan" followed by "Karmex". 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.
 * Reg. trademark of Eianco Products Co.

Preemergence—U.S., except Arizona, California, and areas west of Interstate 35 or 35W in Texas and Oklahoma: Use "Karmex" alone or apply as a separate operation following preplant treatment with "Treflan". Apply "Karmex" 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 ½") 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" or if soil becomes crusted before crop emerges, a shallow rotary hoeing (no deeper than ¼") should be made before weeds become established.

"Karmex" Alone: Make a single application as a broadcast or band spray, using the following broadcast rates, for band treatment, use proportionately less.

Soil Texture**	Lbs "Karmex" Per Acre
Loamy sand	¾
Sandy loam, loam, silt loam, silt	1
Sandy clay loam, clay loam, silty clay loam, sandy clay	1¼
Silty clay, clay	2

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

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

Soil Texture**	Product Per Acre	
	Preplant "Treflan"	Preemergence "Karmex"
Loamy sand	½ pt	¾ lb
Sandy loam, loam, silt loam, silt	1 pt	1 lb
Sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay, clay	1½ pts	1¼ - 2 lbs

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

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

Early Season—Apply when weeds are at least 6" tall and when weeds are actively growing and do not exceed 2" in height. Apply as a band treatment at the following rates, for each 25 gals of spray, add 1 pt Surfactant WK. Two application may be made if needed.

Weed Problem (Up to 2' Tall)	Lbs "Karmex" Per Acre (Broadcast Basis)
Annual grasses	¾
Pigweed	¼

For control of seedling perennial grasses such as johnsongrass and partial control of nuttallcreeper when weed growth is under drought stress or as high as 4", add 2 to 3½ lbs disodium methylarsenate (DSMA, 63% anhydrous or equivalent) to above spray mixture. If DSMA is used, do not apply after first bloom.

Late Season (Lay-By)—Apply 1 to 1½ lbs per acre (1 to 2 lbs in Arizona and California) when cotton is at least 12" tall (at least 20" tall for Pima S-2). For control of germinating weed seedlings, apply to soil beneath cotton plants and between rows immediately after last cultivation. In irrigated cotton, best weed control is obtained if the field is irrigated within 3 to 4 days after application; thoroughly wet the surface of the ground over the row to carry the herbicide into the root zone of germinating weeds. Alternatively, for control of emerged annual weeds (up to 4" in height) at lay-by time, make a single application in combination with Surfactant WK (1 pt per 25 gals spray), or use 1/2 to ¾ lb "Karmex" (plus surfactant) per acre and repeat later if needed. **Replanting:** If initial seeding fails to produce a stand, cotton may be replanted in soil treated preplant or preemergence with "Karmex", alone or following "Treflan". Wherever possible, avoid disturbing original bed. If necessary to rework soil before replanting, use shallow cultivation such as discing; do not relist nor move soil into the original drill area. Plant seed at least 1" deep. Do not retreat field with a second preplant or preemergence application during the same crop year as injury to the crop may result.

Subsequent Crops:

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

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

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

Colorado, Kansas, New Mexico and Oklahoma: On sand bluestem, side oats grama and switchgrass, apply 2 to 3 lbs 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 lbs 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 2 to 4 lbs per acre between October 1 and November 15. In fields where ash residues have accumulated from burning straw, use 3 to 4 lbs per acre; spread unburned chaff or straw with a harrow or chopper before application. If perennial velvetgrass (*Holcus lanatus*) is a problem, use 4 lbs per acre. For best results apply as soon as possible after fall rains start. Established weeds (beyond 2 to 4 leaf stage) should be removed prior to treatment.

Well established vigorous stands of spring-planted alta fescue, Kentucky bluegrass and orchardgrass may be treated the following fall provided the crop is planted before April 1 and treatment is not applied before October 15, use 2 lbs per acre.

Oregon: For use in newly planted bentgrass, chewing fescue, Kentucky bluegrass, perennial ryegrass, orchardgrass and tall fescue. During planting operation, spray Aqua Nu-Char² or Gro-Safe³ or other suitable brands of activated charcoal as a 1" band on soil surface at rate of 300 lbs per acre (broadcast basis; equivalent to 15 lbs per acre of crop where row spacing is 20"). Mount nozzles to apply directly over seed rows to prevent crop injury. Follow with "Karmex" as a single broadcast spray at rate of 2½ to 3 lbs 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.

² Reg. trademark of Westvaco Corp.

³ Reg. trademark of ICI United States Inc.

- **OATS (Drill-Planted)**

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

Spring oats—Idaho, Eastern Oregon, Eastern Washington: Use in areas where average annual rainfall exceeds 16". Make a single application of 1 to 1½ lbs 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 2 to 4 weeks after planting. Apply before weeds are 3" to 4" tall.

Winter Oats and Mixtures with Peas or Vetch—Western Oregon and Western Washington: Make a single application of 1½ to 2 lbs per acre as soon as possible after planting but before emergence of the crop.

- **PEPPERMINT—Pacific Northwest**

Apply 3 lbs per acre just after the last cultivation in the spring prior to emergence of peppermint. Do not apply to newly planted (less than 1 year) nor to emerged peppermint as injury may result.

- **RED CLOVER—Western Oregon**

Make a single application of two pounds per acre on established red clover stands (at least 9 months). Apply "Karmex" when red clover is dormant (October 15 to December 15). Do not apply to seedling red clover, and do not replant 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 ½ to ½ lb per acre; add 1 pt Surfactant WK per 25 gals of spray. Apply as a directed postemergence broadcast or band spray after sorghum is 15" tall to control weeds 2" to 4" in height. **DO NOT SPRAY OVER TOP OF SORGHUM.** Use the lower rate on broadleaved weeds up to 2" tall, use the higher rate on grasses up to 2" and broadleaved weeds up to 4" tall. When the lower rate is used, a second application may be made if needed provided the amount applied in one crop year does not exceed ½ lb per acre. Treatment of weeds under drought stress is usually ineffective.

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

- **SUGARCANE**

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

Florida: Preemergence—For high organic soils, apply 2 to 4 lbs per acre as a broadcast or band spray prior to weed emergence after planting or after harvesting plant crop (or ratoon crop). Postemergence—Make 1 or 2 applications of 2 lbs per acre as needed by directed spray inter-row. Alternatively, for panicum control, make up to 3 application of ½ to 1 lb per acre as a directed spray after cane has emerged but before panicum exceeds 2" in height. Add 1 qt Surfactant WK per 100 gals of spray. Adjust nozzles to spray beneath cane plants and between rows to cover weed foliage and to minimize contact of cane leaves with spray drift. Do not apply more than 6 lbs total per acre between planting (or ratooning) and harvest.

Hawaii and Puerto Rico: Apply 4 to 8 lbs 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 lbs 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 (such as Surfactant WK, "Osamil" 95 or "Sterox" SK) to the spray at the rate of 1 to 2 qts per 100 gals and apply as a directed spray. **DO NOT SPRAY OVER TOP OF CANE.**

Do not apply more than 3 treatments nor more than 10 lbs (Puerto Rico) or 12 lbs (Hawaii) total per acre between planting (or ratooning) and harvest. Treated areas may be planted to sugarcane or pineapple one year after last application.

Louisiana: Use on plant cane seeded on fallowed ground. Make a single application of 3 to 3½ lbs per acre at either of the following times: Fall Treatment (August through October)—Treat a 2 ft band over the row after planting of cane, but before weeds or cane emerge. Spring Treatment (January through April)—if shaving and off-barring are practiced, treat a 2 ft band over the row before weeds or cane emerge.

• **WHEAT, WINTER (Drill-Planted)**

Crop injury may result where severe winter stress, disease or insect damage follows application; winter-sensitive varieties such as McDermid and Hyslop may be less tolerant of "Karmex" than winter-hardy varieties such as Gaines and Nugaines. Crop injury may also result from failure to observe the following: Do not use on sand or loamy sand soils, nor on gravelly or sandy loams low in organic matter (less than 1%), nor on thinly covered or exposed subsoil areas (clay knobs); do not treat wheat planted less than 1" deep; do not treat wheat where winter climatic conditions have caused "heaving" of plants; do not treat wheat plants lacking in vigor due to poor emergence, insect damage, disease, high alkalinity or other causes; do not apply after wheat has reached the "boot" stage of maturity. Do not replant treated areas to any other crop within 1 year after last treatment (except as noted) as injury to subsequent crops may result.

Idaho, Oregon and Washington—East of Cascade Range:

Areas Where Average Annual Rainfall Exceeds 16 Inches: Make a single application of 1 to 1½ lbs 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" 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" tall. Application later than May 1 may give poor results.

Alternatively, make a single application of ½ to 1 lb "Karmex" plus ¼ lb bromoxynil per acre as a tank mixture, either in the fall after wheat has emerged but before soil freezes or in the spring as soon as soil thaws; apply before weeds are 2" tall or across.

Areas Where Average Annual Rainfall is 10 to 16 Inches: After wheat is planted in the fall, make a single application of 1 to 1½ lbs per acre when sufficient moisture is available to germinate wheat seed. Apply before soil freezes and before weeds are 2" tall. Application later than March 1 may give poor results.

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

Oregon and Washington—West of Cascade Range: Make a single application of 1½ to 2 lbs per acre as soon as possible after planting, if wheat and weeds have emerged, apply before weeds are 3" to 4" tall. Alternatively, apply a tank mixture of "Karmex" plus bromoxynil as detailed above for "East of Cascade Range."

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

Central Plains and Midwest: Use 1 to 2 lbs per acre.

Kansas, Oklahoma and Texas: Do not use on sand or sandy loam soils. Use 1 lb per acre on silt and silt loam soils and 1½-2 lbs per acre on clay, clay loam, and silty clay loam soils.

Northeast: Use 1 to 1½ lbs per acre.

• **FRUIT AND NUT CROPS**

(See Soil Limitations)

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

APPLES:

Use "Karmex" alone, or apply as a tank mixture with Du Pont "Sinbar" Herbicide.

"Karmex" 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 lbs per acre in the spring (March through May). In the Far West, treatment may be made in winter (December through February), or apply 2 lbs per acre as a postharvest treatment followed by 2 lbs in the spring.

"Karmex" + "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	Lbs Product Per Acre	
	1 to 2% Organic Matter "Karmex" + "Sinbar"	More Than 2% Organic Matter "Karmex" + "Sinbar"
Sandy loam	1 + 1	1½ + 1½
Loam, silt loam, silt	1½ + 1½	2 + 2
Clay loam, clay	2 + 2	2 + 2

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

Georgia—Apply 2 to 3 lbs per acre in the spring. Repeat application in the fall but do not use more than 4 lbs per acre per year. Add Du Pont Surfactant WK at 1 pint per 25 gals spray mixture to improve control of small, emerged weeds.

• **BANANAS AND PLANTAINS—New Plantings**

To control annual weeds, apply 1½ to 3 lbs 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 3 to 6 lbs per acre plus 1 pt Surfactant WK (or suitable equivalent) per 25 gals of spray, avoid contact of plants with spray or drift as injury may result. When tall, dense weed growth is present, remove weed growth before application. If application is made to soil free of weeds, omit the surfactant from the spray. Repeat treatment as needed, but do not apply more often than 6-week intervals nor more than a total of 12 lbs per acre (broadcast basis) in a 12-month period.

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

• **BLUEBERRIES, CANEBERRIES AND GOOSEBERRIES**

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

Georgia—Blueberries

Apply 1½ to 2 lbs per acre in the spring and repeat treatment after harvest in the fall. Add Du Pont Surfactant WK at 1 pint per 25 gals spray mixture to improve control of small, emerged weeds.

Indiana, Michigan and Ohio—Blueberries: Apply 2 to 4 lbs per acre in late spring, alternatively, apply 2 lbs per acre in the fall and repeat at same rate in the spring. **Raspberries:** Apply 3 lbs per acre in the spring.

Massachusetts—Blueberries: Apply 2 lbs per acre in late spring.

New Jersey—Blueberries: For control of winter annuals, apply 2 lbs per acre in October, November or December, or a single application of 2½ lbs per acre may be applied in early to mid spring.

California—Raspberries, Blackberries, Boysenberries, Dewberries and Loganberries: For control of winter annuals, apply 2 lbs per acre in October or November, repeat at same rate in late spring to control summer annuals. A single application of 3 lbs per acre in January or February will control both winter and summer annuals in some areas, but the separate fall and spring schedule is preferred.

Western Oregon and Western Washington—Blueberries, Caneberries and Gooseberries: Use same schedule as recommended for California.

CITRUS:

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

Arizona (except Yuma area) and California (except Imperial and Coachella Valleys): Apply 3 to 4 lbs per acre shortly after grove has been laid-up in final form (nontillage program) in late fall or early winter. Alternatively, apply 2 lbs per acre in October or November and repeat at the same rate in March or April. Subsequent annual applications of 2 to 3 lbs per acre will usually give adequate weed control.

Florida and Puerto Rico: Make a single application of 4 to 8 lbs per acre, or apply 3 to 4 lbs per acre followed by the same rate 4 to 6 months later. On bearing citrus, apply any time when seasonal rains are expected, on nonbearing trees, apply when winter banks are pulled down.

For control of guineagrass, looetseife, maidencane, paragrass, primrose willow and seamyrtle in ditches adjacent to citrus groves, use 1 lb per 1000 sq ft (40 lbs per acre) in sufficient water (min 4 gals per 1000 sq ft) to provide thorough and uniform coverage. Apply in the spring before weed growth starts or after removal of vegetation. Repeat treatment on a spot basis to control hard-to-kill species such as guineagrass. In bedded groves, do not treat water furrows between the beds as injury to the trees may result.

Texas: Apply 2 to 4 lbs per acre for annual weeds; use 4 to 6 lbs per acre for control of johnsongrass seedlings. Best results accompany application in the spring. Well established weeds should be eliminated by cultivation prior to treatment.

GRAPES

Apply only 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 one inch of irrigation occurs soon after treatment. This risk must be assumed by the user.

East of the Rocky Mountains: On soils low in clay or organic matter (1 to 2%), apply 2 to 3 lbs per acre; on soils high in clay or organic matter, apply 3 to 6 lbs 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 3 to 4 lbs per acre, subsequent annual applications of 2 lbs per acre will usually give adequate weed control. Do not apply to vines with trunks less than 1 1/2" in diameter as injury may result.

New York and Pennsylvania—Perennial Grasses: Use only in established vineyards (at least 4 years old) for spot control of perennial grasses such as orchardgrass, quackgrass and ryegrass. Apply in the spring as a band treatment to ridged soil (2" to 4" high) under the trellis at the rate of 8 to 12 lbs per acre. Band width should not exceed 30". Do not apply more than once every 4 years. Use only on heavy soils such as loams, silt loams, clay loams. Do not use in areas where grape roots are shallow or exposed because of high bedrock, poor drainage, or erosion as injury to grapes may result.

MACADAMIA NUTS—Hawaii

Use only under trees established in the orchard for at least 1 year. Apply 2 to 6 lbs per acre immediately after harvest, preferably before weeds emerge. If weeds have emerged, add 1 pt Surfactant WK per 25 gals of spray. Retreat as needed, but do not exceed 10 lbs per acre per year.

OLIVES—California

Use only under trees established in the grove for at least 1 year. Apply 2 lbs 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 2 1/2 to 5 lbs per acre, preferably before weeds emerge, if weeds have emerged add 1 pt Surfactant WK per 25 gals of spray.

PEACHES

Use "Karmex" alone, or apply as a tank mixture with "Sinbar".

"Karmex" Alone—Use only under trees established in the orchard for at least 3 years. Apply 2 to 5 lbs 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.

"Karmex" + "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	Lbs Product Per Acre	
	1 to 2% Organic Matter "Karmex" + "Sinbar"	More Than 2% Organic Matter "Karmex" + "Sinbar"
Sandy loam	1	1 1/2
Loam, silt loam, silt	1 1/2	2
Clay loam, clay	2	2

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

Georgia—On trees established for at least 2 years, apply 2 to 3 lbs per acre in the spring. Repeat application in the fall but do not exceed 5 lbs per acre per year. Add Du Pont Surfactant WK at 1 pint per 25 gals spray mixture to improve control of small, emerged weeds.

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

PEARS

Use only under trees established in the orchard for at least 1 year, do not treat varieties grafted on full dwarf root stocks. Apply 4 lbs per acre in the spring (March through May). In the Far West, treatment may be made in winter (December through February), or apply 2 lbs per acre as a postharvest treatment followed by 2 lbs in the spring.

PECANS

Use "Karmex" alone or apply as a tank mixture with "Sinbar". Make a single band or broadcast application as a directed spray using a minimum of 10 gals of water per acre. Apply in the spring before weeds emerge or during the early seedling stage of growth.

Soil Texture	Lbs Product Per Acre	
	"Karmex" Alone*	Tank Mixture "Karmex" + "Sinbar"††
Sandy loam	2	1 1/2
Loam, silt loam, silt	3	1 3/4
Clay loam, clay	4	2

*Use only on trees established in grove for at least 4 yrs and on soils with at least 1% organic matter.

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

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

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- **PINEAPPLE—Hawaii and Florida**

Apply 4 to 8 lbs per acre as a broadcast spray just before or immediately after planting but prior to weed emergence. Use 4 lbs per acre after harvesting plant crop (or ratoon crop). For plant crop only, a second and third broadcast or interspace application may be made prior to differentiation at the rate of 2 lbs 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 lbs per acre. Do not apply more than 3 broadcast sprays (maximum 12 lbs per acre) prior to differentiation nor more than 16 lbs total per acre per plant crop. Treated areas may be planted to pineapple or sugarcane 1 year after last application.

- **WALNUTS (English)—California**

Use only under trees established in the orchard for at least 1 year. As an initial treatment, apply 3 to 5 lbs per acre after the orchard has been laid up in final form (nontillage program) in late fall or early winter; retreat annually with 2 to 3 lbs per acre. Alternatively, apply 2 lbs per acre in October or November and repeat at same rate in March or April.

• ORNAMENTAL CROPS

(See Soil Limitations)

- **ORNAMENTAL BULB CROPS (Bulbous Iris, Narcissus)—Western Washington**

Make a single application of 4 lbs per acre. Apply after planting but no later than 4 weeks prior to bulb emergence (usually late September or October). Do not replant treated areas to any crop within 1 year after last application as injury to subsequent crops may result.

- **PLUMOSUS FERN—Florida**

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

- **TREE PLANTINGS—Colorado, Montana, Nebraska, North Dakota, South Dakota, Wyoming**

Use only under established plantings (1 year or older) of American elm, caragana, cottonwood, Douglas fir, green ash, honeysuckle, Ponderosa pine, redcedar, Russian olive and Siberian elm. Use 2½ to 5 lbs per acre; apply as a band 4 ft wide in the tree row (2 ft on each side of row). For example, 1 oz "Karmex" treats 135 ft of tree row (2 ft on each side of row) at the rate of 5 lbs 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 to the trees may result.

• NON-CROP WEED CONTROL

"Karmex" is an effective herbicide for the control of many weeds on noncropland 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.

"Karmex" 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 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 of at least 80% active ingredient at 0.25 to .5% by volume of water (1-2 qts/100 gals water). 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 "Karmex" into volume of water necessary to obtain uniform coverage; if Surfactant WK 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 bypass 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 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 5 to 15 lbs per acre to control most annual weeds.

Irrigation and Drainage Ditches: Apply 5 to 15 lbs 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 "Karmex" 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.