

PM 23 9779-303

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APR 30 1996

Steven E. Rogosheske
Riverside/Terra Corporation
600 Fourth Street
P.O. Box 6000
Sioux City, IA 51102-6000

Dear Mr. Rogosheske:

Subject: Revised Labeling - General Label Editing
Trifluralin 4EC
EPA Registration No. 9779-303
Your Submission Dated January 5, 1996

The labeling referred to above, submitted in connection with registration under the Federal Insecticide, Fungicide, and Rodenticide Act, as amended, is acceptable with the following provisions:

- 1) The percentages of active ingredient and inert ingredients in the Ingredient statement should be aligned by the decimal point.
- 2) The section for Application and Calibration Techniques for Sprinkler Irrigation, including the first two paragraphs, the subsection for Calibration, and the subsection for Mixing Directions, must be revised to be specific to this product. To accomplish this, any reference to "Trific 60DF" must be replaced with the appropriate product name "Trifluralin 4EC". In addition, the subsections for Calibration and Mixing Directions should further be revised to reference a liquid measure as is appropriate for this product rather than dry measure.
- 3) Revise the title line in the Rate Chart for Impregnating Fertilizer by placing the application amounts of Trifluralin 4EC over the correct columns. The chart should appear as is shown on the previously approving labeling dated August 10, 1994.
- 4) Delete the section that begins with the heading "Repeat Applications" within the directions for use on Sugarcane.

DK: 305-7546: FNB/PM23

CONCURRENCES

SYMBOL ▶	7505C							
SURNAME ▶	D. KENNY							
DATE ▶	4/30/96							

- 5) Within the rate chart for Sunflower, correct the application amount for medium soils with less than 2% organic matter to read "1¼ - 1½ pts".
- 6) Within the rate chart for transplant Tomatoes, correct the application amount for medium soils with less than 2% organic matter to read "1¼ - 1½ pts".

A stamped copy is enclosed for your records. Please submit one (1) final printed copy for the referenced label, incorporating the above changes, before releasing the product for shipment.

Sincerely yours,

Joanne I. Miller
Product Manager (23)
Fungicide-Herbicide Branch
Registration Division (7505C)

Enclosure

R⁰

TRIFLURALIN 4EC

For the preemergence control of annual grasses and broadleaf weeds

ACTIVE INGREDIENT

Trifluralin (alpha, alpha, alpha-trifluoro-2,6-dinitro-N, N-dipropyl-p-toluidine)	46.0%
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INERT INGREDIENTS*	54.0%
TOTAL	100.0%

Contains 4 pounds of active ingredient per gallon.

*Contains xylene range aromatic petroleum solvent.

KEEP OUT OF REACH OF CHILDREN

CAUTION

STATEMENT OF PRACTICAL TREATMENT

- IF SWALLOWED:** Call a physician. Drink 1 or 2 glasses of water and induce vomiting by touching back of throat with finger. Do not induce vomiting or give anything by mouth to an unconscious person.
- IF INHALED:** Remove victim to fresh air. Get medical attention.
- IF IN EYES:** Immediately flush with plenty of water. Get medical attention.
- IF ON SKIN:** Wash with plenty of soap and water.

PRECAUTIONARY STATEMENTS

CAUTION

HAZARDS TO HUMANS AND DOMESTIC ANIMALS

Harmful if swallowed, inhaled or absorbed through the skin. Avoid contact with skin, eyes or clothing. Avoid breathing spray mist.

Personal Protective Equipment:

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

Applicators and other handlers must wear long-sleeved shirt and long pants, chemical-resistant gloves, such as Barrier Laminate or Viton ≥ 14 mils, shoes plus socks, and protective eyewear.

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. Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

Read Additional PRECAUTIONARY STATEMENTS.

EPA Reg. No. 9779-303

EPA Est. No. 9779-AR-13

Manufactured For
RIVERSIDE/TERRA CORPORATION
P.O. Box 6000, Sioux City, Iowa 51102-6000
Riverside Serves Agriculture. Agriculture Serves Everyone.

**ACCEPTED
with COMMENTS
in EPA Letter Dated**

APR 30 1996

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

9779-303

NET CONTENTS
GALS.

ENVIRONMENTAL HAZARDS

This pesticide is toxic to fish. Do not apply directly to water, to areas where surface water is present or to intertidal areas below the mean high water mark. Drift or runoff from treatment areas may be hazardous to aquatic organisms in neighboring aquatic sites. Do not contaminate water when disposing of equipment washwaters.

PHYSICAL AND CHEMICAL HAZARDS

Do not use or store near heat or open flame.

DIRECTIONS FOR USE

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

Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application. For any requirements specific to your State or Tribe, consult the agency responsible for pesticide regulation.

AGRICULTURAL USE REQUIREMENTS

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

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

PPE required for early entry to treated areas that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil, or water, is: coveralls, chemical-resistant gloves, such as barrier laminate or viton, shoes plus socks, and protective eyewear.

STORAGE AND DISPOSAL

DO NOT CONTAMINATE WATER, FOOD OR FEED BY STORAGE OR DISPOSAL.

STORAGE

Store in a dry location away from children, animals, foods, feeds, seeds, and other agricultural chemicals. Keep storage area locked when not in use. Keep container closed when not using. Do not allow water into container as this may cause deterioration of product. Handle in accordance with information given under PRECAUTIONARY STATEMENTS.

Avoid freezing. Do not store below 40°F. If frozen, poor weed control may result.

In the event of spillage or leakage, soak up material with absorbent clay, sand, sawdust, or other absorbent material. Scrape up and dispose of in accordance with information given under PESTICIDE DISPOSAL. Repackage and relabel useable product in a sound container. In case of fire or other emergency, report at once by toll-free telephone to 800-424-9300.

DISPOSAL

PESTICIDE DISPOSAL: Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility. CONTAINER DISPOSAL: Do not reuse empty containers. Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or incineration, or if allowed by state and local authorities, by burning. If burned, stay out of smoke.

SPECIAL PRECAUTIONS

Applied according to directions and under normal growing conditions, Trifluralin 4EC will not harm the treated crop. Over application may result in crop injury or a soil residue. Uneven application or improper soil incorporation can result in erratic weed control and/or crop injury. Seedling disease, cold weather, deep planting, excessive moisture, high salt concentration or drought may weaken crop seedlings and increase the possibility of damage from Trifluralin 4EC. Under these conditions, delayed crop development or reduced yields may result.

In Arizona, Colorado, Idaho, Nevada, New Mexico, Oregon, Utah, Washington and Wyoming, sugarbeets, red beets or spinach should not be planted for 12 months after a spring application or for 14 months after a fall application of Trifluralin 4EC. Plow the land to a depth of 12 inches prior to planting sugar beets to prevent the possibility of crop injury. Sorghum (milo), proso millet, corn, oats and annual or perennial grass crops or grass mixtures should not be planted for 14 months after a spring application or for 16 months after a fall application to avoid crop injury. If land has not been irrigated, do not plant any of these crops for 18 months after a spring application or 20 months after a fall application.

In those portions of Kansas, Nebraska, North Dakota, Oklahoma, South Dakota and Texas where at least 20 inches of irrigation and/or rainfall (total) was used to produce the crop, sorghum, oats and annual or perennial grass crops or grass mixtures should not be planted for 12 months after an application of Trifluralin 4EC.

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GENERAL INFORMATION

Trifluralin 4EC is a preemergence herbicide which is incorporated into the soil to provide long-lasting control of annual grasses and broadleaf weeds; it controls weeds by killing their seeds as they germinate. It does not control established weeds. Incorporation of Trifluralin 4EC assures effective control regardless of weather conditions and permits shallow cultivation, rotary hoeing and hand hoeing without reducing its weed control activity.

WEEDS AND GRASSES CONTROLLED	
GRASSES	
Common Name	Scientific Name
Annual bluegrass	Poa annua
Barnyardgrass (Watergrass)	Echinochloa spp.
Brachiaria (Signalgrass)	Brachiaria spp.
Bromegrass (Cheatgrass, Downy brome)	Bromus tectorum
Cheat (Chess)	Bromus secalinus
Crabgrass (Large crabgrass, Smooth crabgrass)	Digitaria spp.
Fall panicum	Panicum dichotomum
Foxtails (Bottlegrass, Bristlegrass, Foxtail millet, Giant foxtail, Green foxtail, Pigeongrass, Robust foxtail, Yellow foxtail)	Setaria spp.
Guineagrass	Panicum maximum
Italian ryegrass	Lolium multiflorum
Johnsongrass (Seedling and Rhizome-see special instructions in crop sections)	Sorghum halapense
Junglerice	Echinochloa col.
Itchgrass (Raoulgrass)	Rottboellia exalt.
Red rice (see special instructions in soybean section)	Oryza sativa
Sandbur (Burggrass)	Cenchrus incertus
Shattercane (wildcane)	Sorghum bicolor
Sprangletop	Leptochloa filifor
Stinkgrass (Lovegrass)	Eragrostis cilian.
Texas panicum (Buffalograss, Coloradograss)	Panicum texanum
Woolly cupgrass	Eriochloa villosa

SOIL PREPARATION

Good soil preparation is essential for best results. Destroy existing weeds before herbicide application. Chop and thoroughly mix crop residue into the soil to a depth of at least 4 to 6 inches by deep plowing or discing before application. Use machinery that breaks up large clods.

Before application determine soil texture in order to apply the correct rate. Rates given in this booklet refer to the following soil texture groups:

- Coarse soils: sand, loamy sand, sandy loam
- Medium soils: loam, silty clay loam, silt loam, silt, sandy clay loam
- Fine soils: clay, clay loam, silty clay loam, silty clay, sandy clay, sandy clay loam.

Silty clay loam and sandy clay loam soils are transitional soils and may be classified as either medium or fine textured soils. If silty clay loam or sandy clay loam soils are predominantly sand or silt, they are usually classified as medium textured soils. If they are predominantly clay, they are usually classified as fine textured soils.

APPLICATION DIRECTIONS

Trifluralin 4EC is an emulsifiable concentrate which must be mixed with water and applied as a spray before or in the same operation as soil incorporation.

APPLICATION AND CALIBRATION TECHNIQUES FOR SPRINKLER IRRIGATION
Only In The States Of IDAHO, OREGON and WASHINGTON

Trific 60DF may be applied through properly equipped chemigation systems for weed control in alfalfa, asparagus, carrots, corn, dry beans, mint, and potatoes in the states of Idaho, Oregon and Washington only. Trific 60DF may only be used in chemigation systems which have paddle agitation with sufficient bottom to top agitation to keep the Trific 60 DF in suspension. The system must be monitored closely during start-up and periodically thereafter to insure proper application. See crops for specific chemigation instructions. Apply this product only through the irrigation systems described below. Do not apply this product through any other type of irrigation system. Crop injury, lack of effectiveness, or illegal pesticide residues in the crop can result from nonuniform distribution of treated water. If you have any questions about calibration, you should contact State Extension Service specialists, equipment manufacturers, or other experts. Do not connect an irrigation system (including greenhouse systems) used for pesticide application to a public water system. A person knowledgeable of the chemigation system and responsible for its operation, or under the supervision of the responsible person, shall shut the system down and make necessary adjustments should the need arise. When the system is shut down be sure to maintain agitation in the chemical tank. If the system is to be shut down for an extended period of time, add and thoroughly mix in prior to shut down an anticompaction agent such as Assit to allow for better resuspension.

Continuously Moving Center Pivot, Lateral Move, or End Tow Irrigation Equipment: Trific 60DF should be injected continuously throughout the chemigation period. The chemigation metering pump should be checked periodically during application to ensure proper operation. The injection metering pump must be calibrated as specified by the manufacturer. During chemigation, maintain agitation in supply tank at all times. Apply Trific 60DF in sprinkler irrigation equal to 1/2-1 inch of water.

CALIBRATION

A sample calculation for use of Trific 60DF follows:

1. Assume 50 acres are to be covered by a chemigation treatment.
2. At 1.25 lbs./Acre, the amount of product required is 62.5 lbs. Add this amount of product to 250 gallons of water (use 4 gallons of water per pound of Trific 60DF).
3. Adjust the injection system to deliver the 250 gallons of solution during the time required to apply 1 inch of water to 50 acres.
If the irrigation system requires 7.5 hours to deliver 1 inch of water to 50 acres, the injection rate is 33.33 gallons per hour.
 $250 \text{ gallons} / 7.5 \text{ hours} = 33.33 \text{ gallons/hour}$
 $33.33 \text{ gallons} = 4266 \text{ ounces}$
 $4266 \text{ ounces per hour divided by } 60 \text{ minutes per hour} = 71 \text{ ounces per minute}$
4. Adjust the acreage and rates per acre to the particular soil conditions and size of field.

SAFETY DEVICES

(1) The systems designated above must contain a functional check valve, vacuum relief valve, and low pressure drain appropriately located on the irrigation pipeline to prevent water source contamination from backflow. (2) All pesticide injection pipelines must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection pump. (3) The pesticide injection pipeline must also contain a functional, normally closed, solenoid-operated valve located on the intake side of the injection pump and connected to the system interlock to prevent fluid from being withdrawn from supply tank when the irrigation system is either automatically or manually shut down. (4) The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops. (5) The irrigation line or water pump must include a functional pressure switch which will stop the water pump motor when the water pressure decreases to the point where pesticide distribution is adversely affected. (6) Systems must use a metering pump, such as a positive displacement injection pump (e.g. diaphragm pump) effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock. (7) Do not apply when wind speed favors drift beyond the area intended for treatment.

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MIXING DIRECTIONS

Use 4 gallons or more of water for each pound of Trific 60DF needed. Add at least half the water required for the application to the chemical tank. Start the agitation and add the desired amount of Trific 60DF. Add the remaining amount of water required. Continue agitation until the tank has been emptied.

GROUND APPLICATION

Apply in 5 to 40 gallons of water/acre (broadcast basis) using any properly calibrated low-pressure sprayer that will uniformly apply the spray. Pour the recommended amount of product into the spray tank during the filling operation and mix thoroughly before spraying. As the amount of water decreases, the importance of accurate calibration and uniform application increases. Check the sprayer daily. Do not apply the herbicide to soils which are wet or in poor condition or to soils which are subject to prolonged periods of flooding.

AERIAL APPLICATION

For best results apply to a dry soil surface at a spray volume of from 5 to 10 gallons/acre. Adjust pump pressure, nozzle arrangements, flying speed and height to provide uniform application. Use markers or flagmen to assure proper application spray widths. Do not apply when the wind is blowing at a velocity of 5 mph or greater.

INCORPORATION

Before planting.

For best results the herbicide must be incorporated within 24 hours after application. A second incorporation is required at any time prior to planting using the equipment in a different direction from the first. Incorporation should place the product into the top 2 or 3 inches of the final seedbed. Variable weed control may result from delayed incorporation if the herbicide is applied to a wet, warm soil surface or if the wind velocity is 10 mph or higher.

After planting.

When incorporating after planting (check crops approved for incorporation after planting), use P.T.O.-driven equipment or Rolling Cultivators and adjust to till the soil over the seed or throw treated soil toward the crop. Avoid disturbing the seed or mechanically damaging the crop.

In bedded culture.

For effective weed control in bedded culture the product should be incorporated into the top 2 to 3 inches of the final seedbed. When applying prior to bedding, apply and incorporate one time. The bedding operation serves as the second incorporation. When applying after bedding, knock off beds to planting height before application and incorporation on bedded ground. Avoid removal of treated soil from the seedbed before or during the planting operation. This will expose untreated soil and allow weeds to germinate in the drill row.

Equipment.

For incorporation use machinery which pulverizes large clods and mixes the herbicide thoroughly with the soil. Thorough incorporation may be achieved with the following: Disc, set to cut 4 to 6 inches deep and operated in two different directions at 4 to 6 mph; Field Cultivator, set to cut 3 to 4 inches deep and operated at 5 mph or more; Rolling Cultivator, set to cut 2 to 4 inches deep and operated two times at 6 to 8 mph (adequate for use on coarse and medium textured soils only); Bed Conditioner, set to cut 2 to 4 inches deep and operated one time at 4 to 6 mph (adequate for use on coarse and medium textured soils only); Mulch Treader and other similar disc-type implements, set to cut 3 to 4 inches deep and operated at 5 to 8 mph in two different directions; P.T.O.-driven equipment (tillers, cultivators, hoes), set to cut 2 to 3 inches deep with rotors spaced to provide a clean sweep of the soil and operated one time (they should not be operated at a speed greater than 4 mph).

APPLICATION WITH LIQUID FERTILIZERS

Trifluralin 4EC may be mixed with most liquid fertilizer materials. The combination of Trifluralin 4EC with solutions and suspension-type fertilizers provides weed and grass control equal to the same rates of Trifluralin 4EC applied in water. Follow Trifluralin 4EC label recommendations regarding rates per acre, crops, incorporation directions, special instructions, cautions and special precautions.

Individual state regulations relating to liquid fertilizer mixing, registration, labeling and applications are the responsibility of the individual and/or company selling the fertilizer and chemical mixture.

Testing for Tank Mix Compatibility in Liquid Fertilizers: Trifluralin 4EC alone or in tank mixture with dry flowables (DF), wettable powders (WP), aqueous suspensions (AS), flowables (F), liquids (L), or solutions (S) may not combine properly with some fluid fertilizer materials. Small quantities should always be tested before full-scale mixing. This will determine whether a compatibility agent is needed, and which agent does the best job. The eight agents listed on the following page have been thoroughly tested. There are many other surfactants on the market which were not designed for use with liquid fertilizers. Use the following test to select the correct agent for your mixture.

1. Put 1 pint of liquid fertilizer in a quart jar.
2. Add 1 to 4 teaspoon(s) of the dry flowable, WP, AS, F or L formulation (depending on the recommended rate per acre) to the liquid fertilizer. Close jar and agitate until the materials are dispersed evenly in the fertilizer. If the materials do not disperse well, it may be necessary to slurry the chemicals in water before adding to the fertilizer.
3. After dispersing the materials (Step 2), add 3 to 4 teaspoons of Trifluralin 4EC to the jar and shake well. Add solution herbicides to the mixture last and agitate. Observe the jar for about 10 minutes. If the materials rise to the surface and form a thick layer (oily curds) which will not redisperse when agitated, a compatibility agent is needed. If the mixture is easily redispersed to its original state with slight agitation, no agent is needed but good agitation must be provided in the fertilizer spray tank.
4. If the need for a compatibility agent is shown in Step 3: Using a clean quart jar, start at Step 1 above, add ½ teaspoon of the compatibility agent to the liquid fertilizer, mix well, then repeat Steps 2 and 3.

An effective compatibility agent will cause the mixture to remain uniformly mixed with little or no separating or oil rising to the surface for one half hour or longer. Riverside Combine has been thoroughly tested and approved as an effective compatibility agent. If slight separation does occur, 2 to 3 inversions of the jar should give a uniform remix. If oily curds form which will not redisperse, more Riverside Combine or other agent should be tried.

Use a clean jar for each test. The compatible mixture will have a uniform appearance and will be relatively easy to keep mixed with gentle agitation of the jar.

LIQUID FERTILIZER MIXING INSTRUCTIONS

General - Emulsifiable concentrates, such as Trifluralin 4EC, can be mixed with liquid fertilizers. In all cases, continuous agitation is required to prevent the Trifluralin 4EC from rising to the surface as an oily layer. When necessary (see Testing for Tank Mix Compatibility in Liquid Fertilizers), a compatibility agent can be used to cause the Trifluralin 4EC to emulsify properly (i.e., have a milky appearance rather than an oily layer). The use of compatibility agents is especially important when tank mixing emulsifiable concentrates (E.C.) with dry flowables, wettable powders (WP), aqueous suspensions (AS), flowables (F), liquids (L), or solutions (S) in liquid fertilizer. If the emulsion is not properly formed and the Trifluralin 4EC rises to the surface of the fertilizer as an oil ("oils out"), the oil may combine with the wettable powder, flowable, or suspension to form oily curds (viscous phase) which are difficult to redisperse. Any one of the compatibility agents listed below is helpful in causing liquid concentrates to form non-oiling mixtures with liquid fertilizers. These compatibility agents can be used at rates as low as 1 1/2 to 2 pints per ten of liquid fertilizer per 100 gallons of solution, and should be mixed well with the fertilizer before adding the liquid concentrate. Read the label on the compatibility agent and follow the directions.

1. Combine (Riverside/Terra Corp., Sioux City, IA)*
2. Sponto 168D (Witco Chemical Co., Chicago, IL)
3. Compat (Farm Chemicals, Inc., Aberdeen, NC)*
4. Unite (Hopkins Ag Chemical, Madison, WI)
5. T-Mulz 734-2 (Thompson-Hayward Chemical Co., Kansas City, MO)*
6. Rigo Compatibility Agent (Rigo Company, Buckner, KY)
7. Amoco Spray Mate™ (Amoco Oil Co., Chicago, IL)*
8. Kem-Link (Universal Coop, Minneapolis, MN)

*Not for use in California.

All of the above are phosphate ester-type surfactants designed to be used with liquid fertilizers. They usually do not work as compatibility agents in tank mixtures in plain water.

Application - Spread the fertilizer/pesticide mixture with a properly calibrated applicator. Be certain the material is applied uniformly to the soil surface.

Incorporation - Follow normal Trifluralin 4EC incorporation procedures.

APPLICATION WITH DRY BULK FERTILIZERS

Dry bulk fertilizers may be impregnated or coated with Trifluralin 4EC. Application of dry bulk fertilizers impregnated with Trifluralin 4EC has provided weed and grass control equal to the same rates of Trifluralin 4EC applied in water.

All Trifluralin 4EC label recommendations regarding rates/acre, approved crops, incorporation, special instructions, cautions and special precautions must be followed. All individual state regulations relating to dry bulk fertilizer blending, registration, labeling and application are the responsibility of the individual and/or company selling the fertilizer and chemical mixture.

Limitations.

Apply a minimum of 200 pounds/acre of dry fertilizer impregnated with Trifluralin 4EC at the recommended rates. Any commonly used dry fertilizer can be used for Trifluralin 4EC impregnation except coated ammonium nitrate and straight limestone. These materials will not absorb the herbicide. Blends containing mixtures of these materials can be impregnated.

Impregnation.

Use any closed drum, belt, ribbon or other commonly used dry bulk fertilizer blender. Provide uniform spray coverage of Trifluralin 4EC onto the fertilizer.

Rates.

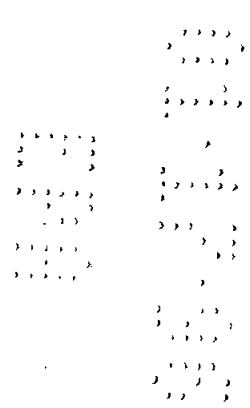
Check the crop section to determine the rate of Trifluralin 4EC/acre. See the rate table which follows to determine amount of Trifluralin 4EC to be impregnated on a ton of dry bulk fertilizer based on the amount of fertilizer which will be applied/acre.

Application.

Spread the fertilizer/chemical mixture normally with a properly calibrated applicator. Be certain the material is applied uniformly to the soil surface.

Incorporation.

Follow the normal incorporation procedures.



Broadcast Rates Per Acre		
	Trifluralin* 4EC	
	Split Application	Single Application
Soil Texture	Before + After Harvest	Before or After Harvest
	(pints)	(pints)
Coarse	1 + 1	2 or 2
Medium	1½ + 1½	3 or 3
Fine	2 + 2	4 or 4

*In any single calendar year, the maximum Trifluralin 4EC to apply is 2 pints per acre on coarse soils; 3 pints on medium soils; and 4 pints on fine soils.

BARLEY - TRIFLURALIN 4EC ALONE

Trifluralin 4EC is recommended as a postplant incorporated treatment to control foxtail (pigeongrass).

Apply Trifluralin 4EC at a broadcast rate of 1 pint per acre on coarse and medium soils and 1½ pints on fine soils.

Plant 2 to 3 inches deep in a well-tilled seedbed. Apply Trifluralin 4EC after seeding but before the crop emerges. To incorporate, use flex-tine or diamond harrows operated two times in different directions, at speeds of at least 5 mph. Incorporate by operating equipment 1 to 1½ inches deep. Application and the first incorporation should be done in the same operation if possible. Both incorporations must be done within 24 hours.

BARLEY (FALL APPLICATION) - FOXTAIL/PIGEONGRASS CONTROL

~~Trifluralin 4EC may be fall applied for foxtail/pigeongrass control in barley planted the following spring. Trifluralin 4EC may be applied to ground that has a manageable trash level, has been fallowed or pretilled. The first incorporation is required with 24 hours after application. A second incorporation is required prior to planting to destroy emerged weeds and to ensure an even distribution of Trifluralin 4EC treated soil. Apply Trifluralin 4EC at a broadcast rate of 1 pt. per acre on coarse and medium soils and 1 1/2 pints on fine soils.~~

BARLEY - SPRING PREPLANT INCORPORATED (MN, ND and SD)

Apply Trifluralin 4EC preplant incorporated prior to planting spring barley to ground that has a manageable trash level or has been fallowed or pre-tilled. The first incorporation is required within 24 hours. The second incorporation is required just before planting. Broadcast 1 pint/acre Trifluralin 4EC for all soil types. Seed barley approximately 2 inches deep. When incorporating Trifluralin 4EC operate equipment to place herbicide 1 to 1 1/2 inches deep.

BARLEY (ACREAGE CONSERVATION RESERVE PROGRAM) - FOXTAIL CONTROL

Trifluralin 4EC may be applied in the spring as a preplant soil incorporated treatment for foxtail control in spring seeded barley grown on land used in acreage conservation reserve programs.

Trifluralin 4EC should be applied at the rate of 1 pt. per acre on coarse-textured soils and 1½ pts. per acre on medium- and fine-textured soils. Do not exceed this rate or crop injury may occur.

Planting Directions—Barley should be seeded approximately 2 inches deep.

Precaution—Use of this practice may result in a slight stand reduction. Follow the most severe grazing restrictions imposed either by the pesticide label or by the USDA Acreage Conservation Reserve Program, whichever is longer. Consult the local ASC office or other state agency to determine the period of the USDA grazing restriction.

BARLEY - TRIFLURALIN 4EC/FAR-GO® TANK MIX

Trifluralin 4EC/Far-Go applied as a postplant incorporated treatment will control foxtail (pigeongrass) and wild oat.

Plant 2 to 3 inches deep in a well-tilled seedbed. Apply Trifluralin 4EC/Far-Go after seeding but before crop emerges. To incorporate, use flex-tine or diamond harrows two times, operated in different directions, at speeds of at least 5 mph. Incorporate by operating equipment 1 to 1½ inches deep. Application and the first incorporation should be done in the same operation if possible; if not, incorporate immediately after application. Both incorporations must be done within 24 hours. Apply 1 pint per acre Trifluralin 4EC and 1 quart per acre Far-Go.

Precautions: Over application may result in crop injury. Read the Far-Go label carefully before using. Do not apply Far-Go plus Trifluralin 4EC tank mix to soils which are subject to prolonged periods of flooding or excessive irrigation. If less than 25 inches of total water is used to produce a crop, do not plant sorghum or oats for 18 months after application.

BEANS

DRY BEANS AND CASTOR BEANS

Apply and incorporate before planting at the following:

Soil Texture	Broadcast Rate/Acre *		
	Less than 2%	Organic Matter 2 to 5%	5 to 10%
Coarse	1 pt.	1 1/2 pts.	2 pts.
Medium	1 1/4 to 1 1/2 pts.	1 1/2 pts	2 pts
Fine	1 1/2 pts.	2 pts.	2 pts.

* Use lower rate in areas receiving less than 20 inches total annual rainfall and /or irrigation.

For dry beans grown in Idaho, Oregon, and Washington only, apply any time between October 15 and December 31 at a broadcast rate/acre of 1 pt. on coarse soil, 1 1/4-1 1/2 pts. on medium soil, 1 1/2 pts. on fine soil.

DRY BEANS - TRIFLURALIN 4EC/EPTAM® TANK MIX

Apply from two days before planting (up to planting in the eastern US)- Plant within 48 hours at the following rate:

Soil Texture	Broadcast Rate/Acre			
	Trifluralin 4EC			Eptam 7E ⁽¹⁾
	Percent Organic Matter			
	Less than 2	2 to 5	5 to 10	
Coarse	1 pt.	1 to 1 1/2 pts.	1 1/2 pts.	2 1/2-3 1/2 pts.
Medium	1 1/4 pts.	1 1/2 pts.	1 1/2 pts.	2 1/2-3 1/2 pts.
Fine	1 1/2 pts.	1 1/2 pts.	1 1/2 pts.	2 1/2-3 1/2 pts.

(1) Use higher rate for nutsedge control.

Precautions: This combination should not be used on soybean, adzuki beans, Mung beans, garbonzo beans, black-eyed peas (beans), lima beans and other flatpoddeds beans except Romano. Do not use the foliage from a crop treated with this tank-mix for feed or for grazing.

Observe all directions, precautions and limitations on both products' labeling.

GUAR BEANS, MUNG BEANS, LIMA BEANS, SNAP BEANS

Apply and incorporate before planting at a broadcast rate/acre of 1 pt. on coarse soil and 1 1/2 pts. on medium and fine soils.

LIMA BEANS AND SNAP BEANS

Apply and incorporate before planting at a broadcast rate per acre of 1 pint on coarse and medium textured soils and 1 1/2 pints on fine textured soil.

CARROTS

Apply and incorporate before planting at the following:

Soil Texture	Broadcast Rate/Acre*		
	Less than 2%	Organic Matter 2 to 5%	5 to 10%
Coarse	1 pt.	1 1/2 pts.	2 pts.
Medium	1 1/4 - 1 1/2 pts.	1 1/2 pts.	2 pts.
Fine	1-1/2 - 2 pts.	.2 pts.	2 pts.

*Use lower rate in rate range in areas receiving less than 20 inches total annual rainfall and/or irrigation.

CELERY

Both direct-seeded and transplant.

Apply and incorporate before planting or transplanting at the following:

Soil Texture	Broadcast Rate/Acre*		
	Less than 2%	Organic Matter 2 to 5%	5 to 10%
Coarse	1 pt.	1 1/2 pts.	2 pts.
Medium	1 1/4 - 1 1/2 pts.	1 1/2 pts.	2 pts.
Fine	1 1/2 - 2 ptx.	2 pts.	2 pts.

*Use lower rate in rate range in areas receiving less than 20 inches total annual rainfall and/or irrigation.

CHICORY/ENDIVE

Apply Trifluralin 4EC at the following rates and incorporate before planting.

Soil Texture	Broadcast Rate/Acre		
	Less than 2%	Organic Matter 2 to 5%	5 to 10%
Coarse	1 pt.	1 1/2 pts.	2 pts.
Medium	1 1/2 pts.	1 1/2 pts.	2 pts.
Fine	2 pts.	2 pts.	2 pts.

COLE CROPS
BROCCOLI, BRUSSELS SPROUTS, CABBAGE, CAULIFLOWER

For transplants, apply and incorporate before transplanting at the following:

Soil Texture	Broadcast Rate/Acre*		
	Less than 2%	Organic Matter 2 to 5%	5 to 10%
Coarse	1 pt.	1 1/2 pts.	2 pts.
Medium	1 1/4 - 1 1/2 pts.	1 1/2 pts.	2 pts.
Fine	2 pts.	2 pts.	2 pts.

*Use lower rate in rate range in areas receiving less than 20 inches total annual rainfall and/or irrigation.

For direct-seeded, apply and incorporate before planting at the following:

Soil Texture	Broadcast Rate/Acre	
	Less than 2% Organic Matter	2 to 5%
Coarse	1 pt.	1 1/2 pts.
Medium	1 pt.	1 1/2 pts.
Fine	1 1/2 pts.	1 1/2 pts.

Direct-seeded cole crops have exhibited marginal tolerance to recommended rates. Stunting or reduced stands may occur.

CORN (FIELD CORN) AND GRAIN SORGHUM (MILO)

Apply Trifluralin 4EC when crop is well established. Apply to field corn (2 true leaf stage or taller) or grain sorghum (8 inches or taller) as an over-the-top or directed spray to effectively control weeds listed for Trifluralin 4EC.

Soil Preparation—Cultivate before a Trifluralin 4EC application to insure loose, friable soil, to remove established weeds and to cover the base of plants with soil

Application Directions—Trifluralin 4EC should be applied and incorporated at the recommended rates for the soil texture when the crop is well established (8 inches or taller). Trifluralin 4EC may be applied either as an over-the-top spray or as a directed spray. Drop nozzles should be used if foliage prevents uniform coverage of soil surface. Soil incorporation may be accomplished with only one pass of a sweep-type cultivator or a properly adjusted rolling cultivator.

The sweep-type cultivator should have 3 to 5 sweeps per row middle and be operated at 6 to 8 mph. Set the middle sweeps so as to avoid exposing untreated soil. Adjust the incorporation tools to prevent crop injury.

Broadcast Rate/Acre*	
Soil Texture	Trifluralin 4EC
Coarse	¾-1 pt.**
Medium	1-1½ pts.
Fine	1½-2 pts.

Use the lower rates when light weed pressure is anticipated and the higher rates when heavy weed pressure is anticipated.

Corn Only:

*Use lower rate in rate range in areas receiving less than 20 inches total annual rainfall and/or irrigation

**Apply 1 to 1½ pints per acre in Alabama, Florida, Georgia, North Carolina, South Carolina and Virginia to control fall panicum and Texas panicum.

Chemigation Instructions: Trifluralin 4EC may be applied through properly equipped chemigation systems for weed control in field corn and grain sorghum. Refer to APPLICATION AND CALIBRATION TECHNIQUES FOR SPRINKLER IRRIGATION for use directions.

Corn - Apply Trifluralin 4EC to corn from the 2 true leaf stage of growth up to a height of 30 inches. Trifluralin 4EC must be applied prior to weed emergence or after existing weeds are controlled. Trifluralin 4EC does not control established weeds. Broadcast 1½ to 2 pints per acre to coarse and medium soil textures.

Precautions: Do not apply Trifluralin 4EC to corn grown for seed or to sweet corn. Do not apply Trifluralin 4EC to corn as a preplant or preemergence treatment, or crop injury may occur. Where corn is planted in a furrow, Trifluralin 4EC should be applied only after a cultivation.

TRIFLURALIN 4EC/ATRAZINE TANK MIX

Trifluralin 4EC may be applied in tank-mix combination with atrazine plus an emulsifiable oil or oil concentrate, when corn is at the 2-leaf stage or taller up to 12 inches and weeds are no more than 1½ inches high. A 24-48 hour interval is required for the post-emergence activity of atrazine, after which the Trifluralin may be activated by incorporation or one-half inch of rain or irrigation. Observe all directions, precautions and limitations on both product's labeling.

GRAIN SORGHUM

Cultivate before Trifluralin application to destroy existing weeds, provide a loose, friable soil surface condition and to cover the base of sorghum plants with soil. Cultivation equipment should be set to add approximately one inch of soil to the base of sorghum plants. The soil surface should be well prepared, free of any existing weeds, trash or clods before Trifluralin application.

Apply Trifluralin 4EC in 1/2 to 1 acre inch of irrigation water as soon as possible after a cultivation when grain sorghum is at least eight (8) inches tall. Trifluralin 4EC must be applied postplant prior to weed emergence or after existing weeds are controlled. Trifluralin 4EC does not control established weeds. Broadcast 3/4 to 1 pint per acre to coarse soil and 1 to 1 1/2 pints per acre to medium soil textures.

Precautions: Do not apply Trifluralin 4EC to grain sorghum as a preplant or preemergence treatment or crop injury will occur. Over-application may result in injury to sorghum.

TRIFLURALIN 4EC/ATRAZINE TANK MIX

Trifluralin 4EC may be applied in tank-mix combination with atrazine plus an emulsifiable oil or oil concentrate when grain sorghum is 8 to 12 inches and weeds are no more than 1 1/2 inches high. A 24-48 hour interval is required for the post-emergence activity of atrazine, after which the Trifluralin may be activated by incorporation or one-half inch of rain or irrigation. Observe all directions, precautions and limitations on both product's labeling.

COTTON

Preemergence application.

Apply and incorporate before planting, at planting, immediately after planting, at the following:

Soil texture	Broadcast Rate/Acre*		
	Less than 2%	Organic Matter 2 to 5%	5 to 10%
Coarse	1 pt.	1 1/2 pts.	2-2 1/2 pts.
Medium	1 1/4-1 1/2 pts.	1 1/2 pts.	2-2 1/2pts.
Fine	2 pts.	2 pts	2-2 1/2 pts.

*Use lower rate in rate range in areas receiving less than 20 inches total annual rainfall and/or irrigation.

When incorporating after planting, care must be taken not to disturb the seed.

Postemergence or lay-by application.

Apply any time from 4 true leaf stage up to lay-by but not less than 90 days before harvest. Direct lay-by applications to the soil between the rows and beneath emerged cotton plants. Use the same rates as for preemergence application.

Fall application.

Apply and incorporate any time from October 15 to December 31. The ground may be left flat or bedded-up over winter. On bedded ground, knock beds down to desired height before planting, moving some treated soil from beds into furrows. Where soil is left flat over winter, be careful not to turn up untreated soil during spring bedding operations. Destroy established weeds during seedbed preparation. If weeds become established in furrows due to uncovering of untreated soil during bedding, destroy these weeds before planting. In the fall, do not apply Trifluralin 4EC to soils which are wet or subject to prolonged periods of flooding.

In Alabama, Arkansas, Northern Florida, Georgia, Louisiana, Mississippi, SE Missouri bootheel, New Mexico, North Carolina, Oklahoma, South Carolina, Tennessee, and Texas, apply and incorporate at a broadcast rate/acre of 2 pts. on coarse and medium soils and 2 1/2 pts. on fine soil.

In Arizona, California and Nevada, apply and incorporate at a broadcast rate/acre of 1 1/2 pts. on coarse soil, 2 pts. on medium soil, 2 1/2 pts. on fine soil.

In states other than those listed above, apply and incorporate at a broadcast rate/acre of 1 pt. on coarse soil, 1 1/2 pts. on medium soil, 2 pts. on fine soil, 1 1/2 pts. on soils with 2 to 5% organic matter, 2 to 2 1/2 pts. on soils with 5.1 to 10% organic matter.

Incorporation with Bedding Implements.

Bedding implements (listers and hippers) may be used to soil incorporate Trifluralin 4EC for weed control in cotton. Because bedding implements do not provide thorough soil mixing under all conditions, follow use directions to optimize weed control. Weed control resulting from single pass incorporation with bedding equipment will be reduced compared to conventional double pass incorporation. Use the application rate recommended above for the soil texture to be treated.

Soil Preparation.

Crop Residues or Existing Weeds: Ground cover, such as crop residues or existing weeds, can interfere with uniform soil incorporation of Trifluralin 4EC. A manageable level of such ground cover will allow uniform incorporation into the top 2 to 3 inches of soil. Ground cover or crop residues, if excessive, should be reduced by appropriate soil tillage prior to application.

General Soil Conditions: The soil surface should be smooth enough to allow for uniform application and efficient incorporation of Trifluralin 4EC. Apply Trifluralin 4EC when soil moisture is sufficient to allow the breakup of large clods and uniform mixing during the incorporation process.

Use Directions for Bedding Equipment.

A lister or disk bedder may be used to incorporate Trifluralin 4EC. Operate the implement according to the manufacturer's use directions in order to produce beds of the desired height. A ripper shank, sweep or chisel shank should be mounted on the bedder in a position behind the spray nozzles but ahead of the bedder tool to help distribute Trifluralin 4EC in the center of the bed. The use of bed tillage equipment such as rolling cultivators, P.T.O. driven rod weeders or bed conditioners after the bedding operation will provide additional soil mixing. Avoid deep tillage which might bring untreated soil to the surface resulting in loss of weed control. Weather conditions, cultural practices, bed tillage and planting procedures can affect the distribution of Trifluralin 4EC treated soil. Weed control obtained will be dependent upon how uniformly Trifluralin 4EC treated soil is distributed over the soil surface at the time of planting.

If trifluralin treated soil is moved exposing untreated soil during bed tillage or planting, a band application of Trifluralin 4EC at planting or a postemergence application may be required to restore uniform weed control.

Precautions.

Do not incorporate with the bedding equipment if the soil is too wet for uniform soil mixing.

Special applications.

For the control of Fall Panicum, apply and incorporate at a broadcast rate/acre of 2 pts. on both coarse and medium soils.

For the control of Rhizome Johnsongrass in all cotton producing states except Arizona and California, apply a double-rate Trifluralin 4EC program for 2 years in a row.

Applications can be made in spring, any time before planting for two years in a row or between October 15 and December 31 for two years in a row at a broadcast rate/acre of 2 pts. on coarse soil, 3 pts. on medium soil and 4 pts. on fine soil. Proper preparation of the soil before application and deep incorporation is essential for best results. Some Johnsongrass plants may escape; timely cultivation during the crop season is necessary. In the season following a double-rate treatment, plant only rice and those crops for which Trifluralin 4EC can be applied as a preplant treatment or injury may result.

For the control of Pigweed and Seedling Johnsongrass in Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, SE Missouri, North and South Carolina, Tennessee and Southern Virginia, apply Trifluralin 4EC, preplant at a broadcast rate/acre of 1 to 1½ pts. on coarse soil, 1½ to 2 pts. on medium soil, 2 pts. on fine soil (3 pts. in Louisiana).

For a more complete control of all listed grasses and weeds in counties along the Texas Gulf Coast (limited to Brazoria, Calhoun, Chambers, Fort Bend, Galveston, Harris, Jackson, Jefferson, Liberty, Matagorda, Orange, Victoria, Waller and Wharton), apply up to 2 weeks before planting at a broadcast rate/acre of 1½ pts. on coarse soil, 2 pts. on medium soil, 3 pts. on fine soil.

Chemigation Instructions: Trifluralin 4EC may be applied through properly equipped chemigation systems for weed control in cotton. Refer to APPLICATION AND CALIBRATION TECHNIQUES FOR SPRINKLER IRRIGATION for use directions.

Apply Trifluralin 4EC in sprinkler irrigation equal to ½ to 1 inch of water. TRIFLURALIN 4EC must be applied within 2 days after planting prior to crop emergence. Trifluralin 4EC does not control established weeds. Soil incorporation is not required when applied through chemigation systems. Soil treated with Trifluralin 4EC may be shallow-cultivated without reducing weed control activity.

In minimum-till situations an overlay herbicide is recommended in addition to the use of Trifluralin 4EC.

Broadcast Application Rates Per Acre Conventional-Till Cotton	
Soil Texture	Trifluralin 4EC
Coarse	1 pt.
Medium	1½ pts.
Fine	2 pts.

Use 1½ pints per acre on coarse soils and medium soils and 2 pints on fine soils with 2-5% organic matter. Use 2 to 2½ pints on all soils with 5.1-10% organic matter.

Broadcast Application Rates Per Acre Minimum-Till Cotton	
Single Application:	
Soil Texture	Trifluralin 4EC
Coarse	2-3 pts.
Medium	3-4 pts.
Fine	3-4 pts.

Use higher rate in rate range where heavy weed pressure is anticipated or where there is significant crop residue.

Precautions: Cotton should be planted after early season adverse weather conditions have passed, especially when using higher rate programs. Cool, wet weather early in the growth cycle causes additional stress to the cotton plant. This may result in reduced stands, delayed maturity, and reduced yields.

TRIFLURALIN 4EC/RIVERSIDE® PROMETRYNE 4L OR CAPAROL® 4L TANK MIX

For cotton grown in California, Arizona, New Mexico and Texas, apply to the flat soil surface before disking at the following:

Soil Texture*	Broadcast rate/acre	
	Trifluralin 4EC	Riverside® Prometryne 4L or Caparol 4L
Coarse	1 pt.	2-4 pts.**
Medium	1½ pts.	4 pts.
Fine	2 pts.	4 pts.

*Do not use on sand and loamy sand soils. For band application the user should apply proportionally less.

**Use less than 3.2 pt./acre only in Arizona and California.

Carefully follow the procedures on the Prometryne or Caparol label. After the Prometryne or Caparol is well mixed, add the Trifluralin 4EC and agitate continuously.

Precautions: Do not use this tank-mix on the cut areas of newly leveled fields, in areas of excess salt and where flooding over the beds is likely to happen. Do not plant cotton in tractor wheel depressions. These conditions may cause crop injury. On mulch-planted cotton, water back only after cotton seedlings are well established. Do not feed treated forage to livestock, or graze treated fields.

Crop rotation: Cabbage, celery, okra, onion and peas may be planted in the fall after a spring application of the mixture. Winter barley, winter rye and winter wheat can be planted in the fall if they are plowed down and not used for food or feed.

Observe all directions, precautions and limitations on both products' labeling.

TRIFLURALIN 4EC/RIVERSIDE® FLUOMETURON 4L OR COTORAN® 4L TANK MIX

Except in Arizona and California.

Apply and incorporate at the following:

Soil texture	Broadcast rate/acre	
	Trifluralin 4EC	Riverside® Fluometuron 4L or Cotoran 4L
Coarse	1 pt.	2 pts.
Medium	1½ pts.	3.2 pts.
Fine	2 pts.	4 pts.

Use 15-40 gallons of clean water/acre.

Carefully follow the procedures on the Fluometuron or Cotoran label. After the Fluometuron or Cotoran is well mixed, add the Trifluralin 4EC and agitate continuously.

Precautions: Do not plant crops other than cotton on the treated land within 6 months after application of this tank-mix or crop injury may result. Do not feed foliage from treated cotton plant or gin trash to livestock. Do not mix with liquid fertilizers.

In West Texas do not use on sandy, loamy sand or fine sandy loam soils. Do not use on cotton planted in furrows.

In Arkansas, Louisiana, and Mississippi, use 1.6 pts. of Fluometuron or Cotoran in tank-mix with Trifluralin 4EC on sandy loam soils low in organic matter.

In Arizona, California and New Mexico, do not plant treated land with crops other than cotton until one year after the last application. Do not use on sandy loam soils with less than 1 percent organic matter.

Observe all directions, precautions and limitations on both products' labeling.

COTORAN OVERLAY: Apply Trifluralin 4EC as recommended and then Fluometuron or Cotoran as a preemergence surface treatment at 2 to 4 pts./acre. On light soil and sandy soils low in organic matter, use the lower rate. Refer to Fluometuron or Cotoran label for cautions, precautions and instructions.

TRIFLURALIN 4EC/ZORIAL® RAPID 80 TANK-MIX

Trifluralin 4EC may be used in tank-mix combination with Zorial® Rapid 80 to control weeds listed on the Trifluralin 4EC label, plus those listed for the tank mix. Follow use directions for Trifluralin 4EC alone and add Zorial Rapid 80 as directed on the Zorial Rapid 80 label.

TRIFLURALIN 4EC PREPLANT FOLLOWED BY RIVERSIDE® DIURON 80DF OR KARMEX® DF OVERLAY

For cotton grown east of the Mississippi River, Arkansas, SE Missouri, Louisiana, and eastern Texas, apply and incorporate Trifluralin 4EC before planting at usual rates. Then make a preemergence application of Diuron 80DF or Karmex DF at ½ lb. for coarse soils, ⅓ lb. for

medium soils, and 1 lb. for fine soils.

Precautions: Do not use Diuron or Karmex on sandy or low organic soils. Do not allow grazing on cotton treated with either product. Refer to Diuron 80DF or Karmex label for additional instructions, cautions and precautions.

**CUCURBITS
CANTALOUPE, CUCUMBERS, WATERMELONS**

Use restricted to Western US including Texas.

Apply to postplant emerged at the following:

Soil texture	Broadcast Rate/Acre		
	Organic Matter		
	Less than 2%	2 - 5%	5 to 10%
Coarse	1 pt.	1 1/2 pts.	2 pts.
Medium	1 1/4-1 1/2 pts.	1 1/2 pts.	2 pts.
Fine	1 1/2-2 pts.	2 pts.	2 pts.

Use the higher rate in areas receiving more than 20" average annual rainfall. Apply as directed spray to the soil between the rows and beneath the plants which are in the 3 to 4 true-leaf stage. Care should be taken that incorporation machinery does not damage the plants.

FLAX

Trifluralin 4EC can be used as an incorporated treatment in autumn only for control of specific weeds in flax seeded the following spring. Apply following rates and incorporate to a maximum depth of 2-3 inches within 24 hours. Before spring seeding, do a shallow incorporation, then pack the seedbed and seed using a press drill or hoe drill to a maximum depth of 1 1/2 inches.

Broadcast Application Rates (pts./acre)	
Soil Texture	Trifluralin 4EC
Coarse	1 pt.
Medium	1 1/2 pts.
Fine	2 pts.

FORAGE LEGUMES

Trifluralin 4EC can be used as a preplant incorporated broadcast applied treatment for preemergence control of many annual grasses and broadleaf weeds in direct seeded forage legumes used as a cover crop in the acreage conservation reserve program.

Apply and incorporate Trifluralin 4EC following recommended procedures on the label. Apply Trifluralin 4EC at the following:

Soil texture	Broadcast rate/acre
Coarse	1 pt.
Medium	1-1 1/2 pts.
Fine	1 1/2 pts.

Follow the more severe grazing restrictions imposed either by the pesticide label or by the USDA Conservation Use Program, whichever is longer. Consult the local ASC committee or other State Agency to determine the period of the USDA grazing restriction.

Precautions: Some stand reductions may occur with this use; however, excellent weed control will allow time for establishment of a quality stand.

**GREENS
TURNIP GREENS (for processing), COLLARDS, KALE, MUSTARD GREENS**

Apply and incorporate before planting at a broadcast rate/acre of 1 pt. on coarse soils and 1 1/2 pts. on medium and fine soils. Soils with 2 to 10% organic matter, use 1 1/2 pints per acre.

MUSTARD

For mustard grown for seed or processing in Minnesota and North Dakota, see "Greens" above.

HOPS

Apply and incorporate while the crop is dormant at a broadcast rate/acre of 1 pt. on coarse soil, 1 1/4-1 1/2 pts. on medium soil, 1 1/2 pts. on fine soil and soils with 2 to 10% organic matter.

MINT

(Established Peppermint and Spearmint)

Apply at a rate of 1 pt. on coarse soil, 1 1/4 pts. on medium soil and 1 1/2 pts. on fine soil during dormant period.

Use incorporation equipment that will insure thorough soil mixing with minimum damage to the crop.

OKRA

Apply and incorporate before planting, at planting or immediately after planting at the following:

Soil texture	Broadcast Rate/Acre*		
	Less than 2%	Organic Matter 2 to 5%	5 to 10%
Coarse	1 pt.	1 1/2 pts.	2 pts.
Medium	1 1/4-1 1/2 pts.	1 1/2 pts.	2 pts.
Fine	1 1/2-2 pts.	2 pts.	2 pts.

*Use lower rate in rate range in areas receiving less than 20 inches total annual rainfall and/or irrigation.

ONIONS (Dry Bulb Only)

Trifluralin 4EC may be used as an incorporated treatment. Apply as a directed spray between rows. Use shields to prevent contact with exposed bulbs or foliage. Do not apply less than 60 days before harvest.

Incorporate 2-4 inches deep with one pass of a sweep-type or rolling cultivator. Avoid covering onion bulbs with treated soil, and avoid injuring bulbs while cultivating. Do not use this treatment under high moistures or high salinity conditions or crop injury could result.

Broadcast Rate (pts./acre)	
Soil Texture	Trifluralin 4EC
Coarse	3/4 - 1
Medium	1 - 1 1/4
Use lower rate in areas receiving less than 20 inches of rain or irrigation.	

PEANUTS

Spanish peanuts grown in Texas, New Mexico and Oklahoma only.

Apply and incorporate before planting, at planting or immediately after planting at a broadcast rate/acre of 1 pt. on coarse soils, 1 1/2 pts. on medium soils. Care should be taken not to disturb the seed when incorporating after planting.

TRIFLURALIN 4EC/VERNAM® TANK MIX (Texas, Oklahoma and New Mexico)

Apply up to 10 days prior to planting, incorporate immediately after application at a broadcast rate/acre of 1 pt. of Trifluralin 4EC and 2 1/4 pts. of Vernam 7E. Observe all directions, precautions and limitations on both products' labeling.

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PEAS

ENGLISH PEAS, DRY PEAS

Apply and incorporate before planting or in the fall prior to planting at the following: at a broadcast rate/acre of 1 pt. on coarse and medium soils and 1 1/2 pts. on fine soil.

Soil Texture	Broadcast Rate/Acre*	
	Spring	Fall**
Coarse	1 pt.	1 pt.
Medium	1 pt.	1 1/4 - 1 1/2 pts.
Fine	1 1/2 pts.	1 1/2 pts.

*Use lower rate of rate range in areas receiving less than 20 inches total annual rainfall and/or irrigation.

**Fall application in Idaho, Oregon and Washington Only - Do not apply in fall to soils which are wet or are subject to prolonged flooding.

TRIFLURALIN 4EC/FAR-GO® TANK MIX

In Idaho, Oregon and Washington, the tank mix combination of Trifluralin 4EC plus Far-Go will provide control of wild oat in addition to other annual grasses and broadleaf weeds controlled by trifluralin.

Application Rates: Broadcast 3/4 1 pint of Trifluralin 4EC per acre on coarse and medium soils; 4- 1 1/2 pint of Trifluralin 4EC on fine soils. Use 1 1/4 quarts of Far-Go per acre for all soil textures.

Incorporation Directions: Apply and incorporate up to 3 weeks before planting. Follow recommended incorporation procedures for Trifluralin 4EC.

Precautions: Do not apply to lentils. Leaf crinkling and delayed maturity of peas may occur, particularly on clay points in the Northwest; this is usually more than offset by a reduction of wild oat. Do not use foliage from treated peas for feed or forage. Refer to the cautions, precautions, and directions on the Far-Go label.

Fall application:

For dry and English peas grown in Idaho, Oregon and Washington only, apply and incorporate any time between October 15 and December 31 at a broadcast rate/acre of 1 pt. on coarse soil, 1 1/4 - 1 1/2 pts. on medium soil and 1 1/2 pts. on fine soil. Destroy established weeds during seedbed preparation. Do not apply in the fall to soils which are wet or are subject to prolonged periods of flooding.

SOUTHERN PEAS

Apply and incorporate before planting at the following:

Soil texture	Broadcast Rate/Acre*		
	Organic Matter		
	Less than 2%	2 to 5%	5 to 10%
Coarse	1 pt.	1 1/2 pts.	2 pts.
Medium	1 1/4 - 1 1/2 pts.	1 1/2 pts.	2 pts.
Fine	1 1/2 - 2 pts.	2 pts.	2 pts.

*Use the lower rate in the rate range in areas receiving less than 20 inches total annual rainfall and/or irrigation.

PEPPERS

Apply and incorporate before transplanting at the following:

Soil texture	Broadcast Rate/Acre*		
	Organic Matter		
	Less than 2%	2 to 5%	5 to 10%
Coarse	1 pt.	1 1/2 pts.	2 pts.
Medium	1 1/4 - 1 1/2 pts.	1 1/2 pts.	2 pts.
Fine	1 1/2 - 2 pts.	2 pts.	2 pts.

Do not apply after transplanting. *Use the lower rate in the rate range in areas receiving less than 20 inches total annual rainfall and/or irrigation.

POTATOES

Not recommended for use in the state of Maine.

Apply after planting, before emergence or immediately following drag off or after the potato plants have fully emerged.

Broadcast Rate/Acre*			
Soil texture	Organic Matter		
	Less than 2%	2 to 5%	5 to 10%
Coarse	1 pt.	1 1/2 pts.	2 pts.
Medium	1 1/4 - 1 1/2 pts.	1 1/2 pts.	2 pts.
Fine	1 1/2 - 2 pts.	2 pts.	2 pts.

*Use the lower rate in the rate range in areas receiving less than 20 inches total annual rainfall and/or irrigation.

Care should be taken so that incorporation machinery does not damage potato seed pieces or elongating sprouts. Set incorporation equipment so that bed and furrow will be uniformly covered by the product. If the layer of Trifluralin 4EC treated soil is not uniform, potato emergence may be retarded and stem brittleness can occur. When applying and incorporating after potato plants have fully emerged, do not completely cover the foliage with treated soil.

Split application in Idaho, Oregon, and Washington.

On all soils apply and incorporate 3/4 pt. before planting and 3/4 pt. after planting when potato plants have fully emerged.

Precautions: Do not apply to soil containing 2% or more organic matter.

Chemigation Instructions: Trifluralin 4EC may be applied through properly equipped chemigation systems for weed control in potatoes. Refer to APPLICATION AND CALIBRATION TECHNIQUES FOR SPRINKLER IRRIGATION for use directions.

Apply Trifluralin 4EC in 1/2 to 1 acre inch of overhead sprinkler irrigation water after planting, before emergence, or immediately following drag off or after the potato plants have fully emerged. Existing weeds must be destroyed by tillage or cultivation prior to Trifluralin 4EC application. Trifluralin 4EC does not control weeds that have emerged at the time of application. Broadcast 1 pt. per acre to coarse soils and 1 1/2 pts. per acre to medium soil textures. Use 1 1/2 pts. on coarse and medium soils with 2-5% organic matter; use 2 pts. on all soils with 5-10% organic matter. Do not apply Trifluralin 4EC by chemigation to fine textured soils.

Precautions: If cultivation is required after treatment of Trifluralin 4EC, avoid completely covering potato foliage with treated soil. Erratic weed control may result if cultivation exposes untreated soil between rows.

TRIFLURALIN 4EC/EPTAM® TANK MIX

For potatoes grown in Kansas, Minnesota, Nebraska, North Dakota, Oklahoma, South Dakota and Texas, apply after planting, but prior to crop emergence. In areas where potatoes are normally dragged off, the mixture should be applied and incorporated up to or immediately following drag off.

Broadcast Rate/Acre*				
Soil Texture	Trifluralin 4EC			Eptam 7E
	Organic Matter			
	Less than 2%	2 to 5%	5 to 10%	
Coarse	1 pt.	1 1/2 pts.	2 pts.	3 1/2 - 7 pts.**
Medium	1 1/4-1 1/2 pts.	1 1/2 pts.	2 pts.	3 1/2 - 7 pts.**
Fine	1 1/2 - 2 pts.	2 pts.	2 pts.	3 1/2 - 7 pts.**

*Use lower rate in rate range in areas receiving less than 20 inches total annual rainfall and/or irrigation.

**Use higher rates for nutsedge control.

Precautions: Do not graze or feed forage to livestock from fields treated with this mixture.

For potatoes grown in Washington, Idaho, and Oregon, apply and incorporate before planting at a broadcast rate of 3/4 pt. of Trifluralin 4EC/acre and 3 1/2 pts. of Eptam 7E/acre on all soils.

Precautions: Do not use this tank mixture both before and after planting in the same season. Do not use foliage from treated crops for feed or forage. Observe all directions, precautions and limitations on both products' labeling.

RAPE (CANOLA)

For use in all states except Alaska. Trifluralin 4EC may be applied in the fall or early spring prior to seeding. Set incorporation equipment to incorporate to a depth of 3 to 4 inches. Apply 1 pint on coarse soil, 1 1/2 pints on medium soil, and 2 pints on fine soil.

SAFFLOWER

Apply and incorporate in the spring before planting or in the fall between October 15 and December 31 at the following:

Broadcast Rate/Acre*			
Soil texture	Organic Matter		
	Less than 2%	2 to 5%	5 to 10%
Coarse	1 pt.	1 1/2 pts.	2 1/2 pts.
Medium	1 1/4 - 1 1/2 pts.	1 1/2 pts.	2 1/2 pts.
Fine	1 1/2 - 2 pts.	2 pts.	2 1/2 pts.

*Use lower rate in rate range in areas receiving less than 20 inches total annual rainfall and/or irrigation.

Fall application.

For safflower grown in Arizona, California, Idaho, Montana, Nevada, Oregon, Utah, Washington, and Wyoming: Apply and incorporate anytime between October 15 and December 31 at a broadcast rate/acre of 1 1/2 pts. on coarse soil, 2 pts. on medium soil, 2 1/2 pts. on fine soil. Ground may be left flat or bedded-up over winter. On bedded ground, knock beds down to desired height before planting, moving some treated soil from tops into furrows. Where soil is left flat over winter, take care during spring bedding operations to prevent turning up untreated soil. Destroy established weeds during seedbed preparation. If weeds become established in furrows due to uncovering of untreated soil during listing, destroy these weeds before planting.

Precautions: Do not apply in the fall to soils which are wet or are subject to prolonged periods of flooding.

SOYBEANS

Apply and incorporate before planting at the following:

Broadcast rate/acre			
Soil texture	Organic Matter		
	Less than 2%	2 to 5%	5 to 10%
Coarse	1 pt.	1 1/2 pts.	2 - 2 1/2 pts.
Medium	1 1/2 pts.	1 1/2 pts.	2 - 2 1/2 pts.
Fine	2 pts.	2 pts.	2 - 2 1/2 pts.

*Except charcoal soils in Arkansas, Louisiana and Mississippi (see below).

Chemigation Instructions: Trifluralin 4EC may be applied through properly equipped chemigation systems for weed control in soybeans. Refer to APPLICATION AND CALIBRATION TECHNIQUES FOR SPRINKLER IRRIGATION for use directions.

Apply Trifluralin 4EC in sprinkler irrigation equal to 1/2 to 1 inch of water. Planting and application should occur as soon as possible after the last tillage operation. Trifluralin 4EC must be applied within 2 days after planting prior to crop or weed emergence. Trifluralin 4EC does not control established weeds. Soil incorporation is not required when Trifluralin 4EC is applied through chemigation systems. Broadcast 1 1/2 to 2 pts. per acre to coarse and medium soils; 2 to 2 1/2 pts. per acre on fine soils. Use 2 pts. per acre on fine soils with 2-5% organic matter. Use 2 to 2 1/2 pts. per acre on all soil textures with 5.1-10% organic matter. Soil treated with Trifluralin 4EC may be shallow-cultivated without reducing weed control activity.

Charcoal soils in Arkansas, Louisiana and Mississippi.

Newly cleared land often contains high organic matter (5 to 10%) and charcoal which results from burning debris. This tends to bind TRIFLURALIN 4EC reducing its weed control activity. Higher rates are therefore necessary, but increased rates can cause crop injury if charcoal or organic matter is not present. In the burn row a high level of charcoal is present; consequently, poor weed control may result even with an increased rate. Apply and incorporate at a broadcast rate/acre of 1 1/2-2 1/2 pts. on coarse soil, 2 1/2 pts. on medium soil, 3 pts. on fine soil.

Fall application.

Apply anytime between October 15 and December 31. Ground may be left flat or bedded-up over winter. On bedded ground, knock beds down to desired height before planting, moving some treated soil from tops into furrows. Where soil is left flat over winter, take care during spring bedding operations to prevent turning up untreated soil. Destroy established weeds during seedbed preparation. If weeds become established in furrows due to uncovering of untreated soil during listing, destroy these weeds before planting.

In Alabama, Arkansas, northern Florida, Georgia, Louisiana, Mississippi, southeastern Missouri bootheel, North Carolina, Oklahoma, South Carolina, Tennessee, and Texas: Apply and incorporate at a broadcast rate/acre of 2 pts. on coarse and medium soils and 2 1/2 pts. on fine soil, with fall application.

In states other than those listed above: Apply and incorporate at a broadcast rate/acre of 1 pt. on coarse soil, 1 1/2 pts. on medium soil and 2 pts. on fine soil, 1 1/2 pts. on coarse soil with 2 to 5% organic matter, 2 to 2 1/2 pts. on soils with 5.1 to 10% organic matter.

Precautions: Do not apply to soils which are wet or subject to prolonged periods of flooding or where rice was grown the previous year.

Special applications.

For the control of Fall Panicum, apply at a broadcast rate/acre of 2 pts. on both coarse and medium soils.

For more complete control of Pigweed and Seedling Johnsongrass in Alabama, Arkansas, Florida, Georgia, Kansas, Louisiana, Mississippi, Missouri, Nebraska, North Carolina, Oklahoma, South Carolina, Tennessee, and Southern Virginia: Apply at a broadcast rate/acre of 1-1 1/2 pts. on coarse soil, 1 1/2-2 pts. on medium soil, 2-2 1/2 pts. on fine soil (3 pts. in the state of Louisiana are recommended if the soil is fine).

For more complete weed control in the Texas Gulf Coast (limited to Brazoria, Calhoun, Chambers, Fort Bend, Galveston, Harris, Jackson, Jefferson, Liberty, Matagorda, Orange, Victoria, Waller and Wharton counties): Apply up to 2 weeks before planting at a broadcast rate/acre of 1 1/2 pints on coarse soil, 2 pts. on medium soil, 3 pts. on fine soil.

For suppression of Itchgrass (raoulgrass) apply Trifluralin 4EC as a preplant incorporated treatment or at layby. Layby Treatment: Cultivate to remove existing weeds and treat when soybeans are well established (10 inches tall). Apply as a directed spray to the soil surface and incorporate using a rolling cultivator set to cut 2-4 inches deep or sweep-type cultivator with 3 to 5 sweeps per row middle operated 2 to 3 inches deep. Set incorporation equipment to throw treated soil to the row.

For suppression or partial control of Red Rice in Arkansas, Louisiana, Mississippi, and Texas: Apply as directed at double the normal rate the first year and at the normal rate the second year. Apply and incorporate anytime in the spring before planting at the following:

Soil texture	Broadcast Rate/Acre	
	1st Year	2nd Year
Coarse	2 pts.	1 pt.
Medium	3 pts.	1 1/2 pts.
Fine	4 pts.	2 pts.
Coarse soils with 2 to 5% organic matter	3 pts.	1 1/2 pts.
Soils with 5 to 10% organic matter	4 pts.	2 - 2 1/2 pts.

If a combination of high organic matter and charcoal are present, apply in the second year the rates labeled for charcoal soils in Louisiana, Arkansas and Mississippi (1 1/2 to 2 1/2 pts. on coarse soil, 2 1/2 pts. on medium soil, 3 pts. on fine soil).

Crop rotation: The second year plant only those crops for which Trifluralin 4EC has been registered as a preplant treatment, or crop injury may result.

Precautions: Do not plant rice the second year. Rice may be planted the third year.

For the control of Rhizome Johnsongrass in eastern United States and Texas: Apply in a row for two consecutive years according to the program that best fits your cultural practices: As spring application, anytime in spring before planting; as fall application, between October 15 and December 31; as split application, directed under both spring and fall applications.

Broadcast rate/acre		
Soil texture	Spring or Fall	Split Spring and Fall
Coarse	2 pts.	1 + 1 pt.
Medium	3 pts.	1 1/2 + 1 1/2 pts.
Fine	4 pts.	2 + 2 pts.
Coarse soils with 2 to 5% organic matter	3 pts.	1 1/2 + 1 1/2 pts.
Soils with 5.1 to 10% organic matter	4 pts.	2 + 2 pts.

Proper preparation of the soil before application and deep incorporation are very important for best results. Use a chisel plow or similar implement to bring rhizomes to the top of the soil. Then follow with a disc two times before application to cut the rhizomes into small (2 to 3 inch) pieces and to destroy any emerged johnsongrass.

Incorporation--Deep incorporation is essential for good Rhizome Johnsongrass control. Incorporate Trifluralin 4EC thoroughly with a disc set to cut 4 to 6 inches deep and operate at 4 to 6 mph. Two passes are necessary, with the second pass in a different direction from the first.

Cultivation--Some Johnsongrass plants will escape. Timely cultivations during the crop season to remove escaped plants are necessary to obtain commercially acceptable control.

Crop Rotation: In the season following a double rate treatment, plant only rice or those crops for which Trifluralin 4EC can be applied as a preplant treatment or injury may result.

For the control of Wild Cane (shattercane). Wild Cane can germinate from greater soil depth than most other weed seeds. Several "flushes" or germinating times are common in one season. Commercially acceptable control of Wild Cane can be obtained with increased rates of Trifluralin 4EC.

Land preparation: Work the soil to destroy existing grasses and weeds. Thoroughly mix crop residues into the soil to a depth of 4 to 6 inches.

Application: Apply before planting at a broadcast rate/acre of 1 pt. on coarse soil, 2 pts. on medium soil, 2 1/2 pts. on fine soil.

Incorporation: Deep incorporation is essential to good Wild Cane control. Incorporate thoroughly with a disc set to cut 4 to 6 inches deep and operate in 2 different directions at 4 to 6 mph. Cultivations during the crop season will also contribute to control.

Precautions: Plant soybeans after early season adverse weather conditions have passed; do not plant soybeans deeper than 2 inches. Crop injury in the form of delayed growth may occur under adverse cool, wet weather conditions early in the season when Trifluralin 4EC is used according to these recommendations.

TANK MIXES FOR USE ON SOYBEANS

Trifluralin 4EC may be tank mixed with the following product to obtain a broader spectrum of weed control (for weeds controlled see labels of the listed products): Sencor®/Lexone®, Dual®, Dual II®, Lasso®, Command®, Frontier®, Mico-Tech®, Partner®, Canopy®, Preview®, Pursuit®, and Scepter®. Refer to tank mix product label for application rate, additional directions, precautions and limitations before use.

TRIFLURALIN 4EC PREPLANT INCORPORATED FOLLOWED BY OVERLAY TREATMENTS (Do Not Use in California)

Apply Trifluralin 4EC as a preplant incorporated treatment. Additional weeds tolerant to trifluralin may be controlled by using overlay preemergence applications of Canopy®, Command®, Dual®, Dual II®, Frontier®, Lasso®, Lexone®, New Lasso Plus®, Mico-Tech®, Partner®, Preview®, Pursuit®, Scepter® or Sencor®. Consult these product labels for additional weeds controlled, application directions and precautions before use.

TRIFLURALIN 4EC PREPLANT INCORPORATED FOLLOWED BY POSTEMERGENCE TREATMENTS (Do Not Use in California)

Apply Trifluralin 4EC as a preplant incorporated treatment. Additional weeds tolerant to trifluralin may be controlled by using postemergence applications of Basagran®, Blazer®, Classic®, Concert®, Cobra®, Galaxy®, Flexstar®, Pursuit®, Pinnacle®, Reflex®, Reliance "STS", Scepter®, Scepter QT®, Storm®, Synchrony STS®, and [redacted]. Consult these product labels for additional weeds controlled, application directions and precautions before use.

*Synchrony STS and Reliance "STS" are for use only on "STS" soybean variety (sulfonyl-urea tolerant soybeans).

SUGAR BEETS

Apply as a broadcast, over-the-top spray to plants immediately after blocking or thinning when plants are between 2 and 6 inches tall. Exposed beet roots should be covered with soil prior to application to reduce possibilities of girdling. Care should be taken that incorporation machinery does not damage the taproot.

Broadcast Rate/Acre	
Soil texture	Trifluralin 4EC
Coarse	1 pt.
Medium	1 1/4-1 1/2 pts.
Fine	1 1/4-1 1/2 pts.

Special application.

Incorporation with a tine-tooth harrow in Colorado, Idaho, Kansas, Montana, Nebraska, Oregon, Texas, Utah, Washington, Wyoming. A properly operated tine-tooth harrow can provide adequate incorporation of the herbicide for effective weed control in sugar beets. Operate the tine-tooth harrow two times over the field in opposite directions at a speed of 3 to 6 mph and set the harrow to cut 1 to 2 inches deep. Care should be taken to insure that the tine-tooth harrow does not damage the sugar beet taproot.

TRIFLURALIN 4EC PLUS EPTAM TANK MIX for sugar beets.

Trifluralin 4EC may be tank mixed with Eptam and applied as an over the top spray followed by incorporation to control additional weeds. Use application rates recommended for sugar beets as in "Trifluralin 4EC - Alone" above. Refer to the Eptam label for weeds controlled, application rates, additional use directions, precautions and limitations before use.

SUGARCANE

Use restricted to eastern United States.

Plant Cane

Apply and incorporate twice a year at a broadcast rate/acre of 2 to 4 pts. for all soil textures. Application rate within rate range may be adjusted according to weed pressure. Make the first application in the fall on firmly packed beds immediately after the seed pieces are planted.

Make the second application in the spring before or shortly after the cane emerges. Loosen rain-packed beds 2 to 3 inches deep before the spring application. Care should be taken so that incorporation machinery does not damage the seed pieces or emerging shoots.

Plant and Ratoon Cane (grown in Louisiana and Texas only):

Apply and incorporate at a broadcast rate/acre of 2 to 4 pts. for all soil textures. Application rate within rate range may be adjusted according to weed pressure. Make application in the spring from before or shortly after the cane emerges up to lay-by. Make application after the beds have been shaved or false shaved. Loosen rain-packed bed 2 to 3 inches deep before application. Care should be taken so that incorporation machinery does not damage seed pieces or emerging roots.

Postplant Surface Application for control of most annual grasses including guineagrass (Hawaii only) :

Apply to surface after planting (for plant cane) or after harvesting (for ratoon cane) before weeds and cane emerge at a broadcast rate/acre of 6 to 8 pts. for all soil textures. In plant cane the beds should be formed or rolled before application. In ratoon cane, the crop residue should be removed before application. If large amounts of crop residues are present, Trifluralin 4EC will not be effective. Apply just before anticipated rainfall or sprinkle irrigate immediately after application.

Repeat Applications:

~~Subsequent germination flushes of grass weeds may occur prior to the development of full dense canopy of sugarcane. Once this occurs, additional grass weed establishment is strongly suppressed. One or two additional applications of Trifluralin 4EC can be applied to maintain weed control during the early crop development period. For repeat applications, direct the spray to the soil surface to minimize interception of the herbicide by the crop.~~

Use Precautions:

Do not apply Trifluralin 4EC as a postplant surface applied treatment within 180 days of harvest.

Itchgrass control (in Louisiana only).

Apply and incorporate on either plant or ratoon cane at a broadcast rate/acre of 2-4 pts. for all soil textures. Apply in the spring from before or shortly after the cane emerges up to lay-by. Follow directions above for sugarcane lay-by application in Louisiana and Texas.

SUNFLOWER

Apply and incorporate in the spring or in the fall between October 15 and December 31 at the following:

Broadcast Rate/Acre			
Soil texture	Organic Matter		
	less than 2 %	2 to 5%	5 to 10%
Coarse	1 pt.	1 1/2-2 pts.	2 pts.
Medium	1 1/2-1 1/2 pts.	1 1/2-2 pts.	2 pts.

Fine		1 1/2-2 pts.	2 pts.	2 pts.
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*Use lower rate in rate range in areas receiving less than 20 inches total annual rainfall and/or irrigation.

TOMATOES ✓

For direct-seeded tomatoes, apply at blocking or thinning as a directed spray to soil between the rows and beneath the plants, and incorporate.

For transplant, apply and incorporate before transplanting. Do not apply after transplanting.

Soil texture	Broadcast Rate/Acre*		
	less than 2%	Organic Matter 2 to 5%	5 to 10%
Coarse	1 pt.	1 1/2 pts.	2 pts.
Medium	1 1/2 - 1 1/2 pts.	1 1/2 pts.	2 pts.
Fine	1 1/2-2 pts.	1 1/2-2 pts.	2 pts.

*Use lower rate in rate range in areas receiving less than 20 inches total annual rainfall and/or irrigation.

TREES AND VINEYARDS

EASTERN U.S.

For new planting of vineyards, citrus and pecan trees, apply and incorporate before planting at the following:

For non-bearing established plantings of citrus and pecan trees and bearing plantings of grapefruit, lemon, orange, pecan, tangelo, and tangerine trees, apply at a broadcast rate/acre of 2 to 4 pts. for all soil textures. Apply as a directed spray to soil around the trees and use incorporation methods not injurious to the trees. For continued weed control in citrus areas, apply twice a year at an interval of approximately 4 to 6 months.

WESTERN U.S.

For new plantings of almond, apricot, citrus, grapefruit, lemon, orange, tangelo, tangerine, nectarine, peach, plum, prune, pecan, and walnut trees, apply and incorporate before planting at the following:

Soil texture	Broadcast Rate/Acre		
	less than 2%	2 to 5%	5 to 10%
Coarse	1 pt.	1 1/2-2 pts.	2 pts.
Medium	1 1/4-1 1/2 pts.	1 1/2-2 pts.	2 pts.
Fine	1 1/2-2 pts.	1 1/2-2 pts.	2 pts.

*Use lower rate in rate range in areas receiving less than 20 inches total annual rainfall and/or irrigation.

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For new plantings of vineyards, apply before planting at the following:

Soil texture	Broadcast rate/acre
Coarse	1 - 1½ pts.
Medium	1½-3 pts.
Fine	3 - 4 pts.
2 to 10% organic matter	3- 4 pts.

*Use lower rate in rate range in areas receiving less than 20 inches total annual rainfall and/or irrigation.

Do not use more than 2 pts./acre on heat-treated grape rootings.

For post-plant applications on bearing and non-bearing established plantings of vineyards, and plantings of almonds, apricot, grapefruit, lemon, nectarine, orange, peach, pecan, plum, prune, tangelo, tangerine and walnut trees, apply at a broadcast rate/acre of 2 to 4 pts. for all soil textures. Application rate within rate range may be adjusted according to weed pressure. Apply as a directed spray to the soil around the trees or vines and use incorporation methods not injurious to the trees or vines. Do not apply to vineyards within 60 days of harvest. For continued weed control in citrus trees, apply twice a year at an interval of about 4 to 6 months.

Special application.

For Rhizome Johnsongrass control (Western U.S. only).

Commercially acceptable control of Rhizome Johnsongrass can be obtained with post-plant applications in bearing and non-bearing established plantings of vineyards, and plantings of almond, apricot, grapefruit, lemon, nectarine, orange, peach, pecan, tangelos, and walnut trees. Work the soil thoroughly to bring the rhizomes nearer the surface. Apply for two years in a row at a broadcast rate/acre of 4 pts. on all soil textures each year. Incorporate thoroughly with a disc set to cut 4 to 6 inches deep and operate 2 times at 4 to 6 mph. Some Johnsongrass plants will escape. Timely cultivations are necessary.

Precautions: Do not use the 2 qt. rate on new plantings; do not apply to vineyards within 6 months 60 days of harvest; do not interplant orchards or vineyards with other crops; if the Trifluralin 4EC treated vineyards and orchards are diverted to other crop uses, plant only those crops for which Trifluralin 4EC has been registered as a preplant treatment.

For Field Bindweed control in vineyards, and plantings of almond, apricot, grapefruit, lemon, nectarine, orange, peach, pecan, tangelo, tangerine and walnut trees. Apply in the spring with a specially designed spray blade which applies at a soil depth of 4 to 6 inches at a broadcast rate/acre of 4 pts. on all soil textures in 40-80 gallons of water/acre. Destroy all weeds and grasses with soil tillage before applying.

Precaution: Some soils develop cracks as they dry after rainfall or irrigation and Field Bindweed may emerge. Prevent or eliminate cracks by shallow discing or other tillage.

WHEAT

WHEAT (WINTER) grown in Idaho, Oregon and Washington (Pre Plant Treatment).

Preplant incorporated treatment for control of downy brome (cheatgrass), annual ryegrass, annual bluegrass, pacific meadow foxtail (blackgrass), henbit and fiddleneck (tarweed). Apply any time during a period from 3 weeks up to immediately prior to planting at a broadcast rate/acre of 1½ pts. on coarse and medium soils and 2 pts. on fine soils. Incorporate, with a flexible tine-tooth harrow set to cut 1 to 2 inches deep and operate at 3 to 6 mph, one time within 24 hours after application and a second time, in a different direction, prior to planting. Do not till the soil with a disc after the material has been incorporated with a flexible tine harrow.

Precaution: Wheat planted in direct contact with treated soil may suffer crop injury in the form of delayed emergence and development. Use deep or semi-deep furrow drills.

WHEAT (WINTER) grown in Idaho, Oregon, and Washington (Post Plant Treatment).

Incorporate Trifluralin 4EC after planting, but before wheat emergence, to control annual ryegrass, annual bluegrass, downy brome (cheatgrass), pacific meadow foxtail (blackgrass), fiddleneck (tarweed) and henbit. Use 1 to 1 1/2 pts./acre on coarse textured soils or 1 1/2 pts./acre on medium textured soils. Incorporate with a flex tine or spike toothed harrow set to cut 1-1.5 inches deep and operated at least 5 mph. First incorporation should be within 24 hours of application. Second pass should be at a different direction from the first.

Precautions: Wheat should be planted 2 - 3 inches deep in a well-tilled seed bed. Do not use a deep or semi-deep furrow drill. Wheat seed coming in direct contact with treated soil may suffer crop injury in the form of delayed emergence or development. If less than 20 inches of rainfall and/or irrigation occur between planting and harvest, refer to rotation crop restriction before planting corn or oats.

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UNDER PAVED SURFACES

Directions for Use and Site Preparation: Trifluralin 4EC should be used only where the area to be treated has been prepared according to good construction practices. If rhizomes, stolons, tubers or other vegetative plant parts are present in the site, they should be removed by scalping with a grader blade to a depth sufficient to insure their complete removal.

Applications should be made only when final grade is established or after additions of base rock. Do not move soils following Trifluralin 4EC application and do not apply Trifluralin 4EC to areas where asphalt is to be laid directly on top of soil.

Paving should follow Trifluralin 4EC applications as soon as possible.

Application Directions: Large Areas—Apply Trifluralin 4EC in sufficient water to insure thorough wetting of the soil surface or penetration of the spray solution through the base rock layer. A minimum of 150 gallons per acre is recommended. Apply with any sprayer that will apply the spray uniformly. Add the recommended amount of Trifluralin 4EC to clean water in the spray tank during the filling operation. Agitate before spraying.

Small Areas—For treating small areas, a tank type hand sprayer or sprinkling can may be used. Before application determine the amount of water and Trifluralin 4EC necessary to uniformly cover the area to be treated. Shake or stir the spray solution prior to application.

The Proper Amount of Trifluralin 4EC to Apply

Apply the Following Amount of Trifluralin 4EC		
	Ounces Per 1,000 Sq. Ft.	Gallons Per Acre
Trifluralin 4EC	9 to 12 ounces	3 to 4 gallons

ORNAMENTAL USES

Trifluralin 4EC may be used as a preemergence herbicide to control annual grasses and broadleaf weeds in ornamental ground covers, trees, shrubs, roses, flowers, and nursery stock, as well as under paved surfaces. Do not apply Trifluralin 4EC through any type of irrigation system for use on ornamentals.

Weeds and Grasses Controlled by Trifluralin 4EC	
Grasses	
Annual Bluegrass	Junglerice
Barnyardgrass (Watergrass)	Panicum, Fall
Brachiaria	Panicum, Texas
Bromegrass	Sandbur
Cheat	Sprangletop
Crabgrasses	Stinkgrass
Foxtail	Woolly Cupgrass
Johnsongrass (from seed)	
Broadleaf Weeds	
Carpetweed	Pigweed
Chickweed	Puncturevine
Florida pusley	(Western U.S. only)
Goosefoot	Purslane
Knotweed	Russian thistle
Kochia	Stinging nettle
Lambsquarters	
Note: Trifluralin 4EC will not control certain resistant weeds such as Cocklebur, Velvetleaf, Jimsonweed, Ragweed, Venice Mallow and Nutgrass.	

Trifluralin 4EC is recommended for use on a wide variety of vegetables, ornamental trees, ornamental ground covers, shrubs, and flowers. The ornamental species on which Trifluralin 4EC can be used at recommended rates without damage include those listed in this booklet. Refer to the index for the page numbers of these lists.

Application Directions

Trifluralin 4EC is to be mixed with water and applied as a spray before, or in the same operation as soil incorporation. Apply in 5 to 40 gallons of water per acre (broadcast basis) using any properly calibrated low-pressure boom-type herbicide sprayer that will uniformly apply the spray. Pour the recommended amount of Trifluralin 4EC for your soil type into the spray tank during the filling operation and mix thoroughly before spraying. Do not apply more than the recommended amount.

Incorporation Directions

Trifluralin 4EC must be incorporated into the soil after application to prevent loss of its activity. Spraying and incorporation should be done in the same operation, if possible. Incorporation may be delayed up to 4 hours after application. Variable weed control may result from delayed incorporation if Trifluralin 4EC is applied to a wet, warm soil surface or if the wind velocity is 10 mph or higher.

The machinery used for incorporation should break up large clods and mix Trifluralin 4EC thoroughly with the soil. The more thoroughly the Trifluralin 4EC is mixed with the soil, the more consistent the weed control will be.

Apply and incorporate Trifluralin 4EC prior to planting new nursery stock liners, ornamentals, trees and woody shrubs, and gladioli. (Gladioli corms less than 1 inch in diameter may be injured by preplant applications of Trifluralin 4EC.) Trifluralin 4EC may also be applied to established plantings by using a directed spray to the soil between the rows and beneath the plants.

Broadcast (Overall) Application Rates for Soil Incorporation Only

	Coarse Soils	Sand and Sandy Loam 1 pint per acre (½ pound active)
	Medium Soils	Loam, Silt Loam and Silt 1 ¼ pints per acre (¾ pound active)
	Fine Soils	Clay Loam, Silty Clay and Clay 2 pints per acre (1 pound active)

For band applications, use the following formula to figure the proportionate amount:

$$\frac{\text{band width in inches}}{\text{row width in inches}} \times \text{recommended broadcast rate} = \text{amount to apply per acre on band}$$

Trifluralin 4EC is not recommended on muck soils.

Incorporation before planting (preplant): Thorough incorporation may be achieved with the following: *P.T.O.-driven equipment* (tillers, cultivators, hoes) set to cut 2 to 3 inches deep with rotors spaced to provide a clean sweep of the soil; *double disc* (or double disc with spiketooth harrow in tandem) set to cut 3 to 4 inches deep and operated in two different directions (cross disced) at 4 to 6 mph; *mulch treader* and other similar disc-type implements set to cut 3 to 4 inches deep and operated twice at 5 to 8 mph; *rolling cultivators* set to cut 2 to 4 inches deep and operated twice at 6 to 8 mph; or a *bed conditioner* (Do-All) set to cut 2 to 4 inches deep and operated at 4 to 6 mph.

Incorporation after planting (post-plant): Incorporation may be achieved around established plants by using *P.T.O.-driven equipment* (tillers, cultivators, hoes) set to cut 2 to 3 inches deep with rotors spaced to provide a clean sweep of the soil, or *rolling cultivators* set to cut 2 to 4 inches deep and operated twice at 6 to 8 mph. When incorporating Trifluralin 4EC in transplants, new liners, or established plants, the implement should be adjusted so that treated soil is thrown toward and around the plants in the row.

Clean cultivated area to be treated before application since Trifluralin 4EC will not control established weeds.

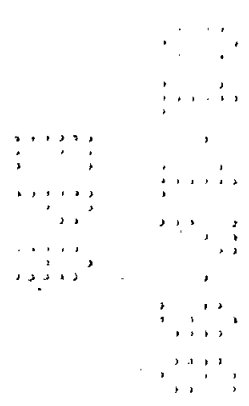
Shallow incorporation with implements set to cut less than 2 inches deep may result in erratic weed control. Do not use spiketooth or springtooth harrows alone for incorporation.

Surface Application and Water Incorporation to Ornamental Ground Cover Plantings

Add Trifluralin 4EC to clean water in the spray tank during the filling operation. Agitate thoroughly prior to spraying. Apply in 5 to 40 gallons of water per acre using any properly calibrated low pressure herbicide sprayer that will uniformly apply the spray mixture. A one-half-inch rain or its equivalent in sprinkler irrigation must be received within 24 hours or poor weed control will result.

Application Rates—Ground Cover Only

Apply 1 gallon of Trifluralin 4EC per acre or 3 ounces per 1,000 sq. ft. of ground cover area.



ORNAMENTALS

Woody Shrubs
Common Name

Scientific Name

Woody Shrubs Common Name	Scientific Name
Andromeda, Japanese	<i>Pieris japonica</i>
Arborvitae, American	<i>Thuja occidentalis</i>
Azalea	<i>Rhododendron</i> spp.
Barberry, Japanese	<i>Berberis thunbergii</i>
Barberry, Mento	<i>Berberis mentorensis</i>
Boxwood, Common	<i>Buxus semperviens</i>
Boxwood, Harlands	<i>Buxus harlandi</i>
Boxwood, Littleleaf	<i>Buxus microphylla</i>
Camellia, Japanese	<i>Camellia japonica</i>
Camellia, Sasanqua	<i>Camellia sasanqua</i>
Cherrylaurel, American	<i>Prunus caroliniana</i>
Cinquefoil	<i>Potentilla</i> spp.
Cleyera, Japanese	<i>Cleyera japonica</i>
Cotoneaster, Cranberry	<i>Cotoneaster apiculata</i>
Cotoneaster, Zabel	<i>Cotoneaster zabelii</i>
Deutzia	<i>Deutzia</i> spp.
Elaeagnus, Silverberry	<i>Elaeagnus pungens</i>
Euonymus, Spreading	<i>Euonymus kiautschovica</i>
Euonymus, Winged	<i>Euonymus alatus</i>
Euonymus, Wintercreeper	<i>Euonymus fortunei</i>
Firethorn	<i>Pyracantha</i> spp.
Forsythia	<i>Forsythia</i> spp.
Guava, Pineapple	<i>Feijoa sellowiana</i>
Holly	<i>Ilex</i> spp.
Honeysuckle	<i>Lonicera</i> spp.
Indiahawthorn	<i>Raphiolepis indica</i>
Juniper	<i>Juniperus</i> spp.
Laurel, Mountain	<i>Kalmia latifolia</i>
Lilac, Common	<i>Syringa vulgaris</i>
Mockorange	<i>Philadelphus</i> spp.
Pittosporum, Japanese	<i>Pittosporum tobira</i>
Privet	<i>Ligustrum</i> spp.
Redcedar, Eastern	<i>Juniperus virginiana</i>
Rhododendron	<i>Rhododendron</i> spp.
Spiraea, Vanhoutte	<i>Spiraea vanhouttei</i>
Viburnum	<i>Viburnum</i> spp.
Weigela	<i>Weigela</i> spp.
Willow	<i>Salix</i> spp.
Yew, Anglojap	<i>Taxus media</i>
Yew, Japanese	<i>Taxus cuspidata</i>
Yewpine	<i>Podocarpus macrophyllus</i>

Trees Common Name	Scientific Name
Almond	Prunus dulcis
Apple, Crabapple	Malus spp.
Apricot	Prunus armeniaca
Ash, White	Fraxinus americana
Baldcypress	Taxodium distichum
Birch, European White	Betula pendula
Blackgum	Nyssa sylvatica
Cherry	Prunus spp.
Chestnut, Chinese	Castanea mollissima
Cottonwood	Populus deltoides
Dogwood, Flowering	Cornus florida
Dogwood, Kousa	Cornus kousa
Douglasfir	Pseudotsuga menziesii
Fir, Balsam	Abies balsamea
Hemlock, Canada	Tsuga canadensis
Honeylocust	Gleditsia triacanthos
Larch, Japanese	Larix kaempferi
Locust, Black	Robinia pseudoacacia
Maple, Norway	Acer platanoides
Maple, Red	Acer rubrum
Maple, Silver	Acer saccharinum
Maple, Sugar	Acer saccharum
Oak, Pin	Quercus palustris
Oak, Red	Quercus rubra
Oak, Scarlet	Quercus coccinea
Peach	Prunus persica
Pine, Austrian	Pinus nigra
Pine, Eastern White	Pinus strobus
Pine, Japanese Black	Pinus thunbergiana
Pine, Loblolly	Pinus taeda
Pine, Red	Pinus resinosa
Pine, Scotch	Pinus sylvestris
Planetree, London	Platanus acerifolia
Plum	Prunus spp.
Redbud, Eastern	Cercis canadensis
Spruce, Colorado (Blue)	Picea pungens
Spruce, Norway	Picea abies
Spruce, White	Picea glauca
Sweetgum	Liquidambar styraciflua
Sycamore	Platanus occidentalis
Tuliptree	Liriodendron tulipifera
Walnut, Black	Juglans nigra

Groundcover Plantings Common Name	Scientific Name
Aaronsbeard	Hypericum calycinum
Bellflower, Adriatic	Campanula elatines
Bellflower, Poscharsky	Campanula poscharskyana
Ceanothus	Ceanothus spp.
Coreopsis	Coreopsis spp.
Cotoneaster	Cotoneaster spp.
Coyote Brush	Baccharis pilularis
Crown Vetch	Coronilla vana
Daisy Trailing African	Osteopsernum fruticosum
Fern, Asparagus	Asparagus densiflorus
Gazania	Gazania spp.
Germander	Teucrium chamaedrys
Ice Plant, Largeleaf	Carpobrotus edulis
Ivy, Algerian	Hedera canariensis
Ivy, English	Hedera helix
Lily-of-the-Nile	Agapanthus spp.
Lilyturf, Bigblue	Liriope muscari
Marigold	Tagetes spp.
Myoporum	Myoporum laetum
Plumbago, Dwarf	Ceratostigma plumbaginoides
Rockrose	Cistus spp.
Rosemary	Rosmarinus officinalis
Rupturewort	Herniaria glabra
Snow-in-Summer	Cerastium tomentosum
Speedwell	Veronica spp.
St. Johnswort	Hypericum coris
Stonecrop (Sedum)	Sedum spp.
Strawberry, Beach	Fragaria chiloensis
Thrift	Armeria maritima
Verbena	Verbena spp.
Wirevine, Creeping	Muehlenbeckia axillaris
Yarrow, Woolly	Achillea tomentosa
Zoysiagrass	Zoysia tenuifolia

Roses and Other Established Flowers	
African Daisy	Marigold
Aster (perennial)	Marigold, Cape
Balsam	Morningglory
Blackeyed Susan	Nasturtium
Calendula	Nicotiana
Carnation	Petunia
Centaurea, Velvet	Phlox
Chrysanthemum	Pincushion Flower
Coreopsis	Poppy, California
Cornflower	Portulaca
Cosmos	Rose
Dahlia	Salvia
Dianthus	Shasta Daisy
Dusty Miller	Snapdragon
Floss Flower	Snow-on-the-mountain
Forget-me-not	Stock
Four O'Clock	Sunflower
Gaillardia	Sweet Alyssum
Gladiolus	Sweet Pea
Golden Glow	Sweet Sultan
Impatiens	Sweet William
Ixora	Vinca (Periwinkle)
Lobelia	Yarrow
Lupine	Zinnia

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