

51036-126

08/05/2004

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

WASHINGTON, D.C. 20460

OFFICE OF  
PREVENTION, PESTICIDES  
AND TOXIC SUBSTANCES

AUG 5 2004

Mr. Bill Washburn  
Regulatory Affairs Specialist  
Micro Flo Company LLC  
P.O. Box 772099  
Memphis, Tennessee 38117-2099

Dear Mr. Washburn:

Subject: TRIFLURALIN 4 TSF  
Registration No. 51036-126  
Application Dated November 20, 2002, Request To Amend  
Labeling To Comply with the Trifluralin Reregistration  
Evaluation Document (RED), Amendments Required; Your  
Response to Agency's Letter Dated October 9, 2002; and  
Your Response To Agency's Letter Dated May 9, 2002; and  
Application Dated July 23 and Your Letter Dated July 26,  
2004: Response to Comments in This Agency's Letter Dated  
March 24, 2004

The revised labeling submitted with your resubmission response to our letter dated March 24, 2004 has been reviewed and found acceptable under the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA), as amended, provided that you revise the label as indicated in the following comments; and submit a final printed copy of the revised label:

1. On front panel the word "selective" must be deleted or its meaning, as used to describe this pesticide product, must follow the use of the word.
2. Either list the "row crops, fruits, nuts, vegetables and vineyards" in the front panel claim, or delete this broad claim.
3. Correct the typographic error on page 4, i.e.: "Also note-planting ....." to read: "Also note planting ...".
4. On page 32, correctly name the current owners of the trademarked names used in the text of the labeling submitted with your letter dated July 26, 2004.
5. Submit one copy of the final printed labeling prior to shipping under the revised labeling.

If these conditions are not complied with, the registration will be subject to cancellation in accordance with FIFRA, section 6(E). Your release for shipment of this product under the revised labeling constitutes acceptance of these conditions. A stamped copy of the accepted labeling is enclosed for your records

Sincerely yours,

ISI

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

Enclosure

**TRIFLURALIN 4 TSF**

**A selective preemergence herbicide  
for the control of annual grasses and broadleaf weeds  
in row crops, fruits, nuts, vegetables and vineyards.**



**ACTIVE INGREDIENT:**

Trifluralin (a,a,a-trifluoro-2,6-dinitro-N,N-dipropyl-p-toluidine) ..... **41.2%**

**INERT INGREDIENTS:**..... **58.8%**

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

Contains 4 pounds active ingredient per gallon.

**KEEP OUT OF REACH OF CHILDREN**

**CAUTION**

<b>FIRST AID</b>	
If In Eyes:	<ul style="list-style-type: none"> <li>• Hold eye open and rinse slowly and gently with water for 15-20 minutes.</li> <li>• Remove contact lenses, if present after the first 5 minutes, then continue rinsing eye.</li> <li>• Call a poison control center or doctor for treatment advice.</li> </ul>
If Swallowed:	<ul style="list-style-type: none"> <li>• Call a poison control center or doctor immediately for treatment advice.</li> <li>• Have person sip a glass of water if able to swallow.</li> <li>• Do not induce vomiting unless told to do so by a poison control center or doctor.</li> <li>• Do not give anything by mouth to an unconscious person</li> </ul>
If On Skin or Clothing:	<ul style="list-style-type: none"> <li>• Take off contaminated clothing.</li> <li>• Rinse skin immediately with plenty of water for 15-20 minutes.</li> <li>• Call a poison control center or doctor for treatment advice.</li> </ul>
If Inhaled:	<ul style="list-style-type: none"> <li>• Move person to fresh air</li> <li>• If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible.</li> <li>• Call a poison control center or doctor for further treatment advice</li> </ul>
<b>HOT LINE NUMBER</b>	
Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact 1-800-832-4357.	
<b>NOTE TO PHYSICIAN:</b> This product contains an aromatic hydrocarbon and can be extremely harmful if swallowed. Aspiration of this product may produce a severe pneumonitis. Stomach lavage with a cuffed endotracheal tube in place and immediate administration of activated charcoal, 6-8 heaping teaspoonfuls with water, should be considered. Treatment is otherwise symptomatic and supportive.	

See Additional Precautionary Statements Inside

EPA Reg. No. 51036-126

EPA Est. No. 51036-GA-1

AD xxxxxx

NET CONTENTS: \_\_\_\_\_

Manufactured For:

MICRO FLO COMPANY LLC

P.O. 772099

MEMPHIS, TN 38117

ACCEPTED  
with COMMENTS  
in EPA Letter Dated  
**AUG 5 2004**

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

**PRECAUTIONARY STATEMENTS**  
**Hazards To Humans and Domestic Animals**

**CAUTION**

Causes moderate eye injury. Harmful if swallowed or absorbed through the skin. Do not get in eyes, on skin, or on clothing. Prolonged or frequently repeated skin contact may cause allergic reaction in some individuals.

**EMERGENCY TELEPHONE NUMBERS:** Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact:

- (800) 424-9300 CHEMTREC (transportation and spills)
- (800) 832-4357 Human health
- (800) 345-4735 ASPCA (animal health)

**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 B on an EPA chemical resistance category selection chart.

Applicators and other handlers must wear:

1. Long-sleeved shirt and long pants
2. Chemical-resistant gloves, such as barrier laminate or butyl
3. Shoes plus socks
4. Protective eyewear

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

**Engineering Controls:**

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

**USER SAFETY RECOMENDATIONS**

Users should:

1. Wash hands before eating, drinking, chewing gum, using tobacco or using the toilet.
2. Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.
3. 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.

**ENVIRONMENTAL HAZARDS**

This pesticide is extremely toxic to freshwater marine, and estuarine fish and aquatic invertebrates including shrimp and oyster. Do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. Do not apply in a manner that will directly expose canals, lakes, streams, ponds, marshes or estuaries to aerial drift. 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 and restricted-entry intervals. The requirements in this box only apply to uses of this product that are covered by the Worker Protection Standard.

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

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

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

1. Coveralls
2. Chemical-resistant gloves, such as barrier laminate or butyl rubber
3. Shoes plus socks
4. Protective eyewear

#### CHEMIGATION PROHIBITION

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

#### STORAGE AND DISPOSAL

Do not contaminate water, food or feed by storage or disposal. STORAGE: May be stored in unheated facilities. Do not store near heat or flame.

PESTICIDE DISPOSAL: Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility.

CONTAINER DISPOSAL: Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or incineration or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

#### SPECIAL PRECAUTIONS

Applied according to directions and under normal growing conditions Trifluralin will not harm the treated crop. Over application may result in crop injury or a soil residue. Uneven application or improper soil incorporation of Trifluralin can result in erratic weed control 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. Under these conditions, delayed crop development of reduced yields may result.

In Arizona, Colorado, California, Idaho, Montana, 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. 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 or oats should not be planted for 14 months after a spring application or for 16 months after a fall application of

Trifluralin 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 of Trifluralin.

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 or oats should not be planted for 12 months after an application of Trifluralin.

If less than 20 inches of total water was used to produce the crop, do not plant sorghum, proso millet, or oats for 18 months after an application of Trifluralin. Cool, wet weather conditions during the early stage of growth may increase the possibility of injury to sorghum.

In all other areas receiving greater than 20" rainfall/year: Moldboard plow before planting sugar beets where a spring application of Trifluralin was made the previous season. Also note-planting restrictions listed in the section on control of rhizome johnsongrass and other higher rate programs.

Vegetable Growing Areas: Vegetable crops other than those listed on this label should not be planted within 5 months following the application of Trifluralin. Trifluralin is a preemergence herbicide, which is incorporated into the soil to provide long-lasting control of many annual grasses and broadleaf weeds. Trifluralin controls weeds as they germinate. Trifluralin will not control established weeds.

**WEEDS AND GRASSES CONTROLLED BY TRIFLURALIN TSF**

**GRASSES**

- Annual bluegrass (Poa annua)
- Barnyardgrass (Echinochloa sp.)
  - (Watergrass)
- Brachiaria (Brachiaria sp.)
  - (Signalgrass)
- Bromegrass (Bromus tectorum)
  - (Cheatgrass)
  - (Downy brome)
- Cheat (Bromus secalinus)
  - (Chess)
- Crabgrass (Digitaria spp.)
  - (Large crabgrass)
  - (Smooth crabgrass)
- Foxtail (Setaria spp.)
  - (Bottlegrass, Bristlegrass, Giant foxtail, Green foxtail, Foxtail millet, Pigeongrass, Robust foxtail, Yellow foxtail)
- Goosegrass (Eleusin indica)
  - (Silver crabgrass, Silvergrass, Wiregrass, Yardgrass)
- Johnsongrass (from seed) (Sorghum halepense)
  - (Rhizome-see page 5 for special instructions for control in cotton and see page 7 for special instructions for control in soybeans)
- Junglerice (Echinochloa colonum)
- Panicum:
  - Fall panicum (Panicum dichotomiflorum)
    - (Spreading panicgrass-see page 5 for special instructions in cotton and see page 7 for special instructions in soybeans)
  - Guineagrass (Panicum maximum)
    - (See page 12 for special instructions)
- Texas panicum (Panicum texanum)
  - (Buffalograss, Coloradograss)

Itchgrass (Raoulgrass) (See page 12 for special instructions)	(Rottboellia exaltata)
Red Rice (See page 7 for suppression or partial control directions)	(Oryza sativa)
Sandbur (Bluegrass)	(Cenchrus incertus)
Sprangletop Stinkgrass (Lovegrass)	(Leptochloa filiformis) (Eragrostis cilaneensis)
Wild cane (Shattercane) (See page 8 for special instruction)	(Sorghum bicolor)
Woolly cupgrass	(Eriochloa villosa)
<b>BROADLEAF WEEDS</b>	
Carpetweed	(Mollugo verticillata)
Chickweed	(Stellaria media)
Field bindweed (See page 13 for special instructions)	(Convolvulus arvensis)
Florida pusley (Florida purslane, Pusley)	(Richardia scabria)
Goosefoot	(Chenopodium hybridum)
Henbit (fall application only)(Lamium amplexicaule)	
Knotwood	(Polygonum aviculare)
Kochia (Fireweed, Mexican fireweed)	(Kochia scoparia)
Lambsquarters	(Chenopodium album)
Pigweed (Carelessweed, Prostrate pigweed, Redroot, Rough pigweed, Spiny pigweed)	(Amaranthus spp.)
Puncturevine (Western U.S. Only) (Caltrop, Goathead)	(Tribulus terrestris)
Purslane	(Portulaca oleracea)
Russian thistle (Tumbleweed)	(Salsola Kali)
Stinging nettle (Nettle)	(Urtica dioica)

### SOIL PREPARATION

**Crop Residues or Existing Weeds:** Ground cover, such as crop residues or existing weeds, can interfere with the incorporation of Trifluralin into the soil. A manageable level of such ground cover will allow the Trifluralin to be uniformly incorporated into the top 2 to 3 inches of soil. If the level of the ground cover is such that this cannot be done, you must till the soil prior to the application of Trifluralin. **Roughness:** The soil surface should be smooth enough so that you can operate a sprayer and incorporation equipment efficiently and at speeds which insure a uniform application and incorporation of Trifluralin. **General Soil Conditions:** To assure uniform incorporation of Trifluralin, soil moisture conditions should be such that large clods can be broken up during the incorporation process.

## SOIL TEXTURE GUIDE

The amount of Trifluralin you apply will vary with the soil texture and organic matter. A fine textured soil will require more Trifluralin per acre than a coarse soil. Choose the proper rate for each application based on the following soil texture group and specific crop recommendations. Do not exceed recommended rates.

Soil Texture	Soil Classification
Coarse (Light) 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 predominately sand or silt, they are usually classified as medium textured soils. If they are predominately clay they are usually classified as fine textured soils.

### MIXING AND APPLICATION DIRECTIONS

Alone in Water Start with a clean spray tank. Fill sprayer 1/4 to 1/2 full with clean water. Start agitation. Add correct quantity of Trifluralin, continue agitation and finish filling the tank.

Trifluralin Tank Mix in Water Vigorous, continuous agitation is required for all tank mixes. (Sparger pipe agitators generally provide the best agitation in spray tanks). Avoid stirring or splashing air into the mixture during filling to prevent foaming. To do this, place the end of the fill pipe below the surface of the water in the spray tank. Do not allow the mixture to siphon back into the water source.

Mixing order: Fill the tank 1/4 to 1/2 full with clean water. Start the agitation. Add dry flowables, wettable powders (WP), aqueous suspensions (AS), flowables (F), and liquids (L) to the water and agitate until the product (s) are completely dispersed in the water. Allow additional mixing and dispersion time when using dry flowable products. Continue agitation and fill tank to 1/4 full, add the Trifluralin, mix thoroughly. Then add any solution (S) formulations, agitate and finish filling. Maintain agitation during filling and through application. If spraying and agitation must be stopped before the tank is empty, the materials may settle to the bottom in this case. It is important to resuspend all of the material in the bottom of the tank before continuing the spray application. A sparger agitator is particularly useful for this purpose. Sometimes it is more difficult to resuspend settled material than it is to suspend it originally. Read and carefully follow all label instructions for each material added to the tank. Premixing dry and flowable formulations with water (slurrying) and pouring the slurry through a 20 to 35 mesh-wetting screen in the top of the tank will help assure good initial dispersion in the tank water. Line screens in the tank should be no finer than 50 mesh (100 mesh is finer than 50 mesh). If you see a buildup of material on the walls of the spray tank, wash the tank with soapy water between fillings. Rinse and continue the spraying operation. Clean the tank, lines, and screens thoroughly after use. As the spray volume decreases, the importance of accurate calibration and uniform application increases. Check the sprayer daily to insure proper calibration and uniform application. Do not apply Trifluralin when the wind can cause drifting of spray particles, which can result in non-uniform application. Trifluralin should not be applied to soils which are wet or are subject to prolonged periods of flooding as poor weed control may result.

### GROUND APPLICATION:

Apply Trifluralin in 5 to 40 gallons of water or liquid fertilizer per acre (broadcast basis), using any properly calibrated, low-pressure herbicide sprayer that will apply the spray uniformly.



**AERIAL APPLICATION:**

Apply Trifluralin in 5 to 10 gallons of water or liquid fertilizer per acre. Adjust pump pressure, nozzle arrangements, speed and height to provide a uniform application to the soil surface. Use swath markers or flagmen to assure proper application spray widths.

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

The following drift management requirements must be followed to avoid off-target drift movement from aerial applications to agricultural field crops. These requirements do not apply to forestry applications, public health uses or to applications using dry formulations.

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

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

**AERIAL DRIFT REDUCTION ADVISORY INFORMATION****Information on Droplet Size**

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

**Controlling Droplet Size**

**Volume** - Use high flow rate nozzles to apply the highest practical spray volume. Nozzles with higher rated flows produce larger droplets.

**Pressure** - Do not exceed the nozzle manufacturer's recommended pressures. For many nozzle types lower pressure produces larger droplets. When higher flow rates are needed, use higher flow rate nozzles instead of increasing pressure.

**Number of Nozzles** - Use the minimum number of nozzles that provide uniform coverage.

**Nozzle Orientation** - Orienting nozzles so that the spray is released parallel to the airstream produces larger droplets than other orientations and is the recommended practice. Significant deflection from horizontal will reduce droplet size and increase drift potential.

**Nozzle Type** - Use a nozzle type that is designed for the intended application. With most nozzle types, narrower spray angles produce larger droplets. Consider using low-drift nozzles. Solid stream nozzles oriented straight back produce the largest droplets and the lowest drift.

**Boom Length**

For some use patterns, reducing the effective boom length to less than 3/4 of the wingspan or rotor length may further reduce drift without reducing swath width.

**Application Height**

Applications should not be made at a height greater than 10 feet above the top of the largest plants unless a greater height is required for aircraft safety. Making applications at the lowest height that is safe reduces exposure of droplets to evaporation and wind.

**Swath Adjustment**

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

**Wind**

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

**Temperature and Humidity**

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

**Temperature Inversions**

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

**Sensitive Areas**

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

**INCORPORATION DIRECTIONS****Incorporation Equipment-General Directions**

Use incorporation equipment that mixes Trifluralin into the top 2 to 3 inches of the final seedbed, or erratic weed control and/or crop injury may result. Incorporation equipment such as a disc will mix Trifluralin approximately half as deep as the equipment is set to operate. For example a disc set to cut 4 inches deep will incorporate most of the Trifluralin within the top 2 inches of soil.

**Incorporation Before Planting**

Trifluralin must be incorporated one time within 24 hours after application. Then any time prior to planting, a second incorporation is necessary, this time running the equipment in a different direction from the first. You should incorporate the Trifluralin uniformly into the top 2 or 3 inches of the final seedbed.

**Incorporation After Planting**

Check specific crop for incorporation directions after planting.

### **Incorporation in Bedded Culture**

For effective weed control, Trifluralin needs to be incorporated into the top 2 to 3 inches of the final seedbed.

**APPLICATION PRIOR TO BEDDING:** Apply Trifluralin and incorporate it one time with recommended equipment. The bedding operation serves as the second incorporation. Do not expose untreated soil during post-bedding operations. \* Application after bedding: Knock off beds to planting height before applying Trifluralin. Apply Trifluralin and incorporate it with recommended equipment that will conform to the bed shape. Do not leave untreated soil exposed. \* \*Avoid removal of untreated soil from the seedbed before or during the planting operation. This would expose untreated soil allowing weeds to germinate in the drill row.

### **Recommended Equipment**

Any recommended incorporation tool may be used alone or in combination with any other recommended tool. Two incorporation passes are required unless specifically stated. The second incorporation should not be deeper than the first. DISC: Set to cut 4 to 6 inches deep and operate at 4 to 6 mph.

**Field Cultivator:** Set to cut 3 to 4 inches deep and operate at 5 mph or more. A field cultivator is defined as an implement with 3 to 4 rows of sweeps, spaced at intervals of 7 inches or less and staggered so that no soil is left unturned. Chisel points should not be used. Combination Seedbed Conditioners: Set to cut 3 to 4 inches deep and operate at a speed of at least 5 mph. These implements are defined as three or more tillage devices combined and used as a single tool. For example, 2 to 3 rows of field cultivator C- or S-shaped shanks with an effective sweep spacing of 6 to 9 inches (staggered so that no soil is left unturned), followed by a spike-tooth or flexline harrow, followed by a ground-driven reel or basket.

**Rolling Cultivator:** Set to cut 2 to 4 inches deep and operate at 6 to 8 mph. Rolling cultivators are adequate for use on coarse and medium textured soils only, except when used in sugarcane where the rolling cultivator may be used on fine textured soils.

**Bed Conditioner (Do-All):** Set to cut 2 to 4 inches deep and operate at 4 to 6 mph. The do-all is adequate for use on coarse and medium textured soils only. When using the do-all in bedded culture, only one incorporation pass is required. However, two passes with a do-all are required in flat planted culture.

**Mulch Treader (Other Similar Disc-Type Implements):** Set to cut 3 to 4 inches deep and operate at 5 to 8 mph. P.T.O.

**Driven Equipment (Tillers, Cultivators, Hoes):** Adjust to incorporate Trifluralin into the top 2 to 3 inches of the seedbed with rotors spaced to provide a clean sweep of the soil. Only one incorporation is necessary. P.T.O. driven equipment should not be operated at a speed greater than 4 mph. Other equipment, including the flexible tine-tooth harrow (Flexline, Melroe) is also recommended but only for the special programs for which it is specified in this label.

### **CULTIVATION AFTER PLANTING**

Soil treated with Trifluralin may be shallow cultivated without reducing the weed control activity of Trifluralin. Do not cultivate deeper than the treated soil since this may bring untreated soil to the surface, and poor weed control may result.

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## **CROP RECOMMENDATIONS**

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These recommendations are given as the broadcast rates of Trifluralin per acre. For band applications, decrease the amount of Trifluralin in proportion to the amount of surface treated per acre. Apply any time after January 1 when the soil can be worked and is suitable for good incorporation. Trifluralin can be applied in the fall - see specific crop for recommendations. For general fall application directions where specific recommendations are not given, see page 14. Where a rate range is shown, use the lower rate

for coarser soils or soils with lower organic matter. Trifluralin should not be used on soils containing more than 10% organic matter.

**COTTON**

**TRIFLURALIN ALONE**

Apply pre-plant, after planting (before crop emergence) up to and at lay-by, and in the fall.

**COTTON - Preemergence:**

Broadcast Rates per Acre		
Trifluralin		
Soil texture	Areas receiving less than 20" average annual rainfall*	Areas receiving more than 20" average annual rainfall*
Coarse	1 pint	1 pint
Medium	1 ¼ to 1 ½ pints	1 ½ pints
Fine	1 ½ pints	2 pints

\*Use 1 1/2 pints per acre on coarse and medium textured soils and 2 pints on fine soils with 2 to 5% organic matter; use 2 pints on all soil with 5 to 10% organic matter.

**COTTON - Postplant:** When incorporating Trifluralin after planting (postplant), be careful not to disturb the seed. Use the same rates as for a preemergence application.

**COTTON - Layby:** Apply and incorporate Trifluralin any time up to layby, but not less than 90 days before harvest. Direct the layby applications onto the soil between the rows and beneath emerged cotton plants. Use the same rates as for a preemergence application.

**COTTON - Fall Application:** Apply and incorporate Trifluralin any time between October 15 and 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 to soils which are wet or subject to prolonged periods of flooding.

**Broadcast Rates Per Acre - Fall Application Only:** In Alabama, Arkansas, northern Florida, Georgia, Louisiana, Mississippi, southeastern Missouri Bootheel, North Carolina, New Mexico, Oklahoma, South Carolina, Tennessee and Texas, apply and incorporate Trifluralin at a broadcast rate of 2 pints per acre on all soil types. In Arizona, California and Nevada, apply and incorporate Trifluralin at a broadcast rate of 1 1/2 pints per acre on coarse soils and 2 pints on medium and fine soils. For cotton grown in other states, apply and incorporate Trifluralin at a broadcast rate of 1 pint per acre on coarse soils; 1 1/2 pints on medium soils; 2 pints on fine soils, 1 1/2 pints on coarse soils with 2-5% organic matter; and 2 pints on soils with 5 to 10 % organic matter.

**SPECIAL USE DIRECTIONS FOR COTTON**

**FALL PANICUM:**

In Alabama, Florida, Georgia, North Carolina, South Carolina, and Virginia apply and incorporate Trifluralin at the broadcast rate of 2 pints per acre on both coarse and medium soils.

**RHIZOME JOHNSONGRASS:**

In all cotton-producing states except Arizona and California, you can obtain commercially acceptable control of rhizome johnsongrass by applying in accordance with the following directions for 2 consecutive years.

**PIGWEEED AND SEEDLING JOHNSONGRASS CONTROL:**

In Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, southeastern Missouri, North Carolina, South Carolina, Tennessee and southern Virginia, Trifluralin may be applied preplant at a broadcast rate of 1 to 1 1/2 pints per acre on coarse soils; 1 1/2 to 2 pints on medium soils; and 2 pints on fine soils.

**ADDITIONAL WEED AND GRASS CONTROL (TEXAS GULF COAST):**

In the Texas Gulf Coast counties of Brazoria, Calhoun, Chambers, Fort Bend, Galveston, Harris, Jackson, Jefferson, Liberty, Matagorda, Orange, Victoria, Waller and Wharton, Trifluralin may be applied up to 2 weeks before planting at a broadcast rate of 1 1/2 pints per acre on coarse soils and 2 pints on medium and fine soils. —

**Soil Preparation**

Proper preparation of the soil before application is very important for satisfactory 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 inches) pieces. This should also destroy any emerged johnsongrass.

**Application**

Choose the one application program that best fits your cultural practices: **SPRING APPLICATION** - Apply Trifluralin any time before planting in the spring for 2 years in a row. Use a broadcast rate of 2 pints per acre.

**Fall Application** - Apply Trifluralin between October 15 and December 31 to 2 years in a row at the same rates as a spring application for the control of rhizome johnsongrass.

**Incorporation** - Deep incorporation is essential for good rhizome johnsongrass control. Incorporate Trifluralin 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. You cannot obtain commercially acceptable control with only 1 year of double rate Trifluralin use.

**Crop Rotation** - In the season following application using the methods for control of rhizome johnsongrass described above, plant only rice and those crops for which Trifluralin can be applied as a preplant treatment or injury may result.

**COTTON 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.

**Maximum Crop Year Use Rates:** For full season weed control, Trifluralin may be applied one or more times sequentially during the crop year observing the rates, methods of application, and a 90 day pre-harvest interval. The maximum dosage must not exceed the rates given, and the maximum cumulative amount of trifluralin that may be applied within the same crop year (includes fall application or spring application plus layby application) must not exceed 4.0 pints per acre (2 pounds active ingredient per acre).

**TANK MIXES AND OVERLAYS**

Follow recommended soil preparation and incorporation procedures for Trifluralin.

**TRIFLURALIN / CAPAROL**

**TANK MIX for cotton grown in California, Arizona, New Mexico and West Texas:**

The Trifluralin/Caparol combination will control certain grasses and broadleaf weeds listed for Trifluralin alone plus the following weeds: Smartweed, Prickly side (Teaweed), Annual morningglory, Ragweed, Groundcherry (Annual), Mustard, Malva, Wild oat. The tank mix also controls shallow germinating seedlings of cocklebur and coffeeweed.

Broadcast Rates Per Acre		
Soil Texture	Trifluralin (pints)	Caparol 80 (pounds)
Coarse	1	2*
Medium	1 ¼ - 1 ½	2 ½
Fine	2	2 ½

\*Do not use on sands and loamy sands. For band applications use proportionately less.

**Mixing Directions:** Carefully follow the procedures on the Caparol 80W label for making a slurry and adding it to a partially filled tank of water. After the Caparol is thoroughly mixed with the partially filled tank of water, add the Trifluralin and continue filling. Agitate continuously during the filling and spraying operation. Avoid leaving the spray mixture in the tank without constant agitation. If bypass agitation is used, the bypass line should stop at the bottom of the tank to minimize foaming.

**Additional Precautions:** The combination of Trifluralin and Caparol should not be used in the cut areas of newly leveled fields, in areas of excess salt, or 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. Crop Rotations: Cabbage, okra, onions and peas may be planted in the fall after a spring application of Trifluralin plus Caparol. Winter barley, winter rye and winter wheat can be planted in the fall also, if they are plowed down and not used for food or feed. Refer to the Caparol label for directions, cautions and precautions.

#### TRIFLURALIN / COTORAN

##### TANK MIX (except in Arizona and California):

Follow recommended soil preparation and incorporation procedures for Trifluralin. The Trifluralin/Cotoran tank mix effectively controls all the annual grasses and broadleaf weeds listed for Trifluralin alone plus these additional weeds: Ryegrass, Buttonweed, Cocklebur, Groundcherry, Wright, Jimsonweed, Morningglory, Prickly side (Teaweed) Ragweed, Sesbania, Sicklepod, Smartweed, Tumbleweed.

Broadcast Rates Per Acre		
Soil Texture	Trifluralin (pints)	Cotoran 80W (pounds)
Coarse	1	1 ¼
Medium	1 ½	2
Fine	2	2 ½

**Mixing Directions:** Carefully follow the procedures on the Cotoran label for making a Cotoran slurry and adding it to a partially filled tank of water. After the Cotoran is thoroughly mixed with the partially filled tank of water, add the Trifluralin and continue filling. Agitate continuously throughout the filling and application operations. Do not leave spray mixture in tank without constant agitation. If bypass agitation is used, the bypass line should stop at the bottom of the tank to minimize foaming. Apply in 15 to 40 gallons of water per acre.

**Additional Precautions:** Do not plant crops other than cotton on the treated land within 6 months after the application of Trifluralin plus Cotoran, or crop injury may result. Do not feed foliage from treated cotton plants or give trash to livestock. Do not mix Trifluralin plus Cotoran with liquid fertilizer. West Texas Only: Do not use the tank mix of Trifluralin plus Cotoran on sandy, loamy sand or fine sandy loam soils. Do not use on cotton planted in furrows. Arkansas, Louisiana and Mississippi Only: Use 1 pound Cotoran 80W in tank mix with Trifluralin on sandy loam soils low in organic matter. New Mexico: Do not

plant treated land with crops other than cotton until 1 year after the last application. Do not use on sandy or coarse textured soils of less than 1% organic matter.

#### TRIFLURALIN PREPLANT FOLLOWED BY COTORAN OVERLAY:

Apply and incorporate Trifluralin as recommended for the specific soil texture. Then apply Cotoran as a preemergence surface treatment at 1 1/4 to 2 1/2 pounds per acre. On light silt and sandy soils low in organic matter, use the lower rate.

**Additional Precaution:** Refer to the Cotoran label for all cautions and precautions when using this preemergence surface treatment.

#### TRIFLURALIN PREPLANT FOLLOWED BY KARMEX OVERLAY:

For cotton grown east of the Mississippi River plus Arkansas, southeastern Missouri, Louisiana and eastern Texas, incorporate Trifluralin before planting. Then follow with a preemergence application of Karmex. This will effectively control all the weeds controlled by Trifluralin alone plus these additional weeds: Ragweed, Annual Groundcherry, Shepherdspurse, Velvetgrass, Dogfennel, Pennycress, Annual morningglory, Wild lettuce, and Wild mustard

Broadcast Rate Per Acre		
Soil Texture	Trifluralin (pints)	Karmex 80W (pounds)
Coarse	1	1/4
Medium	1 1/2	3/8
Fine	2	1

**Additional Precautions:** Do not use Karmex on soils with less than 1% organic matter as crop injury may result. Do not allow livestock to graze on cotton treated with Karmex. Consult the Karmex label for additional instructions, cautions and precautions.

### SOYBEAN

#### TRIFLURALIN ALONE

**Preemergence:** Follow recommended soil preparation, application and incorporation procedures for Trifluralin.

Broadcast Rates Per Acre		
Soil texture	Trifluralin	
	Areas receiving less than 20" average annual rainfall*	Areas receiving more than 20" average annual rainfall*
Coarse	1 pint	1 pint
Medium	1 1/4 to 1 1/2 pints	1 1/2 pints
Fine	1 1/2 pints	2 pints

\*Use 1 1/2 pints per acre on coarse and medium textured soils and 2 pints on fine soils with 2-5% organic matter; use 2 to 2 1/2 pints on all soils with 5-10% organic matter.

**FALL APPLICATION:** Apply and incorporate Trifluralin 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. Do not fall apply Trifluralin to soils which are wet or subject to prolonged periods of flooding, or where rice was grown the previous year. For soybeans grown in Alabama, Arkansas, northern Florida, Georgia, Louisiana, Mississippi, southeastern Missouri bootheel,

North Carolina, Oklahoma, South Carolina, Tennessee and Texas, apply and incorporate Trifluralin at a broadcast rate of 2 pints per acre on coarse and medium soils and 2 1/2 pints on fine soils. For soybeans grown in states other than those listed above, apply and incorporate Trifluralin at a broadcast rate of 1 pint per acre on coarse soils; 1 1/2 pints on medium soils; 2 pints on fine soils; 1 1/2 pints on coarse soils with 2-5% organic matter; and 2 pints on soils with 5-10% organic matter.

#### SPECIAL USE DIRECTIONS FOR SOYBEAN

**Fall Panicum:** Apply Trifluralin at the broadcast rate of 2 pints per acre on both coarse and medium soils. **SOYBEAN - Pigweed and seedling johnsongrass:** In Alabama, Arkansas, Florida, Georgia, Kansas, Louisiana, Mississippi, southeastern Missouri, North Carolina, Oklahoma, South Carolina, Tennessee and southern Virginia, Trifluralin may be applied at a broadcast rate of 1 to 1 1/2 pints per acre on coarse soils; 1 1/2 to 2 pints on medium soils; and 2 pints on fine soils. Exception: In the state of Louisiana, 3 pints per acre recommended on fine soils. **SOYBEAN -Additional weed and grass control (Texas Gulf Coast):** In the Texas gulf Coast counties of Brazoria, Calhoun, Chambers, Fort Bend, Galveston, Harris, Jackson, Jefferson, Liberty, Matagorda, Orange, Victoria, Waller and Wharton, Trifluralin may be applied up to 2 weeks before planting at a broadcast rate of 1 1/2 pints per acre on coarse soils; 2 pints of medium soils and 3 pints on fine soils.

**Charcoal Soils in Arkansas, Louisiana and Mississippi:** Newly cleared land often contains high organic matter (5-10%) and charcoal from burning debris. This charcoal and/or organic matter tends to bind Trifluralin and reduce its weed control activity. Under these conditions, higher rates of Trifluralin are necessary for weed control. Increased rates, however, can cause crop injury if charcoal or organic matter is not present to bind some of the Trifluralin. In the burn row a high level of charcoal is present, consequently, poor weed control may result even with an increased rate of Trifluralin. Apply Trifluralin at the broadcast rate of 1 1/2 to 2 1/2 pints per acre on coarse soils; 2 1/2 pints on medium soils; and 3 pints on fine textured soils. Follow recommended soil preparation, application and incorporation procedures for Trifluralin.

**Red Rice in Arkansas, Louisiana, Mississippi and Texas only:** You can obtain suppression or partial control of red rice when you apply Trifluralin at the following recommended rates. Follow recommended soil preparation and incorporation procedures for Trifluralin. Apply and incorporate Trifluralin in the spring before planting.

Broadcast Rates Per Acre		
Soil Texture	Trifluralin 4 TSF (pints)	
	Application	
	Year 1	Year 2
Coarse	2	1
Medium	3	1 1/2
Fine	4	2
Coarse soils with 2 - 5% organic matter	3	1 1/2
Soils with 5 - 10% organic matter	4	2 1/2

If a combination of high organic matter (5-10%) and charcoal are present in the soil, apply Trifluralin the second year at the following rates for charcoal soils in Arkansas, Louisiana, and Mississippi:

Soil Texture	Trifluralin (pints)
Coarse	1 1/2 - 2 1/2
Medium	2 1/2
Fine	3



For more information on charcoal soils see above. Crop Rotation: The program for red rice control in soybeans is a 2-year program. Use the rates listed for first year application and plant soybeans. The second year use the normal Trifluralin rates listed for your soil type and charcoal level and plant only those crops for which Trifluralin has been registered as a preplant treatment, or crop injury may result. Do not plant rice the second year. Rice may be planted the third year.

**Rhizome Johnsongrass (Eastern United States and The State Of Texas):** You can obtain commercially acceptable control of rhizome johnsongrass with a double rate program applied for 2 consecutive years in accordance with the following directions. Soil Preparation - Proper preparation of the soil before application is very important for satisfactory 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. Application - Choose the one application program that best fits your cultural practices: Spring Application - Trifluralin anytime in the spring before planting for 2 years in a row. Use a broadcast rate of 2 pints per acre on coarse soils; 3 pints on medium soils; 4 pints on fine soils; 3 pints on coarse soils with 2-5% organic matter; and 4 pints on soils with 5-10% organic matter. OR Fall Application - Apply Trifluralin between October 15 and December 31 for 2 years in a row at the same rates as a spring application for the control of rhizome johnsongrass. OR Split Application - Apply Trifluralin at the same rate in both the spring and fall for 2 years in a row using the rates in the following table:

Broadcast Rates Per Acre	
Soil Texture	Trifluralin (pints)
	Spring and Fall
Coarse	1
Medium	1 ½
Fine	2
Coarse Soils with 2 – 5% Organic Matter	1 ½
Soils with 5 – 10% Organic Matter	2

**Incorporation** - Deep incorporation is essential for good rhizome johnsongrass control. Incorporate Trifluralin 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 and those crops for which Trifluralin can be applied as a preplant treatment or injury may result.

**Wild Cane (Shattercane):** Follow recommended soil preparation and application procedures for Trifluralin. Wild cane (shattercane) can germinate throughout the growing season and from greater soil depth than most other weed seeds. Commercially acceptable control of wild cane can be obtained with the following increased rates of Trifluralin. Apply Trifluralin at the broadcast rate of 1 pint per acre on a coarse soil; 2 pints on a medium soil; and 2 1/2 pints on a fine textured soil. Incorporation - Deep incorporation is essential for good wild cane control. Incorporate Trifluralin 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 - Cultivations during the crop season will also contribute to control.

**SOYBEAN PRECAUTIONS:** Soybeans 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 soybean plant. This may result in reduced stands, delayed maturity and reduced yields.

**SOYBEAN TANK MIXES AND OVERLAYS**

**Trifluralin/Sencor or Trifluralin/Lexone tank mix:**

The Trifluralin/Sencor or Trifluralin/Lexone tank mix effectively controls the annual grasses and broadleaf weeds controlled by Trifluralin alone plus these additional weeds: Jimsonweed, Mallow, Venice (Flower-of-an-hour), Mustard (wild), Prickly sida, common Ragweed, hemp Sesbania, Pennsylvania Smartweed, Velvetleaf Control of cocklebur, morningglory and giant ragweed (horseweed) may be erratic. Control may be improved with timely cultivation. Where cocklebur is a serious problem, an overlay of Sencor or Lexone may be preferred to the Trifluralin/Sencor or Trifluralin/Lexone tank mix. Follow recommended procedures for soil preparation, incorporation, and cultivation of Trifluralin. Mix according to instructions. The Trifluralin/Sencor or Lexone tank mix can be applied from 2 weeks before planting up to planting. Broadcast Rates Per Acre

Broadcast Rates Per Acre			
Soil Texture	Trifluralin 4EC (pints) +	Lexone 50WP/4L	Lexone (dry flowables)
		or	or
		Sencor 50WP/4L (lbs/pints)	Sencor (dry flowables) (lbs.)
Coarse*	1	1/2	1/3
Medium	1 1/2	3/4	1/2
Fine	2	1	2/3

\*Do not use Sencor/Lexone on coarse soils with less than 1% organic matter.

**Additional Precautions:** Do not plant any crop other than soybeans within 4 months after treatment. Over application, uneven application, or improper soil incorporation may result in crop injury, herbicide residue, or erratic weed control. Additional stress factors are seedling disease, cold weather, deep planting, excessive moisture, soil pH over 7.5, high salt concentration, or drought. Any of these may weaken crop seedlings and increase possibility of damage from the tank mix. These additional factors may also delay crop development or reduce yields when Sencor or Lexone is applied. Observe all cautions and limitations on the Sencor and Lexone labels. Do not use the foliage from soybeans treated with the Trifluralin/Sencor or Lexone tank mix for feed or forage.

**Rhizome Johnsongrass - Trifluralin/Sencor or Trifluralin/Lexone Tank Mix:** Trifluralin/Sencor or Trifluralin/Lexone may be used for rhizome johnsongrass control and for the control of those weeds listed for Trifluralin alone. For the additional weeds controlled by Sencor or Lexone in tank mix, see below. Follow procedures for soil preparation, incorporation, and cultivation recommended in the Soybean - Rhizome johnsongrass section. Apply Trifluralin/Sencor or Lexone up to two weeks before planting for two consecutive years at the following broadcast rates per acre:

Broadcast Rates Per Acre			
Soil Texture	Trifluralin (pints) +	Lexone 50WP/4L	Lexone (dry flowables)
		or	or
		Sencor 50WP/4L (lbs/pints)	Sencor (dry flowables) (lbs.)
Coarse*	2	1/2	1/3
Medium	3	3/4	1/2
Fine	4	1	2/3

\*Do not use on coarse soils with less than 1% organic matter. Read and follow all additional precautions listed for the Trifluralin/Sencor or Trifluralin/Lexone tank mix (see below).

### TRIFLURALIN PREPLANT Followed By Sencor Or Lexone As An Overlay:

Apply Trifluralin as a preplant incorporated herbicide. As a separate operation, make a single application of Sencor or Lexone as either a band or broadcast spray during planting or as a separate operation after planting, but before the soybeans emerge. Do not spray Sencor or Lexone over the top of emerged soybeans, or crop injury may result. Use Direction - Follow directions on the Sencor or Lexone labels for specific instructions regarding each herbicide.

### Postplant/Preemergence

Broadcast Rates Per Acre			
Soil Texture	Trifluralin 4EC (pints) +	Lexone 50WP/4L	Lexone (dry flowables)
		or	or
		Sencor 50WP/4L (lbs/pints)	Sencor (dry flowables) (lbs.)
Coarse**	1	$\frac{3}{4}$ - 1 [ $\frac{3}{4}$ ]	$\frac{1}{2}$ - $\frac{2}{3}$ [ $\frac{1}{2}$ ]
Medium	1 $\frac{1}{2}$	$\frac{3}{4}$ - 1 $\frac{1}{2}$ [ $\frac{3}{4}$ to 1]	$\frac{1}{2}$ - 1 [ $\frac{1}{2}$ to $\frac{2}{3}$ ]
Fine	2	1 - 1 $\frac{3}{4}$ [ 1 ]	$\frac{2}{5}$ - 1 $\frac{1}{16}$ [ $\frac{2}{5}$ ]

\*Lexone rates for each soil texture are enclosed in [ brackets ].

\*\*Do not apply Lexone to sand or soils with less than 1/2% organic matter. Do not apply Sencor to coarse soils (sandy loam and loamy sand) containing less than 2% organic matter. Additional Sencor and Lexone precautions: Do not use Lexone or Sencor on Tracy, Semmes, Altona, Vansoy or Cokes 102 soybeans. These varieties are sensitive to Lexone or Sencor, and crop injury may result. Seed must be planted at least 1 1/2 inches but not more than 2 inches below the soil surface before a Sencor or Lexone application. Do not apply Sencor or Lexone at these rates more than once per season. Do not replant areas treated with Sencor or Lexone with any crop other than soybeans within 4 months after treatment. Injury to soybeans may occur if you use Lexone or Sencor on soils having a calcareous surface or pH of 7.5 or higher, or if you use them in conjunction with soil-applied organic phosphate pesticides. Do not use the foliage from treated soybeans for feed or forage.

### Trifluralin/Amiben tank mix or overlay:

**Tank mix** - Amiben may be applied several days prior to planting as a broadcast tank mix with Trifluralin. Weeds controlled by this tank mix, in addition to those controlled by Trifluralin alone, are smartweed, velvetleaf and ragweed. The tank mixture should be used as a spring preplant incorporated treatment.

**Overlay** - Amiben may be applied broadcast or in a band over the soybean row at planting time in fields where Trifluralin has been preplant incorporated. Weeds controlled by Amiben when surface applied in addition to those controlled by Trifluralin alone, are: Coffeeweed (Sesbania), wild Mustard, black Nightshade, Prickly sida (Teaweed), Ragweed common, annual Spurge, Pennsylvania Smartweed, Stinkgrass, Velvetleaf Apply Trifluralin as a tank mix with Amiben, or apply and incorporate Trifluralin alone followed by an overlay application of Amiben at these rates:

Broadcast Rates Per Acre		
Soil Texture	Trifluralin (pints)	Amiben 2S (quarts)
Coarse	1	4-6*
Medium	1 ½	4-6
Fine	2	4-6

\*Use the higher rate where you expect heavy populations of smartweed, velvetleaf, ragweed, wild mustard or black nightshade. Do not use on muck or charcoal soils. Read and observe all directions and cautions on the Amiben label.

#### Trifluralin/Amiben/Sencor or Lexone tank mix:

The Trifluralin/Amiben/Sencor or Lexone tank mix effectively controls all weeds listed for Trifluralin/Amiben and Trifluralin/Sencor or Lexone tank mixes. Follow recommended soil preparation, application, and incorporation procedures for Trifluralin. The Trifluralin/Amiben/Sencor or Lexone tank mix may be applied from several days prior to planting up to planting in 10 to 40 gallons of water per acre. Use screens no finer than 50 mesh. Apply the Trifluralin/Amiben/Sencor or Lexone tank mix at the following broadcast rate per acre:

Broadcast Rates Per Acre				
Soil Texture	Trifluralin +	Amiben 2S +	Lexone 50WP/4L*	Lexone (dry flowables)*
			or Sencor 50WP/4L*	or Sencor (dry flowables)*
			(lbs. / pints)	(lbs.)
Coarse	1	3 to 4 **	½	⅓
Medium	1 ½	3 to 4 **	½ to ¾ ***	⅓ to ½ ***
Fine	2	4 to 5	¾ ***	½ ***

\*Do not use Sencor or Lexone on coarse soils with less than 1% organic matter.

\*\*Use the higher rate of Amiben when velvetleaf or black nightshade is a problem.

\*\*\*On Clarion/Webster soils in Minnesota and Iowa or on similar alkaline (calcareous) soils with a pH of 7.5 or above, apply Sencor or Lexone at the rates listed below.

Soil Texture	Lexone 50WP/4L	Lexone (dry flowables)
	or Sencor 50WP/4L	or Sencor (dry flowables)
	(lbs./pints)	(lbs.)
Medium	½	⅓
Fine	½ to ¾*	⅓ to ½*

\*Use the higher rate only where soil pH is less than 7.5 and where weed pressure is heavy.

**Additional precautions:** The Trifluralin/Amiben/Sencor or Lexone tank mix will not harm the treated crop when you apply it according to directions and under normal growing conditions. However, over application, uneven application or improper soil incorporation of the tank mix can result in erratic weed control or crop injury. Additional stress factors are seedling disease, cold weather, deep planting, excessive moisture, soil pH over 7.5, high salt concentration, or drought. These additional factors may weaken crop seedlings and increase the possibility of damage from the tank mix. These additional factors may also delay crop development or reduce yields. Observe all cautions and limitations of all

products used in mixtures. Do not use the foliage from soybeans treated with the Trifluralin/Amiben/Sencor or Lexone tank mix for feed or forage.

**Trifluralin /Vernam tank mix:**

Trifluralin /Vernam tank mix effectively controls those weeds listed for Trifluralin alone plus these additional weeds: Purple nutsedge (nutgrass), Yellow nutsedge (nutgrass), Annual morningglory, Coffeeweed, Velvetleaf Follow recommended soil preparation procedures for Trifluralin. You may apply the Trifluralin/Vernam tank mix up to 10 days prior to planting. Incorporate the tank mix immediately after application. Apply Trifluralin/Vernam at these rates.

Broadcast Rates per Acre		
Soil Texture	Trifluralin (pints)	Vernam 7 (pints)
Coarse	1	1 ¼ - 2 ½
Medium	1 ½	2 ½ - 3*
Fine	2	3 - 3 ½

\*For nutsedge, wild cane and velvetleaf control, use the higher rate of 3 pints per acre on medium textured soils.

**ALFALFA - ESTABLISHED**

In areas receiving less than 20" average annual rainfall per year, apply Trifluralin to established alfalfa stands at a broadcast rate of 1 1/2 pints per acre on coarse soils and 2 pints on medium and fine soils. Use incorporation equipment that will insure thorough soil mixing with minimum damage to the established alfalfa.

**Restrictions:** Do not apply more than 2 lbs a.i. per application. Do not apply within 21 days before harvest of forage, or 20 days before harvest of hay. Do not apply more than 4 lbs. a.i. per year.

**ASPARAGUS - ESTABLISHED**

Follow recommended soil preparation, application and incorporation procedure for Trifluralin. Trifluralin can be applied to established asparagus as a single or as a split application. In the winter or early spring, apply Trifluralin to asparagus after ferns are removed but before spear emergence. Or, apply after harvest in the late spring or early summer before ferning begins. Trifluralin will suppress volunteer seedling asparagus and field bindweed if you use the following recommended rates and application schedules. Follow recommended soil preparation, application and incorporation procedures for Trifluralin.

Broadcast Rates per Acre				
Soil Texture	Trifluralin			
	Split Application		Single Application	
	Before Harvest	After Harvest	Before Harvest	After Harvest
	(pints)		(pints)	
	+		or	
Coarse	1	1	2	2
Medium	1 ½	1 ½	3	3
Fine	2	2	4	4

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

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**FOR THE FOLLOWING CROP GROUPING, USE THE RATE TABLE BELOW**

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**CARROT, CASTOR BEAN, CELERY –**

(Direct seeded and transplant in areas receiving less than 20" average annual rainfall.)

**COLE CROPS (Broccoli, Brussels Sprout, Cabbage and Cauliflower) –**

**TRANSPLANT** - Apply and incorporate prior to transplanting only. See next section for direct seeded.

**OKRA, PEPPER –**

**TRANSPLANT** - Apply and incorporate prior to transplanting only.

**SOUTHERN PEA - (Before planting only.)**

Apply and incorporate Trifluralin before planting, at planting or immediately after planting, unless otherwise indicated.

<b>Broadcast Rates Per Acre</b>		
Trifluralin		
Soil texture	Areas receiving less than 20" average annual rainfall*	Areas receiving more than 20" average annual rainfall*
Coarse	1 pint	1 pint
Medium	1 ¼ to 1 ½ pints	1 ½ pints
Fine	1 ½ pints	2 pints

\*Use 1 1/2 pints per acre on coarse and medium textured soils and 2 pints on fine soils with 2-5% organic matter; use 2 pints on all soils with 5-10% organic matter.

**COLE CROPS SEEDED (Broccoli, Brussels Sprouts, Cabbage and Cauliflower)-**

**DIRECT** - See above section for transplant. For direct-seeded cole crops, apply and incorporate Trifluralin before planting at a broadcast rate of 1 pint per acre on coarse and medium soils and 1 1/2 pints on fine soils and soils with 2-5% organic matter. Direct-seeded cole crops have exhibited marginal tolerance to recommended rates of Trifluralin. Stunting or reduced stands may occur.

**CUCURBITS (Cantaloupe, Cucumber and Watermelon) –**

**POSTPLANT EMERGED** Western United States including Texas: Apply Trifluralin as a directed spray to the soil between the rows and beneath plants which are in the 3 to 4 true leaf stage.

<b>Broadcast Rates Per Acre</b>		
Trifluralin		
Soil texture	Areas receiving less than 20" average annual rainfall*	Areas receiving more than 20" average annual rainfall*
Coarse	1 pint	1 pint
Medium	1 ¼ to 1 ½ pints	1 ½ pints
Fine	1 ½ pints	2 pints

\*Use 1 1/2 pints on coarse and medium textured soils and 2 pints on fine soils with 2-5% organic matter; use 2 pints on all soils with 5-10% organic matter. Set incorporation equipment to throw treated soil around the plants during incorporation.

**DRY BEAN –****Trifluralin Alone**

Apply and incorporate Trifluralin before planting, using the following rates:

Broadcast Rates Per Acre		
Trifluralin		
Soil texture	Areas receiving less than 20" average annual rainfall*	Areas receiving more than 20" average annual rainfall*
Coarse	1 pint	1 pint
Medium	1 ¼ to 1 ½ pints	1 ½ pints
Fine	1 ½ pints	2 pints

\*Use 1 1/2 pints per acre on coarse and medium textured soils and 2 pints on fine soils with 2-5% organic matter; use 2 pints on all soils with 5-10% organic matter.

**DRY BEAN –  
Trifluralin/Eptam tank mix:**

The Trifluralin/Eptam tank mix effectively controls all the following weeds in addition to those weeds listed for Trifluralin (see page 2): Henbit (Spring applications), Black Nightshade, Hairy Nightshade, Nutsedge, Wild Oat, Common Ragweed, Pennsylvania Smartweed, Velvetleaf (Buttonweed) Follow recommended soil preparation and incorporation procedures for Trifluralin. The Trifluralin/Eptam tank mix should be applied from 2 days before planting up to planting. Incorporate immediately after application.

Broadcast Rates Per Acre			
Trifluralin			
Soil texture	Areas receiving less than 20" average annual rainfall*	Areas receiving more than 20" average annual rainfall*	ETPAM 7E (pints)
	Coarse	1 pint	
Medium	1 ¼ to 1 ½ pints	1 ½ pints	2 ½ to 3 1/2
Fine	1 ½ pints	2 pints	2 ½ to 3 1/2

\*Use 1 1/2 pints per acre on coarse and medium textured soils and 2 pints on fine soils with 2-5% organic matter; use 2 pints on all soils with 5-10% organic matter. \*\*Use Eptam 7E at a rate of 2 1/2 pints per acre to control annual grasses; 3 1/2 pints to control nutsedge and additional broadleaf weeds. Precaution: Read the Eptam label before using. Observe all cautions and limitations of all products used in mixtures. The combination of Trifluralin and Eptam should not be used on soybeans, blackeyed peas (beans), lima beans and other flatpodded beans; except Romano. Do not use the foliage from a crop treated with the Trifluralin/Eptam tank mix for feed or for grazing.

**DRY BEAN** - Fall application for dry beans grown in Idaho, Oregon, and Washington: Apply and incorporate Trifluralin any time between October 15 and December 31 at a broadcast rate of 1 pint per acre on coarse soils; 1 1/4 to 1 1/2 pints on medium soils; and 1 1/2 pints on fine soils. Destroy established weeds during seedbed preparation.

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**FOR THE FOLLOWING CROP GROUPING, USE THE RATE LISTED BELOW.**

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**BEANS - (Guar and Mungbean)**

**GREENS** - Turnip greens grown for processing, Collard, Kale and Mustard Greens

**MUSTARD** - Grown for seed or processing for food in Minnesota, Montana and North Dakota Apply and incorporate Trifluralin before planting at 1 pint per acre on coarse soils and 1 1/2 pints on medium and fine soils.

**BEANS - (Lima Beans and Snap Beans):**

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

**CORN (FIELD CORN) and GRAIN SORGHUM (MILO):**

Apply Trifluralin to field corn or grain sorghum (8 inches or taller) as an over-the-top or directed spray to effectively control weeds listed for Trifluralin. Soil Preparation - Cultivate before a Trifluralin application to insure loose, friable soil, to remove established weeds, and to cover the base of plants with soil. Application Directions - Trifluralin should be applied and incorporated at the recommended rates for the soil texture when crop is well established (8 inches or taller). Trifluralin 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 adjust 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 Rates Per Acre	
Soil Texture	Trifluralin (pints)
Coarse	1/4 to 1*
Medium	1 to 1/2
Fine	1 1/2 to 2

Use the lower rates when you anticipate light weed pressure and the higher rates when you anticipate heavy weed pressure.

\*Corn only: Apply 1 to 1 1/2 pints per acre in Alabama, Florida, Georgia, North Carolina, South Carolina and Virginia to control fall panicum and Texas panicum.

**Precaution:** Do not apply Trifluralin to corn grown for seed. Do not apply Trifluralin to corn or sorghum as a preplant or preemergence treatment, or crop injury may occur.

**HOPS**

Apply and incorporate Trifluralin while the crop is dormant. Use a broadcast rate of 1 pint per acre on coarse soils; 1 1/4 to 1 1/2 pints on medium soils; and 1 1/2 pints on fine soils and soils with 2-10% organic matter.

**MINT - (Established Peppermint and Spearmint):**

Apply Trifluralin at a rate of 1 pint per acre on coarse soils; 1 1/4 pints on medium soils; and 1 1/2 pints on fine soils. Use incorporation equipment that will insure thorough soil mixing with minimum damage to the crop.

**PEA - (Dry and English) -**

**Trifluralin alone** - Apply and incorporate Trifluralin before planting at a rate of 1 pint per acre on coarse and medium soils and 1 1/2 pints on fine soils.

**Trifluralin/Far-Go tank mix for pea in Idaho, Oregon and Washington:** The tank mix combination of Trifluralin 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 pint of Trifluralin per acre on coarse and medium soils; 1 pint of Trifluralin 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.

**Precaution:** Do not apply to lentils. Leaf crinkling and delayed maturity of peas may occur, particularly on clay points in the northwest; but 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.



**PEA –**

**Fall application to dry pea and English pea in Idaho, Oregon and Washington:** Apply and incorporate Trifluralin any time between October 15 and December 31 at a broadcast rate of 1 pint per acre on coarse soils; 1 1/4 to 1 1/2 pints on medium soils; and 1 1/2 pints on fine soils. Destroy established weeds during seedbed preparation. Do not apply Trifluralin in the fall to soils which are wet or are subject to prolonged periods of flooding. **PEANUT - (Spanish Peanut in Texas and Oklahoma):** Apply and incorporate Trifluralin before planting, at planting or immediately after planting at a broadcast rate of 1 pint per acre on coarse soils. When incorporation after planting, take care not to disturb the seed.

**PEANUT –**

Trifluralin/Vernam tank mix (Spanish Peanut in Texas and Oklahoma): Trifluralin/Vernam tank mix effectively controls those weeds listed for Trifluralin alone plus these additional weeds: Purple nutsedge (nutgrass), Yellow nutsedge (nutgrass), Annual morningglory, Coffeeweed, and Velvetleaf. Follow recommended soil preparation procedures for Trifluralin. You may apply the Trifluralin/Vernam tank mix up to 10 days prior to planting. Incorporate the tank mix immediately after application.

Apply Trifluralin/Vernam at these rates:

<b>Broadcast Rates Per Acre</b>		
<b>Soil Texture</b>	<b>Trifluralin</b>	<b>Vernam 7E</b>
Coarse	1 pint	2 1/2 pints

**POTATO - (All states except Maine):**

Apply and incorporate Trifluralin after planting, before emergence, or immediately following dragoff or after the potato plants have fully emerged.

<b>Broadcast Rates Per Acre</b>		
<b>Trifluralin</b>		
<b>Soil texture</b>	<b>Areas receiving less than 20" average annual rainfall*</b>	<b>Areas receiving more than 20" average annual rainfall*</b>
Coarse	1 pint	1 pint
Medium	1 1/4 to 1 1/2 pints	1 1/2 pints
Fine	1 1/2 pints	2 pints

\*Use 1 1/2 pints per acre on coarse and medium soils with 2-5% organic matter; use 2 pints on all soils with 5-10% organic matter. Set incorporation equipment so that the bed and furrow will be uniformly covered with a layer of treated soils. If the layer of treated soils is not uniform and the herbicide is concentrated over the bed, potato emergence may be retarded, and stem brittleness can occur. When applying and incorporating Trifluralin after potato plants have fully emerged, do not completely cover the foliage with treated soil. Likewise, do not completely cover foliage at subsequent cultivations. Be careful that incorporation machinery does not damage potato seed pieces or elongating sprouts.

**POTATO - Split application in Idaho, Oregon and Washington:** On all soils, apply and incorporate 3/4 pint of Trifluralin per acre before planting and 3/4 pint after planting when potato plants have fully emerged. Do not apply to soils containing 2% or more organic matter. Follow incorporation directions listed above for application to potato after planting.

**POTATO - Trifluralin/Eptam tank mix for potatoes grown in Kansas, Minnesota, Nebraska, North Dakota, Oklahoma, South Dakota and Texas:** The Trifluralin/Eptam tank mix effectively controls the following weeds in addition to those weeds controlled by Trifluralin: Henbit (Spring allications), black nightshade, hairy nightshade, nutsedge, wild oat, common ragweed, Pennsylvania Smartweed, and Velvetleaf (Buttonweed). Follow recommended soil preparation and application procedures for Trifluralin. The Trifluralin/Eptam tank mix may be applied after planting, but prior to crop emergence. In areas where

26/34

potatoes are normally dragged off, the Trifluralin/Eptam tank mix should be applied and incorporated up to or immediately following drag off.

Broadcast Rates Per Acre			
Soil texture	Trifluralin		ETPAM 7E (pints)
	Areas receiving less than 20" average annual rainfall*	Areas receiving more than 20" average annual rainfall*	
Coarse	1 pint	1 pint	1 3/4 -7**
Medium	1 to 1 1/2 pints	1 to 1 1/2 pints	1 3/4 -7
Fine	1 to 1 1/2 pints	1 to 2 pints	1 3/4 -7

\*Use 1 1/2 pints per acre on coarse and medium soils with 2-5% organic matter; use 2 pints on all soils with 5-10% organic matter. \*\*Use the higher rate of Eptam 7E for nutsedge control. Precaution: Read the Eptam label before using. Observe cautions and limitations of products used in mixtures. Do not graze or feed forage to livestock from fields treated with Trifluralin/Eptam tank mix.

**POTATO - Trifluralin/Eptam application before planting in Washington, Idaho and Oregon:** Trifluralin/Eptam may be applied before planting at a broadcast rate of 1/4 pint of Trifluralin per acre and 3 1/2 pints of Eptam 7E per acre on all soil textures. Incorporate immediately.

**Precaution:** Do not use this tank mix both before and after planting in the same season. Read the Eptam label before using. Observe all cautions and limitations on labeling of all products used in mixtures. Do not use foliage from treated crops for feed or forage.

**SAFFLOWER**

Follow recommended soil preparation, application and incorporation procedures for Trifluralin. Apply and incorporate Trifluralin in the spring before planting or in the fall between October 15 and December 31.

Broadcast Rates Per Acre		
Soil texture	Trifluralin	
	Areas receiving less than 20" average annual rainfall*	Areas receiving more than 20" average annual rainfall*
Coarse	1 pint	1 pint
Medium	1 1/4 to 1 1/2 pints	1 1/2 pints
Fine	1 1/2 pints	2 pints

\*Use 1 1/2 pints per acre on coarse and medium textured soils and 2 pints on fine soils with 2-5% organic matter; use 2 to 2 1/2 pints on all soils with 5 -10% organic matter.

**SAFFLOWER - Fall application in Arizona, California, Idaho, Montana, Nevada, Oregon, Utah, Washington and Wyoming:** Apply and incorporate Trifluralin any time between October 15 and December 31. Ground may be left flat or beeded-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. Apply and incorporate Trifluralin at a broadcast rate of 1 1/2 pints per acre on coarse soils; 2 pints of medium soils; and 2 1/2 pints on fine soils. Do not apply Trifluralin in the fall to soils which are wet or are subject to prolonged periods of flooding.

**SUGAR BEET**

Apply Trifluralin as a broadcast, overtop spray when plants are between 2 and 6 inches tall at a rate of 1 pint per acre on coarse soils and 1 1/4 to 1 1/2 pints on medium and fine soils. Use the higher rate for medium and fine soils in areas receiving more than 20" average annual rainfall. Set incorporation machinery to throw treated soil toward the plants in the row. Be careful that incorporation machinery does not damage the sugar beet taproot.

**Precaution:** Exposed beet roots should be covered with soil before a Trifluralin application to reduce the possibility of girdling.

**SUGAR BEET –**

**Incorporation with a tine-tooth harrow in California, Colorado, Idaho, Montana, Nebraska, Oregon, Texas, Utah, Washington and Wyoming:** A properly operated tine-tooth harrow (Flexline or Melroe) can incorporate Trifluralin for effective weed control in sugar beet. Operate the tine-tooth harrow 2 times over the field in opposing directions at a speed of 3 to 6 mph. Set the harrow to cut 1 to 2 inches deep. Be careful that the tine-tooth harrow does not damage the sugar beet taproot. Follow recommended application procedures and broadcast rates per acre for sugar beet (see preceding paragraph).

**SUGARCANE - (Plant Cane):**

Apply and incorporate Trifluralin twice a year at a broadcast rate of 2 to 4 pints per acre for all soil textures. Make the first Trifluralin application in the fall on firmly packed beds immediately after the seed pieces are planted. Make the second Trifluralin application in the spring before or shortly after the cane emerges. Loosen rain-packed beds 2 to 3 inches deep before the spring application. Take care that incorporation machinery does not damage the seed pieces or emerging shoots.

**SUGARCANE - Postplant in Hawaii for control of most annual grasses, including guineagrass:**

Surface apply Trifluralin after planting (for plant cane) or after harvesting (for ratoon cane), before weeds and cane emerge harvesting (for ratoon cane), before weeds and cane emerge. Use a broadcast rate of 6 to 8 pints per acre 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 will not be effective. Apply Trifluralin just before anticipated rainfall or sprinkle irrigate immediately after application.

**SUGARCANE - Applications up to layby for plant cane or ratoon cane grown in Louisiana or Texas:**

Apply and incorporate Trifluralin at a broadcast rate of 2 to 4 pints per acre for all soil textures. Do this in the spring from before or shortly after the cane emerges up to layby. Apply the Trifluralin after the beds have been shaved or false shaved. Loosen rain-packed beds 2 to 3 inches deep before application. Be careful that incorporation machinery does not damage seed pieces or emerging shoots. You may use a rolling cultivator or bed chopper to incorporate Trifluralin layby applications in sugarcane on all soil textures. Follow normal incorporation directions for the rolling cultivator. Set bed chopper to cut 3 to 4 inches deep and operate at 4 to 6 mph. Two incorporation passes are necessary.

**SUGARCANE - Itchgrass (Raoulgrass) control in Louisiana:** Apply and incorporate Trifluralin on either plant or ratoon cane at a broadcast rate of 4 pints per acre for all soil textures. Follow the directions above for sugarcane layby application in Louisiana and Texas (see above).

**SUNFLOWER –**

**Trifluralin alone:** Apply and incorporate Trifluralin in the spring or in the fall between October 15 and December 31. Follow recommended soil preparation, application and incorporation procedures for Trifluralin.

<b>Broadcast Rates Per Acre</b>		
<b>Trifluralin</b>		
Soil texture	Areas receiving less than 20" average annual rainfall*	Areas receiving more than 20" average annual rainfall*
Coarse	1 pint	1 pint
Medium	1 ¼ to 1 ½ pints	1 ½ pints
Fine	1 ½ pints	2 pints

\*Use 1 1/2 to 2 pints per acre on coarse and medium soils with 2-5% organic matter and 2 pints on all soils with 5-10% organic matter.

**SUNFLOWER - Trifluralin/Amiben tank mix or overlay:** Follow recommended soil preparation, application and incorporation procedures for Trifluralin. Amiben may be applied in a band or broadcast over sunflowers at planting in fields where Trifluralin has been incorporated prior to planting. Or, the Trifluralin/Amiben tank mix may be incorporated prior to planting. Trifluralin/Amiben tank mix improves mustard, smartweed, velvetleaf and ragweed control in addition to those weeds controlled by Trifluralin alone. Apply Trifluralin/Amiben or Trifluralin with an Amiben overlay at the following broadcast rates per acre.

<b>Broadcast Rates Per Acre</b>		
Soil Texture	Trifluralin	Amiben 2S
Coarse	1 pint	4 quarts
Medium	1 ½ pints	4 to 6 quarts*
Fine	2 pints	4 to 6 quarts*

\*For best control of mustard, common ragweed or black nightshade use the 6 quart rate. In coarse textured soils, heavy rains on the incorporated Amiben may move it below the weed seed germination zone and erratic weed control may result. If sufficient rain does not fall within 7 days after a preemergence application of Amiben, but there is enough soil moisture to germinate weeds and grasses, a light cultivation with a rotary hoe or similar tool will uproot these small broadleaf weeds and grasses. The shallow mixing of Amiben in the surface soil will not interfere with the action of Amiben when rains come.

**TOMATO**

For direct-seeded tomato, apply Trifluralin at blocking or thinning as a directed spray to the soil between rows and beneath the plants, and incorporate. For transplant tomato, apply and incorporate Trifluralin before transplanting. Do not apply Trifluralin after transplanting.

<b>Broadcast Rates Per Acre</b>		
<b>Trifluralin</b>		
Soil texture	Areas receiving less than 20" average annual rainfall*	Areas receiving more than 20" average annual rainfall*
Coarse	1 pint	1 pint
Medium	1 ¼ to 1 ½ pints	1 ½ pints
Fine	1 ½ pints	2 pints

\*Use 1 1/2 pints per acre on coarse and medium textured soils and 2 pints on fine soils with 2-5% organic matter, use 2 pints on all soils with 5-10% organic matter.

**FRUIT AND NUT CROPS AND VINEYARDS:**

For areas receiving more than 20" average annual rainfall. For new plantings of vineyards, citrus and pecan trees, apply and incorporate Trifluralin before planting at a broadcast rate of 1 pint per acre on coarse soils; 1 1/2 pints on medium soils; 2 pints on fine soils; 1 1/2 pints on fine soils with 2-5% organic matter; and 2 pints on soils with 5-10% organic matter. For non-bearing, established plantings of citrus and pecan trees and bearing plantings of grapefruit, lemon, orange, pecan, tangelo and tangerine trees, apply Trifluralin at a broadcast rate of 2 to 4 pints per acre for all soil textures. For areas receiving less than 20" average annual rainfall. For new plantings of almond, apricot, citrus, nectarine, peach, pecan and walnut trees, apply and incorporate Trifluralin before planting at a broadcast rate of 1 pint per acre on coarse soils; 1 1/4 to 1 1/2 pints on medium soils; 1 1/2 pints on fine soils; 1 1/2 to 2 pints on soils with 2-5% organic matter; and 2 pints on soils with 5-10% organic matter. For new plantings of vineyards, apply and incorporate Trifluralin before planting at a broadcast rate of 1 to 1 1/2 pints per acre on coarse soils; 1 1/2 to 3 pints on medium soils, and 3 to 4 pints on fine soils or soils with 2-10% organic matter. Do not use more than 2 pints per acre on heat-treated grape rootings. For postplant applications on bearing or non-bearing established plantings of vineyards and almond, apricot, grapefruit, lemon, nectarine, orange, peach, plum, prune, tangelo, tangerine and walnut trees, apply Trifluralin at a broadcast rate of 2 to 4 pints per acre for all soil textures. Do not apply to vineyards within 60 days of harvest. In established plantings, apply Trifluralin as a directed spray to the soil and use in incorporation methods not injurious to the trees or vines.

**FRUIT AND NUT CROPS AND VINEYARDS - Rhizome johnsongrass control:**

For areas receiving less than 20" average annual rainfall. You can obtain commercially acceptable control of rhizome johnsongrass with postplant applications in bearing and nonbearing, established plantings of vineyards and almond, apricot, grapefruit, lemon, nectarine, orange, peach, pecan, tangelo, tangerine and walnut trees with a Trifluralin program when applied for 2 years in a row. Soil Preparation - Work the soil thoroughly to bring the rhizomes nearer the surface. Application - Apply Trifluralin at a broadcast rate of 2 quarts per acre on all soil textures each year for 2 years in a row. Do not apply to vineyards within 60 days of harvest. Incorporation - Incorporate Trifluralin thoroughly with a disc set to cut 4 to 6 inches deep and operate at 4 to 6 mph. Two incorporation passes are necessary with the second pass in a different direction from the first. Cultivation - Some johnsongrass plants will escape. Timely cultivations are necessary to obtain commercially acceptable control. You cannot obtain commercially acceptable control with only 1 year of Trifluralin use. Precautions: Do not use the 2 quarts rate on new plantings, or crop injury may result. Do not interplant orchards or vineyards with other crops. If the treated vineyards and orchards are diverted to other crop uses, plant only those crops for which Trifluralin has been registered as a preplant treatment for the next cropping season.

**FRUIT AND NUT CROPS AND VINEYARDS - Bindweed control in California:** Trifluralin can be used for the control of field bindweed in vineyards and for almond, apricot, grapefruit, lemon, nectarine, orange, peach, pecan, tangelo, tangerine and walnut trees. Apply Trifluralin at a broadcast rate of 4 pints per acre on all soil textures. Trifluralin must be applied in the spring with a specially designed spray blade which applies a thin, concentrated layer at a soil depth of 4 to 6 inches. This layer of Trifluralin prevents bindweed shoots from emerging. Land Preparation - Destroy all weeds and grasses with soil tillage before applying Trifluralin. This tillage is necessary to prevent trash from interfering with the operation of the spray blade. Equipment - This operation requires a spray blade capable of running 4 to 6 inches below the surface of the soil. The spray blade should be equipped with nozzles located under the blade and directed so that the Trifluralin spray will be trapped under the soil which is flowing over the blade as it is pulled through the soil. Use a sufficient number of nozzles with spacing that will uniformly apply the Trifluralin underground in a thin, horizontal layer. Application - Apply Trifluralin in 40 to 80 gallons of water per acre. Operate the spray blade at a depth of 4 to 6 inches. Precaution: Some soils develop cracks as they dry after rainfall or irrigation. Field bindweed may emerge if the cracks extend through the Trifluralin layer. Prevent or eliminate cracks by shallow discing or other tillage. Avoid deep tillage which disturbs the subsurface layer. Cultivation or tillage also aids the control of germinating seeds.

**WHEAT (WINTER) - (Idaho, Montana, Oregon and Washington):**

Trifluralin may be applied for preplant preemergence control of cheatgrass and other annual grasses and broadleaf weeds controlled by Trifluralin. The growth, development and yield of winter wheat will not be adversely affected, provided the seed is placed below the zone of soil treated with Trifluralin. Apply Trifluralin any time during a period from 3 weeks up to immediately prior to planting. Broadcast Trifluralin at a rate of 1 1/2 pints per acre on coarse and medium soils and 2 pints on fine soils. Incorporation Directions - Incorporate Trifluralin into the soil with a flexible tine-tooth harrow (Flextine, Melroe) set to cut 1 to 2 inches deep and operate at 3 to 6 mph. Incorporate one time within 24 hours after application, followed by a second incorporation in a different direction from the first prior to planting. Do not till the soil with a disc after the Trifluralin has been incorporated with a flexible tine harrow. Seeding Directions - Use only a deep furrow or semi-deep furrow drill that will place the seed below the zone of soil into which Trifluralin has been incorporated. Precaution: Wheat planted in direct contact with treated soil may suffer crop injury in the form of delayed emergence and development.

**WHEAT (WINTER) - Fallow soil application in Washington and Oregon:**

Trifluralin applied and shallowly incorporated into fallow soil up to four months ahead of planting will control cheatgrass and certain annual grasses and broadleaf weeds. The growth, development, or yield will not be adversely affected as long as the seed is placed below the zone of soil treated with Trifluralin. Use deep or semi-deep furrow drills. Broadcast rates are 1 1/2 pints per acre on coarse and medium soils and 2 pints on fine soils. Apply Trifluralin any time from May to September prior to the fall planting of winter wheat. Incorporate - Incorporate Trifluralin with a flexible tine-tooth harrow (Flextine or Melroe) set to cut 1 to 2 inches deep and operated at 3 to 6 mph. For thorough incorporation, two passes of the equipment in different directions over the field are necessary. Incorporate one time within 24 hours after application followed by a second incorporation prior to seeding. Do not till the soil with a disc after Trifluralin has been applied with a flexible tine harrow. Precaution: Use only deep furrow or semi-deep furrow drills. Place seed below the zone of soil into which Trifluralin has been incorporated. Do not plant wheat directly into the zone of soil treated with Trifluralin as injury to the crop or a delay in its emergence and development may occur.

**WHEAT (SPRING), DURUM AND BARLEY -**

**TRIFLURALIN ALONE** Trifluralin is recommended as a postplant incorporated treatment to control foxtail (pigeongrass). Apply Trifluralin at a broadcast rate of 1 pint per acre on coarse and medium soils and 1 1/2 pints on fine soils. Plant 2 to 3 inches deep in a well-tilled seedbed. Apply Trifluralin 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 1 1/2 inches deep. Application and the first incorporation should be done in the same operation if possible. Both incorporations must be done within 24 hours.

**WHEAT (SPRING), DURUM, BARLEY (FALL APPLICATION) - Foxtail/Pigeon-grass control:**

Trifluralin may be fall applied for foxtail/pigeongrass control in spring wheat, durum and barley planted the following spring. Trifluralin may be applied to ground that has a manageable trash level, has been fallow or pretilled. The first incorporation is required within 24 hours after application. A second incorporation is required prior to planting to destroy emerged weeds and to ensure an even distribution of Trifluralin treated soil.

Broadcast Rates Per Acre	
Soil Texture	Trifluralin
Coarse	1 pint
Medium	1 pint
Fine	1 1/2 pints

**Incorporation Directions** - Any of the following tools are recommended for fall incorporation. The disc or field cultivator may be used for the spring incorporation pass. Care should be taken to operate the tool at a more shallow depth than the fall incorporation.

1. **Chisel plow:** May be used for the first pass only. Operate at 4-5 inches deep at 4-6 mph. A chisel plow is defined as having 3 rows of up to 18-inch sweeps on no greater than 12-inch centers. Stagger sweeps so that no soil is left unturned.
2. **Tandem disc:** Operate at 3-4 inches deep at 4-6 mph
3. **Field Cultivator:** Operate at 3-4 inches deep at 5 mph or more. A field cultivator is defined as having 3 to 4 rows of sweeps with "c" or "s" shaped shanks, spaced 7 inches or less and staggered so that no soil is left unturned. Planting Directions - Wheat, durum, or barley should be approximately 2 inches deep. Precaution - While use of this practice may result in a stand reduction, slight stand reductions do not normally affect yield.

**WHEAT (SPRING, DURUM AND BARLEY - Trifluralin/Far-Go tank mix:** Trifluralin/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/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 1 1/2 inches deep. Application and the first incorporation should be done in the same operation if possible. If not, incorporate immediately after application.

Broadcast Rates Per Acre				
Soil Texture	Trifluralin (pints)		Far-Go (pints)	
	Durum	Spring Wheat	Durum	Spring Wheat
Coarse	1	1	2 ½	2
Medium	1	1	2 ½	2
Fine	1 ½	1 ½	2 ½	2

Precaution: Over application may result in crop injury. Read the Far-Go label carefully before using.

#### FALL APPLICATION - GENERAL:

(Areas receiving more than 20" average annual rainfall) See specific crop for recommendations. For all crops for which there are no specific fall application instructions and for which Trifluralin is recommended as a preemergence application use the rates listed for spring applications. Do not apply Trifluralin in the fall for sugarbeets, potatoes and direct-seeded tomatoes. In most states apply and incorporate Trifluralin any time between October 15 and December 31. In Minnesota, Montana, North and South Dakota, apply and incorporate Trifluralin anytime between September 1 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 beds into furrows. Where soil is left 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. Do not apply Trifluralin in the fall to soils which are wet, are subject to prolonged periods of flooding, or where rice was grown the previous year.

#### FERTILIZER USE DIRECTIONS APPLICATION WITH LIQUID FERTILIZERS

Trifluralin may be mixed with most liquid fertilizer materials. The combination of Trifluralin with solutions and suspension-type fertilizers has provided weed and grass control equal to the same rates of Trifluralin applied in water. Follow Trifluralin 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 alone or in tank mixture with dry flowables, 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 seven agents listed below 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 the liquid fertilizer in a quart jar.
2. Add 1 to 4 teaspoonful(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 teaspoonfuls of Trifluralin 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 readily 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, use a clean quart jar, start at Step 1 above, add 1/2 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. 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 agent or another 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

Trifluralin in Liquid Fertilizer Emulsifiable concentrates, such as Trifluralin can be mixed with liquid fertilizers. In all cases, continuous agitation is required to prevent the Trifluralin from rising to the surface as an oily layer. When necessary, (see Testing for Tank Mix Compatibility in Liquid Fertilizers, above) a compatibility agent can be used to cause the Trifluralin to emulsify properly (i.e., have a milky appearance rather than oily layer). The use of compatibility agents is especially important when tank mixing emulsifiable concentrates, with dry flowables, wettable powders, aqueous suspensions, flowables, liquids, or solutions in liquid fertilizer. If the emulsion is not properly formed and the Trifluralin 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 is 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 ton of liquid fertilizer 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. Sponto 168D (Witco Chemicals Co., Chicago, IL)
2. Compat (Farm Chemicals, Inc., Aberdeen, NC)
3. Unite (Hopkins Ag Chemical, Madison, WI)
4. T-Mulz 734-2 (Thompson-Hayward Chemical Co.)
5. Rigo Compatibility Agent (Rigo Company, Buckner, KY)
6. Amoco Spray Mate\* (Amoco Oil Co., Chicago, IL)
7. Kem-Line (Universal Coop., Minneapolis, MN)

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 incorporation procedures.

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#### TRIFLURALIN APPLICATION WITH DRY BULK FERTILIZERS

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General Dry bulk fertilizers may be impregnated or coated with Trifluralin. Application of dry bulk fertilizers impregnated with Trifluralin has provided weed and grass control equal to the same rates of Trifluralin applied in water. All Trifluralin label recommendations regarding rates per acre, approved crops, incorporation, special instructions, cautions and special precautions must be followed. Apply a minimum of 200 pounds per acre of dry fertilizer impregnated with Trifluralin at the recommended rates. Any commonly used dry fertilizers can be used for Trifluralin 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. Apply Trifluralin uniformly to the fertilizer. Rates - Check specific crop recommendations for the rate of Trifluralin per acre. See the rate table which follows to determine the amount of Trifluralin to be impregnated into a ton of dry bulk fertilizer based on the amount of fertilizer which will be applied per acre. (See rate chart below) Application - Spread the fertilizer/chemical mixture with a properly calibrated applicator. Be certain the material is applied uniformly to the soil surface. Incorporation - Follow Trifluralin incorporation procedures.

<b>RATE CHART FOR IMPREGNATING FERTILIZER WITH TRIFLURALIN</b>					
(Trifluralin Added to a TON of fertilizer)					
<b>Fertilizer Rate per Acre</b>	<b>Trifluralin Rate Per Acre</b>				
	1 pint	1 ½ pints	2 pints	3 pints	4 pints
200 lbs.	5 qts.	7 ½ qts.	10 qts.	15 qts.	20 qts.
250 lbs.	4 qts.	6 qts.	8 qts.	12 qts.	16 qts.
300 lbs.	3 ½ qts.	5 qts.	6 ¾ qts.	10 qts.	13 ½ qts.
350 lbs.	2 ¾ qts.	4 ¼ qts.	5 ¾ qts.	8 ½ qts.	11 ½ qts.
400 lbs.	2 ½ qts.	3 ¾ qts.	5 qts.	7 ½ qts.	10 qts.
450 lbs.	2 ¼ qts.	3 ¼ qts.	4 ½ qts.	6 ¾ qts.	9 qts.
	per ton	per ton	per ton	per ton	per ton

For rates other than those listed above, use the following formula to calculate the amount of Trifluralin to be impregnated on a ton of dry bulk fertilizer:

$$\begin{array}{r} \text{Pints Trifluralin} \times \\ \text{Per Acre} \end{array} \times \frac{1000}{\text{Lbs. Fertilizer Per Acre}} = \begin{array}{r} \text{Quarts Trifluralin per} \\ \text{Ton of Fertilizer} \end{array}$$

#### CONDITIONS OF SALE AND WARRANTY

The Directions For Use of this product reflects the opinion of experts based on field use and tests. The directions are believed to be reliable and should be followed carefully. However, it is impossible to eliminate all risks inherently associated with use of this product. Crop injury, ineffectiveness or other unintended consequences may result because of such factors as weather conditions, presence of other materials, or use of the product in a manner inconsistent with its labeling, all of which are beyond the control of MICRO FLO COMPANY LLC ("Micro Flo") or the Seller. All such risks shall be assumed by the Buyer. Micro Flo warrants that this product conforms to the chemical description on the label and is reasonably fit for the purposes referred to in the Directions for Use, subject to the inherent risks, referred to above. MICRO FLO MAKES NO OTHER EXPRESS OR IMPLIED WARRANTY OF FITNESS OR MERCHANTABILITY OR ANY OTHER EXPRESS OR IMPLIED WARRANTY. IN NO CASE SHALL MICRO FLO OR THE SELLER BE LIABLE FOR CONSEQUENTIAL, SPECIAL OR INDIRECT DAMAGES RESULTING FROM THE USE OR HANDLING OF THIS PRODUCT. Micro Flo and the Seller offer this product, and the Buyer and User accept it, subject to the foregoing Conditions of Sale and Warranty which may be varied only by agreement in writing signed by a duly authorized representative of Micro Flo Company LLC.

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Sencor\*-metribuzin, is a registered trademark and product of Bayer, GmbH  
Vernam\*-vernolate, is a trademark and product of Stauffer Chemical Company