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

FEB 13 1996

OFFICE OF
PREVENTION, PESTICIDES AND
TOXIC SUBSTANCES

Willard F. Cummings
U.S. Registration Manager
Uniroyal Chemical Company, Inc.
74 Amity Road
Bethany, Connecticut 06524-3402

SUBJECT: Amendment of Directions for Use
Harvade 5F, EPA Reg. No. 400-155 ✓
Harvade 25F, EPA Reg. No. 400-398
Your Submission Dated June 2, 1995

Dear Mr. Cummings:

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

1. Make the label consistent with the Vocabulary Oversight Committee recommendations on geographical limitation vocabularies. You should submit revised labels to list the states located in the "rain-belt" and stripper and other irrigated cotton" areas.
2. Separate directions for use "Rain-Belt Cotton" and "Stripper and Other Irrigated Cotton" are needed to clarify and distinguish between the timing, rate, and tank mix combinations for each growing area.
3. The minimum spray volume for aerial application for use on stripper and other irrigated cotton can be reduced from 5 to 2 gallons of spray solution\A, because residue data available from ground and aerial field studies are consistent with the requirements of PR Notice 93-2.

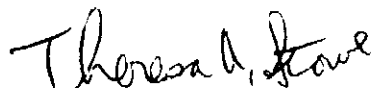
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2 of 5

4. Submit one (1) copy of your final printed labeling before you release the product for shipment. If these conditions are not complied with, the registration will be subject to cancellation in accordance with, FIFRA Section 6(a). Your release for shipment of the product bearing the amended labeling constitutes acceptance of these conditions.

A stamped copy of the labeling and a copy of the review dated February 7, 1995 are enclosed for your records.

Sincerely yours,



Theresa A. Stowe
Acting Team Leader
Product Manager (22)
Fungicide-Herbicide Branch
Registration Division (7505C)

Enclosures

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3 of 5

HARVADE®-5F

ACCEPTED
with COMMENTS
In EPA Letter Dated
FEB 13 1996

Under the Federal Insecticide,
Fungicide, and Rodenticide Act
as amended, for the pesticide
registered under EPA Reg. No.
400-155

HARVEST GROWTH REGULANT FOR COTTON

Net contents:

COMPOSITION

Active Ingredient: (% by weight)	
dimethipin* (2,3-dihydro-5,6-dimethyl-1,4-dithiin-1,1,4,4-tetraoxide)	48.0%**
Inert Ingredients:	52.0%
Total:	100.0%

*U.S. Patent No. 3,920,438
**Contains 4.9 pounds of active ingredient per U.S. gallon.
**Contains 587 grams of active ingredient per liter.

KEEP OUT OF REACH OF CHILDREN CAUTION

STATEMENT OF PRACTICAL TREATMENT

IF SWALLOWED: Drink two large glasses of water and induce vomiting. Contact a physician.
IF ON SKIN: Wash affected area with plenty of soap and water.
IF IN EYES: Flush eyes with plenty of water for at least 15 minutes. Contact a physician.
IF INHALED: Remove to fresh air; if abnormal symptoms develop, contact a physician.

PRECAUTIONARY STATEMENTS HAZARDS TO HUMANS AND DOMESTIC ANIMALS CAUTION

Harmful if swallowed or inhaled. Do not breathe vapors or spray mist. Avoid contact with skin, eyes or clothing. Keep away from food or food products.

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 E on an EPA chemical resistance category selection chart.

Applicators and Other Handlers Must Wear: Long-sleeved shirt and long pants; chemical-resistant gloves such as barrier laminate, or nitrile rubber, or neoprene rubber, or viton; shoes plus socks.

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.

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 RECOMMENDATIONS

Users should:

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



ENVIRONMENTAL HAZARDS

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

Uniroyal Chemical Company, Inc., Middlebury, CT 06749

EPA Reg. No. 400-155

EPA Est. No.

006WPS

DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with its labeling. Read all label directions carefully before use. Do not apply this product through any type of irrigation system.

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.

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AGRICULTURAL USE REQUIREMENTS

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

Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 48 hours.

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

GENERAL INFORMATION

HARVADE®-5F is a plant growth regulant that effects certain plant processes which lead to defoliation in cotton. Since HARVADE-5F must enter the plant through the leaves for optimum activity, it must be applied in a manner that will allow maximum penetration through the leaf surface. Complete coverage of the entire plant is essential for optimum effectiveness. HARVADE-5F MUST BE USED WITH A MINIMUM OF ONE PINT PER ACRE OF CROP OIL CONCENTRATE SPRAY ADJUVANT. See APPLICATION NOTES for additional important information.

HARVADE-5F also may improve the harvest operation by desiccating most mature morningglory species. Desiccation/defoliation of other weed species such as sicklepod, croton, and teaweed has been observed. Good coverage of the weeds is necessary for best results.

MIXING INSTRUCTIONS

ALWAYS SHAKE OR STIR WELL BEFORE USE. Fill the spray tank with 2/3 of the required amount of water. Add the desired amount of HARVADE-5F, the selected crop oil concentrate and remaining required amount of water. The HARVADE-5F and crop oil concentrate will suspend easily with minimum agitation. **To assure that container content is emptied - TRIPLE RINSE (OR EQUIVALENT) INTO SPRAY TANK. PRESSURE RINSE IS PREFERRED.**

CROP OIL CONCENTRATE REQUIRED WITH HARVADE-5F

A petroleum-based crop oil concentrate (83-17) such as those listed below must be added to the spray mixture at 1 to 2 pints per acre: Agridex¹, Chem-Oil², Maximizer³, Peptoil⁴, Prime Oil⁵, Super Oil⁶, or Surf-Oil⁷. These are trademarks of ¹Helena Chemical Co., ²Coastal Chemical, ³Loveland Industries, inc., ⁴Drexel Chemical Co., ⁵Terra International Inc., ⁶Red Panther Cooperative, and ⁷Cleveland Chemical Co. The commercial crop oil concentrate chosen must be cleared for application to growing crops. NOTE: USE 2 PINTS OF CROP OIL CONCENTRATE PER ACRE WHEN THE WEATHER IS COOL.

COMPATIBILITY

HARVADE-5F is compatible with most commonly used cotton desiccants, defoliants, and insecticides. HARVADE-5F has been shown to be incompatible with EPN when used as a tank mix. Consult your supplier or Uniroyal Chemical for details.

USE PRECAUTIONS

1. Do not plant rotational crops within 6 months after application.
2. Keep HARVADE-5F drift from non-target areas. Do not apply when weather conditions favor drift from treated areas.
3. a. Do not apply HARVADE-5F directly to, or permit mist to drift onto, citrus, broccoli, almonds, grapes, peppers, tomatoes, lettuce, alfalfa, sugarbeets or wheat. These crops may sustain significant injury if contacted with HARVADE-5F.
b. Do not apply HARVADE-5F to, or permit mist to drift onto, soil that will subsequently be seeded to peppers, tomatoes, lettuce, broccoli, alfalfa or sugarbeets. Significant crop injury may occur from such an application.

- 4 of 5
- c. Do not apply HARVADE-5F to, or permit mist to drift onto, irrigation water that will subsequently be applied to peppers, tomatoes or lettuce.

FOR USE ON RAIN-BELT COTTON

APPLICATION EQUIPMENT

Nearly all spray application equipment is suitable for applying HARVADE-5F if fine spray droplets can be deposited. If aerial equipment is used, it should be fitted with a fixed boom set at 45 to 90° relative to the trailing edge of the wing and flown 10 to 12 feet above the crop canopy.

TIMING OF APPLICATION

Apply 7 to 14 days prior to anticipated harvest. Optimum defoliation will be obtained when HARVADE-5F is applied to mature cotton plants; i.e. when 70% or more of the bolls are open, when the last boll to be harvested is no more than four nodes above the last cracked boll showing fiber (4NACB), when last boll to be harvested is hard to cut through and seed coat is light brown, or when there is no active growth and lower leaves have purple tinge.

RATE OF APPLICATION

One gallon of HARVADE-5F will treat 16 acres of cotton, when applied at the 8 fl. oz. per acre rate.

Aerial Application: Mix 8 to 10 fl. oz. of HARVADE-5F and one to two pints of crop oil concentrate with sufficient water to make up a minimum 5 gallons of spray solution per acre. Use the higher rate of HARVADE-5F when the plants are more vigorous and robust. If cotton is rank or conditions favor regrowth, see APPLICATION NOTES.

Ground Application: Mix 8 to 10 fl. oz. of HARVADE-5F and one to two pints of crop oil concentrate with sufficient water to make up 10 to 20 gallons of spray solution per acre. Use the higher rate of HARVADE-5F when the plants are more vigorous and robust. If cotton is rank or conditions favor regrowth, see APPLICATION NOTES.

APPLICATION NOTES

Partial defoliation from the first application of HARVADE-5F may result from one or more of the following situations:

- Rank cotton foliage is dense enough to prevent spray droplets from reaching the bottom leaves.
- Plants are actively growing, with new growth and fruiting evident at the top.
- Less than 70% of the bolls are open.
- Cotton is drought stressed. (Under this condition, applications should be made before mid morning or at late afternoon).
- Night temperatures are below 60°F for 3 to 4 nights either before or after application.
- Rainfall occurs within 6 hours after application.

Under these conditions a second application of HARVADE-5F at 4 to 6 fl. oz./A may be required 5 to 7 days after the initial application. Do not use more than a total of 14 fl. oz. of HARVADE-5F per acre per year.

TANK MIX COMBINATIONS FOR RAIN-BELT COTTON

Before using a tank mix combination, read each product label carefully and follow the Precautionary Statements on each label. Use 1 to 2 pints of crop oil concentrate per acre with all combinations.

1. **HARVADE-5F plus DEF®** (or other phosphate defoliants)
If cotton is rank or actively growing, HARVADE-5F at 6.5 to 8.0 fl. oz./A may be applied with 3 to 16 fl. oz./A of DEF to enhance defoliation. Use the lower rate of both products when the night temperature is above 70°F; Use the higher rates when the night temperature falls below 70°F.
DEF® is a registered trademark of Bayer Corp.
2. **HARVADE-5F plus PREP™** (or other ethephon products)
To enhance boll opening and control regrowth, HARVADE-5F may be applied at the labeled rate with 1.33 to 2.67 pints of PREP™. Apply this tank mixture when the bolls are 60 to 70% open.
PREP™ is a trademark of Rhone-Poulenc Ag Company
3. **HARVADE-5F plus DRUPP® SOWP**
Under conditions that promote excessive regrowth, a tank mix of

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HARVADE-5F at 6.5 to 8.0 fl. oz./A with one pint of crop oil plus DROPP 50WP at 0.1 to 0.2 pound/A provides excellent regrowth control. Use the lower rate of both products when the night temperature is above 65°F; Use the higher rates when the temperature falls below 65°F.

DROPP® is a registered trademark of AgrEvo USA Co.

4. HARVADE-5F plus STARFIRE®

On rain-belt cotton if a high percentage of cotton leaves are still actively growing, 4 to 6 fl. oz./A of STARFIRE may be added to the labeled rate of HARVADE-5F for more complete defoliation.

STARFIRE® is a registered trademark of a Zeneca Group company

5. HARVADE-5F plus ROUNDUP®

If perennial weeds such as johnsongrass are prevalent, HARVADE-5F is compatible with ROUNDUP. Refer to the ROUNDUP label for further application information.

ROUNDUP® is a registered trademark of Monsanto Company

FOR USE ON STRIPPER AND OTHER IRRIGATED COTTON

APPLICATION EQUIPMENT

Nearly all spray application equipment is suitable for applying HARVADE-5F if fine spray droplets can be deposited. If aerial equipment is used, it should be fitted with a fixed boom set at 45 to 90° relative to the trailing edge of the wing and flown 10 to 12 feet above the crop canopy.

TIMING OF APPLICATION

Optimum defoliation will be obtained when HARVADE-5F is applied to mature cotton. It may be used alone or tank mixed with other registered cotton harvest aids.

Under growing conditions for stripper cotton, HARVADE-5F and HARVADE-5F tank mixes will initiate the defoliation process if applied when the last bolls to be harvested are mature. This normally occurs 14 to 21 days before harvest. Application of CYCLONE® brand desiccant 7 to 10 days after HARVADE-5F is necessary to complete the defoliation process.

®CYCLONE is a registered trademark of a Zeneca Group company

RATE OF APPLICATION

One gallon of HARVADE-5F will treat 16 acres of cotton, when applied at the 8 fl. oz. per acre rate.

Aerial Application: Mix 8 fl. oz. of HARVADE-5F plus one to two pints of crop oil concentrate designated above in a minimum of 2 gallons of spray solution per acre. Use CYCLONE at 16 fl. oz./A at 7 to 10 days after HARVADE-5F to complete the defoliation process.

Ground Application: Mix 8 fl. oz. of HARVADE-5F plus one to two pints of crop oil concentrate designated above in 10 to 20 gallons of spray solution per acre. Use CYCLONE at 16 fl. oz./A at 7 to 10 days after HARVADE-5F to complete the defoliation process.

TANK MIX COMBINATIONS FOR STRIPPER AND OTHER IRRIGATED COTTON

Before using a tank mix combination, read each product label carefully and follow the Precautionary Statements on each label. Use 1 to 2 pints of crop oil concentrate per acre with all combinations.

1. HARVADE-5F plus DEF (or other phosphate defoliant)

To initiate defoliation on cotton that may have been water-stressed at some time during the growing season, HARVADE-5F may be applied at 8 fl. oz./A with 8 fl. oz./A of DEF. Use CYCLONE at 16 fl. oz./A at 7 to 10 days after the HARVADE-5F/phosphate defoliant application to complete the defoliation process.

2. HARVADE-5F plus a formulated sodium chlorate product

To provide good defoliant initiation if cotton has been stressed over an extended period of time or has any new growth, HARVADE-5F at 8 fl. oz./A may be applied with 3 lb. a.i./A of sodium chlorate (example: 5 pints/A of a 5 lb/gal formulated product or 4 pints/A of a 6 lb/gal product). Use CYCLONE at 16 fl. oz./A at 7 to 10 days after the HARVADE-5F/sodium chlorate application to complete the defoliation process.

3. HARVADE-5F plus PREP (or other ethephon products)

To enhance harvest initiation and boll opening, HARVADE-5F at 8 fl. oz./A may be applied with 1.33 to 2.67 pints of PREP (or equivalent rate of other ethephon product). Use CYCLONE at 16 fl. oz./A at 7 to 10 days after the HARVADE/ethephon application to complete the defoliation process.

4. HARVADE-5F plus DROPP 50WP

Under conditions that promote excessive regrowth, HARVADE-5F at 8 fl. oz./A may be used with DROPP 50WP at 0.1 to 0.2 lb./A. Use CYCLONE at 16 fl. oz./A at 7 to 10 days after the HARVADE-5F/DROPP 50W application to complete the defoliation process.

ALWAYS SHAKE OR STIR WELL BEFORE USE

STORAGE AND DISPOSAL

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

STORAGE: Store in original container only. After partial use, replace lid and close tightly. Store in a secure place that is temperate and dry. Keep from freezing. Do not store below 40° F. ALWAYS SHAKE OR STIR WELL BEFORE USE.

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:

Plastic Containers: Triple rinse (or equivalent). Pressure rinse is preferred. Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or by incineration, or if allowed by State and local authorities, by burning. If burned, stay out of smoke.

IMPORTANT NOTICE—Seller warrants that this product conforms to its chemical description and is reasonably fit for the purposes stated on the label when used in accordance with the directions and instructions specified on the label under normal conditions of use, but neither this warranty nor any other warranty of merchantability or fitness for a particular purpose, express or implied, extends to the use of this product, contrary to label instructions, or under abnormal conditions, or under conditions not reasonably foreseeable to seller, and buyer assumes the risk of any such use.

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