

400-473

8-4-2000

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AUG 28 2000

Ms. Judy Ball  
Uniroyal Chemical Company, Inc.  
74 Amity Road  
Bethany, CT 06524-3402

Dear Ms Ball:

Subject: Dimilin 2F  
EPA Registration No. 400-473  
Our letter to you dated 8/4/2000  
Revised labeling: add use on rangeland and noncrop areas for control of  
grasshoppers and Mormon crickets; compliance with PRB review for  
reregistration;

On August 4, 2000, we wrote a letter to you accepting with comments the label changes listed above. It has been brought to our attention that we made a typographical error and listed the EPA Registration Number for Dimilin 2F as 460-473, instead of 400-473 in this letter. Please be advised that the correct number for this product is **400-473**, and we urge you to make this correction in our letter dated 8/4/2000, which accompanied the revised accepted (with comments) label for Dimilin 2F. The stamp on the label had the correct EPA Registration Number 400-473 on it. We regret any inconvenience this typographical error may have caused you. All comments listed in our letter dated 8/4/2000 still apply, and you must submit the final printed label with the revisions as requested.

Please do not hesitate to call me at (703) 308-8291, or e-mail if you have any questions about this letter.

Sincerely yours,

*Rita Kumar*

Rita Kumar  
Senior Regulatory Specialist  
Insecticide-Rodenticide Branch  
Registration Division (7505C)  
e-mail: kumar.rita@epa.gov

AUG 4 2000

Ms. Judy Ball  
Uniroyal Chemical Company, Inc.  
74 Amity Road  
Bethany, CT 06524-3402

Dear Ms Ball:

Subject: Dimilin 2F  
EPA Registration No. 460-473  
Your submission dated June 30, 2000  
Revised labeling: add use on rangeland and noncrop areas for control of grasshoppers and Mormon crickets; compliance with PRB review for reregistration;

The amendment referred to above, submitted in connection with registration under FIFRA sec. 3(c)(7)(A), is acceptable, provided that you:

1. Submit and/or cite a data required for registration/reregistration of your product under FIFRA sec. 3(c)(5) when the Agency requires all registrants of similar products to submit such data.

2. Make the label changes listed below:

- a. Under Personal Protective Equipment and in the Agricultural Use Requirements box, specify what kind of gloves will qualify as chemical resistant gloves.
- b. Under General Precautions and Restrictions, change the subheading for specifying buffer zones for aerial and ground applications. from "For Row Crops" to "For Row Crops, Rangeland, and Non-Crop Areas".
- c. As required in the RED, add the following sentence to the paragraph for buffer zones for aerial and ground applications: "All applications must include a 25 foot

buffer strip within the buffer zone to decrease runoff."

d. In our letter dated September 30, 1999, we had asked that either you revise the warranty statement as suggested by us in that letter, or revise your current version to address what you mean by 'normal' and 'abnormal' use. Revise your label using one of these two options.

3. Submit five (5) copies of the final printed label before you release the product for shipment.

If these conditions are not complied with, the registration will be subject to cancellation in accordance to FIFRA sec. 6(e). Your release for shipment of the product bearing the amended labeling constitutes acceptance of these conditions.

A stamped copy of the label is enclosed for your records. Please do not hesitate to call me at (703) 308-8291, or e-mail if you have any questions about this letter. Please note that this product will also be ready for reregistration upon resolution of the issues listed above.

Sincerely yours,

*Rita Kumar*

Rita Kumar  
Senior Regulatory Specialist  
Insecticide-Rodenticide Branch  
Registration Division (7505C)  
e-mail: kumar.rita@epa.gov

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**RESTRICTED USE PESTICIDE**  
Due to toxicity to aquatic invertebrate animals.  
For retail sale to and use only by Certified Applicators, or persons under their direct supervision, and only for those uses covered by the Certified applicator's certification.

ACCEPTED  
with COMMENTS  
by EPA Letter Dated

AUG 4 2000

Under the Federal Insecticide, Fungicide, and Rodenticide Act as amended, the pesticide registered under EPA Reg. No. 400-473

# DIMILIN® 2F

FOR USE ON COTTON,  
SOYBEANS AND RANGELAND

**INSECT GROWTH REGULATOR  
OIL FLOWABLE**

Net contents:  
**2½ gallons**

<b>COMPOSITION</b>	
Active Ingredient: (% by weight)	
diflubenzuron	
N-[[[4-Chlorophenyl)amino]carbonyl]-2,6-difluorobenzamide*	24%
Inert Ingredients:	76%
<b>TOTAL</b>	<b>100%</b>

\*Contains 2 lbs. diflubenzuron per gallon.  
Contains petroleum distillate

**EMERGENCY ASSISTANCE:**  
**UNIROYAL CHEMICAL EMERGENCY PHONE 203-723-3670**  
**SAFETY DATA AND INFORMATION 203-573-3303**  
**TRANSPORTATION EMERGENCY (CHEMTREC) 800-424-9300**  
 Have the product container or label with you when calling a doctor or going for treatment.

## KEEP OUT OF REACH OF CHILDREN CAUTION

**FIRST AID**  
**IF SWALLOWED:** Call a physician or Poison Control Center. Do not induce vomiting. Do not give anything by mouth to an unconscious person. Avoid alcohol.  
**IF ON SKIN:** Wash with plenty of soap and water. Get medical attention if symptoms persist.  
**NOTE TO PHYSICIAN:** May pose an aspiration pneumonia hazard.

### PRECAUTIONARY STATEMENTS HAZARDS TO HUMANS AND DOMESTIC ANIMALS CAUTION

Harmful if absorbed through skin. Avoid contact with skin or clothing. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals.

**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:** A long-sleeved shirt & long pants; shoes plus socks; chemical-resistant gloves such as Nitrile rubber, barrier laminate, neoprene rubber or viton.  
**Mixers and Loaders Must Wear:** Long-sleeved shirt and long pants; chemical-resistant gloves; 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.

**USER SAFETY REQUIREMENTS**  
 Wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet.

**ENGINEERING CONTROLS:**  
 When handlers use closed systems (including water soluble bags), 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:

- Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.
- Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

### ENVIRONMENTAL HAZARDS

This pesticide is toxic to aquatic invertebrates. For terrestrial uses (other than on forest canopy to control forest pests), do not apply directly to water or to areas where surface water is present or to intertidal areas below the mean high water mark. Drift or runoff from treated areas may be hazardous to aquatic invertebrate organisms in neighboring areas. Do not contaminate water when disposing of equipment wastewater or rinsate.

### DIRECTIONS FOR USE

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

#### Application Restrictions:

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.

### AGRICULTURAL USE REQUIREMENTS

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

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

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

- coveralls
- chemical-resistant gloves such as nitrile rubber, barrier laminate, neoprene rubber or viton
- shoes plus socks.

### STORAGE AND DISPOSAL

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

**STORAGE** - Store in a dry location.

**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.

### GENERAL INSTRUCTIONS AND INFORMATION

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

#### SPRAY DRIFT LABELING

Avoiding spray drift at the application site is the responsibility of the applicator. The interaction of many equipment-and-weather-related factors determine the potential for spray drift. The applicator is 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.

The applicator should be familiar with and take into account the information covered in the 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 manufacture'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 the 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 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 cross-wind, the swath will be displaced downwind. Therefore, on the up and downwind edges of the field, the applicator must compensate for the 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 speed 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 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 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 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 upwards 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).

## GENERAL INFORMATION

DIMILIN 2F is an insect growth regulator which is effective on a wide variety of insect pests, predominately from the families Lepidoptera and Diptera. Because of its mode of action, which results in a disruption of the normal molting process of the insect larvae, the action of DIMILIN is slow and several days may elapse before the full effect is seen. Because of its specificity, DIMILIN does not effect bees or other beneficial insects and is therefore an excellent product for use in IPM programs.

## GENERAL PRECAUTIONS AND RESTRICTIONS

Do not apply this product to bodies of water where swimming is likely to occur.

**For Row Crops:** Do not apply within 25 feet by ground or 150 feet by air of bodies of water such as lakes, reservoirs, rivers, permanent streams, natural ponds, marshes or estuaries.

**Restrictions on Rotational Crops:** Do not plant food or feed crops in DIMILIN treated soils within 1 month following last application, unless DIMILIN is authorized for use on these crops.

## APPLICATION INSTRUCTIONS

### USE AND MIXING DIRECTIONS FOR IF USED WITH WATER:

1. Fill tank with half of the required amount of water.
2. Begin agitation and add required amount of DIMILIN 2F.
3. Continue agitation while adding remainder of water.
4. Add proper quantity of oil slowly. To avoid formation of an invert emulsion, use at least 2 parts of water for each part of oil.

### USE AND MIXING DIRECTIONS IF USED WITHOUT WATER:

Always evaluate any potential mixture for compatibility and sprayability. To ensure thorough mixing of DIMILIN 2F with insecticides or other carriers, it is recommended that ingredients be premixed in a nurse tank, prior to being transferred to aerial or ground ULV application equipment. If nurse tank is not available, or unable to simultaneously mix:

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1. Fill tank with the required amount of oil and/or oil based insecticide.
  2. Begin agitation and add required amount of DIMILIN 2F.
  3. After the contents of the tank have been thoroughly agitated, a volume of carrier sufficient to fill the booms and piping system should be drained and then added back to the tank.

**Aerial or ground application:** Spray should be applied with aerial or ground equipment designed or modified to insure full uniform coverage of the entire plant. Adjust equipment to provide droplets with a diameter of 150 to 220 microns. Provide agitation prior to, during, and after blending and while applying.

## SOYBEANS (except California)

**VELVET BEAN CATERPILLAR, MEXICAN BEAN BEETLE AND GREEN CLOVER WORM:** DIMILIN 2F will control larvae of velvetbean caterpillar, Mexican bean beetle and green cloverworm. Apply DIMILIN 2F at the rate of 2 to 4 ounces per acre. Make application when larvae are small (less than 0.5 inches) to give greater control and minimum insect damage to leaves. Repeat application if damaging numbers reappear. The minimum reapplication interval is 30 days.

DIMILIN 2F may be applied at the lower rate (2 ounces) to prevent velvetbean caterpillar build-up when the vegetative growth of soybeans is completed and as pod formation begins. Consult local Extension Service regarding infestation levels requiring treatment.

**BEET AND FALL ARMYWORM AND SOYBEAN LOOPER:** To control larvae of beet and fall armyworm and to provide suppression of soybean looper, apply 4 ounces of DIMILIN 2F per acre. Application must be made when worms are small before the 3rd instar and before populations build.

**ADJUVANT USAGE:** See Cotton Section.

**Aerial Application:** Apply recommended amount of DIMILIN 2F in sufficient water (3 to 5 gallons per acre) to achieve uniform coverage of foliage.

**Ground Application:** Apply recommended amount of DIMILIN 2F in 9 to 35 gallons of water per acre to give uniform coverage.

Do not make more than two applications per season. Do not apply within 21 days of harvest.

DIMILIN 2F inhibits the molting process of larvae, therefore it does not provide immediate kill. From 5 to 7 days may be required before populations are reduced.

**SOYBEAN YIELD ENHANCEMENT:** In the absence of significant insect pressure and under certain growing conditions, an increase in soybean seed yield has been demonstrated with DIMILIN under field conditions on both determinate and indeterminate cultivars. Application of 0.031 to 0.062 lb. a.i. per acre (2 to 4 fl. oz. DIMILIN 2F per acre) to high yield potential soybean plants at the R3 to R3.5 growth stage period has been more consistent in increasing yields than applications at other reproductive stages of the soybean plant. This reproductive period represents beginning pod growth (pod  $\frac{1}{16}$  inch long at one of the four uppermost nodes on the main stem with a fully developed leaf) to just prior to full pod elongation (pod  $\frac{1}{4}$  inch long at one of the four uppermost nodes on the main stem with a fully developed leaf).

Use on soybeans not registered by the California Department of Pesticide Regulation.

## COTTON

### BEET ARMYWORM:

**EARLY SEASON (before first bloom):** For early infestations on young cotton, DIMILIN 2F should be applied at the first sign of beet armyworm activity (2 egg masses or hatch outs/100 feet of row) with 2 to 4 fl. oz. per acre in multiple applications, either as a directed or broadcast spray. Use on a 5 to 7 day interval until up to 8 fl. oz. per acre have been applied. Do not exceed 6 applications per season and do not exceed 24 fl. oz. DIMILIN 2F per season. Multiple applications of DIMILIN 2F will provide acceptable beet armyworm control and, because it has little activity on beneficial insects (parasites and

predators) and has good persistence, will help prevent populations of beet armyworm from building up later in the growing season. Use of DIMILIN 2F in this way allows for more complete coverage of new foliage during the period of rapid vegetative growth.

**MID SEASON:** Starting around first bloom and through mid-bloom, apply 4 to 8 fl. oz. of DIMILIN 2F per acre. Repeat application until up to 8 fl. oz. per acre have been applied, using a 5 to 7 day interval between applications. The higher application rate should be used on larger cotton or under conditions of greater larval pressure. Do not exceed 6 applications per season and do not exceed 24 fl. oz. DIMILIN 2F per season. First application should coincide with peak beet armyworm moth catches in pheromone traps, indicating another generation of larvae is imminent. DIMILIN is more effective on early stages of larval development, therefore cotton leaves should be treated before populations become established.

**LATE SEASON:** After mid-bloom and prior to 14 days before harvest, apply 6 to 8 fl. oz. of DIMILIN 2F per acre. The higher application rate should be used on more advanced cotton or under conditions of greater larval pressure. Do not exceed 6 applications per season and do not exceed 24 fl. oz. DIMILIN 2F per season. Do not exceed 3 applications and 12 fl. oz. DIMILIN 2F post boll opening. Application should coincide with peak beet armyworm moth catches in pheromone traps. Additional applications of 6 to 8 fl. oz. per acre may be needed if larval pressure continues.

**Adjuvant Usage:** Always use oil (1 to 2 quarts) with DIMILIN 2F if conditions are favorable for water evaporation (e.g. high air temperature and/or low humidity). For ground or aerial LV application, 1 pint to 2 quarts of emulsified vegetable or paraffinic crop oil is recommended to enhance canopy penetration, and to reduce spray droplet evaporation and subsequent drift. For ULV application use DIMILIN 2F in a minimum of 20 oz. of non-emulsified cottonseed oil, or vegetable or petroleum based oil carriers. Consult your supplier or Uniroyal representative for oil specifications.

**Aerial Application:** Apply in 3 to 5 gallons of total volume per acre. For ULV application, use a total volume of 20 to 48 oz. per acre. (See notes on use of adjuvants above and mixing directions below).

**Ground Application:** Apply in 10 to 20 gallons of total volume per acre to give uniform coverage. For ULV application, use a total volume of 20 to 64 oz. per acre (see notes on use of adjuvants above and mixing directions below).

Use sufficient application volume to assure adequate coverage. DIMILIN 2F may be mixed with other insecticides being applied for other cotton insects. When emulsifiable concentrate insecticide formulations are used with oil and DIMILIN in tank mixes, they may result in phytotoxicity. Care should be taken where such mixture is used. Because of the unique mode of action of DIMILIN, its visible effects may not be seen for 5 to 7 days following application.

**FALL ARMYWORM, YELLOWSTRIPED ARMYWORM, SOUTHERN ARMYWORM, SOYBEAN LOOPER, CABBAGE LOOPER AND SALTMARSH CATERPILLAR:** For larvae of fall armyworm, yellowstriped armyworm and southern armyworm, and larval suppression of soybean looper, cabbage looper and saltmarsh caterpillar, apply 4 to 8 fl. oz. of DIMILIN 2F per acre. Application should be made during early stages of larval development. Repeat application until at least 8 fl. oz. per acre have been applied using a 5 to 7 days interval. See **BEET ARMYWORM** for recommendations on adjuvants, and applications by air or ground. See **BEET ARMYWORM** for use restrictions.

**BOLL WEEVIL:**

**EARLY SEASON (before first bloom):** DIMILIN 2F will control boll weevil by suppressing reproduction. Apply 4 to 8 fluid ounces of DIMILIN 2F per acre in combination with 2 to 4 quarts of non-emulsified cottonseed oil, vegetable oil, or paraffinic crop oil. For ULV application, use 4 fluid ounces of DIMILIN 2F in a minimum of 8 fluid ounces of non-emulsified cottonseed oil, oil based insecticide, or vegetable or petroleum based oil carriers. Consult your supplier or Uniroyal representative for oil specifications.

For best suppression of boll weevil reproduction, make first application at pinhead square stage of cotton growth when overwintering boll weevils are entering the fields. Repeat treatments should allow at least 5 to 7 day intervals between applications.

**LATE SEASON:** DIMILIN 2F will reduce the numbers of weevils that emerge in the following spring if applications are made when adult weevils are going into diapause to overwinter. Apply when cotton plant has reached full vegetative growth or when it begins blooming out the top. For ground or aerial LV applications, spray 2 to 4 fluid ounces of DIMILIN 2F per acre in combination with 2 to 4 quarts of an emulsified vegetable or paraffinic oil per acre. For ULV application, use 2 to 4 fl. oz. of DIMILIN 2F in a minimum of 8 oz. of non-emulsified cottonseed oil, oil based insecticide, or vegetable or petroleum based oil carriers. At least 2, but not more than 3, applications at 7 to 14 day intervals should be made.

**Aerial application:** Apply in 3 to 5 gallons total volume per acre. For ULV application, use total volume of 20 to 32 oz. per acre. (See section on use of adjuvants above).

**Ground application:** Apply in 10 to 20 gallons of total volume per acre to give uniform coverage. For ULV application, use total volume of 20 to 64 oz. per acre. (See section on use of adjuvants above).

DIMILIN 2F does not kill the adult boll weevils, however, eggs deposited by affected female weevils will not hatch, thus limiting reproduction. The control of egg hatch and larval development within the square prevents its shedding and will then allow normal boll development. After initial treatment of the female weevil, 7 to 10 days are required before non-hatching eggs are laid; however, once affected, non-hatching eggs will be laid for approximately 10 days, and longer if the female encounters more DIMILIN. Thus treat early and use multiple applications.

When DIMILIN 2F is used alone for boll weevil control, it allows normal build-up of beneficial insects which may aid in control of bollworm and budworm. Emulsifiable concentrate insecticide formulations used in tank mixes, in the presence of oil, may result in phytotoxicity. Care should be taken where such mixture is used.

**USE RESTRICTIONS FOR COTTON:** Do not exceed 6 applications per season and do not exceed 24 fl. oz. DIMILIN 2F per season. Do not exceed 3 applications and 12 fl. oz. DIMILIN 2F post boll opening. Do not apply closer than 14 days before harvest.

**RANGELAND AREAS**

**GRASSHOPPERS / MORMON CRICKETS:** DIMILIN 2F will control grasshopper/Mormon cricket infestations in rangeland areas. Higher rates and gallonages are suggested for areas with dense vegetation, when nymphs are beyond the 2nd instar stage, and when climatic conditions are favorable for grasshopper/Mormon cricket survival and increase.

**APPLICATION RATES AND RECOMMENDATIONS\***

Insect	No. of Applications	Rate per Acre	Timing
Grasshoppers and Mormon crickets	1	0.5 to 1.0 oz.	Early instar (majority in the 2nd to 3rd instar nymphal stages)
	2	0.5 fl. oz.	If a second application is made, apply 2 to 3 weeks after the first application.

**AERIAL APPLICATION:** Apply in 1 to 5 gallons of water per acre and include 1 pt. to 2 qts. of emulsified vegetable or paraffinic crop oil if conditions are favorable for water evaporation (e.g. high air temperature and/or low humidity). For ULV application in an oil carrier, use a total volume of at least 12 to 32 fl. oz. No additional emulsifiers are necessary when using oil as a carrier, however, an emulsifier can be added to the last tank of oil to facilitate cleanup. For low volume and ULV applications, make sure the boom is filled with spray mixture containing the correct concentration of DIMILIN 2F before the first

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application begins.

**GROUND APPLICATION:** Apply in 5 to 20 gallons of water per acre. Include 1 pt. to 2 qts. of emulsified vegetable or paraffinic crop oil if conditions are favorable for water evaporation.

**TIMING OF APPLICATION:** Applications may be made anytime after eggs begin to hatch. For optimum results, applications should be made when the majority of the nymphs have reached the 2nd to 3rd instar stage of development. DIMILIN 2F remains active on the foliage and will continue to control grasshoppers/Mormon crickets that hatch later in the season. DIMILIN 2F is not effective in controlling grasshoppers/Mormon crickets once they have reached the adult stage. Since it is an insect growth regulator, effects of DIMILIN 2F may not be seen until 3 to 10 days after treatment.

**\*REDUCED AREA AND AGENT TREATMENTS (RAATs):** A RAATs application is an IPM strategy that takes advantage of grasshopper movement and conservation biological control to allow DIMILIN 2F to be applied on a reduced treated area and at reduced rates, while sustaining acceptable grasshopper/Mormon cricket control. RAATs may provide ranchers with an economic means to reduce grasshopper competition on their rangeland, depending on insect age and plant canopy. Using this program DIMILIN 2F may be applied on as little as 50% of the infested acreage (e.g. skipping a 100 ft. swath for every 100 ft. treated), up to 100% infested acreage. Apply 0.75 to 1 fl. oz. DIMILIN 2F per treated acre. The rate to use per acre and amount of area treated will depend on grasshopper/Mormon cricket age, plant canopy and topography. Skip up to 50% of the infested area and use the lower rate under uniform topography with early instar ages and sparse vegetation. If the majority of the population is late instars, vegetation is dense, terrain is considered rough, and conditions are hot during treatment, then the coverage and rate of DIMILIN 2F should be increased up to a blanket (100%) coverage with 1 fl. oz. per acre. Refer to application methods and oil requirement conditions in Aerial Applications section above.

**NON-CROP AREAS**

[Field border, fence rows, roadsides, farmsteads, Conservation Reserve Program (CRP) land]

**GRASSHOPPERS/MORMON CRICKETS:** Apply 1.0 fl. oz. DIMILIN 2F per acre to manage grasshoppers/Mormon crickets in their breeding areas before they move into cropland. See RANGELAND section for timing of application.

**AERIAL APPLICATION:** Apply in 1 to 5 gallons of water per acre (Note preceding oil requirement conditions).

**GROUND APPLICATION:** Apply in 5 to 30 gallons of water per acre. (Note preceding oil requirement conditions).

**USE RESTRICTIONS FOR GRASSHOPPERS/MORMON CRICKETS IN BOTH RANGELAND AND NON-CROP AREAS:**

Do not exceed a total of 1.0 fl. oz. DIMILIN 2F per acre per year.

Do not make more than 2 applications of DIMILIN 2F per year.

This 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).

**MODE OF ACTION:** DIMILIN affects the formation and/or deposition of chitin in the insect's exoskeleton (cuticle, exuvia). Chitin is a polysaccharide occurring mainly in the exoskeleton. When a larva/nymph is exposed to DIMILIN, the exoskeleton at molting is weakened and the larva/nymph is unable to successfully molt. If an adult female grasshopper consumes DIMILIN, the eggs she lays may not hatch (transovarial activity). Besides a fatal incomplete molting, grasshoppers may exhibit missing posterior legs, hernias, abdominal segments malformed, twisted antennae, hemolymph exudation, and wrinkled wings. Additionally, they may move slower, have limited jumps and

unsteady landings, show a reduction in feeding, have atrophy of posterior legs or be unable to fly. Any nymph/adult possessing these symptoms is likely more susceptible to predatory insects. DIMILIN has been shown not to impact adult populations of various ground dwelling and flying non-target arthropods in a rangeland ecosystem.

**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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