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Dr. Ralph Hodosh, Manager  
 Labeling and Product Safety  
 CAPD Regulatory Affairs  
 Abbott Laboratories  
 1401 Sheridan Road  
 North Chicago, IL 60064-4000

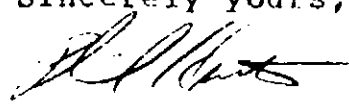
Dear Dr. Hodosh:

Subject: Dipel ES Labeling Amendment  
 EPA File Symbol/Reg. No. 275-65

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 following comments.

1. Bring the label into compliance with PR Notice 84-2.
2. Delete the phrase "unless the pesticide label-prescribed safety devices for public water systems are in place" or add the specific wording dictated in section VI of PR Notice 87-1.
3. In your chemigation section, indicate if the pesticide is to be applied continuously for the duration of the water application. If not, indicate when during the water application the pesticide is to be applied.
4. Submit five (5) copies of the final printed label.

A stamped copy is enclosed for your records.

Sincerely yours,  


Phil Hutton  
 Product Manager (17)  
 Insecticide-Rodenticide Branch  
 Registration Division (H75050)

CONCURRENCES

SYMBOL							
SURNAME							
DATE							

**BEST AVAILABLE COPY**

NOT REGISTERED IN CALIFORNIA

DIPEL ES

EMULSIFIABLE SUSPENSION  
BIOLOGICAL INSECTICIDE

Active Ingredient

Bacillus thuringiensis, var.  
kurstaki, 17,600 International Units  
of Potency per mg (64 billion International  
Units per gallon) ..... 3.5%  
Inert Ingredients ..... 96.5%

KEEP OUT OF REACH OF CHILDREN  
CAUTION

List No. 5555 01  
EPA Registration No. 275-65  
EPA Est. No. 33762-IA-1

NET CONTENTS: GALLONS

**BEST AVAILABLE COPY**

ACCEPTED  
with COMMENTS  
in EPA Letter Dated:

MAR 12 1990

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

275-65

**DIRECTIONS FOR USE**

**CAUTION**

Avoid contacts with skin, eyes or clothing. In case of contact immediately flush eyes or skin with plenty of water. Get medical attention if irritation persists.

**STORAGE AND DISPOSAL**

Do not contaminate water, food or feed by storage or disposal  
**STORAGE:** Keep containers tightly closed when not in use. At temperatures less than 0°F and greater than 100°F. Dipel ES should be stored under cover. Roll or shake the container before dispensing.

**PESTICIDE DISPOSAL:** Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility. Do not contaminate water when disposing of equipment wash waters.

**CONTAINER DISPOSAL:** Triple rinse (or equivalent). Then puncture and dispose of in a sanitary landfill, or by other procedures approved by state and local authorities.

### Directions for Use

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

Dipel ES is a highly selective insecticide for use against listed caterpillars (larvae) of lepidopterous insects. Close scouting and early attention to infestations is highly recommended. Larvae must eat deposits of dipel es to be affected. Always follow these directions:

- \* Treat when larvae are young (early instars) before the crop is extensively damaged.
- \* Larvae must be actively feeding on treated, exposed plant parts.
- \* Thorough spray coverage is needed to provide a uniform deposit of Dipel ES at the site of larvae feeding. For some crops directed drop nozzles by ground machine are required.
- \* Under heavy pest population pressure, use the higher label rates, shorten the spray interval, and/or raise gallonage to improve spray coverage.
- \* Repeat applications at an interval sufficient to maintain control, usually 3 to 14 days depending on plant growth rate, moth activity, rainfall after treating, and other factors. If attempting to control a pest with a single spray, make the treatment when egg hatch is essentially complete, but before extensive crop damage occurs.
- \* A spreader-sticker or surfactant which has been approved for use on growing and harvested crops should be added for hard-to-wet crops.
- \* Dipel ES is a non-restricted use pesticide and does not require a restricted use permit for purchase or use.

After eating a lethal dose of Dipel ES, larvae stop feeding within the hour, and will die within several days. Dying larvae move slowly, discolor, then shrivel, blacken and die.

Dipel ES may be applied in conventional ground, aerial equipment, or irrigation systems with quantities of water sufficient to provide thorough coverage of infested plant parts. The amount of water needed per acre will depend on crop size, weather, spray equipment, and local experience. Refer to chemigation instructions on label.

## APPLICATION INSTRUCTIONS

**Mixing Recommendations:** Important - do not add Dipel ES to the mix tank before introducing the desired quantity of water. Start the mechanical or hydraulic agitation to provide moderate circulation before adding Dipel ES. When using a surfactant or spreader-sticker, add it to the water prior to addition of Dipel ES. Add the desired volume of Dipel ES to the mix tank and continue circulation. Include rinse water from the containers. Maintain the suspension while loading and spraying. When using a non-emulsifiable oil or another pesticide, add it after the Dipel ES. Do not mix more Dipel ES than can be used in a 6-day period. Rinse and flush spray equipment thoroughly following each use. Selection of fluid to flush the application system will depend on what type of mixture was used during the application period. Use 20-mesh screens.

**MIXING RECOMMENDATIONS FOR CHEMIGATION** (Also see Chemigation Section): FOLLOW GENERAL MIXING RECOMMENDATIONS AND KEEP THE RATIO AT 3 PARTS WATER TO 1 PART DIPEL ES. ALSO, PROVIDE MILD UNIFORM AGITATION THROUGHOUT THE SOLUTION BUT DO NOT AGITATE EXCESSIVELY. For undiluted injection for chemigation: Flush and clean nurse tank, lines, screen canister, and pump with diesel fuel or a non-emulsifiable oil until they are water free before and after application. Use a 20-mesh screen. Continue agitation during injection.

**Spray volume:** For aerial application use at least 3 gallons of total volume per acre in water based sprays, except in the Western U.S. where 5 to 10 gallons is the usual minimum. For ground application, use at least 7 gallons of volume per acre. For chemigation, use irrigation levels of 0.15 to 0.5 inches of water per acre. Up to 1 inch of irrigation water may be used, but efficacy may be reduced. Apply Dipel ES only through sprinkler irrigation systems such as center-pivot, lateral move, end-tow, side (wheel) roll, traveler, solid-set or hand move. Do not apply this product through any other type of irrigation system. (Also see chemigation section.)

### For Small Spray Volumes:

#### If Rate Is

1/2 pt./acre or 100 gals.  
1 pt./acre or 100 gals.  
2 pts./acre or 100 gals.

#### Use This Amount Per Gallon

1/2 tsp.  
1 tsp.  
2 tsps.

Control of European and Southwestern Corn Borers on Field Corn, Seed Corn, Sweet Corn, Silage Corn or Popcorn

Dipel ES for Corn

<u>Crop</u>	<u>Pest</u>	<u>Pints/Acre (Ground Equipment)</u>	<u>Pints/Acre (Sprinkler Irrigation)</u>	<u>Pints/Acre (Aerial Application)</u>
Corn:				
Field Corn	European Corn- borer and Southwestern Cornborer (First generation population)	1 1/2 to	1 1/2 to	---
Seed Corn		2 1/2	2 1/2	
Sweet Corn	European Corn- borer & South- western Corn- borer (Second generation population)	1 1/2 to	1 to	1 1/2 to
Popcorn		2 1/2	2 1/2	2 1/2
Silage Corn				

**Timing of Application:**

Applications should be made when young larvae are present for first or second generation corn borers. One application against the first generation of larvae should provide economic control. Two or more applications may be required against second generation borers if there is an extended period of egg deposition.

Treatments should be made before extensive damage has occurred while larvae are still actively feeding on exposed plant parts. Thorough spray coverage is needed to provide a uniform deposit at the site of larval feeding.

Under heavy pest population pressure, use the higher label rates increased spray volume, and/or multiple applications.

Cool weather may cause cornborer larvae to seek protected areas of the corn plant and to reduce the amount of feeding normally done on exposed plant parts. This alteration in feeding behavior will hamper the effectiveness of Dipel ES.

**CONTROL OF OTHER CORN PESTS**

Crop	Pest	Pints/Acre
Sweet Corn	Corn Earworm	3/4 to 2 1/2
	Armyworms*	3/4 to 2 1/2

**Directions For Use:**

This product can be mixed with esfenvalerate (1.9EC), permethrin (25W, 2E, 3.2EC, 25WP), methomyl (90% water soluble powder, 24% liquid, 29% liquid) or methyl parathion (microencapsulated 2 lbs/gallon) for use on sweet corn against armyworms and corn earworm in accordance with the more restrictive of label limitations and precautions. No label dosage rates should be exceeded. This product can not be mixed with any product containing a label prohibition against such mixing.

**Timing of Applications:**

**Armyworms:** Treat when plants first exhibit feeding signs in the whorl or leaves. Multiple applications at approximately 3-5 days interval may be necessary when populations are heavy. High-spray gallonage (50 to 75 gallons per acre) is best for effective control.

**Corn Earworm:** Treat every 1 to 3 days or at longer intervals depending on pest pressure, temperature and geographical location. Begin treatments when 5 percent of the upper ears show silk. When populations are heavy, treat when first silk is seen and every 1-3 days thereafter until harvest.

Crop	Pest	Pints/Acre
Field Corn, Seed Corn, Silage Corn and Popcorn	Corn Earworm	1 to 2 1/2
	Variegated Cutworm	1 to 2 1/2
	Webworms	1 to 2 1/2
	Armyworms*	1 to 4
	Western Bean Cutworm	1 to 2 1/2

\* Dipel ES may be used to control small armyworms (1st and 2nd instar) when populations are light and full coverage sprays are applied. Repeat treatments as necessary. If mature worms or heavy populations are present a contact insecticide should be used to enhance control.

**DIPEL ES FOR COTTON**

<u>Crop</u>	<u>Pest</u>	<u>Pints/Acre (Ground Equipment)</u>	<u>Pints/Acre (Sprinkler Irrigation)</u>	<u>Pints/Acre (Aerial Application)</u>
Cotton	Tobacco Bud- worm**	1 to 2 1/2	1 to 2 1/2	1 to 2 1/2
	Cotton Bollworm**	1 to 2 1/2	1 to 2 1/2	1 to 2 1/2
	Armyworm*	1 to 2 1/2	1 to 2 1/2	1 to 2 1/2
	Loopers	1 to 2	1 to 2	1 to 2
	Saltmarsh Cater- pillar	1 to 2	1 to 2	1 to 2

**Application Timing**

\*\* Use Dipel ES to control light to moderate populations of newly hatched worms in pest management programs. Use under close scouting when beneficial insects are active or building. Repeat treatments at 4 to 5 day intervals or as long as necessary and results are acceptable. This product can be mixed with Larvin (thiodicarb 3.2 lbs/gallon) for use on cotton against tobacco budworm and cotton bollworm in accordance with the more restrictive of label limitations and precautions. No label dosage rates should be exceeded. This product can not be mixed with any product containing a label prohibition against such mixing.

\* Dipel ES may be used to control small armyworms (1st and 2nd instar) when populations are light and full coverage sprays are applied. Repeat treatments as necessary. If mature worms or heavy populations are present a contact insecticide should be used to enhance control.



DIPEL ES FOR ALFALFA

Control of Armyworms on Alfalfa and Other Forage Crops

<u>Crop</u>	<u>Pest</u>	<u>Pints/Acre (Ground Equipment)</u>	<u>Pints/Acre (Sprinkler Irrigation)</u>	<u>Pints/Acre (Aerial Application)</u>
Alfalfa (Hay and Seed)	Armyworms	1 to 4	1 to 4	1 to 4
	Loopers	1 to 2	1 to 2	1 to 2
Hay and Other Forage Crops	Alfalfa			
	Caterpillar	1 to 2	1 to 2	1 to 2
	European Skipper	1 to 2	1 to 2	1 to 2
	Webworm	1 to 2	1 to 2	1 to 2

**Application Timing:**

Dipel ES may be used to control small armyworms (1st and 2nd instar) when populations are light and full coverage sprays are applied. Repeat treatment as necessary. If mature worms or heavy populations are present a contact insecticide should be used to enhance control.

**DIPEL ES FOR SUNFLOWERS**

<u>Crop</u>	<u>Pest</u>	<u>Pints/Acre (Ground Equipment)</u>	<u>Pints/Acre (Sprinkler Irrigation)</u>	<u>Pints/Acre (Aerial Application)</u>
Sunflowers: Oil Seed and Confectionary	Sunflower Moth	1 1/2-2 1/2	---	1 1/2-2 1/2
	Banded Sunflower Moth	1 1/2-2 1/2	---	1 1/2-2 1/2

**Application Timing:**

For moderate pest pressure make a single application prior to 75% bloom. A second application, 5 days later, may be necessary to control severe infestations. Treat when larvae are exposed and small.

In Texas, begin treatment when early-instar larvae are present and no more than 20% of the heads are in bloom. Use a spray interval of 4-6 days for a total of 3 applications, if necessary, to reduce the worm population to an acceptable level, especially if continued egg deposition occurs during the period.

DIPEL ES FOR TREES AND SHRUBS

Crop	Pest	Pints/ 100 Gallons* (Ground Equipment)	Pints/Acre (Aerial** Application)
Forest, Shade, Sugar Maple Trees and Shrubs	Gypsy Moth	1/2 to 2 1/2	1 to 2 1/2
	Browntail Moth	1/2 to 2 1/2	1 to 2 1/2
	Bagworm	1/2 to 1	1/2 to 1
	Redhumped Caterpillar	1/2 to 1	1/2 to 1
	Spring & Fall Cankerworm	1/2 to 1	1/2 to 1
	Fall Webworm	1/2	1/2
	Elm Spanworm	1/2 to 1	1/2 to 1
	Tent Caterpillars	1/2 to 1	1/2 to 1
	California Oakworm	1/2	1/2
	Pine Butterfly	1	1
	Spruce Budworms <sup>1</sup>	1 to 2 1/2	1 to 2 1/2
	Saddled Prominent Caterpillar	1/2 to 1	1/2 to 1
	Douglas Fir Tussock Moth	1 to 2	1 to 2
	Western Tussock Moth	1/2 to 1	--
	Fruittree Leafroller	1/2 to 1	--
	Blackheaded Budworm	1	--
	Mimosa Webworm	1/2 to 1	--
	Jack Pine Budworm	1/2 to 1	1 to 2
	Saddleback Caterpillar	1/2 to 1	--
	Green Striped Maple Worm	1 to 1 1/2	1 to 1 1/2
Oak Leaf Tier	1 to 1 1/2	1 to 1 1/2	

\* Water dilution rate for hydraulic sprayer may be varied depending on coverage. For mist blowers, mix the applicable amount (pts.) in up to 10 gallons of water.

\*\* For aerial application, use in up to 10 gallons of water depending on type and density of trees. For best results, spray systems which deliver droplet VMD of 150 microns or less should be used. DIPEL ES should always be mixed with at least an equal amount of water for diluted applications

<sup>1</sup> Use rates greater than 1 pint in Northern states for heavy populations. DIPEL ES may be sprayed undiluted for the control of Spruce Budworms, Jack Pine Budworm and Gypsy Moth.

**DIPEL ES FOR OTHER CROPS**

**APPLICATION RATE**

<u>Crop</u>	<u>Pest</u>	<u>Pints/Acre</u>
Leafy and Cole Crops (***) such as Broccoli, Brussell Sprouts, Cabbage, Cauliflower, Celery, Chinese Cabbage, Collards, Endive, Kale, Kohrabi, Lettuce (Head and Leaf), Mustard Greens, Parsley, and Spinach	Loopers	1 to 2
	Imported Cabbageworm	1 to 2
	Diamondback Moth	1 to 2
	Armyworms*	1 to 4

\*\*\*Do not apply by air to plants after transplant or other stress before 6 weeks in the field. Use more than 25 gallons of water per acre by ground and 5 gallons of water per acre by air.

Legume Vegetables such as Beans, Peas Lentils and Soybeans	Loopers	1 to 2
	Green Cloverworm	1 to 2
	Velvetbean Caterpillar	1 to 2
	Podworms*	1 to 2
	Armyworms*	1 to 4
	Soybean Loopers	1 to 2
	Saltmarsh Caterpillar	1 to 2

\* Dipel ES may be used to control small armyworms and/or podworms (1st and 2nd instar) when populations are light and full coverage sprays are applied. Repeat treatment as necessary. If mature worms or heavy populations are present a contact insecticide should be used to enhance control.

Tobacco	Tobacco Budworm	1 to 2
	Hornworms	1/2 to 1
	Loopers	1 to 2

**DIPEL ES FOR OTHER CROPS (Cont.)**

**APPLICATION RATE**

<u>Crop</u>	<u>Pest</u>	<u>Pints/Acre</u>
Fruiting Vegetables such as Eggplant, Peppers, and Tomatoes	Loopers	1 to 2
	Tomato Fruitworm	1 to 2
	Variegated Cutworm	1 to 2
	Saltmarsh Caterpillar	1 to 2
	Hornworms	1 to 2
	Armyworms*	1 to 4

**Rangeland**                      Range Caterpillar                      1/2 to 1

Use in 1 to 2 qts. water per acre against 1st through 4th instar larvae.

Avocados	Amorbia Moth (Western Avocado Leafroller)	1 TO 4
	Omnivorous Leafroller	1 TO 4
	Omnivorous Looper	1 TO 4
	Orange Tortix	1 TO 4

Use a minimum of 200 gallons water per acre by ground rig or 10 gallons by aircraft.

Cranberries	Spanworms	1 to 2 1/2
	Gypsy Moth	1 to 2 1/2
	Blossom Worm	1 to 2 1/2
	Sparganothis Fruitworm	1 to 2 1/2
	Fireworms	1 to 2 1/2
	Cranberry Fruitworm	1 to 2 1/2
	False Armyworm	1 to 2 1/2
	Fall Armyworm	1 to 2 1/2
	Black Cutworm	1 to 2 1/2

Small Grains such as Barley, Sorghum, Wheat or Oats	Armyworms*	1 to 4
	Variegated Cutworm	1 to 2
	Loopers	1 to 2
	Corn Earworm	1 to 2
	Webworm	1 to 2

\* Dipel ES may be used to control small armyworms (1st and 2nd instar) when populations are light and full coverage sprays are applied. Repeat treatment as necessary. If mature worms or heavy populations are present a contact insecticide should be used to enhance control.

DIPEL ES FOR OTHER CROPS (Cont.)

APPLICATION RATE

<u>Crop</u>	<u>Pest</u>	<u>Pints/Acre</u>
Root and Tuber Crops such as Sugar Beets, Carrots, or Potatoes	Armyworms*	1 to 4
	Cutworms	1 to 2
	Diamondback Moth	1 to 2
	Hornworms	1 to 2
	Loopers	1 to 2
	European Corn Borer	1 to 2
Pome Fruit such as Apples and Pears	Codling Moth	1 to 4
	Fruittree Leafroller	1 to 4
	Obliquebanded Leafroller	1 to 4
	Omnivorous Leafroller	1 to 4
	Tent Caterpillar	1 to 4
	Redbanded Leafroller	1 to 4
	Redhumped Caterpillar	1 to 4
Tufted Apple Budmoth	1 to 4	
Hops	Armyworms*	1 to 4
	Loopers	1 to 2

\* Dipel ES may be used to control small armyworms (1st and 2nd instar) when populations are light and full coverage sprays are applied. Repeat treatment as necessary. If mature worms or heavy populations are present a contact insecticide should be used to enhance control.

## CHEMIGATION

Apply this product only through sprinkler systems such as center pivot, lateral move, end tow, side (wheel) roll, traveler, solid set, or hand move. Do not apply this product through any other type of irrigation system.

Crop injury, lack of effectiveness, or illegal pesticide residues in the crop can result from nonuniform distribution of treated water. If you have questions about calibration, you should contact State Extension Service specialists, equipment manufacturers or other experts.

Do not connect an irrigation system (including greenhouse systems) used for pesticide application to a public water system unless the pesticide label-prescribed safety devices for public water systems are in place.

A person knowledgeable of the chemigation system and responsible for its operation, or under the supervision of the responsible person, shall shut the system down and make necessary adjustments should the need arise.

The active ingredient in Dipel ES will settle in the tank and injection lines: adequate agitation must be provided before and during the injection period. Use only in systems that apply uniformly and have appropriate check valves. Do not apply where wind speed favors drift beyond the area intended for treatment. When application is complete, thoroughly flush the injection system and sprinkler lines.

The system must contain a functional check valve, vacuum relief valve, and low pressure drain appropriately located on the irrigation pipeline to prevent water source contamination from backflow. The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection pump.

The pesticide injection pipeline must also contain a functional, normally closed solenoid operated valve connected to the system interlock located on the intake side of the injection pump and to prevent fluid from being withdrawn from the supply tank when the irrigation system is either automatically or manually shut down. The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops.

The irrigation line or water pump must include a functional pressure switch which will stop the water pump motor when the water pressure decreases to the point where pesticide distribution is adversely affected.

Systems must use a metering pump, such as a positive displacement

injection pump (e.g. diaphragm pump) effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock.



**NOTICE TO USER**

Seller makes no warranty, express or implied, of merchantability, fitness or otherwise concerning use of this product other than as indicated on the label. User assumes all risks of use, storage or handling not in strict accordance with accompanying directions.

For information call:  
1-800-323-9597

Chemical and Agricultural Products Division  
Abbott Laboratories  
North Chicago, Illinois 60064

Lot No.