

73049-30

9/15/2009

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

September 15, 2009

OFFICE OF  
PREVENTION, PESTICIDES  
AND TOXIC SUBSTANCES

Doina Bujor, Regulatory Manager  
Valent BioSciences Corporation  
870 Technology Way  
Libertyville, IL 60048

RE: Product Name: Dipel ES-NT Biological Insecticide Emulsifiable Suspension  
EPA Reg. No: 73049-30  
Application for Label Notification Dated July 17, 2009 to Update Storage and  
Disposal Language per PR Notice 2007-4

Dear Ms. Bujor:

The Biopesticides and Pollution Prevention Division is in receipt of your application for Notification under Pesticide Registration (PR) Notice 98-10 dated above. A preliminary screen of this request has been conducted for its applicability under PR Notice 98-10 and it has been determined that the action(s) requested falls within the scope of PR Notice 98-10. Our records have been duly noted, and the label submitted with this application has been stamped "Notification, received and reviewed" and will be placed accordingly in our records.

Questions concerning this action should be directed to Ms. Diana Hudson at (703) 308-8713 or email at [hudson.diana@epa.gov](mailto:hudson.diana@epa.gov).

Sincerely,

*Sheryl K. Reilly*  
Sheryl K. Reilly, Ph.D., Chief  
Microbial Pesticides Branch  
Biopesticides and Pollution Prevention  
Division (7511P)

Please read instructions on reverse before completing form.

Form Approved MB No. 2070-0060

Print Form



United States Environmental Protection Agency Washington, DC 20460

 Registration  
 Amendment  
 Other

OPP Identifier Number

Application for Pesticide - Section I

1. Company/Product Number 73049-30	2. EPA Product Manager Sheryl Reilly	3. Proposed Classification <input checked="" type="checkbox"/> None <input type="checkbox"/> Restricted
4. Company/Product (Name) DIPEL ES-NT	PM#	
5. Name and Address of Applicant (Include ZIP Code) Valent BioSciences Corporation 870 Technology Way Libertyville, IL 60048 <input type="checkbox"/> Check if this is a new address	6. Expedited Review. In accordance with FIFRA Section 3(c)(3)(b)(i), my product is similar or identical in composition and labeling to: <input checked="" type="checkbox"/> EPA Reg. No. _____ Product Name _____	

Section - II

<input type="checkbox"/> Amendment - Explain below.	<input type="checkbox"/> Final printed labels in response to Agency letter dated _____	<b>NOTIFICATION</b> Date Reviewed: <u>9-15-09</u> Reviewed By: <u>D. Hudson</u>
<input type="checkbox"/> Resubmission in response to Agency letter dated _____	<input type="checkbox"/> "Me Too" Application	
<input checked="" type="checkbox"/> Notification - Explain below.	<input type="checkbox"/> Other - Explain below.	

Explanation: Use additional page(s) if necessary. (For section I and Section II.)

Notification of label per PR Notice 2007-4. This notification is consistent with the guidance in PR Notice 2007-4 and requirements of EPA's regulations at 40 CFR §§ 156.10, 156.140, 156.144, 156.146, and 156.156. NO other changes have been made to the labeling or the Confidential Statement of Formula for this product. (see next page)

Section - III

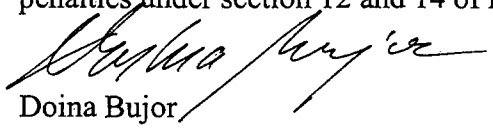
1. Material This Product Will Be Packaged In:				2. Type of Container	
Child-Resistant Packaging <input type="checkbox"/> Yes* <input checked="" type="checkbox"/> No	Unit Packaging <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Water Soluble Packaging <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If "Yes" Unit Packaging wgt. No. per container		<input checked="" type="checkbox"/> Metal <input type="checkbox"/> Plastic <input type="checkbox"/> Glass <input type="checkbox"/> Paper <input type="checkbox"/> Other (Specify) _____
* Certification must be submitted		If "Yes" Package wgt. No. per container			
3. Location of Net Contents Information <input checked="" type="checkbox"/> Label <input type="checkbox"/> Container		4. Size(s) Retail Container		5. Location of Label Directions <input checked="" type="checkbox"/> On Label <input type="checkbox"/> On Labeling accompanying product	
6. Manner in Which Label is Affixed to Product <input type="checkbox"/> Lithograph <input type="checkbox"/> Paper glued <input type="checkbox"/> Stenciled			<input type="checkbox"/> Other _____		

Section - IV

1. Contact Point (Complete items directly below for identification of individual to be contacted, if necessary, to process this application.)					
Name Doina Bujor		Title Regulatory Manager		Telephone No. (Include Area Code) 847-968-4724	
<b>Certification</b> I certify that the statements I have made on this form and all attachments thereto are true, accurate and complete. I acknowledge that any knowingly false or misleading statement may be punishable by fine or imprisonment or both under applicable law.					6. Date Application Received (Stamped)
2. Signature 		3. Title Regulatory Manager			
4. Typed Name Doina Bujor		5. Date Jul 17, 2009			

Notification of Storage and Disposal Statement (PR Notice 2007-4) for DiPel ES-NT,  
EPA Reg. No. 73049-30 (continuation from the previous page)

I understand that it is a violation of 18 U.S.C. Sec. 1001 to willfully make any false statement to EPA. I further understand that if the amended label is not consistent with the requirements of 40 CFR §§152.46, 56.10, 156.140, 156.144, 156.146, and 156.156, this product may be in violation of FIFRA and may be subject to enforcement action and penalties under section 12 and 14 of FIFRA.



Doina Bujor  
Regulatory Manager  
Valent BioSciences Corporation

July 17, 2009



July 17, 2009

Sheryl Reilly  
Biopesticides & Pollution Prevention Division  
Document Processing Desk (NOTIF)  
Office of Pesticide Programs (7504P)  
U.S. Environmental Protection Agency  
Room S-4900, One Potomac Yard  
2777 South Crystal Drive  
Arlington, VA 22202-4501  
703-308-8269

**RE: DiPel ES-NT (EPA Reg. No. 73049-30) Notification**

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Dear Ms. Reilly:

Valent BioSciences Corporation is submitting a notification for DiPel ES-NT (EPA Reg. No. 73049-30) in accordance with PR Notice 2007-4 and PR. The changes made to the label are to the Storage and Disposal statement and include the container disposal language for non-refillable container.

Present submission consists of:

- Application for Registration (EPA form 8570-1)
- One copy of the red-lined label
- One copy of the clean label.

Please contact me if you have any questions at 847-968-4724 or by e-mail at [doina.bujor@valent.com](mailto:doina.bujor@valent.com).

Sincerely,

Doina Bujor  
Regulatory Manager

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**NOTIFICATION**

5/26

Date Reviewed: 9-15-09

Reviewed By: D. Hudson

**DIPEL ES-NT  
BIOLOGICAL INSECTICIDE  
EMULSIFIABLE SUSPENSION**

**Active Ingredient:**

<i>Bacillus thuringiensis</i> subsp. <i>kurstaki</i> strain ABTS-351 fermentation solids, spores, and insecticidal toxins.....	25.0%
Other Ingredients.....	75.0%
Total.....	100.0%

Potency: 7,300 Cabbage Looper Units (CLU) per mg of product or 26.5 billion CLU per gallon of product.

The percent active ingredient does not indicate product performance and potency measurements are not federally standardized.

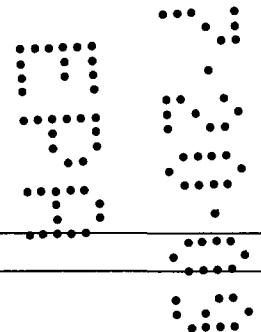
**KEEP OUT OF REACH OF CHILDREN  
CAUTION**

Valent Biosciences Corporation  
870 Technology Way, Suite 100  
Libertyville, IL 60048

EPA Reg. No. 73049-30  
EPA Est. No. 33762-IA-1

Lot No.:

NET CONTENTS:



**FIRST AID**

<b>If inhaled</b>	<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>If in eyes</b>	<ul style="list-style-type: none"> <li>• Hold eye open and rinse slowly and gently with water for 15 - 20 minutes. 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>
<b>If on skin or clothing</b>	<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>
<b>HOT LINE NUMBER</b>	
<p>Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact 1-800-892-0099 for emergency medical treatment and or transport emergency information. For all other information, Call 1-800-6-Valent.</p>	

**PRECAUTIONARY STATEMENTS  
HAZARDS TO HUMANS (AND DOMESTIC ANIMALS)  
CAUTION**

Harmful if inhaled. Causes moderate eye irritation. Harmful if absorbed through the skin. Avoid breathing spray mist. Avoid contact with skin, eyes or clothing. Remove and wash contaminated clothing before reuse. Wash thoroughly with soap and water after handling.

**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.

Mixers/loaders and applicators must wear a dust/mist filtering respirator meeting NIOSH standards of at least N-95, R-95 or P-95. Repeated exposure to high concentrations of microbial proteins can cause allergic sensitization.

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.

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

**User Safety Recommendations**

Users should:

- Wash hands before eating, drinking, chewing gum, using tobacco products or using the toilet.
- Remove clothing/PPE 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**

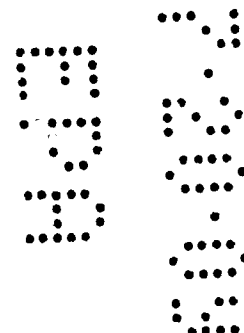
Do not apply directly to water, or to where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when cleaning equipment or disposing of equipment washwaters.

This product must not be applied aerially within 1/4 mile of any habitats of endangered species or threatened lepidoptera. No manual application can be made within 300 feet of any threatened or endangered lepidoptera.

**DIRECTIONS FOR USE**

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

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 intervals. The requirements in this box only apply to uses of this product that are covered by the Worker Protection Standard.

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.

Do not enter or allow worker entry into treated areas during the restricted entry level (REI) of 4 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 neoprene rubber or viton
- Shoes plus socks.

### NON-AGRICULTURAL USE REQUIREMENTS

The requirements in this box apply to uses of this product that are NOT within the scope of the Worker Protection Standard for agricultural pesticides (40 CFR Part 170). The WPS applies when this products is used to produce agricultural plants on farms, forests, nurseries, or greenhouses.

Do not enter treated areas without protective clothing until sprays have dried.



## **STORAGE AND DISPOSAL**

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

**Storage:** Keep containers tightly closed when not in use. Do not store at temperatures greater than 100° F. 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 washwaters.

**Container Disposal:** Nonrefillable container. Do not reuse or refill this container.

Triple rinse container (or equivalent) promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container ¼ full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times. Offer for recycling, if available or puncture and dispose of in a sanitary landfill, or by other procedures approved by state and local authorities.

## **MODE OF ACTION**

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

## **APPLICATION INSTRUCTIONS**

DiPel ES-NT 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-NT to be affected. Always follow these directions:

- Treat when larvae are young (early instars) and before economic thresholds of damage have been exceeded.
- Larvae must be actively feeding on treated, exposed plant parts.
- Thorough spray coverage is needed to provide a uniform deposit of DiPel ES-NT 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 increase spray volume to improve coverage.
- Tank mixes with a contact insecticide may enhance control.
- 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 application, make the treatment when egg hatch is essentially complete, but before economic 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. (Not recommended for chemigation)
- DiPel ES-NT is a non-restricted use pesticide and does not require a restricted use permit for purchase or use.

**GROUND AND AERIAL APPLICATIONS**

DiPel ES-NT may be applied in ground, aerial equipment, or sprinkler 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 development, weather, application equipment, and local experience.

Do not spray when wind speed favors drift beyond the area intended for use.

**Mixing Recommendations:** Important - do not add DiPel ES-NT 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-NT. Add the desired volume of DiPel ES-NT to the mix tank and continue circulation. Include rinse water from the container. Maintain the suspension while loading and spraying. Do not mix more DiPel ES-NT than can be used in a 2-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 a strainer no finer than 50 mesh in conventional spray systems.

**Spray Volume Recommendations:** For conventional aerial applications use at least 2 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 5 gallons of volume per acre. For Ultra Low Volume (ULV) aerial applications, mix DiPel ES-NT with vegetable or cottonseed oil and apply in a total volume of 1.0 - 2.25 quarts per acre or apply undiluted.

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 and the grower are responsible for considering all of these factors when making decisions.

**APPLICATION INSTRUCTIONS (continued)**  
**CHEMIGATION (All states except California)**

**Mixing Recommendations:** DiPel ES-NT may be injected in the undiluted product form (neat) or diluted with water. Follow general mixing recommendations and keep the ratio at 3 parts water to 1 part DiPel ES-NT. Provide mild agitation of the diluted mixture throughout the chemigation cycle. **DO NOT AGITATE EXCESSIVELY.** For undiluted injection for chemigation make sure tank and injection system are free of all residual water. 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.

**Application Instructions:**

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. 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.

For all crops except cranberry, application of DiPel ES-NT may be made continuously during irrigation. For cranberry, apply during the end of the irrigation period, after it is determined that the heads are operating properly for 8-20 minutes depending on the size of the system.

Crop injury, lack of effectiveness, or illegal pesticide residues in the crop can result from non-uniform 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-NT may settle in the tank and injection lines. Adequate agitation must be provided before and during the injection period. Use only in systems that apply product 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 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.

Chemigation systems connected to public water systems<sup>1</sup> must contain a functional, reduced-pressure zone, backflow preventer (RPZ) or the functional equivalent in the water supply line upstream from the point of pesticide introduction. As an option to RPZ, the water from the public water system should be discharged into a reservoir tank prior to pesticide introduction. There shall be a physical break (air gap) between the outlet end of the fill pipe and the top or overflow rim of the reservoir tank of at least twice the inside diameter of the fill pipe.

<sup>1</sup>A public water system is a system for the provision to the public of piped water for human consumption that has at least 15 service connections or regularly serves an average of at least 25 individuals daily for at least 60 days out of the year.

The pesticide injection pipeline must contain a functional, normally closed, solenoid-operated valve located on the intake to prevent fluid from being withdrawn from the supply tank when the irrigation system is either automatically or manually shut down.

The systems must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops, or in cases where there is no water pump, when the water pressure decreases to the point where pesticide distribution is adversely affected.

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

**DiPel ES-NT for Corn**  
(All States Except California)

Crop	Pest	Pints/Acre (Ground Equipment*)	Pints/Acre (Chemigation)	Pints/Acre (Aerial Application)
<b>Corn:</b> Field Corn Seed Corn Sweet Corn Popcorn Silage Corn	European Corn Borer and Southwestern Corn Borer (First generation population)	1.5 - 2.5	1.5 - 2.5	-----
	European Corn Borer and Southwestern Corn Borer (Second generation population)	1.5 - 2.5	1.5 - 2.5	1.5 - 2.5

\*Apply in 6 to 8 inch band directly over whorls. Refer to table below for over the row rates.

**FLUID OUNCES APPLIED PER 1000 ROW FEET**

<u>Row Width</u>	<u>Label rate/A</u>	
	<u>1.5 pts.</u>	<u>2.5 pts</u>
30	1.4 oz/1000 ft	2.3 oz/1000 ft
32	1.5 oz/1000 ft	2.5 oz/1000 ft
36	1.7 oz/1000 ft	2.8 oz/1000 ft

**Timing of Application:**

Application 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 application may be required against second generation borers if there is an extended period of egg deposition:

**APPLICATION INSTRUCTIONS (continued)**

**Timing of Application (continued)**

**First Generation:**

DiPel ES-NT should be applied on seed corn when no more than 15% to 25% of the corn plants show "shot hole" feeding in the whorls.

With irrigated or sweet corn, apply DiPel ES-NT when not more than 25% to 35% of the whorls show feeding signs.

With dryland corn, apply DiPel ES-NT when not more than 35% to 40% of the leaves show "shot hole" feeding signs.

**Second Generation:**

Apply DiPel ES-NT when the field count shows not more than 50 egg masses per 100 plants and the first hatch is taking place. If worm pressures are intense, a second application may be necessary.

Cool weather may cause corn borer 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-NT.

Contact State and Local Extension Service for specific economic threshold and application recommendations.

**CONTROL OF OTHER CORN PESTS**

(All states except California)

Crop	Pest	Pints/Acre (Ground and Aerial Applications)
Field Corn, Sweet Corn Seed Corn, Silage Corn and Popcorn	Corn Earworm	2.0 - 4.0
	Variegated Cutworm	1.5 - 2.5
	Webworms	1.5 - 2.5
	Armyworms <sup>1</sup>	2.0 - 4.0
	Western <sup>1</sup> Bean Cutworm	1.5 - 2.5

**TANK MIX DIRECTIONS FOR CONTROL OF OTHER CORN PESTS**

Crop	Pest	Pints/Acre (Ground and Aerial Applications)
Sweet Corn and Field Corn	Corn Earworm	0.75* - 4.0*
	Armyworms <sup>1</sup>	0.75* - 4.0*

**Directions for Use: (\*Tank Mix Only)**

DiPel ES-NT can be mixed with esfenvalerte (1.9EC), permethrin (25W, 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 label limitations and precautions. No label dosage rates should be exceeded.

**Timing of Application:**

**Armyworms:** Treat when plants first exhibit feeding signs in the whorl or leaves. Multiple applications at approximately 3-5 day intervals may be necessary when populations are heavy. High-spray gallonage (50 to 75 gallons per acre) will improve coverage and control.

**Corn Earworm:** Treat every 1 to 3 days or at wider 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.

<sup>1</sup>DiPel ES-NT may be used to control small armyworms and the Western Bean Cutworm (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-NT FOR COTTON****EARLY SEASON PROGRAM****Pre-squaring stage:**

DiPel ES-NT may be used for early season management of *Helicoverpa zea* and *Heliothis virescens* under conditions of continuous low egg deposition. Use DiPel ES-NT alone at 0.5 pint/acre or in combination with a recommended ovicide, boll weevil sprays, or Pix applications. When egg pressure is moderate to high DiPel ES-NT should be tank mixed with an ovicide. A spray interval of 5-7 days is recommended for a total of 3 applications, if necessary, especially if continued egg pressure occurs during this period.

**Pre-bloom stage:**

For control of light to moderate populations, use DiPel ES-NT at 0.75 to 2.0 pints/acre in combination with an ovicide such as LARVIN (thiodicarb). Repeat treatments at 4 to 5 day intervals or as long as necessary to maintain control. Applications should be directed at brown eggs and newly hatched larvae. Larvae should not exceed 2,500 per acre (approximately 4 percent of plants infested) before treatments are initiated. Close scouting is essential for well timed applications.

**MID SEASON PROGRAM****Pre-bloom to first mature boll stage:**

Use DiPel ES-NT at 0.75 to 4.0 recommended synthetic pyrethroid during midseason. Use the lower rates under moderate pressure and increase rates if necessary to maintain control.

## LATE SEASON PROGRAM

### **Mature bloom boll stage:**

Use DiPel ES-NT at 0.75 to 6.0 pints/acre in combination with recommended carbamate or organophosphate insecticides. This product will aid in controlling worms escaping from organophosphate insecticides.

DiPel ES-NT can be mixed with other insecticides in accordance with the more restrictive label limitations and precautions. This product cannot be mixed with any other product having a label which prohibits such mixing.

### **Spray Volumes:**

For aerial applications, use a minimum of 2 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 applications, use at least 5 gallons of total volume per acre with 3 nozzles per row. For banded applications, use a minimum of 2 nozzles per row with ground sprayer or cultivator. Rates should not be less than 0.5 pint/acre on a broadcast basis. For ULV applications, mix 1 to 2 pints DiPel ES-NT with 1 to 2.5 pints vegetable or cottonseed oil and apply in a total volume of 1.0 - 2.25 quarts per acre. Adjust the spray system to deliver a fine droplet spectrum. Generally, rotary atomizers produce a finer droplet spectrum for ULV applications.

(For all states except California)

Crop	Pest	Pints/Acre (Ground, Aerial, and Chemigation Applications)
Cotton*	Tobacco Budworm <sup>2</sup>	1.0 - 6.0
	Cotton Bollworm <sup>2</sup>	1.0 - 6.0
	Armyworms <sup>1</sup>	2.0 - 6.0
	Looper	1.0 - 6.0
	Saltmarsh Caterpillar	1.0 - 4.0

**\*For Use in California** - See the California Crops Section of this Label.

### **Timing of Applications:**

<sup>1</sup>DiPel ES-NT 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.

<sup>2</sup>Use DiPel ES-NT 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. DiPel ES-NT can be mixed with Larvin 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 cannot be mixed with any product containing a label prohibition against such mixing. DiPel ES-NT may be used alone for



*Helicoverpa zea* and *Heliothis virescens* control only on preblossoming cotton where few or no eggs are present. If significant eggs are present, use only in combination with ovicidal rates of Larvin. Larvin is a registered trademark of Rhone-Poulenc Ag Company.

**DIPEL ES-NT FOR PEANUTS**

(All states except California)

Crop	Pest	Pints/Acre (Ground, Aerial and Chemigation Applications)
Peanut	Green Cloverworm	1.0 - 2.0
	Looper	1.0 - 2.0
	Podworm <sup>1</sup>	1.0 - 4.0
	Armyworms <sup>1</sup>	2.0 - 4.0
	Velvetbean Caterpillar	1.0 - 2.0

<sup>1</sup>This product may be used to control podworm and armyworms when populations are light to moderate and good spray coverage can be achieved. Use DiPel ES-NT at 1 to 4.0 pints/acre (2 to 4 pints per acre for armyworm) when small larvae first appear. Applications should be made to coincide with egg lay and early instar larvae. Under conditions of higher pressure and rapid plant development, the addition of a contact insecticide in combination with DiPel ES-NT is recommended. Treatments should be repeated as necessary to maintain acceptable control.

**DIPEL ES-NT FOR ALFALFA, HAY AND OTHER FORAGE CROPS**

(For all states except California)

Crop	Pest	Pints/Acre (Ground, Aerial and Chemigation Applications)
Alfalfa (Hay and Seed)	Armyworms <sup>1</sup>	2.0 - 4.0
	Looper	1.0 - 2.0
Hay and Other Forage Crops*	Alfalfa Caterpillar	1.0 - 2.0
	European Skipper	1.0 - 2.0
	Webworm	1.0 - 2.0

\*For Use in California - See the California Crops Section on this Label.

**Application Timing:**

<sup>1</sup>This product 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-NT FOR SUNFLOWERS**  
(All states except California)

Crop	Pest	Pints/Acre (Ground, Aerial and Chemigation Applications)
Sunflower: Oil Seed and Confectionery	Sunflower Moth <sup>1</sup>	1.5 - 2.5
	Banded Sunflower Moth <sup>1</sup>	1.5 - 2.5

**Application Timing:**

<sup>1</sup>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-NT FOR TREES AND SHRUBS**  
(All states except California)

Crop	Pest	Oz./100 Gal./A.* (Ground Equipment)	Oz./Acre (Aerial** Application)
Forest, Shade, Sugar Maple, Trees & Shrubs	Bagworm	8 to 32	8 to 32
	Blackheaded Budworm	16 to 32	16 to 32
	Browntail Moth	16 to 60	16 to 60
	Buck Moth	16 to 80	16 to 80
	California Oakworm	8 to 32	8 to 32
	Douglas Fir Tussock Moth	16 to 60	16 to 60
	Eastern Pine Looper		
	Eastern Tent Caterpillar	24 to 48	24 to 48
	Elm Spanworm	8 to 32	8 to 32
	Fall Webworm	8 to 32	8 to 32
	Forest Tent Caterpillar	8 to 32	8 to 32
	Green Striped Maple Worm	16 to 32	16 to 32
	Gypsy Moth <sup>1</sup>	16 to 80	16 to 80
	Hemlock Looper	24 to 48	24 to 48
	Jack Pine Budworm <sup>1</sup>	16 to 32	16 to 32
	Leafrollers	16 to 32	16 to 32
	Mimosa Webworm	8 to 16	--
	Oak Leaf-tier	16 to 32	16 to 32
	Oak Skeletonizer	16 to 32	16 to 32
	Pine Butterfly	16 to 32	16 to 32
	Redhumped Caterpillar	8 to 32	8 to 32
	Saddleback Caterpillar	8 to 32	--
	Saddled Prominent Caterpillar	8 to 32	8 to 32
	Spring & Fall Cankerworm	8 to 32	8 to 32
	Spruce Budworms <sup>1</sup>	16 to 60	16 to 60
	Torxtrix	16 to 32	16 to 32
	Western Tussock Moth	8 to 32	8 to 32

\* Water dilution rate for hydraulic sprayer may be varied depending on coverage. For mist blowers, mix the applicable amount (oz.) 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 (Volume Median Diameter) of 150 microns or less should be used. DiPel ES-NT should always be mixed with at least an equal amount of water for diluted applications. Note: For Hemlock Looper and Eastern Pine Looper use

**DIPEL ES-NT FOR TREES AND SHRUBS (continued)**  
(All states except California)

1-2 applications, undiluted, beginning at peak first instar. When applying two applications, apply each application at a recommended rate of 24 ounces/A. First application is applied at peak first instar and second application is at second instar. For the high rate, i.e. 48 ounces/A, apply single application only at peak first instar.

<sup>1</sup> Use rates greater than 16 ounces in northern state for heavy populations. This product may be sprayed undiluted for the control of Spruce Budworm, Jack Pine Budworm and Gypsy Moth.

**DIPEL ES-NT FOR OTHER CROPS**  
(All states except California)

**APPLICATION RATE**

Crop	Pest	Pints/Acre (Ground and Aerial Applications)
Leafy and Cole Crops (***) such as Broccoli, Brussels Sprout, Cabbage, Cauliflower, Celery, Chinese Cabbage, Collard, Endive, Kale, Kohlrabi, Lettuce (Head and Leaf), Mustard Greens, Parsley, and Spinach	Looper	1.0 - 2.0
	Imported Cabbageworm	1.0 - 2.0
	Diamondback Moth	1.0 - 2.0
	Armyworms <sup>1</sup>	2.0 - 4.0

\*\*\* 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. Do not tank mix DiPel ES-NT with Bravo, Captan or other fungicides that are not compatible with spray oils.

**DIPEL ES-NT FOR OTHER CROPS (continued)**  
(All states except California)

Crop	Pest	Pints/Acre (Ground and Aerial Applications)
Legume Vegetables such as Bean, Pea Lentil and Soybean	Looper	1.0 - 2.0
	Green Cloverworm	1.0 - 2.0
	Velvetbean Caterpillar	1.0 - 2.0
	Podworm <sup>1</sup>	1.0 - 4.0
	Armyworms <sup>1</sup>	2.0 - 4.0
	Soybean Looper	1.0 - 2.0
	Saltmarsh Caterpillar	1.0 - 2.0

<sup>1</sup>DiPel ES-NT 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.

**APPLICATION RATE**

Crop	Pest	Pints/Acre (Ground and Aerial Applications)
Tobacco	Tobacco Budworm	1.0 - 2.0
	Hornworm	0.5 - 1.0
	Looper	1.0 - 2.0
Fruiting Vegetables such as Eggplant, Pepper, and Tomato	Loopers	1.0 - 2.0
	Tomato Fruitworm	1.0 - 4.0
	Variegated Cutworm	1.0 - 2.0
	Saltmarsh Caterpillar	1.0 - 2.0
	Hornworm	1.0 - 2.0
	Armyworms <sup>1</sup>	2.0 - 4.0
Rangeland	Range Caterpillar	0.5 - 1.0

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

**DIPEL ES-NT FOR OTHER CROPS (continued)**  
(All states except California)

Crop	Pest	Pints/Acre (Ground and Aerial Applications)
<b>Avocado</b>	Amorbia Moth (Western Avocado Leafroller)	1.0 - 4.0
	Omnivorous Leafroller	1.0 - 4.0
	Omnivorous Looper	1.0 - 4.0
	Orange Tortrix	1.0 - 4.0

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

Crop	Pest	Pints/Acre (Ground and Aerial Applications)
<b>Small Grains</b> such as Barley, Sorghum, Wheat or Oats	Armyworms <sup>1</sup>	2.0 - 4.0
	Variiegated Cutworm	1.0 - 2.0
	Looper	1.0 - 2.0
	Corn Earworm	1.0 - 4.0
	Webworm	1.0 - 2.0

**Application Timing:**

<sup>1</sup>This product 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.

**APPLICATION RATE**

Crop	Pest	Pints/Acre (Ground and Aerial Applications)
<b>Root and Tuber*</b> Crops such as Sugar Beet, Carrot and Potato	Armyworms <sup>1</sup>	2.0 - 4.0
	Cutworm	1.0 - 2.0
	Diamondback Moth	1.0 - 2.0
	Hornworm	1.0 - 2.0
	Looper	1.0 - 2.0
	European Corn Borer	1.0 - 2.0

**\*For Use in California** - See the California Crops Section of this Label.

**DIPEL ES-NT FOR OTHER CROPS (continued)**  
(All states except California)

Crop	Pest	Pints/Acre (Ground and Aerial Applications)
<b>Stone Fruit</b> such as Cherry, Plum, Peach, Prune and Nectarine <b>Pome Fruit</b> such as Apple and Pear <b>Tree Nuts</b> such as Almond, Pecan, Walnut and Filbert <b>Pomegranate</b>	Leafrollers	1.0 - 4.0
	Fall Webworm	1.0 - 4.0
	Walnut Caterpillar	1.0 - 4.0
	Cankerworm	1.0 - 4.0
	Gypsy Moth	1.0 - 4.0
	Codling Moth	1.0 - 4.0
	Tent Caterpillar	1.0 - 4.0
	Redhumped Caterpillar	1.0 - 4.0
	Tufted Apple Budmoth	1.0 - 4.0
	Armyworms <sup>1</sup>	2.0 - 4.0
	Oriental Fruit Moth	1.0 - 4.0
	Cutworm	1.0 - 4.0
	<b>Hops</b>	Peach Twig Borer <sup>2</sup>
Pecan Nut Casebearer		1.0 - 4.0
<b>Hops</b>	Navel Orangeworm <sup>3</sup>	2.0 - 4.0
	Armyworms <sup>1</sup>	2.0 - 4.0
	Looper	1.0 - 2.0

**Application Timing;**

<sup>1</sup>This product 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.

<sup>2</sup>See note under California Crops (Peach Twig Borer)

<sup>3</sup>See note under California Crops (Navel Orangeworm)

**DIPEL ES-NT FOR OTHER CROPS (continued)**  
(All states except California)

**APPLICATION RATE**

Crop	Pest <sup>1</sup>	Pints/Acre (Ground and Aerial Applications)
Small Fruits and Berries such as: Blueberry, Grape, Cranberry, and Strawberry	Spanworm	1.0 - 2.5
	Gypsy Moth	1.0 - 2.5
	Blossom Worm	1.0 - 2.5
	Sparganothis Fruitworm	1.0 - 2.5
	Fireworm	1.0 - 2.5
	Cranberry Fruitworm	1.0 - 2.5
	Armyworms	2.0 - 4.0
	Black Cutworm	1.0 - 2.5
	Looper	1.0 - 2.5
Tent Caterpillars	1.0 - 2.5	

**Application Timing:**

<sup>1</sup> Treat when larvae are young and before economic thresholds of damage have been exceeded. If hatch occurs over an extended period of time, multiple application should be considered. Use higher rates when pest pressure is heavy and/or older larvae are present. Tank mixes of DiPel ES-NT plus a low rate of a contact insecticide (such as phosmet) registered for use on small fruit and berries may enhance control of heavy populations and large larvae. The use of an approved spreader sticker is recommended.

**CALIFORNIA CROPS**

Crop	Pest	Pints/Acre (Ground and Aerial Applications)
Cotton*	Armyworms <sup>1</sup>	2.0 - 4.0
	Looper	1.0

\*See the Cotton Section of this Label for Further Use Directions



**CALIFORNIA CROPS (continued)**

<b>Crop</b>	<b>Pest</b>	<b>Pints/Acre (Ground and Aerial Applications)</b>
<b>Alfalfa</b> (Hay and Seed)	Armyworms <sup>1</sup> Alfalfa Caterpillar	2.0 - 4.0 1.0 - 2.0
<b>Hay and Other Forge Crops</b>		
<b>Root and Tuber</b> such as, Sugar Beet, Carrot, and Potato	Armyworms <sup>1</sup>	2.0 - 4.0

**Application Timing:**

<sup>1</sup>This product 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.

Add attached sections on fruit crops to California crops list.

<b>Crop</b>	<b>Pest</b>	<b>Pints/Acre (Ground and Aerial Applications)</b>
<b>Tree Nuts</b> , such as Almond, Pecan , Walnut and Filbert	Peach Twig Borer <sup>1</sup> Navel Orangeworm <sup>2</sup>	2.0 - 4.0 2.0 - 4.0
<b>Stone Fruit</b> , such as Cherry, Plum Peach, Prune and Nectarine	Peach Twig Borer <sup>1</sup>	2.0 - 4.0

**Application Timing:**

<sup>1</sup>Make two applications during bloom for control of over wintering larvae; the first between popcorn and the beginning of bloom and the second seven to ten days later, but no later than petal fall. Spring sprays (the May spray) directed against first generation larvae should be determined by the use of pheromone traps and degree-day calculations.

Control of second generation larvae requires critical timing and should begin at 12% hull split in almonds and prior to fruit entry in other crops.

