DiPel® DF

BIOLOGICAL INSECTICIDE

DRY FLOWABLE

FOR ORGANIC PRODUCTION

ACTIVE INGREDIENT:

Bacillus thuringiensis, subsp. *kurstaki*, strain ABTS-351, fermentation solids, spores, and insecticidal toxins*	54%
OTHER INGREDIENTS	46%
TOTAL	100%

*Potency: 32,000 Cabbage Looper Units (CLU) per mg (14.5 billion CLU per pound).

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

EPA Reg. No. 73049-39
EPA Est. No. 33762-IA-001 List No. 12046

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KEEP OUT OF REACH OF CHILDREN

CAUTION

1.0

FIRST AID	
If on skin or clothing	• Take off contaminated clothing. • Rinse skin immediately with plenty of water for 15-20 minutes. • Call a poison control center or doctor for treatment advice.
If inhaled	• Move person to fresh air. • If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth-to-mouth, if possible. • Call a poison control center or doctor for treatment advice.
If in eyes	• 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. • Call a poison control center or doctor for treatment advice.
HOT LINE NUMBER	
Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact 800-892-0099 (24 hours) for emergency medical treatment and/or transport emergency information. For all other information, call 800-6-VALENT (682-5368).	

2.0 PRECAUTIONARY STATEMENTS

2.1 HAZARD TO HUMANS AND DOMESTIC ANIMALS

CAUTION

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

2.2 Personal Protective Equipment (PPE)

Applicators and other handlers must wear:

- Long-sleeved shirt and long pants
- Waterproof gloves
- Shoes plus socks

Mixer/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.

Follow the 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.

2.3 Engineering Controls

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

IMPORTANT: When reduced PPE is worn because a closed system is being used, handlers must be provided all the PPE specified above for "applicators and other handlers" and have such PPE immediately available for use in an emergency, such as a spill or equipment break-down.

2.4 User Safety Recommendations

- Users should remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.
- User should 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.

2.5 Environmental Hazards

Do not contaminate water when cleaning equipment or disposing of equipment washwaters.

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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.

3.0 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.

4.0 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 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 Interval (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
- Waterproof gloves
- Shoes plus socks

5.0 NON-AGRICULTURAL USE REQUIREMENTS

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

Keep unprotected persons out of the treated areas until sprays have dried.

6.0 STORAGE AND DISPOSAL

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

Pesticide Storage: Reclose containers of unused DiPel® DF. Store in a dry place inaccessible to children and out of sunlight.

Pesticide Disposal: Do not contaminate food or feed by disposal. Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility.

Container Disposal: Nonrefillable container. Do not reuse or refill this container. Completely empty bag into application equipment by shaking and tapping sides and bottom to loosen clinging particles. Offer for recycling, if available, or dispose of empty bag in a sanitary landfill or by incineration. Do not burn, unless allowed by State and local ordinances.

7.0 DIRECTIONS FOR USE

See Chemigation section for chemigation use directions.

Days to Harvest: There are no restrictions on applying *DiPel* DF up to the time of harvest. Individual state regulations may vary and should be consulted for allowable pre-harvest application intervals.

Sites: *DiPel* DF may be used for any labeled pest in both field and greenhouse use.

DiPel DF is an 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* DF to be affected. Always follow these directions:

- Treat when larvae are young (early instars) before the crop is damaged.
- Larvae must be actively feeding on treated, exposed plant surfaces.
- Thorough spray coverage is needed to provide a uniform deposit of *DiPel* DF at the site of larval feeding. Use overhead and drop nozzles to obtain good spray coverage on both sides of foliage. Use sufficient spray volume to insure uniform deposition on all plant surfaces.
- Under heavy pest population pressure, use the higher label rates, shorten the spray interval, and/or raise spray volume 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 crop damage occurs.
- A spreader-sticker which has been approved for use on growing and harvested crops should be added for hard-to-wet crops such as cabbage, or to improve weather-fastness of the spray deposits.
- *DiPel* DF is a non-restricted use pesticide and does not require a restricted use permit for purchase and use.
- *DiPel* DF may be tank mixed with other labeled insecticides to enhance control. Use of the resulting tank mix must be in accordance with the more restrictive label limitations and precautions. No dosage rates should be exceeded. This product cannot be mixed with any product containing a label prohibition against such mixing. Before tank mixing *DiPel* DF with other labeled products, including spreader stickers, check for tank mix compatibility.

After ingesting a lethal dose of *DiPel* DF, larvae stop feeding within the hour, and will die within several hours to 3 days. Mortality varies with larval size (instar), lepidopteran species, and dose consumed. Following ingestion, larvae become sluggish, discolor, then shrivel, blacken and die. Smaller larvae die more quickly.

DiPel DF may be applied in conventional ground or aerial equipment with quantities of water sufficient to provide uniform coverage of infested plant parts. The volume of water needed per acre will depend on crop development, relative humidity, spray equipment, and local experience. Usually, selection of moderate to high spray volume will provide the best results in most equipment. For optimal results, use at least 20 gallons of water per acre for ground application. For aerial application use at least 3 gallons of water per acre; exception being arid areas, where 5 to 10 gallons are required. Add water to the mix tank and provide moderate agitation. While agitating, add the required amount of *DiPel* DF. Continue agitation, and add other spray materials, if any. Add remaining water, if any, and agitate until fully mixed. Maintain the suspension with moderate agitation while loading and spraying. Do not mix more *DiPel* DF than can be used in a 3 day period.

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.

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For Smaller Spray Volumes:

If Rate is	Use This Amount Per Gallon (wt)
1/4 lb/acre or 100 gals	1/2 tsp (0.04 oz)
1/2 lb/acre or 100 gals	1 tsp (0.08 oz)
1 lb/acre or 100 gals	2 tsps (0.16 oz)
2 lb/acre or 100 gals	4 tsps (0.32 oz)

8.0 CHEMIGATION USE DIRECTIONS

Apply this product only through sprinkler including center pivot, lateral move, end tow, side (wheel) roll, traveler, big gun, solid set, or hand move irrigation systems. Do not apply this product through any other type of irrigation systems. Do not connect an irrigation system (including greenhouse systems) used for pesticide applications to a public water system.

Crop injury, lack of effectiveness, or illegal residues in the crop can result from non-uniform distribution of treated water. 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. Allow sufficient time for pesticide to be flushed through all lines and all nozzles before turning off irrigation water.

8.1 Spray Preparation

First prepare a suspension of *DiPel* DF in a mix tank. Fill tank with 1/2 to 3/4 the desired amount of water. Start mechanical or hydraulic agitation. Add the required amount of *DiPel* DF, and then the remaining volume of water. Then set the sprinkler to deliver a minimum of 0.1 to 0.3 inch of water per acre. Start sprinkler and uniformly inject the suspension of *DiPel* DF into the irrigation water line so as to deliver the desired rate per acre. The suspension of *DiPel* DF should be injected with a positive displacement pump into the main line ahead of a right angle turn to insure adequate mixing. Any questions on calibration should be directed to your State Extension Service Specialists, to equipment manufacturers or other experts.

NOTE: When treatment with *DiPel* DF has been completed, further field irrigation over the treated area should be avoided for 24 to 48 hours to prevent washing the material off the crop.

9.0 GENERAL PRECAUTIONS FOR APPLICATIONS THROUGH SPRINKLER IRRIGATION SYSTEMS

Maintain continuous agitation in the mix tank during mixing and application to insure a uniform suspension.

Greater accuracy in calibration and distribution will be achieved by injecting a larger volume for a more dilute solution per unit time.

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 located on the intake side of the injection pump and connected to the system interlock 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. Do not apply when wind speed favors drift beyond the area intended for treatment, system connections or fittings leak, nozzles do not provide uniform distribution or when lines containing the product must be dismantled and drained.

10.0 PESTS CONTROLLED BY *DIPEL* DF

Common name	Scientific name
Achema Sphinx Moth (Hornworm)	*Eumorpha achemon*
Alfalfa Caterpillar	*Colias eurytheme*
Almond Moth	*Caudra cautella*
Amorbia Moth	*Amorbia humerosana*
Armyworm	*Spodoptera spp.,* e.g. *exigua, frugiperda, littoralis, Pseudaletia unipuncta*
Artichoke Plume Moth	*Platyptilia carduidactyla*
Azalea Caterpillar	*Datana major*
Bagworm	*Thyridopteryx ephemeraeformis*
Banana Moth	*Hypercompe scribonia*
Banana Skipper	*Erionota thrax*
Blackheaded Budworm	*Acleris gloverana*
California Oakworm	*Phryganidia californica*
Cankerworm	*Paleacrita merriccata*
Cherry Fruitworm	*Grapholita packardi*
China Mark Moth	*Nymphula stagnata*
Citrus Cutworm	*Xylomyges curialis*
Codling Moth	*Cydia pomonella*
Cotton Bollworm	*Helicoverpa zea*
Cranberry Fruitworm	*Acrobasis vaccinii*
Cross-striped Cabbageworm	*Evergestis rimosalis*
Cutworm	Various *Noctuid* species, e.g. *Agrotis ipsilon*
Diamondback Moth	*Plutella xylostella*
Douglas Fir Tussock Moth	*Orgyia pseudotsugata*
Ello Moth (Hornworm)	*Erinnyis ello*
Elm Spanworm	*Ennomos subsignaria*
European Corn Borer	*Ostrinia nubilalis*
European Grapevine Moth	*Lobesia botrana*
European Skipper (Essex Skipper)	*Thymelicus lineola*
Fall Webworm	*Melissopus latiferreanus*
Filbert Leafroller	*Archips rosanus*
Fruittree Leafroller	*Archips argyrospilia*
Grape Berry Moth	*Paralobesia viteana*
Grape Leafroller	*Platynota stultana*
Grapeleaf Skeletonizer (ground only)	*Harrisina americana*
Green Cloverworm	*Plathypena scabra*
Greenstriped Mapleworm	*Dryocampa rubicunda*
Gummosos-Batrachedra Comosae (Hodges)	

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10.0 Pests controlled by *DiPel* DF (Cont'd)

Common name	Scientific name
Gypsy Moth	*Lymantria dispar*
Headworm	*Helicoverpa zea*
Head Moth	
Hemlock Looper	*Lambdina fiscellaria*
Hornworm	*Manduca* spp.
Imported Cabbageworm	*Pieris rapae*
Indian Meal Moth	*Plodia interpunctella*
Io Moth	*Automeris io*
Jack Pine Budworm	*Choristoneura pinus*
Light Brown Apple Moth	*Epiphyas postvittana*
Looper	Various *Noctuidae*, e.g. *Trichoplusia ni*
Melonworm	*Diaphania hyalinata*
Mimosa Webworm	*Homadaula anisocentra*
Obliquebanded Leafroller	*Choristoneura rosaceana*
Oleander Moth	*Syntomeida epilais*
Omnivorous Leafroller	*Playnota stultana*
Omnivorous Looper	*Sabulodes aegrotata*
Orangedog	*Papilio cresphontes*
Orange Tortrix	*Argyrotaenia citrana*
Oriental Fruit Moth	*Grapholita molesta*
Peach Twig Borer	*Anarsia lineatella*
Pine Butterfly	*Neophasia menapia*
Podworm	*Heliocoverpa zea*
Redbanded Leafroller	*Argyrotaenia velutinana*
Redhumped Caterpillar	*Schizura concinna*
Rindworm Complex	Various *Leps.*
Saddleback Caterpillar	*Sibine stimulea*
Saddle Prominent Caterpillar	*Heterocampa guttivitta*
Saltmarsh Caterpillar	*Estigmene acrea*
Sod Webworm	*Crambus* spp.
Soybean Looper	*Pseudoplusia includens*
Spanworm	*Ennomos subsignaria*
Spring and Fall Cankerworm	*Paleacrita vernata* and *Alsophila pometaria*
Spruce Budworm	*Choristoneura fumiferana*
Tent Caterpillar	Various *Lasiocampidae*
Thecla-Thecla Basilides (Geyr)	*Thecla basilides*
Tobacco Budworm	*Heliothis virescens*
Tobacco Hornworm	*Manduca sexta*
Tobacco Moth	*Ephestia elutella*
Tomato Fruitworm	*Helicoverpa zea*
Tufted Apple Budmoth	*Platynota idaeusalis*
Twig Borer	*Anarsia lineatella*
Variegated Cutworm	*Peridroma saucia*
Variegated Leafroller	*Platynota flavedana*
Velvetbean Caterpillar	*Anticarsia gemmatalis*
Walnut Caterpillar	*Datana integerrima*
Webworm	*Hyphantria cunea*
Western Tussock Moth	*Orgyia vetusta*
Southern Cornstalk Borer	*Diatraea crambidoides*
Sugarcane Borer	*Diatraea saccharalis*
Corn Earworm, Cotton Bollworm, Tomato Fruitworm	*Helicoverpa zea*
Tobacco Budworm	Heliothis virescens

11.0 APPLICATION RATE

Field Crops	Application rate (pounds/acre)
Vegetables, root and tuber (Crop Group 1) Including: Arracacha; arrowroot; artichoke, Chinese; artichoke, Jerusalem; beet, garden; beet, sugar; burdock, edible; canna, edible; carrot; cassava, bitter and sweet; celeriac; chayote (root); chervil, turnip-rooted; chicory; chufa; dasheen (taro); ginger; ginseng; horseradish; leren; parsley, turnip-rooted; parsnip; potato; radish; radish, oriental; rutabaga; salsify; salsify, black; salsify, Spanish; skirret; sweet potato; tanier; turmeric; turnip; yam bean; yam, true.	0.5 - 2
Vegetable, bulb (Crop Group 3 - 07) Including: Chive, fresh leaves; chive, Chinese, fresh leaves; daylily, bulb; elegans hosta; fritillaria, bulb; fritillaria, leaves; garlic, bulb; garlic, great-headed, bulb; garlic, serpent, bulb; kurrat; lady's leek; leek; leek, wild; lily, bulb; onion, Beltsville bunching; onion, bulb; onion, Chinese, bulb; onion, fresh; onion, green; onion, macrostem; onion, pearl; onion, potato, bulb; onion, tree, tops; onion, Welsh, tops; shallot, bulb; shallot, fresh leaves; cultivars, variety, and/or hybrids of these.	0.5 - 2 Use 1-2 lb/acre for control of *Helicoverpa*.
Vegetable, leafy, except brassica (Crop Group 4) Including: Amaranth (Chinese spinach); arugula (roquette); cardoon; celery; celery, Chinese; celtuce; chervil; chrysanthemum, edible-leaved; chrysanthemum, garland; corn salad; cress, garden; cres, upland; dandelion; dock (sorrel); endive (escarole); fennel, Florence; lettuce, head and leaf; orach; parsley; purslane, garden; purslane, winter; radicchio (red chicory); rhubarb; spinach, New Zealand; spinach, vine; Swiss chard.	0.5 - 2 Use higher rates for control of *Heliothis* spp.
Vegetable, brassica leafy (Crop Group 5) Including: Broccoli; broccoli, Chinese (gai lon); broccoli raab (rapini); Brussels sprouts; cabbage; cabbage, Chinese (bok choy); cabbage, Chinese (napa); cabbage, Chinese mustard (gai choy); cauliflower; cavalo broccoli; collards; kale; kohlrabi; mizuna; mustard greens; mustard spinach; rape greens.	0.5 - 2 Use 0.5 to 1.5 lb/acre for looper control and 1-2 lb/acre for *Heliothis* spp. control depending on larval stage and infestation levels. Use surfactants for hard to wet crops.
Vegetable, legume (succulent or dried) (Crop Group 6) Including: Bean, (*Lupinus*) (includes grain lupin, sweet lupin, white lupin, and white sweet lupin); bean (*Phaseolus*) (includes field bean, kidney bean, lima bean, navy bean, pinto bean, runner bean, snap bean, tepary bean, wax bean); bean (*Vigna*) (includes adzuki bean, asparagus bean, blackeyed bean, catjang, Chinese longbean, cowpea, crowder pea, moth bean, mung bean, rice bean, southern pea, urd bean, yardlong bean); broad bean (fava); chickpea (garbanzo); guar; jackbean; lablab bean; lentil; pea (*Pisum*) (includes dwarf pea, edible-podded pea, English pea, field pea, garden pea, green pea, snowpea, sugar snap pea); pigeon pea; soybean; soybean (immature seed); sword bean.	0.5 - 2 Monitor insects and apply at more frequent intervals (3 - 5 days) for heavy populations to maintain control.

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11.0 Application Rate

Field Crops	Application rate (pounds/acre)
Vegetable, fruiting (Crop Group 8 - 10) Including: African eggplant; bush tomato; bell pepper; cocona; currant tomato; eggplant; garden huckleberry; golj berry; groundcherry; martynia; naranjilla; okra; pea eggplant; pepino; nonbell pepper; roselle; scarlet eggplant; sunberry; tomatillo; tomato; tree tomato; cultivars, varieties, and/or hybrids of these.	0.5 - 2 Use 1 - 2 lb/acre for control of heavy populations or overlapping generations of *Spodoptera* spp. Scout tomato fields and apply when insects are hatching or are small.
Vegetable, cucurbit (Crop Group 9) Including: Chayote waxgourd (Chinese preserving melon); citron melon; cucumber; gherkin; gourd, edible (includes hyotan, cucuzza, hechima, Chinese okra); *Momordica* spp. (includes balsam apple, balsam pear, bittermelon, Chinese cucumber); muskmelon (includes cantaloupe); pumpkin; squash, summer; squash, winter (includes butternut squash, calabaza, hubbard squash, acorn squash, spaghetti squash); watermelon.	0.5 - 2 Use 1 - 2 lb/acre for control of *Spodoptera* spp.
Fruit, citrus (Crop Group 10 - 10) Including: Australian desert lime; Australian finger lime; Australian round lime; Brown River finger lime; calamondin; citron; citrus hybrids; grapefruit; Japanese summer grapefruit; kumquat; lemon; lime; Mediterranean mandarin; mount white lime; New Guinea wild lime; orange, sour; orange, sweet; pummelo; Russell River lime; Satsuma mandarin; sweet lime; tachibana orange; Tahiti lime; tangelo; tangerine (mandarin); tangor; trifoliate orange; uniq fruit; cultivars, varieties, and/or hybrids of these.	0.5 - 2 Use sufficient volume of water to ensure good canopy coverage and penetration.
Fruit, pome (Crop Group 11 - 10) Including: Apple; azarole; crabapple; loquat; mayhaw; medlar; pear; pear, Asian; quince; quince, Chinese; quince, Japanese; tejocote; cultivars, varieties, and/or hybrids of these. For leaf rollers, it is important to apply before leaves are rolled and insects are protected. *DiPel* DF can be used during bloom.	0.5 - 2 Scout orchards and apply when insects are hatching or small. For insect borers (e.g. codling moth) it is important to apply before the insect bores into the fruit.
Fruit, stone (Crop Group 12) Including: Apricot; cherry, sweet; cherry, tart; nectarine; peach; plum; plum, Chickasaw; plum, Damson; plum, Japanese; plumcot; prune (fresh).	0.5 - 2 Scout orchards and apply when insects are hatching or are small, are actively feeding on leaf surfaces, and before they enter fruit or roll leaves. *DiPel* DF can be used during bloom.
Berry and small fruit group (Crop Group 13 - 07) Including: Amur river grape; aronia berry; bayberry; bearberry; bilberry; blackberry (including Andean blackberry, arctic blackberry, bingleberry, black satin berry, boysenberry, brombeere, California blackberry, Chesterberry, Cherokee blackberry, Cheyenne blackberry, common blackberry, coryberry, darrowberry, dewberry, Dirksen thornless berry, evergreen blackberry, Himalayaberry, hullberry, lavacaberry, loganberry, lowberry, Lucretiaberry, mammoth blackberry, marionberry, mora, mures deronce, nectaberry, Northern dewberry, olallieberry, Oregon evergreen berry, phenomenalberry, rangeberry, ravenberry, rossberry, Shawnee blackberry, Southern dewberry, tayberry, youngberry, zarzamora, and cultivars, varieties and/or hybrids of these); blueberry, highbush; blueberry, lowbush; buffalo currant; buffaloberry; che; Chilean guava; chokeberry; cloudberry; cranberry; cranberry, highbush; currant, black; currant, red; elderberry; European barberry, gooseberry; grape; honeysuckle, edible; huckleberry; jostaberry; Juneberry (Saskatoon berry); kiwifruit, fuzzy; kiwifruit, hardy; lingonberry; maypop; mountain pepper berries; mulberry; muntries; native currant; partridgeberry; phalsa; pincherry; raspberry, black and red; riberry; salal; schisandra berry; sea buckthorn; serviceberry; strawberry; wild raspberry; cultivars, varieties, and/or hybrids of these.	0.5 - 2 For armyworm (*Spodoptera* spp.) and cutworm (e.g. *Agrotis ipsilon*), use the higher rate range. Ensure good coverage for optimal control.
Nut, tree (Crop Group 14) Including: Almond; beech nut; Brazil nut; butternut; cashew; chestnut; chinquapin; filbert (hazelnut); hickory nut; macadamia nut; pecan; walnut, black and English.	0.5 - 2
Grain, cereal (Crop Group 15) Including: Barley; buckwheat; corn; millet, pearl; millet, proso; oats; popcorn; rice; rye; sorghum (milo); teosinte; wheat; wild rice.	0.5 - 2
Grass Forage, Fodder, and Hay (Crop Group 17) Including: Any grass, *Gramineae* family (either green or cured) except sugarcane and those included in the cereal grains group, that will be fed to or grazed by livestock, all pasture and range grasses and grasses grown for hay or silage.	0.5 - 2 If crop is in rapid growth phase, and/or there is ongoing egg laying and overlapping pest generations apply *DiPel* DF with increased frequency @ 3 - 7 days to maintain control. For armyworm (*Spodoptera* spp.) use the higher label rates.

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11.0 Application Rate (Cont'd)

Field Crops	Application rate (pounds/acre)
Herbs and spices (Crop Group 19) Including: Allspice; angelica; anise; anise, star; annatto (seed); balm; basil; borage; burnet; chamomile; caper buds; caraway; caraway, black; cardamom; cassia bark; cassia buds; catnip; celery seed; chervil (dried); chive; chive, Chinese; cinnamon; clary; clove buds; coriander leaf (cilantro or Chinese parsley); coriander seed (cilantro); costmary; cilantro (leaf); cilantro (seed); cumin (curry leaf); dill (dillweed); dill (seed); fennel (common); fennel, Florence (seed); fenugreek; grains of paradise, horehound; hyssop; juniper berry; lavender; lemongrass; lovade (leaf); lovage (seed); mace; marigold, marjoram; mustard (seed); nasturtium; nutmeg; parsley (dried); pennyroyal; pepper, black; pepper, white; poppy (seed); rosemary; rue; saffron; sage; savory, summer and winter; sweet bay; tansy; tarragon; thyme; vanilla; wintergreen; woodruff; wormwood.	0.5 - 2 Use 1 - 2 lb/acre for control of *Spodoptera* spp.
Alfalfa (hay and seed)	0.5 - 2 If crop is in rapid growth phase, and/or there is ongoing egg laying and overlapping pest generations apply *DiPel* DF with increased frequency @ 3 - 7 days to maintain control. For armyworm (*Spodoptera* spp.) use the higher label rates.
Artichoke	0.5 - 2
Asparagus	0.5 - 2
Avocado	0.5 - 2 Apply at or soon after egg hatch when insects are small.
Banana	0.5 - 1 Ensure good coverage to all foliage.
Coffee	1 - 2 For best results, drench bark and new shoots with 1 - 2 lbs of *DiPel* DF per acre, mixing with a sufficient volume of water to ensure uniform coverage.
Cotton	0.5 - 2 Lower rate ranges (0.5 - 1 lb/acre) can be used early season if the insects are small and pest pressure is not high. If *Helicoverpa* spp. is the dominant species, or pest pressure is high with variable larval stages, use 1.5 - 2 lb/acre. Later in the season when insect development is rapid, use the higher rate of 1.5 - 2 lb/acre to control *Helicoverpa* spp. As the canopy becomes denser, use higher water carrier volumes to penetrate foliage and ensure complete coverage. If additional activity or spectrum is required *DiPel* DF can be mixed with a pyrethroid or other approved insecticide. Follow the most restrictive label directions when tank mixing.
Fruit, tropical	0.5 - 2 Monitor populations and apply when insects are small and before they roll and web leaves in leaf rolling species.
Hop	0.5 - 2 Use 1.5 - 2 lb/acre when insect populations are high or when *Spodoptera* is the dominant pest.
Kiwi fruit	0.5 - 2 Apply at hatch or when small insects are actively feeding. Monitor population and apply at 5 - 7 day intervals.
Malanga	0.5 - 2
Mint and peppermint	0.5 - 2 Use 1 - 2 lb/acre for control of *Spodoptera* spp.
Peanut	0.5 - 1 Apply at intervals necessary to maintain control. *DiPel* DF can be tank mixed with a pyrethroid for additional spectrum and control. Follow label directions from the most restrictive material when tank mixing products.
Pineapple	0.25 - 0.5 Apply when insects are small before they damage fruit. Thorough coverage is required to get to the base of the fruit.
Pomegranate	0.5 - 2
Rape (Canola)	0.5 - 2 Use 1 - 2 lb/acre for *Heliothis* spp. control.
Safflower	0.5 - 2
Sugarcane	0.5 - 2 For sugarcane borer control, best used with parasitic wasps. Apply when insects are actively feeding on foliage and before they bore into the plant.
Sunflower	0.5 - 1 Thorough coverage of larval feeding sites within flowers is necessary for adequate control.
Tobacco	0.5 - 1
Watercress	0.5 - 2 Apply when there is no standing water in the bed.

Crops	Application rate (pounds/acre)
GREENHOUSE/SHADEHOUSE AND OUTDOOR NURSERY	
Crops including but not limited to: **Vegetable, leafy, except brassica (Crop Group 4), Vegetable, brassica leafy, (Crop Group 5), Vegetable, fruiting, (Crop Group 8), Herbs and spices (Crop Group 19)**	0.5 - 2 Use higher rates for *Heliothis* spp.

TANK MIXES

Always read and follow all label directions, restrictions and precautions when using any pesticide alone or in tank mix combinations. The most restrictive labeling applies when using a tank mix.

CONTINUED

Crops	Pests	Products	Application Rate (lb/acre)	Special Instructions
Cotton	Armyworm Cotton Bollworm Looper Saltmarsh Caterpillar Tobacco Budworm	*DiPel* DF plus Pyrethroid	1/2 - 1 plus Labeled Use Rate	Treat when larvae are young (early instars) before the crop is damaged. Larvae must be actively feeding on treated, exposed surfaces. Use sufficient spray volume to insure uniform coverage and deposition on all plant surfaces. Use the higher rate for high infestations. Can be applied by air or ground. Will control pyrethroid resistant species of the pests listed on this 2(ee) recommendation. * For corn earworm, use the 1 lb/acre rate. Refer to pyrethroid label for additional insects controlled.
Peanut	Armyworms Green Cloverworm Looper Podworm Velvetbean Caterpillar	*DiPel* DF plus Pyrethroid	1/2 - 1 plus Labeled Use Rate	
Soybean	Armyworm Corn Earworm* Green Cloverworm Looper Podworm Saltmarsh Caterpillar Soybean Looper Velvetbean Caterpillar	*DiPel* DF plus Pyrethroid	1/2 - 1* plus Labeled Use Rate	

11.1 *DiPel* DF for Stored Agricultural Commodities
(For all states except California)

GRAINS, SOYBEANS, SUNFLOWER SEED, CROP SEED, CONDIMENTAL SEEDS, SPICES, HERBS, BIRDSEED AND POPCORN

Pest	Rate
Indian Meal Moth[1]	3/8 lb/100 bu
Almond Moth[1]	(undiluted and diluted)*

* As a surface treatment, apply 1/2 lb *DiPel* DF in 5-10 gal of water per 500 sq ft of grain surface area, mix into top 4 inches. For commodities coarser than shelled corn, increase depth of treatment according to the habit of the pest.

[1] For the control and prevention of these pests, apply *DiPel* DF in a constantly agitated water suspension to the top 4 inch surface layer of grain in the bin. Use a sprinkler can or sprayer to apply the suspension into the grain stream as the last (top) 4 inch layer is augured into the bin. Mix 1/20 lb *DiPel* DF per gallon of water. Apply 0.6 pint of this mixture per bushel as grain is augured into storage. Or, sprinkle the suspension onto the surface of the grain in the bin and mix thoroughly with a scoop or rake to the depth of 4 inches. More thorough coverage may be achieved by dividing the recommended concentration into three applications and mixing the grain between applications.

For the protection of bagged grain including popcorn, apply the suspension to the entire grain mass and mix thoroughly prior to bagging.

Treatments can be applied to stored grain at any time, but for best results, make application immediately after harvest before moth activity occurs. In areas where late fall harvested grain is not subject to infestation because of low temperatures, application can be delayed until late winter or early spring before moth activity begins. Control for a full storage season should normally be expected; however, repeat application if infestation recurs.

This treatment controls the moth larvae. If an infestation is present when the grain is treated, moth emergence may continue for several days. If immediate control of severe infestations is desired, grain should be fumigated prior to application of this treatment. *DiPel* DF **will not control weevils or other beetles.**

PEANUT

Pest	Rate
Indian Meal Moth Almond Moth	1/4 lb/ton*

* Apply this rate to the top 4-8 feet of nuts when filling the warehouse.

To prevent and control these pests, spray an even coating of *DiPel* DF on the farmer stock peanuts while filling the warehouse. To make the spray solution, mix 3-3/4 lbs *DiPel* DF per 5 gallons of water. Apply to 15 tons of commodity. Do not pre-mix more spray solution than will be used within 12 hours. Keep the spray suspension agitated during application, and use pressures and nozzles sufficient to handle this suspension.

Before filling the warehouse, clean thoroughly, then spray interior of the facility with a *DiPel* DF suspension at the rate of 1/2 lb *DiPel* DF per 100 gallons water. Spray enough suspension to wet all cracks and crevices.

For bagged peanuts, treat the entire quantity at the rate indicated above.

FLUE-CURED TOBACCO

Pest	Rate
Tobacco Moth	0.2 oz/100 lbs*

* Apply 0.2 ounce (approximately 2-1/2 tsps) of *DiPel* DF in one quart of water per 100 pounds of tobacco as a fine mist spray. Avoid overwetting. Tobacco should have just enough moisture to be handled without shattering at the time of application.

Tobacco to be Stored up to Twelve Months
Spray loose leaves as the tobacco is being bundled from the curing barn. For tobacco on sticks, treat both sides of leaves.

Stored Tobacco
For tobacco which is to be carried over, rebundle or restack sticks, fluff up tobacco and spray loose leaves.

For tobacco that has been stored over three weeks, apply at first sign of infestation; promptly open bundles, spray loose leaves, then bundle.

CONTINUED

Treatment of Storage Barns

Treatment of storage barn floors and walls with *DiPel* DF may aid in control of the Tobacco Moth. Sweep out the area, especially cracks and corners, and all of the loose tobacco pieces in which the moth might breed. Make a spray mixture containing 1/2 oz (6 tsps) *DiPel* DF per 2-1/2 gallons of water. Apply this at a rate of 1/2 gallon per 1000 sq ft of surface area. Be sure to spray into cracks and between floorboards.

12.0 NOTICE TO USER

To the extent consistent with applicable law, seller makes no warranty, express or implied, of merchantability, fitness or otherwise concerning the 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.

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