

Valent USA Corporation

DiPel[®] 2X

Biological Insecticide

Wettable Powder

Active Ingredient:

Bacillus thuringiensis, subsp. *kurstaki* 6.4% w/w
Inert Ingredients 93.6% w/w

Total 100.0% w/w

Potency:

32,000 International Units per mg of product or 14.52 billion International Units per pound of product.

Potency units should not be used to adjust use rates.

E.P.A. Est. No. 33762-IA-1

E.P.A. Registration No. 275-37

List No. 11379

KEEP OUT OF REACH OF CHILDREN**CAUTION****STATEMENT OF PRACTICAL TREATMENT**

If in Eyes: Flush with plenty of water. Get medical attention if irritation persists.

If on Skin: Wash skin with plenty of soap and water. Get medical attention if irritation persists.

PRECAUTIONARY STATEMENTS**Hazards To Humans**

Harmful if absorbed through the skin. Causes moderate eye irritation. Avoid contact with skin, eyes, or clothing.

Personal Protective Equipment

Applicators and other handlers must wear:

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

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

User Safety Recommendations

User should:

- Wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet.
- 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.

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 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.

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 product is used to produce agricultural plants on farms, forests, nurseries.

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

STORAGE AND DISPOSAL

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

Storage: Reclose containers of unused DiPel 2X. Store in a dry place.

Pesticide Disposal: Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility.

Container Disposal: Triple rinse (or equivalent). Then puncture and dispose of in a sanitary landfill, or by incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

APPLICATION DIRECTIONS

Days To Harvest: There are no restrictions on applying DiPel 2X up to the time of harvest.

Sites: DiPel 2X may be used for any labeled pest in both field and greenhouse uses.

DiPel 2X 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 2X 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 2X at the site of larval 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 which has been approved for use on growing and harvested crops should be added for hard-to-wet crops such as cole crops, or to improve weather-fastness of the spray deposits.
- DiPel 2X is a non-restricted use pesticide and does not require a restricted use permit for purchase and use.

After eating a lethal dose of DiPel 2X, larvae stop feeding within the hour, and will die within several days. Dying larvae move slowly, discolor, then shrivel, blacken and die.

DiPel 2X may be applied in conventional ground or aerial equipment 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. Unless otherwise indicated, use at least 2 gallons of water per acre by air; except in the Western U.S., where 5 to 10 gallons is the usual minimum. Add water to the spray or mixing tank at the level that provides maximum agitation. With the agitator running, slowly sprinkle in the DiPel 2X. Continue agitation. Then add other spray materials (if any). Add the balance of the water and agitate until mixed. Maintain the suspension while loading and spraying. Do not mix more DiPel 2X than can be used in a 12-hour period.

Smaller Spray Volumes:

If Rate is	Use This Amount Per Gallon
1/4 lb./acre or 100 gals.	1/2 tsp.
1/2 lb./acre or 100 gals.	1 tsp.
1 lb./acre or 100 gals.	2 tsps.
2 lbs./acre or 100 gals.	4 tsps.

CHEMIGATION USE DIRECTIONS

Chemigation directions apply only to the state of Florida and to the following crop categories: Flowers, bedding plants, ornamentals, greenhouse/shadehouse and outdoor nursery crops. Refer to these label sections under **General Instructions** for application rate information when chemigation is used.

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.

Spray Preparation

First prepare a suspension of DiPel 2X 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 2X, 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 2X into the irrigation water line so as to deliver the desired rate per acre. The suspension of DiPel 2X 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 2X 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.

General Precautions For Applications Through Sprinkler Irrigation Systems

Maintain continuous agitation in the mix tank during the 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.

Crop injury, lack of effectiveness, or illegal residues in the crop can result from nonuniform 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.

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 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.

Do not apply when wind speed favors drift, when system connections or fittings leak, when nozzles do not provide uniform distribution or when lines containing the product must be dismantled and drained.

GENERAL INSTRUCTIONS/APPLICATION RATES

Application Rates for Typical Crops

Crop Group	Pest	Pounds/Acre
Cucurbit	Armyworms*	1/2-2
Vegetables such as Cucumbers, Melons and Squash	Loopers	1/2-1
	Melonworms	1/2-1
	Rindworm complex	1/2-1
Fruiting Vegetables such as Eggplant, Pepper and Tomato	Armyworms*	1/2-2
	Hornworm	1/2-1
	Loopers	1/2-1
	Pinworm	1-2
	Saltmarsh Caterpillar	1/2-1
	Tomato Fruitworm	1/2-1
	Variiegated Cutworm	1/2-1
Legume Vegetables such as Beans, Lentil, Peas and Soybean	Armyworms*	1/2-2
	Green Cloverworm	1/2-1
	Loopers	1/2-1
	Podworms*	1/2-1
	Soybean Looper	1/2-1
	Velvetbean Caterpillar	1/2-1
Root and Tuber such as Carrots, Potatoes, Beets and Sugarbeets	Armyworms*	1/2-2
	Cutworms	1/2-1
	Diamondback Moth	1/2-1
	Green Cloverworm	1/2-1
Bulb such as Onions (green and bulb) and Garlic	Hornworms	1/2-1
	Imported Cabbageworm	1/2-1
	Loopers	1/2-1
Leafy and Cole Crops such as Lettuce (head and leaf), Kale, Celery, Spinach, Broccoli, Cabbage, Mustard Greens, Brussel Sprouts, Cauliflower, Collards, Chinese Cabbage, Endive, Kohlrabi and Parsley	Omnivorous Leafroller	1/2-1
	Saltmarsh Caterpillar	1/2-1
	Webworm	1/2-1

*DiPel 2X 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 Rates for Other Crops

Crop	Pest	Pounds/Acre
Alfalfa (Hay and Seed), Hay and Other Forage Crops	Alfalfa Caterpillar	1/2-1
	Armyworms*	1/2-2
	European Skipper (Essex Skipper)	1/2-1
	Loopers	1/2-1
Asparagus	Armyworms*	1/2-2

Crop	Pest	Pounds/Acre	
Avocado	Amorbia Moth	1/2-2	
	Omnivorous Leafroller	1/2-2	
	Omnivorous Looper	1/2-2	
	Orange Tortrix	1/2-2	
	Spanworm	1/2-2	
	Banana	Banana Skipper	1/2-1
		Achema Sphinx Moth (Hornworm)	1/2-1
	Berry and Small Fruit Crops such as Blackberry, Cranberry, Grape and Strawberry	Armyworms*	1/2-2
		Grape Berry Moth	1/2-1
		Grape Leafroller	1/2-1
Grapeleaf Skeletonizer (ground only)		1/2-1	
Loopers		1/2-1	
Oblique Banded Leafroller		1/2-1	
Omnivorous Leafroller (ground only)		1/2-1	
Orange Tortrix		1/2-1	
Saltmarsh Caterpillar (ground only)		1/2-1	
Tobacco Budworm		1/2-2	
Canola (Rape)	Armyworms*	1/2-2	
	Heliothis	1/2-2	
	Looper	1/2-1	
Citrus	Citrus Cutworm****	1/2-2	
	Fruittree Leafroller	1/2-2	
	Orangedog	1/4-1	
Corn (Field, Sorghum and Sweet)	Armyworms*	1/2-2	
	Headworms	1/2-1	
Cotton	Armyworms*	1/2-2	
	Cotton Bollworm**	1/2-2	
	Loopers	1/2-1	
	Saltmarsh Caterpillar	1/2-1	
	Tobacco Budworm**	1/2-2	
	Flowers, Bedding Plants and Ornamentals (Note: Aerial application should be applied in a minimum of 5 gallons per acre)	Armyworms*	1/2-2
		Azalea Caterpillar	1/4- 1/2
		Diamondback Moth	1/4- 1/2
		Ello Moth (Hornworm)	1/4- 1/2
		Io Moth	1/4- 1/2
Loopers		1/4- 1/2	
Oleander Moth		1/4- 1/2	
Omnivorous Leafroller		1/4- 1/2	
Omnivorous Looper		1/4- 1/2	
Tobacco Budworm		1/4- 1/2	
Greenhouse/Shadehouse and Outdoor Nursery Crops *** such as Brassica, Fruiting Groups, and Leafy Herbs	Heliothis	1/2-2	
	Loopers	1/2-1	
	Armyworms*	1/2-2	
Herbs, Spices and Mint such as Basil, Chives, Dill, Leek and Peppermint	Armyworms*	1/2-2	
	Looper	1/2-1	
	Saltmarsh Caterpillar	1/2-1	
Hops	Armyworms*	1/2-2	
	Loopers	1/2-1	
Kiwi Fruit	Omnivorous Leafroller	1/2-2	
Malanga	Armyworms*	1/2-2	
	Saltmarsh Caterpillar	1/2-1	
Peanuts	Green Cloverworm	1/2-1	
	Loopers	1/2-1	
	Podworms*	1/2-1	
Pineapple	Velvetbean Caterpillar	1/2-1	
	Gummosos-Batrachedra comosae (Hodges)	1/4- 1/2	
	Thecla-Thecla basilides (Geyr)	1/2-1	
Safflower	Armyworms*	1/2-2	
	Loopers	1/2-1	
	Saltmarsh Caterpillar	1/2-1	
Small Grains	Loopers	1/2-1	
	Armyworms*	1/2-2	
	Cankerworms	1/2-2	
Stone Fruit such as Cherry, Nectarine, Peach, Plum and Prune	Codling Moth	1/2-2	
	Cutworms	1/2-2	
	Fall Webworm	1/2-2	
Pome Fruit such as Apple and Pear	Filbert Leafroller	1/2-2	
	Fruittree Leafroller	1/2-2	
Tree Nuts such as Almond, Filbert, Pecan and Walnut	Gypsy Moth	1/2-2	
	Obliquebanded Leafroller	1/2-2	
Pomegranate	Omnivorous Leafroller	1/2-2	
	Redbanded Leafroller	1/2-2	
	Redhumped Caterpillar	1/2-2	
	Tent Caterpillars	1/2-2	
	Tufted Apple Budworm	1/2-2	
	Variiegated Leafroller	1/2-2	

Crop	Pest	Pounds/Acre
Sunflower	Walnut Caterpillar	1/2-2
	Head Moth	1/2-1
Tobacco	Loopers	1/2-1
	Hornworms	1/4- 1/2
	Loopers	1/2-1
Tropical Fruits	Tobacco Budworm	1/2-1
	Hornworm	1/2-2
	Leafrollers	1/2-2
	Loopers	1/2-2
Turf	Omnivorous Looper	1/2-2
	Sod Webworm	1-2
Watercress	Armyworms*	1/2-2
	Diamondback Moth	1/2-1
	Loopers	1/2-1

*DiPel 2X 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.

**Use to control light to moderate populations of newly hatched worms in integrated pest management conditions. Repeat treatments at 4 to 5 day intervals as long as necessary and results are acceptable. Use in combination with ovicidal rates of labeled *Heliothis* ovicides.

***Chemigation applications only in the state of Florida for flowers, bedding plants, ornamentals, greenhouse/shadehouse and outdoor nursery crops.

****Apply to light to moderate populations of newly-hatched worms.

Application Rates for Stored Ag Commodities

Crop	Pest	Pounds/Acre
Grains, Soybeans, Sunflower Seed, Crop Seed, Condimental Seeds, Spices, Herbs, Birdseed ¹ and Popcorn ¹	Indian Meal Moth	3/8 lb./100
	Almond Moth	bu (undiluted and diluted) ²
Peanuts	Indian Meal Moth	1/4 lb./ton ³
	Almond Moth	
Flue-Cured Tobacco	Tobacco Moth	0.2 oz./100 lbs. ⁴

*As a surface treatment, apply 1/2 lb. DiPel 2X in 5-10 gallons of water per 500 square foot 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.

¹For all states except California.

For the control and prevention of these pests, apply DiPel 2X in a constantly agitated water suspension to the top four inch surface layer of grain in the bin. Use a sprinkler can or sprayer to apply the dosage into the grain stream as the last (top) four inch layer is augered into the bin. Mix 1/20 lb. DiPel 2X per gallon of water. Apply 0.6 pint of this mixture per bushel as grain is augered into storage. Or, sprinkle the dosage into the surface of the grain in the bin and mix thoroughly with a scoop or rake to the depth of four inches. More thorough coverage may be achieved by dividing the recommended dosage into three applications and mixing the grain between applications.

For the protection of bagged grain including popcorn, apply the dosage 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 2X will not control weevils or other beetles.

Grain treated with DiPel 2X can be used at any time after treatment for any use.

²Apply this rate to the top four to eight feet of nuts when filling the warehouse.

To prevent and control these pests, spray an even coating of DiPel 2X on the farmer stock peanuts while filling the warehouse. To make the spray solution, mix 3 3/4 lbs. DiPel 2X 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 2X suspension at the rate of 1/2 lb. DiPel 2X per 100 gallons water. Spray enough suspension to wet all cracks and crevices.

For bagged peanuts, treat the whole mass of commodity at the rate indicated.

³Apply 0.2 ounce (approx. 2 1/2 tsp.) of DiPel 2X 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 signs of infestation, promptly open bundles, spray loose leaves, then rebundle.

Treatment of Storage Barns:

If tobacco has been treated, or is going to be treated, treatment of the floors and walls may be made to aid in control. 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. DiPel 2X per 2 1/2 gallons of water. Apply this at a rate of 1/2 gallon per 1,000 sq. ft. of surface area. Be sure to spray into cracks and between floorboards.

Application Rates For Trees And Forests

(Forest, Shade, Sugar Maple Trees & Ornamentals)

Pest	Lbs./100 Gallons* (Ground Equip)	Lbs./Acre (Aerial**)
Gypsy Moth	1/4- 3/4	1/2-1 1/2
Bagworm	1/4- 3/4	1/2-1 1/2
Redhumped Caterpillar	1/4- 3/4	1/2-1 1/2
Spring & Fall Cankerworm	1/4- 3/4	1/2-1 1/2
Fall Webworm	1/4- 3/4	1/2-1 1/2
Elm Spanworm	1/4- 3/4	1/2-1 1/2
Tent Caterpillars	1/4- 3/4	1/2-1 1/2
California Oakworm	1/4- 3/4	1/2-1 1/2
Pine Butterfly	1/4- 3/4	1/2-1 1/2
Spruce Budworms	1/4- 3/4	1/2-1 1/2
Saddle Prominent Caterpillar	1/4- 3/4	1/2-1 1/2
Douglas Fir Tussock Moth	1/4- 3/4	1/2-1 1/2
Western Tussock Moth	1/4- 3/4	1/2-1 1/2
Fruitree Leafroller	1/4- 3/4	1/2-1 1/2
Blackheaded Budworm	1/4- 3/4	1/2-1 1/2
Mimosa Webworm	1/4- 3/4	1/2-1 1/2
Jack Pine Budworm	1/4- 3/4	1/2-1 1/2
Saddleback Caterpillar	1/4- 3/4	1/2-1 1/2
Greenstriped Mapleworm	1/4- 3/4	1/2-1 1/2

*Rate for hydraulic sprayer. For mist blowers, mix the applicable amount (lbs.) in 10 gallons of water.

**For aerial application, use in one to five gallons of water depending on type and density of trees. For best results, spray systems which deliver droplet size of LESS THAN 150 microns should be used.

NOTICE TO USER

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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