

Delfin[®]WG

BIOLOGICAL INSECTICIDE

 FOR ORGANIC PRODUCTION



Active Ingredient:

Bacillus thuringiensis, subspecies *kurstaki* solids,
spores and Lepidopteran active toxins*85.0%

Other Ingredients:15.0%

TOTAL100.0%

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

**KEEP OUT OF REACH OF CHILDREN
CAUTION**

See additional precautionary statements

EPA Reg. No. 70051-66
EPA Est. No. 70051-CA-001
Lot No.:

Manufactured by
Certis USA, L.L.C.
9145 Guilford Road, Suite 175
Columbia, MD 21046



**PRECAUTIONARY STATEMENTS
HAZARDS TO HUMANS
AND DOMESTIC ANIMALS**

CAUTION

Harmful if inhaled or absorbed through the skin. Avoid breathing vapors or spray mist. Prolonged or frequently repeated skin contact may cause an allergic reaction in some individuals. Avoid contact with skin, eyes or clothing. Wash thoroughly with soap and water after handling. Remove contaminated clothing and wash before reuse.

FIRST AID

If on skin or clothing: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes.

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.

If inhaled: Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth, if possible.

Call a poison control center or doctor for treatment advice.

Have the product container or label with you when calling a poison control center or doctor, or going for treatment. Hot Line Number: 1-800-255-3924.

Personal Protective Equipment:

Applicators and other handlers must wear:

- Long-sleeved shirt and long pants
- Waterproof gloves
- 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.

Follow manufacturer's instructions for cleaning/ maintaining PPE.

If no such instructions for washables exist, use detergent and hot water. Keep and wash PPE separately from other laundry.

Engineering Controls Statements:

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.

User Safety Recommendations:

Users should:

- Wash hands before eating, drinking, chewing gum, using tobacco or using the toilet.
- Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.
- Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

ENVIRONMENTAL HAZARDS

Do not contaminate water when disposing of equipment washwaters.

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.

Prosper with pesticides by using them properly! Read and follow label directions.

This labeling must be in the possession of the user at the time of the pesticide application.

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

NOTICE: Read "Limitation of Warranty and Limitation of Liability" on the container or in this Directions for Use section before buying or using. If terms are not acceptable, return at once, unopened.

Unless specifically stated, do not apply this product through any type of irrigation system.

DELFIN® WG is a biological insecticide for the control of lepidopterous larvae (see Application Rates section).

DELFIN® WG attacks the larval gut and must be ingested by the insect to be effective.

DELFIN® WG may be applied up to and on the day of harvest.

GENERAL USE INSTRUCTIONS

For most consistent control, apply at first sign of newly hatched worms (1st and 2nd instar larvae). Instructions for specific crops are located in the ADDITIONAL INSTRUCTION sections under APPLICATION RATES.

Reapply as necessary under a pest management program that includes close scouting.

If rapid knockdown of heavy worm or non-lepidopterous populations is necessary, include an effective contact insecticide in combination with DELFIN® WG.

For heavy worm infestations, use the higher DELFIN® WG rate. During situations of dense foliage and/or rapid growth, increasing water carrier volumes will provide better crop coverage and improve DELFIN® WG performance.

Tank mix instructions are for use only in states where the tank mix product and application site are registered. Read and follow all label directions for use for other pesticides used as tank mix partners with DELFIN® WG for specific rates, application timing, and precautions.

Mixing

Fill spray or mixing tank 3/4 full. Turn on agitation and pour DELFIN® WG into water while maintaining continuous agitation. Add other spray material (if any) and add balance of water. Agitate as necessary to maintain suspension. Do not allow diluted sprays to remain in the tank for more than 48 hours. DELFIN® WG is formulated to provide desirable coverage and adherence to leaf surfaces. Additional adjuvants, spreaders, or stickers may be added to improve product performance, especially under heavy dew or rainy conditions. Combinations with commonly used insecticides, fungicides, or other spray tank adjuvants are generally not deleterious to DELFIN® WG if the mix is used promptly. Before mixing in the spray tank, it is

advisable to test physical compatibility by mixing all components in a small container in proportionate quantities.

Application Instructions

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 these factors when making decisions.

Ground Application

Unless otherwise stated, use the application rate amount of DELFIN® WG in a minimum of 20 gallons of water per acre depending on type of crop and requirements of state regulations. If lower volumes are used, proper application equipment must be used to insure adequate coverage. Thorough and uniform crop coverage is required for adequate insect control.

Aerial Application

Use application rate amount of DELFIN® WG in at least 3 gallons of water per acre. Applications at higher water volumes have demonstrated improved control of targeted pests. Apply early morning or evening when air is calm.

INSECTS CONTROLLED

When used as directed, DELFIN® WG will control the following insects.

Common Name

Alfalfa caterpillar
Almond Moth
Armyworm
Artichoke plume moth
Bagworm

Banana skipper
Bertha armyworm
Blueberry leafrollers
Blueberry spanworm
Bollworm
California oak moth
Cherry fruitworm
Citrus cutworm
Codling moth
Cotton leafperforator
Cotton leafworm
Cutworm
Diamondback moth
Douglas-fir tussock moth

Elm spanworm
European corn borer
Fall cankerworm
Fall webworm
Filbert webworm

Fruitree leafroller
Grape leafroller
Grapeleaf skeletonizer
Green cloverworm
Green fruitworm
Gypsy moth
Helicoverpa spp.
Heliothis spp.
Hornworms
Imported cabbageworm
Jack pine budworm
Loopers
Mimosa webworm
Naval orangeworm
Obliquebanded leafroller
Omnivorous leafroller

Scientific Name

Colias eurytheme (Boisduval)
Cadra cautella (Walker)
Pseudaletia unipuncta (Haworth)
Platyptilla carduidactyla (Riley)
Thyridopteryx ephemeraeformis (Haworth)
Erionota thrax (Haworth)
Mamestra configurata various
Itame argillacearia (Pack.)
Helicoverpa zea (Boddie)
Phryganidia californica (Packard)
Grapholita packardii (Zeller)
Xylomyges curialis
Cydia pomonella (Linnaeus)
Bucculatrix thurberiella (Busck)
Alabama argillacea (Hubner)
various, family Noctuidae
Plutella xylostella (Linnaeus)
Orgyia pseudotsugata (McDunnough)
Ennomos subsignaria (Hubner)
Ostrinia nubilalis (Hubner)
Alsophila pometaria (Harris)
Hyphantria cunea (Drury)
Melissopus latiferreanus (Walsingham)
Archips argyrospila (Walker)
Desmia funeralis (Hubner)
Harrisina americana (Guerin)
Plathypena scabra (Fabricius)
Lithophane antennata (Walker)
Lymantria dispar (Linnaeus)
Helicoverpa spp.
Heliothis spp.
Manduca spp.
Pieris rapae (Linnaeus)
Choristoneura pinus (Freeman)
various
Homadaula anisocentra (Meyri)
Amyelois transitella (Walker)
Choristoneura rosanceana (Harris)
Platynota stultana

Common Name	Scientific Name
Omnivorous leaf-tier	<i>Cnephasia longana</i> (Haworth)
Orange tortrix	<i>Argyrotaenia citrana</i> (Fernald)
Orangedog	<i>Papilio cresphontes</i> (Cramer)
Oriental fruit moth	<i>Grapholita molesta</i> (Busck)
Pandemis leafroller	<i>Pandemis pyrusana</i>
Peach twig borer	<i>Anarsia lineatella</i> (Zeller)
Pecan nut casebearer	<i>Acrobasis nuxvorella</i> (Neunzig)
Redbanded leafroller	<i>Argyrotaenia velutinana</i> (Walker)
Redhumped caterpillar	<i>Schizura concinna</i> (J.E. Smith)
Rindworm complex	various
Roughskinned cutworm	<i>Athetis mindara</i> (Barnes & McDunnough)
Saltmarsh caterpillar	<i>Estigmene acrea</i> (Drury)
Sod webworm	<i>Crambus mutabilis</i>
Southwestern corn borer	<i>Diatraea grandiosella</i> (Dyar)
Spotted cutworm	<i>Xestia</i> spp.
Spring cankerworm	<i>Paleacrita vernata</i> (Peck)
Spruce budworm	<i>Choristoneura fumiferana</i> (Clemens)
Tent caterpillar	various, family Lasiocampidae
Tobacco budworm	<i>Helicoverpa virescens</i> (Fabricius)
Tobacco hornworm	<i>Manduca sexta</i> (Linnaeus)
Tomato pinworm	<i>Keiferia lycopersicella</i> (Walsingham)
Tropical sod webworm	<i>Herpetogramma phaeopteralis</i> (Guenee)
Tufted apple bud moth	<i>Platynota idaeusalis</i> (Walker)
Variegated leafroller	<i>Platynota flavedana</i> (Clemens)
Velvetbean caterpillar	<i>Anticarsia gemmatilis</i> (Hubner)
Western tussock moth	<i>Orygia vetusta</i> (Boisduval)

RATE SELECTION CONSIDERATIONS

Application rates are typically given as a range:

Lower rate ranges may be desired when tank mixing with contact insecticides labeled for worm control or under conditions of light worm infestations or when uniformly small worms are present.

Medium rate ranges may be desired when multiple worm life stages are present, continuous egg hatches are occurring or young or light armyworm infestations exist.

Upper rate ranges may be desired for heavy worm infestations, mature (larger) worms or for moderate to heavy infestations of armyworm, bollworm, or other difficult to control worm species.

Unless otherwise stated, use the application rate amount of DELFIN® WG in a minimum of 20 gallons of water per acre depending on type of crop and requirement of state regulations. Lower volumes may be used, but proper application equipment must be used to insure adequate coverage. Thorough and uniform crop coverage is required for adequate insect control.

APPLICATION RATES

Crops	Lbs./Acre
VEGETABLE CROPS	
Artichokes	0.50-1.25
ADDITIONAL INSTRUCTIONS: Apply in a minimum of 100 gal. of water per acre with a spray interval of 10 days or less. Apply 1 lb/A in combination with ASANA® XL, AMBUSH®, or SUPRACIDE® 25-W aerially to aid in resistance management of the artichoke plume moth. Use and follow all label directions of the tank mix partner regarding application, timing, gallonage, and schedules.	
Asparagus, Beans, (Green, Lima, Mung), Broccoli, Broccoli Raab (Rapini), Brussels Sprouts, Cabbage, Cardoon, Carrots, Cauliflower, Celeriac, Celery, Chick Peas, Chinese Broccoli, Chinese Cabbage, Collards, Cucumbers, Dry Bulb Onions, Eggplants,	0.12-1.50

Crops	Lbs./Acre
Garlic, Green Onions, Greens (Dandelion, Turnip, Mustard, Beet, China), Herbs (Basil, Cilantro, Dill, Oregano, Thyme, etc.), Horseradish, Kale, Kohl Rabi, Leeks, Lettuce (Endive, Romaine, Head Lettuce, Escarole, Butter Crunch, Leaf, etc.), Melons (Cantaloupe, Crenshaw, Honeydew, Muskmelon, Watermelon, etc.), Okra, Onions, Parsley, Parsnips, Peas, Peppers, Potatoes, Pumpkins, Radishes, Rutabaga, Salsify, Spinach, Squash (Summer and Winter), Sweet Corn, Sweet Potatoes, Swiss Chard, Table Beets, Tomatoes, Turnip Root, Watercress, Yams	
ADDITIONAL INSTRUCTIONS: Apply as necessary to maintain control.	
FIELD CROPS	
Alfalfa (Hay and Seed), Sudan Grass, Hay Crops & Other Forage Crops	0.25-1.50
ADDITIONAL INSTRUCTIONS: Under conditions of rapid plant growth and rapidly increasing armyworm populations (10 worms or greater per 180° sweep) use the highest rate. Against heterogenous worm populations, where 4th and 5th instars are present, and continuous egg laying is occurring, applications may provide variable control. Under these conditions, the addition of a contact insecticide in combination with DELFIN® WG is recommended. The addition of a spreader sticker to DELFIN® WG may provide improved performance.	
Canola and Evening Primrose	0.12-1.50
ADDITIONAL INSTRUCTIONS: Apply as necessary to maintain control.	
Dry Beans and Peas, Lentils, Mint, Peanuts, Rice, Safflower, Soybeans, Sugar Beets, Sunflower, Sorghum	0.25-1.50
ADDITIONAL INSTRUCTIONS: Apply as necessary to maintain control.	
Field Corn, Pop Corn, Seed Corn	0.50-1.50
ADDITIONAL INSTRUCTIONS: Make initial application when economically damaging populations exist. Repeat as necessary to maintain control. Applications must be made to early instars prior to entering the ear or plant.	
Hops	0.25-1.00
ADDITIONAL INSTRUCTIONS: Apply as necessary to maintain control. Begin treatment as soon as possible after hatching and before larvae are protected by leaf folds.	
Jobba	0.50-1.00
ADDITIONAL INSTRUCTIONS: Apply in a minimum of 50 gallons of water per acre by ground equipment or a minimum of 10 gallons of water by aerial equipment. Thorough coverage of foliage is essential and dictates the minimum spray volumes necessary.	
Small Grains	1.00-1.50
ADDITIONAL INSTRUCTIONS: Apply as necessary to maintain control.	

Crops	Lbs./Acre
Tobacco	0.12-1.25
ADDITIONAL INSTRUCTIONS: Apply as necessary to maintain control.	
Cotton Including Arizona and California	0.50-1.50
Early and Mid-Season ADDITIONAL INSTRUCTIONS: Repeat as necessary throughout season to maintain control. If egg laying frequency indicates future moderate to heavy worm populations, time application spray to coincide with the 2nd instar larvae. During periods of high temperatures, worms will progress through 1st and 3rd instars very rapidly and early application timing is necessary for control. To be effective, DELFIN® WG spray must be deposited at the larval feeding site. When plant cover is dense and worms are feeding in the lower 2/3 portion of the plant, aerial application of DELFIN® WG may not provide adequate control. For the suppression of light to moderate infestations, apply at first sign of egg-laying or newly-hatched worms (1st instar larvae).	
Except Arizona and California	0.25-1.25
Early ADDITIONAL INSTRUCTIONS: For early season management of <i>Helicoverpa</i> and <i>Heliothis</i> species. Initiate applications when 50% of plants are at pinhead square cotton stage, independent of <i>Helicoverpa</i> and <i>Heliothis</i> egg and larval counts, or at 1st egg lay, whichever occurs earlier. Continue applications on 5-day spray interval up to synthetic pyrethroid spray window. For added control of <i>Helicoverpa</i> and <i>Heliothis</i> , tank mixing of DELFIN® WG with a labeled ovicide, such as, methomyl (0.125 lb. a.i./acre), profenofos (0.25 lb. a.i./acre), or thiodicarb (0.125-0.25 lb.a. i./acre) is recommended. Read and follow all directions for use, precautions and restrictions on tank mix product labels.	
FRUIT, NUT & VINE CROPS	
Apples and Pears	0.50-4.00
ADDITIONAL INSTRUCTIONS: Apply when newly hatched larvae appear and before leaves are rolled. Continue applying as a part of the normal cover spray program until pest is adequately controlled. Apply when caterpillars are actively feeding (2nd-4th instars).	
Avocados	0.50-1.25
ADDITIONAL INSTRUCTIONS: Apply as necessary to maintain control. Begin treatment as soon as possible after hatching and before larvae are protected by leaf folds. (<i>Amorbia</i> [Mexican leafroller] is suppressed only).	

Crops	Lbs./Acre
Bananas	0.50-1.00
ADDITIONAL INSTRUCTIONS: Hawaii only. Use calibrated ground equipment with adequate water to apply to point of runoff.	
Citrus	0.25-1.50
ADDITIONAL INSTRUCTIONS: Use 50-600 gallons of water per acre when using ground equipment and 10 gallons of water minimum per acre by air.(<i>Amorbia</i> [Mexican leafroller] is suppressed only.)	
Blueberries, Caneberries, Currants, Kiwi	0.25-1.00
ADDITIONAL INSTRUCTIONS: Apply by ground or aerial equipment using enough water to provide adequate coverage. Begin treatment as soon as possible after hatching. For leafrollers, apply before larvae are protected by leaf folds.	
Grapes	0.50-1.25
ADDITIONAL INSTRUCTIONS: Apply by ground equipment in up to 200 gallons total spray per acre to obtain thorough coverage of leaf surfaces. Start treating as soon as possible after hatching and before larvae are protected by leaf folds.	
Almonds, Apricots, Cherries, Filberts, Nectarines, Peaches, Pecans, Persimmons, Plums, Pomegranates, Prunes, Walnuts	0.25-4.00
ADDITIONAL INSTRUCTIONS: For leafrollers, start treating as soon as possible after hatching and before larvae are protected by leaf folds. Apply when caterpillars are actively feeding (2nd-4th instar). Application timing is very important for good casebearer suppression. Consult your local university or extension agent for information concerning specific modeling, that predicts egg lay, typical application dates, and scouting techniques for your area. DELFIN® WG must be present at egg hatch for best control. Make application when the majority of eggs are in the pink stage. For best control make two applications 7 days apart. If only one application is made, a minimum of 1lb. should be applied.	
Melons (Also see vegetables)	0.50-0.75
ADDITIONAL INSTRUCTIONS: Apply at first sign of hatch before larvae enter fruit. Repeat as necessary to maintain control.	
Strawberries	0.25-1.50
ADDITIONAL INSTRUCTIONS: Apply as necessary to maintain control. Use 20 gallons water minimum per acre when using ground equipment and 5 gallons water minimum per acre by aircraft. In a tank mix with contact insecticides, rates as low as 1/2 lb. of DELFIN® WG may be used for the control of armyworm.	

Crops	Lbs./Acre
SHADE TREES AND ORNAMENTALS (Including Roses)	0.12-1.25
ADDITIONAL INSTRUCTIONS: Apply when leaf expansion reaches 40% to 50% as infestation warrants. If eggs hatch over a long period of time, or if reinfestation occurs, spray about 14 days after first application. Apply when most larvae are 3rd-4th instar. Also consider the opening of the bud cap to ensure foliage exposure. Apply after eggs have hatched and early instar larvae are feeding on exposed foliage.	

TURF AND GRASS SEED PRODUCTION	1.00
ADDITIONAL INSTRUCTIONS: Repeat as necessary throughout season to maintain control.	

**STORED SOYBEANS, GRAINS
(Indian Meal Moth, Almond Moth)**

ADDITIONAL INSTRUCTIONS:
To control and prevent Indian Meal Moth and Almond Moth infestations of stored soybeans and grains, prepare a spray mixture which includes 1 gallon of water for every 1.5 oz. by weight of DELFIN® WG. The spray mixture may be applied either by treating the top 4 inches of grain as it is being augered into storage (applying 0.6 pint of mixture per bushel in the grain stream), or by treating the surface of grain after it is in the bin. The Table below can be used as a guide in determining the total amount of DELFIN® WG needed according to bin diameter or the number of bushels to be treated.

Bin Diameter (ft.)	Surface Area (sq. ft.)	Bushels (to 4 in. depth)	DELFIN® WG Rate (by weight)	
			Grams	oz.
8	50	13	21	0.75
12	113	30	50	1.75
16	201	53	85	3.00
20	314	84	120	4.25
24	452	120	185	6.50
28	615	163	255	9.00
32	804	214	326	11.50

To insure thorough coverage when making applications to the grain surface after it is in the bin, apply spray mixture in three (3) applications. Mix the grain with a scoop or rake to a depth of four (4) inches after each application.

Stored grain may be treated anytime, but for best results, treat grain at the time it is placed into storage or shortly thereafter, or in the early spring prior to egg-laying. Full season control is normally experienced. Re-treat only if reinfestation occurs.

For the protection of bagged grain, apply spray mixture to entire grain mass, and mix thoroughly prior to bagging. DELFIN® WG at 6 oz. by weight per 10 gallons of water will treat approximately 100 bushels.

Treated grain may be used at any time after treatment.

Flowers and Ornamentals

DELFIN® WG may also be used on flowers and ornamentals outdoors and in the greenhouse at a rate of 0.25-1.50 lb. per 100 gallons of water for control of listed insects on this label.

Guide for Small Spray Volume Mixing

Rate Lbs. / A	Conversion Rate* Teaspoons / Gallon
1/4	1/2
1/2	1
1	2

*Assumes Application to spray runoff.

STORAGE AND DISPOSAL

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

Storage

Store in original container in a cool, dry place inaccessible to children and pets and away from heat and direct sunlight. Protect from freezing. Storage at temperatures above 90° F may impair effectiveness.

Pesticide Disposal

Pesticide, spray mixture, or rinse water that cannot be used according to label instruction must be disposed of according to Federal, State, or Local procedures.

Container Disposal

Completely empty container into application equipment. Triple rinse or equivalent. Then offer for recycling or reconditioning, or 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.

WARRANTY

Certis USA, L.L.C. warrants that the material contained herein conforms to the description on the label and is reasonably fit for the purposes referred to in the directions for use. Timing and method of application, weather, watering practices, nature of soil, the insect problem, condition of the crop, incompatibility with other chemicals not specifically recommended, and other influencing factors in the use of this product are beyond the control of the seller. Buyer assumes all risks of use, storage or handling of this material not in strict accordance with directions given herein. NO OTHER EXPRESS OR IMPLIED WARRANTY OF THE FITNESS OR MERCHANTABILITY IS MADE.

REGISTERED TRADEMARKS

Ambush® is a registered trademark of Syngenta.

Asana® XL is a registered trademark of E.I duPont de Nemours and Co., Inc.

Supracide® 25-W is a registered trademark of Gowan Company.

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