

**READ SAFETY DIRECTIONS  
BEFORE OPENING OR USING**



**Delfin<sup>®</sup>WG**



**BIOLOGICAL INSECTICIDE**

**Active Constituent: *Bacillus thuringiensis* subspecies *kurstaki* Strain SA-11  
(Manufactured by Certis USA, L.L.C., Columbia, USA) active solids and solubles.**

**GROUP 11C INSECTICIDE**

**A water dispersible granule for the control of a range of caterpillars in Vegetables, Tomatoes, Vines, Fruit Trees, Kiwifruit, Cereal Grains, Tobacco, Herbs, Forestry, Amenity Trees, Turf and Ornamentals as per the DIRECTIONS FOR USE Table.**

**READ THE BACK OF THIS BAG BEFORE USE.**

**NET CONTENTS: 2.5 kg**

Certis USA L.L.C.  
9 Bogan Avenue  
Baulkham Hills, NSW 2153

**BATCH NO.:**

**EXPIRY DATE:** 24 Months after the date of manufacture

Filename: 45608\_46227\_1-30kg\_Label\_MPL\_V01.pdf  
Dimensions: 297 x 210 mm  
Date: 13 July 2009  
Scale: A4 paper - 100%; A3 paper -100%

# Delfin® WG

## RESTRAINTS

Do NOT apply if rain is expected within 8 hours.

## DIRECTIONS FOR USE (ALL STATES)

Crop	Pests	Rate		Critical Comments
		per 100L water	per ha	
Agricultural and non-agricultural uses: Vegetables Macadamias Fruits Vines Oilseeds Cereal Grains Herbs Tobacco Ornamentals Forestry Amenity Trees Turf	Susceptible larvae including: Armyworm ( <i>Spodoptera</i> spp.) Cotton bollworm ( <i>Helicoverpa armigera</i> ) Native budworm ( <i>Helicoverpa punctigera</i> ) Cabbage moth ( <i>Plutella xylostella</i> ) Cabbage white butterfly ( <i>Pieris rapae</i> ) Loopers ( <i>Chrysodeixis</i> spp., <i>Ectropis excursaria</i> , <i>Thysanoplusia orichalcea</i> ) Lightbrown apple moth ( <i>Epiphyas postvittana</i> ) Vine moth ( <i>Phalaenoides glycinae</i> , <i>Agarista agricola</i> )	25 – 100 g	0.5 – 2.0 kg	Time spraying to coincide with egg hatch. Monitoring of crops is essential to ensure correct timing. Best results are achieved when Delfin WG is used in combination with beneficial arthropods (e.g. spiders, <i>Trichogramma</i> parasitoids). Avoid use of broad-spectrum insecticides when using Delfin WG. Increase rate of application under higher egg laying activity, to achieve longer residual activity or if larger larvae are present. Higher rates should be used for control of <i>Helicoverpa</i> spp. Best control of <i>Helicoverpa</i> spp. is achieved if larvae are less than 8mm long. Control of <i>Spodoptera</i> spp. is most effective if larvae are less than 15mm. In <b>tomatoes</b> , when <i>Helicoverpa</i> spp. egg pressure is high or larger larvae are present, increase the rate of Delfin WG and mix with Larvin 375 at rates recommended on the Larvin 375 label. Ensure thorough spray coverage as Delfin WG must be ingested to control target larvae. Addition of a non-ionic wetting agent will improve coverage on hard to wet surfaces. Where larvae feed in protected sites, e.g. sweet corn whorls or the heart leaves of cabbages or lettuces, spraying to run-off may be required to get product into those protected sites. Once ingested, larvae quickly stop feeding but may take several days to die. Control may be slower in cooler conditions. Best results are obtained if Delfin WG is applied in the late afternoon or early evening (before dew settles) when larvae are feeding actively. The residual activity of Delfin WG is influenced by factors such as growth of the plant and rainfall/irrigation. In rapidly growing crops (e.g. sweet corn silks, tomato shoots) apply Delfin WG twice at no more than 3-day intervals and then at 3-5 day intervals. It may be necessary to reapply Delfin WG if heavy rains or overhead irrigation occurs after application.

**NOT TO BE USED FOR ANY PURPOSE, OR IN ANY MANNER, CONTRARY TO THIS LABEL UNLESS AUTHORIZED UNDER APPROPRIATE LEGISLATION.**

**WITHOLDING PERIOD: A WITHOLDING PERIOD OF 1 DAY EXISTS WHEN TANK MIXES WITH LARVIN 375 ARE USED IN TOMATOES. OTHERWISE A NIL WITHOLDING PERIOD IS REQUIRED.**

## **GENERAL INSTRUCTIONS**

DELFIN WG is a biological insecticide based on the SA-11 strain of *Bacillus thuringiensis* (Bt) subspecies *kurstaki* (Bt) which is a spore-forming bacterium which produces, in addition to spores, crystals of a protein endotoxin. This endotoxin is specifically toxic to lepidopteran larvae.

DELFIN WG acts within the gut of the target larvae. DELFIN WG causes feeding inhibition within a few minutes of ingestion. Eventually disintegration of the gut wall and larval death occur. Dying larvae can be expected to be found for several days after application.

DELFIN WG is a selective agent that provides fast and effective control of lepidopteran larvae, without harmful effects on humans, domestic animals, honeybees, wildlife, fish and beneficials. Thorough spray coverage is essential as DELFIN WG is active only if ingested by the caterpillar. Coverage of the underside of the leaf is important.

## **Insecticide Resistance Warning**

For insecticide resistance management Delfin WG is a Group 11C insecticide.

GROUP	<b>11C</b>	INSECTICIDE
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Some naturally occurring insect biotypes resistant to DELFIN WG and other Group 11C insecticides may exist through normal genetic variability in any insect population. The resistant individuals can eventually dominate the insect population if DELFIN WG or other Group 11C insecticides are used repeatedly. The effectiveness of DELFIN WG on resistant individuals could be significantly reduced. Since occurrence of resistant individuals is difficult to detect prior to use, Certis USA L.L.C. accepts no liability for any losses that may result from the failure of DELFIN WG to control resistant insects.

Delfin WG may be subject to specific resistance management strategies. For further information contact your local supplier, Certis USA L.L.C. representative or local agricultural department agronomist.

## **Mixing**

Half fill the spray tank with water, start agitation. Pour the required quantity of DELFIN WG while maintaining agitation; add other spray material (if any) and add balance of water. Maintain agitation throughout preparation and spraying operations.

Maintain agitation while mixing, standing and spraying.

DO NOT allow diluted sprays to remain in the tank for more than 24 hours.

DELFIN WG is formulated to provide desirable coverage and adhesion on leaf surfaces.

## **Application**

As this product must be ingested, thorough spray coverage is essential. If rain falls shortly after treatment, re-treatment may be necessary. To obtain maximum assistance from beneficial insects, avoid use of broad-spectrum insecticides during a program of the above sprays.

For most consistent control, apply at first sign of newly hatched larvae.

Re-apply as necessary under a pest management program that includes frequent scouting.

In situations of dense crop foliage and rapid crop growth, increasing water volumes will provide more complete crop coverage and may improve DELFIN WG performance. During periods of high temperatures, larvae will progress through early 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. In tomatoes when plant cover is dense and larvae are feeding in the lower 2/3 portion of the plant, aerial application of DELFIN WG may not provide adequate control.

1. **High Volume (Dilute) Sprays:** Fully wet plant foliage to the point of run-off and typically utilize a minimum water volume of 1000 L/ha. When using reduced water volumes, increase the rate of Delfin WG Biological Insecticide to ensure the same total amount of product is applied to the target crop as when applying with higher water volumes.
2. **Broadacre applications:** When applying by ground boom spray use the highest practical water volume. DO NOT apply less than 200 L total spray volume per hectare, unless otherwise stated.

## **Compatibility**

Commonly used acaricides, insecticides and fungicides are compatible with DELFIN WG if mixed in the spray tank and used promptly.

As it is impossible to know all the commercial products on sale, we cannot assume any responsibility for tank-mix compatibility. We can only recommend to the user that a preliminary compatibility test be carried out with the planned mixture to observe the physical aspect of the spray and the reaction it may produce on the plants. Larval behaviour may also be modified by some products.

## **PROTECTION OF LIVESTOCK, WILDLIFE, FISH, CRUSTACEANS AND ENVIRONMENT**

Avoid contamination of any watercourse (ponds waterways or drains) during handling, spraying, disposing of the product or its container and during cleaning of the equipment. DO NOT apply where run-off is likely to occur. DO NOT apply when weather conditions favour drift from areas treated.

## **STORAGE AND DISPOSAL**

KEEP OUT OF REACH OF CHILDREN.

Store in the closed, original container in a dry, cool, well-ventilated area out of direct sunlight. As DELFIN WG is a biological insecticide, it can be damaged by heat and should be protected at all times from high temperature.

Single rinse before disposal. Add rinsings to the spray tank. DO NOT dispose of undiluted chemicals on site. Puncture and bury empty bags in a local authority landfill. If no landfill is available, bury the containers below 500 mm in a disposal pit specifically marked and set up for this purpose clear of waterways, desirable vegetation and tree roots. Empty bags and product should not be burnt.

### **SAFETY DIRECTIONS**

Will irritate the eyes and skin. Avoid contact with eyes, skin and open wounds. DO NOT inhale spray mist. When opening the container and preparing spray wear:

- cotton overalls buttoned to the neck and wrist;
- a washable hat;
- elbow-length PVC gloves; and
- face shield or goggles.

If product on skin, immediately wash area with soap and water. If product in eyes, wash it out immediately with water. After use and before eating, drinking or smoking, wash hands, arms and face thoroughly with soap and water. After each day's use wash gloves, face shield or goggles and contaminated clothing.

### **FIRST AID**

If poisoning occurs contact a doctor or Poisons Information Centre. Phone 13 11 26.

### **MATERIAL SAFETY DATA SHEET**

Additional information is listed in the Material Safety Data Sheet available from Certis USA L.L.C.

### **EXCLUSION OF LIABILITY**

This product as supplied is of a high grade and suitable for the purpose for which it is expressly intended and must be used in accordance with the directions. The user must monitor the performance of any product as climatic geographical or biological variables and/or developed resistance may affect the results obtained. No responsibility is accepted in respect of this product, save for those non-excludable conditions implied by the Trade Practices Act or any State or Federal legislation.

IN A TRANSPORT EMERGENCY DIAL 000 POLICE OR FIRE BRIGADE
FOR 24 HOUR SPECIALIST ADVICE IN EMERGENCY ONLY PHONE: (02) 8448 8155

**APVMA Approval No.:** 45608/1-30kg/0709

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Larvin® is a registered Trademark of Bayer.

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