



Campbell

# Bacchus<sup>®</sup> WG

Contains: *Bacillus thuringiensis* (BT) berliner subsp. **aizawai** strain GC-91



**CONTROLLING**  
**LEPIDOPTERA PESTS**  
**ON ALL YOUR CROPS...**  
**NATURALLY!**



Campbell

COLIN CAMPBELL (CHEMICALS) PTY LTD

100% Australian owned & operated. Established 1940

HORTICULTURE · FRUIT COATINGS · TURF

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# The change that's set to revolutionise BT use!

Using Bacchus as your preferred BTa\* has always made sense as the label was a lot broader than the alternative BTa on the market. However, our goal with Bacchus was to give growers a BTa that they could rotate with their conventional BTK\* insecticides and use it on as many crops, if not more.

In January 2007 after various research and development work and submissions to the APVMA, Bacchus was granted a label extension, that realises this goal.

**Bacchus can now be used to control susceptible lepidoptera larvae on the following crops** (see the back page for the directions for use):

- ✓ Vegetables
- ✓ Macadamias (unique to Bacchus)
- ✓ Fruits
- ✓ Vines
- ✓ Oil Seeds
- ✓ Cereal Grains
- ✓ Herbs
- ✓ Tobacco
- ✓ Ornamentals
- ✓ Forestry
- ✓ Amenity Trees
- ✓ Turf

With all these uses Bacchus is an essential tool in any lepidoptera management programme.

Whether it be to manage resistance between other insecticides or in rotation with a BTK, Bacchus is now the most versatile BT on the market.

## Besides our broad label, what makes Bacchus the right BTa to use.

Bacchus contains *Bacillus thuringiensis Berliner subsp. aizawai strain GC-91*, which is **a unique formulation in Australia**. Manufactured in the USA by Certis USA LLC and protected under patent. The active ingredient in Bacchus is generated in a 3 stage process giving Bacchus its unique toxin profile developed from a combination of Aizawai & Kurstaki strains.

It is formulated as a water dispersible granule (WG) that is easy to handle and mixes very well with water. Some growers have even commented that **"it mixes better with water than other BTs."**

Bacchus has strong activity against armyworms, Diamondback/Cabbage moth and Heliothis just to name a few, (see directions for use on back page for more).

As with other BT's, Bacchus is harmless to non target insects, users and the environment, (as always read the product label before opening or using).

## Strategies for the

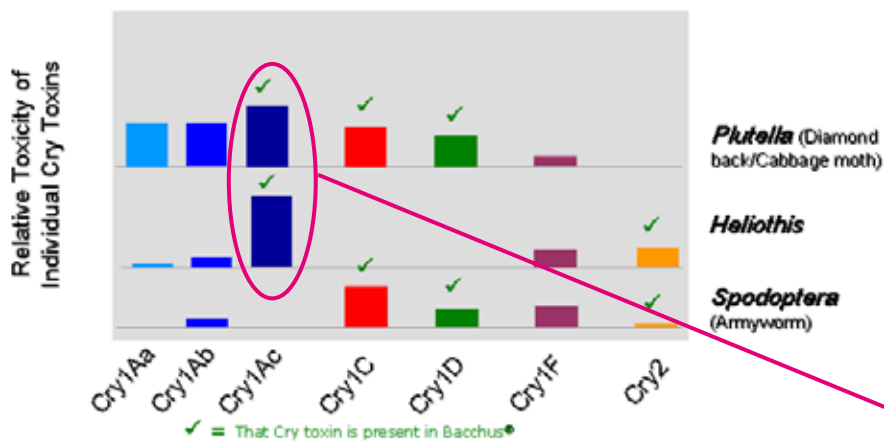
- ➔ **Start applications of Bacchus on early infestations** of young larvae.
- ➔ Always target young larvae as **the smaller the gut cavity the quicker the kill**, the larger the larvae the larger the gut cavity & it has to consume a lot more BT to get the receptors to attach.
- ➔ **Apply early morning or late in the evening** as this is when the larvae most active on the plants. Avoid wash off as the product is not systemic, BT's are broken down by UV light. Heat has only very minor effect on BT's
- ➔ **Continue applications at 3-5 day intervals**. During periods of rapid plant growth and heavy insect pressure, shorter spray intervals are required to obtain control.

\*BTa = BT products based on aizawai strain.

\*BTK = BT products based in kurstaki strain.

# The Toxin Profile of Bacchus®

## Cry toxins vs. Important Lepidoptera pests



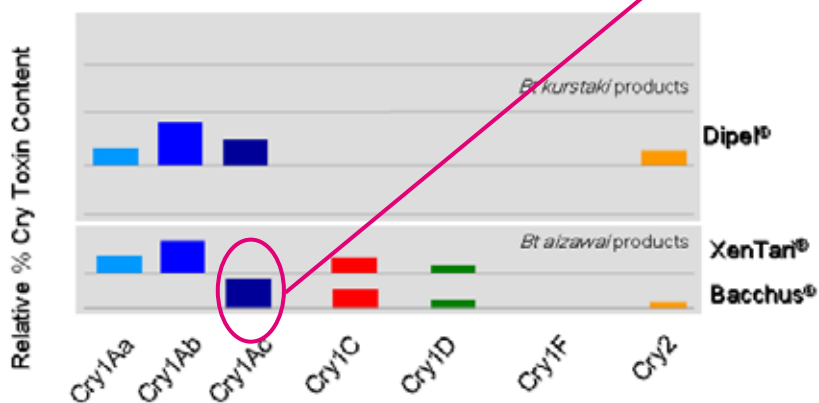
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The chart to the left outlines the Cry toxins in the various BT products sold in Australia

**To control *Heliothis* & Diamondback/Cabbage moth you need the most Cry1Ac toxin.**

**GRAM FOR GRAM BACCHUS HAS MORE CRY1AC THAN ANY OTHER BT IN AUSTRALIA**

## Cry Toxin Profiles of Bt spray products for control of Lepidoptera



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This chart shows which Cry toxins are most effective at controlling the various lepidoptera pests.

For example the Cry1Ac toxin is the most potent for the control of *Heliothis* and Diamondback moth.

From the chart above you can see that Bacchus has a higher proportion of Cry1Ac than other BT products.

## successful use of Bacchus®

- ➔ Apply Bacchus at 50-200g/100L water depending on degree of infestation
- ➔ Tank mixing with registered larvicides may be necessary to control large larvae or when heavy populations occur.
- ➔ **Ensure uniform coverage as the larvae has to consume the BT;** it has no effect dermally (through the skin).
- ➔ Bacchus can be tank mixed with registered insecticides & fungicides. Avoid alkaline products such as copper as it will reduce the effect of the BT's by breaking it down. Aim for a pH of less than 8 and test the water after all chemicals have been added to the spray vat.

# How to apply Bacchus® WG

| Situation                                      | Lepidoptera Pests  | Rate   | Comments   |
|--|--|--|--|
| <b>Agricultural and non-agricultural uses:</b> | <b>Susceptible Lepidoptera larvae</b> including:                           | <u>High Volume (Dilute) spraying:</u><br>50 – 200 g/100L water | Concentrate spraying<br>Apply the same total amount of product to the target crop whether applying this product by dilute or concentrate spraying methods. Typically the range of rates will vary between 1.0 – 4.0kg/ha, however this will not always be the case and the calculation in the general instructions must be used before application.  |
| Vegetables                                     | Armyworm (Spodoptera spp.)   | <u>Concentrate spraying</u>                                    | Do not use at rates greater than 2kg/100L of water.  |
| Macadamias                                     | Cotton bollworm (Helicoverpa armigera)                                     | Refer to the Mixing/ Application instructions                  | All application methods  |
| Fruits   | Native budworm (Helicoverpa punctigera)                                    |  | Time spraying to coincide with egg hatch. Monitoring of crops is essential to ensure correct timing. Best results are achieved when BACCHUS WG is used in combination with beneficial arthropods (e.g. spiders, Trichogramma parasitoids). Avoid use of broad-spectrum insecticides when using BACCHUS WG.   |
| Vines  | Cabbage moth (Plutella xylostella)   |  | 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 Helicoverpa spp. Best control of Helicoverpa spp. is achieved if larvae are less than 8mm long. Control of Spodoptera spp. is most effective if larvae are less than 15mm.  |
| Oilseeds                                       | Cabbage white butterfly (Pieris rapae)                                     |  | In tomatoes, when Helicoverpa spp. egg pressure is high or larger larvae are present, increase the rate of BACCHUS WG and mix with Larvin 375 at rates recommended on the Larvin 375 label.  |
| Cereal Grains                                  | Loopers (Chrysodeixis spp., Ectropis excrucaria, Thysanoplusia orichalcea) |  | Ensure thorough spray coverage as BACCHUS 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.  |
| Herbs  | Lightbrown apple moth (Epiphyas postvittana)                               |  | Once ingested, larvae quickly stop feeding but may take several days to die. Control may be slower in cooler conditions.   |
| Tobacco  | Vine moth (Phalaenoides glycinae, Agarista agricola)                       |  | Best results are obtained if BACCHUS WG is applied in the late afternoon or early evening (before dew settles) when larvae are feeding actively. The residual activity of BACCHUS 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 BACCHUS WG twice at no more than 3-day intervals and then at 3-5 day intervals. It may be necessary to reapply BACCHUS WG if heavy rains or overhead irrigation occurs after application. |
| Ornamentals                                    | Cabbage-centre grub ( <i>Hellula hydralis</i> )                            |  |  |
| Forestry                                       | Cabbage cluster caterpillar ( <i>Crociodolomia pavonana</i> )              |  |  |
| Amenity Trees                                  |  |  |  |
| Turf   |  |  |  |

DO NOT apply during the day in hot weather

DO NOT apply if rain is expected within 6 hours.

WITHHOLDING PERIOD: NOT REQUIRED WHEN USED AS DIRECTED.

TOMATOES: REFER TO THE LARVIN 375 PRODUCT LABEL WHEN TANK MIXED WITH THIS PRODUCT.

**Bacchus® is available from all good rural merchandise stores in the following container sizes:**

- 1kg
- 5kg (packaged in a handy size bucket)
- 10kg (pre packed 2 x 5kg packaged in a handy picking size bucket) &
- 30kg (pre packed 6 x 5kg)