For the control of Helicoverpa spp. larvae in various crops as specified in Directions For Use

Contents: 1, 5, 10 or 20 Litres

ACTIVE CONSTITUENT: 5 x 10⁹ POLYHEDRAL INCLUSION BODIES OF THE NUCLEOPOLYHEDROVIRUS OF Helicoverpa armigera PER MILLILITRE

READ SAFETY DIRECTIONS BEFORE OPENING OR USING

PRECAUTIONS

Re-entry: Do not allow entry into treated areas until spray has dried. When prior entry is necessary, wear cotton overalls buttoned to the neck and wrist (or equivalent clothing) and chemical resistant gloves. Clothing must be laundered after each day’s use.

Flaggers: Do not use human flaggers/markers unless they are protected by engineering controls such as enclosed cabs.

PROTECTION OF WILDLIFE, FISH, CRUSTACEANS AND ENVIRONMENT

Do not contaminate streams, rivers or waterways with the product, including via run-off, spray drift or disposal of used containers.

STORAGE AND DISPOSAL

Storage: Keep out of reach of children. Store in the closed, original container out of direct sunlight at or below 4°C. The product is stable for 2½ years if stored as indicated.

Disposal: Triple or preferably pressure rinse containers before disposal. Add rinsings to spray tank. Do not dispose of undiluted product on site. Break, crush or puncture and bury empty containers 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 containers and product should not be burnt.

SAFETY DIRECTIONS

May irritate the eyes and skin. Avoid contact with eyes and skin and open wounds. Repeated exposure may cause allergic disorders. Sensitive workers should use protective clothing. When opening the container, preparing spray and using the prepared spray, wear cotton overalls buttoned to the neck and wrist and a washable hat, elbow length PVC gloves and a face shield or goggles. Wash hands after use. 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 (Ph. 131126).

MATERIAL SAFETY DATA SHEET

Additional information is listed in the Material Safety Data Sheet.

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 according to the directions contained in this label. The user must monitor the performance of the product as climatic, geographical or biological variables and/or developed resistance may affect the results obtained. AgBiTech Pty Ltd accepts no responsibility in respect of this product except for those non-excludable statutory warranties implied by the Trade Practices Act or any State or Federal legislation.

Manufactured by:

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APVMA Approval Number: 69095/56701
**DIRECTIONS FOR USE:**

<table>
<thead>
<tr>
<th>CROP</th>
<th>PEST</th>
<th>RATE</th>
<th>CRITICAL COMMENTS</th>
</tr>
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<tbody>
<tr>
<td><strong>Cereal Grains including:</strong> Maize, Popcorn</td>
<td>Larvae: Ortica argemione Corn earworm</td>
<td>150 mL/ha</td>
<td>All Crops: Thorough coverage of the crop is essential, as the nucleopolyhedrovirus (NPV) in Vivus Max must be ingested by larvae to be effective. NPV is most effective on smaller larvae. Target application when the majority of larvae are less than 7 mm in length. Vivus Max should not be used to control larvae larger than 13 mm in length. Vivus Max will provide between 60 and 90% control, with greater control expected on smaller larvae under ideal application conditions. Larvae will continue to feed for 1 to 3 days following virus infection. Larvae will take between 3 to 6 days to die, with slower control occurring with larger larvae and during cool conditions. Under high pest pressure or sub-optimal application conditions, or when immediate protection against damage is required, additional control should be considered. Avoid applying Vivus Max if heavy rain is expected within 1 hour after application. <em>Unseen:</em> Use a non-ionic surfactant at the manufacturer's specified rate to improve coverage. <strong>Pulse:</strong> The addition of Optimol® is likely to improve the performance of Vivus Max in pulse crops.</td>
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<td></td>
<td><strong>Sweetcorn</strong></td>
<td>75 to 150 mL/ha (OR 10 L/ha total volume - see Application)</td>
<td>Use lower rates when targeting smaller larvae than 7 mm (1st and 2nd instar) in length or under lower pressure (near threshold) situations. Use the higher rates when targeting larger larvae than 7 mm in length (3rd instar). Applications are targeted when 50% of heads have reached 100% flowering are likely to provide good control.</td>
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<td>75 to 150 mL/ha (OR) + Optimol®</td>
<td>Use lower rates as a preventative measure in pre-podding chickpeas. Use the high rate when the pest population has reached economic threshold. The addition of Optimol® is likely to improve the performance of Vivus Max in chickpeas. <strong>Max</strong> is unlikely to reduce larval numbers below threshold if the initial population exceeds 6 metres per row – use alternative control options under these populations.</td>
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<td></td>
<td><strong>Cotton</strong></td>
<td><strong>200 mL/ha (OR) + Optimol®</strong></td>
<td>Vivus Max should not be applied on larvae larger than 7 mm in length in cotton. When applied as a stand-alone insecticide, Vivus Max is unlikely to reduce larval numbers below threshold if the initial population exceeds 4 metres per row. Always include Optimol® when using Vivus Max in cotton. Vivus Max should be used in accordance with the Cotton Best Management Practices Manual.</td>
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<td>200 mL/ha (OR) + Optimol® + a registered nematicide at its label rate</td>
<td><strong>Application should be made from the early vegetative growth stage through to tasselling and prior to the emergence of silks. Vivus Max has short residual activity and re-treatment may be required at 2 to 3 day intervals, depending on egg counts and crop growth rates.</strong></td>
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<td></td>
<td><strong>Sweetcorn</strong></td>
<td><strong>200 mL/ha (OR) + Optimol®</strong></td>
<td>Vivus Max is highly compatible with the majority of pesticides, herbicides and foliar fertilisers. Vivus Max is compatible with a range of irrigation equipment. The product is diluted in water prior to injection into the irrigation water, ensuring that the dilution water is clean and not oily with a pH of 7 or less and ensure there is constant agitation. Preferably, rainwater should be used for dilution. Ensure any diluted Vivus Max is used within 10 hours of mixing. For one-pass mobile irrigators such as centre pivots and laterals, continuously introduce the required quantity of Vivus Max into the irrigation water over the course of irrigation. Apply Vivus Max in no more than 10 mm of irrigation water. For static irrigators, introduce the required amount of Vivus Max into the irrigation water just prior to completion of the irrigation period, to maximise the concentration of Vivus Max applied and the amount that remains on the crop.</td>
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<tr>
<td></td>
<td><strong>Sweetcorn</strong></td>
<td><strong>200 mL/ha (OR) + Optimol®</strong></td>
<td>Use a higher rate when Bowers, fruit or economic parts of the crop are present, under high pest pressure conditions or to target larvae larger than 7 mm in length. Use lower rates during vegetative stages of crop production. Vivus Max has a short residual activity and re-treatment may be required at 2 to 3 day intervals. Use a non-ionic surfactant at the manufacturer’s specified rate to improve coverage. The addition of Optimol® may increase the speed of kill and improve performance against larger larvae larger than 7 mm in length.</td>
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**Use of Optimol® (refer to the Optimol label for additional information)**

Optimol has been developed specifically as an additive for Vivus Max. It contains molasses, sugar and petroleum oil that can enhance the performance of Vivus Max in some situations. Maximum control with Vivus Max will primarily be achieved by closely following the directions on this label. The addition of Optimol to Vivus Max should be considered where factors outside of the user’s control could limit the performance of Vivus Max. These factors may include:

- **Drift reduction during cooler conditions** (-18°C) that may cause reduced larval activity and feeding (typical in winter crops such as chickpeas)
- **High UV light conditions**
- **Hot, dry conditions during spraying that can cause droplet evaporation** (where application cannot be delayed until conditions improve)

When targeting high larval numbers or larvae at the larger end of the recommended size spectrum for Vivus Max (7 to 13 mm in length):

- **Alkaline or unfavorable plant chemistry** (as for cotton and pulses)
- **When using low volume (10 L/ha) application in sorghum, to minimise droplet evaporation.**

**GENERAL INSTRUCTIONS**

Vivus Max (nucleopolyhedrovirus) is a highly specific naturally occurring pathogen of Helicoverpa spp. The effectiveness of Vivus Max is dependent on a number of important factors; environmental conditions, application and the feeding behaviour of the pest. It is because of the requirement for near perfect conditions that the performance of Vivus Max is variable and at times, the level of control may be below expectations. The speed of activity of Vivus Max is also dependent on climatic conditions. Larvae can take up to 8 days to die. Daytime temperatures of 25°C to 35°C are ideal for the activity of Vivus Max. Good coverage of the feeding sites of the larvae is essential, as the product needs to be ingested to be effective. Vivus Max will not control larvae that do not feed on treated areas, e.g. when larvae are feeding in protected feeding sites such as inside cotton bolls, lettuce hearts, bean pods, com cobs and flowers. Good coverage plus actively feeding larvae are the key factors in ensuring maximum performance of Vivus Max. For this reason, apply Vivus Max to coincide with optimum environmental conditions for application. The majority of virus uptake by larvae occurs within 1 hour post-application. For this reason, it is best to avoid applying Vivus Max as alkaline mixtures will damage the virus. In UVE: For UV application in olive, Vivus Max is compatible with other products, since the undiluted solutions in these products can damage the virus. Vivus Max is compatible with Optimol in UVE mixtures.

**Horticultural crops:** Apply by ground ring or hand held equipment in a minimum of 400 litres of water per hectare.

**Broadacre crops:** **Ground Big** Apply in a minimum of 100L of water per hectare.

**Aerial – High Volume** Apply in a minimum of 30 litres of water per hectare. This application method is particularly susceptible to droplet evaporation, especially during hot and dry conditions (temperature greater than 30°C and humidity less than 40%). Droplet evaporation will reduce coverage, which can have a detrimental impact on performance.

**Aerial – Low Volume (Sorghum Only)** Apply in a minimum of 10 litres of water per hectare and include Optimol at 1 litre per hectare (Vivus Max + 1 L Optimol + 9 L water per hectare).

**Aerial – Ultra-Low Volume (UV)** Use an aeroplane carrier such as D-Dron, Cottol, Canopy or Biqupl Oil and apply in a minimum volume of 3 litres per hectare using micronair nozzles. The three component mix of carrier oil, Vivus Max and Optimol is suitable for UV application. When applying Vivus Max in UIV, DO NOT tank mix with other pesticides or fertilisers (refer to Compatibility).

**Via Overhead Irrigation:** Vivus Max can be effectively applied to crops in overhead irrigation water. The product should be introduced to the irrigation water at the appropriate rate using fertigation/chemigation equipment. If the product is diluted in water prior to injection into the irrigation water, ensure that the dilution water is clean and not oily with a pH of 7 or less and ensure there is constant agitation. Preferably, rainwater should be used for dilution. Ensure any diluted Vivus Max is used within 10 hours of mixing. For one-pass mobile irrigators such as centre pivots and laterals, continuously introduce the required quantity of Vivus Max into the irrigation water over the course of irrigation. Apply Vivus Max in no more than 10 mm of irrigation water. For static irrigators, introduce the required amount of Vivus Max into the irrigation water just prior to completion of the irrigation period, to maximise the concentration of Vivus Max applied and the amount that remains on the crop.

**COMPATIBILITY**

**In water:** Vivus Max is highly compatible with the majority of herbicides, insecticides fungicides and fertilisers when mixed in water. Ensure that the mixture has a pH of 7 or less before adding Vivus Max as alkaline mixtures will damage the virus. In ULV: For UV application in oil, Vivus Max is not compatible with other pesticides, since the undiluted solutions in these products can damage the virus. Vivus Max is compatible with Optimol in UVE mixtures.

**RAIN FASTNESS**

The majority of virus uptake by larvae occurs within 1 hour post-application. For this reason, it is best to avoid applying Vivus Max if heavy rain is expected within one hour following application. However do not delay application if only moderate rain is expected, or heavy rain is not imminent.