Product Name: VIVUS MAX HELICOVERPA BIOCONTROL

APVMA Approval No: 60905/129006

RLP
APPROVED

Label Name:	VIVUS MAX HELICOVERPA BIOCONTROL
Signal Headings:	READ SAFETY DIRECTIONS BEFORE OPENING OR USING
Constituent Statements:	5 x 10^9 polyhedral inclusion bodies of the Nucleopolyhedrovirus of Helicoverpa armigera per millilitre
Mode of Action:	GROUP 31 INSECTICIDE
Statement of Claims:	For the integrated control of Helicoverpa spp. in various crops as specified in Directions For Use
Net Contents:	1L-1000L
Restraints:	
Directions for Use:	This section contains file attachment.
Other Limitations:	
Withholding Periods:	WITHHOLDING PERIOD: NOT REQUIRED WHEN USED AS DIRECTED
Trade Advice:	
General Instructions:	This section contains file attachment.

Resistance Warning:	INSECTICIDE RESISTANCE WARNING GROUP 31 INSECTICIDE For insecticide resistance management VIVUS Max is a Group 31 insecticide. Some naturally occurring insect biotypes resistant to VIVUS Max and other Group 31 insecticides may exist through normal genetic variability in any insect population. The resistant individuals can eventually dominate the insect population if VIVUS Max or other Group 31 insecticides are used repeatedly. The effectiveness of VIVUS Max on resistant individuals could be significantly reduced. Since occurrence of resistant individuals is difficult to detect prior to use, AgBiTech accepts no liability for any losses that may result from the failure of VIVUS Max to control resistant insects. VIVUS Max may be subject to specific resistance management strategies. For further information contact your local supplier, AgBiTech representative or local agricultural department agronomist.

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.

Protections:	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 AND DISPOSAL Storage: Keep out of reach of children. Store in the closed, original container out of direct sunlight at or below 4°C. Storage in a domestic freezer is suitable (-18°C). The product is stable for at least 2½ years if stored as indicated. Disposal: Triple rinse containers before disposal. Add rinsings to spray tank. DO NOT dispose of undiluted product on site. If recycled, replace cap and return clean containers to recycler or designated collection point. If not recycled, break, crush, or puncture and deliver empty packaging for appropriate disposal to an approved waste management facility. If an approved waste management facility is not available bury the empty packaging 500mm below the surface in a disposal pit specifically marked and set up for that purpose clear of waterways, desirable vegetation and tree roots, in compliance with relevant Local, State and Territory government regulations. DO NOT burn empty containers or product. Refillable Containers: Empty contents fully into application equipment. Close all valves and return to the point of supply for refill or storage.

Safety Directions:	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 Instructions:	FIRST AID

	First aid is not generally required. If in doubt, contact a Poisons Information Centre (phone Australia 13 11 26; New Zealand 0800 764 766) or a doctor.

First Aid Warnings:	

Directions for use:

Crop	Pest	Rate	Critical Comments
Cereal Grains *including:* Maize Popcorn Lucerne (Alfalfa) Oilseed *including:* Linseed Peanut Canola Safflower Sunflower Potatoes Pulses *including:* Azuki bean Broad bean Cowpea Faba bean Field pea Kidney bean Lablab Lentil Lima bean Lupin Mung bean Navy bean Pigeon pea Soya bean Vetch	Larvae of: *Helicoverpa armigera* Corn earworm/ Cotton bollworm/ Tobacco budworm and *Helicoverpa punctigera* Native budworm	150 mL/ha	**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 8 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 options should be considered. Avoid applying Vivus Max if heavy rain is expected within 1 hour after application. **Linseed:** Use a non-ionic surfactant at the manufacturer's specified rate to improve coverage. **Pulses:** The addition of Optimol* is likely to improve the performance of Vivus Max in pulse crops.
Sorghum		75 to 150 mL/ha (+ Optimol* at 1 L/ha when applied in 10 L/ha total volume – see Application)	Use lower rates when targeting larvae smaller than 7 mm (1st and 2nd instar) in length or under lower pressure (near threshold) situations. Use the higher rates when targeting larvae larger than 7 mm in length (3rd instar). Applications that are targeted when 50% of heads have reached 100% flowering are likely to provide good control.

Chickpeas	75 to 150 mL/ha + Optimol*	Use lower rates as a preventive 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. Vivus Max is unlikely to reduce larval numbers below threshold if the initial population exceeds 6 per metre of row – use alternative control options under these populations.
Cotton	200 mL/ha + Optimol* OR 200 mL/ha + Optimol* + a registered larvicide at its label rate	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 per metre of row. Always include Optimol* when using Vivus Max in cotton. Vivus Max should be used in accordance with the Cotton Best Management Practices Manual.
Sweetcorn	200 mL/ha	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.

Berryfruit *including:* Blackberries Blueberries Boysenberry Cranberry Currants Gooseberry Raspberries Strawberry Brassica vegetables *including:* Broccoli Brussels sprouts Cabbages Cauliflower Chinese broccoli Brassica leafy vegetables Celery Cucurbits *including:* Cucumber Melons Pumpkins Squash Watermelon Zucchini Fruiting vegetables *including:* Eggplant Peppers (capsicum and chilli) Tomato Leafy vegetables *including:* Endive Lettuce Roquette (Rucola) Silver beet Spinach Legume vegetables *including:* Green beans Green peas Snow peas Sugar snap peas Ornamental flowers and plants Pome fruit *including:* Apples Nashi Pears		150 – 300 mL/ha	Use a higher rate when flowers, fruit or economic parts of the crop are present, under high pest pressure conditions or to control 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 larvae larger than 7 mm in length.

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

*** 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:
• Application 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 unfavourable plant chemistry (as for cotton and pulses)
• When using low volume (10 L/ha) application in sorghum, to minimise droplet evaporation

Optimol rates:

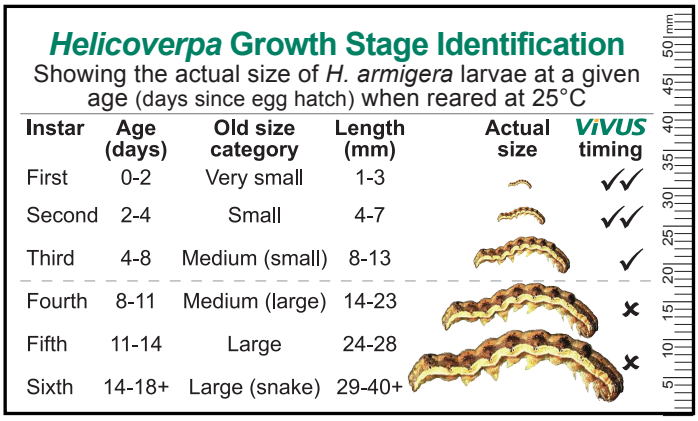
Application Volume	**Optimol Rate**
Less than 100 L/ha	**1 L/ha**
Greater than 100 L/ha	**2 L/ha**

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, corn 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 and larval activity, such as periods of high humidity and warm (>18°C) conditions. Under sub-optimal conditions where application cannot be delayed, increasing application volume and droplet size, and inclusion of Optimol, should be considered.



Mixing: Shake the container well before use. Spray water pH should be neutral (pH 7.0) – spray water pH above 8 may damage the virus and performance will be reduced. If needed, use a suitable buffer or acidifier. If mixing with other pesticides or foliar fertilisers in water, add Vivus Max to the spray tank after the other products are thoroughly diluted. Vivus Max should be applied as soon after mixing as possible. The virus can be rendered inactive if the mixture is left to stand overnight. If using Optimol, add the required amount after mixing Vivus Max in the spray tank.

Application: Use application parameters (nozzles, swath width, pressure, boom height, speed, etc) to ensure thorough coverage of the target area.

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

Broadacre crops:
Ground Rig
Apply in a minimum of 100 litres 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. During hot and dry conditions avoid using this application method – wait until conditions favour good coverage or apply in ULV (see below). Alternatively, if application in water by air during hot and dry conditions cannot be avoided, increase application volume and/or use an anti-evaporation additive (such as a suitable petroleum oil or Optimol) to improve coverage.

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 (ULV)
Use an approved carrier such as D-C-Tron, Cottoil, Canopy or Biopest 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 ULV application. When applying Vivus Max in ULV, 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 silty 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 ULV application in oil, Vivus Max is not compatible with other pesticides, since the undiluted solvents in these products can damage the virus. Vivus Max is compatible with Optimol in ULV 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.