

READ SAFETY DIRECTIONS BEFORE OPENING OR USING

Fawligen

FALL ARMYWORM BIOCONTROL

ACTIVE CONSTITUENT: 7.5 x 10⁹ OCCLUSION BODIES OF *Spodoptera frugiperda* MULTIPLE NUCLEOPOLYHEDROVIRUS STRAIN 3AP2 PER MILLILITRE

GROUP 31 INSECTICIDE

**For the integrated management of
Spodoptera frugiperda (fall armyworm)
in various crops as per the Directions For Use Table**

Approved for use under APVMA Permit Number: PER90820
Important: Read the attached label before use

5 Litres

Manufactured by:
AgBiTech Pty Ltd
8 Rocla Court Glenvale
QLD Australia 4350

AgBiTech

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HERE

READ SAFETY DIRECTIONS BEFORE OPENING OR USING

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SAFETY DIRECTIONS

May irritate the eyes. Avoid contact with eyes. When using together with other products, consult their label safety directions. Wash hands after use.



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.

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8 Rocla Court
Glenvale QLD 4350
Phone: 1800 242 519
www.agbitech.com

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DIRECTIONS FOR USE

Crops	Pest	Rate	Critical Comments
› Cereal Grains <i>including:</i> Maize, Popcorn, Sorghum › Oilseed <i>including:</i> Linseed, Peanut, Canola, Safflower, Sunflower › Pulses <i>including:</i> Soybean, Mung bean › Fodder and forage crops	Larvae of: <i>Spodoptera frugiperda</i> (Fall armyworm)	50 to 200 mL/ha + Optimol*	All Crops: Thorough coverage of the crop is essential, as the active agent in Fawligen (SfMNPV) must be ingested by larvae to be effective. SfMNPV is most effective on 1st and 2nd instar larvae, so application should be timed when most larvae are 4 mm or smaller in length. Fawligen should not be used to control larvae larger than 8 mm (3rd instar) in length. Fawligen will provide the best control when targeting 1st and 2nd instar larvae under ideal application conditions. Larvae will continue to feed for 1 to 3 days following virus infection. Larvae will take between 3 to 9 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 used. The addition of Optimol* may increase the speed of kill and overall level of control. Sorghum: When applying Fawligen during flowering, mix with the recommended rate of ViVUS Max if <i>Helicoverpa armigera</i> larvae are present.
Cotton		150 to 300 mL/ha + Optimol* OR 150 mL/ha + Optimol* + a registered larvicide at its label rate	Fawligen should not be applied alone to control threshold populations of larvae or to target larvae larger than 4 mm in length. Always include Optimol* when using Fawligen in cotton. Fawligen should be used in accordance with the Cotton Best Management Practices Manual.
Sweetcorn		200 mL/ha + Optimol*	Application should be made at first appearance of neonate (hatchling) larvae. Fawligen has short residual activity and re-treatment may be required at 3-day intervals, depending on egg counts and crop growth rates.
› Root and tuber vegetables <i>including:</i> Ginger › Legume vegetables <i>including:</i> Green beans, Green peas › Fruiting Vegetables, other than Cucurbits › Leafy vegetables <i>including:</i> Brassica leafy vegetables › Ornamental Flowers and Plants		100 to 200 mL/ha + Optimol*	Application should be made at first appearance of neonate (hatchling) larvae. 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 4 mm in length. Use lower rates only during vegetative stages of crop production. Fawligen has a short residual activity and re-treatment may be required at 3-day intervals depending on egg counts and crop growth rates.

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

WITHHOLDING PERIOD: NOT REQUIRED WHEN USED AS DIRECTED

***Use of Optimol® (refer to the Optimol label for additional information)**

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

- › Application during cooler conditions (<18°C) that may cause reduced larval activity and feeding
- › 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 Fawligen (4 to 8 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

Spodoptera growth stage identification

Showing the actual size of *S. frugiperda* larvae at a given age (days since egg hatch) when reared at 25°C.

Instar	Age (days)	Size category	Length (mm)	Actual size	Fawligen timing
1st	0 - 1	Very Small	1 - 2 mm		✓✓
2nd	2 - 3	Small	3 - 4 mm		✓✓
3rd	4 - 5	Medium (small)	5 - 8 mm		✓
4th	6 - 7	Medium (large)	9 - 14 mm		✗
5th	8 - 9	Large	15 - 20 mm		✗
6th	10 - 14	Very Large	21 - 30+ mm		✗

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GENERAL INSTRUCTIONS

Fawligen (SfMNPV) is a highly specific naturally occurring pathogen of *Spodoptera frugiperda* (fall armyworm) and will have no impact on other pest and beneficial species present in the crop. The effectiveness of Fawligen is dependent on several 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 Fawligen is variable and at times, the level of control may be below expectations. The speed of activity of Fawligen is also dependent on climatic conditions. Larvae can take up to 9 days to die from initial infection. A temperature range of 25°C to 35°C is ideal for the activity of SfMNPV. Temperatures below 18°C will slow the development of SfMNPV infection and cause delayed or reduced control.

Good coverage of the feeding sites of the larvae is essential, as the product needs to be ingested to be effective. Fawligen will not control larvae that do not feed on treated areas, such as when larvae are feeding in protected feeding sites such as inside whorls, corn cobs and cotton flowers and bolls.

Good coverage plus actively feeding larvae are the key factors in ensuring maximum performance of Fawligen. For this reason, apply Fawligen 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 Fawligen to the spray tank after the other products are thoroughly diluted. Fawligen 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 Fawligen in the spray tank.

APPLICATION (ALL CROPS)

It is critical to 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 (Flowering Sorghum Only): Apply in a minimum of 10 litres of water per hectare and include Optimol at 1 litre per hectare (e.g., Fawligen + 1 L Optimol + 9 L water per hectare).

Aerial – Ultra-Low Volume (ULV): Use an approved carrier oil 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 Fawligen, Optimol and carrier oil is suitable for ULV application (e.g., Fawligen + 1 L Optimol + 2 L carrier oil per hectare). When applying Fawligen in ULV, DO NOT tank mix with other pesticides or fertilisers (refer to Compatibility).

Via Overhead Irrigation: Fawligen 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 Fawligen is used within 10 hours of mixing.

For one-pass mobile irrigators such as centre pivots and laterals, continuously introduce the required quantity of Fawligen into the irrigation water over the course of irrigation. Apply Fawligen in no more than 10 mm of irrigation water. For static irrigators, introduce the required amount of Fawligen into the irrigation water just prior to completion of the irrigation period, to maximise the concentration of Fawligen applied and the amount that remains on the crop.

COMPATIBILITY

In water: Fawligen is highly compatible with most herbicides, insecticides, fungicides, and fertilisers when mixed in water. Ensure that the mixture has a pH of 7 or less before adding Fawligen as alkaline mixtures will damage the virus.

In ULV: For ULV application in oil, Fawligen is not compatible with other pesticides since the undiluted solvents in these products can damage the virus. Fawligen is compatible with Optimol in ULV mixtures.

RAIN FASTNESS

The majority of virus uptake by larvae occurs within one hour post-application. For this reason, it is best to avoid applying Fawligen 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.

INSECTICIDE RESISTANCE WARNING

GROUP

31

INSECTICIDE

For insecticide resistance management Fawligen is a Group 31 insecticide. Some naturally occurring insect biotypes resistant to Fawligen 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 Fawligen or other Group 31 insecticides are used repeatedly. The effectiveness of Fawligen 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 Fawligen to control resistant insects. Fawligen may be subject to specific resistance management strategies. For further information contact your local supplier, AgBiTech representative or local agricultural department agronomist.

To help prevent the development of resistance to Fawligen, observe the following instructions:

- › Use Fawligen in accordance with the current Insecticide Resistance Management (IRM) strategy for your crop or region
- › Use IPM tactics to manage *Spodoptera frugiperda* (fall armyworm)
- › Monitor *Spodoptera frugiperda* populations for loss of field efficacy

For further information contact your farm chemical supplier, consultant, local Department of Agriculture or Primary Industries, or AgBiTech. For additional information on insect resistance, modes of action and monitoring visit the Insecticide Resistance Action Committee (IRAC) website.

PROTECTION OF WILDLIFE, FISH, CRUSTACEANS AND ENVIRONMENT

Do not contaminate wetlands or watercourses with this product or 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. Storage in a domestic freezer is suitable (-18°C). The product can be stored and transported between 4°C and 27°C for short periods (less than 48 hours). Expiry date is 2 years from DOM when stored at less than 4°C.

Disposal: Triple rinse containers before disposal. Add rinsings to spray tank. DO NOT dispose of undiluted product on site. If recycling, replace cap and return clean containers to recycler or designated collection point. If not recycling, 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 500 mm below the surface in a disposal pit specifically marked and set up for this purpose clear of waterways, desirable vegetation and tree roots, in compliance with relevant Local, State or 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.

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SAFETY DATA SHEET

Additional information is listed in the 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.

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