Andermatt
Madumbi

Biological Solutions

Bollworm Management

Bolldex®

Reg. No. L8895, Act 36 of 1947.

Bio Crop Protection | Root Health | Plant Vitality

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A suspension concentrate of a Nucleopolyhedrovirus (HearNPV) for the control of African bollworm (*Helicoverpa armigera*) on all crops. A highly effective population management tool.

Why use Bolldex®?

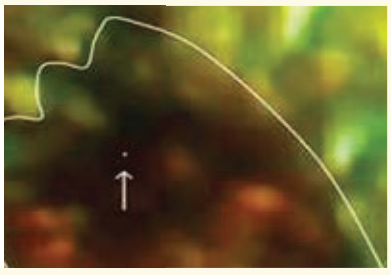
Advanced virus technology for suppression of African Bollworm larvae, manufactured to highest standard by world renowned virus specialists, Andermatt Biocontrol Suisse AG.

Features	Benefits
Unique virus mode of action.	Ingestion of only a few virus particle ensures mortality. There is no sub-lethal dose. This makes Bolldex® a highly effective population and resistance management tool and ideal for IPM programs.
Correct timing of application can offer up to 90% control with minimal crop damage.	Many opportunities exist for the target pest to ingest virus particles, starting when the eggs hatch. This improves population reduction and damage control to the crop.
Highly concentrated SC formulation.	Bolldex® can be applied at low volume application rates.
Bolldex® has no residue limit.	This allows for effective pest management right up to harvest and gives you residue options for other management needs.
Highly specific target range.	As the Bolldex® virus is highly specific and it will not harm beneficial insect populations. Bolldex® can be applied without risk to bee populations and other beneficial insects and mites.
Good compatibility and excellent shelf life (24 months at 4°C and infinite when frozen).	Bolldex® is user friendly and easily incorporated into chemical programs as long as pH of the spray tank is managed.
Natural product with no chemical additives, suitable for organic use.	Non-toxic, no MRL, completely natural, safe for applicators and has no withholding period.

How does Bolldex® work?

Bolldex® virus particles must be ingested to be effective. Chances for ingestion by African bollworm is high, due to the larvae's ravenous appetite and virus particle concentrations dispersed per application. Ingestion of only a few virus particles is enough to cause mortality.

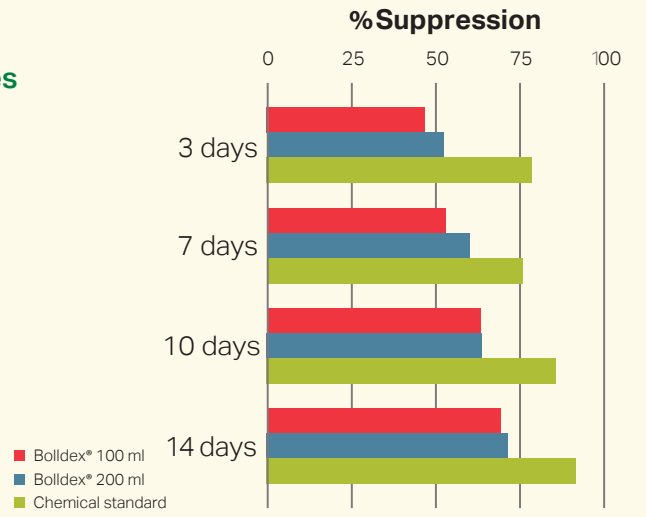
Pictured right: An illustration of the size of a virus particle in comparison to the mandible of an African bollworm larvae before hatching.



When virus particles are ingested, they travel into the midgut of the larvae (as illustrated on the right). The high pH environment causes the dissolution of the protective capsule surrounding the virus and releasing it. These virus particles infect the cells lining the midgut and replicate. These new virus particles are released into the haemolymph and go on to infect other cells, where replication continues. The widespread infection of the larval cells cause the insect to stop feeding and death occurs. The production of enzymes, such as chitinase, cause liquefication, releasing viruses that can serve as a secondary source of inoculum to infect other larvae.

Trial data

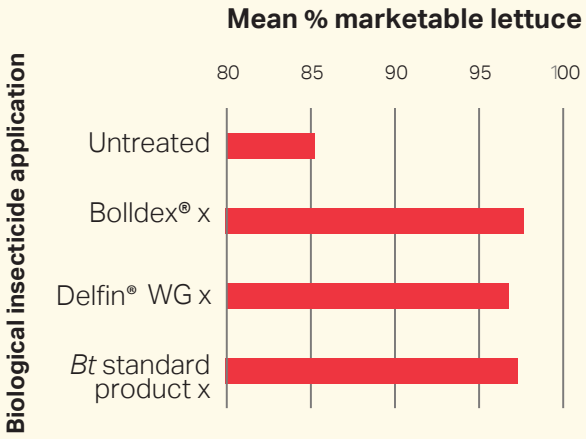
Bolldex® application of 100 ml and 200 ml per hectare on sunflowers, gave up to 71% suppression of Bollworm infestation which makes it an ideal tool for the reduction of Bollworm larvae in an integrated program.



Figures right: Percentage suppression of control of Bollworm larvae on sunflower compared to a chemical standard evaluated specific days after treatment.

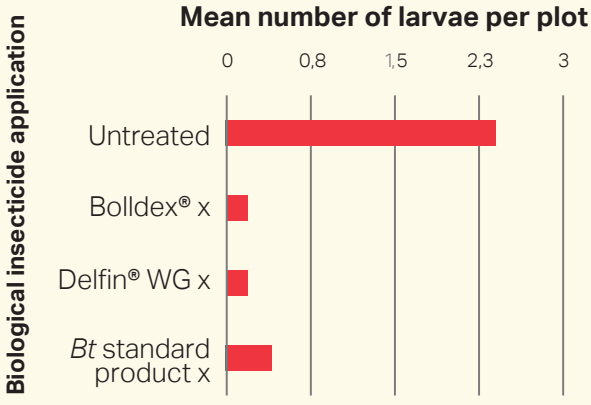
Bolldex®, as well as Delfin® WG (*Bacillus thuringiensis*), exhibit very good control of African Bollworm when applied early, ie. when the first activity of young larvae (1st instar) is noticed. Bolldex® and Delfin® WG compared very well to a standard Bt product used commercially.

3 applications every 7 days prior to harvest resulted in higher than 90% of marketable lettuce.

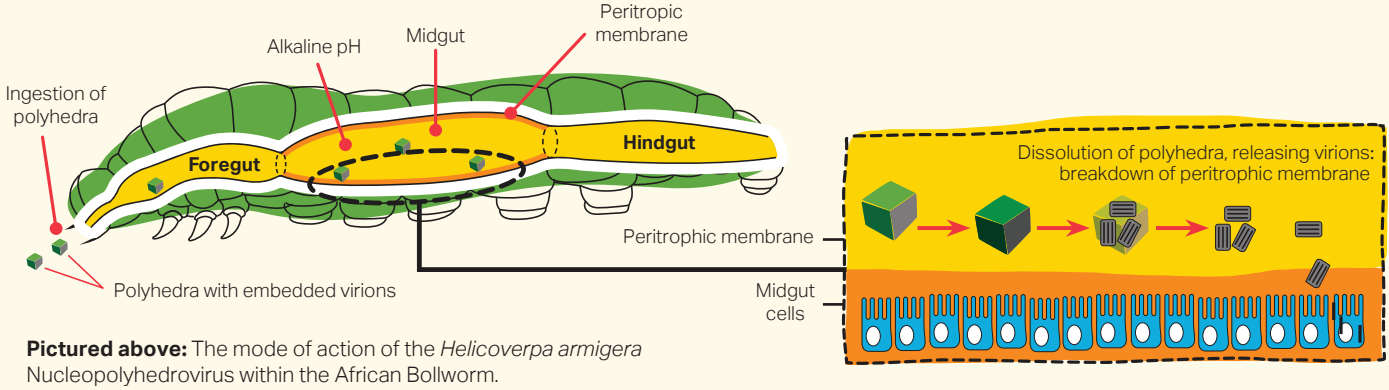


Figures right: The effect of Bolldex® and Delfin® WG products on the percentage marketable lettuce per plot.

Bolldex® and Delfin® WG caused a significant reduction in African bollworm larvae present on lettuce when compared to the untreated control.



Figures right: The effect of Bolldex® and Delfin® WG on the number of African bollworm (*Heliocoverpa armigera*) larvae present on lettuce.



Pictured above: The mode of action of the *Helicoverpa armigera* Nucleopolyhedrovirus within the African Bollworm.

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Bolldex® – production, formulation and quality control:

Andermatt Biocontrol Suisse AG, established in 1988, is a leading producer of virus products with extensive experience in manufacturing these viruses for commercial pest control. Granulovirus particles are covered by a natural occlusion capsule, which protects the virus from environmental factors. Inadequate procedures during production, improper timing of harvest, incorrect formulation and inappropriate co-formulants can lead to incomplete or damaged viruses which results in reduced stability, impacting the virus' efficacy.

Andermatt Biocontrol Suisse AG has optimised the production procedure to ensure that the virus particles are not damaged and maintain their virulence under varying application conditions. Product quality is very important for the Swiss company, and therefore their product efficacy is determined by evaluating the product on the relevant host insect itself. In the case of Bolldex®, each batch is tested via bioassay against African Bollworm larvae. The quality control on African Bollworm larvae ensures that only the most effective products are put on the market.

Registered uses

Pest	Crop	Dose rate
African bollworm (*Helicoverpa armigera*)	All crops	General application rate of 200 ml per ha and 100 ml per ha aerial application for row crops. Refer to Bolldex® label for detailed instructions.

Available in: 500 ml, 5 L

Registered, Marketed and Distributed by:

Andermatt Madumbi

Manufactured by:

Andermatt Biocontrol Suisse

Andermatt Madumbi

Healthy Food and Healthy Environment, for all

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