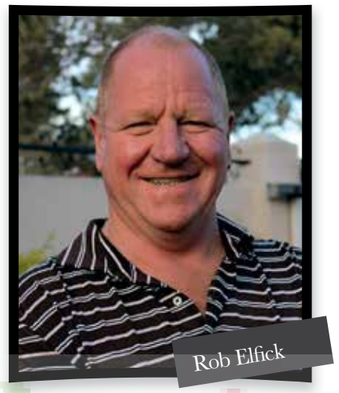
The only patented NPV in SA

Exploring effective biological control of false codling moth, macadamia nut borer and litchi moth larvae. By **Rob Elfick**



The Lepidopteran family *Tortricidae* is a diverse family of moths that comprises over 11 000 species, many of which are also referred to as tortrix or leafroller moths. They are considered crop pests and cause significant economic damage to agricultural commodities around the world. Pests such as the codling moth (*Cydia pomonella*) can cause major crop loss due to the damage that they cause to fruits in particular. In SA there are a number of tortrix pests that are considered economically important, or have phytosanitary status. Three species of the tortricid complex found in SA are particularly troublesome within the fruit and nut industry. These are false codling moth (FCM) (*Thaumatotibia leucotreta*), macadamia nut borer (MNB) (*Thaumatotibia batrachopa*) and litchi moth (LM) (*Cryptophlebiae peltastica*). These insect pests that belong to the tortricid subfamily *Grapholitini* inflict feeding damage that can cause significant losses to susceptible crops like citrus, macadamias, litchis, table grapes, and stone fruit.

Tortricid damage in susceptible crops and the difficulties in achieving effective pest management

- Tortricid moth larvae typically burrow into fruit and nuts upon hatching.
- In fruit, the larvae create tunnelling scars that break down plant tissue and cause premature fruit drop. Fruits are often susceptible from fruit set until harvest.
- In nuts, tortricid moths typically penetrate the husk to feed on the kernel or the seed lining (depending on the size and developmental stage of the nut). In macadamias, MNB damaged nuts are often shed from the tree, resulting in up to 20% crop loss.
- Due to the polyphagous nature of the moths and the similarities between species, monitoring populations and infestation can be difficult. Farmers typically rely on several chemical treatments each season to effectively manage multiple tortricid pests at once. This, in turn, leads to issues with resistance and residue management.
- Unfortunately, growers do not always plan sprays to correlate with peaks in pest activity, preferring calendar spray programmes. This could exacerbate the risk of resistance development towards products with long residual action, such as pyrethroids.

MultiMax™ – A novel solution for tortricid moth challenges

Taking into consideration the difficulties experienced by growers that are dealing with infestations of multiple species at once and factoring in MRLs and the potential for resistance development, River Bioscience is proud to announce our new product to manage problematic tortricid pests: MultiMax™.

MultiMax™ is a novel patented biopesticide that is effective against tortricid larvae in the subfamily *Grapholitini*, including FCM, MNB, LM codling moth and oriental fruit moth. It provides growers with a low-risk, effective, virus-based pesticide for population control that is compatible with other biocontrol strategies. Using MultiMax™ for population knockdown reduces pest pressure and limits infestation as fruit becomes more susceptible to the larvae of tortricid moths. Maintaining a low population improves area-wide pest management and protects the fruit leading up to harvest. Thus, MultiMax™ is an integrated pest management (IPM) tool that can be used to minimize infested fruit reaching the packhouse, limiting the risk of exceeding pre-packhouse FMS thresholds.

Several trials were conducted for the registration for MultiMax™. For example, data shows that MultiMax™ applied to tree nut crops (macadamia) is comparable to registered chemical standards, delivering 92.2% MNB and 88.9% FCM control of infestation, without the chemical residues and risk of resistance development.

For more information, please visit our website: www.riverbioscience.co.za

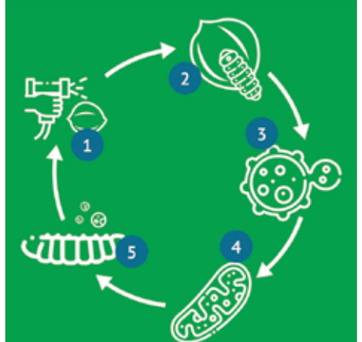
River Bioscience | xsit x sterile insect technique

The difficulties experienced by growers dealing with infestations of multiple species, plus MRLs and the potential for resistance development, have necessitated a novel patented biopesticide.

How does MultiMax™ work?

1. MultiMax™ is sprayed onto crops.
2. Larvae ingest the virus from the surface of the fruit.
3. Protective protein layer of virus is digested by high pH of midgut.
4. The virus is absorbed by microvilli, and virus replication begins in nuclei of midgut cells.
5. The virus spreads throughout the larvae and secondary replication occurs.

The larvae die and release virus particles into the surrounding environment, causing secondary infection.



MultiMax™ Benefits

No phytotoxicity
In all field trials, no phytotoxicity was observed for any rates of MultiMax™.

Environmentally friendly
No impact on beneficial insects and other life forms.

No resistance
Due to MultiMax™ being a naturally occurring virus within the tortricid family, the larvae cannot build resistance to the biopesticide.

Efficacy
Up to 92.2% efficacy rate has been observed during product trials.

MRL Management
MultiMax™ can be used up to harvest for control of tortricid larvae, as there are no MRL residues.

IPM friendly
MultiMax™ can be incorporated into an integrated pest management programme.