Enhance the management of False codling moth on citrus

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Enhance the management of false codling moth (FCM) with the inclusion of biologicals, Cryptex and Eco-Bb, in an integrated pest management (IPM) approach.

False codling moth (*Thaumatotibia leucotreta*) is one of the most detrimental and challenging pests to control on a variety of agricultural crops. With a wide host range, this indigenous moth species causes severe damage to many crops including citrus, table grapes, stone fruit and tree nuts. Export crops are closely monitored. Should a single FCM be detected in a shipment, it may be rejected resulting in severe financial losses to the South African fruit industry. Furthermore, FCM has become a regulated pest in the European Union adding additional challenges.

Controlling FCM requires an integrated, holistic approach combining cultural, chemical and biological control, as well as dedicated and effective management practices. The inclusion of biological products is not a replacement to a chemical pesticide, but rather a complimentary practice to aid the suppression of FCM. The combination of products and mode of actions will lead to improved resistance management and ultimately extend the lifespan of chemical pesticides.

For example, the inclusion of a granulovirus (Cryptex) and an entomopathogenic fungus (Eco-Bb) strengthens the pest control strategy and complements an IPM approach to FCM.

Cryptex, a *Cryptophlebia leucotreta* Granulovirus (produced by Andermatt Biocontrol) is highly species specific and only active against FCM larvae. Cryptex contains encapsulated virus particles and needs to be applied just after peaks in FCM flights. It is not a contact insecticide and has to be ingested by FCM larvae to be effective. Once ingested, the alkaline conditions in the FCM midgut dissolve the protective capsule, activating the virus particle and resulting in the death of the infected larvae. Buffering of the spray mix (pH 5 - 8) is extremely important as very alkaline or acidic conditions could dissolve the protective capsule in the spray tank, decreasing the virus particle's tolerance to climatic conditions and overall efficacy.

Cryptex is an excellent population management tool and as such needs to be incorporated early into the growing season. It works in synergy with mating disruption to manage and reduce late season FCM population pressure. For optimum efficacy and population control, the first Cryptex application must coincide with the first moth flight around late October, and subsequent peak flights thereafter.

Eco-Bb (*Beauveria bassiana*, strain R444), an entomopathogenic fungus (produced by Plant Health Products), is a broad-spectrum contact insecticide that controls FCM eggs, larvae, exposed pupae and adults. As Eco-Bb targets all stages of the pest lifecycle, it is an ideal insurance policy to further reduce FCM pressure. Eco-Bb can be applied regularly through the growing season in combination with the regular spray programme. Contact Madumbi for guidance on compatible tank mixtures.

Trials on a variety of crops have shown that the combination of Cryptex and Eco-Bb results in effective and consistent reduction of the FCM pest population. Many commercial citrus growers are incorporating these biological products into their total IPM approach.

For more information visit www.madumbi.co.za.

Why use *Cryptex*®?

Features	Benefits
Locally isolated granulovirus strain, manufactured in Switzerland by world renowned virus specialists, Andermatt Biocontrol	Proven and consistent efficacy against FCM on a variety of crops
Highly effective FCM reduction and damage control when applied as recommended	An effective granulovirus product is one of the best tools available to reduce target pest populations
Very specific target range	*Cryptex*® will not affect any beneficial organisms and is harmless to bees
Unique mode of action	Mode of action of virus products differ from chemical insecticides, making them ideal for use in IPM and resistance management programs
User friendly SC formulation	Advanced formulation allows for: • Versatile application options • No feeding stimulant (molasses) needed • Lipophilic characteristics ensure excellent adhesion and rain fastness • Can be tank mixed with most agricultural products provided pH is correctly managed • Excellent shelf life; min. 24 months at 4 °C, unlimited if kept at -18 °C
Non-toxic, no MRL requirements and has no with-holding period	*Cryptex*® is suitable for organic and conventional agriculture and can be applied during the harvesting period