

# Codling moth problems in pome-fruit orchards

Introducing a novel patented virus-based biopesticide for effective biological control of codling moth larvae. By **Rob Elfick**

**C**ydia pomonella, commonly referred to as the codling moth, is a prominent pest notorious for its detrimental impact on the pome fruit industry. It belongs to the family Tortricidae and poses a significant threat to both local and international fruit markets due to the damage inflicted by its larval feeding.

The economic impact of codling moth infestations is substantial, as it can lead to significant losses in fruit yields. Infestations not only result in reduced crop yields but also render damaged fruits unmarketable.

Controlling this pest presents challenges due to its ability to develop resistance to chemical and certain biopesticide treatments, as well as its adaptability to various environmental conditions.

## Codling moth damage and challenges

- Adult codling moths lay their eggs directly on the fruit surface. It typically takes 5–12 days for the eggs to hatch. Detecting these tiny and inconspicuous eggs requires meticulous inspection. Once the eggs hatch, the larvae emerge and begin their destructive feeding habits.
- Codling moth larvae inflict two types of damage on fruit: stings and deep entries:



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- o Stings occur when newly hatched larvae feed on the fruit surface, resulting in shallow excavations. These stings are often visible but may be caused by larvae that have perished due to natural predators or insecticidal treatments. Despite being superficial, stings can mar the appearance of the fruit and create openings for secondary infections.
- o Deep entries, on the other hand, are caused by larvae successfully burrowing into the fruit. These larvae tunnel towards the fruit core, consuming pulp, and seeds along the way. The fruit tissue surrounding deep entries decomposes due to bacterial activity, and tunnels are often obstructed by larval excrement (frass), which oozes from the entry point. As the damaged tissue decays,

penetration holes in ripe fruit become sunken and turn brown, leading to premature ripening and fruit drop.

- Early in the season, larvae often enter through the calyx. These entry points are challenging to detect without cutting open the fruit, which complicates sanitation efforts. In the later season, side entries become more prevalent and are easier to identify.

## When to look out for codling moth

Codling moths go into diapause in the winter months and typically begin emerging in early October when temperatures begin to rise. Traps should be used in conjunction with temperature data to determine when emergence will occur and to track generational flight peaks, so that sprays can be timed accurately.

## CodlMax™ - effective results and a novel active ingredient to manage risks of resistance

CodlMax™ is a novel patented biopesticide that is highly effective against codling moth. It provides growers with a low-risk, environmentally friendly, and effective virus-based pesticide for population control. CodlMax™ can be used to reduce pest pressure by preventing the completion of the pest's lifecycle, and by killing larvae before they penetrate or damage the fruit. CodlMax™ can also be used as a knockdown spray, in conjunction with area-wide pest management techniques, to maintain low populations and limit infestation as fruit become more susceptible. Thus, CodlMax™ can provide effective protection against codling moths in pome fruit orchards.

## CodlMax™ benefits

### Efficacy

An excess of 80% efficacy rate has been observed during product trials.

### Environmentally friendly

No impact on beneficial insects and other life forms.

### No phytotoxicity

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

### Reduced risk of resistance development

CodlMax™ is a naturally occurring nucleopolyhedrovirus isolated in SA. Resistance has developed against *Cydia pomonella* granulovirus (CpGV) in Europe, because of repeated applications for many years without alternating active ingredients. CodlMax™ contains a novel active ingredient with a slightly different mode of action to CpGV products. Incorporating CodlMax™ into spray programmes with CpGV will contribute to reducing the chance of resistance building and ensure these important active ingredients can be effective into the future.

## MRL management

CodlMax™ can be used up to harvest for control of codling moth larvae as there are no MRL residues.

## IPM friendly

CodlMax™ can be incorporated into an integrated pest management programme.

In addressing the persistent threat posed by codling moths to the pome fruit industry, CodlMax™ offers a promising avenue for effective pest management. With its proven efficacy, environmentally

friendly nature, and reduced risk of resistance development, CodlMax™ is an excellent tool to add to an IPM programme to combat codling moth. By integrating this novel biopesticide into comprehensive IPM strategies and area-wide pest management techniques, growers can mitigate the economic losses associated with codling moth damage, as well as ensure the sustainable production of high-quality fruits for both local and international markets. 



Codling moth damage on apples



Left: Codling moth larval tunneling and excrement (frass)

Codling moth infestations cause reduced crop yields and render damaged fruits unmarketable.

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