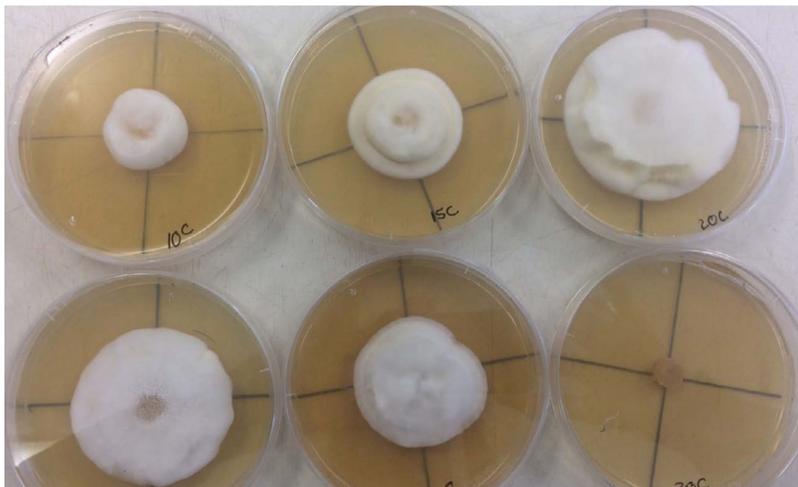


# Improving vine weevil control in container-grown hardy nursery stock



## Background

Vine weevil is the main pest of container-grown hardy nursery stock (HNS). Due to the withdrawal of, and restrictions on using most persistent plant protection products in the growing media for control of larvae, a robust integrated pest management strategy is needed, tackling both adults and larvae. Three trials from AHDB Horticulture-funded project HNS 195 are summarised here.

## 1. Control of larvae

In year one, ADAS tested a 'little and often' approach to nematode application through overhead irrigation. Both 20% and 40% rates of *Steinernema krausei* (Nemasys L) applied five times from June to October gave equal control of larvae on fuchsia compared to the industry standard of two full rate nematode drenches in September and October. In year two, the experiment was repeated on four fuchsia varieties on a commercial HNS nursery. *Heterorhabditis bacteriophora* (Nemasys H) was applied during June to September and the cold-tolerant product Nemasys L in October. The 40% rate, applied five times through the irrigation, gave equal control of larvae compared to two full rate drenches applied in September and October on all four fuchsia varieties and the 20% rate gave equal control on cv. 'Tom Thumb' and cv. 'Riccartonii'. The 'little and often' system could offer a cost-effective strategy saving on labour time, but needs testing on a range of plants.

## 2. Cold tolerant entomopathogenic fungi

The currently approved entomopathogenic fungus, *Metarhizium brunneum (anisopliae)* (Met52 Granular Bioinsecticide) for control of vine weevil larvae needs warm temperatures (15-30°C) to be effective. The product is recommended to be used as part of an IPM programme, and is best used at spring potting, as temperatures will be too low for it to give good control from the autumn onwards. Warwick Crop Centre are looking at the potential of cold tolerant fungal strains for vine weevil control. They have obtained 11 candidate strains from different parts of the world and these are being cultured in their laboratory.

Current experiments are testing growth of the fungi on agar plates at a range of temperatures between 4°C and 40°C. Spore germination at different temperatures is also being assessed under the microscope. Once these experiments are completed, selected fungi will be used to test infection and kill of vine weevil larvae at different temperatures to assess if any would have the potential for development as a new biopesticide.

## 3. Improving knowledge of vine weevil biology and behaviour

In year one, Harper Adams University showed that vine weevil adults feed and lay eggs at temperatures as low as 6°C, a lower temperature than previously thought. Last year, air temperature records from unheated protected structures in West Sussex showed that temperatures were 6°C or above for at least one hour on most nights of the year. However, it is not known for how long temperatures need to exceed 6°C before egg laying recommences.

Laboratory experiments last year showed that overwintered adults need a five-week period of intense feeding before they recommence laying eggs. Growers should monitor for adult weevils and check for feeding damage from March onwards and consider applying a plant protection product for the control of adults before they start laying eggs (see AHDB factsheet 24/16 'Vine weevil control in hardy nursery stock' for details of approved products). Work in conjunction with Greenwich University is ongoing to identify attractants for potential use to improve monitoring trap catches and for use in a 'lure and kill' approach, so far two plant volatile compounds look promising.

### ACTION POINTS FOR GROWERS

- Monitor for adult vine weevils and check for feeding damage from March onwards
- Consider applying an IPM-friendly plant protection product if needed to reduce numbers of adults before they commence egg laying
- If using nematodes for the control of larvae, select the nematode product according to the prevailing and subsequent growing media temperatures
- Use the whole pack(s), do not split them as the nematodes can be unevenly distributed in them
- Keep up to date with further research on the 'little and often' method for nematode application
- If using Met52 Granular Bioinsecticide, do not use it as the only treatment for larvae, use it as part of an integrated pest management programme

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