Controlling raspberry cane midges and associated cane diseases

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Introduction

- The raspberry cane midge (*Resseliella theobaldi*) is a widespread and serious pest of raspberries.
- Main cane diseases: *Didymella*, *Leptosphaeria* and *Fusarium,* are strongly associated with infestation of raspberry cane midge (RCM).
- Fungicides are not very effective against these cane diseases.
- Good control of cane diseases starts with the control of RCM.

Figure 1. Raspberry cane midge (RCM) and *Didymella.*

Figure 2. Raspberry cane midge RCM: egg laying in damaged cane.

Figure 3. RCM: fully grown larvae turn orange; overwintering and pupation in cocoon in the soil. Pupation of cane midge larvae occurs in the top centimeters of the soil.

Control of RCM: entomophagous nematodes

- Control of RCM larvae with nematodes in the laboratory.
  - Reduction of RCM-adult emergence, after exposure of RCM-larvae in the soil to *Heterorhabditis bacteriophora*.
  - No effect of *Steinernema carpocapsae* and *S. feltiae* was observed.

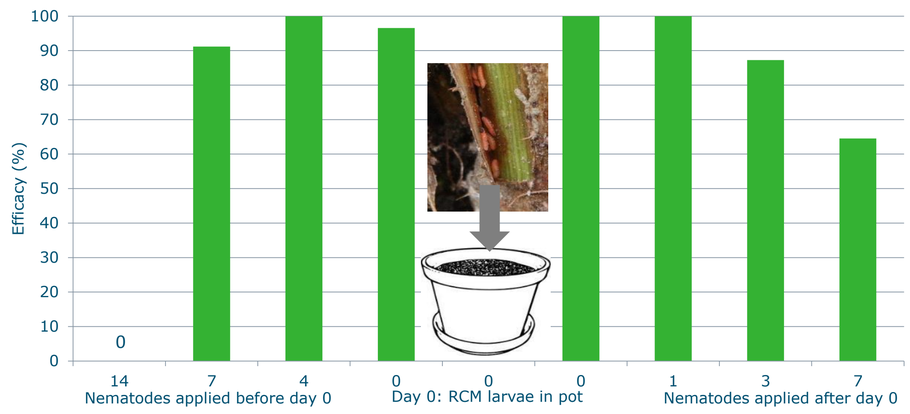

Figure 5. Efficacy of *H. bacteriophora* (5000/pot) when applied before or after RCM -larvae enter the soil.

Physical control of RCM

- How to prevent adult RCM to emergence from the soil?

Field experiment: soil cover of paper pulp to prevent emergence of adult midges

- Commercial crop, 'Brilliance'; 3 doses + control treatment: 0, 4, 8, 12 litre pulp/m2; 2 repetitions.

Figure 6. Plots treated with paper pulp.

Figure 7. Plots with cages for assessments on RCM.

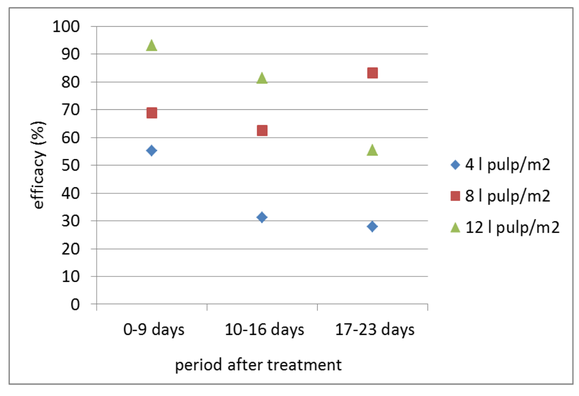

Figure 8. Effect of soil cover on number of emerging adult male midges during different periods after treatment.

Conclusions effect soil cover of paper pulp

- In the first 10 days after treatment: efficacy = 93%.
- Efficacy declines after a few weeks.
- Optimization of technique for practical use is needed.

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