Taking on WFT with Biopesticides

Taro Saito



Biocontrols for thrips

Soil-dwelling stages











Biocontrols for thrips

Foliage-dwelling stages











Entomopathogenic Nematode

Steinernema feltiae



- Foundation for thrips biocontrol program
 - Different application methods: Drench /Foliar spray /Sprench
 - 0 hrs REI
 - Sprench application most efficient
 - Reduces thrips pupae up to
 ≈60 %



Entomopathogenic Nematode



Insect Pathogenic Fungi

BotaniGard®





- WP and ES formulation
- Registered for thrips as foliar spray, targetting thrips adults and larvae
- 4 hrs REI





Nematode and BotaniGard®

- The combo treatment suppressed thrips population development
- But was not significantly better than the individual treatments





Nematode and BotaniGard®

Degree of leaf damage

- HOWEVER, the combination significantly reduced damage.
- Important in an aesthetic crop





Insect Pathogenic Fungi

Met 52® granular



- Registered for greenhouse ornamental in 2013
- Mix granules with potting media
- 0 hrs REI
- Persists in soil, especially around roots



Nematode and Met52® granular

- Met 52/nematode combination suppressed thrips population
- Better than Met 52 high rate (3x than low rate)
- Also suppressed thrips after the nematode application ceased at 6wks







- Dalotia + Met52 \rightarrow > 90% thrips mortality
- Mites + Met52 or BotaniGard $\rightarrow \approx$ 90% thrips mortality



Insect Pathogenic Fungi

Met 52® EC



- Spores are suspended in petroleum distillate
- Registered for thrips and whiteflies
- Foliar spray application
- 0 hrs REI





Nematode and Met52 EC

Tank mix compatibility

- Nemasys was suspended in Met52 EC
- The nematode survival started to fall after 1hr.
- The tank mix should be prepared right before the application



Time



Foliage predatory mites and fungi

Compatibility

- Both mite species were compatible with Met52 EC
- Generally compatible with BotaniGard 22WP





Cucumeris sachet and Met52 EC

- The Met/cucu not significantly better than the cucumeris only vs thrips.
- HOWEVER, the cucumeris only failed to control spider mites.
- But, the combination significantly reduced spider mites AS WELL.





Swirskii sachet and Met52 EC

- The combination treatment was slightly better
- Overall, successfully suppressing thrips population growth to a minimal level.





Foliage predatory mites and Met52 EC

Compatibility on plants

Met52 EC foliar spray

 No difference in cucumeris /swirskii population



Compatible!



Take home

- Biopesticides (nematodes, fungi) can be effectively used in thrips IPM
- Compatible with predators (soil, foliar)
- In general, use of fungi can enhance thrips control when used with other natural enemies





