Learnings From The Tomatoes NZ/ A Lighter Touch Research Project

IPM programme for glasshouse tomatoes incorporating arthropod BCAs

Introduction

- Tomatoes NZ and A lighter Touch initially established a research project to test whether Engytatus nicotianae could be an effective TPP control in commercial glasshouses.
- This was to build on the lab trials carried out by Emiliano Veronesi and the Plant Protection team at Lincoln University
- The goal being that if you can control the TPP, you can control the Liberibacter
- In July 2022 the project morphed into a more general BCA project where Engytatus was but 1 of 5 beneficial insects, being combined to control both TPP and Greenhouse Whitefly

Some background of the trials

- There were 7 trial sites in both the North and South Islands
- Growers participating ranged from small family run glasshouses to large commercial sites of 5 hectares in size
- Some of the data collected was statistically valid and other was observational

Was using Engytatus effective in eliminating Liberibacter ?

NO!

- But it did reduce the amount detected
- The process highlighted TPP presence at a very early stage

Why wasn't Engytatus effective for Liberibacter control?

- Using BCA's is not about having zero pest populations in your glasshouse
- It is about managing pests at a level that is economic for the grower to produce
- Engytatus assisted the growers to reduce the TPP population in the glasshouses, but it did not completely eliminate them
- If any TPP enter the glasshouse there was always the risk of Liberibacter and, this proved to be the case in our trials

There Were Positives and Learnings

- Engytatus was trialed as a TPP defence mechanism for tomato crops
- Banker plants(Tobacco) were introduced at the time of planting. Engytatus can survive upon Tobacco plants without pests being present.
- The banker plants developed breeding populations of Engytatus to potentially intercept any TPP incursions.
- Whilst we did have some TPP incursions they were manageable.
- We found Liberibactor infected tomato plants without finding TPP
- This suggested that the TPP had been predated upon after infecting the plants
- A bonus was that Engytatus also feeds upon Greenhouse Whitefly. For Tomato growers, Whitefly is more of a problem than TPP.

More Learnings

- The project reinforced that effective crop scouting is essential for BCA systems
- Best practice in tomato glasshouses is to remove any plants that show symptoms of infection or disease.
- Tomato plants showing Liberibactor symptoms are removed and bagged within the glasshouse for subsequent disposal
- This helps reduce the risk of future Liberibactor infection

Grower Resources

- Learnings from the trials helped develop a suite of resources for Tomato growers to assist them with pest control
- A Greenhouse Tomato Integrated Pest Management guide is available for all Tomato growers
- This includes decision trees, specific pest guides and, control strategies
- The guide is a living document and will be reviewed, upgraded and, added to on a regular basis
- A series of helpful videos guides were developed www.youtube.com/@TomatoesNZ
- This included “How to use Engytatus with banker plants” can be accessed at www.tomatoes.co.nz
- Articles have regularly appeared in industry publications
- A number of presentations are happening to educate growers on how IPM based pest control can be effective.

Summary

- Engytatus nicotianae can help suppress TPP numbers, but there remains a risk of Liberibacter infecting plants
- Engytatus nicotianae plays a supportive role in managing greenhouse whitefly, which is the Tomato growers main pest
- Growers saw significant gains through using IPM based systems rather than traditional chemistry control
- These gains were in efficacy as well as economically.

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