

# Peeling Back the Layers of Onion Thrips IPM

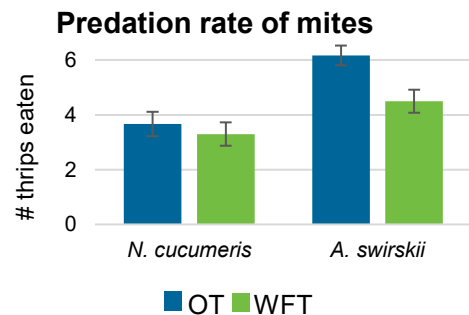
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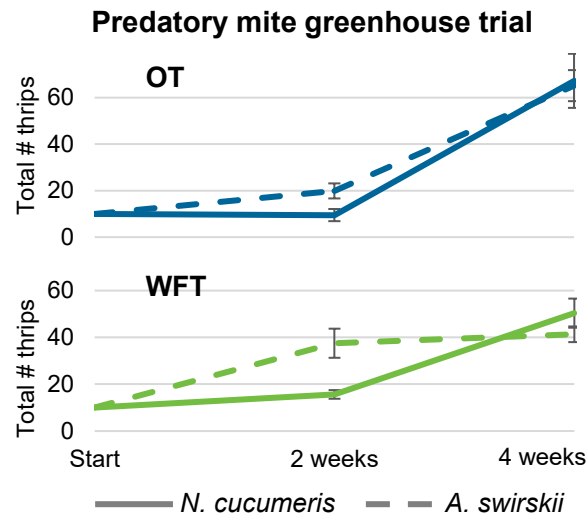
Onion thrips (*Thrips tabaci*, OT) outbreaks in Ontario floriculture greenhouses have derailed biocontrol programs that have been effective for managing the primary pest species, western flower thrips (*Frankliniella occidentalis*, WFT). We compared the efficacy of the principal components of the typical WFT IPM strategy against both thrips species to answer the question **which biocontrol agents work best for onion thrips?**

## Predatory Mites

*Amblyseius swirskii* consumed 63% more OT than *Neoseiulus cucumeris* did in laboratory trials (Fig. 1), however this did not translate to better OT control in greenhouse trials on chrysanthemum plants (Fig. 2).



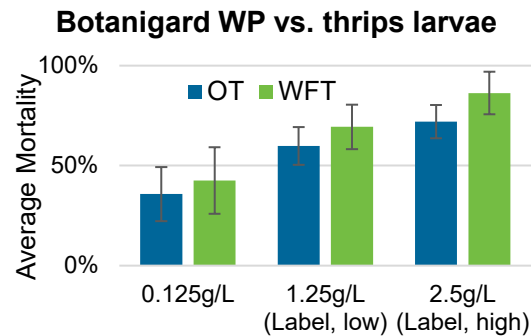
**Figure 1.** Mean number of 1<sup>st</sup> instar thrips larvae  $\pm$ SE consumed by adult *Neoseiulus cucumeris* and *Amblyseius swirskii* in 24 hrs in laboratory trials.



**Figure 2.** Mean thrips population  $\pm$ SE per 3 chrysanthemum plants with 100 *Neoseiulus cucumeris* or *Amblyseius swirskii* released every 2 weeks.

## Biopesticides

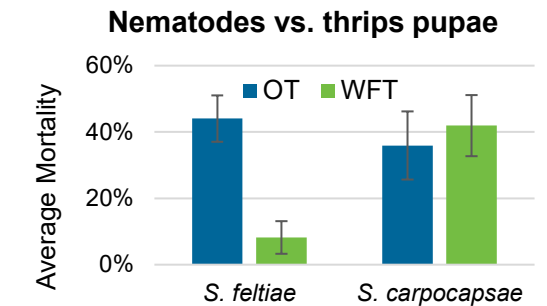
There was no difference in the mortality rate of thrips larvae between species when exposed to *Beauveria bassiana* (Botanigard WP) in laboratory trials (Fig. 3). A greenhouse trial to validate results is underway.



**Figure 3.** Mean corrected mortality  $\pm$ SE of 2<sup>nd</sup> instar thrips larvae exposed to different rates of *Beauveria bassiana* applied to chrysanthemum leaf discs.

## Nematodes

*Steinernema feltiae* caused higher mortality in OT than WFT in laboratory trials, but there was no difference between thrips species exposed to *S. carpocapsae* (Fig. 4). Greenhouse trials to validate results are needed.



**Figure 4.** Mean corrected mortality  $\pm$ SE of thrips pupae caused by *Steinernema feltiae* and *S. carpocapsae* at a concentration of 100 infective juveniles/cm<sup>2</sup> in peat-based potting mix.

## Conclusions

Laboratory trials indicate that biocontrol agents *should* work as well or better for OT as they do for WFT, however results of the predatory mite greenhouse trial demonstrate that **the way pests and biocontrol agents interact with plants can lead to different results.** Biocontrol agents need to be tested in the crop before we can determine the true efficacy of any product.