

## Biological Control of Avocado Thrips (*Scirtothrips perseae*) with Entomopathogenic Fungi and Entomopathogenic Nematodes

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### **Benefit to the Industry**

This new pest has spread rapidly and is now considered a major insect pest of California Avocado. The emphasis now is to identify chemical control agents. Although several natural enemies are known to impact other thrips species, the affect these chemicals will have on beneficial species is not known. Alternative biological control agents such as entomopathogenic fungi and nematodes may prove valuable in directly reducing populations of avocado thrips. They also help in preserving natural enemies that play an important role in reducing avocado thrips populations.

### **Objective**

The purpose of this study is to examine the potential of two different biological control agents in controlling avocado thrips in California avocado. The objectives are four folds:

1. Conduct laboratory bioassay's to determine life-stage susceptibility to the entomopathogenic fungi *Beauveria bassiana*, and three different species of entomopathogenic nematodes.
2. Determine if foliar applications of *Beauveria bassiana* will control the adult and/or larval stages in the avocado canopy.
3. Determine if leaf litter applications of entomopathogenic nematodes will control the propupal or pupal stages.
4. Determine if either strategy by itself or in combination will provide acceptable control of avocado thrips.

### **Summary**

### **Objective I**

We have attempted to collect live specimens from the field and bring them into the laboratory for susceptibility studies. On three separate occasions all material died within 24 hours. This is not uncommon. Joseph Morse from UC Riverside has recently had success in establishing his colony of citrus thrips. This closely related species should provide similar results to avocado thrips. He has indicated that material can be sent to me. Once my laboratory is set up (following my recent move), I will continue with the life-stage susceptibility studies.

Current research by Dr. Kevin Hines at Texas A&M University on western flower thrips (*Frankliniella occidentalis*) has shown that the propupal and pupal stages are susceptible to the nematode species *Steinernema carpocapsae* and *S. feltiae*.

### **Objective II**

Mycotech Corporation had agreed to cooperate with this project last year. Their senior scientist has recently left the company and we are uncertain if this cooperation will transcend to 1999. If not, then the project will continue evaluating entomopathogenic nematodes only.

### **Objective III**

We had originally planned to conduct this phase of the project in 1998. Unfortunately, field populations did not recover from the summer heat. Phil Phillips' group had been monitoring avocado thrips populations throughout Ventura County, and could not locate a population that would allow establishment of our small plot field trials. Populations are now on the rise and we will begin the small plot field evaluation in two weeks.

After conclusion of this phase, we will begin the large-scale field trial designed to test the application of entomopathogenic nematodes under real farming conditions. We anticipate conclusion of this project by August of 1999.