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Biology and Management of Avocado Thrips

Avocado Thrips Management in Ventura County

Continuing Project: Year 2

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Benefit to the Industry

Avocado thrips, *Scirtothrips perseae* Nakahara (Thysanoptera: Thripidae) was discovered in California in July of 1996, and spread rapidly to most avocado orchards in Southern California. The economic impact of this pest has been estimated at an annual short-run loss of between $7.6 and $13.4 million in 1998 from the combined effects of losses in quality and increased production costs associated with avocado thrips management. Since the introduction, methods to control this pest have been studied. Chemical, cultural and biological approaches to control have resulted in Section 18 registration of abamectin (Agri-Mek) for the last few years and full registration of spinosad (Success and Entrust) and sabadilla (Veratran D). The biological studies have not provided a single economically viable agent, but a range of cultural actions (use of mulch, time of pruning) that may be taken as part of a strategy to control avocado thrips.

This year our research sponsored by the California Avocado Commission changed slightly from its initially proposed focus in order to respond to needs from EPA: (1) the efficacy of different chemical control methods, (2) an improved understanding of this pest's biology, ecology and natural enemies in the coastal environment and (3) exploration of possible alternative pathways for biological control in the coastal environment. We intend to use this information for the development of stronger biological and cultural control components of integrated pest management programs for avocado thrips.

Objectives

1) Investigate the efficacy of spinosad and abamectin for avocado thrips control in three comparison field trials in Ventura County as a part of the EPA requested research.

2) Determine the identity and population dynamics of generalist predators and parasitoids associated with avocado thrips in organic groves and in groves with a history of chemical control in Ventura County and determine spatial and temporal differences

3) Evaluate the effect of releasing two commercially available generalist thrips predators [predatory mite (*Amblyseius cucumeris*) and minute pirate bug (*Orius* sp.)] for

avocado thrips control in a coastal environment. As a pilot study to seek validation for possible future larger scale research.

Chemical Control of Avocado Thrips: EPA Requested Research

The EPA research consisted of 5 companion field studies, three in Ventura County and two in Riverside/San Diego Counties. Morse (UCR) lab provided the central organization and collaborated with the field selection. The report from Morse lab found elsewhere in this publication includes a discussion on the data we collected on the three field sites in Ventura County.

Ventura County Specific Avocado Thrips Natural Enemy Population Dynamics

This study has been undertaken with additional support from the California Avocado Society and in collaboration with local PCAs. For the second year the spatial and temporal dynamics of natural enemies in avocado orchards was monitored every two weeks at 15 locations throughout the county. The methods used for collecting data were not changed from those used previously. The field site observations are currently being finalized for the 2004 season. In combination with data collected in the 2002 pilot study and from 15 locations in 2003, a multiple -year analysis will be available in spring 2005.

Preliminary analyses from 2002/2003 data indicated that the natural enemy species varied in abundance and timing of their population peaks with their distance from the coast (these preliminary analyses have been accepted for publication in the California Avocado Society 2003 yearbook).

Effectiveness of *Cucumeris* and *Orius* releases for avocado thrips control.

This pilot study was initiated in collaboration with Koppert Biological Systems, USA, which provided the insects free of charge. In Carpinteria, a site was selected where no chemical treatments for avocado thrips had been used in the past. Seven year old trees were grouped into 6 blocks of 9-12 trees, and six treatments were randomly assigned to the blocks. Using beat samples, leaf counts and sticky cards the population of avocado thrips and the natural enemies was observed weekly. The sticky card data is not available yet and a complete analyses and discussion of this research will be available in Spring 2005.