Efficacy Trials of Registered and Developmental Insecticides for Navel Orangeworm

Project No.: **08-ENTO8-Haviland/Holtz**

Project Leaders:
David Haviland
Entomology Farm Advisor
Univeristy of California Cooperative Extension, Kern County
1031 S. Mount Vernon
Bakersfield, CA, 93307
(661) 868-6215
dhaviland@ucdavis.edu

Brent Holtz
Pomology Farm Advisor
Univeristy of California Cooperative Extension, Madera County
328 Madera Avenue
Madera, CA 93637
(559) 675-7879 ext. 205
baholtz@ucdavis.edu

Project Cooperators:
Brad Higbee, Paramount Farming Company
James Bettiga, S&J Ranch
Kevin Olsen, S&J Ranch

Objectives:

1. Develp efficacy data for newly-registered and experimental insecticides against navel orangeworm in almonds

Interpretive Summary:

Effective navel orangeworm management in almonds requires a combination of cultural practices, such as winter orchard sanitation and early harvest, and properly-timed insecticide treatments. When utilized properly, programs based on these tactics have provided relatively effective navel orangeworm control during the 1990s and early 2000s.

However, recent changes in regulations regarding aflatoxins have reduced the tolerance for navel orangeworm damage. Effective control, previously commonly considered synonymous with less that two percent damage, has started to become defined as something much lower. Additionally, regulatory changes related to the use of azinphos-

methyl, the long-time standard insecticide for navel orangeworm, have made its use impractical.

Several research projects are underway to improve navel orangeworm management within the context of recent regulatory changes. The specific purpose of this project is to evaluate the effectiveness of newly-registered insecticides that could potentially be used in IPM programs for navel orangeworm.

One group of products under evaluation includes newer generation pyrethroids such as Brigade, Battalion, Baythroid, Danitol, Renounce and Warrior. It is generally considered true that many of these new generation pyrethoids have higher activity against worms and longer residual in the field compared to their predecessors. Some also have the added benefit of activity against spider mites, which might allow their use in locations with histories of spider mite outbreaks.

The other group of new insecticides includes mostly reduced-risk products such as Altacor, Alverde, Assail, Belt, Delegate, Dimilin, Rimon and Proclaim. Each of these new products provides new active ingredients for almonds as well as several new modes of action.

Currently there is a large gap in our understanding of the efficacy of these products. Many of these products have undergone substantial testing and have been proven effective against codling moth in apples, pears and walnuts; however, to date there is very little information on how they perform on navel orangeworm on almonds.

Considering the economic scale of the significance of navel orangeworm as a pest of almonds in California, including both the effects on percentage offgrades and aflatoxins, it is essential that we learn more about how each of these new insecticides works and might contribute to improved control in the field.

During 2007 and 2008 we evaluated the effects of new insecticides compared to commercial standards. Details regarding the 2007 trials are published in our final report to the Almond Board, 07-ENTO8-Haviland/Holtz, that is contained on the 2007-08 Final Report CD distributed with this Proceedings. Unfortunatelly, the three trials conducted in 2007 did not have sufficient pest pressure to get meaningful results. We hope that changes for the two trials conducted in 2008.

The 2008 trials were organized in a similar manner as in the previous year. The trials were located in Kern and Madera counties and had approximately twenty treatments. Plots in each trial were organized in a randomized complete block design with each treatment placed on six individual trees. Insecticide treatments were made at the initiation of hull split and evaluated by collecting nuts off of the ground just after shaking. At the time of the writing of this Proceeding in October, all of the nuts from this year's evaluations are in storage waiting to be cracked. We encourage attendees at the conference to visit our poster to view the results of the trials.