Control of Navel Orangeworm (NOW) in Almonds Using Insecticides and Assessing Spray Coverage

Project Leaders: Joel Siegel[1] & Spencer Walse[2]
[1,2]USDA/ARS SJVASC, 9611 South Riverbend Ave, Parlier, CA 93648,
[1](559) 596-2735 joel.siegel@ars.usda.gov [2](559) 596-2750 spencer.walse@ars.usda.gov

PROJECT SUMMARY

Objectives:

- Determine persistence of insecticides on nut surfaces
- Assess the stability and longevity of commonly used insecticides for control of navel orangeworm NOW on nuts
- Assess NOW larval feeding behavior in relation to the possible repellency of different insecticide classes used in almonds
- Assess insecticide penetration and coverage into the upper canopy

Background and Discussion:

Control of NOW with insecticides has always been difficult because of the prolonged egg laying period and the need to kill the emerging worms before they tunnel into the nut. Therefore, ensuring long term stability and good insecticide coverage of the nuts are keys to the successful control of NOW with in-season insecticides.

Over the last few years a number of new insecticides have been registered for use in almonds to control of navel orangeworm (NOW), the primary insect pest of almonds. These compounds have different modes of action than the traditional broad-spectrum insecticides.

This project focuses on assessing the duration of control and the photostability of various NOW insecticides applied in the orchard. The duration of control of an insecticide is monitored, by removing treated nuts from the orchard at intervals, infesting the nuts with eggs and then assessing larval survival.

In ongoing studies designed to assess photostability, profiles of all currently registered insecticides are being created and using analytical equipment. Glass slides are treated with each insecticide and placed in a photolysis chamber for UV light exposure. The rate of breakdown is determined for each insecticide and their persistence on almonds will be assessed by measuring the residues at different times after application.

Ongoing studies demonstrate that spray coverage of nuts in the upper reaches of the canopy is substantially reduced. Work is addressing how application details affect the quality of the penetration of the materials in the trees, for example tractor speed, droplet size, and configuration and type of nozzles used.

This project will continue to assess the efficacy of spray penetration into the trees by placing small strips with NOW eggs as well as spray cards at different locations within the tree. The focus on spray coverage will dovetail with the currently funded project on spray efficacy and spray drift by Giles and Markle.

By better understanding the duration of control of the different insecticides, optimal timing for improved treatment efficacy can be achieved. It is likely that with these newer materials an earlier time frame for application at the onset hull-split is more effective.

Project Cooperators and Personnel: Gary Weinberger, Weinberger, Fukoda & Assoc.; James Bettiga, S&J Ranch; Chris Wiley, AgriWorld, Forrest Felger, and Valley Orchard Management ; Ken Giles, UCD; Franz Niederholzer, UCCE - Sutter/Yuba and Colusa Counties; James Markle, CURES; May Berenbaum, University of Illinois; Frank Zalom, UC Davis

For More Details, Visit

- Poster location 15, Exhibit Hall A and B during conference, or on the web (after January 2014) at www.almondboard.com/researchreports
- 2012.2013 Annual Report CD (12-ENTO11-Siegel/Walse); or on the web (after January 2014) at www.almondboard.com/researchreports
- Related Projects: 13-WATER3-Giles/Markle; 13-ENTO1-Berenbaum; 12-ENTO7-Zalom