Navel Orangeworm Control: Relative Photostability of Insecticides and Assessment of Application Coverage

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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. Thus ensuring long stability and good insecticide coverage of the nuts is key to 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 photostability of various NOW insecticides applied in the orchard.

Duration of control is being monitored by removing treated nuts from the orchard at intervals and assessing whether eggs hatch and emerging larvae survive. Photostability will initially be assessed by treating a glass slide with the insecticide and placing in a photolysis chamber for UV light exposure. Persistence on other surfaces will be assessed by measuring the residues at different times after application.

Joel Siegel has noted that spray coverage of nuts in the upper reaches of the canopy is substantially reduced. 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 project on spray efficacy and spray drift by Giles and Markle (see 11-WATER3-Giles/Markle).

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

Future work will address how application details affect the quality of the penetration of the materials in the trees, for example tractor speed, droplet size, etc.

Project Cooperators and Personnel: Gary Weinberger, Weinberger & Assoc.; James Bettiga, S&J Ranch; Chris Wiley, AgriWorld, Forrest Felger; Thomas Wang, Valley Orchard Management

For More Details, Visit

- Poster location 38, Exhibit Hall, Session 3, or on the web (after January 2012) at AlmondBoard.com/AICposters
- 2010 - 2011 Annual Report CD (10-ENTO11-Siegel/Walse); or on the web (after January 2012) at AlmondBoard.com/ResearchReports
- Related Projects: 11-WATER3-Giles/Markle; 11-ENTO1-Berenbaum/Robertson