

Insect and Mite Research

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PROJECT SUMMARY

Objectives:

- Determine treatment timing of bifenthrin, methoxyfenozide, spinetoram, chlornitraniliprone, and flubendiamide for NOW control in spring based on comparison of male trap captures using the Suterra NOW pheromone lure and egg-laying using the traditional black egg traps baited with almond presscake.
- Evaluate residual efficacy of bifenthrin, methoxyfenozide, chlornitraniliprone, and flubendiamide during the spring.
- Determine if low temperatures delay mating or oviposition by NOW females.
- Confirm that mummy nuts that were previously infested in fall are more likely to become reinfested in spring.

Background and Discussion:

This project continues to address the most significant chronic insect pests of almonds, including navel orangeworm, peach twig borer and spider mites, and localized pests such as tenlined June beetle and San Jose scale. The research continues decades of finding ways for integrated pest management to work in almonds under changing environmental, regulatory, and market conditions.

Studies were conducted in both 2014 and 2015 that focused on evaluating efficacy of bifenthrin (Brigade), methoxyfenozide (Intrepid), chlornitraniliprone (Altacor), flubendiamide (Belt) and Delegate (spinetoram) for navel orangeworm (NOW) control applied at seven (2014) or six (2015) different weekly intervals during spring and relating the results to NOW phenology as indicated from monitoring with both navel orangeworm egg traps and NOW pheromone

traps that record male flight. Additional studies related to NOW control included estimating the residual efficacy of four of the registered insecticides applied during the spring, and an efficacy evaluation of other insecticides at the traditional 'May spray' timing based on NOW egg traps. Results of the field efficacy and treatment timing study showed that all of these products provided significantly better control resulting in less damage at each of the weekly treatment timings when compared to the untreated control. Brigade, a pyrethroid insecticide, is not recommended for use as a 'May spray' due to potential negative effects on biological control. Results of the residual efficacy study suggested that Brigade residual activity was sufficient to prevent infestation for about 2 weeks, Intrepid about 4 weeks, Altacor about 3 weeks, and Belt about 3 weeks.

A laboratory study was initiated in early 2015 to determine temperature effects, if any, on mating and oviposition by NOW females. This study of lower temperature effects on NOW mating and oviposition was conducted with individuals from both a laboratory colony and wild collected from infested nuts, and compared mating and oviposition at constant temperatures as low as 48.2°F and variable daily temperatures as low as 60.8°F during the day and 41.0°F at night. In general, the number of fertile eggs laid was fewer at the lowest temperatures, but the females laid viable eggs at all of the experimental temperatures.

Mummy nuts that were previously infested in fall were 3 to 5 times more likely to become reinfested with NOW larvae in spring from oviposition by females of the overwintering generation than were previously uninfested nuts.

Project Cooperators and Personnel: Franz Niederholzer, UCCE - Sutter/Yuba and Colusa Counties; David Haviland, UCCE – Kern County; Joel Siegel, USDA-ARS, Parlier

For More Details, Visit

- Poster location 20, Exhibit Hall A + B during the Almond Conference; or on the web (after January 2016) at Almonds.com/ResearchDatabase
- 2014 - 2015 Annual Reports CD (14-ENTO7-Zalom); or on the web (after January 2016) at Almonds.com/ResearchDatabase
- Related projects: 15-ENTO6-Haviland; 15-ENTO13-Tollerup; 14-ENTO11-Siegel/Walse (2014-15 Annual Report CD)

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