Alternative Devices to Control Navel Orangeworm

Project No.: **17-ENTO19-Symmes**

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Objectives:

The overall objective of this study is to field test the effectiveness of a multi-attraction, pesticide-free attract-and-kill approach to navel orangeworm (NOW) pest management in almond orchards. Within the experimental design, we will evaluate (1) rate per acre impacts on NOW activity and damage, and (2) effective range of each device on NOW activity and damage.

Interpretive Summary:

This project was initiated in the 2018 almond growing season and is currently ongoing. Thus, key findings and recommendations will be presented in the final Annual Report at project completion.

Materials and Methods:

The management approach being investigated in the current study is based on the SolaRid™ pest control device (IPM Products Manufacturing, Inc.). This is a solar-powered device that employs a combination of attractants (light and semiochemicals) to lure adult moths of both sexes to the device, where they come in contact with a silver printed grid which delivers electric current to disrupt voluntary control of muscles causing neuromuscular incapacitation, resulting in death of the insect. Once activated, controls are built into the circuit board that turn the light panel on at dusk and off at dawn. Thus, it targets the natural rhythms or cycles of harmful insects which are nocturnally active (i.e., NOW) while avoiding beneficial insects (pollinating honeybees) active during day-time periods. This type of device has the potential to be an environmentally sound alternative or supplement to conventional pesticide applications.

In Spring 2018, devices were installed in a 228-acre mature commercial almond orchard with significant history of NOW pressure and damage (Glenn County, CA). The orchard is planted to 50% Nonpareil (every other row) and 50% pollinizer varieties (Aldrich, Carmel, Winters, Monterey). Three replicates of the experimental design were deployed at this site. Each replicate consisted of four experimental plots (10 acres/plot). Treatments within each replicate

included: 0 devices/plot, 1 device/plot, 2 devices/plot, and 3 devices/plot (randomly assigned to plot location in the replicate). Devices were deployed at the end of tree rows along the south end of each treatment plot.

Data collected during the 2018 growing season included: (1) trap capture/egg laying in trapping stations centrally-located within each 10-acre treatment plot, and (2) capture of adult NOW moths in collection bags affixed to each unit beneath the electrical grid panels. Each trapping station consisted of a square pattern of: (1) one pheromone trap (orange delta trap baited with Suterra NOW Biolure®) to evaluate adult male NOW trap capture and flight activity, (2) two kairomone traps (orange delta trap baited with Peterson Trap Company pistachio-almond bait bags) to evaluate adult female NOW trap capture and flight activity, and (3) two black egg traps (baited with Trécé almond meal) to evaluate oviposition abundance and activity. Data will be compared among treatment plots using standard statistical methods.

At press time, data are still being collected for the 2018 season and will be evaluated at the conclusion of the project.

Results and Discussion:

Complete results of this project and discussion of significant findings will be presented in the final Annual Report at project completion.

Research Effort Recent Publications:

NA

References Cited:

NA