Alternative Devices to Control Navel Orangeworm

Project Leader: Emily J. Symmes
University of California Cooperative Extension and Statewide IPM Program (530) 538-7201, ejsymmes@ucanr.edu

PROJECT SUMMARY

Objectives for current year:

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

Background and Discussion:

Navel orangeworm (NOW) is the primary insect pest of almonds in California. Direct damage by this insect can be devastating to crop yield and value. It poses a high risk to an almond crop because the larvae bore into the nut and feed on the nutmeat. Not only is the nut damaged, but the feeding opens the door to *Aspergillus* molds, which can result in aflatoxin contamination. With the increasing nut crop footprint throughout California (almond, pistachio, and walnut – all hosts for NOW), there is real potential for NOW management to become even more difficult in the coming years. Even in high input conventional systems, damage caused by NOW can exceed the necessarily low industry reject standards, demonstrating the need to investigate and employ a wide range of management tactics targeting this pest.

In addition to cultural controls like winter sanitation, management of NOW is by traditionally-applied chemical and bio-insecticides. In addition to being complicated by proposed regulations that limit pesticide applications in proximity to schools and childcare facilities, these applications raise concerns of off-site movement, impacts on natural enemies and pollinators, and other adverse effects on the environment and orchard ecology. Alternative strategies are needed for sustainable and ecologically-sound NOW management.

The management approach being investigated in the current study is based on the SolaRid™ pest control device (IPM Products Manufacturing, Inc.). This is a sustainable, 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. This type of device is an environmentally sound alternative to conventional chemical applications and requires minimal labor after installation. This is an important benefit to farmers struggling with rising costs of labor due to new minimum wage and overtime regulations.

Once deployed and turned on, controls are built into the circuit board that turn the light panel on at dusk and off at dawn. Thus, it is effective at night and able to work with the natural rhythms or cycles of harmful insects which are active at night while avoiding beneficial insects (pollinating honey bees) active during day-time periods.

During the 2017 growing season, four devices were deployed in two commercial almond orchards (two devices/site) in Butte County, CA. The goals this season were to become familiar with the operation of the system, work with the manufacturer to troubleshoot (as needed) any issues with the device, and develop appropriate assessment, data collection, and evaluation methods for effectiveness (e.g., quantification of moths in an attached collection device, supplemental trapping grids in proximity to the device, harvest damage evaluation). Based, on these preliminary investigations, the large-scale experiments in 2018 will be deployed as scheduled according to the proposed experimental design. Study sites will be confirmed in the fall of 2017, and full-scale deployment is planned by March 2018.

For More Details, Visit

- Poster location 100, Exhibit Hall A + B during the Almond Conference; or on the web (after January 2018) at Almonds.com/ResearchDatabase