

# Standard and Commercial Formulations for Navel Orangeworm Pheromones

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## PROJECT SUMMARY

### Objectives:

- Improve mating disruption of the navel orangeworm (NOW).
- Develop a highly attractive lure to be used to monitor NOW.

### Background:

As a rule, insect pheromones consist of multiple chemical components, often a major component with minor ones. The major component ((Z11,Z13)-hexadecadienal) of the NOW pheromone was identified in the late 1970's. It is being used in mating disruption as a control for NOW. However, traps baited with this component attract few male moths and lack utility as a monitoring tool. Furthermore, experience shows disruption is usually improved with addition of minor pheromone components.

For over 3 decades, identification of the critical minor components has been elusive. Fortunately recent breakthroughs have identified three of these minor components to yield an active 4 component NOW pheromone mixture. Other components may be involved, but this mixture is as attractive as female NOW moths.

However, there is still a challenge: that is developing a formulation that lasts under field conditions. Initially synthetic lures consisting of the 4 components are attractive, but the activity has proved to be short lived.

There could be a number of reasons the test formulations lose their attractiveness, including the components degrade quickly; the presence of inhibitory contaminants (which may be degradation products); or the formulations do not release the components in the correct ratio as emitted by the NOW female moth.

Experts in pheromone chemistry experienced in NOW pheromone development are being supported by the Almond Board and other groups like pistachios to develop a stable field ready pheromone mixture and formulation which could be used both as a lure for monitoring and in mating disruption for control.

The research effort includes this project and Project 10-ENTO9-Cardé and Project 09-ENTO2-Leal.

This new project under the leadership of Bas Kuenen and Spencer Walse is using an evolutionary bioassay-driven process to make lab and then field-ready pheromone lures. The steps involved include:

1. Test "standard" laboratory-based matrices (e.g. plastic vials, tubes, septa), after exhaustive clean up, for the ability to maintain the stability of the NOW sex pheromone.
2. Compare lab-based matrices to appropriate proprietary commercial matrices as carriers for the 4-component NOW sex pheromone.
3. Develop a stabilized formulation that will provide effective and reproducible NOW lures with reasonable field longevity.

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**Project Cooperators and Personnel:** Chris Wiley, AgriWorld; James Bettiga, S&J Ranch

### For More Details, Visit

- Poster location 39, Exhibit Hall, Session 2; or on the web (after January 2011) at [AlmondBoard.com/AICposters](http://AlmondBoard.com/AICposters)
- Related Projects: 10-ENTO9-Cardé; 09-ENTO2-Leal