Statewide Monitoring Study to Determine Relationship Between Navel Orangeworm Egg and Male Moth Pheromone Traps

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PROJECT SUMMARY

Objectives:

- Determine Navel Orangeworm (NOW) population dynamics over the geographical almond growing region: Southern San Joaquin Valley (Kern Co) to the Sacramento Valley Region (Glenn Co)

- Determine biofix dates for egg-laying and male-moth capture at sites in different growing regions

Background and Discussion:

In 2013, Suterra LLC began marketing a male NOW lure containing synthetic female sex pheromone. The lure when placed in Delta sticky traps provides an effective and efficient method for monitoring male moth flights within orchards. Up to now, egg traps have been used to monitor NOW and time insecticide applications. We do not have a sufficient understanding of the relationship between egg capture and male moth capture and therefore cannot fully utilize male capture data for making treatment decisions.

During the 2015 season, we continued an NOW trapping study that was initiated in May 2014. We deployed egg and pheromone traps at 18 and 16 orchard sites in 2014 and 2015 respectively among Kern, Fresno, Madera, Merced, Stanislaus, Yolo, and Glenn counties. At each site we selected three tree-rows, separated by at least 500 ft. We placed a monitoring trap-set consisting of four egg traps (ET) and a single pheromone trap (PT) within each of the three tree-rows. Traps were monitored weekly from late-Feb. to Oct.

In 2014, pheromone traps began capturing male moths at all 18 sites within the first week of being placed in orchards; therefore, we could not establish a biofix based on male moth capture.

Initial analysis of 2015 data indicated that moth capture began immediately or soon after trap deployment. Biofix based on egg capture in 2014 occurred between 10 and 18 Apr. at 14 of the 18 sites. Egg biofix in 2015 appears to have occurred to a large extent during March.

In 2014, moth capture followed the expected trend of the overwintering, and the 1st, 2nd, and 3rd, generation flights. The overwintering moth populations among the sites were not exceptionally large; weekly male capture commonly did not exceed a mean of 75 moths per trap. A decrease in male capture typically occurred over the first generation, then increased during the second and third generation flights. Egg capture followed a similar trend. Additionally, egg capture tended to lag slightly behind upswings of male capture.

At this stage data have not been fully analyzed to determine if a similar relationship between male moth and egg capture occurred between 2014 and 2015.

A logistic model is one possible option that can provide a tool for predicting the initiation of egg laying using male capture. The benefit such a model is that several independent categorical variables can be employed such as: geographical region, level of sanitation, proximately to sources of infestation in other crops. As this project progresses, we will explore how a logistic and or other models can be used best.

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For More Details, Visit

- Poster location 15, 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-ENTO13-Tollerup); or on the web (after January 2016) at Almonds.com/ResearchDatabase
- Related project: 15-ENTO7-Zalom