Assessing the Value of Supplemental Forage During Almond Pollination on Honey Bee Nutrition

Project Leader: Ramesh Sagili
Department of Horticulture, Oregon State University, Corvallis, OR 97331
(541) 737-5460 ramesh.sagili@oregonstate.edu

PROJECT SUMMARY

Objectives:

- Evaluate effects of supplemental forage prior to and after almond bloom on honey bee nutrition, colony growth, immune system and survival.

Background and Discussion:

Honey bee colonies employed for almond pollination face two challenges with respect to nutrition: a) lack of adequate foraging resources before and after almond bloom and b) lack of floral diversity during almond bloom. To address this nutritional stress, organizations such as Project Apis m are providing alternate forage for bees before and after almond bloom in California. To successfully implement and promote this strategy we need to understand the potential of these supplemental bee forages in promoting honey bee colony health. We measured honey bee colony health and nutrition parameters in colonies that were located adjacent to supplemental forage and colonies located in sites with no supplemental forage.

Four field sites (almond orchards) in northern California and two field sites in southern California were used for this study. In northern California two sites were adjacent to land planted with mustard, and two sites had no mustard within at least a 1-mile radius of the honey bee colonies. We marked a total of 48 colonies at these sites. In southern California, one site was adjacent to UC Davis' wildflower planting project, and one site was at least 2 miles away from the wildflower site. We marked 20 colonies at the site near the wildflower plantings and 20 colonies at the site far from the wildflower plantings.

Bee samples were obtained from all the experimental colonies at the start of the experiment and then at regular intervals for hypopharyngeal gland protein analysis, lipid analysis, midgut proteolytic enzyme activity, immunocompetence assays and pest/pathogen analysis. Colony evaluations were also performed at the beginning and end of the study. Pollen traps were also installed on the experimental colonies to identify incoming pollen during the study period.

Data analysis pertaining to colony parameters such as colony growth, pest/disease incidence and hypopharyngeal gland protein is currently in progress. The pollen collection data demonstrate the ideal pollination scenario: honey bees focus on pollinating almond blossoms when in bloom with minimal distraction to other forage, and upon bloom conclusion, honey bees have continuous resources available to sustain their growing population.

Project Cooperators and Personnel: Neal Williams, UC Davis; Project Apis m.

For More Details, Visit

- Poster location 3, 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-POLL14-Sagili); or on the web (after January 2016) at Almonds.com/ResearchDatabase
- Related projects: 15-POLL13-Williams; 15-POLL14-McFrederick/Meikle/Carroll; 13-POLL1-DeGrandi-Hoffman