

Assessing the Value of Supplemental Forage During Almond Pollination

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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:

Our current agricultural production involves extensive monocultures, and many of these production systems are without the presence of cover crops, which had once provided supplemental pollen sources for honey bees (Dimitri, 2005). Within this current system, honey bees are left with few pollen species in their diet for a significant amount of time as they are transported from bloom to bloom. When monoculture crops are not in bloom, these areas provide no forage for bees, turning already diminished open land into resource deserts (Kremen et al. 2002). Nutrition is key in dealing with most of the stress factors that ultimately compromise the immune systems of honey bees. Honey bee colonies that are poorly nourished are more susceptible to the gut parasite *Nosema ceranae* when compared to the colonies that receive adequate nutrition (Eischen and Graham 2008).

Honey bee colonies employed for almond pollination face a particular challenge with respect to nutrition and that is a lack of adequate foraging resources before and after almond bloom.

To address this nutritional stress, organizations such as Project Apis m are working with other cooperators to develop appropriate seed mixes and planting regimes to provide 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 will evaluate and document the nutritional value of supplemental forage before and after almond bloom by longitudinal monitoring of honey bee colonies.

Six almond orchards, three with supplemental bee forage and three orchards without supplemental bee forage will be selected for this study. Orchards without supplemental forage will serve as controls. Honey bee colonies from cooperating beekeepers will be placed near these selected almond orchards. Bee samples will be obtained from all the experimental hives at regular intervals for hypopharyngeal gland protein analysis, lipid analysis, midgut proteolytic enzyme activity, hemolymph extraction and pest and pathogen analysis.

Project Cooperators and Personnel: Neal Williams, University of California, Davis; Project Apis m.

For More Details, Visit

- Poster location 7, Exhibit Hall A + B during the Almond Conference; or on the web (after January 2015) at Almonds.com/ResearchDatabase
- Related project: 13-POLL1-DeGrandi-Hoffman