Enhancing the Tech Team Program for the Commercial Beekeeping Industry

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PROJECT SUMMARY

Objectives:

- Develop *Varroa* economic thresholds for commercial, migratory beekeepers through long-term longitudinal monitoring of how *Varroa* levels impact colony health.
- Quantify success of the selection progress for bee breeders participating in the Bee Tech Team services.

Background and Discussion:

The almond industry is currently challenged by the presence of colony collapse disorder (CCD) and other adverse conditions that affect the well-being of honey bees and thereby of the $18 billion pollinator-dependent US food crops.

Over the past three years, the Honey Bee Tech-Team program was developed to provide critical help for commercial beekeepers through personalized field assistance. The program was initiated by M. Spivak, supported by a number of grants including from the Almond Board, and is now funded through the Bee Informed Partnership (BIP, http://beeinformed.org/), a 5-year, multi-institutional extension grant funded by USDA/NIFA in 2011. The objective of BIP is to reduce honey bee colony losses nationwide and build a national database to develop best management practices for beekeepers.

Using the Tech Team and BIP infrastructure, we will address the most important bee pest, the parasitic mite *Varroa destructor*. Despite *Varroa*'s importance, there is no published threshold for the mite.

By assessing how different levels of *Varroa* lead to different levels of colony survival, we will develop treatment thresholds. We will use the BIP database to examine how the *Varroa* treatment threshold changes under different factors, including location, colony movement, *Nosema* levels, and treatments. Using epidemiological methods, we will determine the relative risk for the different factors to develop best management practices.

Bee breeding is one of the most sustainable methods to address *Varroa* and other bee pathogens. Bee breeder operations that have been using the Bee Tech Team information to select colonies with the hygienic behavior trait and lower disease and pest incidence should result in colonies that are more disease resistant. Measuring levels of disease resistant colonies in the bee breeder operations will show how successful they have been in breeding in disease resistance traits. We will compare current and past disease and pest incidence within bee breeder operations that have been participating in the Bee Tech Team program, and compare the average hygienic level over time to measure how successful the bee breeders have been in breeding for the hygienic trait. By setting up a protocol to measure how disease resistant colonies are, we can develop a stock certification program.

Project Cooperators and Personnel: Dennis vanEnglesdorp, University of Maryland; Katie Lee and Megan Mahoney, University of Minnesota; Rob Snyder and Benjamin Sallmann, UCCE - Butte County

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For More Details, Visit

- Poster location 3, Exhibit Hall A and B during conference; or on the web (after January 2014) at www.almondboard.com/researchreports
- Related Projects: 11-POLL5-Donohue/Spivak; 13-POLL7-Sheppard/Cobey

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