Developing Specialized Tech-Transfer Teams to Help Improve Honey Bee Genetics and Stock

Project Cooperators: Katie Lee, Mike Andree, Rob Snyder, Susan Donohue, University of California Cooperative Extension, Butte County ; Marla Spivak, University of Minnesota; Susan Cobey, University of California, Davis

University of California
Agriculture and Natural Resources
Making a Difference for California

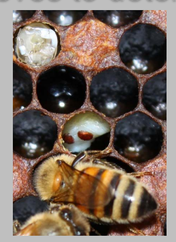
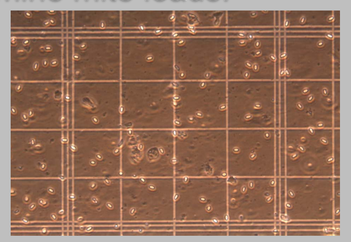
Since 2006 the almond industry has been challenged by the reliability of pollination units. Colony collapse disorder (CCD) and other conditions have been reported by beekeepers to cause losses from 30 to 90 percent over the last 5 years limiting pollination resources.

To address these pollination issues, a **Tech-Transfer Team** was developed. This team of experienced bee researchers will provide queen breeders in Northern California with hands-on assistance to accomplish the following **Short-Term Objectives.**

Objective 1.

Assist with selection of breeding stock that shows levels of resistance to pest, pathogens and disease through sampling and assessing potential breeder colonies of 16 queen breeders. We test for:

1) *Varroa destructor* (parasitic mite) – to test we collect 300 bees into a 4 oz. container filled with 70 % Ethanol. Samples are washed with soap and stirred to remove mites and then run through sieves to determine mite loads.

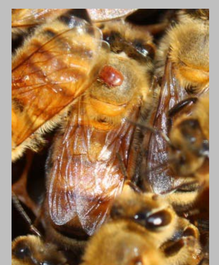




2) *Nosema sp.*(pathogenic gut fungus) – to test we remove 100 bees. Contents are crushed then diluted with water and analyzed under a compound microscope for spore loads.

3) Hygienic behavior – to test we use liquid nitrogen to perform a freeze-killed brood assay. The test is associated with disease resistance.

Objective 2.

By documenting disease management and treatment strategies, we will generate summaries of pest and parasite population trends. We plan to decrease chemical treatment in breeder colonies by using “anonymous data sharing.” Allowing beekeepers to look at more successful practices to reduce treatment costs and increase pollination units.




Objective 3.

With Sue Cobey and Steve Sheppard we will be supplementing breeder stock with imported germplasm to maintain genetic diversity in U.S honey bee stock.




Objective 4.

Collaborate with Queen breeders and researchers in working on key issues like sperm quantity and viability, and bee nutrition. The Team is a part of a Nationwide effort to help Honey bees, called the Bee Informed Partnership (beeinformed.org).




UC CE
University of California
Cooperative Extension

Bee INFORMED

USDA

Our **Long-Term Goals** are to:

- Increase the reliability of production in pollinator dependent crops.
- Increase the profitability of pollinator dependent producers.
- Increase beekeeper profitability and enhance the adoption of sustainable management systems in beekeeping.
- Develop a 5 year business plan to make the transfer team sustainable and permanent.
- Reduce honey bee mortality.
- Establish other teams across the nation to aid migratory beekeepers and queen producers that bring bees to California for pollination.