Honey Bee Stock Improvement Program

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PROJECT SUMMARY

Objectives:

- Continue to develop and test technologies and protocols for the international exchange of honey bee germplasm.
- Continue to enhance commercial honey bee breeding stocks and genetic diversity in North America by importing stocks from Europe.
- Study the relationships between breeder queens and their embryos with emphasis on pathogen status as a basis for developing a protocol for safe importation of germplasm.
- Continue to provide technology transfer of the skills required for honey bee stock maintenance.

Background:

California's production of almonds, as well as of certain other key crops, requires the availability of healthy honeybee colonies, and meeting that requirement requires a healthy and sustainable domestic beekeeping industry.

Currently, though, beekeepers and growers alike are faced with the effects of dwindling colony numbers. Further, the narrowing gene pool used to restock colonies nationwide is a concern. As a result, there are various efforts under way to build up and strengthen the domestic honey bee stock.

This particular ongoing project focuses on promoting the diversification of the gene pool to enhance colony fitness and colony survival, and to reduce the adverse effect of pests and disease.

One of the project's aims is to develop a standardized protocol for the international exchange of honey bee germplasm, so that domestic beekeepers can enhance their gene pools with stocks imported from Europe. The goal is to support the hybridization of domestic and foreign stocks to produce bees on a viable commercial scale in ways that are well adapted to U.S. beekeeping conditions and management practices.

Using the protocols being developed, honey bee semen from 3 subspecies of European stocks have been imported successfully and released from quarantine.

One key factor in the protocol development is the incorporation of technologies to minimize the risk of transmission of pathogens, especially viruses.

Another essential aspect of the project is ongoing technology transfer support and the dissemination of information on stock selection, maintenance and improvement. Currently this project is working with members of the California Bee Breeders Association. This is done in cooperation with the project led by Dr. Marla Spivak (ABC project 10-POLL5-Spivak): Developing Specialized Tech-Transfer Teams to Help Improve Honey Bee Genetics and Stocks, and with Steve Sheppard's Washington State University Honey Bee Health Program. As well, short courses on queen rearing and artificial insemination are conducted at UC Davis.

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Project Cooperators and Personnel: John Pollard and Claire Plante, GeneSafe Technologies; Steve Sheppard, Washington State University; Michelle Flenniken, University of California, San Francisco; Judy Chen, USDA, Beltsville, MD; Maria Spivak, University of Minnesota; Elizabeth Frost, UC Davis

For More Details, Visit

- Poster location 48, Pollination Pavilion, Session 3; or on the web (after January 2011) at AlmondBoard.com/AICposters
- 2009-10 Annual Report CD (09-POLL4-Cobey); or on the web (after January 2011) at AlmondBoard.com/ResearchReports