

Executive Summary

Importation of the honey bee subspecies that coevolved with apples

The objectives outlined in the proposal were completed fully. Significant outcomes of the project included the collection and importation of honey bee germplasm (semen) from several populations of *A.m pomonella* by WSS and BKH in Kazakhstan. The semen was hand-carried through US customs under USDA permit to WSS and used to inseminate virgin honey bee queens in Pullman WA. *A.m pomonella* is a honey bee subspecies that originated in the wild apple forests of Kazakhstan and Kyrgyzstan. Aliquots of the imported semen were submitted to the USDA-APHIS as required by the Permit for virus-testing and the semen was subsequently released to WSU for use in a breeding and selection program. Additional portions of semen were cryopreserved and are stored in the WSU honey bee germplasm repository for subsequent back-crossing.

After one year, daughters from inseminated queens were backcrossed to previously cryopreserved honey bee semen collected under this project. These instrumentally-inseminated F2 *A. m. pomonella* stocks are being overwintered in 2017-2018 and will be further propagated in 2018. The colonies will further undergo evaluation and selection as part of the honey bee breeding effort at Washington State University. In 2018, *pomonella* stocks will also be used in research to compare mating behavior in inclement (colder) weather, relative to currently available commercial US stocks. A USDA-SARE project proposal will be submitted in January 2018 to further examine the stock in side-by-side comparisons with commercial strains of US honey bees.

Future directions include continued screening of novel honey bee germplasm from areas of origin in the Old World, including the importation of additional *A. m. pomonella* for potential use as an improved tree fruit pollinator. Once data are available from our research on mating and foraging behavior under local conditions, we expect to provide breeding stock to commercial queen producers in California. The collaborators will propagate this strain for use in the PNW and our expectation is that it will be of considerable interest to beekeepers who are involved in providing pollination services to Washington Tree Fruit growers.