

Interspecific Breeding Germplasm for Rootstock Research and Development

Project Leader: Tom Gradziel

Dept. of Plant Sciences, University of California, Davis, One Shields Ave., Davis, CA 95616
(530) 752-1575, tmgradziel@ucdavis.edu

PROJECT SUMMARY

Objectives:

- Catalog individual interspecific breeding populations. Compile available breeding information dissemination to interested public and private researchers.
- Propagate the most promising selections. Develop seed populations of 100+ individuals for the most promising breeding lines for trait/molecular marker segregation proposals/projects.
- Transfer promising core germplasm to the USDA Repository.

Background and Discussion:

Changes in almond cropping patterns have led to the need for a new generation of rootstocks. Responding to this need, a number of public and private efforts have been initiated to develop and test new rootstocks and interstocks for almond and related stone fruit. Germplasm derived from interspecies hybrids is often pursued to attain the largest possible range of vigor and desirable horticultural traits. However, the acquisition of such exotic germplasm is often difficult and time-consuming.

UC Davis breeding lines have been developed combining almond, peach as well as related species including *P. argentea*, *P. bucharica*, *P. davidiana*, *P. fenzliana*, *P. domestica*, *P. mira*, *P. orthosepala*, *P. scoparia*, *P. tangutica* and *P. webbii*. Selections have demonstrated desirable traits such as drought and disease resistance.

This project is making this exotic germplasm available to interested researchers and is developing suitably large (100-200 individuals) seedling populations from targeted interspecific genotypes prior to scheduled mature tree removal in 2013-2014.

We have identified the specific parental source and lineage of most current interspecific populations. Initial pedigree information has been placed in the publically available RosBreed web-site (<http://www.rosbreed.org/>) to allow end-user visualization of pedigree relationships. Relevant phenotypes and field evaluation data has also been included on the site for identification of traits.

Key selections, representing diverse species lineages, have been propagated for distribution to interested researchers. Using both selfed pollinations as well as controlled hybridizations, we have generated over 1200 new seed for use in trait/molecular marker segregation greenhouse projects. Seed is currently being prepared for field transplanting in 2013.

A core germplasm (i.e., capturing fullest range of diversity) based on PediMap analysis is currently being developed. The most promising material has been propagated and approximately 25 selections transferred to the USDA Repository for long-term maintenance and public access.

Project Cooperators and Personnel: Carlos Crisosto, M.A. Thorpe, Bruce Lampinen, J. Fresnedo, S, Marchard, P. Martinez Garcia, UC Davis.

For More Details, Visit

- Poster location 70; Exhibit Hall A and B during conference, or on the web (after January 2014) at www.almondboard.com/researchreports
- 2012.2013 Annual Report CD (12-HORT10-Gradziel); or on the web (after January 2014) at www.almondboard.com/researchreports
- Related Projects: 12-HORT16-Aradhya/Ledbetter; 12-PATH7-Baumgartner; 13-HORT4-Duncan; 13-PATH1-Browne