Almond Variety 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:

To further advance this ongoing multiyear project focused on developing new almond varieties, with emphasis on both improved Nonpareil pollenizers and self-pollinating varieties with a broad range of improved traits for marketing and field.

- Continue to identify the most promising candidates for inclusion in new almond regional variety trials based on expanded grower trials, to thoroughly evaluate commercial potential of advanced breeding lines.
- Continue to improve selection efficiency for required traits; including productivity, self-fertility, marketability, water use efficiency, and resistance to disease, pests, and stress. Work with growers, handlers, and processors to prioritize those traits.
- Continue to accelerate almond breeding through the expanded use of controlled hybridizations followed by more efficient screening of progeny trees for required traits, utilizing proven traditional methods with new biotechnologies.

Background:

California's almond industry is going through a period of transformation driven by increasing market and regulatory demands, diminishing natural resources, increasing industry demand for honeybee pollinators, and changing climatic conditions. Accordingly, a key research priority continues to be the introduction of new and improved germplasm into the almond-breeding program at the University of California, Davis.

Genetic diversification is seen as an essential strategy for producing varieties with improved traits including higher yields and quality; self-compatibility which will reduce reliance on bees; differing bloom times, increased resistance to disease, pests, and stress; compatibility with Central Valley growing conditions; lower water use; and reduced orchard management costs.

Concurrent with this research approach is the expected outcome of enhanced human-health benefits, such as increasing the phytonutrient content (along with more flavor) and minimizing the risks of exposure to contaminants.

One early success in this regard has been the research team's release of "Winters' and more recently "Sweetheart' as high quality pollenizers for "Nonpareil'.

Almond-breeding research is a slow and complex process, partly because of the tree's challenging 5-year seed-to-nut cycle. But by taking advantage of recent technological advances to incorporate advanced computer modeling, molecular analysis, and the use of molecular markers into the program, a more efficient selection and sped up development cycle should emerge.

The research efforts are now setting the stage for the third generation of Regional Variety Trials. Planting will likely occur in 2014 using advanced selections currently showing commercial potential in grower test plantings.

Project Cooperators and Personnel: Carlos Crisosto, M. A. Thorpe, Bruce Lampinen, S. Metcalf, J. Fresno, R. Ragas, UC Davis; Jim Adaskaveg, UC Riverside; Joseph H. Connell, UCCE-Butte County; Paul S. Verdegaal, UCCE-San Joaquin County; M. Viveros, P. Schrader, UCCE-Kern County; Roger Duncan; UCCE-Stanislaus County; Franz Niederholzer, UCCE-Colusa County

For More Details, Visit

- Poster location 32, Exhibit Hall A & B during conference, or on the web (after January 2013) at www.almondboard.com/researchreports
- 2011.2012 Annual Report CD (11.HORT1.Gradziel); or on the web (after January 2013) at www.almondboard.com/researchreports
- Related project 12.HORT2.Lampinen