

Almond Variety Development

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PROJECT SUMMARY

Objectives for Current Phase:

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,

- Continue to identify the most promising candidates for inclusion in new almond regional variety trials, based on expanded grower trials to evaluate advanced breeding lines.
- Continue to improve the efficiency of selecting for required traits, such as productivity, sustainability, marketability, and resistance to disease, pests, and stress, and work with growers, handlers, and processors to prioritize those traits.
- Continue to accelerate traditional breeding through the expanded use of controlled hybridizations followed by the more efficient screening of progeny trees for required traits, much of this assisted by biotechnology.

Background and Discussion:

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 honey bee pollinators, and changing climatic conditions.

Accordingly, one key research thrust continues to be the introduction of new and diverse germplasm into the almond-breeding program at the University of California, Davis.

Genetic diversification is seen as a means of eventually producing almond varieties with such desirable traits as high yields and quality; self-compatibility, which will reduce reliance on bees; varying bloom times, increased resistance to disease, pests, and stress; adaptable to Central Valley growing conditions; lower water use; and reduced orchard managements costs.

Central to this research approach, of course, 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 "Sweetheart," a recently released Marcona-type premium-quality variety with partial self-compatibility.

Almond-breeding research is a slow and complex process, partly because of the tree's irresolute 5-year seed-to-nut cycle. But the researchers are taking advantage of recent technological advances to incorporate advanced computer modeling, molecular analysis, and the use of molecular markers into their work, with emphasis on prioritizing selection traits and speeding up the development cycle.

Their research efforts are now setting the stage for the third generation of regional variety trials. Planting will likely occur in 2013, with various selections already showing commercial potential.

Project Cooperators and Personnel: Carlos Crisosto, M. A. Thorpe, R. Ahmad, Bruce Lampinen, S. Metcalf, UC Davis; James Adaskaveg, UC Riverside; Joseph H. Connell, University of California Cooperative Extension, Butte County; Paul S. Verdegaal, UCCE, San Joaquin County; M. Viveros, P. Schrader, UCCE Kern County; Roger Duncan; UCCE, Stanislaus County; John Edstrom, UCCE, Colusa County; Amy Lezzoni, Michigan State University

For More Details, Visit

- Poster location 10, Exhibit Hall, Session 3; or on the web (after January 2011) at AlmondBoard.com/AICposters
- 2009-10 Annual Report CD (09-HORT1-Gradziel/Crisosto); or on the web (after January 2011) at AlmondBoard.com/ResearchReports