# Almond Variety Development

**Project Leader: Tom Gradziel**
Department of Plant Sciences, University of California, Davis, One Shields Ave., Davis, CA 95616
(530) 752-1575, tmgradziel@ucdavis.edu

## PROJECT SUMMARY

### Objectives:

Develop improved pollenizers for *Nonpareil*, including varieties that possess self-fertility and improved market value and resistance to disease, insects and environmental stress resulting from changing climates and water quantity/quality.

- Release 'Kester' as a late flowering and very productive *Nonpareil*-type cultivar.
- Target new traits; including productivity, self-fertility, water use efficiency and resistance to disease, pests and stress. Identify elite individuals for use as parents in controlled crosses and as selections for the new Regional Variety Trials (RVT).
- 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 combined with new biotechnologies.

### Background and Discussion:

The almond industry is going through a period of transformation driven by increasing market and regulatory demands, diminishing natural resources including good quality land, water, and availability of insect pollinators, and changing climatic conditions. Thus, a key UCD research priority continues to be the incorporation of new, improved germplasm into the breeding program.

Genetic diversification is seen as an essential strategy for producing varieties with improved traits, including higher yields and quality, self-compatibility to reduce reliance on bees, differing bloom times, increased resistance to disease, pests, and stress, lower requirements for water quantity and quality, and reduced orchard management needs. While almond-breeding is a slow and complex process owing to its large tree size and 5-year seedling-to-bearing tree cycle, greater breeding efficiency is being developed though appropriate incorporation of both field management and molecular diagnostic techniques.

In 2014, advanced selection UCD2-19E was released as the variety 'Kester' providing growers with a late flowering/early harvest and very productive *Nonpareil*-type cultivar.

Ten advanced UCD breeding selections representing a diverse array of genetic backgrounds while expressing high kernel quality and productivity as well as promising new traits, including self-compatibility and disease/pest/environmental stress resistance, have now been planted as part of the 2014 Regional Variety Trials (RVT).

Over 10,000 seed from crosses between advanced breeding selections were recovered in 2013/14 and over 6000 seed have now been field planted following greenhouse screenings. Greater breeding efficiency continues to be pursued through improvements in molecular diagnostics as well as field techniques to more accurately target crucial traits.

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**Project Cooperators and Personnel:** Bruce Lampinen, Carlos Crisosto, M. A. Thorpe, S. Metcalf, J. Fresnedo , UC Davis; Jim Adaskaveg, UC Riverside; Joseph H. Connell, UCCE-Butte County; Gurreet Brar, UCCE-Fresno/Madera Counties; M. Viveros, P. Schrader, UCCE-Kern County; Roger Duncan; UCCE-Stanislaus County; Franz Niederholzer, UCCE-Colusa County

**For More Details, Visit**

- Poster location 47, Exhibit Hall A + B during the Almond Conference; or on the web (after January 2015) at Almonds.com/ResearchDatabase
- 2013-2014 Annual Reports CD (13-HORT1-Gradziel); or on the web (after January 2015) at Almonds.com/ResearchDatabase
- Related projects: 14-HORT2-Lampinen; 14-HORT21-Gilbert; 14-HORT7-Gradziel