

# Long Term Nutrient Optimization Trial – Data Analysis, Web Delivery, and Application Development

## Project Leader: Patrick Brown

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## PROJECT SUMMARY

### Objectives:

- Analyze all the data that has been collected during “*Development of a Nutrient Budget Approach and Optimization of Fertilizer Management in Almond*” and use that data to model the determinants of yield, to create an understanding of whole orchard nutrient, and to examine relationships between the various parameters measured.
- In collaboration with SureHarvest, develop web based and device based applications for growers and consultants to make N management decisions.

### Background and Discussion:

Optimal nutrition is essential to maintain the competitiveness of California’s almond orchards; and successful and cost-effective fertilization entails both maximizing production and protecting the environment.

Over the past 5 years, the Almond Board in collaboration with CDFA and USDA has funded a large and integrative project “*Development of a Nutrient Budget Approach and Optimization of Fertilizer Management in Almond*”. This project has been highly successful and represents the most intensive and integrative data ever collected in almond.

The data collected over the past years represent an incredible resource to develop information and to test and validate approaches.

For instance, it has been observed that fruit N demand changes with crop yield and season though the explicit causes of these changes are unknown. A general data exploration is being conducted (on existing data sets) to better refine and optimizes the tissue sampling and nutrient demand data that we have generated.

Researchers have been improving the current prediction model of leaf nitrogen status. A new version has been developed and it will be available by January 2014. In addition, researchers have been studying the dynamics of potassium in different almond orchards. Ideally, a prediction model of potassium status will be developed by the next year.

In collaboration with SureHarvest, we have developed a web based decision support system to better manage nitrogen in California almond orchards. This model accounts for all the nitrogen inputs and give sounds recommendations to avoid nitrogen contamination, while ensuring high productivity. The first version of this model will be launched during the annual Almond Conference in December 2013.

**Project Cooperators and Personnel:** Sebastian Saa, UC Davis; Blake Sanden, UCCE - Kern County; Roger Duncan, UCCE - Stanislaus County; Brent Holtz, UCCE - San Joaquin County; Emilio Laca, Professor, Department of Plant Sciences, UC Davis; Franz Niederholzer, UCCE - Sutter and Yuba counties; Paramount Farming Co.; SureHarvest

### For More Details, Visit

- Poster location 49, Exhibit Hall A and B during conference or on the web (after January 2014) at [www.almondboard.com/researchreports](http://www.almondboard.com/researchreports)
- 2012.2013 Annual Report CD (12-PREC2-Brown); or on the web (after January 2014) at [www.almondboard.com/researchreports](http://www.almondboard.com/researchreports)
- Related Projects: 13-HORT11A-Sanden; 13-HORT13-Lampinen; 13-AIR2-Smart; 13-PREC5-Brown