Revisions to a Nutrient-Budget Approach and to Leaf Sampling Methods for Fertilizer Management in Almonds

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PROJECT SUMMARY

Objectives:

- Determine how leaf-nutrient status varies across a range of representative orchards and environments.
- Determine how leaf-nutrient status varies within the canopy and within the year.
- Assess the longstanding University of California "critical values" guidelines for nutrient applications, and determine whether nutrient ratio analysis is useful for optimizing nutrient management.
- Develop a phenology and yield-based nutrient model for almond.
- Develop fertilizer-response curves based on yield data and nutrient levels, and assess nutrient-use efficiency.
- Determine nutrient-use efficiency of selected commercially important fertilizer sources of nitrogen and potassium.
- Develop and promote new best management practices for nutrient use in almond.

Background:

The effective nutritional care and feeding of almond trees represents an essential factor in the rising productivity of California's orchards.

It also lies at the heart of a critical challenge for growers, in that successful and cost-effective fertilization entails not only using science-based application procedures but also meeting myriad environmental regulations.

Grower concern about this challenge is reflected in the results of a 2007 survey conducted by the project researchers. Growers indicated that the standard procedure of using July leaf sampling plus the University of California's "critical values" guidelines may not provide adequate guidance on nutrient management.

That finding was a major factor leading to the implementation of this multiyear, multidisciplinary, and multi-location project, which includes other ABC-sponsored research studies.

One of this project's two principal goals is the systematic reexamination of both current leaf-sampling protocols and the application and interpretation of UC critical values.

The other principal goal is to determine the response of almond to the application of nitrogen and potassium in terms of application rates, seasonal timing, and fertilizer sources. This effort, with trials in their 3rd year, will support the development of a phenology and yield-based nutrient model. Results to date indicate that some growers can be very efficient in the nutrient use.

The results of these research activities will be incorporated into a nutrient-budget approach to developing an integrated set of science-based and yield-oriented best management practices for nutrient management in almond.

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For More Details, Visit

- Poster location 13, Exhibit Hall, Session 3; or on the web (after January 2011) at AlmondBoard.com/AICposters
- 2009-10 Annual Report CD (09-PREC2-Brown); or on the web (after January 2011) at AlmondBoard.com/ResearchReports
- Related projects: 10-HORT11/11A-Shackel/Sanden; 10-HORT13-Lampinen; 10-AIR2-Smart; 10-HORT15-Hopmans