

Fertigation: Case Study of Interaction of Water Management and Nutrient Management in Almond

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PROJECT SUMMARY

Objectives:

- As part of the larger fertilizer study by Patrick Brown, document the amount and timing of water applied to each study site
- Monitor the plant water potential at each of the fertilizer/nutrient status study sites to allow analysis of irrigation and fertilization interactions in affecting tree nutrient status.
- In the southern San Joaquin Valley site, use soil moisture and meteorological monitoring methods to document non-stressed almond evapotranspiration (ET) under both drip and microsprinkler irrigation. Assess the impact, if any, of fertility on almond ET through replicated sites in this one orchard.

Background:

The interplay between water management and nutrient management plays a complex role in almond production. This effort is part of the multiyear, multidisciplinary, and multi-location enterprise labeled "Revisions to a Nutrient-Budget Approach and to Leaf Sampling Methods for Fertilizer Management in Almonds" being conducted by Patrick Brown and colleagues.

The Brown project is focused on nutrient management with different rates and sources being tested. As plant water status can influence

nutrient status, this effort is to monitor the plant water status in conjunction with the sampling occurring in 4 orchards across the state for nutrient status. Irrigation is managed by growers to address a variety of factors such as minimizing hull-rot or ensuring a dry ground for harvest, which may affect the nutrient status of the tree.

The other thrust of this project involves assessing how different fertilizer treatments affect soil moisture content as well as the water needs of the almond tree. The data so far indicate that in the southern San Joaquin Valley almond trees can use more water than has traditionally been thought. The results may affect the crop coefficient used to assess almond irrigation needs.

If collectively successful, these studies will result in growers being able to adopt an optimal combination of water and nutrient applications leading to high quality and yield on a sustainable basis.

Project Cooperators and Personnel: Patrick Brown, Bruce Lampinen, Saiful Muhammed, William Stewart, Jeremy Nunes, University of California, Davis; John Edstrom, University of California Cooperative Extension - Colusa County; Roger Duncan, UCCE - Stanislaus County; Richard C. Rosecrance, California State University, Chico; Bob Beede, UCCE - Kings and Tulare counties; Franz Niederholzer, UCCE - Sutter and Yuba counties; William Stewart and Andres Olivos, UCCE

For More Details, Visit

- Poster location 11, Exhibit Hall, Session 3; or on the web (after January 2011) at AlmondBoard.com/AICposters
- 2009-10 Annual Report CD (09-HORT11-Shackel/Sanden and 09-HORT11A-Sanden/Shackel); or on the web (after January 2011) at AlmondBoard.com/ResearchReports
- Related projects: 10-PREC2-Brown and 10-HORT15-Hopmans