Integration of Tree Spacing, Pruning, and Rootstock Selection for Efficient Almond Production

Project Leader: Roger Duncan
University of California Cooperative Extension, Stanislaus County, 3800 Cornucopia Way (#A), Modesto, CA 95358
(209) 525-6800, raduncan@ucdavis.edu

PROJECT SUMMARY

Objectives for Current Phase:

In support of a major ongoing 20-year project,

- Continue to evaluate the interactive effects of three key management factors—tree spacing (planting density), rootstock selection, and training/pruning techniques—on tree size, structural integrity, short-term and long-term yield, and disease incidence in almond orchards.
- Continue to evaluate the associated economic advantages and disadvantages.

Background:

To prune, or not to prune, and when to prune and how to prune—collectively, tree training—are critical issues in orchard management, in conjunction with choice of tree density and rootstock.

Pruning-related questions abound, of course, and this two-decade project, initiated in 1999, continues to explore them. Meanwhile, it is apparent that minimal pruning, or even nonpruning, of almond trees is gaining in popularity among growers.

Central to this long-term research project has been the use of a single, integrated, and long-term trial to examine the interactive consequences of decisions made about tree spacing, pruning, and rootstock selection.

This approach is expected to lead in time to a better understanding of the effects of tree spacing on the short-term and long-term sustainability of almond production.

Discussion:

The trial began with the closely spaced planting of three varieties on three kinds of rootstock, with the trees being subjected to training/pruning strategies ranging from standard practices to untrained/unpruned.

These directed activities resulted overall in maximum early yields. However, with the gradual development of a full canopy, continued tree growth raised the possibility of crowding and increasing shade-out leading to declining yields, plus increased susceptibility to foliar diseases and hull rot.

As reported by the researchers, results for the project's first decade demonstrate that unpruned almond trees produce as well as or better than trees pruned annually in the conventional manner.

However, they also emphasize the need to continue monitoring and documenting the effects of minimal pruning. As they note, "Time will tell how lack of pruning will affect longer-term production and profits."

Another interim finding of the researchers is that untrained trees and trees trained to multiple scaffolds are more susceptible to blow over and scaffold failure during the development years. That's especially true of larger trees planted with wider spacings.

One possible solution, say the researchers, would be to train the trees during the initial two years and then subsequently reduce or abandon pruning activities.

They also have reported their detailed findings to date on tree spacing versus tree size and yield, pruning versus yield, and yield versus rootstock type.

_____

Project Cooperator: Bruce Lampinen, University of California, Davis

For More Details, Visit

- Poster location 6, Exhibit Hall, Session 3; or on the web (after January 2011) at AlmondBoard.com/AICposters
- 2009-10 Annual Report CD (09-HORT5-Duncan); or on the web (after January 2011) at AlmondBoard.com/ResearchReports