

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

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PROJECT SUMMARY

Objectives:

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

Background and Discussion:

This project integrates various minimal training and pruning strategies with different planting densities in the same orchard. The Nonpareil and Carmel varieties are planted 22, 18, 14 or 10 feet apart down the row while the rows are all 22 feet apart. The four pruning strategies range from the old standard of selecting three scaffolds and pruning every year to not selecting any scaffolds and not pruning at all except for safety and equipment access.

Minimal Pruning: After sixteen years, much of the pruning story remains the same. Annual pruning has not increased or even maintained yield compared to unpruned trees. In general, the more extensively trees have been pruned, the lower the cumulative yields have been.

The cost of pruning and brush disposal, plus lower cumulative yield would have conservatively cost over \$7000 per acre so far if one were to use the historic price of \$1.50 per pound. At current almond prices, lost revenue would be significantly higher. The take home message from the pruning part of this trial is that almond trees need to be pruned occasionally for equipment access and safety, but not to improve yield. Worth noting,

during the early development years of this trial, untrained trees and trees trained to multiple scaffolds were more susceptible to blow over and scaffold failure than young trees that were trained to three scaffolds. One good option is to train young trees during the first few years to build a strong architecture and reduce future maintenance needs, but then stop pruning unless warranted for cultural access.

Tree Spacing: Through the first fifteen years of this trial, the most closely planted trees have yielded more (especially the smaller Carmel variety), are smaller, have incurred less shaker damage, have had fewer broken scaffolds, have had far fewer replants, have fewer mummies per acre and have reduced the need to hedge down the middle to improve drying at harvest. In 2015, the most tightly spaced Nonpareil trees on Hansen rootstock yielded less than the more widely spaced trees for the first time in the 16 years of this trial. This was only true for Nonpareil on Hansen and not for Nonpareil on Nemaguard or Carmel. Cumulative yields are still clearly better for the closer spacing. It is unknown if yields in more tightly spaced trees will continue to decline in future years or if 2015 was an anomaly (yields were substantially lower in all treatments compared to historical average).

The long-term impacts require continued monitoring and documenting the effects of minimal pruning and high density planting. Time will tell how lack of pruning and close spacing will affect longer-term production and profits.

Project Cooperators and Personnel: Bruce Lampinen, University of California, Davis

For More Details, Visit

- Poster location 59, Exhibit Hall A + B during the Almond Conference; or on the web (after January 2016) at Almonds.com/ResearchDatabase
- 2014 - 2015 Annual Reports CD (14-HORT5-Duncan); or on the web (after January 2016) at Almonds.com/ResearchDatabase
- Related projects: 15-HORT6-Niederholzer; 15-HORT19-Lampinen