SELECTIVE PRUNING OF CLOSE-PLANTED ASHLEY WALNUTS

Bill Olson, Dave Ramos, Kay Ryugo, Ron Snyder

OBJECTIVES:

The objectives of this trial are to evaluate any benefits derived from selective annual pruning of a mature, high-yielding Ashley walnut orchard.

PROCEDURES AND RESULTS:

Selective annual pruning vs. no pruning of a dense Ashley orchard began in 1978. In 1978 the selective annually pruned plots averaged 38 pruning cuts/tree, 32 less than 1-1/2 inches in diameter, 5 between 1-1/2 and 2-1/2 inches and 1 above 2-1/2 inches. As a result of this initial heavy pruning, yield of sound nuts was reduced by 320 lbs./acre over the nonpruned plots. Although nut quality was improved by this pruning, the increase in value was not enough to affect the reduced yield and resulted in a loss of $27/acre as compared to nonpruning.

In 1979, 67 cuts/tree were taken on the selective annually pruned trees, 66 less than 1-1/2 inches in diameter and 1 between 1-1/2 and 2-1/2 inches in diameter. The grower trimming averaged 10 cuts/tree, 9 cuts less than 1-1/2 inches in diameter and 1 cut between 1-1/2 and 2-1/2 inches in diameter. Selective annual pruning resulted in a reduction of sound yield/acre as compared to the nonpruned plots, 1.34 and 1.39 tons/acre respectively. Again, nut quality was improved by pruning. Selective annual pruning resulted in $795, and nonpruning $746/acre.

In 1980, the selective annual pruning was directed primarily at the renewal of fruit wood since after two years of intense pruning the trees were now opened up with light and fruit wood dispersed throughout the tree. The pruning averaged 33 cuts/tree, 32 less than 1-1/2 inches in diameter and 1 greater than 2-1/2 inches in diameter. Light measurements of selective pruned and nonpruned trees revealed that the pruned trees had a greater amount of light reaching the ground than did the nonpruned tree. Selective pruned trees averaged 74 micro einsteins greater light penetration per reading over nonpruned trees. Spur fruitfulness on the interior two-thirds canopy of pruned trees averaged 48 percent fruitful spurs; nonpruned trees averaged 25 percent fruitful spurs. On the outer third of the tree canopy, pruned trees averaged 55 percent fruitful spurs while nonpruned trees averaged 46 percent fruitful spurs. These measurements reveal that pruned trees had nuts dispersed throughout the tree canopy while the crop on nonpruned trees was concentrated in the outer third of the canopy. Sound yield of selective pruned trees was 2.7 tons/acre; nonpruning 2.6 tons/acre. For the third year in a row, quality factors such as % large, % light meats and % edible were improved in pruned over nonpruned plots. Value/acre was $85 greater in selective pruned plots as compared to nonpruned plots.

In 1981 the selective annual pruning was directed again primarily at renewal of fruit wood. The pruning averaged 10 cuts per tree, all less than 1-1/2 inches in diameter. For the second year in a row, there was a reduction in yield in the nonpruned plots as compared to the selective annual pruned plots. The yield data was 2.3 T/A for annual pruning and 2.0 T/A for nonpruned plots. Measurements of light intensity indicated improved light penetration into the tree's interior.
This resulted in an increase in the percent of fruitful buds on pruned trees as compared to nonpruned trees. Nut quality value was equal in all treatments due to the light pruning of the pruned plots.

In 1982, 42 cuts per tree were made on the selective annual pruning in order to keep the tree open and renew fruit wood. Forty cuts per tree were less than 1-1/2 inches in diameter and two cuts per tree were between 1-1/2 and 2-1/2 inches in diameter. This year the net yield was the same in annual pruned and nonpruned plots with yields of 2.60 and 2.58 tons/acre respectively. It is believed that the heavy pruning in the annual pruned plots and the good Ashley crop was the cause of this equalization in cropping. Nut quality value was increased by $112 per acre in the pruned plots over nonpruned plots. After five years of comparing annual pruning to nonpruning, the plot was altered in 1983 to include alternate year pruning after a history of pruning (i.e., skip pruning in 1983) and first year pruning after five years of nonpruning in addition to the annual pruned plots and nonpruned plots. The annual pruned plots averaged 43 cuts per tree less and 1-1/2 inches in diameter and 2 cuts/tree between 1-1/2 and 2-1/2 inches in diameter. The first year pruning after five years of nonpruning averaged 53 cuts per tree less than 1-1/2 inches in diameter, 10 cuts per tree between 1-1/2 and 2-1/2 inches in diameter and 1 cut per tree greater than 2-1/2 inches in diameter. The yield data of sound nuts was 1.69 T/A for annual pruning, 1.76 T/A for first pruning after five years of nonpruning, 1.84 T/A for continued nonpruning, and 2.15 T/A for alternate (skip) year pruning. Nut quality data is not available as yet.

Conclusion to date would be that annual pruning does not insure increased production over nonpruning but does generally insure increased quality over nonpruning. A less vigorous system of pruning, such as alternate year pruning, may be the best solution and provide increased production plus top quality and minimal cost.