SELECTIVE PRUNING OF CLOSE-PLANTED ASHLEY WALNUTS

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ABSTRACT

Heavy annual pruning, over 30 cuts per tree, in order to open up the tree and allow light to enter and thus keeping the center of the tree productive, calls for the removal of too much exterior wood resulting in lowered production. In 1982 when over 40 cuts per tree were made on annually pruned trees, the crop was only equal to that on trees not pruned for five years. This is consistent with other years when heavy pruning was practiced. In light pruning years, 1980 and 1981, the annually pruned plots produced significantly more walnuts than nonpruned plots.

REPORT

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 vs. alternate year grower trimming of a dense Ashley orchard began in 1978. In 1978 the selective annually pruned plots averaged 38 pruning cuts/tree, 32 less than 1½ inches in diameter, 5 between 1½ and 2½ inches and 1 above 2½ 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 1½ inches in diameter and 1 between 1½ and 2½ inches in diameter. The grower trimming averaged 10 cuts/tree, 9 cuts less than 1½ inches in diameter and 1 cut between 1½ and 2½ inches in diameter. Selective annual and grower-trimmed plots resulted in a reduction of sound yield/acre as compared to the nonpruned plots, 1.34, 1.35 and 1.39 tons/acre respectively. Again, nut quality was improved by pruning. Selective annual pruning resulted in $795, grower trimming $764, 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 1½ inches in diameter and 1 greater than 2½ inches in diameter. The grower embarked on a program of opening up the tops of his trees, and the grower-trimmed trees averaged 15 cuts/tree, 10 cuts less than 1½ inches, 4 between 1½ and 2½ inches and 1 cut greater than 2½ inches in diameter. The total amount of wood removed/tree was greatest in the grower-trimmed trees. 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; grower trimming, where the heaviest pruning was done, 2.4 tons/acre; and 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, and $100 greater than the heavy pruned grower-trimmed plots. This trial will be continued for at least one more year.

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 1/2 inches in diameter. Grower trimming was skipped this year. 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. This year the grower-pruned plots also out-yielded the nonpruned plots. The yield data was 2.3 T/A for annual pruning, 2.2 T/A for grower 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 1/2 inches in diameter and two cuts per tree were between 1/2 and 2/4 inches in diameter. The grower-pruned trees were not pruned this year. This year the net yield was the same in annual pruned, grower-pruned and nonpruned plots with yields of 2.60, 2.62 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 has not been analyzed as yet.
DRY TONS PER ACRE
(SOUND NUTS)

NONPRUNED
UC PRUNED
GROWER PRUNED
ASHLEY PRUNING TRIAL