

Pecan Yields and Nut Quality as Influenced by Soil Trenching and Tree Pruning

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Abstract

Trenching and pruning applications were placed on mature Wichita pecan trees in Maricopa, Arizona in 1998. Yield and nut quality data from the test are presented. Unfortunately, the cool, favorable growing weather minimized quality degradation during the growing season and confounded the test. Data presented probably do not reflect the true benefits of the treatments.

Introduction

Pecan nuts produced in the lower desert areas of south central Arizona can be affected by various constraints that limit the quality of the nut. Viviparity, the premature germination of the nut while it is still attached to the tree, is one constraint that significantly limits the total yield and the quality of the nut harvest each year. Other constraints include poor nut development, poor fruit set, alternate bearing and mid-summer drop of developing nuts due to stress on the plant. The purpose of this study was to evaluate the affect of combinations of trenching and pruning on the overall bearing capacity of the tree.

Materials and Methods

The test was conducted in a Wichita field at Farmers Investment Company at Maricopa, AZ in 1998. During the dormant period, rows of pecan trees were either trenched to a depth of 6 feet on either side of the trees using a standard pipe laying trenching machine or were not trenched. In addition, trees were either pruned or not pruned in the test rows. Five trees per treatment were randomly selected within rows and individually sampled. At harvest, a random sample of nuts was taken from underneath each tree after shaking. The nuts were selected by using a standard set of ropes that mark off a specific area of the circle under the tree. All nuts within the ropes, including those that were touched by the rope boundaries were included in the sample. Nuts were evaluated for overall yield, percent kernel, viviparity, nut weight, and the number of nuts per pound.

Results and Discussion

Yield. Sampled trees were noted to be in an off year in the alternate bearing cycle which accounts for the low average tree yield in the study. The trees with the highest yield was the trenched but not pruned treatment with a yield of 15.5 pounds. Intermediate were the trees that were not trenched but pruned at 15.5 pounds and the not trenched and not pruned trees at 12.6 pounds. The lowest yielding treatment was the trenched and pruned trees at 9.9 pounds.

Percent Splits. The splitting of the nut shell while the nut is still on the tree or at harvest is an indication of viviparity, a significant yield reducing phenomenon which is characteristic of low desert pecans. The highest incidence of splitting in the test (3.67%) was found in the treatment where the trees were pruned but not trenched. The other treatments were 1% or lower. The low incidence of viviparity was probably due to the favorable growing season in 1998 characterized by the delay of fruiting and fruit maturation by cool spring weather. The nuts had not reached the most susceptible period of growth to splitting before the warm and humid weather in late summer and fall moderated. The condition affected the quality of nuts throughout the region in 1998.

Percent Kernel. For all treatments the percent kernel was similar, ranging from a low of 57.9% to a high of 59.9%, well above the established acceptable limit of 55%.

The confounding affects of the 1998 weather have limited the authors ability to draw significant conclusions from this test. Further work will be necessary to evaluate the positive and negative values of pruning and trenching on the quality and yield of low desert pecan production.

Table 1. Results of the trenching and pruning study as it affects yield and quality of pecan nuts. Farmers Investment Company, Maricopa, AZ, 1998.

<u>Treatment</u>	<u>Average Tree Yield (lbs)</u>	<u>Average % Splits</u>	<u>Average % Kernel</u>
Trenching & Pruning	9.9	0.67	59.9
Trenching No Pruning	15.5	1.67	58.2
No Trenching Pruning	15.2	3.67	58.2
No Trenching No Pruning	12.6	1.33	57.9