

Project No. 93-S5 - Improving Almond Pruning Decisions

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Objectives: Farm Advisors are continuing work to develop information to answer pruning questions for three different situations:

1. What is the impact of alternate year pruning compared to annual pruning and nonpruning?
2. What is the best method of training and pruning a high density hedgerow orchard when maintaining it indefinitely?
3. What is the best method for removal of temporary trees in double planted orchards when they crowd?

Results:

1) **ALTERNATE YEAR PRUNING OF ALMONDS**

(Bill Krueger, Warren Micke, and Jim Yeager)

Annual pruning is a recommended procedure for mature almonds. Growers who prune every other year or even once every three years have observed no apparent deleterious effects to tree vigor or production. Alternate year pruning has been shown to be an acceptable practice with lateral bearing walnuts. This study was undertaken to compare the impact of alternate year pruning to that of annual pruning on mature almond yield and kernel quality.

A uniform 20 acre block of almonds planted in 1978 located in Hamilton City was selected. The planting is a 1:1 with 50% Nonpareil, 25% Price and 25% Peerless at 70 trees per acre. Nonpareil was used for the pruning treatments. The ten acres of Nonpareil were divided into

a randomized complete block with four treatments and five replications. Yield data was collected one year prior to imposing the treatments and then blocked according to yields. The treatments were initiated prior to the 1988 crop year and were: 1) Annual pruning; 2) pruning prior to odd numbered years; 3) pruning prior to even numbered years; and 4) unpruned. Pruning has been the same for all the pruned treatments and consisted of four, approximately 1.5 inch or larger cuts per tree or the equivalent. Average pruning weights have been collected following each pruning and have averaged between 37 and 69 pounds per tree.

Although the pruning crew was given the same instructions for each of the pruning treatments, by the third year of the treatments a trend had developed towards slightly more wood being removed for the alternate year treatment compared to the annual pruning. This was because it was easier to see wood that needed to be removed in the alternate year treatments than in the annual treatments. This difference was significant in 1990 and 1993. From 1990 through 1993, average pruning weight for the annual pruning was 50 lbs. per tree compared to 62 lbs. per tree for the alternate year pruned trees for the year they were pruned.

After six years of differential pruning, there has been no significant differences in yield (Table 1). From 1991 through 1993 pruning treatments have had a significant effect on kernel size (Table 2) with annual pruning having larger kernels compared to non-pruning. Apparently increases in kernel size have compensated for reduction in fruit number caused by pruning. Because kernel size has little effect on crop value, there have been no differences in crop value.

Results from this trial indicate that:

1. Reduction in yields due to lack of fruitwood renewal due to lack of pruning will take longer than six years.
2. Pruning results in increased kernel size compared to non-pruning.
3. Alternate year pruning offers some cost savings with no reduction in yield or crop value.

Since beginning the trial, there has been substantial tree loss in this orchard due to aerial *Phytophthora* and *Ceratocystis* Canker. In our judgement, the resulting non-uniformity in the orchard would make future results questionable. Therefore, we are discontinuing this trial.

Table 1.

EFFECT OF ANNUAL VS. ALTERNATE YEAR AND NO PRUNING ON YIELD

TREATMENTS	Yield lbs/tree						Accum. Yield 1988-93 lbs/Tree
	1988	1989	1990	1991	1992	1993	
Annual Pruning	32.50	24.25	37.86	26.23	31.42	22.94	175
Alt. yr. prior to even yr.	32.07	26.56	37.64	27.22	31.65	25.19	180
Alt. yr. prior to odd yr.	30.74	26.09	38.51	28.73	32.49	23.37	190
Non-pruned	30.25	28.25	36.85	27.07	29.20	24.24	176

There were no significant differences.

Table 2.

Average Kernel Weight in grams

Year	Annual	Odd Year	Even Year	No Pruning
1988	1.16 A	1.13 A	1.16 A	1.09 A
1989	1.26 A	1.20 A	1.23 A	1.17 A
1990	.94 A	.94 A	.95 A	.95 A
1991	1.26 A	1.17 AB	1.14 B	1.12 B
1992	1.13 AB	1.11 AB	1.15 A	1.08 B
1993	1.19 A	1.16 A	1.13 AB	1.07 B

Numbers followed by the same letter are not significantly different at the 5% level.