

**ALTERNATE YEAR PRUNING TRIALS 1989****Steve Southwick, Jim Yeager, Maxwell Norton, Joe Osgood**Objectives

1. To determine whether alternate year pruning can be practiced in prunes without adversely affecting cropping performance.
2. To determine whether there is an economic advantage to alternate year pruning.

Procedures

Pruning treatments consisting of annual pruning, no pruning in even years, and no pruning in odd years were initiated in 1986. Pruning was performed by growers in Tehama and Sutter Counties or by UC personnel in Merced County in January. Fresh and dry yield/tree, drying ratio, dried fruit counted per pound and dried fruit size distribution were evaluated again in 1989.

Results

Tree responses measured at the end of the 1989 growing season in Merced County showed higher fresh and dry fruit yields per tree, higher drying ratios and smaller fruit (higher count/lb) than trees pruned in 1988, but did not differ from annually pruned trees with regard to those aforementioned yield and fruit quality characteristics (Table 1). Trees pruned annually or in alternate years did not differ in fresh or dry yield per tree, drying ratio or dried fruit count/lb in Sutter County trees. Fresh and dry fruit yields per tree were not effected by pruning in Tehama County, but trees pruned in 1989 had higher drying ratios than those pruned in 1988. Fruit size was smaller in trees pruned in 1989, than in trees that were annually pruned or pruned in 1988.

There were more undersize fruit on trees that were pruned in 1989 than on trees pruned in 1988 in Merced County (Table 2). No other fruit size distribution differences were noted as a result of pruning treatment in Merced. Fruit pruned in 1989 had a higher percentage of fruit in the 30 size category than those trees which had been pruned annually. Otherwise, no other fruit size distribution differences were noted in response to pruning treatment. Trees pruned in 1989 in Tehama County had a higher percentage of fruit in the 26 and 23 screen size than obtained from trees pruned in 1988. There was a higher percentage of undersize fruit produced from trees pruned in 1989 than obtained from either annually pruned or trees pruned in 1988.

Effects of pruning treatment and location for the 1989 growing season were assessed by analysis of variance. Fresh and dry yield per tree were not affected by pruning treatment, however drying ratio and dried fruit count/lb were lower in those trees pruned in 1988 (Table 3). Trees measured in the Tehama county orchard had higher fresh and dry yields per tree than those measured in Merced and Sutter counties. However, the drying ratio and dried fruit count/lb were also higher. It is interesting to note that the Merced county orchard produced a lower yield per tree than the Sutter county orchard, but had a higher drying ratio and dried fruit count/lb.

By combining the results from the 1986-89 growing seasons it can be seen that annually pruned trees did not consistently outproduce trees which had been pruned in alternate years (Table 4). Only dried fruit count/lb in Merced and Tehama counties may have had slightly lower dried fruit count/lb measurements than those obtained from trees pruned in alternate years.

Pruning treatments were compared for the 1986-89 growing seasons by combining results from all locations (Table 5). Trees that were annually pruned had a slightly lower yield and dried fruit count/lb, however, the full statistical assessment of data presented in tables 4 and 5 have not been made at this writing.

### Conclusions

In any one year, pruning practice can modify the yield per tree, drying ratio and fruit size. We have observed this over the last 4 seasons and our 1989 data again supports that finding. It appears that certain orchards outperform other orchards on a yield per tree, drying ratio and fruit size basis. For the same crop load, certain orchards will produce larger fruit size. The alternate year pruning practice, however, did not consistently effect tree productivity as measured by yield, drying ratio and dried fruit count/lb. Based upon the data we have analyzed to this moment, we cannot conclude that alternate year pruning has produced different results from pruning trees on an annual basis. The cost savings resulting from pruning every other year may make the practice of alternate year pruning attractive.

Table 1. Effect of alternate year pruning in various orchard locations on fruit yield, drying ratio and count/lb for the 1989 growing season.

Pruning treatment	Fresh yield/tree (lbs)	Dry yield/tree (lbs)	Drying ratio	Dried fruit count/lb
<b>MERCED COUNTY</b>				
Annual	105.6ab <sup>Z</sup>	33.6ab	3.12a	91.5ab
Pruned 89	115.6a	36.5a	3.18a	94.3a
Pruned 88	86.6b	29.4b	2.95b	87.7b
<b>SUTTER COUNTY</b>				
Annual	179.0	67.0	2.64	86.2
Pruned 89	169.8	65.0	2.58	83.1
Pruned 88	162.9 NS	62.0 NS	2.61 NS	82.0 NS
<b>TEHAMA COUNTY</b>				
Annual	506.8	130.8	3.87ab	105.5b
Pruned 89	490.2	124.9	3.94a	111.8a
Pruned 88	508.4 NS	133.0 NS	3.82b	102.6b

<sup>Z</sup>Means separated among treatments and within counties by LSD, 5% level. NS=Not significant differences.

Table 2. Effect of alternate year pruning in various orchard locations on dry fruit size distribution in 1989.

Pruning treatment	Screen size distribution (%)			
	30	26	23	<23
<b>MERCED COUNTY</b>				
Annual	2.0	43.5	40.8	13.7ab <sup>Z</sup>
Pruned 89	2.8	39.0	41.5	16.7a
Pruned 88	2.4	45.1	40.7	11.8b
	NS	NS	NS	
<b>SUTTER COUNTY</b>				
Annual	5.4b	50.5	35.3	8.7
Pruned 89	12.6a	47.6	32.0	7.9
Pruned 88	9.0ab	54.5	30.2	6.3
		NS	NS	NS
<b>TEHAMA COUNTY</b>				
Annual	5.2	19.8ab	37.5ab	37.6b
Pruned 89	4.8	16.7b	35.0b	43.5a
Pruned 88	5.2	22.6a	39.7a	32.5b
	NS			

<sup>Z</sup>Means separated among treatments and within counties by LSD, 5 % level. NS=Not significant differences.

Table 3. Effect of alternate year pruning on fruit yield, drying ratio and count/lb for the 1989 growing season.

Treatment	Fresh yield/tree (lbs)	Dry yield/tree (lbs)	Drying ratio	Count/ lb
<b>PRUNING</b>				
Annual	268.5 <sup>Z</sup>	78.2	3.22	94.7
Pruned 89	262.0	75.7	3.25	98.0
Pruned 88	255.0	75.3	3.13	91.2
P value	NS	NS	<.0001	0.001
<b>LOCATION</b>				
Merced	102.6	33.2	3.08	91.2
Sutter	171.0	64.8	2.61	83.8
Tehama	512.0	131.3	3.13	108.9
P value	<.0001	<.0001	<.0001	<.0001
Pruning x Location	NS	NS	0.003	0.048

<sup>Z</sup>Means separated by ANOVA; NS=Not significant differences, other significance levels are denoted by the appropriate P values.

Table 4. Effect of alternate year pruning on dry fruit yield, drying ratio and count/lb for the 1986 through 1989 seasons.

Pruning treatment	Dry yield/tree (lbs)	Drying ratio	Dried fruit count/lb
<b>MERCED COUNTY</b>			
Annual	55.8	2.72	77.6
Pruned 89 (odd)	63.8	2.74	80.9
Pruned 88 (even)	55.4	2.72	80.5
<b>SUTTER COUNTY</b>			
Annual	54.7	2.69	68.5
Pruned 89 (odd)	53.8	2.66	68.4
Pruned 88 (even)	57.1	2.67	67.6
<b>TEHAMA COUNTY</b>			
Annual	122.0	3.23	69.8
Pruned 89 (odd)	122.2	3.25	73.1
Pruned 88 (even)	127.1	3.22	71.2

Table 5. Effect of alternate year pruning on dry fruit yield, drying ratio and fruit size summed for all orchard locations (1986-1989).

Pruning treatment	Dry yield/tree	Drying ratio	Dried fruit count/lb
Annual pruning	77.5	2.88	72.0
No pruning in even years	80.0	2.88	75.1
No pruning in odd years	79.9	2.87	73.1