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BLOSSOM THINNING OF PEACHES  
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In general, the earlier thinning occurs the larger the resulting fruit. Therefore, it is logical to assume that blossom thinning will provide the greatest possible benefit in terms of final fruit size. In fact, several studies from around the world have demonstrated substantial benefits from blossom thinning. Our experiments in California have also shown significant increases in fruit size but in some situations we have experienced problems. After 12 years of trying various approaches, the following "rules of thumb" represent our current understanding of how to maximize the benefits from blossom thinning.

1. Use blossom thinning to supplement hand thinning. Our first attempt at blossom thinning was an experiment conducted on May Crest peach with the late Jim LaRue in 1986. Knowing the trees could size about 375 fruit per tree, and starting with over 3,000 flowers, we thinned the blossoms down substantially (Table 1). Our intention was to leave 25-30% extra fruitlets so that doubles and undersize "nubbins" could be removed. Even though we achieved the numbers we were aiming for, the results at harvest were disastrous. Nearly 50% of the fruit were undersize leaving only 191 marketable fruit compared to 345 on the fruitlet thinned control trees (Table 1). We concluded then that blossom thinning needed to be less severe so a better selection of large fruit could be made at fruitlet thinning time. Since then our general rule of thumb has been to remove about 50% of the flowers. In most cases this leaves enough fruit so doubles can be removed and large, well spaced fruitlets can be selected.

Table 1. Blossom thinning of May Crest peach, 1986.

	Hand thinned Control	Blossom thinned
Date of blossom thinning		2/21
Date of Fruitlet thinning	3/24	3/24
# Flowers/tree on 2/21	3100 a	712 b
# Fruitlets/tree on 3/24 (before thinning)	1900 a	492 b
# Fruit/tree harvested	388	352 NS
# Marketable fruit/tree	345 a	191 b

Mean separation within rows by Duncan's Multiple Range Test, p < 0.05; NS -Non significant.

2. Blossom thinning may not be effective on early maturing varieties that can be fruitlet thinned within 25-30 days of bloom. In 1990 we conducted an experiment on some young Queencrest trees. On March 6 we thinned off about half of the 1,500 blossoms on the tree. On April 4 (29 days later) we thinned these trees, as well as control trees, down to about 200 fruit. At harvest there were no differences in yield or fruit size between the blossom thinned treatment and the control (Table 2). Why didn't blossom thinning improve fruit size? Basically there are two reasons. First, because of the short fruit growth period of very early varieties like Queencrest, fruitlet size at thinning is critical. Larger fruitlets have a distinct advantage over medium and small ones. Therefore, having more fruit to select from allows one to leave only the very largest. Second, carbohydrate modeling work by Ted DeJong of the Pomology Department suggests there is a period during early development of the fruit when carbohydrates are not limiting to growth. In other words, individual fruit will grow at their maximum potential rate for a period of time without being inhibited by other fruits. The length of this period will depend on many factors such as fruit load, pruning, leaf area and weather. However, under "average" conditions the period appears to be about 25 to 30 days after bloom. Therefore, if fruitlet thinning can be accomplished within this time period, blossom thinning would offer no benefit.

Table 2. Blossom thinning of Queencrest peach, 1990

	Hand thinned control	Blossom thinned
Date of blossom thinning	--	3/6
Date of fruitlet thinning	4/4	4/4
# Flowers/tree on 3/6	1514 a	742 b
# Fruitlets/tree on 4/4 (after thinning)	192	195 NS
# Fruit/tree harvested	180	185 NS
Yield/tree (kg)	17.7	17.6 NS
Average fruit weight (g)	116.4	113.8 NS

Mean separation within rows by Duncan's Multiple Range Test, p < 0.05; NS -Non significant.

3. Blossom thinning can be very beneficial on a range of peach varieties especially when compared to hand thinning in mid April or later. In 1989, we conducted blossom thinning experiments on mature trees of both Spring Lady and O'Henry peaches. In both cases we removed about half the flowers on the trees. Hand thinning was performed on April 10 in Spring Lady and May 8 in O'Henry. Statistical differences in fruit weight were already apparent at the time of hand thinning (Table 3). These differences continued to increase and amounted to 15 to 30 grams per fruit by the time of harvest. The increase in fruit size stimulated by blossom thinning substantially shifted the fruit size distribution and resulted in an increased fruit value of about \$2,000 per acre for both varieties. In these two instances blossom thinning was definitely economically beneficial.

Table 3. Blossom thinning of Spring Lady and O'Henry peach, 1989

	Spring Lady		O'Henry	
	Hand thinned control	Blossom thinned	Hand thinned control	Blossom thinned
Date of blossom thinning	--	3/9	--	3/10
Date of fruitlet thinning	4/10	4/10	5/8	5/8
Average fruit weight at thinning (g)	2.6 b	3.0 a	17.3 b	22.5 a
Average fruit weight at beginning of harvest (g)	97.6 b	114.4 a	152.1 b	181.6 a
Crop value at prevailing prices	\$6,100 b	\$ 8,209 a	\$14,717 b	\$16,782 a

Mean separation within rows by Duncan's Multiple Range Test, p -0.05; NS -Non significant.

4. Blossom thinning does not necessarily need to take a lot of time. In most of our experiments we removed 50% of the blossoms by picking off every other flower on every shoot. Sometimes this took as long as 45 minutes per tree and would have cost as much as \$500 per acre. Many growers would have a hard time justifying this extra expense, especially if they didn't know whether fruit prices would be high enough to pay for it. Other, simpler methods of blossom thinning could be used to knock down the initial fruit load on the tree while costing much less. For instance, in 1997 we tried stripping the flowers off the apical portion of the shoots. This procedure was quite fast especially during the popcorn stage. During fruitlet thinning, there were still sufficient fruit at the base of each shoot for good selection although spacing was not ideal. Another approach might be to run your finger along the top of the shoot thus removing the upward pointing flowers.

Blossom thinning has the potential for increasing fruit size and improving economic returns to the grower. By experimenting with different methods, varieties and conditions, a grower has a good chance of successfully implementing the procedure in his/her operation.