

EFFECT OF TIMING OF TOPPING TO REDUCE TREE HEIGHT ON SUBSEQUENT YEAR TREE VIGOR

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Over half of the annual production costs for peaches, nectarines and plums in California involve hand labor for pruning, thinning and harvest which is done from ladders because of tall trees. It is widely recognized that production costs could be substantially reduced if the height of trees could be reduced enough to reduce the need for ladders in the orchard. Recent research by Kevin Day and others demonstrates that high yields can be obtained on shorter trees with appropriate management techniques. One technique that growers use extensively to uniformly reduce tree height is topping. Mechanical tree topping has been practiced for more than 40 years and there are many theories about optimal timing of topping operations. Physiological reasoning predicts that the earlier one tops after the primary period of shoot growth (approximately June 30th), the greater the loss in carbohydrate storage for the subsequent year and this should result in less vigorous re-growth in the subsequent year. However, there have been no systematic studies to test this theory.

In June 2004 a fairly uniform, excessively vigorous 7-year-old block of early maturing, Arctic Star nectarine trees growing in Tulare County was selected for the study. Beginning in July, selected rows of trees were topped in July, September and November. In July and September the plots chosen for topping were divided into two sub-treatments. One sub-treatment was topped to 10 feet (down from approximately 18 feet) and the other was topped at 12 feet. In November, each of the 12 feet July and September sub-treatments were re-topped to 10 feet along with the a treatment block that was previously not topped. One treatment was also left untopped and will receive normal dormant pruning and reduced to a height of 12-13 feet in the winter.

The weight of biomass removed from by the topping treatments was assessed by weighing the pruned material after topping. The trees will be hand pruned to select fruiting wood during the winter and pruning weights will be recorded. In May 2005 water sprouts will be removed and pruning weights recorded. Tree yield data will be collected in June.

The first set of trunk and rootstock wood samples for determining if the topping treatments affected stored carbohydrate reserves were taken on December 1, 2004. A second set of samples will be taken one month after bloom in the spring. These samples will be processed for carbohydrate analysis at ANR facilities on the UC Davis campus.

Since all of the interesting data on this project will be collected in 2005 this report should be viewed as preliminary.