

OBSERVATION ON TOPWORKING AVOCADOS

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Topworking is commonly used to change over varieties in the avocado variety orchard at the University of California Citrus Experiment Station, Riverside.

When a variety in the Citrus Experiment Station orchard at Riverside is found unsatisfactory it is grafted or topworked to another variety. Topworked trees have ranged in age from 6 to 10 years.

When topworking was first undertaken the practice was to insert the grafts into two or three of the larger framework branches. Because of the difficulty of training the new growth this method was abandoned in favor of placing the scions in the trunk and closer to the ground.

The tree is cut off 12 to 15 inches above ground. This leaves a cut surface of 4 to 10 inches in diameter. We usually place four grafts in the larger trunks and at least two in the smaller. The preferred time for top-working at Riverside is February, although good results have been obtained when it was done as late as April.

A number of methods of grafting have been used and the best results are had with the saw kerf method. A number of professional topworkers have told us they prefer this method. It is not the purpose of these comments to describe grafting methods. A detailed description of the different methods will be found in Agricultural Extension Circular 96, "Propagation of Fruit Plants" by the University of California.

When the grafts are placed in the trunk as mentioned above they are more easily trained to a stake driven into the ground and firmly anchored to the trunk. The new growth is tied to the stake at frequent intervals when growth is rapid. All grafts are left the first season if they grow. Often only one or two grow. It is our practice to allow suckers that sprout from the trunk to grow temporarily, but they are kept well pinched back. They shade the trunk and keep the bark in good functioning condition.

This is particularly important, we think, if only one graft grows. These suckers are left until the grafts have made several feet of top growth, and longer if only one graft is growing. Later, the propagator is confronted with the problem of how many grafts, if more than one grows, to use to form the top. In the case of small trunks one is all that should be used as it will soon cover the exposed surface of the trunk with larger trunks we have left two and all four. While four make a large tree earlier, it is subject to breakage unless carefully braced with strong wires. Two grafts growing on different sides of the trunk have been used and can form a satisfactory top if one is kept cut back and finally removed. The larger and permanent graft will eventually cover the cut surface. With topworking a careful and continuous follow-up is necessary to get a

strong, well-formed tree.

With some trees while one or more grafts may grow, they make a weak, spindly type of growth the first summer. The leaves are small, crinkled and light yellow and also the bark on the branches is light yellow. The same type of growth is made by the suckers sprouting from the trunk. We have tried minor element sprays with no apparent improvement in the type of foliage. Usually in the late summer the new leaves become normal in size and color and shortly the top is in a good growing condition. Apparently the roots of these trees are so severely injured by cutting off the top that it is several months before nutrients are adequately absorbed to feed the new top growth.

For example, the following topworked combinations made an excellent growth: Topa Topa on Carr with a Mexicola root, an unnamed hybrid on Gerkin with a Mexicola root, and Susan on Emerald with a Ganter root.

The following combinations developed the weak type of growth described above: Gardner on Nabal with a Ganter root, Elsie on Nowels with a Topa Topa root, and Gae on Regina with a Mexicola root.

These examples are given to show the range in rootstocks and varieties topworked and their growth behavior. No explanation can be made about the variations in top growth which occurred.

Three components are usually found in a topworked tree: the root-stock, a sandwich, and the scion variety or top. Little is now known a-bout the effect of either the rootstock or sandwich on the behavior of the scion variety.

Rootstock experiments are under way in several counties to determine the effect the stock has on the scion top. This project was initiated by Dr. F. F. Halma of the University of California College of Agriculture in Los Angeles, and is made in cooperation with the Agricultural Extension Service.