

Tree Replacement and Topworking

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No single act is so important as that of tree planting for the future avocado grower. To get started right is a common saying and basically true. The person who is contemplating the planting of a tree either as a part of a new grove or a replacement in his present grove may very well study carefully the importance of bud and root stock selection. The avocado industry is learning to avoid the planting of diseased trees. The virus disease of sun-blotch is carried in the buds taken from diseased trees; if such buds are used the new tree will usually become unthrifty and will be a low producing tree. Just a little more care in selecting buds will avoid these losses. We should only take buds or scions from older trees that have been carefully selected over a period of years and are found to be free from any sun-blotch symptoms.

The subject of bud wood selection is very well covered in the University of California Agricultural Extension Service circular on "Propagation of Fruit Plants," copies of which are available free at your Farm Advisor's office.

The question of what to use as a root stock is still not fully answered. The work Dean Hodgson has done in testing for differences in several Mexican seedlings as rootstock sources may some day give us a clue as to whether or not such differences really exist. It took Dr. Webber of the University of California Citrus Experiment Station about 50 years to develop the very valuable information we have on citrus rootstocks, so we will have to be patient for our information on avocado rootstocks. In the meantime, we may well use seeds from Mexican varieties or Mexican seedlings, which are free from disease, are vigorous, and are heavy producers.

I think every avocado grower should grow a few trees for replacements, even if he gives them away to his city friends for back yard planting. You will more fully appreciate the work done by the nurseryman that produces good trees and you will not only know tree values, but will be in a better position to order from your nurseryman by specifications. I am sure the time will come when the most of you will be unwilling to purchase and plant trees of unknown bud and rootstock source. Lands not well adapted to the growth of avocados should not be planted at all, and it is a most wasteful practice to plant good avocado land to anything but the very best trees.

Tree planting in a new grove deserves more detailed care than it usually receives. Mr. Eggers, who has charge of the University of California Avocado orchard at Los Angeles, has called our attention to the need for careful handling of the balled trees. The improper handling or resting of a balled avocado tree on the bare truck bed while in transit may result in breaking loose most of the smaller roots from the earth of the ball. Many such small details account for the slow start made by some trees.

In planting dig the hole with a flat bottom and straight walls just large enough to receive the ball, allowing for the replacement of an inch of soft soil in the bottom and 2 to 3 inches of soil to be replaced around the ball. If the soil is wet, this soil should not be tamped but rather settled by puddling with a hose and water. If the soil is dry, it should be tamped thoroughly to avoid any possible air spaces. The tree should be planted at the same depth as it grew in the nursery. To avoid sun damage, the bud scar should face away from the afternoon sun. Protection of the new tree from sunburn by the use of white water paint, white wash, or shading is essential for most newly planted trees.

The care of this newly planted tree is mainly a matter of supplying a proper amount of water to meet the needs of the tree where the roots are and when these roots need moisture. A helpful suggestion is that of building a deep cone-shaped basin which causes the water to be directed toward the ball. Some such an effort is especially desirable if the soil of the tree ball is heavier than that of the area being planted.

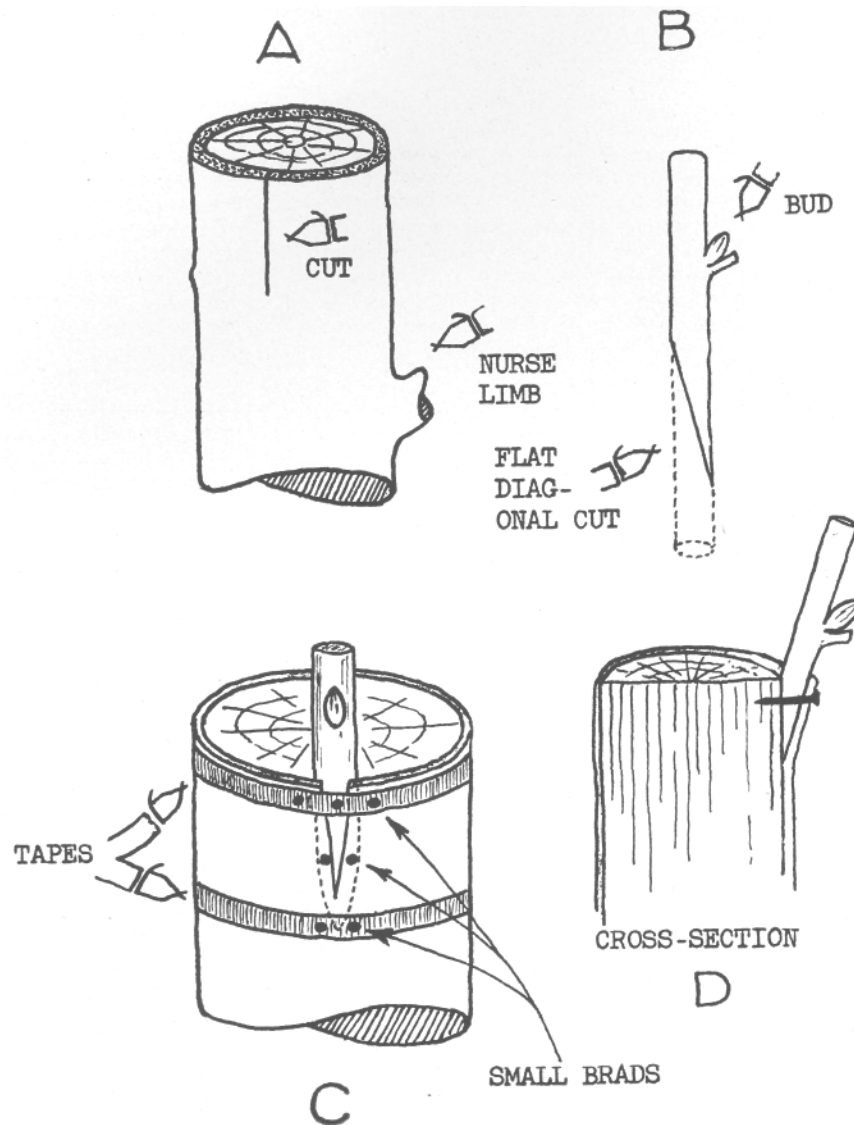
Replanting or replacing trees in old mature groves is frequently a waste of energy since by the time the new tree matures, the surrounding trees have developed to where they can make better use of the area than the newly planted tree which will require a lot of special care to permit it to reach bearing age in about five years.

There are two principal difficulties in interplanting or replacements in old groves, that of shading by other trees and of root competition. The more favorable a root development condition that is provided for the new tree, the faster will be the development and growth of roots from the older trees in this area.

Some orchardists have found it worth while to dig a ditch completely encircling the new tree and about 4 feet from the tree. A second ditch about 6 to 8 feet away may be needed a year or so later if the tree is still unable to compete. The moisture needs of the young tree must be met and will usually require water applications at about two week intervals.

Some growers find the use of strong growing seedlings a more satisfactory replacement practice. When the new tree has reached a satisfactory growth, it is then topworked to the desired variety.

This brings us to the very interesting and important subject of what to do with our low producing trees and obsolete varieties. The cause of low production may be due to the inherent weakness of the scion or bud. The topworking of such trees may be of real help and certainly all varieties other than possibly the Nabal and a few varieties that justify further study should be top-worked to good, strong, productive, disease-free Fuertes, with, of course, the exception of this coastal area where I suggest you study the variety committee report for some helpful suggestions.



This surgical operation of joining together two living tissues is not difficult, for nature has made it quite easy. The cambium layer—that layer of cells between the bark and the wood—are so intensely alive that when they are broken or cut apart and then joined to similar cells, even on another tree of the same family, they grow together rather quickly. It is this natural tendency of plants that is used to obtain vegetative reproduction or to change the top of a tree from one variety or a seedling to a more desired variety.

This operation must be made without seriously infecting the exposed tissue, and two requirements must be met: 1. The two tissues to be joined together must be securely and tightly held together. 2. The union must be protected from drying out.

In order to accomplish the first requirement, many methods have been developed; the mortise graft and the shield bud being the methods most generally used. I prefer, whenever possible, to use the simple bark graft instead of the more intricate mortise graft.

The cutting of a shield bud exposes a relatively large amount of the cambium layer—the

insertion of this bud into the T cut brings the two cambium layers together. They are held snugly together by wrapping with tape. In this case, the tape dipped in paraffin offers sufficient protection from drying out. Most budders insert the bud on the north side of the limb to avoid the direct drying rays of the sun.

In topworking, a scion is cut with a long sloping cut which also exposes a considerable part of the cambium. In making a bark graft, the tree or limb is cut off and a slit in the bark is made under which the tapered end of the scion is inserted. The scion may be held snugly to the stock by the use of small nails or by binding into place by the use of friction tape. The number two factor, that of protecting the scion and stock from drying out, is done by covering all cut surfaces with tree seal and covering the entire scion and stub with a perforated paper bag to prevent the sun from drying out or burning the inactive scion and stock. A sharp clean knife is an essential tool.



An avocado tree of the Mexican Race, tree 9, row 4 at the Citrus Experiment Station at Riverside, Calif. Planted on Greenfield loam soil in 1919. Photographed May 13, 1943 by the late William T. Horne. Circumference breast high 57 inches; height 86 feet.