

TOP-WORKING OLD AVOCADO TREES

DR. WILL R. MANNING

Fillmore, Calif.

Mr. President, Ladies and Gentlemen:

Just why the intensely interesting and highly important subject of "top-working" the avocado tree has occupied so little space in our literature, I am at a loss to understand. Page after page has been devoted to the care of nursery stock, budding, planting, protecting, irrigating, pruning, fertilizing, marketing, chemical contents, food values, etc., etc., till practically every branch of the industry has been thoroughly covered, but so far as I am able to ascertain, little or nothing of an authentic nature has ever been written regarding "top-working."

To be sure, until recently we were not much interested in this subject, for the very good reason that with the exception of an occasional seedling, we had no trees to top-work, or at least that is what we thought. Later, however, most of us began to realize that our early plantings had not, and never would, live up to our expectations. In the first mad rush many of us paid fabulous prices for sickly specimens of delicate non-productive varieties. Our idea was to get into the game, and that quickly. We were imbued with the spirit of "do it now." We wanted avocado trees, and anything so-called was all right with us. I actually paid \$15.00 for a four year old tree, which had never been out of the coal oil can. Fortunately for all concerned, most of these trees are now dead.

Many of us next turned our attention to the hardy Mexican variety, and were indeed fortunate in so doing for they have lived and thrived and can with certainty and in an incredibly short space of time be converted into well-formed bearing trees of whatever variety our more mature judgment may dictate.

About a year ago I became convinced that most of the trees in my orchard would not do, so I promptly began casting about for information regarding the best method of working them over. With this object in view I visited a number of my friends who are well up on all things pertaining to the avocado, and was astounded to learn that even the best informed of them could tell me nothing definite regarding "top-working."

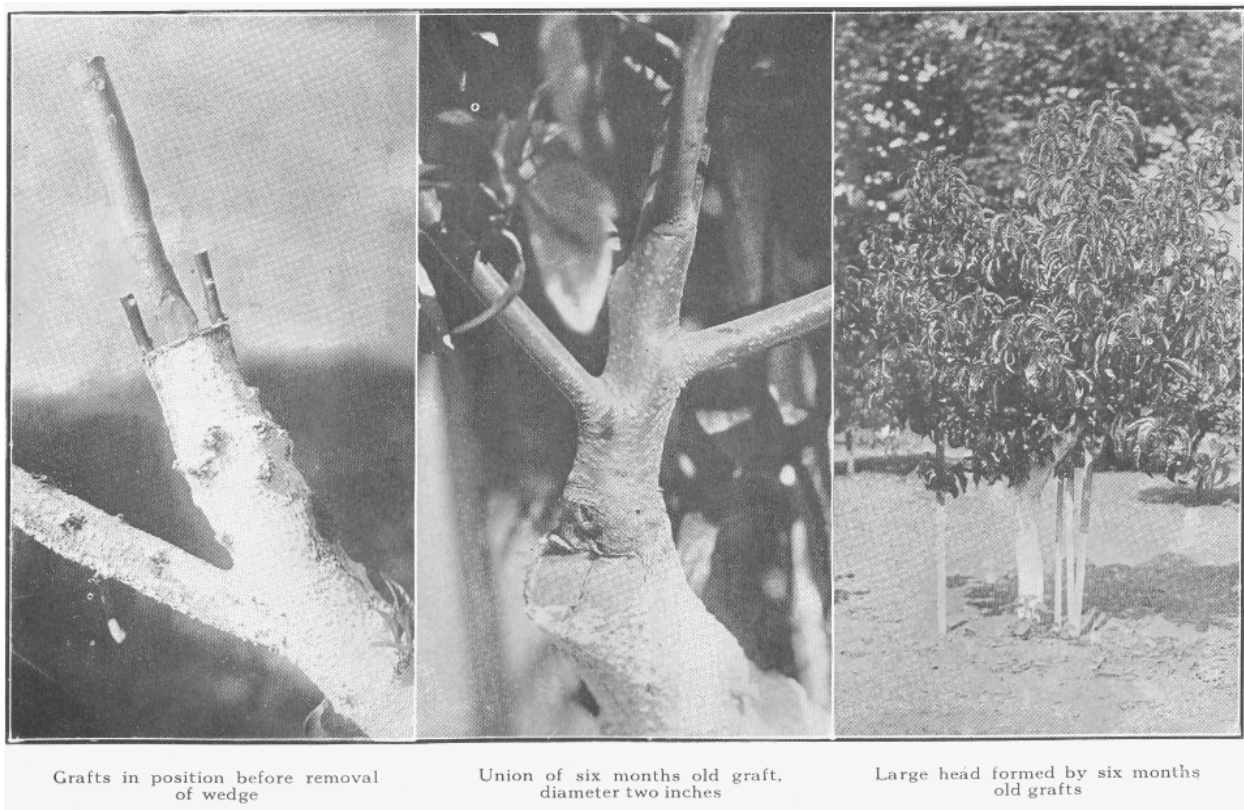
One thought that the best plan was to bud into the old wood. Another advised cutting the tree back and budding into the new growth. While yet another believed that grafting would prove most satisfactory but was not sure as to just when or how it should be done. So, as time was pressing, I decided to abandon my quest and do a little experimenting.

Not wishing to have all my eggs in one basket, I made up my mind to give all three methods a trial, which I did. Cutting my trees well back I placed grafts in the main stumps, buds in the old wood of the large limbs, and also later in the new shoots. In this manner several hundred grafts, and as many buds were used. A few weeks of

observation was sufficient to convince me that there was but one method of "top-working" worth mentioning, and subsequent developments have but served to strengthen that conviction.

Some of the buds did fairly well, but practically every graft failure was directly traceable to ignorance or carelessness on my part. The growth attained by some of them was almost unbelievable. At the end of six months several of them calipered as much as two inches, and a number had grown to the height of six feet. A few trees carrying six or seven grafts presented a bearing surface equal in extent to that of the average tree three or four years of age.

Now I have arrived at the point where possibly I should have started.



"TOP-WORKING" THE OLD AVOCADO TREE BY THE GRAFTING METHOD

The outfit required for grafting is not extensive. A wedge made of some hard wood (orange or lemon will do nicely) eight to ten inches in length and one inch in diameter, a pruning saw, butcher's cleaver, a hammer, a pot of grafting wax, some contrivance for keeping the wax warm (I use a lamp in a coal oil can), a paint brush and a roll of budding cloth complete the list.

The selection of the graft wood is most important. It should be hard and well matured, but not too large, and taken from what is known as the "second growth." The buds on this wood should be plump and well-formed, but not too far advanced. Soft pulpy wood

with feathery buds is most undesirable. As an illustration of the importance of wood selection, I will state that my first efforts were crowned with dismal failure. Out of fourteen grafts most carefully applied, not one was living at the end of two weeks (they were all from first growth wood). I cut these same trees back eight inches and applied second growth wood without the loss of a single graft.

The ideal tree for grafting is one which is branched near the ground, presenting a well formed crown, composed of three or four limbs of about equal size. Each of these limbs should receive two grafts, one of which may be later removed if so desired. Such a tree will produce a marvelous head in a very short space of time. Many trees, however, grow straight and tall with few or no large branches near the ground. These trees are sawed off at a height of about four feet and four grafts are inserted. Later two of these should be cut away if they interfere with the growth of the others.

There are doubtless numerous variations in the technique of grafting. However, the following has proven entirely satisfactory in my hands. Having selected a point at which your final cut is to be made, go a foot or two above and saw off the heavy top. This is a precautionary method to prevent splitting. The top being removed, cut squarely across at right angles to the long axis of the limb at your selected point. Next with a sharp knife smooth off the face of the stump, removing the velvety surface left by the saw. Then place the cleaver across the middle of the stump and split it with several sharp strokes from the hammer, remove the cleaver and insert the wedge, pounding it in until the crack across the face of the stump is at least twice the width of the graft to be used. Unless the stump is split for a considerable distance the pressure on the grafts will be too great when the wedge is removed. You are now ready to prepare your graft.

Select your graft stick, as a rule using the heavier wood in the larger stumps. Cut the lower end of the grafts in such a manner as to form a wedge approximately one inch in length. The sloping sides of this wedge must be perfectly flat and smooth. Correct any concavities or convexities which may exist. The length of the graft is unimportant, but it should possess two or three good healthy buds. The top of the graft is cut squarely across, leaving a flat smooth surface. The grafts now being prepared, insert the wedged ends, one on either side of the split in the surface of the stump, carefully remove the wedge until the grafts are slightly pinched but easily movable. Now adjust the grafts in such a manner that the cambium of the outer side of the graft is in contact with the cambium of the stump. This being done remove the wedge and the pressure will hold the grafts firmly in place.

A crack of considerable width now remains across the face of the stump. This is filled in with paper, cloth, avocado leaves, or anything else which may be at hand, the idea being to prevent the hot wax from running away when later it is applied. Next apply a bandage of budding cloth about one inch wide from the top of the stump to the lower limit of the split in its sides. Now with a paint brush apply a generous coating of hot wax to the face of the stump, making sure that the outer edges and points of contact between the grafts and stump are well covered. Owing to the thickness of the bark on the stump the grafts will set slightly in, leaving a space between the bandage and the graft, this space is filled with a plug of soft wax and painted over with hot wax. It is well to reinforce the bandage where it covers the split with a coat of the wax. Cover the upper ends of the graft with a thick coat of paint, it is more adhesive than the wax, which

is sometimes used. Protect the grafts from the sun by wrapping newspaper about the ends of the stumps. If possible always leave a few branches on the grafted tree for two months to aid in carrying on the circulation. The trunk of the tree and the large branches are protected from the sun-burn by means of the application of several coats of white-wash.

The buds will start to swell almost immediately, and from this point on require constant attention. No fixed rule can be given to govern either the number of grafts to be permitted to develop on each limb or the number of buds permitted to develop on each graft. Each tree presents a case in itself, and no two require the same treatment. There is one point which I cannot emphasize too strongly, that is, the importance of supporting each graft. Their rapid growth and consequent weight renders them extremely susceptible to violence of any kind. I have lost no less than twenty-five of my choicest grafts through inadequate support.

Just how late in the spring grafting can be successfully done I am unable to state. However, I can say that my April grafts have proven quite as satisfactory as those of February.