California Avocado Society 1956 Yearbook 40: 71-76

METHODS OF TOPWORKING AVOCADO TREES

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Many avocado groves contain healthy trees that are not profitable because they do not produce enough fruit, or they produce fruit of poor market quality. These trees may be made .potentially profitable by changing the tree to a variety more suitable to that particular location or condition. Topworking, as the name implies, is merely the process of rebuilding a new top through a graft of scion that has been placed in the cut off trunk of the existing tree. By utilizing the established root structure, a new tree can be built much faster and with less effort than by replanting young trees in the spaces formally occupied by the unprofitable trees.

There are three necessary steps that must be followed to insure a practical and profitable topworking job: (1) the selection of trees to be topworked and a variety to be used; (2) the actual topworking or grafting procedure; (3) the growing and training of the new tree. Discussion follows in that order.

SELECTION OF TREES AND VARIETY

Good tree and orchard records are necessary for proper evaluation of individual trees or blocks of trees that are being considered for topworking. With these records, and proper mapping, a work program can be planned for one or more years. Every effort must be made to select trees that are healthy, with no evidence of sun-blotch, root rot, or severe chlorosis, and to see that they will have ample room to re-grow into full-sized trees. If complete orchard changeover is contemplated, it is much more satisfactory to graft blocks of trees rather than alternate rows or other patterns. Proper variety selections, for each particular location, is very essential. A long costly program is contemplated, so very careful consideration 'should be given to production habits and records of prospective new trees. With this planning complete, the actual work of grafting, which is best done in the spring months of February, March, and April, can now be considered.

GRAFTING

There are two general methods used in the grafting job: the saw-kerf method (pioneered by Mr. George Calkins of Montebello), and the bark graft. As most commercial propagators use the saw-kerf method, consideration will be given it first and more fully.

Trees, to be grafted, should be cut down to a clean stump about three feet from the ground ahead of the actual grafting from one day to several weeks. This allows time to cut up the brush for mulch and to remove the larger limbs and trunks from the orchard. Scion wood is selected from healthy trees of a desired variety. Scions should be cut

from about one-year-old wood, 3/8 to 3/4 inch in diameter and about five inches long, with several good rounded eyes on each stick. These may be cut and stored for several days under cool moist storage conditions.

The stump is then cut off, fresh and clean, at about twelve to eighteen inches above the ground level in preparation for the actual grafting. Next, two or more saw cuts are made over the edge of the stump, extending about two inches in the top and down the side. *(Fig. 1)* With a specially wide chisel, as seen in (*Fig. 4*), the cut is widened out with smooth clean edges. The scion is then trimmed to fit this notch, with the scion extending into the notch about 1½ inches and about 2 inches out, with at least two good eyes on the exposed top. (*Fig. 2*) The scion is then placed in the notch, with the cambium layers of the scion and stump in as near as possible to perfect alignment. The scion is firmed into place with a small mallet and trimmed off smooth. After the scions are in place, all cut surface of the stump and scion are covered with generous amounts of tree seal, with special care that all areas behind the scion are filled. (*Fig. 3*) Paper is then placed on the seal to cover the black surface and a protective cover of paper tied in place over the whole stump. This is supported by bamboo stakes and the top is pinned together to keep out direct sun. Ventilation holes are made in the sides of the paper cover. (*Fig. 4*) The stump area below the paper then should be whitewashed to prevent sunburn.

When bark grafting is employed, the stump is cut off as before, but no notch is made. The bark is split down the side of the stump for about 3 inches and the bark loosened at the sides of the cut. The scion is cut on one side only, with a long slanting cut, and is placed under the bark, with the cut surface in contact with the cambium of the stump. This is tied in place with strong twine. The stump is then sealed and protected as before.

GROWING AND TRAINING OF NEW TREES

The scions will show growth activity in six to eight weeks after grafting, so the paper cover must be opened more to provide ventilation and allow the new growth to grow out of the covering. When the scion growth reaches a height of twelve inches or more, a selection of the one single lead that is to make the tree must be made. The lead growth will need support, so a good substantial stake (2"x2"x6') must be driven into the ground or nailed securely on to the tree stump in proper relation to the lead growth. All other growth is pinched back, but kept alive for one to three years before removing. When the new tree reaches a height of four to five feet, the terminal growth should be pinched out at a series of side branches. This will develop the branching head of the tree. As this growth is very soft and liable to damage, it is important that this new top be securely tied to prevent breakage. The large established root system will force a very fast growth on the new tree.

Grafted trees need much less water for the first two years, so no irrigation should be applied until careful soil examinations show such need. The sealed area of the stump should be periodically examined to see if any breakdown of the seal occurs. When any cracking does show, the area should be resealed with ample material.

With the topworking job completed, and the newly selected variety firmly established,

the prospects are for a new profitable grove.

July 7, 1956. Tree grafted to Zutano, April 25, 1956, by Beck. Now 4 feet tall.

Fig. 1. Two or more saw cuts are made, followed by notches in the edges.

Fig. 2. Scions are then trimmed to fit the notches.

Fig. 3. All cut surface of the stump and scion are covered with tree seal.

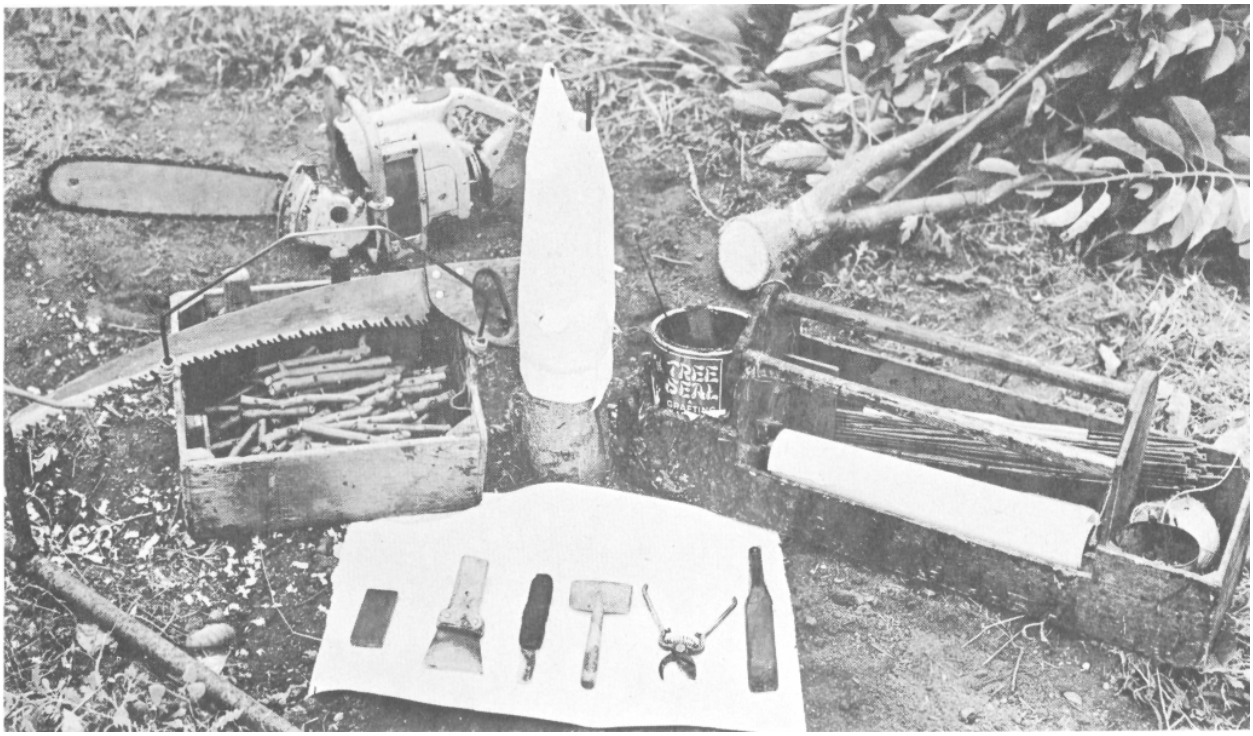

Fig. 4. Finished job and showing materials and equipment used.