

## **CARE OF AVOCADO GRAFTS**

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At a recent meeting of commercial Avocado grafters the problems associated with topworking avocado trees were discussed and the opinions and experiences of those present were freely exchanged.

The following paper reports the results of this meeting, summarizing the obligations of the grafter and the grower in the topworking operation, mentions problems encountered in topworking, and emphasizes the major points in the care of the newly grafted avocado tree.

### **IN GENERAL**

Only healthy trees free of root rot, other diseases, severe salt burn, and serious iron and zinc deficiencies should be grafted. A weak or sick tree cannot be made strong by topworking.

Grafting changes variety and by this means eliminates undesirable varieties.

Whenever possible, trees should be topworked in blocks rather than alternate trees or rows.

The best season for grafting is February through May except in coastal areas like Santa Barbara and San Diego Counties where grafting can be done any time of the year.

Growers are usually expected to cut the trees down to a four-foot high stump. The grafter will make a lower cut at the time of grafting.

### **PROBLEMS**

Occasionally problems develop during the topworking operation that are unexpected and beyond the ability of anyone to predict. These problems are: (1) bleeding stumps on which grafts may not grow the first year but usually grow the second year after regrafting, (2) sunblotch appearing on the new top after grafting apparently healthy trees, (3) abnormal, weak growth (resembling micro-element deficiencies) of graft the first year followed by good foliage the second year, and (4) loss of grafts due to unusual weather such as severe heat or frost.

### **FOLLOW-UP CARE IS ESSENTIAL**

Following grafting all trees need special attention such as staking, tying, pruning, and

training. To obtain well developed trees capable of holding good crops, trees will need monthly inspections and special care for about three years after grafting. Large trees often require special care for four or five years while small trees need care for only two years after grafting. Lack of care will result in uncontrolled growth, breakage of grafts, and tall, poorly developed trees. Time and money must be allotted by the grower for this follow-up care or topworking cannot be expected to be a success.

### **THE GRAFTER'S JOB**

Usually the avocado grafter does only the things mentioned in this paragraph and the grower is expected to do everything else. Other plans may be worked out between the grower and grafter before the topworking job is done. The grafter provides the graft-wood, does the grafting, checks the grafts 6-10 weeks after grafting, and (as part of his guarantee) regrafts at this time or the next spring trees on which no grafts grew. He does not regraft, except for an additional fee, trees which were lost due to grower's neglect in follow-up care. The grafter may do other things such as open the paper protectors over the grafts, give instructions, and show how to care for grafts.

### **CARE OF TOPWORKED ORCHARD**

The care of grafted avocados starts as soon as the grafting has been performed. To prevent sunburn, trunks need to be whitewashed immediately after grafting. This is most essential on stumps which slope to the north or east and young trees with smooth, thin bark.

No fertilizer need be applied to newly grafted trees the first two years.

Irrigation is not needed for several months after grafting, since trees are not using water until the new top develops. Normally, trees do not need water until midsummer and some trees may not need any water the first year. Check in the root zone to see if the soil is approaching dryness before applying the first irrigations. When water is needed apply an irrigation and then wait until the soil needs water again before irrigating. Generally, the second and third years the trees will require water more frequently than the first year but less than they did before grafting. Overirrigation can cause root rot to develop.

### **STAKING**

Stakes must be spiked to the trunk as soon as the graft starts to grow above the paper cylinder. Obtain clear grained redwood or pine stakes that are two by two inches or wider. In commercial orchards these need be only four to six feet long. Spike one to two feet of the stake to the trunk and leave three to four feet above the stump for tying the graft. On small diameter or very short stumps, slightly longer stakes need to be driven into the soil near the stump. Place the stake three to six inches from the most vigorous graft and preferably on the windward side.

## **TYING THE GRAFT**

As soon as the soft tender grafts grow above the paper they may be tied first with jute twine, balling twine, cloth or plastic strips. Tying should be done loosely to prevent cutting the tender growth but securely enough to give support to the growth and to prevent slipping of the tie on the stake. Additional ties should be made every month or two as the graft grows taller.

After the grafts are headed a more permanent material must be placed around the main graft selected as the new tree top. Good materials for these permanent ties are several strands of balling twine, jute twine, a single strand of clothesline rope, or a ten-gauge wire covered with garden hose. Staking and tying early are essential to prevent breakage of tender grafts. Check permanent ties three or four times each year to see if they are still strong yet loose enough to permit continual enlargement of the growing trunk of the graft.

## **TRAINING GRAFTS**

Select the strongest and most vigorous graft to be the main graft that will eventually be the framework of the new tree. Tie it to the stake and let it grow three to four feet tall. Since it is quite vigorous it will tend to grow too tall to make a low, well shaped tree. To develop a reasonably low headed tree that is strong and easy to pick, pinch out (remove by hand) the top when it is about three feet above the stump or at the top of the stake. This forces branches that will make the framework limbs of the new tree. The branches developed from this first pinching need to be pinched again when they are about eighteen inches long. This low heading and pinching of the top and branches produces a round headed tree that withstands wind without breaking when it is properly staked and tied.

After selecting and tying the best graft on the stump, cut the other grafts back to the top of the paper cylinder so they do not interfere with the development of the main graft. These other or secondary grafts are left to help heal over the stump. To avoid interference with the main graft, subsequent new growth will need to be removed every two months. Eventually the other grafts will be cut off even with the stump and the cut painted with "Tree Seal" or "Tree Heal." On stumps less than three inches in diameter, the extra grafts are removed after one year; while on stumps three to eight inches in diameter the other grafts are cut off after two years. Where larger stumps have been grafted these secondary grafts are partially cut back but left four to six years to help heal over a third or more of the stump.

If nurse limbs are left at time of grafting they must be removed the first year to permit the grafts to grow. Suckers on the stump are generally removed but in cases where extra shading is necessary, where abnormally weak growth occurs, or where only one graft grows on large stumps they may be left but partially cut back. They may be handled like secondary grafts and removed when no longer needed. At the end of the first season remove the string tied around the stump at time of grafting.

Heavy saw cuts to lower height of grafted trees usually force soft growth all over the tree top which is hard to train into a strong, well branched top. Frequent light cutting or

pinching will generally spread growth and make a better shaped tree than one heavy saw cut. Soft long sucker-like shoots that sometimes develop on the framework limbs of many grafted trees are best removed.

## **STUMP CARE**

Inspect the stump before the first rains and remove any loose black asphaltum placed over the stump at time of grafting. Paint the top of the stump with "Tree Seal" or "Tree Heal" to protect it against decay. Repeat this each year on trees needing attention.

## **FROST PROTECTION**

In areas where frost is likely to occur, give newly grafted trees special protection. The main grafts and the stumps should be wrapped to insulate them against cold. Corn stalks, several thicknesses of newspaper or similar materials are good insulators if tied evenly and securely to the tree. Orchard heaters may be necessary for maximum protection in the coldest areas.