



## Top Working Citrus by Budding

### Background:

Top working or changing the variety of an established citrus tree is most often done by bark grafting into a limb or the trunk. This method requires a large amount of mature bud wood as bud sticks are used instead of individual buds.

When there is only a limited amount of bud wood as is often the case with a new variety, the bud wood can be made to top work many more trees than with bark grafting. This method is a less complicated and is therefore potentially more reliable.

Ensure trees to be top worked are healthy, of rootstock to give the desired fruit quality, not too old (say not older than 15 to 20 years) and there are no potential compatibility problems.

It is strongly recommended that for the M7 variety, the M7 Orchard Protocol and the M7 Nursery Protocol are consulted ([www.chislettnavel.com.au](http://www.chislettnavel.com.au)).

### Method:

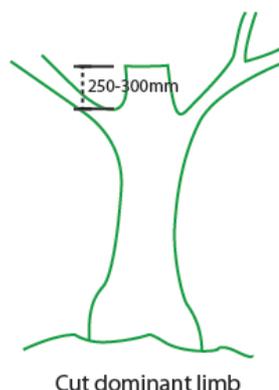
1. Prepare Tree for Top Working.

- a. Cut Limb.

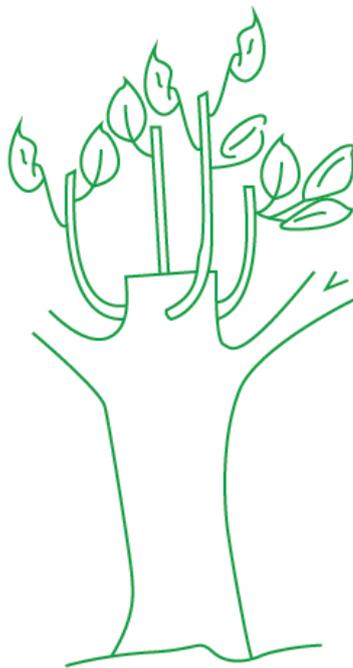
In late winter or early spring when the chance of damaging frost is over, cut a dominant limb in the centre of the tree using a chainsaw 0.6 to 1.0 m above the ground. Leave about 250 to 300 mm projecting above the closest branch.

Trim surrounding canopy to provide ample light for the cut limb.

Reduce irrigation amount to match reduced canopy.



- b. Paint Tree.  
Paint immediately the trunk and limbs exposed to the afternoon sun with undiluted white water based paint to protect bark from sunburn.
- c. Treat Cut Surfaces.  
Apply a fungicide dressing to cut surfaces if it has been found advisable under your growing conditions
- d. Thin Out Shoots.  
Thin out shoots on the cut limb when they are 100 to 250 mm long, leaving four to five of the strongest shoots.  
Select shoots that are not on the edge of the cut surface of the limb as these tend to be weakly attached and more easily broken off in the wind.  
If there are multiple shoots coming from one point, remove the unwanted side shoots by cutting rather than breaking leaving a short stub so that the remaining shoot is not weakened.
- e. Top Shoots.  
Cut the selected shoots about 300 mm long to strengthen them at least two weeks before budding.



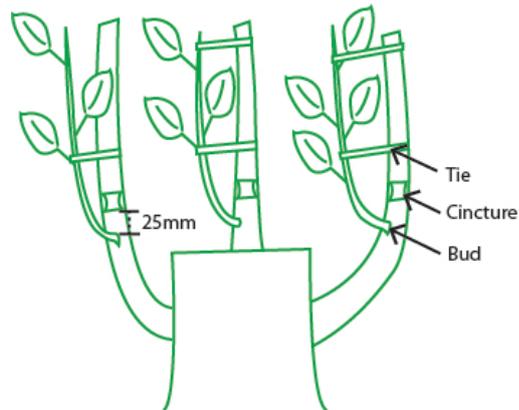
Selected shoots ready for budding

- 2. Bud Shoots.  
Bud shoots when they are approximately 10 to 15 mm in diameter, well hardened and strongly attached to the limb (late spring, early summer). Place the bud just above the level

of the cut surface on the limb using a chip or T budding procedure as used in nurseries. Three budded shoots should be enough.

3. Remove Budding Tape.

Approximately four weeks after budding and when the bud union is well callused, remove the budding tape. Form a tying stake by cutting the shoot 250 to 300 mm above the bud and cincturing the shoot 25 mm above the bud to force the bud to grow. The cinctured shoot can then be used to tie the growing scion for support.

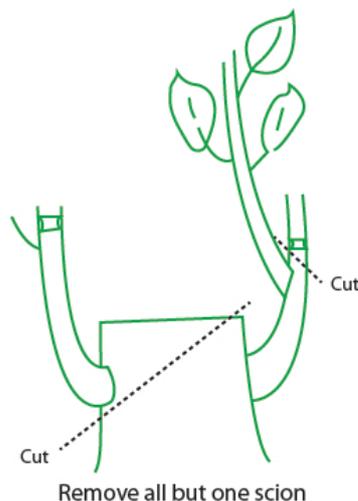


4. Manage Growth of Scion.

Cut scion shoots at approximately 250 mm to allow them to strengthen and branch. Further pruning should be done as required to achieve the required structure and strength.

5. Thin Out Scions.

An optimum structure is obtained if only one scion is left on the completed tree, (some growers leave two however this can produce an undesirable crouch between the two new limbs but could give advanced production). When the scions are strong enough and will not break off in the wind, remove all but one scion with a chainsaw. This would be done at about two years after budding.



6. Remove all remaining limbs of the former variety.

This is done progressively as the scion limb expands, to allow enough space to prevent the scion getting shaded out. Limbs of the old variety also provide protection for the new developing scion. Approximately two and a half to three and a half years after budding, remove all remaining limbs of the original tree leaving only the limb (or limbs) with the new variety. Regular removal of shoots of the old variety will be required. The faster the old canopy is removed, the more deshooting that is required.

7. Continued canopy management.

Regular pruning will be necessary in subsequent years to produce an open structure and to prevent over cropping.



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