

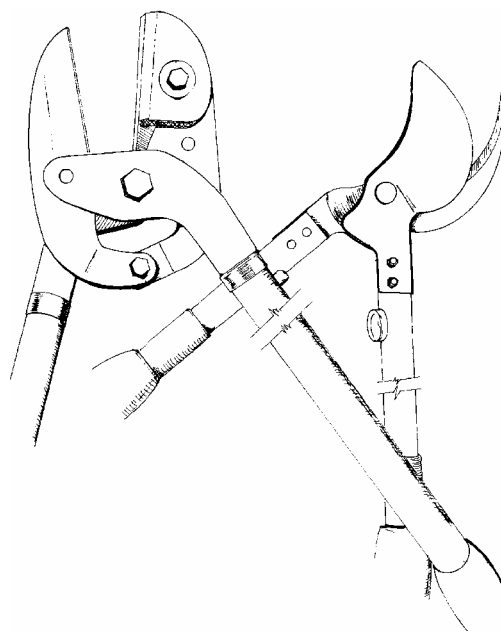
Mango Pruning in the Top End

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Mango trees do not have to be pruned annually to bring on flowering or increase yield as is the case with deciduous fruit trees. They are terminal bearers, and usually flowers are borne on mature wood. In fact pruning at the wrong time could have a detrimental effect. Pruning tends to stimulate shoot development in mango trees usually resulting in vigorous vegetative regrowth. If trees are cut back too heavily they may not fruit for two to three years.

Pruning is usually carried out to shape trees and open up the centres, allowing free movement of air and sunlight into the tree. This facilitates the penetration of sprays through the trees making control of pests and diseases much more efficient. The ability of sunlight to penetrate the tree enhances the colour of the fruit and improves quality.

There are no hard and fast rules for pruning mango trees. It is mainly a matter of common sense; the main objective is to develop a good tree structure which meets all the above requirements and facilitates harvesting and movement of machinery through the orchard. The ideal tree should have three and not more than four main trunks, be open inside and low-set, i.e. 4-5 metres. Over this height harvesting becomes difficult.



YOUNG TREES

The early stages of growth are most important for the initial shaping of the young tree. A well structured tree will be able to carry a heavy crop, facilitate spraying operations and ensure the fruit is exposed to plenty of light leading to a good blush on the fruit at maturity.

Kensington Pride mango trees in particular tend to have strong apical dominance. Young trees will grow to over 1 metre before they start to push out branches. To develop a strong trunk the trees should be allowed to grow to over 1 metre in height initially. They are then cut back to a height of between 0.6 to 0.7 m. The site of first cut is important for the development of a strong frame. Mangoes grow in flushes, each flush is delineated by a concentrated whorl of leaves on the stem. This is referred to as a "ring of buds", as a bud capable of forming into a branch is situated at the base of each leaf. If the cut is made above this "ring of buds" the resulting regrowth will be a feather duster effect of seven or more shoots developing. These would need to be thinned out to three or four if a good tree structure is to be attained. Even so this would be a weak point, prone to breaking during storms or strong winds. Below the "ring of buds" the leaves are more spaced out along the trunk. This is an ideal place to do the first cut (see Figure 1). It will ensure that the branches are well spaced out up the trunk and only three shoots will normally develop, resulting in a strong frame for future development.

After the initial cut allow the three shoots to grow into branches of over 1 metre long. These are then cut back to about a metre in length, which will give you a good strong branch for supporting the growing tree. Again it is important to ensure the cut is below the "ring of buds" so only three shoots will develop.

This should take care of any pruning necessary for the young developing trees. After this the trees should start branching by themselves. Young trees can be pruned at any time of the year. The aim should be to develop a spreading tree rather than a tall tree. Downward and inward growing branches or branches that cross over each other should also be removed.

BEARING TREES

It may not be necessary to prune trees every year. It depends on a number of factors. Mango trees normally respond to pruning by sending out a vegetative flush, usually the heavier the pruning the more vigorous and numerous the flushes. To complicate the issue further mango trees are terminal bearers, i.e. they flower from the ends of the branches and will only flower on mature wood, i.e. shoots that are six weeks or older. It is therefore most important to ensure that the trees do not have vegetative flushes near flowering time, which is usually end of May into June. However, if the grower decides to prune his trees, there are two main times when this should be done.

FIRST PRUNING - AFTER HARVEST:

This should be done immediately after harvest and should be completed by the end of December. Types of pruning at this time include:

- **Skirting.** This is the removal of low hanging branches which could hinder orchard operations such as fertiliser application and under tree spraying for weed control.
- **Opening up.** This is the removal of branches inside the tree which cross over or clutter up the centre of the tree restricting the penetration of sprays.
- **Hygiene.** This involves the removal of any diseased or dead branches in the tree, which could be a source of infection.

SECOND PRUNING- PRE FLOWERING:

This pruning takes place from about the middle of May and, if the timing is right, it is followed by a floral rather than a vegetative flush. Unfortunately, if it is done too soon or too late after flowering has commenced, the crop could be lost due to vegetative flushing. The time span when this pruning can be safely done is limited to a quite short period about two to four weeks.

- **Skirting.** Removal of low hanging branches which could cause fruit to drag on the ground, making it unsaleable.
- **Opening up.** Removal of twigs and branches cluttering up the inside of the tree, as well as opening up the top. This not only facilitates spray penetration for better insect and disease control but also allows light into the tree, improving fruit colour.



Figure 1. A young mango tree

- **Tip Pruning.** This is particularly useful where the trees have had a vegetative flush just prior to flowering. The young flushes are cut back to mature wood, the resulting flush should be floral. This has an added advantage in that it can also be used to reduce tree size, by cutting back two or even more flushes. Trials on trees treated with paclobutrazole (Cultar[®]), resulted in considerably improved flowering.
- **Reducing tree size.** Cutting back large limbs to reduce tree size is always risky with mangoes as you may lose two or more years' production, depending on the amount cut back. However, if the timing is right flowers can develop on even large branches which have been cut back. One method of reducing or spreading the risk is to cut back only one or two branches each year, or cut back one side only per year. Although the pruning time is short the second pruning is the best one for major cutting back.
- **Hygiene.** It is essential to reduce the source of flower and fruit infection. Any diseased or dead branches should be removed before flowering.

REJUVENATING OLD TREES

Old trees are often difficult to harvest, due to their size, and can have a build up of pests (mainly scale) and disease as it is difficult to reach the whole tree when spraying to control them. It is possible to cut these trees back to a more manageable size, but depending on the severity of the pruning you may lose as many as three crops. On the plus side fruit production should improve together with fruit size and quality, once trees have recovered.

With large vigorous trees which are too high the cutting back should be done in two stages. The tall central trunks are cut back to about 3-4 m. The actual site to cut back to should be at a point where there are side branches. A bow or chain saw would be necessary for the job. Cut back one half of the tree, the remaining trunks and leaves will help protect the stump from sunburn. Any freshly exposed trunks and branches to the sun should be painted with white water-based paint diluted three or four times. This is to prevent sunburn, which could bring on a borer attack to the damaged bark. Within a short time numerous shoots will develop; select the most vigorous of these, spaced evenly around the stump and if possible at differing heights.

Remove all the other shoots. This process should be repeated as often as necessary until the selected shoots begin to dominate and take over. Then the rest of the tree can be cut back and the operation repeated.

Old, unthrifty trees can often be rejuvenated by a moderate to severe pruning. This is in the form of skeletonising the tree, i.e. cutting back the branches of the tree till only the basic frame is left. Moderate skeletonising would entail cutting back the large branches to healthy wood, while at the same time maintaining the basic structure of the tree. Particularly large unthrifty trees would benefit from a more severe skeletonising, where all the main branches are cut back to the main trunk only leaving about a metre or so of branch. The whole trunk and remaining branches should be painted with diluted paint to prevent sunburn and borer attack. In both these cases there will be a proliferation of sucker growth. These should be treated as mentioned previously.

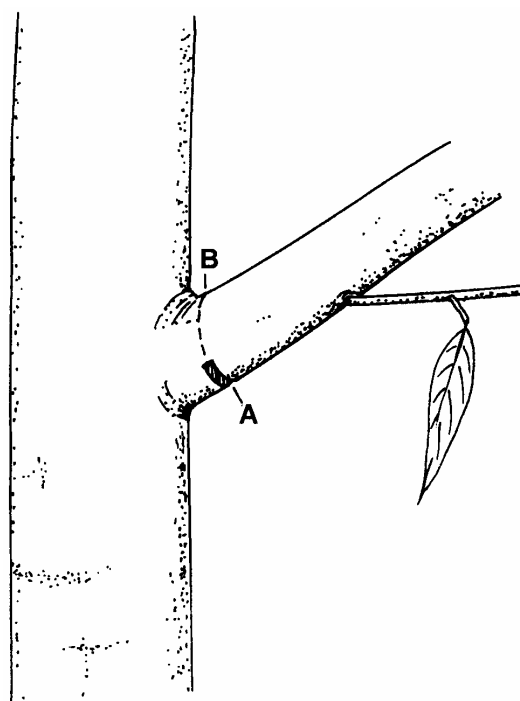


Figure 2. Pruning tips

PRUNING TIPS

When cutting through larger branches with a saw always do a cut of 20-40 mm into the under side of the branch (see A in Figure 2) to be cut before cutting all the way through from the top (see B in Figure 2). This ensures a clean cut and prevents the branch tearing away as the cut reaches the end.

Large upright branches and trunks should be cut on a slight angle to prevent water sitting on the cut surface with the potential to cause rotting.

Large branches and main trunks should be cut off in sections, rather than in one cut where they could fall onto branches below and damage them.

BASIC PRUNING TOOLS

Secateurs are handy for tip pruning and cutting out shoots and suckers. They should be kept sharp at all times. Regular cleaning and a drop of oil prevents the blades sticking. A good pair may cost a few dollars more, but are usually more robust and stay sharp longer. They often have the added advantage of having replaceable blades.

LOPPING SHEARS

These are useful for removing quite large branches, up to 50 mm in diameter. There are two types, one has a cross over cutting action where the blade is curved and passes across a cutting plate. This type is prone to splaying if used on very big branches. The other has an anvil type cutting action, the blade is straight and cuts down onto a cutting plate/anvil. This type is more robust and can cut through larger branches by taking two or more cuts.

PRUNING SAW

This tool is capable of cutting through large branches and trunks up to 150 mm in diameter. These have a fairly narrow, slightly curved blade, which enables them to be used in quite restrictive situations such as narrow forks of trees. Some brands are also designed to fit onto a long handle to enable the user to reach higher branches in the tree.

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