

Canopy Management / Pruning

STRUCTURAL PRUNING

Pruning to maximize light interception needs to be a priority of any pruning or canopy management strategy - fruit will set where there is adequate light intensity.

A main structural prune should occur in Autumn, with a follow-up prune in Spring (in conjunction with flower pruning).

Structural pruning should be completed annually, to a canopy density of 60.

PRUNING PRIORITIES

1. Remove dead, diseased or damaged branches.
2. Remove poorly structured wood (e.g. inclusions, crossed over limbs, sweepers which touch the ground, watershoots).
3. Reduce height – tree height should be no more than 70% of the row width.
4. Improve access (equipment, picker and spray access). Remove limbs in the way of machinery access and create gaps in the canopy to improve spray coverage and the efficiency of picking.
5. Open the north-facing side of the tree – remove tallest branches and those which have just carried a heavy crop.
6. Reduce competitive growth in the canopy. Select 3-6 leaders from the remaining limbs with ample light and space around each. Create space around the selected leaders by pruning out secondary branches. Aim for a canopy density score of 60.

FOLLOW-UP FROM PRUNING

Pruned wood should be chipped and left under trees as a mulch. Light wood and foliage can be left (unchipped) under the tree to retain leaf mulch.

If structural pruning is completed in spring or summer, paint newly exposed limbs with a water-soluble white paint diluted 1:1 with water to prevent sunburn (Figure 10).

OTHER KEY PRUNING POINTS

In New Zealand conditions, tree height should be no more than 70% of the row width. This is to ensure a good amount of sunlight reaches the base of the neighboring trees.

Structural pruning should be completed annually (ideally in Autumn), to a canopy density of 60. A density score of 100 is where you cannot see through the canopy – a density score of 60 is where the canopy covers approximately 60% of your view of a tree.

Work around fruit where possible but be bold about cutting off the high and exposed fruit which will be the most blemished.

Regrowth will occur from where cuts are made, therefore cuts should be made below the desired canopy height.

If no regrowth is desired, limbs should be cut flush with the trunk they branch from. If a limb is cut off a distance from the branching point, a significant amount of regrowth will provide new productive wood.

Regrowth following pruning can be vigorous and shoot numbers numerous. Multiple shoots that emerge from a pruning point can be snapped off by hand when they are in the early stages of growth. When choosing regrowth branches to keep, select ones which are structurally sound and able to fill the available space without too much competition.



Figure 10: Sunburn on an exposed limb.

If new shoots don't receive enough light, they will shoot up very quickly and not generate many branch points capable of producing fruiting wood in the future. These rapidly extending shoots are often referred to as water shoots and add little to the productivity of a tree.

New growth can be 'tipped' by pinching or cutting out the apical buds to encourage lateral growth.

FLOWER PRUNING

Flower pruning and fruitlet removal are tools that growers can use to regulate the crop load on their trees and help reduce irregular bearing. Flower pruning re-balances the flowering load of the tree to allow resources to go into developing and maturing new vegetative flush.

FLOWER PRUNING ADVANTAGES

- Balances the flowering load with the level of new vegetative flush to ensure resources can be maintained to support the following spring's flowering.
- Reduces stress/demand on the tree
- Increases fruit size

FLOWER PRUNING GUIDELINES

Assess the tree health (Appendix 1: Ciba-Geigy Scale).

Assess whether the tree is flowering excessively by assessing the flower panicles. Indeterminate inflorescences have new vegetative growth points. Determinate inflorescences are flower panicles that lack any vegetative growth. Determinate inflorescences are generally better at setting fruit than indeterminate inflorescences, so a balance between the two is ideal (60% determinate: 40% indeterminate).

Where tree health is compromised or an excess of determinate flowering is present, flower pruning should be used to address the balance. If tree health is 5 on the Ceiba-Geigy scale, at least 50% of inflorescences should be removed. If the tree health is less than or equal to 6, 100% of the inflorescences should be removed.



Figure 11: Indeterminate (left) and determinate (right) flower panicles.

Healthy tree flower panicle removal guide

Percentage indeterminate flowering	Percentage determinate flowering	Percentage of flower panicles to remove
0%	100%	40%
10%	90%	30%
20%	80%	20%
30%	70%	10%
>40%	<60%	None

When pruning, firstly target panicles likely to set fruit in exposed areas prone to sunburn and other damage. Then, remove panicles evenly around the remainder of the canopy to achieve the recommended percentage removal.

Cuts should be made on wood at least 1.5 cm thick (Figure 12: Flower pruning cut).

FRUIT THINNING

Fruit thinning is a tool used to reduce stress on sick trees and to reduce the crop of overloaded healthy trees in order to maintain health and resources, reduce alternate bearing, and increase fruit size. The earlier fruit removal is done, the better the response.

For sick trees, if tree health is 5 on the Ciba-Geigy scale, at least 50% of fruit should be removed. If the tree health is less than or equal to 6, 100% of the fruit should be removed.

If healthy trees are carrying an excessive crop load (where fruit is hanging throughout the canopy in bunches of >5 fruit), fruit should also be removed. Firstly, target fruit set in exposed areas prone to sunburn and other damage, and fruit hanging in large bunches.



Figure 12: Flower pruning cut



Figure 13: Excessive fruit-set on a healthy tree before (left) and after (right) pruning.