

Young Tree Development

(Filing the allotted space as quickly as possible)

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Summary

Year or phase of tree	Objective	Management
0 (Planting)	<ul style="list-style-type: none"> • Appropriate density for expected growth • Address base soil fertility deficits • Plant early or late with well managed trees from coolstore • 	<ul style="list-style-type: none"> • Prune low branches • If less than 5 branches at desired height prune them all off. • Irrigate soon after planting if dry soil condition
1 (grow 50% of the tree)	<ul style="list-style-type: none"> • 8-12 feathers (40-50) cm • Tree height to 2-2.5metres • TRV 5000- 7000 m³ 	<ul style="list-style-type: none"> • Irrigate early and regularly. • Tree train down branches as they reach their desired length. • Regular nitrogen throughout the season (2g of N /week) • Early season phosphate helps early growth. • Monitor tree growth and act appropriately if growth slows
2 (grow another 35% of the tree, and start to crop)	<ul style="list-style-type: none"> • Crop 1 year feathers, 6 fruit /cm² of the branch diameter • 20 tonnes/ha • Another 8 to 10 feathers (30cm) • crop a few fruit on leader to manage growth • 3 metre height • TRV, 7000-10000m³ 	<ul style="list-style-type: none"> • Increase fertiliser inputs early to mid season, minimal after Christmas. • Maintain “windows” between trees: train upper branches earlier and steeper, than lower branches. • Crop the centre leader to slow growth. • Hand thin early to maximise tree growth. • Potassium and other nutrients maybe needed for fruit quality.
3	<ul style="list-style-type: none"> • Crop all feathers 	<ul style="list-style-type: none"> • Nitrogen inputs reducing increase

(focus on balanced cropping and limited growth)	<ul style="list-style-type: none"> • 35 tonnes per ha • 10-20 cm length on all feathers • Maintain good light penetration through the tree. 	<p>other nutrients.</p> <ul style="list-style-type: none"> • Start branch thinning, thin out strong or shaded branches
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Introduction

In previous talks we have discussed young tree growth and early performance. In this article I have tried to summarise the key points and emphasis some we see that are not being focused on enough.

We have talked about tree design and the need to grow a simple tree of 18-22 branches with a simple pendant structure, so if this is our goal we can break this down in to steps to monitor and influence. 20 branches of 10 fruit is not a big tree but it is a fantastic yield. Top yields can be achieved from as little as 10,000 m³ TRV, large canopies above 14,000m³ TRV decline in productivity.

We need to fill our space quickly but slowing the tree down and maintaining good light is critical if yield is to be maintained as a mature canopy.

Year 0 - Planting

- Density

Planting at an appropriate density for the site and rootstock means growth targets are easier to achieve and early yields are excellent. There are a number of excellent plantings across Australia showing the advantages of higher densities. If you cannot get to see them in person visit the APAL Future Orchards 2012 website and see them online.

- Irrigation

Under dry soil conditions, newly planted trees can dehydrate even in July and August, A light irrigation after planting helps bed the trees in and will help early root growth.

- Branch removal

The sooner the wrong branch is removed the better the tree will be. Remove low feathers. If less than 5 feathers are left, remove them all as this will ensure more uniform development of subsequent feathers. If only a few feathers are left at planting these feathers become dominant and strong and fewer new feathers start further up the tree.

Year 1 – Grow 50% of the tree

- What's the goal?

Have a clear goal of what you expect in tree growth in year 1 and set some weekly or monthly targets to achieve (e.g. 12 branches, 90mm/week). Like fruit growth, early season growth is everything and growth lost in the first month is very hard to make up. Monitor your tree growth intensively in the first few months of the season.

- Irrigation

The biggest issue I see of poor or limited growth is not fertiliser, but poor irrigation management. It is not always too little water but not enough regular watering. In year 1 the trees root systems are small and it is very easy to over water and then not get back soon enough to maintain adequate moisture and oxygen around the roots. If your not careful your irrigation regime can be subjecting young trees to man made floods and droughts. Electronic monitoring is great if you use it. I have noticed some growers have electronic monitoring but are not using it. Walking the block with a spade or pick cannot be overemphasised. Ensure you are monitoring soil moisture in the rooting zone as some monitoring systems focus on mature tree rooting depths.

- Consistency

Top performing blocks are always very consistent, all trees performing well. Poor performing blocks have always some good trees but performance is limited by weaker trees. Inconsistency in young blocks should be mapped out and strategies to improve poorer areas focused in early in an orchards life. Extra water, compost, fertiliser, less crop could be solutions but until you have identified the area clearly you can not manage it. For example mark the trunks of poor performing trees with a distinct coloured paint and organise earlier thinning and fertiliser for these trees, maybe changes emitter size as well.

- Fertiliser

In my experience fertiliser is not usually the lacking ingredient in most grower's new plantings, but is important. Usually applying 150kg/ha of nitrogen over the season as a number of small dressings monthly or fortnightly is adequate. Use of fertigation will ensure fertiliser is available to the tree under dry conditions. Leaf health should be monitored to pick up any deficiencies early in the saeson.

- Branch training

To achieve a simple productive branch we need to train it into a pendant position. When? When the branch has almost reached the desired length, which can be any time during the season not just in January. Have a small group going through the block regularly tree training it will surprise you what else they will pick up as they go round.

Pendant calm branches are more productive the upright vigorous ones.

Year 2: Grow 30% of the tree and the first 20 tonnes.

- Irrigation

The root system is bigger but the need for well managed irrigation is still critical. Early season stress is more damaging on tree growth than later in the season.

- Fertiliser

In year 2 you are trying to grow the tree further as well as crop so increase fertiliser inputs up until Christmas unless you have a very vigorous tree in which case you may reduce fertiliser. You still need to grow 8-10 shorter branches in the top of the tree and support the desired crop load. Potassium and other nutrients need to be considered in respect of soil and leaf tests to help with fruit growth and quality. Post Christmas Nitrogen should be kept to a minimum to ensure there are no negative impacts on fruit quality.

- Tree training

Windows of light need to be maintained in the upper canopy so earlier and steeper branch training is needed. Depending on density we only need branches of a maximum length of 50 cm in the upper canopy. Part of developing a weaker top is to start cropping the leader it to lessen the length of branches.

- Crop load

Setting the right crop is critical to ensure the balance between tree growth and yield. But more importantly sometimes is the time when the crop load is set. I do not favour the use of secondary thinners up to year 4, as these, delay the time for a hand thinning start. We are waiting for the thinners to work as the tree growth is slowing; if the thinner does not work we have usually seen termination of some shoots. Hand thinning on young trees is cheap as the majority is from the ground. Use bloom thinners and hand thin early to the target crop load to ensure maximum growth.