

## FIELD NOTES – MARCH 2015

### What should we be looking for at harvest?

To continue to be financially sustainable growers should always be looking for opportunities to make improvements where possible.

What happens at harvest is the combination of all of management decisions we have made to date. We need to work through this time with our eyes open and learn where we can make improvements both in the current season and into future seasons.

### The current season

At harvest we need to make sure we can extract the best from what we have.

- Harvest the maximum volume of market suitable fruit
- Understand market requirements – size, colour, maturity
- Ensure you are continually meeting quality standards – QC's, picker training
- Understand costs / potential market returns
- Focus on efficiency – people / machinery.....

Perfect crops are easy – How do you best handle difficult blocks.

Difficult blocks will need all of your skill to try to extract the best out of them.

Make sure the entire harvest management team knows what they should be doing, they need to have the time, resources and training to be able to carry out their job correctly. Picker training videos are available on the APAL website. It is also very important that everyone knows what fruit are acceptable and what is out of grade for both the marketers and the pack house (these are not always the same)

You must have a very good understanding of the market potential of each block. Take samples to the pack house and the marketer for a line up of potential quality breaks – In or Out.

As an example - If you are delaying harvest to get better colour in a block will this mean the maturity will be compromised? Is your marketer more focussed on colour or storage life? Is there a home for lower colour better storing fruit or should you let it colour up and get it sold straight away. In some cases juicing the block might be the best scenario for a very poor crop or the last pick of a block.

Do not lose sight of making sure you are still able to put in enough effort in high value block if a difficult poor value block is hogging a lot of attention.

Make sure you prevent repeating the same mistakes in the future.

### Learning for the future

We need to look at the results of each individual block, being critical but also realistic. – Does each block meet or exceed the previous planned expectations of the following?

- Total fruit yield
- Average fruit size
- Fruit Quality - Maximum recovery of specific fruit class (Class 1 %, Class 2 %, etc)
  - Harvest Maturity
  - Bruising
  - Colour
  - Pest and Disease
  - Other – (Frost / Hail / Russett / Sunburn...)
- Tree growth / canopy development and leaf quality expectations

It is important that you look at the factors above and quantify them against your expectations. What was your plan for each block? If you do not have an expectation for a parameter above - why not?

Once expectations are quantified, they can be assessed and then management plans developed. Do you need to change your expectations? Or change your orchard management? Why did you get this result? Make sure you really understand the cause(s) of the issue. Is it a seasonal effect, or management driven? Many of the factors above can have multiple causes and potential solutions.

As an example - If you have a problem with low colour in a block what is the reasoning behind it? What can you do to fix it?

- Is it because the genetics are poor – long term solution grafting or new tree.
- Is it because the location is not suited to the variety – long term solution tree removal.
- Are you pruning too hard – Excess growth / Nitrogen in the tree = low colour – Change pruning style
- Are you pruning too lightly – Low light = low colour – Change pruning style
- Are you over cropping the tree – Many varieties will not colour if over cropped – Count trees, learn the optimum crop load for the block.
- Are you applying too much N during the growing season – Monitor levels vs amount applied.
- Is it too much water – Monitor levels and the amount applied.
- Can you use colour enhancing tools such as reflective mulch / chemical enhancement.
- Can your marketer find a home for lower colour fruit?

Some solutions are relatively straight forward and others require significant effort or investment. Individual block plans are needed to drive post harvest decisions and into the next pruning season onwards.

### Total Fruit Yield

Have you significantly exceeded or under estimated your total harvested yield? Do you understand why? Were fruit numbers been correctly counted after thinning? Has there been significant fruit loss from thinning to harvest? Are you in a Biennial Bearing pattern or potentially about to head into one? Has the tree canopy volume changed dramatically, thus changing optimum yield?



Fruit not picked at harvest time excess crop – poor colour



Over cropped Pink lady – Nutrition and fruit quality issues

**Average Fruit Size**

Has this been achieved with optimum maturity results? Did the fruit need to be picked more mature to get the required fruit size?

Does the fruit size indicate any likely upcoming biennial bearing trends?

**Fruit Quality**

Has over cropping lead to later / poor colour development, more advanced harvest maturity, reduced fruit pressure (increase bruising) and decreased storage ability?

Is the particular variety strain or location limiting the potential to achieve expected fruit colour? Should potential recovery expectation need to be reduced or colour enhancement / strain improvement options studied?

What can be done to maximise harvest recovery?



Minimise Bruising risk



Options for efficient harvesting



Colour enhancement tools

**Tree Growth / Canopy development / Leaf quality**

Have you filled your maximum canopy development space? Is the seasonal tree vigour result allowing for optimum fruit quality and tree canopy development? Are leaf deficiency symptoms showing up? What do they mean? How and when are the deficiency symptoms best rectified?



Off crop with excess vigour next to heavy on crop

Small trees that have not developed full canopy

### **Post- harvest management of trees and biennial bearing**

Immediately after harvest there are many influences shaping next year's crop and although grower's minds are on completing later variety harvesting, focus should be shifting onto ensuring preparation of next year's crop is well underway. The most important preparation is making sure next year's buds are being nurtured and given the best chance of being fruitful next spring, especially after a big crop this year with varieties that have biennial bearing tendencies such as Fuji and some pears. There are several things you can do to assist this:-

**Buds need nutrition** and minimal water stress to fully develop and reach their potential. A common practice is to apply foliar nutrients such as Nitrogen (in the form of Urea) and Boron. Nitrogen and Boron are the two most mobile elements that can readily move from the leaf into the buds to enhance next year's flower buds and provide a good foundation for building fruitful buds next season. Other nutrients are not so mobile (between the leaf and the bud) however these are often included in proprietary foliar sprays and may indirectly influence the trees nutrition by being recycled through the soil and roots once the leaves have fallen from the tree and broken down.

Another benefit of autumn foliar nitrogen applications is that they can assist basal leaf development without encouraging excessive vegetative growth or a reduction in fruit colour development in the following season.

Solid ground applications can be used in some situations, especially when soil nitrogen reserves are depleted and there is a need for additional nitrogen.

The key point about autumn nitrogen is that it's used mainly for floral buds and not in the vegetative buds, so won't stimulate spring flush of growth.

There are also studies showing applying autumn nitrogen can reduce the likelihood of biennial bearing next year especially if following a high crop load year. Autumn nutrition can also help overcome some

of the damaging effects caused by an unfavourable hot dry growing season that have stressed the tree going into autumn. Another factor increasing the importance of autumn nitrogen is the common practice in Australia of running low leaf nitrogen levels throughout spring and summer so that good fruit colour can better develop. However once harvest is complete, if this is not corrected, the chances of biennial bearing occurring are greater for some varieties.

**Nutritional deficiencies** can often be easily detected after harvest as yellow trees or leaf necrosis is readily visible once fruit are removed from the trees.



Mineral deficiencies can be tested and corrective measure taken without affecting fruit quality.

**Tree health** issues such phytophthora that may have developed from wet spring or autumn conditions can be identified and additional drainage planned. An application of a product like Aliette immediately after harvest can assist the trees recover from damp feet and phytophthora. One paper out of Europe claims this product can have a positive effect on enhancing pear flowering and bud quality, and assist with the control of scab and mildew. These products require foliage for best absorption into the tree and a good time to apply them is immediately the fruit have been harvested. This allows time for the trees to absorb the product before leaf fall, however check with your spray rep/exporter or APAL to see if a product is permitted use or not. Avoid any over spraying of neighbouring harvested trees if undertaking this type of spraying. Other diseases such as mildew can be easily recognisable and these can be readily pruned out before leaf fall. Once the leaves drop sometimes these problems can be a little more difficult to identify to the novice.



Stressed Yellow trees in the fore ground can be treated immediately after harvest.

**Weed spraying** in early autumn can provide winter long suppression of weeds, however be careful not to spray any foliage of branches as trees turn into blotting paper at this time of year and herbicide damage to apple trees is regularly seen in early spring in many orchards that haven't done it right. Apply on a calm day with a boom shield preferably.

**Autumn irrigation** should continue for several weeks after harvest or until sufficient rainfall occurs. Often tree roots are overlooked after harvest and late season irrigation, all be it at reduced levels can help the trees replenish valuable carbohydrate supplies to assist return bloom next spring. Often we get comments how lucky southern hemisphere apple growers are that the season isn't cut short by heavy snow falls that shut the trees down immediately after harvest and therefore trees aren't able to replenishment sufficiently before dormancy. This lessens the ability of the tree to continue high yields in some climates. Remember trees with big yields require time and resources to restock/recharge themselves if they are going to be continue to perform next year.

**Pruning out large limbs**, particularly in varieties that are steady cropping or are expecting an on crop can benefit from early limb removal prior to leaf fall. These bigger limbs that cast the most shade can be easily recognisable while the leaves are still on and if removed soon enough, provides valuable sunlight to those limbs remaining that will encourage better bud development on surrounding limbs. Also important for assisting the repositioning of crop from the higher extremities of the trees to lower limb that can be more easily managed from the ground.

A good orchardist always has one eye on this crop and another on where next year's crop is going to come from. Be prepared and you will be often be rewarded.

