

Future Orchard 2012 – South Australia Orchard Walk November 2006

Notes prepared by Facilitator

The field walk commenced with a discussion session at Lenswood Horticultural Centre and then moved on to Kym Green's property for a practical session

Presented by Craig Hornblow – Ag First NZ

Attendance

- Craig Hornblow – AgFirst NZ
- Ian Stevens – AgFirst NZ
- Trevor Ranford – SA Facilitator
- Paul James – SA Facilitator

Grower participants – as per attendance sheet.

Trevor Ranford welcomed growers to the 2nd Future Orchards 2012 Field day, briefly outlining the project objectives and introduced the Field Day facilitator – Craig Hornblow from AgFirst NZ.

Craig had a prepared power point presentation and started the Field day with a question – What do growers want out of the Future Orchard 2012 project?

Responses included

- \$ (and soon)
- labour efficiencies (easy systems)
- long term viability as commercial apple producers
- utilising resources effectively
 - land
 - water
 - people
 - sustainability
- maximising our resources sustainably
- better quality fruit
- ability to change – have plans
- be globally competitive

This was followed by another question – What do you want out of today?

Responses included

- Production vs quality – as we increase production we have to maintain or improve pack-outs
- Innovation
- Ability to critically assess what we are doing
- Exchanging information and views to enable us to move forward

Craig then moved into his slide presentation

(copy available on Future Orchards 2012 website)

Tree architecture and structure

Key points out of the discussion on this topic was that

- Know where you are heading with tree size and shape **before** you plant the orchard.
- Use simple training systems that are easy to describe and follow to untrained labour
- *“Simplicity creates consistency, consistency creates performance”*

Principals discussed included

Renewal pruning

Long pruning

Fruiting branches

- simple units
- same top to bottom
- simple systems to supervise
- easy to do maths on

Key outcome of discussions was that

“Performance is created/achieved by consistency”

Consistency comes from

1. High tree density
2. simple branch structures
3. simple management practices

Key grower question was on the impact susceptibility to sunburn – response – Not an issue if the tree is well structured.

Crop Loading

Slide presentation

Growers need to set an appropriate target based on

1. tree history
2. market requirements
3. calculations

Crop loads also need to be set consistently and based on actual counting and not guess work.

Discussion on the use of Trunk Cross Sectional Areas (TCA's) was held and strongly pointed out that the formula's used were better for younger developing trees more than older trees because once trees had achieved their ultimate heights then trunk growth continued but canopy volume did not.

When gauging crop loads based on Branch TCA they are equivalent to 2x trunk TCA

The point was emphasised that

“With intensive plantings what seems a reasonable target per tree when multiplied by density becomes exceptional performance”

Craig stated that a crop load of 70-80 tonne/ha needed a canopy volume of roughly 12,000 m³ (with approx 65% light distribution)

This session raised a number of questions and requests for practical demonstration of the crop loading formulas – this was provided in the outside field session and in the afternoons monitoring block growers meeting. The Adelaide MB growers have incorporated simple crop loading demonstrations into their MB for latter assessment and use in the project

A number of questions were asked by growers – these included

Q. How do you manage decreasing vigour and fruit size on pendulous limbs?

A. Need to spur prune or “shorten” limbs to stimulate tip growth. Don't shorten excessively.

Grower comments – SA experience based on Jan Houter's advice is don't need to shorten a limb until the extension growth is shorter than the length of your snips. Any longer don't shorten.

Q How easy are high-density plantings to manage?

A. High density needs discipline – need to have a plan for an objective and stick to it – cant change things or let things slide.

Q. What is the age expectation of a high-density orchard

A. This is not a horticultural question the answer is purely linked to economics – market expectations or management costs vs income

Getting New Plantings to Perform

The key to making an orchard development successful is rapid and full fruiting canopy development.

Biggest loss of money associated with high-density plantings is

“having too much air in the orchard” that is not filling the allocated space

Craig asked growers about vigour management

Responses were

How to increase vigour?	How to reduce vigour?
Water Weed control nitrogen Less training Trace elements Disease control Remove fruit	Crop trees Decrease water Starve trees Root prune Less nitrogen Growth regulators Tie limbs down
Grower assessment of achieving success? 50:50	Grower assessment of achieving success? 80%

Craig’s message to growers was that in high density plantings don’t be afraid of vigour – in young trees it is essential and you have more management options to reduce vigour than you have to increase it

Don’t be scared of pushing young trees hard

Nursery tree quality

This section raised considerable comment from the growers present and highlighted one of the problem areas for Australian growers.

Craig summarised discussion by stating that growers need to be more aggressive with the nurseries

- Know what type of nursery tree you want
- Only accept what you have ordered **and** specified

Q. Budding height and graft unions

A. Graft unions must be out of ground after soil has settled – need to include budding height as one of the tree specifications to the nursery (especially M.26)

Replanting old orchards

Slide presentation with emphasis on SARD (specific apple replant disease) – general discussion – see presentation notes

Planting

Slide presentation – general discussion

Key points

- Site needs well cultivated, open friable soil
- Add organic matter where needed
- Add lime, gypsum and or dolomite where needed
- Ensure good drainage
- Plant early (where practical) – enables good root growth before leaf and shoot growth commences
- Don't plant in wet soils
- Don't let tree roots dry out
- Irrigate *immediately* after planting – good soil-root contact is critical
- Ensure graft union is at least 10 cm above ground

Support Structures

This section also generated considerable discussion – key questions focussing around cost, spacing and height of support structures.

Key points included

- Put tree support costs into perspective of total orchard investment – trees are the most expensive part of the new orchard so the support structure needs to ensure that they perform.
- Don't skimp on tree support
- Inadequate tree support is a major factor in non performance of intensive orchards
- In row posts should not be any wider than 10m (many Australian systems have the in row posts too far apart)
- Post height should be within 0.5m of required tree height ie 3.5m high tree needs 3m posts (above ground)
- Managing tops of intensive trees is critical to orchard performance

- Leaders need to be well supported

Making the Trees grow

Key points

- Establishing tree height early is key to high, early productivity
- Preferably don't head leaders of young trees

Irrigation

Key points

- Look at risk factors and manage them
- Important that young trees are not water stressed in early season shoot growth
- Young trees = small root system therefore water lightly and frequently
- Irrigation frequency will depend on
 - Soil moisture holding capacity
 - Soil volume utilised by roots (rootstock effect)
 - Volume of soil root zone being wetted by irrigation system (drip vs mini sprinkler)
 - Daily evaporation
 - Tree size

Fertilisers

Key points

- Balance soil nutrition as well as possible – pre planting
- Young trees need light and frequent fertiliser applications
- 2nd year critical – up to double requirement of 1st year because of growth of tree and fruit
- Intensive plantings need about 100kg/ha (approx 50gm N/tree) in years 1 & 2
- On young trees Trace elements best applied as foliar sprays

Weed control

Maintain a weed free strip to prevent competition with trees

Pest and Disease control

Briefly discussed in relation to young tree development – importance of maintaining a good control program for those pests and diseases that affect tree growth was emphasised

Cropping

Q. Why keep fruit on young trees?

A. Light crops assist (not hinder) the growth and hormonal development of trees. This hormonal influence provides a balance between cropping and growth.

M.9 is renowned for its cropping efficiency this is in part due to carbohydrate build up in the plant

Field session

Ironically in a drought period the field session had to be kept relatively short because of early morning rains showers. After the technical session the growers present took a short trip to Kym Greens monitoring block (Pink lady on MM.106 – field grafted and producing approx 60 t/ha).

Whilst in the block aspects of tree architecture, leader management and crop loading were discussed. From the monitoring block the group moved to several close by orchard blocks where aspects of tree architecture and leader management were also discussed. The issue of determining crop loads for different tree densities was highlighted in these other blocks where Craig challenged growers to determine the number of fruit required to produce the required tonnages on the different spacings.

Field day participants listening in intently

Monitoring Block Growers Meeting

In the afternoon Craig Hornblow met with the monitoring Block growers. As part of the discussions Craig emphasised it was up to the growers in the group to determine what role they wanted to have for the group. As a result the group decided to take on an action group /leadership role for the SA industry.

From the various discussions throughout the day the group focused on doing something practical. From this they have set up crop loading demonstrations on each of their properties. These demonstrations are revolved around undertaking fruit counts, determining what crop loads they would be aiming for in each of the blocks and then looking at the effects of different crop loads on the marketable performance from these blocks.

In each monitoring block selected 20 trees were selected as being representative of the trees in the block. Then the actual fruit numbers on each tree were counted. The 20 trees were split into 4 groups of 5 trees. The trees in Group 1 were thinned normally by the grower. In Group 2 the crop load the grower would reasonably expect was selected and the appropriate number of fruits required to achieve this yield was determined. The trees were then thinned to the required number of fruit. In Groups 3 & 4 the same procedure was followed except increasing crop yields were selected for each subsequent group.

At harvest yield and quality measurements will be taken to gauge the impact of the different crop loading strategies. These blocks will also be used in future field walks

Determining the crop loading sums as part of the Monitoring Block Growers meeting