

Future Orchards 2012 – Stanthorpe, Queensland Orchard Walk November 2006

Venue: Ugo Tomasel Orchard, Pozieres.

Time: 1pm to 5:30pm

Attendance:

- John Wilton (AgFirst Consultant)
- Allan McWaters (DPI&F Facilitator)
- Clinton McGrath (DPI&F Facilitator)

Attendees: Future Orchards 2012 Stanthorpe Orchard Walk 20 November 06	
Signed In:	Other Attendees Present:
Steve Flood	Dino Rizzato
Ugo Tomasel (Host)	Stephen Tomasel
Adrian Minotto	Ray Palmer
Bruno Stefanon	Shane Dullahide (DPI&F)
Horst Bofinger	Bruce McGrath (DPI&F)
Jason Mattiazzi	Daniel Nicolleti
Wade Krawczyk (Commonwealth Bank)	
Shirley D. Vinall	
J. Pfrunder	
D. Pfrunder	
Simon. Middleton (DPI&F)	
A. Zeppa (DPI&F)	
Christine Horlock (DPI&F)	
Peter Nimmo (DPI&F)	
Ian Paroz (Commonwealth Bank)	
Memo Mattiazzi	

Sponsorship:

The Commonwealth Bank sponsored afternoon tea for the participants. Bruno Stefanon gave a vote of thanks to Mr Wade Krawczyk of the Commonwealth Bank on behalf of the apple sub-committee.

Notes from Orchard Presentation and Discussion

As facilities were not available for the proposed Powerpoint Slide show, John Wilton (AgFirst Consultant) gave his presentation in the orchard. He used a series of posters to present information to the audience. This information was supported by printed notes distributed to all participants.

John started by displaying a poster with key objectives necessary in “Getting New Orchard Plantings to Perform”. These included:

- To fill the tree canopy volume with efficient fruiting wood rapidly.
- 60% mid season light interception.
- Tree height needs to match between row spacing
- TCA/ha > 50,000 cm².

To illustrate these objectives he showed a table comparing tree planting densities with Tree Row Volumes in units of m³/hectare. These figures show that intensive orchard systems (>1,900 trees/hectare) require a TRV of 10,000 to 12,000 m³/hectare to maximize yields, while semi-intensive orchards (1000 to 1,900 trees/hectare) would need 12,000 to 15,000 m³/hectare and “extensive” systems (< 1,000 trees/hectare) would require 18,000 to 20,000 + m³/hectare to achieve maximum yields.

John also showed a table with individual tree sizes (base on TCA) at various planting densities needed to achieve a TCA/hectare of 50,000 cm² and 60,000 cm² respectively. This gives a basis for the tree size required to maximize yields at different tree planting densities. The closer trees are the smaller they need to be.

John then went on to discuss the factors involved in getting orchard plantings to perform.

Pre-plant

- High quality nursery trees are required to achieve good early tree growth. The factors involved with tree quality include trueness of type (no reversion etc), freedom from pests and diseases, trees should also be well feathered. Trees should be free of latent viruses. Poor quality trees need to grow extremely well to achieve the required tree volume.
- Site characteristics need to be established by surveying the site to determine soil depth, structure, pH and nutrient status, drainage and previous cropping history.
- Replanting trees into a site which has grown apples previously may affect tree growth due to Specific Apple Replant Disorder (SARD). This is a complex condition brought about by a build up of organisms in the soil which are antagonistic to roots of the new trees. Old apple roots and crop residues may be a source of infection. Strategies to overcome these issues include removal of old tree roots and debris, fallowing the site, use of break crops, increasing tree density by 50% to compensate for poorer growth, soil fumigation and maintaining soil fertility in the root zone and nutrient status (especially Nitrogen and Phosphorus).

Planting

- Good soil preparation (loose and friable).
- Maintain tree root moisture prior to planting to avoid an early set back in tree growth resulting from the roots drying out.
- Firm soil around roots to maximize soil contact.
- Avoid scion rooting – allow 10cm minimum between the soil level and the graft union.

Trellising was highlighted as being very important for tree support and that it should be there when the trees are planted. A key point which impressed the audience involved alternating the trellis wires either side of the trees. John maintained that the first three wires should be there from planting and placed 50 cms apart. He said that they use staples as a quick means of securing the trees to the support wire (14mm for small and 18mm for trees with thicker trunks). They are not concerned with the wires growing into the trees. Using staples is a quick time saving operation which reduces labour costs. His next preference was for tying with plastic tubing and thirdly by using various types of clips to secure trees to the trellis.

Making the trees grow:

John covered irrigation and spoke about the effects of water stress on the growth of young trees which causes early formation of terminal buds and cessation of grow. He spoke about estimating water usage based on the area of cast shadow at mid-day. The notes talk about a factor of 2-2.5 times the potential evaporation from the area covered by the mid-day shadow. Newly planted trees have a limited root run and therefore require more attention to maintaining soil moisture.

He compared drip irrigation with sprinklers and favoured drip being because it is more efficient. If mulch is applied to the tree row, the trickle pipe should be placed under the mulch. Daily use of sprinklers is ineffective due to high evaporation loss. Reduce the frequency to of every 4-5 days.

He also spoke about making the trees grow rapidly and attaining tree height as a key to high early yields. Tree height to row spacing should be a ratio of about one to one to avoid shading effects between rows. He said that heading trees to make them grow is an “optical illusion”. The trees have to grow back what was cut off before increasing beyond their original size. Early pruning after tree establishment should involve balancing the tree. Removal of low shoots, take out strong branches competing with the leader, and if the tree does not have evenly distributed branches (lop-sided) remove all feathers and branches and bring the tree back to a single rod.

He also talked about the fertilizer requirements of young trees especially Nitrogen (100 kg/ha when growth active). He also indicated responses to Phosphorus in some areas (use MAP 100-200g per tree) and Magnesium.

He made brief mention of weed control, use of wind breaks to protect trees, and normal pest and disease control measures to maintain tree growth and health.

Tree training and pruning:

- Tree form – John showed a diagram of tree architectures and spoke about decreasing the complexity of trees at higher planting densities. The French Solaxe system was explained. This system features low capital costs for establishment, spur pruning to achieve good fruit size, a “calm” tree is the goal with minimal pruning and light penetration is managed by maintaining an open central chimney in the tree canopy.
- Start branches high on the trunk to allow for a pendant tree form. All branches droop into the space below their point of origin.
- Long pruning – Removal of old poorly located branches, renewal of old fruiting branches, removal of lateral branches.
- Renewal pruning – cutting back into the lateral branches to varying degrees to achieve new growth of fruiting wood from a point along the branch..
- Branch bending – allow branches to grow long enough before bending into a lower plain. John displayed a diagram showing the effect of bending branches. The effect on lateral growth being most apparent when branches are bent in a “bow” with the highest point in the bend generating vigorous growth. He advocated bending the branch from the trunk rather than along the length of the branch. Bending branches down from about elbow height on the tree trunk allows space for the fruiting branches to droop into. Allow the tree to attain sufficient height past the point where crop is desirable so the branches can be bent down.
- He advocated simple rods for lateral branches. Remove all upright growths and small laterals. Maintain a simple structure and give pruners an easy system to follow to allow for reduced costs and uniformity of tree structure in the orchard.
- He spoke about the 3:1 rule for large branches growing off the trunk (lateral branches a third or more in diameter of the trunk size should be removed). He also mentioned the 4:1 rule for branches higher in the tree canopy.
- Girdling of tree trunks was mentioned to control vigour. He advocated 6-8 weeks after full bloom to allow for natural fruit drop first.

Crop loading

- Simple branch structures - John spoke about simple rod structures for lateral fruiting branches. He talked about measuring the branch diameters and distributed business cards with a scale of fruit numbers to give a desired fruit set per cm² of TCA for given branch diameters.
- Pendant branches –bend branches down to reduce tree vigour and maintain a “calm tree”
- Systemise tree structure and fruit thinning procedures for consistent results.
- Count fruit on trees. If trees have a simple consistent structure it is easy to count fruit on lateral branches and multiply by the number of branches to give a desired yield.



John Wilton demonstrating concepts to the Orchard Walk audience in the Cripp's Pink Block.

Take Home Concepts and ideas:

- TRV and TCA measurements can be used as a guide to tree size and cropping potential for tree plantings at different densities.
- Use good quality planting material and put effort into pre-plant preparation to ensure good rapid tree growth.
- Fill the tree canopy volume with efficient fruiting wood rapidly. Use appropriate management strategies outlined in the notes to maximise tree growth.
- Maximise light interception (60% mid season).
- Have a one to one relationship between tree height and row spacing.
- Establish trellis at planting for tree support. Alternate three wires 50cm apart.
- Go for a simple tree structure with pendant fruit branches (simple rods). Systemise pruning to achieve a consistent tree structure throughout the orchard.
- Count fruit to achieve desired crop loads. Try to systemise thinning and make it simple for thinners. Train them!