Future Orchards Trial Outline

Project title:	**Evaluating the value of SNAP trees**
Region:	South West WA
Contact:	Susie Murphy White
Projective Objective:	To demonstrate improved production and the simplicity of SNAP tree management on a mature Cordon planting system.

Outline:	Line pruning of Cordon system using SNAP (simple, narrow, accessible, productive) 2 bays of Fuji and 2 bays of Rosy Glow Rules of pruning set by COG Monitoring to include; photo's before and after pruning, winter bud counts, flowering, colour development. Yield (fruit per limb)

Milestones	**Planned Date or Completion Date**
Trial defined	13th June 2016
Trial setup	August 2016
Records Measurement 1 – post pruning photo's, bud counts, define pruning strategy, measure area and tree/leader spacing	August 2016
Records Measurement 2 – colour development, fruit size, fruit numbers count	March 2017
Field day	June 2017
Records Measurement 3 – Yield fruit per limb	May 2017
Reporting	June 2017
Presentation growers	June 2017

MAP & Layout:

Focus Orchard – T & C Fontanini 649 Seven Day Road Manjimup (-34.29 116.07)

Future Orchards Trial: Final Report

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Region:	South West WA
Contact:	Susie Murphy White
Projective Objective:	To demonstrate improved production and the simplicity of SNAP tree management on a mature Cordon planting system.

Method:	**SNAP Pruning Rules** 1. Cut out the big branches 2-3 branches at the top (bench cuts = replacement shoots). 2. Ideal wood is small strong 10mm thick. 3. Get rid of big wood that reduces sunlight getting into the tree. Create windows of light into the tree in the tops of the trees. 4. 12 central leaders per 10m. 5. Straighten up central leaders with staples/tree ties. 6. Only cut 2-3 limbs, next biggest have to stay this year. 7. Reducing vigour; root pruning? Regalis or training wood down (break or bend down) or cincturing tree trunk or leader. 8. Fertiliser in spring with Rusticca Gold Vita K, foliar of trace elements (no nitrogen after spring). 9. Crop Hard (avoid biennial bearing). 10. Ethrel sprays possibly 3 @ 200 of NAA, first after full bloom and regularly over next 2-3 weeks until complete . 11. Aiming for 125 fruit per stem/leader (80T). Stems/ha divided by 80T = crop load per stem (#stem/distance = fruit/stem a. Three stems thinned to singles, doubles and triples to demonstrate the yield load.

Results Summary - Cripps Pink Cordon SNAP Pruning data collection

The Cordon (multiple stems on a single tree) row of Rosy Glow was broken into 3 sections the buffer on the end, next section was pruned by Font's using their standard practice and third section pruned by Steve Spark in winter using the SNAP rules. The buffer was pruned by Craig Hornblow in summer.

Buffer – Summer Prune	Fonty's Standard Practice	SNAP – Winter Prune
0m	20m	40m

Figure 1. Rosy Glow cordon row demonstration layout.

Figure 2. SNAP winter pruning demonstration by Steve Spark 17 August 2017.

Two stems in the SNAP pruned section and two stems in the standard practice had 10 fruit each monitored for diameter from December through until harvest. The apples monitored on the SNAP pruned trees were 2.5 millimetres larger than the standard practice.

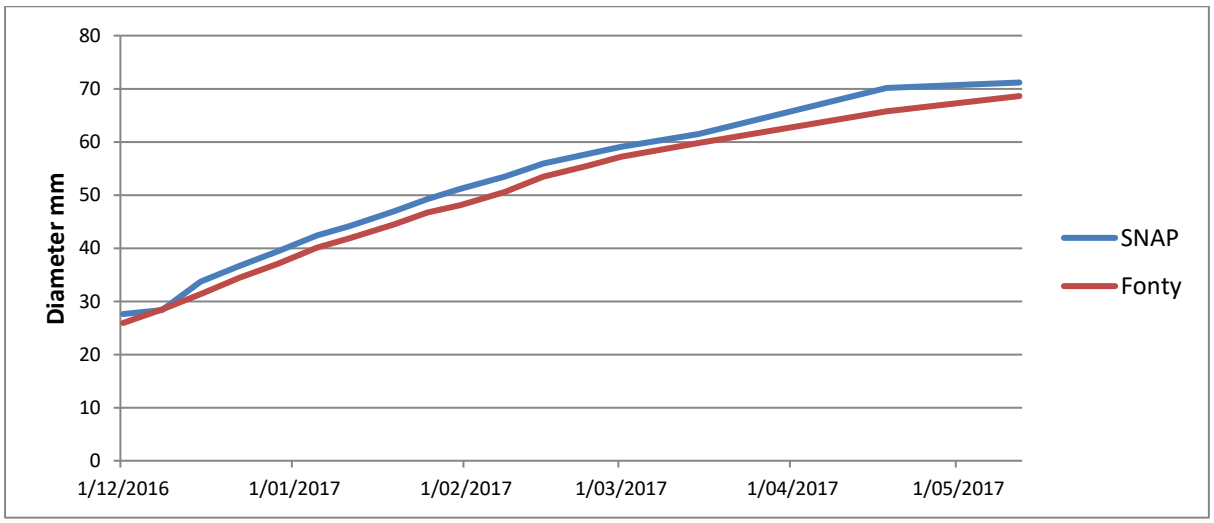

Figure 3. Fruit size monitoring of the SNAP pruned stems and the standard practice stems.

In January the SNAP pruned trees had 3 stems thinned to singles, 3 to doubles and 3 to triples. The yield was estimated after fruit counts were completed on 3 stems of each treatment. With 55 apples per stem average in the singles which would be about 34 tonnes per hectare, 147 apples per stem average in the fruit thinned to doubles (90T/ha) and 185 apples per stem average in the fruit thinned to triples (124T/ha).

Table 1. Total number of fruit per stem at 11 January 2017 after thinning to singles, doubles and triples, yield estimated per hectare.

Stem	Singles	Doubles	Triples
1	55	154	203
2	57	133	161
3	54	155	191
Average fruit number	**55**	**147**	**185**
Est Yield	**34T/ha**	**90T/ha**	**124 T/ha**

A random sample of 10 apples, were monitored for diameter until harvest. The fruit sizing monitoring showed that the singles were just under a millimetre bigger than the doubles and triples.

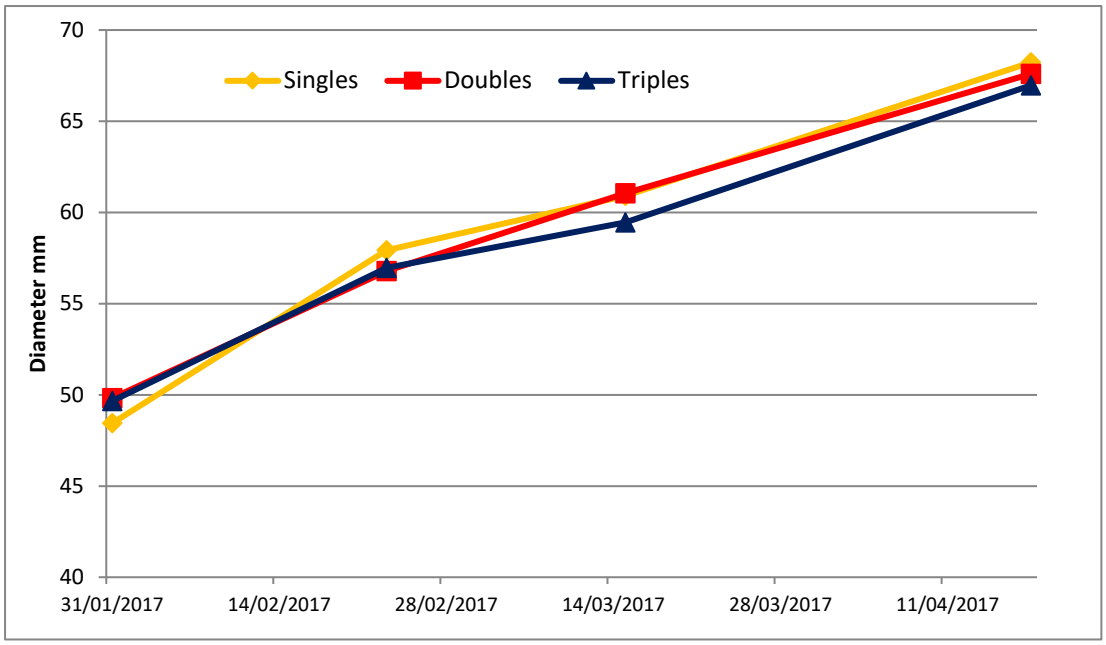

Figure 4. Average fruit size of monitored stems of SNAP trial of fruit thinned to singles, doubles and triples.

In March the buffer block was summer pruned by Craig. Where all the leafy growth was removed to expose the fruit so that more light was exposed to the fruit to ensure the fruit gained more colour. A lot fruit was removed from the trees at this time. Aim here was to get the stems into a flat wall quicker than the pruning that occurred in winter. In a normal hot summer these fruit would have been at a higher risk to sunburn. But as the season in 2017 was very mild with no days over 35°C after March minimal damage to the fruit from sunburn were recorded.

Figure 5. Summer pruning demonstration by Craig Hornblow 23 March 2017.

Figure 6. Day before harvest after summer pruning was completed by Joe 12 May 2017.

After harvest all the fruit had been picked from the summer pruned sections while the standard practice section and the winter SNAP pruned section still had fruit on the stems that had not gained enough colour.

Figure 7. Winter SNAP pruning (left) had fruit that hadn't been picked while the summer pruning all fruit had been picked as they all achieved desired colour (photo 23 June 2017).

Table 2. Crop load of monitored stems in cordon SNAP pruning demonstration.

Crop Load	31/1/2017	23/2/2017
Crop Load 34T/ha Singles		
Crop Load 90T/ha Doubles		
Crop Load 124T/ha Triples		

Fuji already thinned to 100 T/ha (112 apples per stem)

Results

Although this trial has just finished its first year, we are already learning that snap trees can be more productive than conventional trees. These snap trees could offer up to 20% labour savings at harvest time once these canopies achieve the desired canopy width.

Aggressive summer pruning that Craig did in March produced a higher pack-out and more high grade fruit than non summer pruned trees. This however was aided due to the lack of summer heat normally experienced in this region. It is expected this winter to continue the previous year's pruning rules by cutting out the 2 longest branches and keep targeting narrower trees with shorter fruiting wood. This will occur this winter and everyone present at the winter orchard walk is keenly watching to see where this trial ends up. This could be the start of future planting in WA.

WA Community Orchard Group trials

Local Front Line Advisor Susie Murphy White and the WA Community Orchard Group have two exciting trials lined up.

The first involves the West Australian Focus Orchard of Trevor, Carmel and Jo Fontanini of Manjimup. They have several rows of older cordon style trees. Worldwide there is a trend to reduce the number of trees planted per hectare by growing more stems per tree – much like the cordon style trees.

The WA Community Orchard Group decided to use these older cordon trees to implement newer tree training techniques to promote SNAP trees (simple, narrow, accessible and productive). The existing trees will be reworked in the next few years to see if it is possible to achieve higher yields of better quality fruit. Although the row spacing is wider than desired for a modern orchard, valuable lessons will be learnt in this orchard demonstration.

The other trial Susie and group are working on is on soil fumigation. This involves reviewing a range of soil and biological treatments to assess if any are effective at reducing the impact of tree replant stress in this area.

Results for both trials will become available at Future Orchards walks and more information on these trails will be presented in future articles.

Evaluating the value of simple, narrow, accessible and productive (SNAP) trees, South West, Western Australia

Around the world there is shift in horticulture, reducing the number of trees planted per hectare by growing more stems per tree. The current trial on the Fontanini focus orchard in South West, Western Australia aims to demonstrate the possibility of improved production using the simplicity of simple, narrow, accessible and productive (SNAP) tree management on a mature Cordon planting system (multiple stems grown on a single trunk). A few rows of old Cordon style trees on the Western Australian Focus Orchard have been used to try out new SNAP tree training system. By using older Rosy Glow and Fuji trees and re-working them to fit the notion of the SNAP system, growers can learn valuable skills sooner than waiting for a newly planted block to come into production. Lessons learnt here can be transferred to newer plantings in the future.

Over the next few years' trees will be managed using some simple SNAP pruning rules such as:

- Cut out the big branches, 2-3 branches at the top (bench cuts to promote weaker replacement shoots).
- Ideal wood is small, approximately 10mm thick.
- Get rid of big wood that reduces sunlight getting into the tree – create windows of light into the tops of the trees.
- Twelve central leaders per 10 metres of row.
- Straighten up central leaders with staples/tree ties.
- Stagger branch removal over the next few years – only cut 2-3 limbs, next biggest limbs must stay this year.
- Aim to reduce vigour with whatever tools required (fruit/deficit irrigation/Regalis etc.)
- Crop hard but avoid biennial bearing.
- Aiming for 125 fruit per stem/leader (80T).

The driving influence behind the shift to SNAP systems is the ability to increase yields of better quality fruit by re-vitalising existing older plantings. Valuable lessons will be learnt in this orchard demonstration with results expected in June 2017.