

## Future Orchard Focus Orchard & Trial Update ~ West Australia

September 2019

Prepared by Steve Spark and Karen McCallum, AgFirst.

### New 2019/20 planned trials in WA

---

Many growers across Australia might be aware of the WA apple growers and industry commitment to lift the quality standard of apples in Western Australia and exports. They have implemented several initiatives including “The apple maturity testing guide” which has been endorsed by their industry and available to all WA apple growers to assist them to monitor their own fruit quality. Further to this, the WA Community Orchard Group (COG) have set up two new exciting trials that build upon enhancing fruit quality.

#### Over vs Under Watering

There is a lot of good work already being done in the water management field in Australia as published in the latest spring 2019 edition of the AGF magazine (pages 41-62). I would suggest all growers if you haven't read these articles, you really should.

The WA trial focuses specifically on answering “How much water do trees require during the season and how close to harvest can the water be reduced”. Recent industry research will provide some guidance as to how this trial runs. In WA they intend to collect information on water use, fruit size, and shoot growth from several orchards that already have soil moisture monitoring devices and those that regularly undertake fruit size monitoring. This information will then be analysed in conjunction with previous trial work undertaken in WA and Australia and report back on these selected blocks on how changes to irrigation inputs might affect dry matter, pressure, brix and starch in fruit.

#### SNAP vs Click Pruning

In June 2018, Dr. Steffano Musacchi accompanied AgFirst on the southern loop whereby he introduced growers to “Click Pruning”. (Incidentally, the name click pruning comes from the sound the secateurs make from all the cutting they have to do or so Stefano said). It was pleasing to see on the next loop I did to WA that several growers had given click pruning a go and were seeing very pleasing results, particularly on varieties that expressed lots of blind wood. We all know pruning can be an expensive and time-intensive task. This new WA trial compares the time and costs of pruning using the SNAP method vs Click method. SNAP pruning had been introduced several years earlier to growers by many speakers and was gaining lots of supporters. The trial is being conducted on 2015 planted Alvina Gala in V trellis and single leader plantings. They will record the time it takes to prune each block with these two methods and utilise experienced pruners trained in these techniques. Flower bud counts and fruit counts along with pruning time will provide some valuable information for growers to learn from. Also, it is important with these trials that WA growers can see first-hand how the trees and ultimately the fruit have responded to such treatments and have accurate costing of time and productivity to assist them with any changes they may wish to implement back on their orchards.

As always, these reports will be followed with plenty of supporting photos and written reports that will be accessible to all growers from the APAL website.

To Evaluate Pruning Under Net Using Delayed Cuts

In Western Australia, Susie Murphy White (FLA) with the guidance of the local COG have set up a trial at Foxes orchard to compare the timing and affect of delayed cutting/heading of trees. The trial was done under net, measuring the effect on resulting tree growth/vigour and crop load. Three different pruning times were used starting with pruning the tops before senescence in June while the leaves were still green, pruning tops in winter when dormant (August) and pruning the tops at flowering time (November). By managing tree top vigour, it is hoped that fruit quality on the same tree will be better than from an over-vigourous tree.

Results show that there was a small difference between Fuji pruned in winter (Figure 1) compared to spring pruned (Figure 2), with an average of 120 fruit/tree and 158 fruit/tree respectively.



Figure 1. Fuji 1/3/19 - Tops pruned in winter.

Figure 2. Fuji 1/3/19 - Tops pruned in spring

In Galaxy, with the same pruning treatments, there was no obvious difference in fruit counts. With an average of 153 fruit/tree in trees pruned in winter (Figure 3) compared to trees pruned in spring with 151 fruit/tree (Figure 4).



Figure 3. Galaxy 1/3/19 – Tops pruned in winter.

Figure 4. Galaxy 1/3/19 – Tops pruned in spring

The biggest difference in the average number fruit on the tree was seen in the Rosy Glow when the tops were pruned in Spring. The spring pruned trees had 256 apples/tree (Figure 6) and the trees pruned in June before senescence had an average of 163 apples (Figure 5).



Figure 5. Rosy Glow 1/3/19 – tops pruned before Figure 6. Rosy Glow 1/3/19 - Tops pruned in spring Senescence.

The spring pruned Rosy Glow had substantially more fruit numbers, which might be attributed to a quieter tree top with less vigour. However, delaying pruning till flowering can cause other issues such as delaying spraying and chemical thinning as pruning’s need to be mulched or raked out before any spraying can be completed. A small price to pay for attaining calmer trees and improved fruit quality.

It is also interesting that the Foxes plan on pruning all tops at flowering time this year which is possibly the most inciteful result.

Pollination Under Nets

Another trial led by Susie Murphy White at Foxes orchard is to compare pollination differences between netted and none netted blocks of Kanzi and Rosy Glow. Two blocks were compared by counting the number of open flower clusters, observing insect activity and recording temperature, wind and cloud cover over pollination. Fruit and seed counts were made later to determine any differences to trees growing undernet and outside netting. The results from insects visiting clusters shows there to be a little difference between netted vs none netted (Figure 7). None netted trees on average had 2 more pollinator insects per minute visiting clusters of flowers.

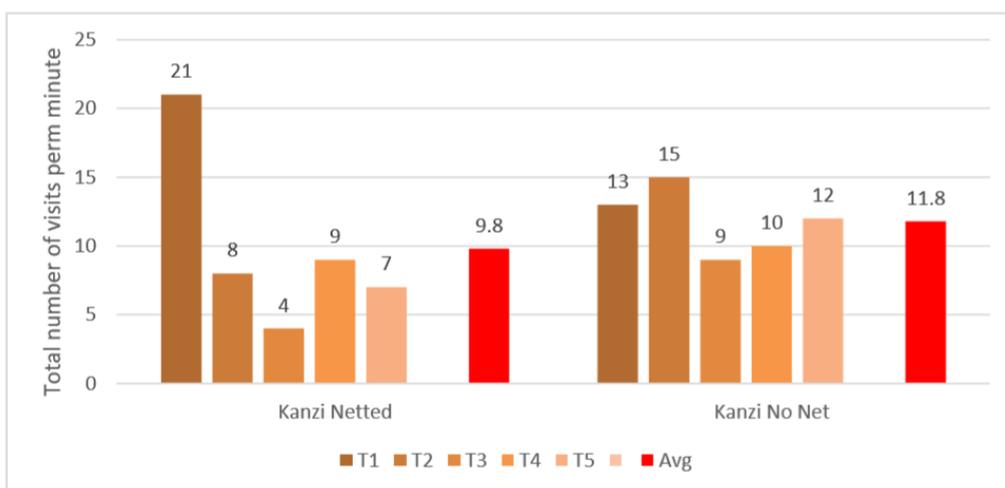


Figure 7. Pollinator insect visits in netted vs none netted Kanzi at 80% full bloom (17/10/2018).

There is little to no difference in seed numbers between blocks undernet and none netted blocks of Kanzi and Rosy Glow.

Table 1. Seed numbers in netted vs none netted blocks

Block	Average Seeds per Apple
Kanzi Netted (2015)	5
Kanzi No Net (2016)	4
Rosy Glow Netted	6
Rosy Glow No Net	6

It might be expected that greater differences in insect visits and ultimately seed counts might be more evident the further into the middle of the block under the net. Research from Europe using nets to exclude insects is showing some interesting results and this trial might highlight a large insect population surrounding this orchard. This may not always be the case as climate change and land-use changes continue to impact on our environment.

### [Apples planted after Apples – The need for Fumigation?](#)

This trial held in Manjimup at the Fontanini orchard and continues to investigate the results of different fumigation methods to control diseases which occur in the ground previously cropped in apples, treatments included are mentioned below (Figure 8).



Figure 8. Treated trees in order of treatment; Mustard & Rocket, Ethiopian Cabbage & Mustard, Beneficial Bacteria, Metham Sodium, Chloropicrin.

Since the start of the trial in 2017, trunk diameter has been measured. Repeatedly Chloropicrin treated soil shows to be more advanced (5mm) than the other treatments (Figure 9).

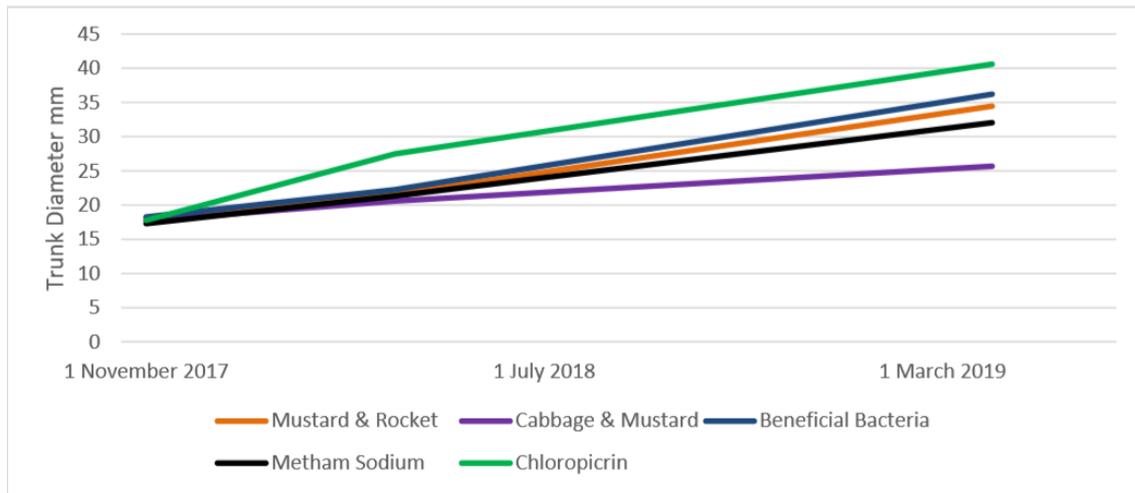


Figure 9. Average trunk diameter growth from planting in November 2017 through to second leaf April 2019 for the different pre-planting treatments.

Leader elongation in the second leaf shows that the beneficial bacteria (Serenade® Prime) treated soil has resulted in the longest leaders (Figure 10). However, overall Chloropicrin had a greater shoot length mass due to the trees having a lot more overall shoot growth than the other treatments.

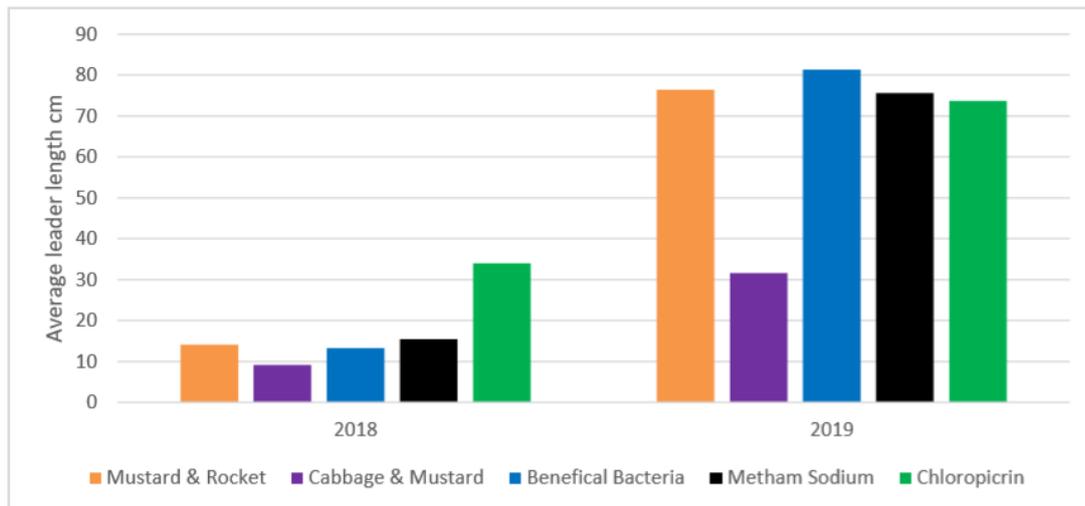


Figure 10. Leader elongation of each treatment showing the average length of leaders per tree.

While the Chloropicrin treatment has given the trees a good start by reducing the effect of possible SARD, the Biofumigation and Beneficial Bacteria have the potential to improve soil health by improving organic matter, soil biology, nutrient cycling, water holding capacity, water infiltration and overall microbial activity. This trial continues to be monitored thanks to the great support of the Fontanini’s and Susie’s enthusiasm. Well done guys.

### Acknowledgements

Thanks to Susie Murphy White, the WA FLA, the local COG and participating trial and FO orchards, RK&J Fox & Son Orchard and TJ & CL Fontanini.