Future Orchards Final Report

**Project title:** High Density Orchard Leader Height Management.

**Region:** South Australia - Adelaide Hills

**Contact:** Paul James

**Projective Objective:** To determine optimal pruning techniques and times to maintain tree height in mature high-density orchards

| Outline/method/ (what we will do did): | A trial block was set up in 2017 in a block of mature (2008) Rosy Glow trees - 3760 trees/and approximately 4 m+ tall and bearing approximately 100 t/ha/yr. This trial extends the original trial through the addition of 3 more treatments.

The trial is investigating 7 different methods of pruning to ascertain if any have significant benefits in maintaining tree height, reducing pruning costs and impacting on fruit quality.

The 7 treatments include
1. Winter “click” pruning where the leader is routinely cut back to a weaker branch each year at the desired height.
2. Summer pruning the leader back to a weaker horizontal branch around the summer solstice (4th Week December)
3. Winter pruning the leader back to a smaller horizontal fruiting branch
4. Growers Own Practice – which is currently to prune the leader back to 3-4 buds above the base of the current season’s growth the end of the season.
5. Growers Own treatment with the addition of NAA to the pruning cuts
6. Prune the leaders at Full bloom.
7. Autumn prune the leaders immediately post-harvest.

Photographs were taken during the growing season and at harvest time when a field day was held. Assessments and observations of the new leader’s growth were undertaken at harvest.

Results were demonstrated to growers a field day and presentations to Future Orchards field days.

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**Results so far**

The winter pruning and aspects of the trial set up was undertaken on August 20\textsuperscript{th}, 2018. The full bloom treatment was undertaken in October 2018. The summer pruning treatment was undertaken in Christmas week 2018.

The Autumn pruning treatment was undertaken in Late May (2019) after harvest (SA had a late harvest season in 2019).
Due to the addition of the Autumn treatment the trial is expected to continue for another 12 months so that an assessment can be made of this treatment’s effectiveness.

The hail damage to SA crops over the last 2 seasons has precipitated the increased use of netting which has also increased grower interest in the outcomes of this trial. Another year will also provide growers with insights to longer term impacts of the repeated use of these treatments.

From the observations made to date the “non-winter” pruning treatments all appear to be reducing the amount of leader regrowth and the amount of pruning required. Each of the winter pruning techniques has led to strong regrowth patterns and pruning requirements.

Implications

The initial trial undertaken in 2017-19 did not prove to be very effective in changing grower practices and perceptions. However, as the trial continues grower interest is increasing in its outcome. This trial with the addition of the new treatments is currently showing very interesting observations that may change grower attitudes, particularly in relation to leader management under netting.

The following photographs show some of the interesting growth responses observed so far.

**Photo 1. Leader regrowth from Full Bloom treatment**

(note the lack of strong regrowth and leader growth)
Photo 2. Leader regrowth from 1 of the winter pruning treatments
(note the shoot elongation and bunchiness from the cuts)

Photo 3. Field day participants discussing their observations
Hail impacted the trial crop significantly leading to a strong hand thinning strategy to be implemented by the grower. The effects of this hand thinning are shown in the following photos. The hail hit the crop predominantly on one side of the tree.

**Photos 4 & 5**  Full Bloom treatment – showing effects of hail on crop levels – affected tree side vs lesser affected side

Crop load on damaged side of the tree  Lesser damaged side of the tree