Focus Orchard Case Study: Will simple pruning rules improve Royal Gala performance

Orchard: Jilba Orchard, Batlow Fruit Co-op, NSW
Orchardist: Matthew McMahon and Steve Bunter
Prepared by: Steven Spark, AgFirst and Kevin Dodds, DPI NSW.
Trial assisted by Ralph Wilson, Batlow orchardist.

Background

Production in the Jilba orchard (Batlow) has been increasing over the last three years, however it is still below desirable levels and vigour is a problem. The main leader has been lost and needs to be re-established. Excessive poor quality buds on “coral-like spurs” along the main trunk are likely to produce fruit of questionable quality. The aim of the trial is to demonstrate the benefits of simple pruning rules and to increase the level of understanding and skills of local growers and extension staff.

Objective

Can the adoption of simple pruning rules lead to increased production of better quality fruit? To achieve this, the focus is to shift fruit production away from the poor quality buds (coral like spurs) that are often shaded and weak, onto the healthier younger more exposed buds. Also more tree height and fruiting canopy is required to increase yield, therefore re-establishing the main leader is also a priority.

Method

Simple winter pruning objectives established for this block. The simple pruning rules used were:

1. Identify where the best quality buds are growing.
2. Remove 6 & 12 o’clock shoots (avoid total removal of buds from limb - check by counting).
3. Remove most ‘Coral Wood’ (weak spurs) from main trunk.
4. Avoid large cuts this season, as this may remove too many buds. Count.
5. Long prune laterals to simplify structure and encourage weak pendant growth.
6. Simplify tops and select new single main leader.

Results

Spur quality had deteriorated so much that a major clean-up was in order. To ensure sufficient buds were left after this major clean-out, very few structural cuts were made. Bud counts were completed during pruning and the simple pruned trees averaged 458 buds/tree, compared to 716 buds/tree in the routine pruned trees. As the trees develop more fruiting area/canopy, the focus will move towards more structural pruning cuts.

Royal Gala control (left) showing very heavy coral spurs along the trunk and simple pruned (right) showing reduction in old spurs.

Pre harvest yield estimate

Tree fruit measurements and counts were carried out before harvest. The relative yield difference between treatments is useful as it shows that on average, the routine pruned trees were carrying more fruit. However the question is how much of this extra fruit will be picked?
Block Spacing 5.5m x 3m = 606 trees/ha

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Winter Buds</th>
<th>Ave fruit/tree</th>
<th>Estimated Yield (T/Ha)</th>
<th>Fruit per winter Bud</th>
</tr>
</thead>
<tbody>
<tr>
<td>Simple pruned</td>
<td>458</td>
<td>460</td>
<td>51</td>
<td>1.00</td>
</tr>
<tr>
<td>Control</td>
<td>716</td>
<td>570</td>
<td>56</td>
<td>0.79</td>
</tr>
</tbody>
</table>

Both treatments are estimated to produce similar gross yield around 50-55 t/ha. However, differences in fruit quality, size and marketable yield just before harvest where showing some clear differences.

Both the simple and routine pruned trees had increased yields for 2013 compared to the previous year (28t/ha). This is largely due to the fact that actual tonnage for 2012 represents the harvested yield only and not the gross yield as a significant volume was left unpicked.

**Fruit Size and Distribution estimates**

200 fruit from each from the two pruning treatments were measured before harvest. The graph below shows the impact the new simple pruning rules and thinning had on improved fruit size and distribution of sizes.

This graph illustrates the differences between the simple pruned trees (green bars) which averaged 65 mm compared to the routinely pruned trees (yellow bars) at 61mm.
In addition, the range in fruit size distribution is narrower for the simple pruned trees, meaning less fruit in the smaller sizes. In the case of the routine pruned trees, much of this smaller fruit was from the poorer quality buds on the coral spurs.

**Colour**

No detailed colour assessment was undertaken prior to harvest. However a grower meeting shortly before harvest highlighted “seeing is believing”. The colour difference can be seen on the video/webinar titled “Crop Review May 2013” located on the FO website. The colour difference was significantly better and more consistent across the simple pruned trees than the routine pruned trees.

The routine pruned trees (left photo) had lower colour and smaller fruit than the simple pruned trees (right photo).

**Harvest results**

Only one pick was carried out in the trial block this season. An inspection of the harvested trees indicated that around 80% of the total crop was harvested from the simple pruned plot compared to only 50% in the routine pruned plot. This result clearly demonstrates the benefit of successful implementation of simple pruning rules. The low harvestable yield achieved in the routine pruned
trees this year is most likely the reason why 28t/ha was picked from this block in 2012. The fruit were there, but not in sufficient size or colour to be packed.

These photos don’t really capture the true extent of the colour difference between the treatments. The simple pruned trees (right) had much better colour than the routine pruned trees (left photo). A better way of highlighting this was in the packout results below.

<table>
<thead>
<tr>
<th>Pack results</th>
<th>Class 1</th>
<th>Class 2</th>
<th>Juice</th>
<th>171g</th>
<th>154g</th>
<th>146g</th>
<th>133g</th>
</tr>
</thead>
<tbody>
<tr>
<td>Routine pruned</td>
<td>48%</td>
<td>34%</td>
<td>18%</td>
<td>09%</td>
<td>13%</td>
<td>21%</td>
<td>36%</td>
</tr>
<tr>
<td>Simple Prune</td>
<td>68%</td>
<td>27%</td>
<td>05%</td>
<td>12%</td>
<td>17%</td>
<td>26%</td>
<td>33%</td>
</tr>
</tbody>
</table>

Further to this, the following comment, warrants careful consideration “Some quick calculations based on the results also show if we can increase the Class 1 packout by 20%, at $24/case the result would be an extra $96/bin Gross ($70/bin net of packing charges) per bin return – not insignificant!” By John Power, Batlow Coop CEO.

Key Messages

- Simple pruning rules work!
- Winter bud quality is very important.
- Simple pruning rules can work on older style seedling and semi-dwarf trees (like these Royal Gala).
- Know the potential crop load before you start winter pruning. If you don’t, how can you effectively plan your pruning?
- Monitor throughout the year.
- Simple pruning can offer clear fruit size and quality gains.