Trials 2020-21

1. Investigating Gala apple eating quality

2. Smitten® hand thinning trial

3. Apple replant disease rootstock trial
Investigating Gala Eating Quality Trial

**Aim:** The trial is investigating the effect of harvest maturity and the use of Harvista™ on the eating quality of Gala apples

**Treatments:**

**Untreated**
- Early pick 10/3/20
- Commercial pick 16/3/20
- Late pick 26/3/20

**Plant growth regulator (PGR) treated**
- Early pick 16/03/20
- Commercial pick 26/3/20
- Late pick 6/4/20
Gala trial – Starch Pattern Index at Harvest

Harvista™ treated fruit ripened ~10 days later than the untreated fruit.

Starch Pattern Index

- Untreated
- Harvista Treated

Untreated
Pick 3 - Late pick
26/3/20

Harvista™ treated
Pick 2 - Commercial pick
26/03/20

Harvest date
10/03/2020
12/03/2020
14/03/2020
16/03/2020
18/03/2020
20/03/2020
22/03/2020
24/03/2020
26/03/2020
28/03/2020
30/03/2020
01/04/2020
03/04/2020
05/04/2020
Gala trial – Taste panel results

- Harvest date influenced the maturity and eating quality post storage.

- The untreated commercial harvest fruit picked on 16/03/2020 was the preferred fruit. It had high pressure at harvest and post storage.

- Late harvested fruit picked after 26/03/2020 with a starch pattern index of greater than 2.5 were the least preferred fruit regardless of PGR treatment.

![Graph showing taste panel results for Gala trial with text labels for Texture, Juciness, Sweetness, and Flavour]
The application of PGR (Harvista™) delayed the commercial harvest date by 10 days allowing for greater red colour development and brix and improved eating experience for late picked fruit particularly for juiciness and flavour.

Harvista™ is a useful tool for extending the harvest window without detriment to eating quality.
Take home messages - Gala eating quality 2020

1. Focus on harvesting gala at the optimum maturity and if maturity is slipping or labour resources are limited then consider the use of a PGR such as Harvista™.

2. If starch pattern index is above 2.5 then the consumer eating experience may be impacted post storage.
Aim: To investigate the cost effectiveness of hand thinning Smitten® apples at different timings after full bloom.

Located in a 5-year-old Smitten® block at RW Squibb & Sons Orchard at Spreyton, Tasmania

Treatments:
1. Early thin (5 weeks after full bloom)
2. Normal thin (7 weeks after full bloom)
3. Late thin (9 weeks after full bloom)
Crop load was highest on early and commercial thinning times.

Only slight difference in fruit size - possible cropload effect?

No / little differences in harvest maturity
Labour efficiency and costs

- Labour efficiency was directly related to the fruit size at thinning.
- Later thinned fruit (9 weeks AFB) was 17.5mm larger and took 5 minutes less to thin than the early thinned fruit (5 weeks AFB) and was 5.8mm larger than the commercial thinned fruit (7 weeks AFB) and took 2.14 minutes less to thin.
- The later thinned fruit was $942/ha cheaper to thin than the early thinned fruit (5 weeks AFB) and $402/ha cheaper than the commercial thinned fruit.

### Thinning times and calculated costs

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Time taken for 2 people to thin 12 trees (mins)</th>
<th>Time taken for 2 people to thin 1 tree (mins)</th>
<th>Time taken for 2 people to thin 1 ha block (hrs)</th>
<th>Total Cost to thin 1 ha block (2 people paid $27.03/hr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 weeks AFB</td>
<td>19.16</td>
<td>1.6</td>
<td>66.5</td>
<td>$ 3,596.49</td>
</tr>
<tr>
<td>7 weeks AFB</td>
<td>17.02</td>
<td>1.4</td>
<td>59.1</td>
<td>$ 3,194.80</td>
</tr>
<tr>
<td>9 weeks AFB</td>
<td>14.14</td>
<td>1.2</td>
<td>49.1</td>
<td>$ 2,654.20</td>
</tr>
</tbody>
</table>
Take home messages – Smitten® hand thinning trial

1. Greater difficulty in controlling crop load at earlier thinning dates

2. No negative implications of later hand thinning to fruit maturity and final fruit size

3. Later hand thinning may warrant consideration for orchardists growing Smitten® to increase labour efficiency and reduce hand thinning costs per hectare if labour resources allow
Aim: To investigate the effect of different apple rootstocks in managing Apple replant disease (ARD).

Two trial sites were planted in replant rows at Hansen Orchards

Rootstocks planted at each site:
1. CG41 (6 trees planted)  
2. MM102 (10 trees planted)  
3. Bud9 (10 trees planted)  
4. M9 (10 trees planted)  
5. CG202 (10 trees planted)  
6. M26 (10 trees planted)
Central leader growth - MM102 stood out followed by CG202 and CG41.

Tree survival - was poor at this site.

- MM102, CG41 and M26 had highest survival rates compared with Bud 9, CG202 with poor survival rates.
Central leader growth - MM102 stood out followed by CG202 and CG41.

Tree survival - was good at this site.
  - The M26, CG41 and MM102 trees had 100% survival rates.
  - Tree deaths in 10% of the M9 and CG202 trees and 10% of the Bud9 and CG202 recoded as sick.
1. The trial was conducted in a commercial orchard setting, with high weed pressure at both trial sites and possible soil effects at one site. Given the small size of the rootstocks at planting the results may have been different had the trial been conducted in a nursery situation where greater attention could be paid to the maintenance of the trial sites.

2. The trial showed the promising results of CG202, CG41 and MM102 rootstocks. These rootstocks are known to be more resistant to ARD and therefore may warrant further consideration to the standard rootstock used at this orchard (M26).