Future Orchards 2012

Monitor Block Performance
Identifying Key Improvement Strategies
Monitor Block Performance – Identifying key improvement strategies

Gala group varieties

Density bands for analysis

- Low/medium density: < 1,500 trees/ha
- High density: 1,500 to 2,500 trees/ha
- Very high density: > 2,500 trees/ha
# Mature Plantings (6+ yrs)

## Average Yields

<table>
<thead>
<tr>
<th>State</th>
<th>2006-2008 harvests kg/ha</th>
<th>Cripps Pink</th>
<th>Gala strains</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>New South Wales</td>
<td></td>
<td>28168</td>
<td>37517</td>
<td>32842</td>
</tr>
<tr>
<td>Queensland</td>
<td></td>
<td>56881</td>
<td>58641</td>
<td>58001</td>
</tr>
<tr>
<td>South Australia</td>
<td></td>
<td>28348</td>
<td></td>
<td>28348</td>
</tr>
<tr>
<td>Tasmania</td>
<td></td>
<td>7816</td>
<td>34131</td>
<td>27552</td>
</tr>
<tr>
<td>Victoria</td>
<td></td>
<td>45148</td>
<td>32528</td>
<td>36735</td>
</tr>
<tr>
<td>Western Australia</td>
<td></td>
<td>29950</td>
<td></td>
<td>29950</td>
</tr>
<tr>
<td>Grand Total</td>
<td></td>
<td>35231</td>
<td>41168</td>
<td>38397</td>
</tr>
</tbody>
</table>

![Graph showing average yields for each state](image-url)
Queensland has outperformed the rest of Australia.

Growing conditions in Queensland were more favourable.

- Absence of serious crop losses from frost.
- Irrigation water supply being less limiting.
- Most Queensland blocks under hail net.

The challenge for the Australian pipfruit industry is to bring average orchard performance up to these Queensland levels.
Consistent high performance comes from:

- Managing climatic limiting factors:
  - Frost protection
  - Hail protection
  - Water supply – match planted area to available water.
- Lift canopy volumes to tree row volumes of 10,000-12,000 m³/hectare.
- Lift specific crop loads/cm² TCA
- For partial red varieties, adopt improved colour strains.
- Address nutritional limiting factors, eg, low nitrogen.
- Improve drainage on heavier soils.
- Address pollination issues – particularly under nets.
Age vs TCA/tree
– Gala strains only

Age vs TCA/tree

$R^2 = 0.5752$

All Densities

Under 1500 trees/ha

1500-2500 trees/ha

Over 2500 trees/ha

Log. (1500-2500 trees/ha)

Log. (All Densities)

Log. (Over 2500 trees/ha)

Log. (Under 1500 trees/ha)
Age vs gross yield per tree – Gala strains only

Age vs Gross Yield/tree

- All Densities
- Under 1500 trees/ha
- 1500-2500 trees/ha
- Over 2500 trees/ha

Gross Yield (kg/tree)

Age
kg/cm$^2$ vs TCA
– Gala strains only

![Graph showing kg/cm$^2$ vs TCA for different tree densities.](image)
Age vs TCA/ha
– Gala strains only

Age vs TCA/ha

R² = 0.5828

All Densities
Under 1500 trees/ha
1500-2500 trees/ha
Over 2500 trees/ha
Log. (1500-2500 trees/ha)
Log. (All Densities)
Log. (Over 2500 trees/ha)
Log. (Under 1500 trees/ha)
QL05

Royal Gala on MM106 at 1250 trees/ha.

Planted 1996 on fumigated replant land.
Establishment cost $40,700/ha

<table>
<thead>
<tr>
<th>Year</th>
<th>Production (tonne/ha)</th>
<th>Grade 1 Packout</th>
<th>Fruit Size Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>40</td>
<td>90%</td>
<td></td>
</tr>
<tr>
<td>2006</td>
<td>44</td>
<td>82%</td>
<td></td>
</tr>
<tr>
<td>2007</td>
<td>59.6</td>
<td>91%</td>
<td>110</td>
</tr>
<tr>
<td>2008</td>
<td>44.4</td>
<td>82%</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>TRV m$^3$/ha</th>
<th>TCA cm$^2$/tree</th>
<th>TCA cm$^2$/ha</th>
</tr>
</thead>
<tbody>
<tr>
<td>September 2006</td>
<td>6674</td>
<td>37.46</td>
<td>46825</td>
</tr>
<tr>
<td>September 2007</td>
<td>6359</td>
<td>34.08</td>
<td>42600</td>
</tr>
</tbody>
</table>

Specific crop load 2007 1.4 kg/cm$^2$ = 8.48 fruit/cm$^2$
QL05 – 2007 season

September

February
QL05 – 2008 season

September

January
Royal Gala on M26 at 2,288 trees/ha.

Planted 2002 on new orchard land.

Establishment cost $20,917/ha.

<table>
<thead>
<tr>
<th>Year</th>
<th>Production (tonne/ha)</th>
<th>Grade 1 Packout</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>19</td>
<td>78%</td>
</tr>
<tr>
<td>2006</td>
<td>33.3</td>
<td>60%</td>
</tr>
<tr>
<td>2007</td>
<td>55.2</td>
<td>70%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>TRV m³/ha</th>
<th>TCA cm²/tree</th>
<th>TCA cm²/ha</th>
</tr>
</thead>
<tbody>
<tr>
<td>September 2006</td>
<td>4272</td>
<td>17.56</td>
<td>40177</td>
</tr>
<tr>
<td>August 2007</td>
<td>6506</td>
<td>18.23</td>
<td>41710</td>
</tr>
</tbody>
</table>

Specific crop load 2007 1.32 kg/cm² = 8 fruit/cm² (est 110 average size)
TA06 – 2007 season

September

March
TA06 – 2008 season

September

Pre-harvest photos not available
NW13

Gala on M9 at 1481 trees per hectare

Planted 1998 on replant soil – no fumigation.

Establishment cost $20,391/ha

<table>
<thead>
<tr>
<th>Year</th>
<th>Production (tonne/ha)</th>
<th>Grade 1 Packout</th>
<th>Fruit Size Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005*</td>
<td>48</td>
<td>0%</td>
<td></td>
</tr>
<tr>
<td>2006*</td>
<td>50.7</td>
<td>0%</td>
<td></td>
</tr>
<tr>
<td>2007</td>
<td>17</td>
<td>70%</td>
<td>80</td>
</tr>
</tbody>
</table>

* In 2005 and 2006 all fruit was sent directly to juice processing – no Class1 or Class 2 fruit was recovered.

<table>
<thead>
<tr>
<th></th>
<th>TRV m^3/ha</th>
<th>TCA cm^2/tree</th>
<th>TCA cm^2/ha</th>
</tr>
</thead>
<tbody>
<tr>
<td>September 2006</td>
<td>2888</td>
<td>28.54</td>
<td>42239</td>
</tr>
<tr>
<td>August 2007</td>
<td>3222</td>
<td>28.70</td>
<td>42476</td>
</tr>
</tbody>
</table>

Specific crop load 2007 0.4 kg/cm^2 = 1.77 fruit/cm^2
NW13 – 2008 season

August

April
VC39

Gala on M26 at 2,614 trees/ha.

Planted 2006 on fumigated replant soil.

Young block has not yet produced a crop, so no yield information available.

<table>
<thead>
<tr>
<th></th>
<th>TRV m³/ha</th>
<th>TCA cm²/tree</th>
<th>TCA cm²/ha</th>
</tr>
</thead>
<tbody>
<tr>
<td>September 2006</td>
<td>0</td>
<td>1.64</td>
<td>4287</td>
</tr>
<tr>
<td>October 2007</td>
<td>0</td>
<td>4.47</td>
<td>11685</td>
</tr>
</tbody>
</table>
VC39 – 2007 season

September

March
VC39 – 2008 season

October

February
VC40

Gala on M26 planted at 1,586 trees/ha

Planted 2006 on unfumigated replant land (land in pasture for some time prior to planting)

Establishment cost $27,614/ha.

<table>
<thead>
<tr>
<th>Year</th>
<th>Production (tonne/ha)</th>
<th>Grade 1 Packout</th>
<th>Fruit Size Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>12</td>
<td>65%</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year</th>
<th>TRV m³/ha</th>
<th>TCA cm²/tree</th>
<th>TCA cm²/ha</th>
</tr>
</thead>
<tbody>
<tr>
<td>September 2006</td>
<td>444</td>
<td>1.42</td>
<td>2252</td>
</tr>
<tr>
<td>August 2007</td>
<td>2222</td>
<td>4.72</td>
<td>7485</td>
</tr>
</tbody>
</table>

Specific crop load 2008  1.6 kg/cm² = 9.72 fruit/cm²
VC40 – 2007 season

September

March
VC40 – 2008 season

August

February
VC18

Corella planted on BP1 at 2,200 trees/ha.

Planted 2001 on unfumigated replant land.

Establishment costs $29,200/ha.

<table>
<thead>
<tr>
<th>Year</th>
<th>Production (tonne/ha)</th>
<th>Grade 1 Packout</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>11</td>
<td>67%</td>
</tr>
<tr>
<td>2006</td>
<td>31.5</td>
<td>60%</td>
</tr>
<tr>
<td>2007</td>
<td>18.1</td>
<td>70%</td>
</tr>
<tr>
<td>2008</td>
<td>97.1</td>
<td>70%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TRV m³/ha</th>
<th>TCA cm²/tree</th>
<th>TCA cm²/ha</th>
</tr>
</thead>
<tbody>
<tr>
<td>September 2006</td>
<td>3578</td>
<td>221.12</td>
</tr>
<tr>
<td>July 2007</td>
<td>4632</td>
<td>44.27</td>
</tr>
</tbody>
</table>

Specific crop load 2008 1 kg/cm²
VC18 – 2008 season

September

Pre-harvest photos not available
VC19

Packham on D6 planted at 2083 trees/ha.

Planted 2002 on unfumigated replant ground.

Establishment costs incomplete.

<table>
<thead>
<tr>
<th>Year</th>
<th>Production (tonne/ha)</th>
<th>Grade 1 Packout</th>
<th>Fruit Size Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>31.2</td>
<td>60%</td>
<td>80</td>
</tr>
<tr>
<td>2007</td>
<td>26.5</td>
<td>88%</td>
<td>85</td>
</tr>
<tr>
<td>2008</td>
<td>49.9</td>
<td>74%</td>
<td>70</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TRV m³/ha</th>
<th>TCA cm²/tree</th>
</tr>
</thead>
<tbody>
<tr>
<td>September 2006</td>
<td>1350</td>
</tr>
<tr>
<td>July 2007</td>
<td>1500</td>
</tr>
</tbody>
</table>
VC19 – 2007 season

September

February
VC19 – 2008 season

July

January