Harvest Labour management

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Introduction

• To achieve financial sustainability we need to continuously look for improvement
• Management of Harvest Labour has the ability to vastly effect orchard profitability
• We need to identify what drives profit and measure how well we are doing
• We need to identify short and long term solutions to maximize our results
Orchard sustainability at Harvest

Perfection

Production

People
Harvest performance drivers

• Perfection –
  • Harvesting to achieve the optimum recovery of **targeted fruit quality** – *reduce waste*

• Production –
  • Harvesting fruit focusing on *reducing cost* through improved efficiency / effectiveness

• People –
  • Securing the correct **number, availability and quality of pickers** to achieve the goals above
Orchard sustainability at Harvest

Perfection
Production
People
Perfection - What is Quality fruit?

Quality is defined by the market and can vary between markets.
To extract the highest block profit we must consider recovery as well as total fruit value.
Different blocks can have different target markets (Class1 vs Juice).
The higher the quality of fruit we grow the easier it is to harvest correctly.
Know the market? What’s the value points?

- Colour
- Size
- Maturity
- Longer storage - risk vs reward
- **Recovery vs returns**
- Each block could have different results
Perfection - Good blocks are Easy
Quality takes many forms
Over cropping reduces quality
Perfection – Short term fixes

• Know all of the quality specs of your chosen markets
• Plan / find solutions to achieve them
• Minimise picker decisions (late thin?)
• Use tools where needed
  • Reflective mulch, Retain, P& D, Vigour
• Lots of small gains add up
## Benefit of increased packout

<table>
<thead>
<tr>
<th>fruit per tree</th>
<th>packout</th>
<th>Cost saving per KG</th>
<th>Cost saving per ha</th>
<th>Cost saving per bin</th>
</tr>
</thead>
<tbody>
<tr>
<td>200</td>
<td>65%</td>
<td>0.82</td>
<td></td>
<td></td>
</tr>
<tr>
<td>184</td>
<td>70%</td>
<td>0.78</td>
<td>1981</td>
<td>11</td>
</tr>
<tr>
<td>173</td>
<td>75%</td>
<td>0.75</td>
<td>3160</td>
<td>20</td>
</tr>
<tr>
<td>150</td>
<td>85%</td>
<td>0.70</td>
<td>6062</td>
<td>44</td>
</tr>
</tbody>
</table>
The cost of poor Packouts.

• 104t/ha @60%  $78K/ha

• 95T/ha @85%  $90K/ha

• $72 extra profit per bin – That’s a lot of Orchard grading or QC checking
Perfection –
Longer term quality solutions

• Orchard systems
• Genetics
Orchard sustainability at Harvest

Perfection

Production

People
Production

• What can we do to increase the output rate of our pickers and still achieve the desired quality standard?
• Change the picker?
• Change the picking conditions?
## How efficient can we be?

<table>
<thead>
<tr>
<th>Country</th>
<th>Hours per ha</th>
<th>Hours per tonne</th>
<th>Harvest hours per tonne</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chile</td>
<td>1200</td>
<td>34</td>
<td>17</td>
</tr>
<tr>
<td>New Zealand</td>
<td>900</td>
<td>18</td>
<td>8</td>
</tr>
<tr>
<td>USA (Washington)</td>
<td>650</td>
<td>18</td>
<td></td>
</tr>
<tr>
<td>Italy</td>
<td>525</td>
<td>9</td>
<td>4</td>
</tr>
<tr>
<td>Australia</td>
<td>640</td>
<td>17</td>
<td>9.8</td>
</tr>
</tbody>
</table>
What’s your metric?

- Hours per bin
- Bins per day
- Marketable tonnes per day
- Harvest cost per marketable kg
What’s good and bad?
What was good or bad in the video?

<table>
<thead>
<tr>
<th>Good</th>
<th>Bad</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Simple trees</td>
<td>• 23 ladder climbs (8000m/ha)</td>
</tr>
<tr>
<td>• Consistent colour</td>
<td>• Distance to bin - Walking with full bag</td>
</tr>
<tr>
<td>• Fast workers</td>
<td>• Double passing over the same area</td>
</tr>
<tr>
<td>• Consistent crop</td>
<td></td>
</tr>
<tr>
<td>• Qc visit per bin</td>
<td></td>
</tr>
</tbody>
</table>
What changes a picker potential

- Distance traveled
- Fruit per tree
- % per pick
- Motivation
- Fatigue

- Bin placement
- Singles vs multiple fruit
- Retain/reflective mulch
Production – Change the picker

• Are the pickers trainer to pick the correct fruit and not fruit that shouldn’t be picked?
• Are the pickers trained to pick as efficiently as possible? (*Apal webinars*)
  • Minimum movements
  • Correct ladder and picking bag use
• Are the pickers motivated to work hard and do the job correctly – Contract rates
• Are the pickers being checked and given feedback?
Productivity – Change the picking

- Reduce the number of fruit on the trees pre-harvest that are not the desired quality.
- Condense flowering and reduce the number of picks required.
- Pick at the correct maturity / colour balance
- Grow trees that require minimal effort to find, identify and pick the quality fruit.
- Use systems that give the shortest time / distance from picking to bin placement.
- Minimise all potential damage points.
Back to the future:
• Need 2 people to shift a ladder

We have come a long way already
Good but can still be better
Colour variation
% per pick

Upper Canopy

Lower Canopy
Colour variation
% per pick

Foreground Colour

![Bar chart showing colour variation percentage per pick for 2D, 3D AGFIRST, and 3D. The chart compares the percentage of colour variation in the Top, Middle, and Bottom sections.](chart.png)
2D

78 tonnes per hectare,
Picking efficiency + 25%
Hours of hand labour in the mature planting- 70 tonnes per ha (Italian work)

<table>
<thead>
<tr>
<th>Tall spindle 2860</th>
<th>Bibaum 5120 leaders</th>
<th>Bibaum 5550 leaders</th>
</tr>
</thead>
<tbody>
<tr>
<td>614</td>
<td>560</td>
<td>15</td>
</tr>
<tr>
<td>9%</td>
<td>15%</td>
<td></td>
</tr>
</tbody>
</table>
Productivity – change the picking

- Using picking platforms in a purpose designed canopy
- Efficient use of harvest labour

Fruit distribution needs to be excellent suit specific canopies
Productivity – change the picking

- Picking platform not fully utilised due to poor fruit availability
- Lots of cost not a lot of gain.
- Cannot be used in standard planted trees
Production - change the picking

- This might be an option for efficiency gains in standard tree canopies.
Orchard sustainability at Harvest

Perfection

Production

People
What’s your labour Pool

- A native Australian picker, able to reach high into the trees, good stamina, works well in hot climates, comes with in built picking bag
People – How do you find and keep them?
Motivation / Enjoyment
Nutrition
Summary

Harvest decisions can significantly impact orchard profitability

• We need to focus on improvements both short and long term looking at the 3 key areas -
  • Fruit Quality – Perfection
  • Harvest performance – Production
  • Having the right – People
• Each needs special focus to make harvest a success
Thank you