Labour efficiencies

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Agfirst
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Talk Outline

1. Labour review
   - How efficient are we.

2. Improvements with Orchard Systems

3. Economic Comparisons: Show me the Money
Labour use changes

<table>
<thead>
<tr>
<th></th>
<th>2008</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Harvest</td>
<td>220</td>
<td>230</td>
<td>240</td>
</tr>
<tr>
<td>Pruning</td>
<td>110</td>
<td>120</td>
<td>130</td>
</tr>
<tr>
<td>Thinning</td>
<td>100</td>
<td>110</td>
<td>120</td>
</tr>
<tr>
<td>Other</td>
<td>220</td>
<td>230</td>
<td>240</td>
</tr>
</tbody>
</table>

Legend:
- 2008
- 2010
- 2011
Labour use changes

- Harvest
- Pruning
- Thinning
- Other

2011  Upper Quartile
## Hours per tonne

<table>
<thead>
<tr>
<th></th>
<th>2008</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total hours per gross tonne</td>
<td>17.8</td>
<td>20.7</td>
<td>17.5</td>
</tr>
<tr>
<td>% spent in harvesting</td>
<td>34%</td>
<td>35%</td>
<td>37%</td>
</tr>
<tr>
<td>Harvesting hours per gross tonne</td>
<td>6.1</td>
<td>7.2</td>
<td>6.5</td>
</tr>
<tr>
<td>Hours per tonne class 1</td>
<td></td>
<td></td>
<td>9.7</td>
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</table>
## Hours per tonne

<table>
<thead>
<tr>
<th></th>
<th>2011</th>
<th>2011 upper quartile</th>
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</thead>
<tbody>
<tr>
<td><strong>Total hours per gross tonne</strong></td>
<td>17.5</td>
<td>18.9</td>
</tr>
<tr>
<td><strong>% spent in harvesting</strong></td>
<td>37%</td>
<td>33%</td>
</tr>
<tr>
<td><strong>Harvesting hours per gross tonne</strong></td>
<td>6.5</td>
<td>6.3</td>
</tr>
<tr>
<td><strong>Hours per tonne class 1</strong></td>
<td>9.7</td>
<td>8.1</td>
</tr>
</tbody>
</table>
# Hours per tonne

<table>
<thead>
<tr>
<th></th>
<th>2011</th>
<th>2011 upper quartile</th>
<th>NZ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total hours per gross tonne</td>
<td>17.5</td>
<td>18.9</td>
<td>8%</td>
</tr>
<tr>
<td>% spent in harvesting</td>
<td>37%</td>
<td>33%</td>
<td>46%</td>
</tr>
<tr>
<td>Harvesting hours per gross tonne</td>
<td>6.5</td>
<td>6.3</td>
<td>-4%</td>
</tr>
<tr>
<td>Hours per tonne class 1</td>
<td>9.7</td>
<td>8.1</td>
<td>-16%</td>
</tr>
</tbody>
</table>
Labour efficiency – What should be a given?

- ??
- High yield consistent yield
  - Year to year, within the block.
  - Canopy volume
- Competitive business
- Piece work
- Effective training
- Simple rules
  - Pruning, thinning…..
- Orchard Systems
  - These are a continuum
Summary

- Focus on higher yields of increased quality by spending more and labour becomes cheaper and more efficient.

- As production increases, the proportion and importance of harvesting labour increases. We need to look for a solution here.
Orchard Systems one option?

- A system choice is a 10-20 year decision.

- We have to plan to be able to solve tomorrows issues
  - Customer requirements
  - Labour – cost, availability, skill
  - Reducing Cost.

- Future proof for technologies, plan for maximum benefits.
  - Narrow, simple, productive canopies
Review existing a few system options

- **Assume:**
  - Canopy volume
  - Consistency

- **Labour**
  - simple
  - Ability to be systematic

- **Capital v return**

- **Targeted fruit**
System comparison

• Assume narrow 2d canopies have key benefits lets see if it can stack up.
System comparison

<table>
<thead>
<tr>
<th></th>
<th>3D</th>
<th>2D W</th>
<th>2D V</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>3.5 X 1</td>
<td>2.4 X 1.4</td>
<td>4 X 0.7</td>
</tr>
</tbody>
</table>
Variations – Operating Costs

- Tree training +50%
- Picking Labour is 50% of your labour cost
- Picking 15% less up to 25%, using the same gang
- Skill base changes
Variations – Production

The graph illustrates the variations in production over time, measured in Tonnes/ha (bins/acre). The x-axis represents different time points, while the y-axis shows the production levels. Three different lines represent different conditions or treatments:

- **2d W**
- **3d**
- **2d V**

The graph shows how each condition progresses differently, peaking at various points, with **2d V** showing the highest production level over time.
Variations – Revenue

Upper Canopy

Lower Canopy
Variations – Revenue

Foreground Colour

2D W

3D

3D

Variations – Revenue

Foreground Colour

2D W

3D

3D

Variations – Revenue

Foreground Colour

2D W

3D

3D

Variations – Revenue

Foreground Colour

2D W

3D

3D
Variations – Revenue

- 15% more fruit into high grade split, 60% to 75%
- 3% increase in marketable yield (packout)
- 7% larger fruit.
- From these I calculated a 10% increase in income per box
## Variations - summary

<table>
<thead>
<tr>
<th></th>
<th>2D W</th>
<th>2D V</th>
</tr>
</thead>
<tbody>
<tr>
<td>Development costs</td>
<td>+4%</td>
<td>+20%</td>
</tr>
<tr>
<td>Training/branching costs</td>
<td>+50%</td>
<td>+100%</td>
</tr>
<tr>
<td>Picking</td>
<td>-15%/bin</td>
<td>-15%/bin</td>
</tr>
<tr>
<td>On Orchard cost/box</td>
<td>-7%</td>
<td>-15%</td>
</tr>
<tr>
<td>Production</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-5 yrs</td>
<td>-20%</td>
<td>-5%</td>
</tr>
<tr>
<td>Maturity</td>
<td>+6%</td>
<td>+25%</td>
</tr>
<tr>
<td>Revenue</td>
<td>+10% /box</td>
<td>+ 10% /Box</td>
</tr>
</tbody>
</table>
**Investment Result: “Show me the Money!”**

**Internal rate of return and net present Value**

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<th>2D W</th>
<th>2D V</th>
</tr>
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<tbody>
<tr>
<td><strong>IRR - 10 years</strong></td>
<td>11%</td>
<td>14%</td>
<td>15%</td>
</tr>
<tr>
<td><strong>IRR – 6 years</strong></td>
<td>-8%</td>
<td>-6%</td>
<td>-5%</td>
</tr>
<tr>
<td><strong>NPV @ 8% 10 yrs</strong></td>
<td>$23,000</td>
<td>$55,000</td>
<td>$83,000</td>
</tr>
</tbody>
</table>

- Relative investment comparison
- Close to your opportunity cost of money
Making a change? Not just Financial!

- Need solution to tomorrow's constraints
- Attitude to “perceived” risk. (we are all different)
- Being an average grower, not the innovator
- Regional Constraints – Land, Labour........
- 2 dimensional canopies should be considered.
- Sit down and study the options.