Why Leaf Defoliation is undertaken by WA orchardists?

- Survey of growers to define current management practices used to defoliate leaves.

- Applying Nitrogen to boost buds: 42%
- Enter dormant phase earlier to gain more chill: 33%
- Clean up and disease prevention: 17%
- Start pruning earlier: 8%
Leaf Defoliation Demonstration

<table>
<thead>
<tr>
<th></th>
<th>ProTone (ABA)</th>
<th>Dormex</th>
<th>Urea</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Active constituent</strong></td>
<td>Abscisic acid</td>
<td>Hydrogen cyanimide</td>
<td>Nitrogen</td>
<td>No treatment</td>
</tr>
<tr>
<td><strong>Product rate</strong></td>
<td>100ppm</td>
<td></td>
<td></td>
<td>50kg/ha</td>
</tr>
<tr>
<td><strong>Mixing</strong></td>
<td>50g per 100L</td>
<td>3L per 100L</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Application timing</strong></td>
<td>As the leaves start to turn yellow</td>
<td>35 days before bud burst</td>
<td>2 weeks post harvest</td>
<td></td>
</tr>
<tr>
<td><strong>Application date</strong></td>
<td>20 May 16</td>
<td>25 August 16</td>
<td>20 May 16</td>
<td></td>
</tr>
</tbody>
</table>

- 5 trees per treatment,
- Products to be applied one concentration and timing
  - as determined by the product label.
- All other management practices to proceed as per grower’s regular schedule.
Winter Chill Accumulation for Manjimup using dynamic chill portions for 2016.
Leaf Defoliation - Results

- UREA - Leaf defoliation quicker in Pink Lady & Kanzi 30 June 16
- Dormex - Green Tip Pink Lady ahead 21 Sept 16
- ABA - Green Tip Kanzi ahead 15 Sept 16

If demonstrated again;
- Use higher rate of ABA,
- Test against Ethrel
- Application of ABA to be after application of urea, after the leaves have started to yellow.
- Suspect winter oil used so minimal effect from Dormex observed
Chill Portions 18 June 17 –
Donnybrook 10, Manjimup 19, Pemberton 14,
Apples on Apples

- Test different soil pre-planting treatments including biofumigants (brassica), beneficial bacteria and soil fumigants.

- Is it more economical to develop new ground or old ground for future pome orchards?

- 5 treatments x 1 variety x 1 location
- Old Fuji trees removed in June 16 by grower, existing block is 8 rows of Fuji at 5m spacing length of 100m. New planting of Ferro Fuji to be at 3.5m planting in early spring 2017.
- Treatment rows across tree rows
- Treatments to be applied one concentration and timing – as determined by the product label.
- 5 trees per treatment monitored for growth after planting in 2017/18 season and for the life of this future orchards contract (2021).
# Apples on Apples – Pre-Planting Trial

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Row 1</th>
<th>Row 2</th>
<th>Row 3</th>
<th>Row 4</th>
<th>Active</th>
<th>Rate</th>
<th>Timing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green Fume</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Mustard 90%</td>
<td>Rate 15-20kg/ha</td>
<td>May</td>
</tr>
<tr>
<td>David Gray’s</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Rocket 10%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ethiopian Cabbage &amp; Mustard PGG Wrightson</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Ethiopian cabbage 75%</td>
<td>Rate 10kg/ha</td>
<td>May</td>
</tr>
<tr>
<td>Ethiopian mustard 25%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Serenade Prime Bayer</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Biologic bacterium</td>
<td>35ml/tree</td>
<td>planting</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Bacillus subtilis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chloropicrin</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3 weeks</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>prior</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grower Standard Practice</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Metham Sodium</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Measuring - Growth rates – shoot extension Trunk cross-sectional area (TCA)
Before the SNAP pruning June 16
Evaluating the value of SNAP trees

- To demonstrate improved production and the simplicity of SNAP tree management on a mature Cordon planting system.

1. Cut out the big branches 2-3 branches at the top (bench cuts = replacement shoots).
2. Ideal wood is small strong 10mm thick.
3. Get rid of big wood that reduces sunlight getting into the tree. Create windows of light into the tree in the tops of the trees.
4. 12 central leaders per 10m.
5. Straighten up central leaders with staples/tree ties.
6. Only cut 2-3 limbs, next biggest have to stay this year.
7. Aiming for 125 fruit per stem/leader (80T).
8. Three stems thinned to singles, doubles and triples to demonstrate the yield load.
17 August 2016 – Steve’s Pruning
March 2017 – Craig’s Pruning
May 17 Day before harvest — Joe’s Pruning
Fruit Size SNAP vs standard Practice

Diameter mm

SNAP  Fonty

1/12/2016  22/12/2016  12/01/2017  2/02/2017  23/02/2017  16/03/2017  6/04/2017  27/04/2017
# Average Fruit Number and Yield after thinning (11 Jan 17)

<table>
<thead>
<tr>
<th>Stem</th>
<th>Singles</th>
<th>Doubles</th>
<th>Triples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average fruit number</td>
<td>55</td>
<td>147</td>
<td>185</td>
</tr>
<tr>
<td>Est Yield</td>
<td>34 T/ha</td>
<td>90 T/ha</td>
<td>124 T/ha</td>
</tr>
</tbody>
</table>
Rosy Glow Fruit Size

Diameter (mm)

- Singles
- Doubles
- Triples

Dates:
- 31/01/2017
- 14/02/2017
- 28/02/2017
- 14/03/2017
- 28/03/2017
- 11/04/2017
Thank You
Any Questions?