Thinning – Building a Strategy

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AgFirst
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"A producing apple orchard is a dynamic system. Optimum crop loading strategies cannot be obtained through the recipe approach, but need an integrated approach that recognises all of the various factors that impact on the crop and its performance” (John Wilton, April 2002).

In regular bearing trees, over 90% of the potential fruitlets need to be removed within six weeks of bloom. Natural drop will account for 50-60% at 8 weeks AFB.

“Sally Bound”
Tasmanian Institute of Ag Research
Factors influencing Chemical Thinning

Thinning

- Variety
- Tree health
- Consistency
- Pruning
- Age
- Size

The target

Chemistry
- Mode of action
- Rate

Application
- Conc.
dilute
- Sprayer type
- Speed
- Water volume
- Agitation
- Filtration
- Ability to target zones
- pH

Weather
- Sunshine
- Humidity
- Rain

Hive quality
- Weather

Pollination
What have I missed?
Building a plan~
The foundation of success

• Clear objectives
• Block to block and within block variation accounted for
• Understanding the tools
• Application options
• The final plan
What's the objective?

- Biennial Bearing
- Reduce costs
- Larger fruit
- Annual wood
- Spur wood
## Block Plan Example

<table>
<thead>
<tr>
<th>Variety</th>
<th>Objective</th>
<th>Block variations</th>
<th>Strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pink Lady</td>
<td>• 55 tonne/ha</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Medium size, 180g fruit (70 mm)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Colour and ease of picking</td>
<td></td>
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</tbody>
</table>
Block Variations

- Age
- Orientation to sun
- Bee activity
- Cross pollination
- Wet feet
- Wood type
- Detailed pruning?
Pruning styles

Both blocks finished pruning but will require a very different thinning approach
Same variety but biennial in the same block
Pollination
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| Pink Lady   | • 55 tonne/ha  
              • 180g fruit (70 mm)  
              • Colour and ease of picking | • Home. Progressive flowering lots of 1 year wood:  
              • Shed. Vigorous tree east/west flowering differences |                                              |
Understand the tools ~
You need to know all the options in detail

- ATS
- ANA
- Ethrel
- Promalin
- BA
- Carbaryl
- .....
Mode of action of the flower thinner ATS and its practical use in apples
Michael Schröder, University of Hohenheim, Department of Horticultural Science, Fruit Research Center, Bavendorf
Investigations on the site of action of ATS
A: whole tree treated
B: only leaves treated
C: only flowers treated
ATS application

- Desiccating flower organs
- Inhib. of pollen tube growth

- Leaf area
- Photo-synthesis
- Shoot growth

- Disturbed fertilization

46%

91% first drop

37%

Assimilate deficiency

Inhibition of fruit IAA-export

8.7% June drop

KOB 2002, Dr. Michael Schröder
Summary

- ATS thins by affecting both flowers and leaves.

- The “leaf effect“ is a complex and indirect process where increased ATS uptake can induce very strong thinning.

- Water rate and minimising rewetting are key to effective thinning with ATS.
### Product a.i. rate Water Volume Variations

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<th>a.i. rate</th>
<th>Water Volume</th>
<th>Variations</th>
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<tbody>
<tr>
<td>ATS</td>
<td>1%</td>
<td>1500 full dilute adjust rates for other blocks by tree size Sprayer calibration 1.</td>
<td>Do not apply if rain expected within 24 hours</td>
</tr>
<tr>
<td>ANA</td>
<td>7ppm</td>
<td>1000L Sprayer calibration 2.</td>
<td>Do not apply under 15 C Wait for temperature</td>
</tr>
</tbody>
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### Variety Objective Block variations Strategy

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            • 180g fruit (70 mm)  
            • Colour and ease of picking | • Home. Progressive flowering lots of 1 year wood:  
| | | • Shed. Vigorous  
            • East west rows | • ATS ½, top 1/3, (if warm use ANA in tops), calibration 2  
| | | | • Carbaryl be careful with bottoms.  
| | | | • Carbaryl late only west side |
Application options

• Basics (do not assume these)
  – Filtration
  – Agitation
  – Nozzeling
  – Speed
  – .......
Hitting the target

• Tops or bottoms only
• Water Volume
  – High water volume can never target the tops only
• Higher forward speed and lower air speed trap the spray plume in the tree.
What's wrong?
Several blocked nozzles
The Plan

• Putting it together
• What if something changes? How do I react.
# The Plan

## Variety | Objective | Block variations | Strategy
--- | --- | --- | ---
Pink Lady | • 55 tonne/ha  
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• Shed. Vigorous  
• East west rows | • ATS ½, top 1/3, (if warm use ANA in tops), calibration 2  
• Carbaryl be careful with bottoms.  
• Carbaryl late only west side |
Walk the Block

- Regularly ~ possibly every 2\textsuperscript{nd}-3\textsuperscript{rd} day when bloom is tight.
- Observe flower density, flower strength
- Flower timing and record.
- Watch for stress effects eg NAA, Frost
- Observe closely fruitlet abortion rates.
- Get into the tree
- Seek professional assistance
Spray Thinning Summary

1. Start your season with a plan but be ready to adapt.
2. Watch the weather like a hawk.
3. Always leave an unsprayed control.
4. Keep good records. Each block has its own unique requirements.
5. Walk the block regularly ~ Your time walking the block will be the best product in any season.
6. Keep flexible (there are many tools in the box)
7. If it ain’t broke don’t fix it!
8. Seek professional assistance