More, is not better.

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Agfirst
## Rule changes

<table>
<thead>
<tr>
<th>Old rule</th>
<th>New simple rule</th>
<th>comments</th>
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</thead>
<tbody>
<tr>
<td>Fill the allotted space, 3-5 row rule</td>
<td>50% shade (when shadows longest)</td>
<td>We need to see through a canopy easily mid-season. 10 rows is too far, 3-5 rows is ideal. The amount and consistency of shade between rows.</td>
</tr>
<tr>
<td>Branch bending 45-60 degrees</td>
<td>Aim at the tractor wheel or ½ way between trees</td>
<td>Aiming at a point on the ground means branches will get steeper higher in the tree.</td>
</tr>
<tr>
<td>200 tonnes in 5 years</td>
<td>Targeted (marketable) fruit!</td>
<td>The target is for marketable fruit, the fruit that pays the bills. Define this for your situation - it may be different for different growers.</td>
</tr>
<tr>
<td>Water: Measure and apply when needed</td>
<td>Start early, apply often, all season Older trees use soil moisture and tree vigour as monitoring tool.</td>
<td>With young trees in most situations growers are starting too late. Irrigate straight after planting to settle soil around roots, apply often while roots are shallow.</td>
</tr>
<tr>
<td>Weeds: Keep sward clean</td>
<td>The same in young, less important in old trees</td>
<td>Maybe less weed is ok for vigour control.</td>
</tr>
</tbody>
</table>
Filling the allotted space

• One principle that always stays constant is that we are harvesting light, converting sunlight to carbohydrate and adding a little moisture (85%).
• Light interception
  – = yield  fill the allotted space
  – = Fruit Quality, Brix, colour, firmness....
  – = Marketable yield
Visual cues

• 3-5 rows

• 50% shade
• 4 year averages of 78 tonnes/ha.
• gaps between the trees.
• This is an excellent example of the 3-5 row rule.
• As I walk the orchard I can easily see 3 rows across the block.
cannot see one row across the rows.
yield is good (at about 70 tonnes gross)
the packed yield is only about 40-45 due to poor
foreground colour, maturity is delayed and storage
potential has been poor.
Visual cues

• 3-5 rows

• 50% shade
These photos show a block at about 65 tonnes with only 45% shade down the row.
80% shade,
only doing 60 tonnes of low colour fruit.
Note not enough windows high in the canopy.
Heres a poor performing Jazz block with the canopy too dense - zero rows across the block and 85-90% shade.
Here are two photos of different rows in the same block of pink lady apples and you can easily see the variation in vigour and pruning styles by the variation in shade along the row. Use these sort of examples in your own orchards to explain good and bad tree structure and pruning techniques.
Light and quality

• Fruit colour development is triggered and influenced by a range of factors,
  – Maturity, temperature, nutrition, yield, light etc....
The following sample is of a new variety Sonja. Fruit of acceptable colour which we would include in the first pick from the outside of the canopy (top of each tray) is compared with fruit low in the canopy which we would leave behind in the first pick. The maturity is similar and may even be higher in the low coloured fruit.
I picked fruit of high and low colour at random from a block of Royal gala. The same royal gala fruit in each photo with high colour at the top and low colour at the bottom of each photo. The average and range of maturity as indicated by an iodine test (SPI) is the same for low and high colour fruit.
Conclusion

- Fruit colour is not a good indicator of fruit maturity.
- Focus on canopy management to pick fruit at the optimal stage for storage and consumer acceptance:
  - Mid season 3-5 row rule
  - Maximum 50% consistent shade
Attention to detail what does that mean

• We are what we have done
• People will do what they want.