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Update

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IN THIS ISSUE

Harvest has come and gone which means for many, winter pruning is well and truly underway.

As packout results come in it's a good time to evaluate what income your blocks are generating, and which blocks are problems and which are success stories. Low performing blocks need to be evaluated and adjustments made to improve. For high performing blocks, the evaluation should centre around maintenance of their performance and if any potential further improvements can be made.

Whilst eyeballing trees can be very effective for pruning, I'd suggest that all blocks should have a target yield established pre-pruning to ensure the planned pruning job matches up with the block goals. A beautifully-pruned block is not always the most profitable; sometimes 'ugly' to hit a target is better. For young trees, early pruning/training is critical and done

poorly can result in significant losses to potential tree growth and yields.

Set a target, have a plan and adjust as necessary; nothing will change (except potentially going backwards) if you aren't seeking to adapt and improve your block performance.

- Nic

OrchardNet has a variety of in-built tools to allow for production planning. A combination of accurate tree counts, areas, block production targets and other factors can be combined to give target bud and fruit numbers per tree.

<http://www.orchardnet.co.nz>

Don't have an OrchardNet account?

As part of the Future Orchards project OrchardNet is provided to Australian growers for free (up to 1200 blocks total). Please contact your local FLA or a member of AgFirst (see details on the last page of this newsletter) if you would like to give it a go.



Planning for harvest 2020 - setting an appropriate crop load



Pruning to achieve your 'appropriate crop load'

Planning for harvest 2020: setting an appropriate cropload to maximise profitability

What is an 'appropriate' crop load?

Before setting an 'appropriate' target crop load it is vital to understand what type (size, quality, variety) of apple or pear you need to produce for the market.

If you're not sure, call the people marketing your fruit and ask what they want from you. The marketer (or your own marketing team) need to be your eyes and ears for what the market wants.

For trees that are not yet at full canopy, an appropriate crop load will also need to reflect tree growth objectives as well as fruit goals. Sometimes the 'wrong size' fruit is inevitable; once you realise this for a specific block it is important to work out what to do with it.

Even the best tasting fruit, if not meeting market demands and being marketed properly, will not return a great price. Whilst it can be tempting to blame the market or the marketer, don't be afraid to look at your fruit to see if a shift in your growing strategy could improve your fruit returns.

How do you achieve it?

Once you have established what type of fruit you are aiming to grow and your goals for a block the next thing to do is set a target crop load.

Think:

- Target fruit size
- Target yield
 - Weight per area (or tree)
- Target pick out
 - what % of fruit actually gets into the bin
- Target packout
 - how to get there



In this scenario, only ~25% of a 'full canopy' cropload is appropriate for the tree size. Major changes (or complete renewal) are needed for this block in its current state

These four numbers should play a significant role in a number of your orchard decisions (ie. winter pruning, chemical thinning, hand thinning PGR use, summer pruning, reflective mulch, irrigation timings).

What strategies can be used?

A combination of the four below strategies are often best combined to produce a robust, and appropriate, crop load target.

1. Look and feel

- Does it look right?

2. History

- most effective in mature canopies
- Did that setup work in the past? Has anything changed?

3. Canopy size

- % of canopy vs mature block optimal yields
- If a full canopy (100%) of Granny Smith is 100t/ha
 - 50% = 50t/ha
- What is full for a spindle tree?
 - Height ~1.1-1.2x row width
 - Width 'filling their space' ~0.5x tree spacing (spindle)
 - Branches ~6-7/fruiting metre
 - Variability: Very low
- 4. **Data based**
 - Fruit per trunk cross sectional area (TCA)
 - Fruit per branch cross sectional area (BCA)
 - Length of fruiting wood – 'x' fruit at 'y' spacing

OrchardNet to help set an appropriate crop load

Getting your block history right

In order to make a well-informed decision for your crop load it is vital that you have a full dataset.

At a minimum, it is generally best to work with at least three years of historical data (yield, average fruit size, packout). If you don't have this data, your best estimate will have to suffice.

If you fall in the latter category of having minimal historical data, it's not too late to change your data collection methods to improve your crop load target accuracy by:

- Collecting bin numbers harvested per management area
- Ask if your packhouse can identify packouts, size etc. by block in the future
- Calculate what the average packout and fruit size was; this often means combining each packout report into a single sheet summary

Setting your block target in OrchardNet

After establishing good historical data it's time to establish:

- A. What we want to target
- B. If it's feasible

Starting with the OrchardNet "thinning report" is a good place to start which would output something similar to the below for each block where data is available:

Blockname	Ssn Type	Gross Kg/ha	Class1 Kg/ha	Class1 P/O %	Fruit Weight (g)
2019	Act	115,000	97,750	85	160
2018	Act	73,528	51,470	70	170
2017	Act	111,333	75,706	68	170

The last three years for this block show a somewhat biennial bearing trend so we can expect a reduction in tonnage but want to aim to not drop back down to the mid-70s (plant growth regulators were used to help with return bloom over the past season).

For this block ~100tonnes/ha seems appropriate. Wanting good size for the market that is being aimed for an average fruit weight of 170 grams is desired.

Enter your estimate (production estimate table) for the block. If you're unsure how to do this then see the below link for instructions <https://www.hortwatch.com/orchardnet/manual/orchardnet-user-manual.pdf>

Tools in OrchardNet to crosscheck your target

After establishing an appropriate target crop load (which is somewhat ambitious given the biennial bearing tendency) there are a couple of good crosschecks available within OrchardNet to check if the target is sensible.

The reports to use to crosscheck:

- Production by tree age
- Thinning report
 - your 2020 estimate will now be populated
 - to get a fruit/TCA reading you must measure trunk diameters and enter them into the metrics table in OrchardNet

I've provided an example with some small commentary of factors to look at on the next page. If you're unsure how to access these reports, see the above link to the OrchardNet manual (also on the left hand pane once logged in)

Once you have established if this is an appropriate target (in this case it looks okay) it is time to formulate a pruning plan.

In the "Metrics" table within OrchardNet add:

- TCA (if you want to see a harvested fruit/TCA number; can be entered as diameter in centimetres)
- Pick out
 - % of fruit after thinning you expect to get into the bin (after fruit drop, field grading etc.) – 90% is default
- Buds required per fruit
 - How many fruit buds for each desired piece of fruit
 - Ranges 1-3 dependent on goal and variety
 - Lower = more vigour (generally)
 - Higher = less vigour

Company:
Property:
Production Site:
Block:

Thinning Report

Season Ending 2020



Blockname	Ssn Type	Gross Kg/ha	Class1 Kg/ha	Class1 P/O %	Weight (g)	Fruit Harvested /Tree	TCA Harvested /TCA	Tree Fruit Pickout %	Target Fruit/Tree post-thin	Actual Fruit/Tree pre-thin	Actual Fruit/Tree post-thin
A	2020	Est 100,000	85,000	85	170	198	31.0	6.4	90	220	-
	Act	-	-	-	-	-	31.0	-	-	-	-
	2019	Act 115,000	97,750	85	160	242	30.2	8.0	122	269	319
	2018	Act 73,528	51,470	70	170	146	-	-	-	162	-
	2017	Act 111,333	75,706	68	170	221	-	-	-	245	-

Harvested fruit per TCA, as a (rough) guideline this I generally look for 5-6 fruit/TCA in mature trees depending on variety and goals

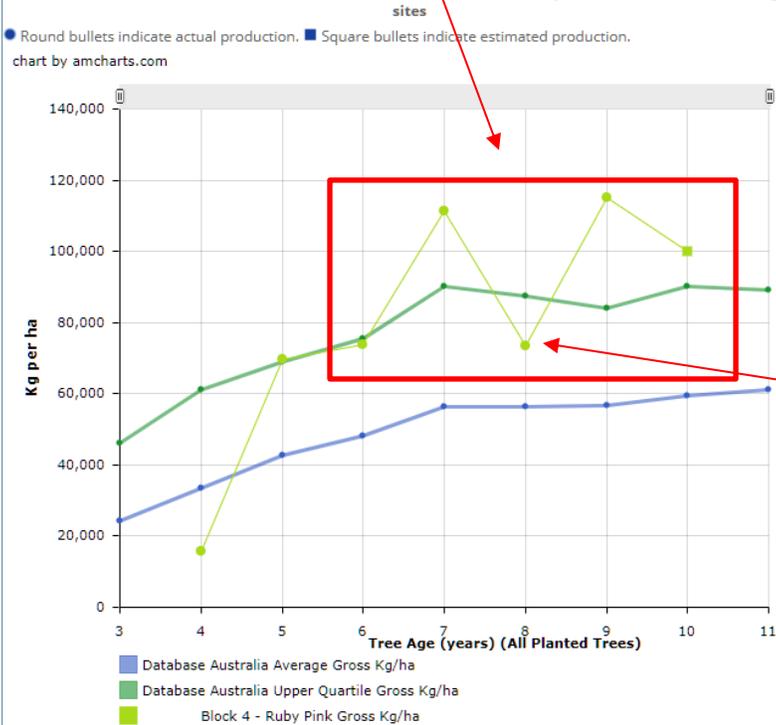
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Know we're in a biennial bearing habit and need to stabilize yield somewhere in the middle of the current swing

Pick out %. Proportion of the post hand thin fruit count that made it into the bin (based on average fruit size and harvested yield).
Being >100% this suggests out post-thin count underestimated fruit number per tree

Ruby Pink Production vs Age comparison: National Type - Pink Lady



Need to be conscious of the low yield result two years prior; return bloom expected to be somewhat challenged so may prune to retain additional fruiting buds. Products for improved return bloom applied in the last season

Pulling it all together - pruning to a target

Once you have established if this is an appropriate crop load target (in this case it looks okay) it is time to formulate a pruning plan.

In the "Metrics" table within OrchardNet you should look to add:

- TCA (tree cross sectional area – area of circle)
 - can be entered as a tree diameter
- Pick out
 - % of fruit after thinning you expect to get into the bin (after fruit drop, field grading etc.) – 90% is default
- Buds required per fruit
 - How many fruit buds for each desired piece of fruit
 - Typically ranges 1-3 dependent on goal and variety
 - Lower number = more vigour, higher = less generally speaking

After entering this data, the "pruning report" (shown below) can output a bud target (number of fruit buds for each tree) to prune towards as a target. If you find you're well under target; prune with less detail. If you find an excess of fruit buds on your trees, prune a bit harder with greater detail.

So what good is a bud target per tree?

In practical terms it allows something to measure your pruning against to see if you're pruning too hard (or too soft).

For most growers this would mean:

- Pre-prune count (probably best after necessary structural cuts that 'need to happen')
 - Is this higher or lower than the bud target?
- Prune trees as desired with bud target/budget in mind
- Post-prune count
 - If this is on target; how do you instruct your pruners to get to the same sort of tree with simple rules

These two bud counts (pre and post prune) can then be entered directly as metrics or by specific tree in the "pruning counts" table which will automatically average each trees data.

Where likely to be well under bud targets this may also feed into your decisions regarding time of pruning (less buds = higher vigour, possibly better pruned outside of dormant) or other vigour control and fruitset options (e.g. use of root pruning, girdling, Regalis, not using primary thinners etc.)

Company:
Property:
Production Site:
Block:

Winter Pruning Report Season Ending 2020



Blockname	Ssn Type	Gross Kg/ha	Class1 Kg/ha	Class1 P/O %	Fruit Weight (g)	Fruit Harvested /Tree	TCA Harvested (cm ²)	Target Fruit /TCA	Actual Fruit	Target Buds/Tree	Actual Buds/Tree	Pre-prune Buds/Tree	Actual Buds/Tree
A	2020 Est	100,000	85,000	85	170	198	-	2.0	-	=	397	-	-
	Act	-	-	-	-	-	-	-	-	-	-	-	-
	2019 Act	115,000	97,750	85	160	242	30.2	8.0	2.0	1.5	397	359	-
	2018 Act	73,528	51,470	70	170	146	-	-	2.0	-	-	-	-

Interested in trying OrchardNet within your business?

OrchardNet takes some perseverance and may require a different way of thinking to what you're used to.

If you're not too sure how-to login to OrchardNet, enter data, add blocks or you just need a few extra pointers don't be afraid to get in contact with your local Front-Line Advisor (FLA), the OrchardNet Administrator (adrian.stone@agfirst.co.nz) or a member of the AgFirst team.

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