



Organic Post Fruitset Discussion Group

7th December 2020

Candover Orchard – Te Puke

Candover Orchard Production History – altitude 20m

Candover Orchard is a 2.42ha Gold3 and 2.29ha HW organic orchard – the HW blocks were planted in 1984, with the Gold3 blocks grafted in 2013 and 2017. Organic conversion began after the 2018 harvest with 2021 being the first certified organic crop.

The 2 year rolling averages for each MA at Candover Orchard are:

| | | Maturity Area | | | | |
|--------------|------|---------------|--------------|--------------|---------------|---------------|
| | | GA1 | GA2 | GA3 | HW B | HW C |
| Yield (size) | 2019 | 13,332 (29.7) | | | 8,715 (30.6) | 7,574 (31.4) |
| | 2020 | 13,559 (25.4) | 7,056 (27.7) | 5,402 (26.7) | 11,967 (33.3) | 11,996 (34.4) |
| Ave | | 13,446 (27.6) | 7,056 (27.7) | 5,402 (26.7) | 10,341 (32.0) | 9,785 (32.9) |

1. Crop load – what was the plan?

In all the field days this year we've been promoting the need to plan (and adjust that plan as required) for the season.

After last revisiting your cropload plans prior to pollination, now is the time to assess fruit numbers and assess how successful pollination was - it may be that you now have more fruit hanging than you originally planned. Doing counts will help you determine your approach to croploads for the rest of the season.

2. Hayward Management

Sizing HW – 4 week trunk girdle

Girdling restricts the flow of nutrients from the leaf to the roots, meaning they are maintained in the canopy (and fruit). If you have already performed a “pre-flower trunk girdle” and plan for two summer dry matter girdles, you may choose not to apply the size girdle (allowing nutrient flow to the roots instead).

A trunk girdle applied approximately 4 weeks after mid-bloom (when 50% of flowers are open) has been shown to consistently improve fruit size by about 5g.

There are excellent resources on girdling available on the Zespri Canopy website (including video instructions) – check them out at Canopy > Growing Kiwifruit > Orchard Management > Girdling.



Figure 1. Girdle depth check – using a sharp knife a square of bark has been removed down to the hardwood

Hayward Canopy Management

As the fruit is in the rapid cell division phase, it is important to direct as much of the plants energy into this process. To support this, ensure enough light is reaching the leaves on fruiting laterals to ensure this process is efficient. If these leaves are shaded, energy is diverted elsewhere, so it is important to control excessive vegetative growth in the leader zone as this will increase the amount of light reaching the fruiting zone.

Pruning the leader zone can be complicated, therefore could be targeted separately from a pruning round in the fruiting zone. Understanding the number, quality, acceptable vigour and position of the replacement is important and therefore the work must be conducted by an experienced team. Remove surplus new cane from this area as these will shade the early, more fruitful canes by the large, later growing canes. Target blind or blank shoots (shoots that don't have any flowers or fruit) and canes that cross-over from one side of the leader to the other, vertical and high canes. At this time of year there is often a flush of new growth after early summer rain (referred to as "reds" or "hockey sticks") that grow vertically from buds that did not break earlier in spring. These canes are large and vigorous and if left alone will draw a substantial amount of nutrients away from the vine.

Don't be tempted to do too much pruning in the fruiting canopy however - the plant will respond by growing more cane in the zone, drawing dry matter away from the fruit growing in that zone.

3. Gold3 Management

Gold3 Canopy Management

Making canopy management a priority at this time of year results in a better quality crop - both this year and next. The key objectives of summer pruning are:

1. Maintain good light levels to fruiting canopy
2. To ensure quality fruiting wood is produced for next year's canopy
3. To keep the canopy open to allow for good spray protection

Maximum cell division occurs in the first 60 days after fruitset so it's important to divert as much of the plants resources into this process. Try to get as much of the summer work (i.e. fruit thinning/canopy management) completed early to maximise this effect and before the

fruit reaches its “sensitive stage” (Figure 1.).

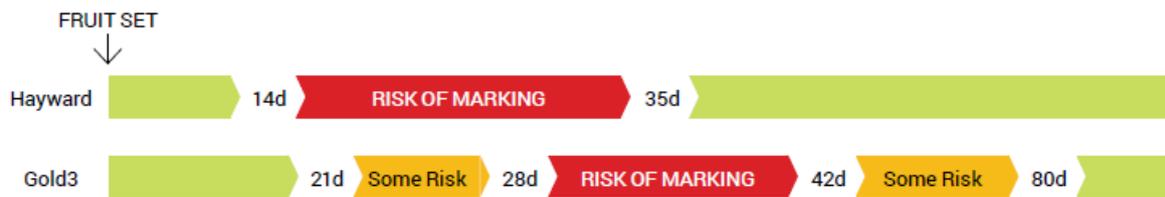


Figure 2. Fruit sensitive period (*Zespri Canopy – Fruit sensitivity periods: caution when applying sprays after fruitset*)

Gold 3 is extremely sensitive to light, so by running dense canopies may result in the vine dropping the lower leaves (that are less exposed to light). As in Hayward, targeting vigorous late shoots off the leader (that will shade the fruiting zone) as early as possible is important. Immature kiwifruit leaves are a drain on the vines resources for around the first 40 days (until they reach a stage where they can positively contribute to carbohydrate production).

If canopy work is not completed by the start of the fruit sensitive period, you will have to work slowly and carefully – doing nothing will only make matters worse! Start by identifying and removing weak canes, spur systems or large diameter vigorous canes that are not very fruitful.

Remember, pruning should always be conducted in dry weather and wounds should be protected using a copper spray.

Understanding the number, quality, acceptable vigour and position of the replacement cane is important and therefore the work should where possible be conducted by an experienced team – target it as a separate activity. Remove surplus late growing cane from this area as these will shade the early, more fruitful canes (by the large, later growing canes). Target blind or blank shoots (shoots that don’t have any flowers or fruit) and canes that cross-over from one side of the leader to the other, vertical and high canes. There is often a flush of new growth after early summer rain (referred to as “reds” or “hockey sticks”) that grow vertically from buds that did not break earlier in spring. These canes are large and vigorous and if left alone will draw a substantial amount of nutrients away from the fruit.

Trunk girdling

Due to the naturally large size of Gold3, many growers do not actively size their crop. However, many Gold3 growers girdle for size, canopy suppression and, later in summer for taste. While it is an effective tool, girdling must be considered as part of your wider orchard management programme. Before girdling ask yourself – what am I trying to achieve with my girdle?

The three main girdles that can be performed post fruitset have very different purposes:

1. Fruit sizing - 4-week trunk girdle

A trunk girdle applied 4 weeks after mid-bloom (when 50% of flowers are open) typically improves fruit size by about 12g (by affecting cell division) but has limited impact on

canopy suppression or dry matter (*Zespri OPC Trial Report – The influence of girdling in December on fruit maturity in Gold3 – November 2017*).

2. Canopy suppression - 6-week trunk girdle

A trunk girdle applied 6 weeks after mid-bloom has been shown to have a canopy suppression effect, with a small fruit sizing effect (and small effect on dry matter)

3. Dry matter – summer girdle applied (late January – March)

- The OPC Gold3 Trunk Girdle Trial report (2013/2014) reports that a single girdle applied in late January/early February can increase dry matter between 0.6% - 1.2%.
- A second girdle applied 4 weeks later may result in an additional 1.3% lift in dry matter (a total of 2.5% dry matter increase), however these results appear variable.
- Do not be tempted to girdle too late as the wound needs time to heal (quickened in a warm dry environment).
- A Plant and Food Research trial on Gold3 on bounty rootstock (*GP1767: Does trunk girdling increase dry matter when Gold3 is on Bounty71 rootstock*) showed “...rootstock responded to summer trunk girdles, consistent with expectations from trials on ‘Bruno’ rootstocks...”, resulting in an increase in dry matter (up to 1.6%), advanced maturity, but had no impact on size.
 - “...Girdles applied in February had a smaller effect on DM and maturity than January girdles”

In summary, girdling has proven to be an effective tool but conducting too many girdles in a season can have a negative impact on plant health and future production. While the girdle is open the roots must survive on stored carbohydrates. If the girdle is performed too deep and/or too late and does not at least partially heal before winter, the vine may perform poorly next spring. Girdles should not be performed if the vine is in poor health or under too much stress. Girdling should always be conducted in dry weather, wounds should be protected using a copper spray and remember to sanitise between vines.

4. **Crop Protection**

Any sprays applied between fruitset and harvest can result in staining and/or damage to the fruit skin. All sprays (foliar fertilisers, pesticides, coppers and oils) have the potential to cause stain, so take care in what you are mixing and when you are spraying. My general advice to growers when considering spraying is “if in doubt, leave it out”. If you decide you must spray, make sure you spray in ideal drying conditions – the rule of thumb is only spray in conditions where your washing would dry quickly on the line.

Growers are reminded to adhere industry best practice when it comes to spraying:

- Spray in good drying conditions only
- Do not mix copper and foliar fertilisers

- Read the label carefully – adhere to recommended rates

If you do notice staining on your fruit prior to harvest, notify your Grower Services Representative so we can best deal with the situation.

Leafroller control

- Now is a critical time for leafroller - applying two applications of BioBit® DF (Bt) 14 days apart is extremely effective.
 - It is possible to tank mix BioBit® DF with 1% organic oil, but if doing so, make sure you add the BioBit® DF to the tank first, followed by the oil.

Passion Vine Hopper (PVH) control

- PVH eggs usually start hatching between November and December so monitor for “fluffy bums” emerging in shelters/gullies neighbouring the orchard. An application 2% oil are effective control measures for gullies.
- Pyganic is an effective option to control adults/nymphs in the orchard – remember Pyganic is UV sensitive so apply late in the evening or early morning for maximum effect.

Psa control

- As we move into the post-fruitset period our Psa tools are limited to copper or Aureo Gold®.
- As the weather warms up, the need for these sprays lessens and should only be applied in response to high risk weather events – refer to the KVH Risk Model for guidance.
- Remember, fruit staining can occur at any time, but the risk is increased during the skin sensitive periods so apply in good drying conditions only.
- I do not recommend applying copper to fruit when extended periods of wet/humid weather are expected as this may result in fruit staining.

Thrips

- Thrips do not feed on HW or Gold3 fruit, but damage the leaves giving them a shiny gold/copper appearance.
- Thrips however do feed on red varieties of kiwifruit so may be a potential issue for red growers in the future.
- Cryptomeria (and pine) shelter are a key source of thrips in the orchard which disperse into the blocks from January through April (with numbers peaking in April)
 - Shelter trimming during these months results in a mass invasion of thrips into the outside kiwifruit rows (closest to the shelter) before they gradually disperse through the block
- If shelter belt trimming is scheduled during summer (and can't be avoided), applying a pyrethrum spray (i.e. Pyganic) to the outside rows 24 to 48 hours after trimming

has proven to be extremely effective at managing this invading population before they spread further into the orchard.



Figure 3. PVH nymph – often referred to as “fluffy bums” (Photo courtesy of Zespri KiwiTech Bulletin No. N59 – Passionvine Hopper)



Figure 4. Leaf damage caused by thrips