Subject: Agronomy report on plant management- New Zealand
Date: 5-8 December 2022
Sites: BerryCo growers- Tauranga & Whangarei regions
Present: BerryCo- David Holmes
Mountain Blue- Simon Radloff

Plant management (pruning & post prune management)

Overview

1. The general trend last season was a moderately hard post-harvest prune towards the end of December. Where plants were pruned harder a strong vegetative response resulted. Without enough focused attention on tipping and canopy management, dense / top heavy canopies tended to occur. This was exacerbated by the low light levels and above average rainfall creating high humidity within the tunnels making irrigation management difficult. All steering the plants towards vegetative growth, restricting already poor air flow / spray penetration and increased botrytis pressure. On some sites, it is estimated that yield loss from botrytis could be as high as 30-50%.
2. Bearing this in mind the pruning approach this season will be lighter and more open to aim for improved airflow / botrytis management.
3. However, on some sites with especially top-heavy, 'leggy' growth it will be necessary to carry out a more structural / re-set prune.
4. In all cases, tipping management post prune will need to be managed carefully to develop improved plant structure and avoid 'leggy' / top heavy growth.
5. Thinning of shoots down the centre of canopies (especially where a harder re-set prune where the vegetative response is generally thicker / denser) may need to be practised (and/or certainly trialled) to encourage better airflow and spray penetration for botrytis management.
6. Irrigation management (avoiding over-watering, in particular by daily monitoring of run off %) with a well-balanced nutritional program is also essential.
7. Pruning timing trials are strongly recommended in conjunction with various pruning styles (ie harder /re-set prune vs lighter / higher prune) and / or tipping trials post prune to learn which approach results in optimum market timing, yield and fruit quality- as discussed.
8. Pruning efficiencies:
    1. Adequate training and supervision is key to driving pruning efficiencies.
    2. Place pruners on induvial rows with a pruned plant example at the start of each row prior to pruning. This allows the supervisor to track individual pruner performance and the pruner will also have a correctly pruned plant demonstration from which to refer.
    3. Calculate pruner output in terms of plants pruned per hour. This will also assist in determining piece rates. Depending on the variety and plant age, a good pruning efficiency rate is 20-30 plants per hour.

General pruning guidelines: refer to demo photos below:

1. Pruning should be carried out as soon as possible post-harvest in approx. 15-30 Dec.
2. On some sites, a mechanised pass using a cutter bar along the sides and top (It is very important to cut to the correct / targeted height in 1 step when cutting over the top) can be carried out prior to the detailed hand prune.
3. Detailed hand prune:
    1. Start at the base of the plant by removing all thin, weak, less than pencil thick and especially lateral growth and work upwards. Most of this can be 'snapped off' by hand. Stronger basal lateral growth can either be removed entirely by cutting back to the crown or by cutting back to a strong upright branch or shoot. Never cut into the crown but avoid leaving 'stubs' at the base of the crown as this will encourage unwanted prolific shoot growth in this basal region.
    2. (Nb. Removing lateral growth by cutting back to either the crown or a strong upright shoot is especially important in varieties with a lateral growth habit such as the Eureka.
    3. Aim to create an open canopy in which future growth will not be restricted or choked. Good tip= keep a 'fist spacing' between canes and shoots where possible. **This is especially important for good airflow / botrytis management**. Remove all weak / less than pencil thick wood but aim to maintain strong, green, productive forks in place as this will provide 'structure' and more productive bearing points. Lateral growth may be removed by cutting back to a strong upright branch or shoot. Do not create 'short stub's (knuckles) when pruning back. Ensure at least a 10-15cm length remains from each cut end to the main branch.
    4. Where strong new shoot growth has already occurred, this may be kept on the plants. This growth should either be tipped to the standard 10-12 leaf stage (approx 20cm) or where older, then cut to approx 20cm. Retaining this earlier / 'spring' growth on the plant will help to push the plants into earlier production.
    5. Pay particular attention to the centres of the plants. These must be opened up for light penetration and disease / botrytis management. Remove 1-2 entire canes if necessary. This is often carried out as a separate operation post prune using a lopper.
    6. NB. Always aim for uniformity throughout blocks when pruning for ease of irrigation and harvesting management / crop timing.
    7. Avoid leaving pruning offcuts around the base of pots / on top of emitters etc. Rather place these in the row pathways whilst pruning so they can be easily mulched / removed from the tunnels once pruning is complete.

Eureka Tauranga. Lighter and open prune. Left=before. Right= after. Note good spacing between stems to maximise air flow. Also, retention of new growth which has been either cut back to 10-15cm or tipped to 15-20cm depending on growth stage.

First Blush Tauranga. Lighter and open prune. Left=before. Right= after.

Eureka Northland. Lighter and open prune. Left=before. Right= after.

Eureka Northland. Lighter and open prune. Left=before. Right= after.

Eureka Northland. Structural re-set prune. Left= before. Right= after.

4. **Plant protection**
    1. Dip secateurs in a suitable sterilant (methylated spirits or other alcohol based sterilant) when moving from one plant to the next. This is especially important to prevent spread of stem blight (Botryosphaeria) and other fungal / bacterial pathogens.
    2. Immediately post prune: apply Copper as a broad-spectrum fungicide / bactericide treatment.

5. **Tipping**
    1. Observe new shoot development carefully after pruning and follow up with pinching/tipping when new shoot growth is approx. 10-12 leaf stage (approx 20cm).
    2. This is critically important to build a good framework with complexity and to avoid top heavy / leggy growth developing (especially with a low light climate)
    3. 1-2 tipping passes are recommended, ensuring that the last tip is no later than 1st / 2nd week Feb (tip- observe when natural 'black tip' occurs)- as discussed.
    4. Some topping (to break apical dominance of primocane tips and thus encourage flower bud development further down the stem) trials should also be carried out in approx. early Feb (as discussed).

6. **Thinning**

1. With the high botrytis pressure associated with the New Zealand climate, thinning new shoot growth down the centres of the plants following pruning may be necessary to improve air flow and spray penetration.
2. This must be monitored extremely carefully as any shoot removal obviously has the potential to reduce yield so only practise this if the canopy appears particularly dense.
3. Best practised when new shoot growth is still young (20-30cm) and can be easily rubbed off/ removed by hand using gloves, targeting the plant centres only.

7. **Fertigation management**
    1. High drain ec's will need to be reduced 7-10 days prior to pruning. Largely dependent on water quality but ideal target drain ec is no more than 1.2-1.5.
    2. Irrigation management during pruning is also important as transpiration rates and water usage are greatly reduced on a freshly pruned plant.
    3. Prune by irrigation valve (not block number) and aim to complete the prune in each irrigation valve within 1-2 days to avoid water stress on unpruned vs pruned plants.
    4. Switch to the vegetative mix ensuring target ppm valves for both macro and micro elements are delivered to the plant. Tip: send dripper collection samples from 1 irrigation cycle to the lab for analysis to double check (as discussed).
    5. Once the new growth post prune has sufficiently matured send leaf samples to the lab for full dry leaf tissue analysis.