FRESH NOTES
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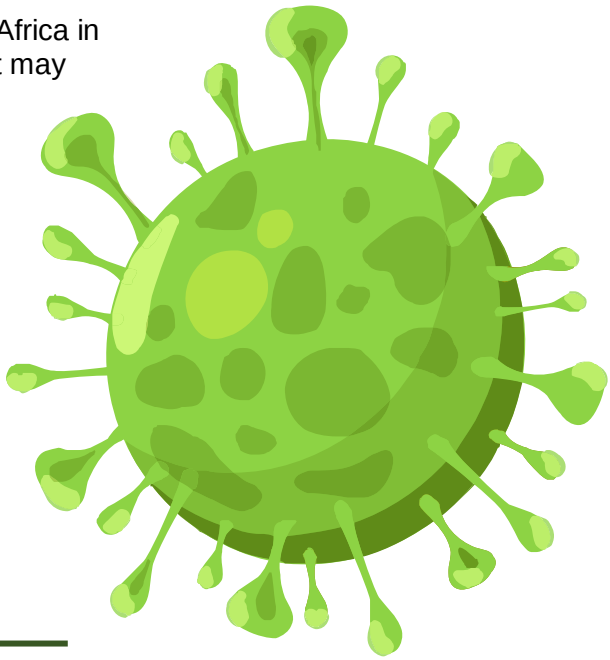
Orchard practice risk management during Covid-19



In light of the forecast of Covid-19 infections peaking in South Africa in Sept/Oct, it is anticipated that producers at some or other point may experience shortages of permanent and seasonal labour. These shortages may affect the normal execution of time-sensitive orchard practices such as pruning, flowering, and fruit thinning.

Although some fortunate farms might be spared the most negative effects of Covid-19, it is a prudent course of action to have strategies in place to mitigate the risk. As the old adage goes, plan for the worst and expect the best…

Similar to as was done in anticipation of the negative effects of the recent (and for some, ongoing) drought, Hortgro decided to enlist the help of technical advisors to proactively determine potential disruptions to normal orchard practice and how best to address these.

Please note that the intention was not to create a recipe or definitive guide. The labour set-up on each farm differs (due to region, fruit type, size of the farm, training system, where labour resides, etc.) and there is no one-size-fits-all strategy.

The intention is to have growers think about possible effects on orchard practices if labour is constrained at any time during the year and to have plans in place for those eventualities. This may also assist in any future limitations in labour availability for whatever reason.

While we aim to provide producers with relevant and useful information, please note that we are all operating in unchartered territory. Hence, there is going to be a considerable level of uncertainty and accompanying risk in any strategy aimed at mitigating the impact of Covid-19.

Therefore, please discuss any mitigating actions with a technical advisor before embarking on them!

The technical advisors assisting with this document were:

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1. How will I prune my trees if I lose a considerable portion of labour-hours due to Covid-19?

We realise that the labour set-up on each farm differs (due to region, fruit type, size of the farm, training system, where labour resides, etc.) and a one-size-fits-all strategy is therefore not going to work. Pruning strategies may differ considerably between commodities and cultivars.

- List all pruning that needs to take place and draw up a time line – include labourer requirements.
- Rank orchards according to pruning needs – some groups use a Growth Index Matrix to inform pruning decisions. Such a matrix can be quite helpful to plan pruning under current conditions. A Growth Index Matrix entails the following:

    a. **Ranking tree vigour according to new growth not arising from pruning cuts (1 to 5)**
    1. 10cm or less
    2. 10 to 20cm
    3. 30cm (ideal)
    4. 40cm
    5. Water-shoot (>50cm)

    b. **Then according to the cultivar, one can draw up a plan;**
    - The best timing of pruning
        - For example a ranking of 1 to 3 would be better suited to a detailed prune during mid-winter
        - A ranking of 4 or 5 would be better suited to autumn light management (possibly only chimney, forks & water-shoots and one or two scaffold removals that are causing excessive shading)
    - Some cultivars (possibly Fuji) would be preferable to prune in spring (post-bloom).

    c. **So, the matrix would include;**
    - Cultivar
    - Timing – Summer, autumn, winter, spring
    - Action – Detailed pruning, light management only, scaffold removal, etc.
    - Description – Specific to each variety. E.g. 1;2;3 method, removing ratios, etc.

- Start with pruning as soon as you can – tackle the vigorous orchards first, where you maybe only need to do light management pruning. It is any case best to get some light on the buds as soon as possible, then you know that those orchards are done. Remove the required branches, “knopkieries” and conduct “chimney” cuts as far as possible. The risk of regrowth is less under the current climatic conditions. Manage postharvest fertilizer application to prevent regrowth.

- Considering that labour may be short for flower (stone fruit) and fruitlet thinning, remember that pruning is the cheapest and an effective form of thinning. So it may make sense to prune early and get it done so to lessen the work at thinning time.
- In stone fruit, the approach of making use of strategic bigger cuts and cutting down on detail pruning (apart from decreasing the thinning requirement), may increase light distribution and fruit quality.
- Consider finishing autumn pruning and saw work while labour is still available. Start the pruning process earlier while you are not allowed to send the seasonal workers back, or don't send all of them back home.
- In pears and vigorous apples, pruning at green tip or even just after flowering can improve fruit set and reduce vigour. Decide how these orchards would be managed if labour is restricted at this time.
- If there is a high risk of severe labour shortage, consider leaving orchards that are not cost effective and are further down on the removal list unpruned or hedge prune. Consider harvesting these orchards for juice grade.
- Consider defoliation sprays to advance leaf drop to get an early start on detail pruning.
- Growth in 2020/21 can be contained with Prohexadione-Ca (in the case of apples) or regulated deficit irrigation (RDI).

Summary:

- **Start and finish autumn pruning for light management as soon as possible.**
- **Normal pruning in winter and spring - as allowed by labour availability.**
- **Altogether, a greater focus on bigger cuts and less on detail pruning.**
- **Have plans ready for how to deal with orchards that will require spring pruning in the case that labour is restricted.**

Additional notes:

- *In the case of pome fruit, orchards on dwarfing rootstocks have a lower pruning requirement since trees are smaller and pruning decisions less complex. This increases productivity (fewer labourer-hours required per ha). So this is another plus point for converting to dwarfing rootstocks in future.*
- *Consider the option of sourcing additional labour from among the jobless. Note that this may prove very difficult as there would be little control over the presence of and spread of infection by these contracted jobless – so they could be a Trojan horse… Also, pruning is a specialist skill that cannot be taught overnight.*
- *Two or three farms can work together in sharing the available workforce on their farms.*
- *Adjust payment structures to motivate workers to work longer hours and more consistently. The short term cost increase may be justified by a normal harvest, provided that normal management is possible.*
- *Lockdown your farm to decrease the risk of infection of the labour force.*

2. How will I thin flowers and fruitlets if I lose a considerable portion of labour-hours due to Covid-19 or if my tractor drivers are sick/confined?

As with pruning, there is no one-size-fits-all strategy for thinning pome and stone fruit. Thinning strategies will need to be considered and revised on an orchard level. Due to the interaction between pruning, rest breaking and thinning, these strategies are best considered together.

- Thinning is more time sensitive than pruning and considering that infections are forecasted to peak in September/October, this is probably where our biggest risk lies in terms of labour availability. Hence, we need to do our utmost to reduce the hand thinning requirement of flowers and fruit.
- With pome fruit, we will only have an indication of thinning requirements at bloom.
- On the plus side, pome fruit growers can choose from a range of very effective chemical thinning products. There may be a need to check on the availability of products long in advance and maybe consider purchasing if feasible. There are growers who do not use any or limited chemical thinning. These growers are strongly advised to take the leap this season. See issue 4 of the Fresh Quarterly for articles on chemical thinning –the Fresh Quarterly can be accessed via the following link - https://www.hortgro-science.co.za/fresh-quarterly/
- If there is a real risk of labour not being available for fruitlet thinning of pome fruit, one may want to chemically thin effectively throughout the thinning window to achieve a crop load as close as possible to the desired crop load. This will reduce the hand thinning requirement. While we generally do have to thin pome fruit, not all orchards may require hand thinning – this may need to be most orchards in the coming season...
- Good rest breaking to obtain a uniform and condensed flower would be preferable since it increases the effectiveness of chemical thinning in pome fruit. Rest breaking on stone fruit may also condense flowering and could reduce the number of picks required, but the decision to apply rest breaking chemical on stone fruit depends on the season and cultivar and should therefore be tested with a technical advisor.
- The point in the previous section of pruning as a thinning strategy refers to pome fruit but in particular to stone fruit where chemical thinning options are not yet available.
- If one has the labour to thin flowers, it is probably best to do it as thoroughly as possible to reduce the need for subsequent clean-up thinning of fruit. Fruit thinning only though for plum cultivars that require cross-pollination.
- Some larger stone fruit growers have mechanical thinning machines and these are going to come in very handy indeed for those orchards with a training system and tree shape conducive to mechanical thinning. Maybe there is opportunity to acquire such a machine or access to one. Smaller growers should investigate a rental

agreement with suppliers. Note: mechanical thinning is not recommend for plum cultivars that require cross pollination.

Summary:

- **Reduce the thinning requirement through effective pruning.**
- **In pome fruit, thin as effectively and thoroughly as possible by chemical means to reduce the hand thinning requirement.**
- **In stone fruit, apart from reducing thinning through pruning, thin as effectively and thoroughly as possible. Once-off thinning if possible.**

Additional notes:

- *It would be prudent to train back-up tractor drivers so that spray applications of rest breaking agents and thinning agents can be done at the right time if the regular drivers are unavailable.*
- *Explore infield evaluation or remote sensing techniques to identify high bloom density sites and focus efforts into areas with high thinning demands – this mostly applies to pome fruit. Some services are available but not yet fully commercial.*
- *In the unlikely and extreme scenario that no labour will be available for hand thinning, consider not placing bee hives in orchards to decrease fruit set.*
- *Also as an extreme intervention, do not thin orchards that are not cost effective and are on the removal list. Harvest the fruit for juice.*

3. How and when will I plant new orchards if labour is not available due to Covid-19?

- Plant pears and stone fruit as soon as possible.
- Also try to plant apples as soon as possible or keep trees in cold storage until labour is available. At the extreme, trees can be kept in cold storage until December, but the risk of damage increases and transplant shock will be considerable. It is preferred that all trees are planted by October.
- Try to complete actions like soil preparation and install training systems and irrigation systems earlier. Many construction companies are on lockdown and more machines may be available to now assist with soil preparation.
- Cancel tree orders in advance.

Summary:

- **Timely execution of all preparations required.**
- **Plant as soon as possible or cold store trees.**

4. How will I harvest my early cultivars if I lose a considerable portion of labour-hours due to Covid-19?

- Stone fruit can be harvested more regularly – smaller quantity per day every day with a smaller work force.
- In contrast, in pome fruit where a large seasonal workforce is required for harvest, the compromise of having fewer, larger picks should be considered.
- Adjust payment structures to motivate workers to work longer hours.
- Neighbouring farms can plan jointly and assist each other at harvest.
- Use AVG or 1-MCP where registered to assist harvest scheduling and timing according to labour availability.
- At worst, growers may need to source healthy individuals from the seasonal or jobless pool to assist.

Summary:

- **Plan harvest contingencies per cultivar and orchard.**
- **Work together with neighbours.**

Additional notes:

- *It would be prudent to train back-up tractor and maybe also forklift drivers so that transport of fruit from orchards and unloading/stacking/loading of bins can proceed in the absence of the regular drivers.*

5. How will work on my farm continue if I (and/or middle management) am Covid-19 positive?

- This should be included in the farm's COVID-19 risk assessment.
- Lower the risk of contracting Covid-19. Be cautious and do not attend meetings etc. that can be joined remotely using one of the many online platforms. Same goes for technical inputs; accept remote consults where possible and practice social distancing during visits.
- In the most likely event that farm management present with mild symptoms, communication of tasks can still take place via various media.
- Contingency plans for orchard practices should be drafted for the less likely event that the normal leadership is not able to communicate tasks on a daily basis. Ensure tasks such as thinning, irrigation, nutrition, summer pruning etc. all have set out plans written down per cultivar or block. Do this by mid-winter so that these can be executed in absence of upper management. These plans should be communicated to the entire management team including team leaders.
- In the case of smaller farms, a second-tier leadership can be identified or the contingency plan may involve neighbouring farmers assisting with management duties if the owner is incapacitated.

Summary:

- **All actions should be planned in advance and communicated to entire management.**
- **Work together with neighbours.**

6. Is there a risk that I may not be able to procure necessary chemicals (rest breaking agents, pest- and fungicides, fertilizer, etc.) and how do I address this risk?

- At the moment, chemical companies indicate that stocks are sufficient for the 2020/21 season - there is absolutely no reason to panic buy like we've seen with toilet paper…. Issues with importing and local logistics may result in short term shortages, but good communication with providers should address any issues that might be experienced.
- Discuss the predicted availability of your plant protection products, plant growth regulators and fertiliser with your supplier well in advance and plan purchases accordingly. They are the experts and will know first and best what to expect.
- Products that are "made to order," must be ordered in time. An example might be netting or net-related products.
- Be open and honest about your requirements and find a solution that works for both parties.
- We all know that the Rand weakened significantly in recent weeks. No one knows whether it will continue the slide or strengthen again. Uncertainty is the only certainty regarding the price levels of imported products. Discuss the possibility of purchasing current season stock and negotiate payment terms that work for both parties. Note that while price is important, supply is critical.
- Do not skimp on post-harvest fertiliser and foliar nutrition in anticipation of shortages.
- Consider obtaining a fertilizer spreader or using fertigation as it has a lower labour component.

Summary:

- **We should be fine in terms of chemical availability but communicate regularly with suppliers.**

Additional notes:

- *It would be prudent to train back-up tractor drivers so that application of rest breaking and thinning agents as well as crop protection chemicals and plant growth regulators can continue if regular tractor drivers are not available.*