TIMELY *hints*

SEPTEMBER 2024
STONE FRUIT PRODUCTION

There are few things as exciting as seeing fruit orchards in full bloom. We experience equal parts excitement and concern as we do not know what the season may bring. But let us not fret. It is much better to focus on that which can be managed.

We have added an additional section on newly planted stone fruit trees. This is one of the most important production inputs. If one can get newly planted stone fruit trees to grow well in the first year and reach the desired height in Year 1, then it is so much easier to achieve high yields from Year 3 onwards. So care of young trees is important.

SOIL

- Allow soils to dry to no less than 45% of plant available water so that soils can warm up without stressing the plant. You would like a soil temperature between 13 and 27°C.
- Do not mulch too early as this may buffer cold winter conditions which limits root growth and mineral element uptake.
- Treat nematodes during the spring root flush according to analysis from an accredited laboratory. Most nematode treatments will react with organic matter, another reason why one should not mulch too early if treatment is required.

IRRIGATION

- At this point establish how you will monitor your soil moisture for the season. How will you integrate the probe graph information, field observations and your "farmer's intuition"?
- Record all data and observations as well as your 'gut' responses to the data and observations in a table. Over time you will see that the 'gut feel' will

- decrease as the controlled irrigation takes over. This will not only allow you to irrigate more effectively, but will allow you to hand over the day-to-day running of irrigation and only tend to the weekly or twice weekly scheduling of the irrigation.

A quick overview of two commonly used soil moisture monitoring tools:

1. **Field Observation / “Voeltoets” / Spade**

   This method is the most common and least likely to ever disappear. This is the most direct method for you to gauge soil moisture and is often used strategically to calibrate capacitance probes or to compare irrigation valves. This method is time consuming yet has the advantage of seeing the soil. Where other methods have a continuous logging benefit, the field observation has the benefit of evaluating over space.

   A proposed Field Observation Index: The 1 – 5 hand rating system is commonly used as a qualitative measure of soil moisture.

   1 = Dusty dry, cannot roll a sausage.
   2 = Crumbly dry, rolls a loose sausage.
   3 = Ideal, rolls a sausage that crumbs when lightly pressed.
   4 = Doughy wet, rolls a sausage that does not crumble when pressed.
   5 = Dripping wet

   Note that the description vary slightly for different textured soils.

   A “1 or 5” is never permitted as either water or oxygen are limiting, respectively. A controlled “2” is used to:

   - Improve set (prior to full bloom to allow soil to warm up)
   - Reduce vigour
   - Improve flower bud initiation (40-60 days after full bloom) but be careful to not negatively affect fruit growth.

A controlled “4” can be used to:

- Increase vigour
- Wash in fertilizer
- Top up prior to hot days
- Leach soils (4-5 for short periods)

Keep to a “3” during critical phases such as full bloom and rapid fruit growth.

2. Capacitance Probes

Capacitance probes measure soil moisture in 10cm increments up to 80cm deep. This is the best method to monitor soil moisture over time and with depth. Giving great data to establish when to irrigate and for how long before passing the root zone. The disadvantage of the probe is that it does not give any indication of spatial variation as the measured volume of soil is very small. If correctly placed the probe will yield representative data, especially in uniform soils.

Probes are expensive, so do your homework to get the best hardware for your money. Consider buying the probe as an upgrade to your mobile phone: i. There are a handful of good hardware manufacturers (Probe suppliers), ii. There are a handful of good service providers (Scheduling Platforms and Consultancies) and iii. Make sure you are able to stay connected when it matters (Data is correct in peak season).

We see farmers who are successful with either and both of these methods in use. Ideal is however to use both, and supplement the system with satellite imagery such as Fruitlook or similar. There are many platforms out there but the best to use for irrigation is the imagery you receive weekly.

NUTRITION

- The first fertilizers will go on in petal drop. This will consist primarily of nitrogen products as we need adequate shoot growth. Excessive nitrogen can however cause:
    - Poor set as vegetative growth trumps reproductive growth.
    - Poor internal quality of fruit due to unbalanced translocation of elements in the plant, especially calcium. The strong vegetative sink will draw more nutrients than the inferior sink, which may be fruitlets.
    - Wastage of fertilizer through leaching if combined with over irrigation or rain.
- Potassium (K) can also be applied early on for cultivars that have a higher demand for example peaches or for very early varieties. The rapid fruit growth phase (Post-pip hardening) however remains the period for highest K demand.
- Phosphate (P) can be given at this stage as it is less prone to leaching and thus available throughout the season.
- Calcium (Ca) uptake occurs predominantly during the spring root flush. A chemically balanced root zone is thus key to maximize uptake. Thus moderate Magnesium (Mg), P and K application.
- Foliar sprays of Zink (Zn), Boron (B) and Manganese (Mn) will now be required based on foliar analysis.

THINNING

To obtain fruit of market acceptable size and good quality, fruit thinning is critical and the following can be noted regarding thinning.

- To date there are really no successful chemical thinning strategies for stone fruit and none can be advised at this stage.
- The earlier one does the hand thinning the better the results. Cell Division takes place in stone fruit in the period of full bloom to +/- 40 days after full bloom, at

the commencement of pit hardening. So all hand thinning should be completed by pit hardening.

- The smaller the fruit, the more costly it is to hand thin but the better the results. Try and thin plums at pea size to small marble size and peaches at a slightly larger size.
- One can blossom thin especially early maturing peaches and nectarines but check with Technical people in your area as to the success of this practice. Some varieties are successful but others not. When one blossom thins, then one strips the tip third of the shoot of all blossom and with one's finger, rubs off the blossom on the top side of the rest of the shoot.
- To determine the number of fruit that one should thin, start by determining the desired tonnage for the orchard from the history of the orchard's performance and other technical information such as desired number of fruit per centimetre trunk circumference. For example a Laetitia Plum orchard has a history of producing 30 tons per hectare, peaking in AA Fruit Size, but if one decides this orchard has a possibility of producing 35 tons per hectare. The planting distance of the orchard is 3.5m x 1.5m (1905 trees per hectare). 35 tons divided by 1905 trees equals 18 kg's of plums per tree, at an average weight of 90g per fruit this equals 200 fruit per tree so would thin to 220 to 230 fruit per tree. Do regular counts to check that the recipe for thinning is correct. Normally thin to one per cluster and if necessary space the fruit a bit on the shoot to get the desired number - remember once a big fruit, always a big fruit. So aim at retaining the biggest fruit and remove small and marked fruit.
- For peaches to do the same sum as above. To determine the average number of fruit per bearing unit, (one year old shoots). Say one fruit per 20cm of shoot length, so if a shoot is 60cm long, it can bare three fruit and then chose the biggest three fruit on that shoot. Once a big fruit always a big fruit.

- Often with stone fruit, just after pit hardening, a second cull size thin is advantageous, removing approximately 10% of the fruit that is obvious [smalls and marked fruit].

- Remember that over cropping a tree, will not only result in small fruit size, but also lack of vegetative growth in the tree results in alternate bearing.

PEST AND DISEASE CONTROL

The list of actives, whose use is being curtailed by the EU is being promoted by the marketing institutions to ensure access to as wide a potential marketing platform as possible, enabling compliance with the differing retail markets' restriction requirements. Fenazaquin and Indoxacarb, may no longer be applied onto export fruit. Propiconazole (CMR) may only be used until full bloom and Mancozeb's MRL is to be amended which will severely impact withholding periods. The pending Mancozeb CMR amendment, will see the mrl for peaches and nectarines dropping to 0.1 ppm, apricots to 0.5 and plums to 0.9 ppm from the current 2.0 ppm. In all likely hood, this will only become effective after the stone fruit season if implemented in November. For weevils, Indoxacarb should be replaced with weevil bands on tree trunks which in any event, are more effective than chemical applications. For FCM, rather make better use of the Mating Disruption control strategies, viruses and sanitation, to reduce possible chemical residues on the fruit.

The later flowering cultivars of all stone fruits may be progressing through the phenological stages of development as depicted in the August "Timely Hints". Please refer to that document to cover the pest and disease strategies that are to be applied, given those phenological stages of development.

- **False Codling Moth – Peaches and Nectarines.** Hang 1 trap/2 Ha to monitor the false codling moth activity from early September or petal drop onwards.
- **Fruit Fly – All Stone Fruit**. Hang 1 trap/2 Ha to monitor fruit fly. These traps must be installed from petal drop onwards in all blocks to monitor the fruit fly activity.

  A thorough, 14 daily fruit fly baiting programme, must be adhered to from the beginning of September, in all **green areas** (home gardens, windbreaks and orchards past petal drop) on the farms.

- **Powdery Mildew—Peaches and Nectarines:** From 10% bloom till 90% petal drop, apply 60ml/hl Nimrod or Nobel 250 EC @ 10–14-day intervals. Do not apply after flowering for export. Local safety window is 14 days.

- **Powdery Mildew—All Stone Fruit:** Apply wettable sulphur @ 300g/hl from 90% petal drop onwards at 10–14 day intervals, till 35 days before expected harvest, if required. Wettable sulphur is not registered for powdery mildew control on apricots, but will control the mildew if applied for brown rust control, for which registration exists. Wettable sulphur does not have any safety window applicable, but be aware of visible spray residues and possible scorching. Refer to the label.

- **Pernicious Scale—Peaches, Nectarines and Plums:** This should basically be controlled in the dormant winter period, when there is very little impact on the predators as well as getting better cover onto the leafless tree, where the scale is situated.
- **Late Scale - All Stone Fruit**. Spray Movento @ 40ml/hl from 100% petal drop onwards, at first crawler movement for scale. Repeat 4 weeks later if needed. Safety window = 14 days local and export.
- **Thrips—Nectarines:** As **fruit approaches maturity**, thrips damage may cause “silvering” on the fruit. If required, apply 15ml/hl Tracer @ first sign of thrip activity. No more than four (4) sprays may be applied per season in any one block of Tracer and/or Delegate. Safety window = 7 days on nectarines.
- **Oriental Fruit Moth (OFM)—Peaches and Nectarines:** OFM primarily goes for the young shoot tips of trees, but once these are no longer abundantly available, they will move into the late maturing fruit (February onwards). Chemical control of OFM is not easily achieved under high pressure situations. One must please liaise with ARC Infruitec to obtain a copy of their “Mating Disruption Manual for Codling Moth and Oriental Fruit Moth”. The information from this publication will enable one to more accurately determine the correct timing for chemical applications, based on the biofix and day degree model. The first spray must be applied 278 degree days after the biofix of the first generation and repeated 14 days later. From **Biofix**, apply 20g/hl Delegate, 14 days apart, with a 7 day safety window.

  Mating Disruption for OFM: is a most efficient control measure. Isomate Rosso @ 500 dispensers/Ha, giving 6 months of pheromone disruption should be hung

from mid-September to give the required cover for the later maturing cultivars. Alternatively, Cidetrak OFM-L @ 450 dispensers/Ha, giving 5 months of pheromone disruption, could be hung OR Checkmate OFM @ 270 dispensers/Ha giving 80-85 days of pheromone disruption could be installed. Providing the MD is working properly, the standard OFM traps will be shut down by the pheromone load released from the disruptors.

False Codling Moth (FCM)—Peaches, Nectarines and Plums: FCM is mainly a problem of stone fruit cultivars that mature after mid-December. Mating Disruption is a most efficient control measure for FCM. With the applicable legislation on EU market access for peaches and nectarines, including the mounting pressure on plums, cultivars from high pressure areas being harvested from late January onwards, should preferably be covered with a MD product. Isomate FCM @ 600 Disruptors/Ha, giving 5–6 months of pheromone disruption, should be hung from early - mid October to give the required cover on the later cultivars. Alternatively, Checkmate FCM-F, needs to be applied once every 21-28 days (based on heat), using 110ml/Ha applied as a bait application into the tops of the trees, in 50 L water/Ha.

Broadband or Eco Bb (*Beauveria bassiana*) (also registered on apricots), is a fungal contact insecticide which must be sprayed on its own. Must add a wetter-sticker like Biodew or Villa 51 @ 6ml/hl to the spray solution. A series of 3 sprays should be applied. If this is done, will suppress red spider mite.
Marksman, despite the 7 day safety window, needs to be positioned early in the control programme as the FCM eggs need to be laid on top of the spray for best efficacy.

The table below gives the current list of products registered for FCM control.

Product Rate/hl	Safety (Days)	Number of Sprays	Peaches	Nectarines	Plums	Apricots
Altacor 10g OR Coragen 17.5ml	14	2	√	√	√	

Akito 12.5ml	14	2	✓	✓	✓	
Cypermethrin 10ml	14	2	✓	✓	✓	
Exirel 50ml	7	2	√	√	√	x
Ampligo 350ml/Ha	28	3	√	√	√ (14)	√
Delegate 20g	7	4 Including Tracer	√	√	√	√
Warlock 100ml	21	4 'Cots 2	√	√	√	√
Broadband 50ml – Min of 1L/Ha OR Eco Bb 100g	0	Minimum of 3	√	√	√	√

- **Brown Rust, Freckle, Gum spot—All Stone Fruit:** Spray 150g/hl Dithane at 75% petal drop and repeat 14 daily for 2-3 sprays, if needed (wet conditions). Safety window = 63 days on peaches, 42 days on apricots and nectarines and 35 days on plums. Be aware of possible discerning market restrictions on Mancozeb usage. Alternatively, for brown rust, spray 14 daily 300g/hl wettable sulphur alternated 14 daily with 200g/hl Captab to control gum spot and freckle. 35 day Safety window applies to Captab and a suggested 35 day window for sulphur to avoid visible spray residues as there is no safety window applicable for sulphur.

- **Fruit Weevil (Snout Beetle)—Nectarines and Apricots:** For chemical control, Exirel @ 35ml/hl may be applied, with a 7-day safety window and applying a maximum of 2 sprays per season.

NEWLY PLANTED ORCHARDS

IRRIGATION

One of the biggest mistakes made with young tree plantings is irrigation. Normally we over irrigate at the beginning of the season and in the middle of summer, under irrigate. It is important to remember that young stone fruit trees' roots are very shallow and most of the feeder roots are in the top 20cm of the soil, so it is important that the top

20cm of the soil does not dry out but just as important, does not become water logged. Constant water loggers are important in determining the moisture status of the orchard but there is nothing that replaces physical orchard inspections and one should take samples on a regular basis. Draw a soil sample at 15-20cm in depth, clutch it into one's fist, if the soil sausage formed should fall apart when one opens one's fist then the soil is too dry and will require irrigation. If free water is squeezed out of the sample then the soil is definitely too wet. Our experience is, that young trees need a little bit of water fairly frequently but be wary of over irrigating as much as under irrigating.

FOLIAR NUTRITION

One should spray the so called **A Mixture**, three weeks after bud break and two weeks later the **B Mixture**, alternating between the A & B Mixture every two weeks, applying a maximum of four sprays before the end of December. Trees must be sprayed to the point of drip and the following is a recommended spray mixture:

PRODUCTS	**RATE PER 100 LITRES WATER**	
	A	**B**
Spray Urea (LB)	500g	250g
MAP		250g
Goemar		200ml
Manganese Sulphate		100g
Zinc Oxide		30g
Copper Oxychloride	50g	
Solubor	100g	
Biodew	6ml	6ml

Magnesium should be sprayed in October and repeated again in November. To spray 800g Magnisol per 100 litres water or similar type product recommended by spray representative.

FERTILISER

We recommend the following fertiliser programme:

TIME	**CALCIUM NITRATE**	**LAN PER TREE**	**1.0.1 (36) PER TREE**	**MAP PER TREE**

	FERTILIZER PER TREE			
Bud Break				50g
Two weeks later	30g	30g		
Two weeks later			50g	
Two weeks later	30g	30g		
Two weeks later			50g	
Two weeks later	30g	30g		
Two weeks later			50g	
Two weeks later	30g	30g		
Two weeks later			50g	

You should not apply any Nitrogen Fertilizer after the end of December, the trees must start slowing down and hardening off for winter. Once the trees had gone into full dormancy, usually not before the beginning of April, one can apply a post-harvest Nitrogen application with other fertilizers to build up reserves for the following year. This application is to be determined from soil and leaf analysis results.

TREE TRAINING

The training system you have chosen for your stone fruit tree will determine the amount of tree training you will need to do. It is important that we do the minimum of pruning as pruning is dwarfing (removing leaves is removing the factory of the tree) and if one does too much shoot selection, one ends up with the remaining shoots becoming too thick and wrong ratios, off the closed vase or central leader. The following generic guidelines regarding tree training are given:

- Tie trees regularly to the support trellis, a tree that is supported will grow much better. Tie to the support wires with spaghetti poly-tubing or max tapener tape. Do not use a product that has no give as this will end up girdling the tree.
- Remove shoots, so only have one per internode.
- Clean the base 40-70cm of the trunk of the trees depending on the training system.
- Make sure that the leader one has chosen remains dominant, you may have to pinch out the growing tips of competing shoots.

- If one is going to be tying side branches horizontally, remember to tie these only when long enough (60-80cm long), if one ties them flat too early, it will stunt the growth of these side branches and they won't become long enough to fill the bearing area allocated to the trees.

MULCH

We strongly recommend that you mulch your soils with a thick organic mulch (compost or wood chips or straw or any other organic material), but not too early (refer to Soil in the Established Orchards section). Be wary of over irrigating where a thick mulch has been applied.

WEED CONTROL

Weed Control is critical, it is not recommend that you use Glyphosate for one and two year old trees, discuss with spray company representative the best products to use for weed control. One of the big advantages of a thick mulch, it also suppresses weed development.

NEMATODES

It is strongly recommend that you sample for nematodes two to three months after planting and if need be, treat for nematodes.

FRUIT REMOVAL

Young stone fruit trees can set fruit, it is very important that we remove this fruit as soon as possible, as this fruit will use up energy that could be invested in growth.

TIMELY HINTS CONTRIBUTORS

Soil, Irrigation, and Nutrition Mico Stander Soil scientist Agrimotion 021 851 1051	**Thinning and Newly planted trees** Peter Dall Technical consultant Peter Dall Consultancy 028 272 9671	**Pest and Disease control** Andrew Hacking Technical consultant Ad Lucem Agricultural Services 021 8555 674

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Growing Fruit IQ

home of the south african stone fruit producer