

TIMELY *hints*

SEPTEMBER 2017 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.

This month 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.
- An example table could look something like this:

BLOCK 1		Field Observations		Graphs	Conclusion	Schedule (mins)		
Date	Pan Evaporation (mm/week)	0-20cm	20-40cm			Mon	Wed	Sat
16/09/05		2	3	3	3	0	90	120
16/09/12		4	5	4	4	0	0	60

From this table you can see what the moisture status was like prior to irrigation, what the evaporation demand was and how you responded. If you responded poorly, you will notice this from the next week's observations, and you can correct it accordingly. MEASURE – INTEGRATE – RESPOND.

Key: The 1 – 5 rating system is a commonly used qualitative measure of soil moisture.

1 = Dusty dry / 2 = Crumbly dry / 3 = Perfect / 4 = Doughy wet / 5 = Dripping wet

A "1 or 5" is never permitted as water and oxygen are limiting, respectively.

A controlled "2 to 3" 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 "3-4" can be used to:

- Increase vigour
- Wash in fertilizer
- Top up prior to hot days.

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

NUTRITION

- The first fertilizers will go on in full bloom. 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. The rapid fruit growth phase 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 Zinc (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 centimeter 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 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.
- **Powdery Mildew – Peaches, Nectarines and Apricots.** From **90% petal drop on**, apply 60ml/hl Nimrod @ 10-14 day intervals. Safety window = 28 days for Europe and 14 days local. Do not apply after flowering for the USA. 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 does not have any safety window applicable, but be aware of visible spray residues and possible scorching. Refer to the label. Wettable sulphur will also control brown rust.

- **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 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 15ml/hl Calypso, 14 days apart to a maximum of 3 sprays per season. Safety window = 60 days both locally and for export. Alternatively, 20g/hl Steward with a 28 day safety window may be applied to a maximum of 2 sprays per season.
- 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 new legislation on EU market access, 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 21-28 daily (based on heat), using 110ml/Ha applied as a bait application into the tops of the trees, in 50 L water/Ha.
- In addition to the sprays listed in the table, there are a range of pyrethroids registered for FCM control on stone fruit. One must however, be cautious of using too many pyrethroids, as they have a very detrimental effect on predators, which can result in problems controlling red spider. Pyrethroid use is not considered good IPM strategy.

Product	Safety (Days)	Number of Sprays	Peaches	Nectarines	Plums	Apricots
Altacor 10g	14	2	✓	✓	✓	
Ampligo 350ml/Ha	28	3	✓	✓	✓ (14)	✓
Calypso 15ml	60	3	✓	✓		
Delegate 20g	7	4 Including Tracer	✓	✓	✓	✓
Steward 20g	28	2	✓	✓	✓	
Warlock 80ml	21	4	✓	✓	✓	✓

- **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.
- **Fruit Weevil (Snout Beetle) – Nectarines.** For chemical control, spray 40ml/hl Steward once weevils are caught in the monitor bands or @ 75% petal drop. Safety window = 28 days.
- **Fruit Weevil (Snout Beetle) – Apricots.** Apply 20ml/hl Lambda-cyhalothrin when damage occurs as monitored above from petal drop on. Safety period = 28 days.

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 fertilizer programme:

TIME	CALCIUM NITRATE FERTILIZER PER TREE	LAN PER TREE	1.0.1 (36) PER TREE	MAP 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.
- Singulate shoots so that we only have one shoot 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 mulches 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, this fruit will use up energy that could be invested in growth.

TIMELY HINTS CONTRIBUTORS

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