Season Update

November 2017

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Western Australia

Seasonal outlook

Rainfall in WA is likely to be drier than usual for most of WA for the November to January period. Particularly in November the chance of above median rainfall is less than 30% for most of south of the state. The chance of a warmer than normal three months in WA is 50%. In the far north there is a higher chance of warmer temperatures.

For more information on climatic averages or the seasonal outlook, visit the Bureau of Meteorology website, http://www.bom.gov.au/climate/outlooks/#/overview/summary.

Evaporation and irrigation

Average daily evaporation rates for the coming month of November are: Harvey 5.9 mm, Karnet 5.1 mm and Carnarvon 9.2 mm. A large citrus tree (14 metre square canopy area) will use an average of 58 litres of water each day during November in Harvey and 90 litres in Carnarvon.

Phenology

Most varieties have reached the end of petal fall and fruitlet shedding is currently underway. This usually takes up to two weeks. Cell division starts in fruitlets that remain. Cell division starts at the end of petal fall and goes until fruit reach approximately 30 mm in diameter in late December.

The spring leaf flush has finished and leaves are hardening off. Now is your last chance to accurately tag spring flush for leaf nutrient sampling in February/March.
Management during cell division: Over 60% of potential fruit size at harvest is determined in the current Cell Division stage. Mild climatic conditions will favour fruit set and above average minimum temperatures will enhance fruit growth. Adverse climatic conditions, water stress and nutrient deficiencies will negatively impact on fruit development and size at harvest. Water stress at this time can also cause excessive fruit drop.

Nutrition: Apply 25% of annual nitrogen at the end of the vegetative growth flush in November. Apply 30% of annual Potassium after fruit set (10mm size). Supplement potassium with foliar applications of KNO3 at 15-20 mm size to promote cell division.

Calcium is important during this period to reduce albedo breakdown. A series of calcium nitrate sprays are recommended throughout the cell division stage for the management of albedo breakdown. Magnesium, nitrogen, phosphorous and potassium compete with the uptake of calcium. Application of these nutrients should be closely related to leaf analysis and should not be over supplied.

Irrigation: Monitor irrigation requirements closely, ensuring an adequate supply of water at all times through the cell division stage. A continuous flow of water is critical for the transportation of nutrients through the plant (particularly calcium).

Crop Regulation: Chemical thinning in mid November can be used to thin a heavy crop in an “on” year. This will assist in maintaining good fruit size. For more information on Crop manipulation strategies for improving fruit size, see the Fruit Size Management Guide Part 1, http://www.dpi.nsw.gov.au/agriculture/horticulture/citrus/management/other-information/fruit-size.

Mulch and compost: Now is a good time to consider applications of compost and mulch as part of your nutrition, irrigation and pest management strategies. Compost has been shown to be highly effective in the control of Kelly’s citrus thrips and its water conservation properties have been shown to increase fruit size and yields.

Wind Blemish: A high percentage of rind blemish is directly attributed to wind events in the first six weeks after petal fall. Significant damage also occurs within 12 weeks of petal fall. As soon as the petals fall and the small immature fruit is exposed, wind blemish to the rind can occur with any movement of leaves, branches, twigs, dead wood, thorns and even other fruit.
Pests & diseases

_Citrus gall wasp:_ Look for galls in stems and prune, especially orchards north of Perth

_Snails:_ If snails are a problem bait while conditions are still moist before the summer dormancy period – do not use copper spray alone as this will not kill the snails.

_Fruit fly:_ Clean up any fruit left in the orchard.

_Scale:_ Monitor scale crawlers, applying targeted oil sprays when crawler activity is evident. Release _Aphytis melinus_ for the control of red scale during October/November.

_Ants:_ Ants are on the move now and will require monitoring and control throughout summer.

_Aphids:_ If controlling aphids only spray the growth flushes.

_Kelly’s Citrus Thrips:_ Monitor for Kelly’s Citrus Thrips weekly from petal fall to calyx closure.
Queensland

Climatic conditions

Extremely wet conditions have prevailed during October, in what has been a direct turnaround from the previous few months. In many centres it has been the highest October rainfall recorded, particularly so at Gin Gin where 529 mm was recorded.

This rainfall is certainly very unseasonal, as October would be considered one of the drier months of the year.

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Phenology

The flowering throughout the district has been very protracted with some Murcott blocks still flowering. There seems to be a very wide range of fruit sizes on the tree and at this stage it appears the crop is much lighter than anticipated across most of the mandarin varieties.

Previously it has been reported that there seems to be a very patchy crop of Imperials mandarins and this remains. Generally speaking, any Imperial block on Cleopatra rootstock is very light. It has been somewhat of a surprise as to how light the Murcott crop looks, given that they were all harvested in an appropriate time frame. As stated above some of the fruit is quite small compared to its normal size at this time of year. As this fruit grows it may be that the crop looks a little better than it is at present.

There is not widespread use of chemical thinning agents in the mandarins this year due to the way the crop looks at present.
Pests and diseases

Red scale levels are reasonably low however numbers are expected to increase during November.

To date the broad mite pressure has been average with mainly lemons and limes being affected. There does not seem to be any infestations in the susceptible mandarin varieties at this stage.

Citrus thrip numbers have been very low this season with very few blocks requiring treatment. The fruit will still be susceptible for 1 – 2 months yet.

With the recent wet weather, disease pressure has been high, particularly with Emporer brown spot. Any block that had not yet received its first fungicide has high levels of inoculum on the flush. There have been reasonable levels of infection on the fruit also, even in those blocks that had already received a fungicide. This serves as a reminder as to how quickly this disease can cause infection, given that conditions were extremely dry as at the end of September. Fungicide programs should always be maintained to minimise the chance of infection from this disease.

The amount of black spot infection from the recent rain is unknown as it is a latent infection. Growers are strongly advised to shorten the fungicide interval if wet conditions prevail.

Figure 1: High levels of Emporer brown spot infection on flush
Riverland, Murray Valley and Riverina

Climate

Mean daily maximums were about two degrees above average, and minimum temperatures were about one degree above average in October for the southern regions. Near average rain fell in Sunraysia and the Riverland for October whilst higher than average rainfall occurred in the Riverina.

Phenology

The average spring temperatures have occurred resulting in a typical long-term average date of flowering. Last year was a late flowering in in the years proceeding was an earlier flowering. Navels in their first main drop, fruit will continue to fall until mid/late-December. Fruit are predicted to approach the end of the cell division stage around mid December in the Southern growing regions. A way to approximate if fruit are in the cell division or expansion stage is to drop them in a jug of water. If the fruit sink they are in the cell division stage and if they float they are in the cell expansion stage.

Export program

*Korea/China – Fullers Rose Weevil & Redscale:* Skirting and trunk band spraying are a core practice to reduce Fullers Rose Weevil populations. A new FRW control chemical (foliar application) is available called Exirel®, contact Dupont® or your pest advisor for more details. Soil applied systemic insecticides have been observed to also reduce FRW populations. Early December is the time to commence the trunk band spraying program. A manual is available from Citrus Australia outlining the requirements and management practices for this program. Red scale is an issue for Korea and oil sprays targeting the next generation *should* be applied if any there is a risk of red scale. The next generation might be around late November/early December, this can be identified by white caps on fruit. Aphytis release also assists red scale control. Obtain the latest grower Asia Export Program IPM guide from your local citrus agency.

Management

*Flowers and fruitlets:* There was a mixed level of flowering. Blocks that produced a heavy crop last season have a light flowering and those that produced a medium or low crop have a heavy flowering. Trees with a heavy flowering currently have a high level of fruitlets however fruit drop has only just started. Already those that will probably drop off have a distinct smaller size and pale colour. An idea on crop set should be observable at the end of November. Monitor crop load in late November and if a high crop load should seriously
consider crop regulation, especially if crop loads in the past few years have been under average. Tops® is a recent fruit thinning product has been registered for use on citrus.

**Nutrition:** There is high variability of crop load, some sporadic blocks will have low crops (i.e. 15t/ha). This can be checked now by counting fruitlets using a counting frame. If a low crop load is already apparent (i.e. 2-3 fruit per frame) begin to reduce nitrogen application to avoid coarse textured fruit, especially for blocks targeting the KCT program. Nitrogen application that exceeds the demand of low crop load exacerbates rough rinds and devalues fruit. Significant calcium uptake occurs through new growing roots (root flush). The benefit of ground/fertigated applied calcium to soils with good calcium levels is unknown. Root flush has commenced. Root flush can be seen as white tips on root hairs. Nitrate and phosphorous can assist to stimulate root growth. Phosphorus is also important nutrient for cell division. Some ammonia application is thought to assist root growth (10% of total N).

**Pests, Diseases & Issues**

**Loopers:** A higher than typical incidence of loopers has been observed. Some blocks have had very high numbers that require immediate control. Loopers cause damage similar in appearance to Katydid. A pattern of a higher incidence of loopers has been observed in Australia and in South Africa where ground applied neonicotinoids such as Confidor® have been used. Samurai® is another neonicotinoid recently permitted for use and could have a similar effect, more time is required. The reason for the possible association is not clear.

**Gall wasp:** Gall wasps is hatching now (first week November peak) and are best controlled at the egg hatching stage (December) with a registered systemic insecticides. The only systemic insecticide registered for Gall wasp is Samurai ®. Eggs hatch in about 3 weeks. If the end of gall wasp emergence is late-November, systemic or trans-laminar insecticides still need to be active in the tree in mid to late December. See NSW DPI Gall wasp factsheet for more information. Calcined Kaolin clay (e.g. Surround) applied during wasp emergence can reduce egg laying by deterring wasps landing on foliage. Chemical control is not going to be an advantage if gall wasp is present at very low levels in the orchard (i.e. 10% of branches with one small gall). Applying chemicals when not required increases the risk of IPM disruption and secondary pests. Gall wasp will always be present in the orchard and chemical control is best targeted when it reaches moderate levels, but before economic damage.

**Katydid & LBAM:** The second and third week of November will be critical for Katydid and the first three weeks are critical for thrips and LBAM. Damage now can significantly affect returns. Monitoring is critical to ensure that early damage of fruit will not occur.
Sunraysia

**Looper**: Numbers are very high in selected blocks requiring immediate control.

**Red scales (Red, soft & black)**: Numbers are still low, not seeing too much movement at this stage.

**LBAM**: Apple moth grubs were found in typical numbers, across all districts, rolled up in lower petals and new growth.

**Kelly's Citrus Thrips**: Thrips numbers are not high currently but are expected to increase in the next week.

**Mealybug**: Small numbers of Mealy bug is being found under calyxes in summer lemons.

Riverina

**Red scale**: Too early to see scale on fruit

**LBAM**: Numbers are lower than usual; the winter frosts might have reduced numbers. From mid-November will be the critical time to monitor during calyx closure (10-20mm fruit size).

**Katydid**: Seeing usual numbers. Now is the critical time to monitor and watch out for later hatching.

**Kelly's Citrus Thrips**: Thrips are currently at low levels however the situation could change in the next few weeks. It is critical to look for larvae rather than adults.

Riverland

**LBAM**: There has been at typical levels on shoot and flower clusters this season. This is probably due to the mild September conditions. However, numbers have not exceeded thresholds.

**Red scale & mealybug**: Currently at low levels. The next generation of red scale is due around late November early December. Monitor regularly.

**Thrips**: Level are as low in navels, but significant levels are in lemons. Monitoring is critical until calyx closure.

**Katydid**: Some juveniles are being seen. Monitor levels closely from mid to the end of November as a few katydid can quickly do a lot of damage.

**Heliothis**: They are present but generally at low levels.

**Looper**: Some activity in isolated blocks have shown signs of lopper activity.
Events calendar

15-17 Nov  Shed visits, WA
21-22 Nov  Plant Health Australia meetings & AGM, Canberra ACT
27-30 Nov  Shed visits, QLD
29 Nov     Post-season meeting, QLD
5 Dec      Murray Valley Q-fly workshop, Trentham Cliffs NSW

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