EXTENSION BRIEFS FOR AUGUST & SEPTEMBER 2011

H. F. LE ROUX & J. J. BESTER

INTEGRATED PEST MANAGEMENT

CITRUS THRIPS (T.G. Grout)

Suppressing citrus thrips populations on the spring growth flush will assist in lowering populations experienced at petal fall. On younger trees a methamidophos stem treatment is a useful option for this. An alternative may be an organophosphate that cannot be sprayed after petal fall. If mealybug requires control, the organophosphate could be sprayed at full cover. These treatments will also reduce low populations of citrus psylla. Avoid using abamectin at this time because it will be needed for citrus thrips control in summer.

FALSE CODLING MOTH (S.D. Moore)

It may be very tempting to neglect orchard sanitation in winter, as FCM levels are usually low and Valencias being harvested at this time are generally less susceptible to FCM than some of the earlier season cultivars. However, this would be a big mistake. It has been shown that Valencias can fulfil an overbridging role for FCM from one season to the next. The most effective way in which to ensure the lowest FCM inoculum possible at the start of a season, is to diligently continue sanitising orchards until the previous season is truly over. Most importantly, growers must ensure that no fruit whatsoever remains on trees or on the orchard floor after harvesting is completed.

BOLLWORM (S.D. Moore)

Depending on the region of the country, which influences temperature and blossom phenology, bollworm may begin invading orchards as early as September or even August. Growers should therefore begin weekly blossom inspections for bollworm eggs and larvae no later than early September. Particularly if a biological product, such as DiPel or HELICOVIR (a recently registered virus product), is going to be used, sprays should be applied as soon as eggs begin to hatch. This can only be determined by vigilant and regular scouting.

CROP & FRUIT QUALITY MANAGEMENT (J.S. Verreynne)

Maturity indexing on late cultivars in late areas should commence. Maturity indexing is done to predict the rate of change in fruit maturity in order to harvest fruit at a maturity that would maintain acceptable commercial shelf life. The aim is to define changes or rate of change in acids and sugars and to build up a database over a number of years for comparison. Random sampling of fruit every week from each of ten representative trees should start 4 to 6 weeks before the expected harvest date. Titratable acidity is determined by titration with sodium hydroxide, sugar content (Brix) is determined using a refractometer, the sugar:acid ratio calculated and fruit colour should be read from a colour chart. All the parameters mentioned above should be plotted on a graph over time. Once plotted, trends will become apparent, harvest dates can be estimated and problem areas in internal and external quality parameters can be identified and manipulated.

Degreening and postharvest rind disorders. The two publications "Common Defects Associated with Degreening of Citrus" by Andy Krajewski and Tim Pittaway and "Postharvest Rind Disorders of Citrus Fruit" by Paul J.R. Cronje are a must for any grower. Both are available from CRI. Contact Bella Thulare at 013 759 8000 or bella@cri.co.za.

Pruning of early and late cultivars should be done during this period as soon as possible after harvest. Prune more heavily after a light crop if a heavy crop is expected and when the orchard has a history of alternate bearing. Pruning in the winter and not later than September improves the light distribution inside the tree and improves the quality of the bearing wood inside the tree. Pruning can also be used as a thinning technique. Light levels of 30% of full sunlight are necessary for optimal photosynthesis and light also improves colour development. In very dense trees and especially older trees light levels drop to below 30% inside the tree and adversely affect fruit size.

One or two **pre-bloom foliar urea** applications (low biuret urea at 1%) should be applied for uniform flowering and fruit set, especially when leaf N levels are low and a light blossom is expected.

Fruit set treatments according to cultivar requirements need to be applied. Specific treatments include the application of gibberellic acid (GA) and girdling, especially for parthenocarpic cultivars that have a poor set. Girdling during full bloom improves set. A general guideline cannot be given as fruit set treatments differ by cultivar and, in many cases, by orchard depending on the previous crop load. Moisture stress should be avoided during full bloom, fruit set and early fruit growth.

GEÏNTEGREERDE BEMESTING (J.G.K. Coetzee)

GOUE REËLS VIR BEMESTING VAN SITRUS

1. Neem blaar- en grondmonsters gedurende Februarie tot Mei.
2. Begin met die stikstoftoedienings in Augustus in die Wes-Kaap en Hartswater of in Julie vir die res van suidelike Afrika.
3. Spuit die ureum in Julie om vrugset te bevorder of na Oktober vir stikstof-aanvulling.
4. Dien die mikro-elemente deur blaarbespuitings in Julie/Augustus toe indien tekorte teenwoordig is of gedurende Oktober tot Desember vir instandhouding.
5. Kaliumsulfaat kan in Augustus tydens seldeling gespuit word

om die potensiaal vir groter vrugte te verhoog.
6. Die kritiese vereistes vir suksesvolle blaarvoeding is die lengte wat die blare nat bly (kontaktyd), en konsentrasie van die voedingselement in die spuit-oplossing.
7. Dien kaliumsulfaat in plaas van kaliumchloried op die grond toe, net indien die konsentrasie chloried in die blare hoër as 0,30% is. Kombinasies van kaliumchloried en –sulfaat kan gebruik word om die koste te verlaag en die chloried-vlak onder 0,30% te handhaaf.

Waar mikro-spuite of enige ander stelsel behalwe druppers gebruik word
8. Verdeel die stikstoftoediening in een tot 4 porsies, afhangende van die klei-inhoud van die grond.
9. Dien kalk toe waar die pH (water) van die grond laer as 6.0 is.
10. Bandplaas die supers deur dit in ń smal band van so 5 cm breed, onder die druplyn. Moet dit nie met iets anders vervang (behalwe met dubbel supers), deur die water toedien, uitstrooi of met die grond meng nie.
11. Indien kalsium benodig word, moet dit in Augustus toegedien word.

Waar druppers gebruik word.
12. Verdeel die massas/volumes wat per maand aanbeveel is, verder in ten minste weeklikse toedienings. Dien dit gedurende die hele lengte van die besproeiingsiklus toe. Maak seker dat die water nie dieper as die worteldiepte indring nie.
13. Waar die pH (water) in die grond/wortelsone laer as 6.0 is, moet meer as 80% van die stikstof in die vorm van nitraat wees.
14. Indien kalsium benodig word moet dit gedurende Augustus tot Oktober toegedien word.

GOLDEN RULES WHEN FERTILISING CITRUS

1. Take leaf and soil samples during February to May.
2. Start with the nitrogen fertilisation in August in the Western Cape and Hartswater or in July for the rest of southern Africa.
3. Spray the urea in July to improve fruit set and after October to supplement nitrogen.
4. Where micro nutrient deficiencies are experienced, apply foliar sprays in July/August and repeat in October/November. When only maintenance is required, spray in October/November.
5. Apply potassium sulphate as a foliar spray in August during cell division to improve the potential of larger fruit.
6. The critical requirements for successful foliar sprays are contact time and concentration od the nutrient element in the spray solution.
7. Use potassium sulphate instead of chloride as an application to the soil only when the concentration of chloride in the leaves exceeds 0.30%. Combinations of potassium sulphate and –chloride can be used to reduce cost and maintain the chloride level below 0,30%.

When micro-jets or any other system except drippers are used
8. Split the nitrogen application in one to 4 portions, depending on the clay content of the soil.
9. Apply lime when the pH (water) of the soil is less than 6,0.
10. Apply the supers in a narrow strip of about 5 cm wide, below the drip line. Do not substitute (except with double supers), fertigate, spread or mix it with the soil.
11. Where calcium is required, apply it in August.

When drip irrigation is used
12. Split the volumes/masses recommended per month into at least weekly applications. Even better, into daily applications. Ensure that the water and fertilisers do not penetrate deeper than the upper root zone (30-40 cm).
13. Where the pH (water) in the soil/root zone is less than 6,0, 80% of the nitrogen should be in the form of nitrate.
14. When calcium is required, apply it during August to October.

GRONDGEDRAAGDE SIEKTES (M.C. Pretorius)

Aalwurms
Grond- en wortelmonsters kan nou in die lente getrek word en na die Diagnostiese Sentrum in Nelspruit gestuur word vir ontleding sodat die aalwurmpopulasie in die wortels bepaal kan word. Die resultaat sal dien as ń bestuurshulpmiddel om ń koste doeltreffende aalwurmbeheerstrategie daar te stel.

Die gebruik van chemiese aalwurmdoders, Temik uitgesluit, vir die beheer van die sitrusaalwurm word nie aanbeveel alvorens ten minste 30 mm reën geval het nie (Oktober). Elke aalwurmdodertoediening behoort met ń behoorlike besproeiing opgevolg te word om daardeur te verseker dat die middels deeglik in die grondprofiel in gewas word. ***Toedienings behoort slegs volgens etiketaanbevelings toegedien te word. Afwykings van die geregistreerde dosisse, om kostes te bespaar, lei tot oneffektiwiteit. Dit is belangrik om 'n program te volg, een aalwurmdodertoediening per seisoen is 'n mors van geld!***

Phytophthora

Phytophthora wortelvrot – die gebruik van fosfonaat produkte is 'n uiters effektiewe en bekostigbare beheermaatreël wat suksesvol deur produsente gebruik word. Dit is van uiterste belang dat die etiket deeglik bestudeer word asook die waarskuwings voordat die produk gebruik word om effektiwiteit te verseker en fitotoksisiteit te voorkom. Indien kraagvrotletsels voorkom kan 'n stamverf/blaarbespuiting aangewend word, drie aanwendings per seisoen met 6-8 weke intervalle. Vir wortelvrotbeheer word drie blaarbespuitings, met 6-8 weke intervalle aanbeveel.

FRUIT AND FOLIAR DISEASES (G.C. Schutte)

***Alternaria* core rot**

Alternaria core rot, also known as navel-end rot and black rot, occurs in all areas of southern Africa. The disease is most prevalent on those citrus cultivars such as navels and Clementines characterised by the presence of a secondary fruit called the fruit-navel, which varies in size and develops at the stylar end of the primary or main fruit. These fruitlets are extremely sensitive to environmental stress conditions during early stages of development and are therefore also prone to diseases such as navel-end rot and physiological disorders.

Alternaria core rot is linked to large fruit-navels or to the abnormal growth of the secondary fruit into primary-fruit locules which lead to the formation of points of entry through which fungi can penetrate to form infections which remain quiescent until favourable conditions stimulate further fungal growth.

The style and stigma of navel blossoms are milky white at first and then turn light brown in colour and abscise cleanly. This happens one week after petals have dropped and young fruit are ± 8 mm in size. The two sets of stylar tissue present in the primary and secondary fruit locules can be injured during the blossom period if harsh weather conditions prevail for one or more days (hot days >25°C), and low relative humidity (<20%) followed by heavy dew during the evenings. This causes the outer or primary style to turn brown and dry out, while the inner or secondary style remains unaffected inside the outer style and continues to develop and swell in size to result in longitudinal cracks in the outer tissue. The longitudinal cracks enlarge as the orange increases in size. The inner ovary projects even more as the orange approaches maturity. This results in a large, irregular-shaped navel-end and creates an ideal site for Alternaria infections.

Score (50 ml/100 *l* water) and Folicur (80 ml/100 *l* water) are registered for control of the disease.

POST HARVEST PATHOLOGY – WASTE PREVENTION (K.H. Lesar)

Intermittent and heavy rainfall has already been experienced in the summer rainfall production areas and the winter rainfall production areas are already experiencing their first heavy rains for the 2011 season, resulting in the following problems:

1. High pathogen inoculum levels in orchards on all surfaces.
2. Heavy hail damage in certain Northern areas resulting in premature drop of green navels and high infections by the latent pathogen Anthracnose. Diplodia stem-end rot is also a problem in some areas.
3. Wound pathogen infections by green mould, sour rot and Trichoderma in all the production areas.
4. Infections by soil pathogens – Phytophthora brown rot.

Precautions and Recommendations

- Minimise injuries to fruit during picking, handling and transport to the packhouse.
- Monitor the incidence of insect activity in the orchards and institute appropriate measures to reduce their populations.
- Insect damage to fruit contributes to injuries and possible infection by the wound pathogens.
- .Make use of the indigo carmine mixture to monitor the incidence of injuries to the fruit during picking.
- Handle the fruit as a perishable product, because it is a perishable product.
- Ongoing removal of dead wood from trees.
- Ongoing orchard sanitation is a non negotiable requirement.
- Minimise the delay between picking and treatment. The longer the delay the higher the risk for high decay.
- Packhouses should "drench" fruit within 24 hours before degreening or packhouse treatments.
- Packed fruit must be cooled down as soon as possible.

PHYTOPHTHORA BROWN ROT Adequately skirt trees to minimise the risk of **Phytophthora brown rot** infection after rainfall. Do not pick skirt (low hanging) fruit for packing. Remove this fruit before harvesting and discard.

Spray contact fungicides only (**copper** at 200 g per 100*l*) as a preventive measure against **Phytophthora brown rot** after rainfall. Contact fungicides must be resprayed after any follow-up rainfall. Foliar applications of Phosphonates for the control of Root and Collar rot will be effective against brown rot.

DEGREENING Pick selectively for colour break fruit to ensure that the same colour fruit, and not different grades of coloured fruit, in the same bins, are submitted for degreening.

Ensure that fruit for degreening is drenched at optimum coverage of the drench mixture and at a minimum of 1 minute exposure rate to the mixture. Ensure that all the recommended parameters for degreening are adhered to.

PACKHOUSE Ensure that packhouse chemicals are applied at recommended concentrations and packhouse procedures and critical control points are **managed** diligently.

Pack very strictly with regard to injuries, creasing, overmature fruit, etc.

IMPORTANT POINTS TO REMEMBER

All damaged fruit are *high risk* for export.

Latent and wound pathogen infections on the tree lead to further development of latent pathogen infections, and the spread of wound pathogen infections in exported cartons.

Overripe fruit, past optimum internal quality, that are destined for cold disinfestation markets are less resistant to cold damage during storage/shipping and more susceptible to decay.

Minimise the delay between picking and packing.

Fruit arriving in the market with quality problems often sells at reduced prices and ultimately becomes a major loss for the grower. **PRODUCERS MUST BE AWARE OF THE RISK INVOLVED IN EXPORTING THIS FRUIT AND DECIDE WHETHER TO EXPORT THE FRUIT, OR NOT.**