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. Try to avoid using abamectin or tartar emetic which are good options 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.

6de SITRUSNAVORSINGSIMPOSIUM:
15-18 Augustus 2010
Hiermee word kennis gegee van die 6de Sitrusnavorsingsimposium wat vanaf 15-18 Augustus 2010 aangebied sal word by die Champagne Sports Resort in die Drakensberge naby Winterton.
Vir meer inligting: www.citrusresearchsymposium.co.za of kontak Mev. Jean De Gasperi by jeandeg@cri.co.za of 013 7598000.

6TH CITRUS RESEARCH SYMPOSIUM:
15-18 August 2010
This is a final reminder of the 6th Citrus Research Symposium which will take place from 15-18 August 2010 at the Champagne Sports Resort in the Drakensberg mountains near Winterton.
For more information: www.citrusresearchsymposium.co.za or contact Ms. Jean de Gasperi at jeandeg@cri.co.za or 013 759 8000.
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 AND 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 post harvest 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.

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**

2. Begin met die stikstof-toediening 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), konsentrasie en humiditeit.
7. Dien kaliumsulfaat in plaas van kaliumchloried op die grond toe, net indien die konsentrasie chloried in die blare hoër as 0,30% is.

**Waar mikro-spuite of enige ander stelsel behalwe druppers gebruik word**

8. Verdeel die stikstofoordiening in een tot 4 porsies, afhankende 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 n 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 toege-dien word.

**Waar drippers gebruik word.**

12. Verdeel die masses/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.


**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, apply 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, concentration and humidity.

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%.

**When micro-jets or any other system except dripppers 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.

**GRONDGEDRAAEGDE 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 ont-leiding sodat die aalwurmpopulasie in die wortels bepaal kan word. Die resultaat sal dien as ‘n bestuurshulpmiddel om ‘n koste doeltreffende aalwurmbedereestrategie daar te stel.

Die gebruik van chemiese aalwurmdoders, Temik uitges-gyser in die vorm van sprays vir aalwurmbedereestrekke, word. Die resultaat sal dien as ‘n bestuurshulpmiddel om ‘n koste doeltreffende aalwurmbeheerstrategie daar te stel.

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ing opgevolg te word om daardeur te vereker dat die middels
deeglik in die grondprofile in gewas word. Toedienings behoor.
slegs slegs etiketaanbevelings toegedien te word. Afwykingen
van die geregisteerde dosisse, om kosites te bespaar, lei tot onef-
fectiwiteit. Dit is belangrik om ‘n program te volg, een aalwurm-
dodertoediening per seisoen is ‘n mors van geld!

Phytophthora

Phytophthora wortelvrot – die gebruik van fosfonaatprodukte
is ‘n uiteers effektiw en bekostigbare beheermaatreël wat sukses-
vol deur produente gebruik word. Dit is van uiterste belang
dat die etiket deeglik bestudeer word asook die waarskuwings
voordat die produkt gebruik word om effektiwiteit te verseker en
fitotoxiskiteit te voorkom. Indien kraagvrotietself voorkom kan
‘n stamverf/blaarspuiting aangewend word, drie aanwend-
ings per seisoen met 6-8 weke intervallle. Vir wortelvrotbeheer
word drie blaarspuitinge, 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, oc-
curs in all areas of southern Africa. The disease is most prevalent
on those citrus cultivars such as navels and Clementines charac-
terised 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 environ-
mental 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 ab-
normal 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 longitudi-
nal 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
nabel-end and creates an ideal site for Al-
ternaria infections.

Score (50 ml/100 l water) and Folicur
(80 ml/100 l water) are registered for con-
trol of the disease.

POST HARVEST PATHOLOGY
– WASTE PREVENTION

(K.H. LESAR)

Post-harvest decay warning
Intermittent rainfall and hail in the sum-
mer rainfall production areas and rain in
the winter rainfall production areas dur-
ing the season has resulted in the follow-
ing problems:
• high pathogen inoculum levels in or-
chards on all surfaces resulting in

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ing the season has resulted in the follow-

• infections by latent pathogens – Anthracnose, Diplodia Stem end rot and Phomopsis stem end rot;
• infections by wound pathogens – green and blue mould and sour rot;
• infections by soil pathogens – Phytophthora brown rot.

PRECAUTIONS
• 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.
• 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. Brilliant (ammonium phosphonate) is registered against brown rot. (See label).

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, over mature 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.
Over-ripe 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.