EXTENSION BRIEFS

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INTEGRATED PEST MANAGEMENT
False codling moth (S.D. MOORE)

All fruit remaining on orange, mandarin and grapefruit trees (i.e. all FCM susceptible cultivars) after harvest must be removed and destroyed. This is because FCM activity does not cease during winter and any remaining fruit can therefore serve to facilitate this activity. In addition, this winter fruit creates a reservoir of inoculum of FCM for the following spring. Conversely, removal of all fruit after harvest can dramatically reduce FCM levels in the following season. In addition, fruit fly numbers can also build up on unharvested fruit.

Red scale (T.G. GROUT)

Those growers who have experienced red scale problems during the past season should consider applying narrow distillation range horticultural mineral oils. Although the oil price has increased considerably oil is probably the most IPM-compatible treatment option for red scale. The generally accepted period to apply this treatment is from budswell to budburst (mid-July to mid-August). The concentration to be used is dependent on the grade of the oil to be applied (generally 1.0 – 1.25% medium grade oil). When spraying oil, care must be taken to apply the oil as a full cover, film wet spray. This is because oil suffocates the insect, a job it cannot do if the scale is not covered with oil. Trees to be sprayed must also not be under any stress.

Ant control (T.G. GROUT)

Ants are usually indirect pests on citrus and interfere with the behaviour of natural enemies, sometimes protecting and even transporting pest species. The winter months are a good time to control ants before honey-dew-producing pests such as aphids increase on the spring growth flush. If trunk barriers are being used as a control method they should be replaced or rejuvenated at this time and trees should be skirt-pruned to prevent branches from touching the ground later in the season when bearing fruit.

CROP AND FRUIT QUALITY MANAGEMENT (J.S. VERREYNNE)

Maturity indexing

Maturity indexing on mid-season to late cultivars 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 "Post-harvest 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: Pruning for the earlier and mid-season cultivars should be done during this period as soon as possible after harvest. Prune heavier 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% in the inside of the tree and adversely affect fruit size.

Flower induction: Citrus trees require a rest period of about 6 weeks to ensure that adequate flower induction takes place. The two mechanisms involved in floral induction in citrus involve (i) low temperature, or (ii) controlled-drought stress, both to ensure no root activity. In the absence of low-temperature rest, citrus trees should be exposed to controlled-drought stress for a 4 to 6 week period during June and July if possible.

GEÏNTEGREERDE BEMESTING (J.G.K. COETZEE)

Blaarontleding / Leaf analysis The very last opportunity to get leaf analysis done is in June and July. Leaf analysis is still the best diagnostic method to measure the nutritional status of the trees. Although all the productions factors are important for optimal production, the single most important one is still irrigation.

Blaarontleding is egter nie 'n towerstaf nie. Dit is 'n betroubare manier om die voedingstatus te bepaal en help om die regte bemestingsprogram te formuleer. Blaarontleding vorm 'n integrale deel van die totale proses van sitrusproduksie.

Bemesting/Fertilisation The fertilisation program for the 2009 crop starts in July or August and is usually completed by November (where micro-jets are used) or January (where drippers are used). Due to the properties of the specific chemical ion, the properties of the soil and the physiological requirements of the trees, certain basic rules should be adhered to when executing the fertilisation program on citrus.

Die hele bemestingsprogram moet by die bome en boord se behoeftes aanpas en nie andersom nie.
Die volgende is basiese vereistes vir die bemesting van sitrus:

Element	Mikrospuite/Micro-jets	Druppers/Drippers
N	Dien die meeste N gedurende Julie tot September toe. Die aantal toedienings word bepaal deur die totale massa en die klei-inhoud van die grond. Die beginsel vir sproeibemesting en uitstrooi met die hand of meganies, bly dieselfde.	Die beginsel is soos dié vir mikrospuite maar die massa word verdeel in `n groot aantal toedienings wat tot Desember strek. Die meeste N moet egter nog steeds in Julie tot September toegedien word, en die toedienings moet nie veel langer as Januarie aanhou nie.
P	Use only single or double supers and apply it in a narrow strip of about 5cm wide, below the drip line of the trees	Use a water soluble source like mono ammonium phosphate (MAP) and apply it over an extended period (4 to 5 months) at lowish concentrations.
K	Wanneer sproeibemesting gebruik word, kan dit teen 100g K per boom per keer oor die hele lengte van die siklus toegedien word. Wanneer meganies of met die hand uitgestrooi word, word een (leem- tot klei-gronde) tot drie (sand-gronde) toedienings gedurende die lente/vroeë somer gemaak	Dien die aanbevole massa kaliumnitraat, -sulfaat of –chloried oor `n periode van 3 tot 6 maande gedurende Julie tot Desember toe.
Ca	The most critical time for a deficiency would be August to October. Therefore when gypsum is required, apply it during August or September	Calcium nitrate is the only suitable source and must be applied during August or even July to September/October. The application can however be extended to December.
Magnesium	Dolomitiese kalk, magnesiumhidroksied of –oksied kan in die lente, vroeë somer of herfs toegedien word.	Magnesiumnitraat of –sulfaat word ook oor `n periode van 3 tot 6 maande toegedien, Die nitraat gewoonlik vroeg en die sulfaat na Oktober.
Sulphur	Sulphur deficiency has the most devastating effect on fruit set. Where a deficiency is present, apply the sulphate during July to August. Maintenance applications are done during spring or early summer.	Magnesium- potassium or ammonium sulphate are the sources and the application is timed to fit the requirement of these four elements.

Blaarbespuitings word gebruik om tekorte reg te stel of om die bome se fisiologie te manipuleer. Vir manipulasie is dit hoofsaaklik lae biuret ureum of kaliumnitraat wat gebruik word. Beide bespuitings moet 6 tot 8 weke voor die 50% blom-stadium toegedien word. Dit is meestal Julie of vroeg Augustus.

Element	Mikrospuite/Micro-jets	Timing
N	Low biuret urea to improve the quality of the blossom. Low biuret urea to supplement the nitrogen supply	July or early August October to February
P	Om die suur-inhoud van die vrugte te verminder. Om die TOV van die vrugte te verhoog.	6 weke na blom-blaar-val. 6, 4 en 2 weke voor oes.
K	Potassium nitrate to improve the quality of the blossom. Potassium sulphate to supplement the K supply	July or early August August/September for the best results and up to February for maintenance.
	Potassium nitrate to supplement the K supply	After fruit drop to December
Mg, Zn, Mn, B en Mo	Waar `n tekort ondervind word. Instandhouding	Julie en weer in Oktober. Oktober tot Desember
Cu	Usually only recommended to correct a deficiency	May to July, before flowering.

POST-HARVEST PATHOLOGY – WASTE PREVENTION CHECKLIST (K.H. LESAR)

The rationale regarding the use of the imazalil 500 EC formulation versus the imazalil 800 EC formulation applied in citrus wax.

The imazalil 800 EC was formulated many years ago for post-harvest application on citrus. South Africa is the only country still using this formulation.

However its use has been discontinued and the product has been replaced by the imazalil 500 EC formulation.

The reasons for the use of the imazalil 500 EC instead of the imazalil 800 EC in citrus waxes are:

The imazalil 800 EC is very viscous and bottles are difficult to empty completely even after multiple rinsing.

Imazazil 800 EC has limited wax compatibility and is not readily miscible in citrus waxes. It was recommended that the imazalil 800 EC be diluted in a little tepid water prior to mixing in the wax to avoid the formation of large droplets and potential burn to the fruit. After mixing in the wax the product forms a "cheesy" deposit due to a reaction between the acidic fraction of the imazalil and the alkalinity of the wax.

Imazalil 800 EC is severely irritating to the eyes as it contains an acidic fraction to keep the active ingredient in emulsion.

The imazalil 500 EC is a far more user-friendly formulation and is safer for the operator handling the product. The product is readily miscible in citrus wax and soluble in water and can be diluted in water and wax without prior dilution in warm water. In waxes the product forms an immediate and stable emulsion with minimum stirring.

The imazalil 800 EC formulation was originally only registered in a few countries such as South Africa, Argentina and Morocco, but South Africa is the only country still using this formulation.

The imazalil 500 EC is being recognized as ***the standard*** in all the most important citrus exporting countries. It is in fact registered in more than twenty countries. The product is based on food grade ingredients listed in the US EPA limited list of ingredients allowed in post-harvest use.

Ethrel application in the packhouse

Those packhouses that don't have access to ethylene gas degreening can easily, cheaply and effectively apply ethrel in the packhouse. One major drawback with this application is that relatively green fruit cannot be easily graded out for blemishes.

The colour should shift by 1 or 2 colour plates after treatment and packing if the fruit stands within the confines of the packhouse at a temperature range of 18-25°C or higher for a day or two prior to going into cold storage. Colour development will continue slowly after cold storage.

The application is applied in the line before waxing as a total

loss spray over a set of brushes. Ensure that the brushes are adequately wet to obtain good coverage of the fruit.
The ethrel is applied as follows:
156 ml ethrel / 25 L water for lemons, grapefruit and Clementines (3000 ppm)
210 ml ethrel / 25 L water for oranges (4000 ppm)
NB. 2,4-D Deccomone must be used when applying ethrel

Packhouse Sanitation

Remove all decayed reject fruit from the packhouse.
Remove all infected fruit from grading belts before contaminating brushes and baths.
Sanitise grading belts regularly after removing infected fruit. Store all culled fungicide-treated fruit out of the packhouse. Never allow this fruit to stand in a crate and rot in the the packhouse. This allows for the selection of fungicide resistant spores and these spores could be carried back into the packline.
Store all fungicide treated local market fruit away from the packhouse.
Constantly monitor sanitizer concentrations in dump tanks (wet dump) and "descaler" water washing systems (dry dump), and fungicide concentrations in the hot water fungicide bath.
Change dirty systems on a regular basis with clean water and full strength chemicals. These compounds do not work in dirty systems with high fungal spore load and organic material.
Top up these systems correctly and if not sure revert to CRI for proper procedures.
Spray all packline belts, brushes, conveyors and all surfaces including coldrooms, degreening rooms etc. within the confines of the packhouse with a suitable sanitizer, on a regular (daily) basis. Likewise spray out trailers and bins before leaving for the orchard.

PRODUCTS TO USE FOR SANITATION

All Quaternary Ammonium compounds Sterimist Sterilan Sporekill, Desogerme, Prasin, Terminator Sporefix etc.
Ozone generators N.B. Formalin (40% Formaldehyde) not permitted by EurepGAP. This product is carcinogenic.

Retention Samples Hold back samples of each consignment of packed fruit for a period of about 2 weeks and check regularly for waste and any other developing factors.

BEKENDE SUID-AFRIKAANSE VRUGTE-UITVOERDER SLUIT BREË BEMAGTIGINGSOOREENKOMS

Een van Suid-Afrika se bekendste vrugte, wyn en voedseluitvoerders, Afrifresh Holdings (Pty) Limited, en Vuwa Investments (Pty) Limited, met die bekende Johannesburgse sakeman en voormalige hoof van die Nasionale gesag, Bulelani Ngcuka, aan die stuur, het 'n bemagtigingsooreenkoms ter waarde van miljoene rande beklink.

Ingevolge die ooreenkoms, wat as 'n groot deurbraak in die landbousektor beskou word, is 'n nuwe operasionele maatskappy, Afrifresh Group (Pty) Limited, tot stand gebring wat al Afrifresh se huidige Suid-Afrikaanse operasies en sakebelange oorgeneem het. Terselfdertyd het Vuwa 30% van die aandele in die nuwe groep opgekoop. Vuwa het ook elders belange in die landbousektor, naamlik in die melkbedryf in Oos-Kaapland.

Roy Fine, Afrifresh se Direkteur van Ontwikkeling, het die ooreenkoms bestempel as 'n uitsonderlike verbintenis tot swart bemagtigting in die primêre landbou en vrugtesektore. Mnr Fine sê die ooreenkoms met Vuwa is in lyn met die groep se huidige planne vir groei. "Ek glo dat Vuwa 'n strategiese rol sal speel om die Afrifresh Groep te help om 'n wesenlike bydrae te lewer tot landbou-ontwikkeling in Suidelike Afrika."

Lance Chandler, 'n uitvoerende direkteur by Afrifresh Groep, beskryf die ooreenkoms as 'n belangrike voorwaartse stap in die Suid-Afrikaanse vrugtebedryf.

Dumisani Tabata, Voorsitter van die nuwe Groep, wat saam met twee ander Vuwa direkteure, Lungisa Dyosi en Sipho Ngewma in die direksie sal dien, het sy verbintenis tot die Groep se toekomstige ontwikkeling bevestig. "Die Afrifresh Groep sal nou in 'n stewige posisie wees om vrugteprodusente by te staan en te help met transformasie in landbou."

Die Afrifresh Groep se Uitvoerende Hoof, Chris Conradie, sê die transaksie sal die Groep in staat stel om 'n positiewe bydrae te maak tot die proses van grondhervorming. "Vuwa se strategiese betrokkenheid sal aansienlike voordele vir Afrifresh inhou en help om die Groep se uitvoervolumes te verhoog, asook sy toegang tot internasionale markte."

Luidens Afrifresh se aankondiging sal Vuwa se belegging in een van Suid-Afrika se vyf grootste uitvoerders sy posisie bevestig as die land se grootste breë basis swart bemagtigings maatskappy in die landbousektor. "Die aankondiging kom op 'n tydstip dat die vraag na landbouprodukte 'n groot toename toon met rekordpryse wat wêreldwyd behaal word."

Sedert sy stigting in June 2006 het Vuwa aansienlike groei getoon en het onlangs ook groot sake transaksies gesluit met twee genoteerde maatskappye, naamlik die City Lodge hotel groep en Buildmax.

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