

EXTENSION BRIEFS

AUGUST & SEPTEMBER 2004

HENNIE LE ROUX

CRI - Nelspruit

POST-HARVEST PATHOLOGY

K.H. LESAR

Terminator The quaternary ammonium compound "Terminator" is approved for use in citrus packhouse dumptank washing systems. A reliable test kit (titration and not dip sticks) is available for measuring the product concentration. Terminator is used at a concentration of 200 ppm a.i. (80 ml per 100 l).

Packhouses Packhouses still busy packing this season and who have not been tested for imazalil resistance, should contact Keith Lesar on 013-759 8000.

CROP LOAD & FRUIT QUALITY ENHANCEMENT

G.H. BARRY

Fruit set treatments according to cultivar requirements need to be applied. Specific treatments include the application of gibberellic acid (GA) and girdling. A general guideline cannot be given as fruit set treatments differ by cultivar, and in many cases, by orchard, depending on previous crop load. Water stress must be avoided during the flowering and fruit set period.

Fruit growth must be optimised during stage 1 of fruit development. Optimal nutrition and irrigation practices are required. In addition, thinning practices (chemical or hand thinning) need to be applied where required to reduce inter-fruit competition and optimise fruit growth.

The acidity of fruit at harvest is largely determined within 6 weeks of fruit growth and development. Thereafter, only minor modifications to acidity can be achieved. Under conditions of anticipated high acidity at harvest, calcium arsenate can be applied approximately 6 weeks after full bloom. Specific concentrations for various cultivars can be found in the Production Guidelines for Export Citrus. However, depending on target market, growers should only apply this product where permitted by the importing country. An alternative product that has a lesser effect on acid reduction is mono-ammonium phosphate (MAP) applied at 1%, i.e. 1 kg per 100 litres of water, 6 weeks after full bloom. Please note that these phosphate sources have not been tested on all citrus cultivars; until now 1% MAP has reduced acidity on Valencia orange and Temple tanger, but not on grapefruit. A higher concentration, e.g. 5%, has worked well in Israel.

INTEGRATED PEST MANAGEMENT

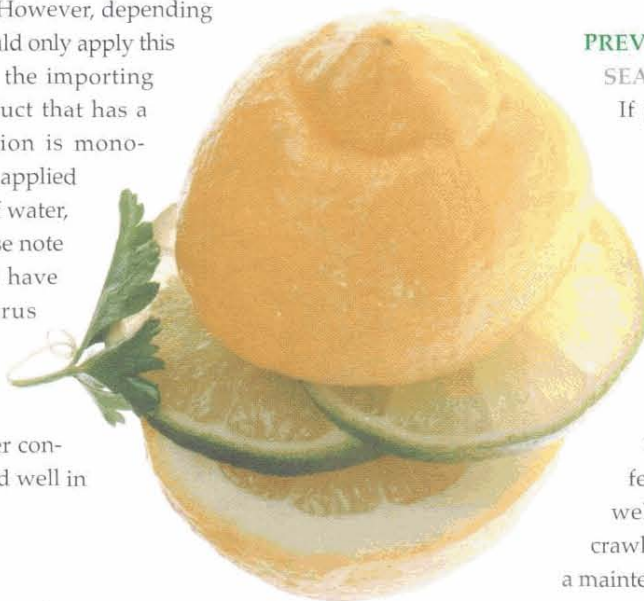
TIM G. GROUT

Citrus thrips Good management of citrus thrips without causing pest repercussions can only be achieved with good pest scouting. Relative numbers of citrus thrips in orchards can be determined with the use of yellow sticky traps (available from CRI) before bloom, to help plan a management strategy. After petal fall, fruit must be monitored at least once a week and scouts must look under the sepals of the calyx until it becomes too tight for thrips to fit underneath. Larvae cause more damage than adults so intervention thresholds for larvae must therefore be lower. Pre-blossom sprays of the spring growth flush will reduce citrus thrips populations damaging fruit after petal fall and will allow for the use of less-disruptive thripcides at this time. This also applies to the pre-blossom use of soil systemics such as Confidor when used for the control of other pests. Thrips management options are also dependent on the availability of spray machinery. If it is not possible to apply a thrips treatment within one week of thresholds being exceeded, some orchards will have to be sprayed with more residual thripcides or intervention thresholds will have to be lowered. The suggested threshold for fruit infestation by larvae during the first four weeks after petal fall is 2% to prevent more than 1% cull due to thrips. If this level is exceeded, a spray should be applied within one week. If this level is attained but not exceeded for two consecutive weeks, a spray should still be applied. If populations are allowed to exceed 15% fruit infestation, control with IPM-compatible treatments such as abamectin plus oil or tartar emetic plus sugar, will be difficult. Do not use more than three applications of abamectin in a season and do not apply more than two consecutively. This will slow resistance development.

PREVENTATIVE SPRAYS FOR MEALYBUG

SEAN MOORE

If pre-harvest blemish analyses or winter inspections of trees indicate that preventative spraying for mealybug is necessary, then these sprays should be applied in spring (September/October). Sprays applied before calyx closure are likely to be more effective than those applied later. As a resistance management tactic, growers who generally use organophosphates are encouraged to consider the use of Applaud (buprofezin). This product will work extremely well where its application is timed with a crawler movement. Growers who wish to apply a maintenance spray for mealybug are encouraged



to consider augmentative releases of *Coccidoxenoides perminutus*, as long as there is absolute certainty that citrus mealybug, *Planococcus citri*, is the dominant species.

BOLLWORM CONTROL

SEAN MOORE

Routine spraying for bollworm is generally not necessary. By monitoring the percentage of blossom clusters infested, it will be possible to determine whether a spray is necessary. A treatment should be applied when more than 20% of blossom clusters are infested with larvae or mature eggs. Enlarged navel end problems in navel oranges can be further exacerbated by bollworm attack. In such an instance, a threshold of 11% of clusters infested should be used.

LEMON MOTHS

SEAN MOORE

Lemons which have not been sprayed or are under a very soft spray programme should be inspected for lemon moth presence

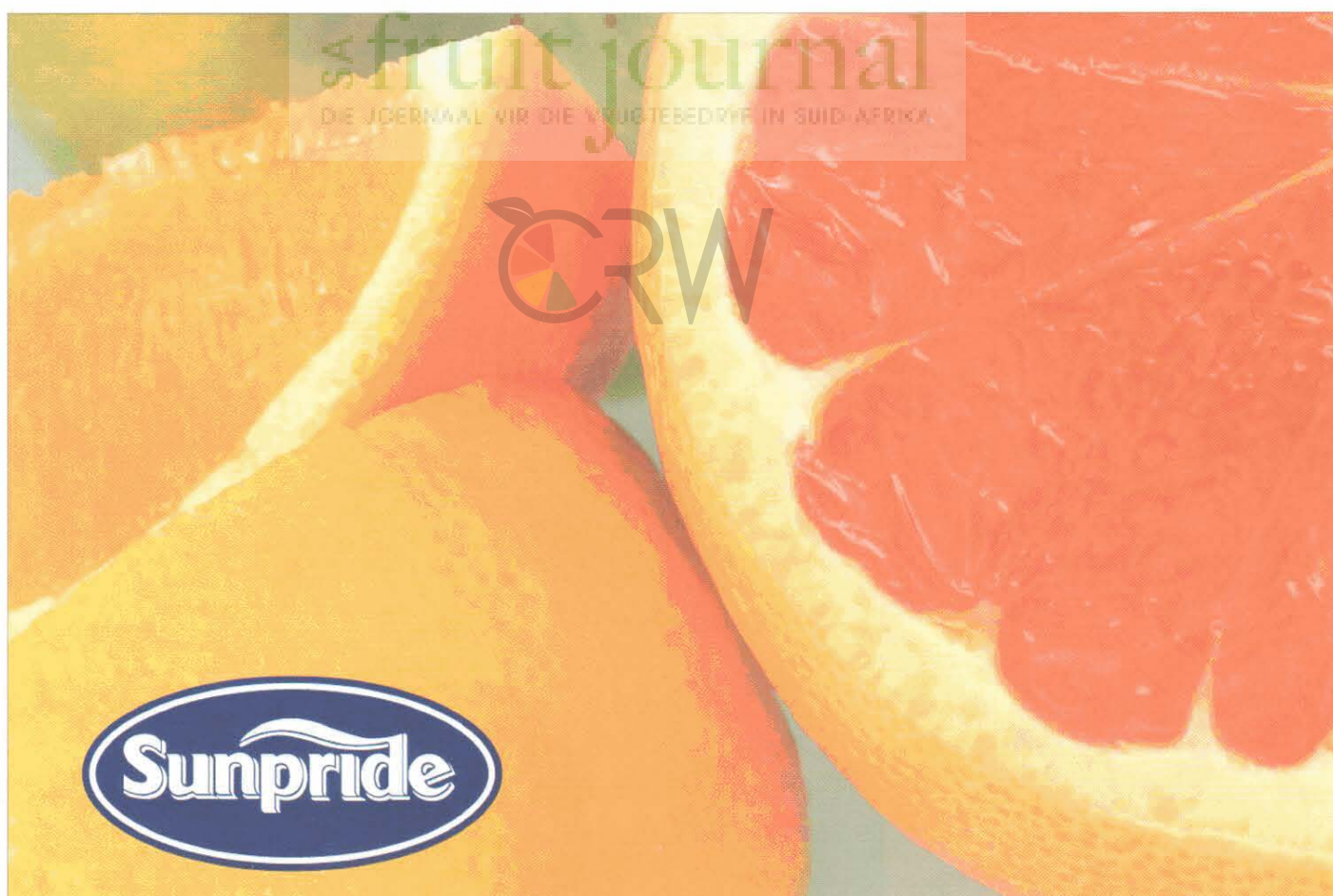
during blossoming. The conspicuous presence of larvae feeding on blossoms and small fruitlets and the formation of pupae webbed amongst petals, indicates the need to spray. If sprays are targeted against feeding larvae, a soft product such as DiPel should be adequately effective. Failure to control lemon moths at this stage might lead to unsightly damage being inflicted on young fruit by the second generation of moths. Control is a lot more difficult to achieve at this later stage.

REMOVAL OF OUT OF SEASON FRUIT

SEAN MOORE AND TONY WARE

As soon after harvesting as possible, all out of season fruit should be removed from trees and destroyed. These fruit can act as a reservoir for false codling moth (FCM) and fruit flies, enabling particularly the former to carry over onto the new crop set in spring. Field observations indicate that the removal and destruction of out of season fruit can have a significant impact in reducing FCM levels.

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DIE JOERNAAL VIR DIE VRUGTEBEDRYF IN SUID-AFRIKA

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GRONDGEDRAAGDE SIEKTES

M.C. PRETORIUS

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

Die gebruik van chemiese aalwurmdoders vir die beheer van die sitrusaalwurm word nie aanbeveel alvorens ten minste 50 mm reën geval het nie (Oktober). Goeie opvolg reëns tesame met besproeiingstelsels is nodig om die aalwurmdoders in die grondprofiel in te was.

Phytophthora *Phytophthora* wortelvrot - die gebruik van fosfenaat produkte is 'n veilige 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 fitotoksiteit te voorkom. Indien kraagvrotletsels voorkom kan 'n stamverf/blaarbespuiting aangewend word. Vir wortelvrot blaarbespuiting, word twee tot drie blaarbespuitings of stamverwe 6-8 weke uitmekaar aanbeveel.

DIAGNOSTIESE SENTRUM

L. HUISMAN

Laura Huisman beveel aan dat produsente in boorde waar probleme met vrugsgroottes ondervind word, wortelmonsters neem vir aalwurmontledings. Dit is ook 'n geskikte tyd vir die instuur van Phytophthora grondmonsters vanaf die winterreënvalgebiede.

KULTIVAR EN ONDERSTAMONTWIKKELING

THYS DU TOIT

Plant en versorging van jong bome

Volledige inligting kan gevind word in die Outspan Produksieriglyn Deel 1.

- Plant slegs gesertifiseerde bome
- Grond moet goed voorberei wees voor plant
- Grawe gate net voor plant met 'n tuinvurk. Geen grondbore.
- Geen bemesting vooraf in die plantgate.
- Indien kwekery bome gekweek is in 'n dennebasmengsel verwyder 25% voor plant. Indien wortels gekoek is, maak rondom los.
- Bome moet effens hoër geplant word as omringende grond sodat die stam nie onder die grondoppervlak begrawe word nie.
- Maak bome so gou as moontlik nat, verkieslik eerstens met 'n waterkar met 'n dam rondom boom vir +/- 40 liter water.

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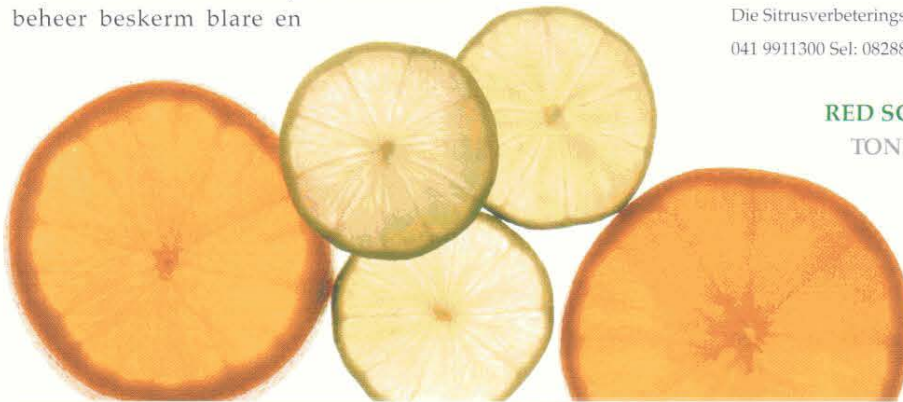
- Permanente besproeiingstelsel moet op die wortelgebied gerig wees. Besproei in die eerste ses weke ten minste weekliks.
- Gebruik stambeskerming - papier/aluminium foelie/gras/verdunde PVA.
- Stut bome indien nodig en snoei blaarkap vir 'n beter wortel en blaaroppervlak verhouding. Vasbind materiaal moet vergaanbaar wees.
- Verwyder alle vrugte gedurende die eerste 2 jaar.
- Beheer onkruid in boomrye. Met chemiese beheer beskerm blare en

stamme teen aanraking. Vermoeg meganiese skoffel omdat stamme beskadig word.

• Plaag en siektebestryding is baie belangrik vir optimum groei. Gereelde plaagverkenning en bestrydingsmaatreëls moet toegepas word. Wees op die uitkyk vir die ontwikkeling van witluis en rooidopluis onder die stambeskerming.

• Eerste bemesting 6 weke na plant met KAN 350g verdeel in 10 gelyke dele, van Augustus tot Februarie. Blaarvoeding elke ses weke.

Die Sitrusverbeteringsprogram: Posbus 2945, Uitenhage, 6230. Tel: 041 9925366 Faks: 041 9911300 Sel: 0828892363. Kontakpersoon: Thys du Toit



RED SCALE TONY WARE

The following programme should be considered for organophosphate-resistant scale. The optional treatments should be considered if natural enemy activity is insufficient or inadequate.

CONTINUED ON PAGE 43

Percentage of previous crop with scale	Swollen axil bud to green bud stage	Petal fall to nine weeks later	10 - 14 weeks after petal fall
Optional: 1.25% light narrow distillational range oil (NRO) or 1.0% medium NRO	-	-	-
0-5%	-	-	Optional: 1.25% light NRO or 1.0% medium NRO
1.25% light NRO or 1.0% medium NRO	-	-	Optional: Mospilan trunk treatment
Optional: 1.25% light NRO or 1.0% medium NRO	-	-	Optional: 1.25% light NRO or 1.0% medium NRO
Confidor drench	-	-	1.25% light NRO or 1.0% medium NRO
Optional: 1.25% light NRO or 1.0% medium NRO	-	-	Mospilan trunk treatment
6-15%	-	Mospilan trunk treatment	Optional: 1.25% light NRO or 1.0% medium NRO
More than 15%	1.25% light NRO or 1.0% medium NRO	Optional: 0.75% light NRO or 0.5% medium NRO	1.25% medium NRO or 1.0% heavy NRO
	Confidor drench	-	1.25% medium NRO or 1.0% heavy NRO
	-	Mospilan trunk treatment	1.25% medium NRO or 1.0% heavy NRO
	Nemesis plus 0.3% oil	Nemesis plus 0.2% oil	-*
	-*	Nemesis plus 0.2% oil	Nemesis plus 0.3% oil

* With severe red scale infestations additional treatments may be required

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 styler 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 leads to the formation of points of entry through which fungi can penetrate to form infections that 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 styler 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 $>25^{\circ}\text{C}$), 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 m/100 (water)) and Folicur (80 m/100 (water)) are registered for control of the disease.

GRAFT TRANSMISSIBLE DISEASES

SF VAN VUUREN

Aphid control to protect citrus tristeza virus (ctv) sensitive cultivars Control measures to prevent heavy infestations of the brown citrus aphid are aimed principally at grapefruit and Mexican lime since these are the most susceptible cultivars to CTV. This will minimise the chances of severe strains being introduced into the plants. Aphids can be controlled with a number of products. Refer to IPM guidelines for details.

VERGROENING

HF LE ROUX

Vergroende vrugte is in verskeie van die sitrusproduserende gebiede opgemerk. Augustus is waarskynlik die beste maand om vergroeningsimptome in boorde waar te neem. Maak seker dat vergroende bome verwyder word of dat vergroende takke in areas waar die siekte endemies is uitgesaag word. Verwyder enige hergroei waar die vergroende takke teruggesaag word. Hoe minder die inokulum in 'n gebied is hoe minder is die waarskynlikheid dat die siekte weer epidemiese proporsies sal aanneem soos in die 1970s. In gebiede waar die sitrusbladvlooi (psylla) bedrywig is moet dit beheer word. Maak seker dat daar sapvloe plaasvind voordat sistemiese stamtoedienings aangewend word.

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Attaching a label is easy - a gentle push of the sponge wheel against the product followed with a smear action by pulling the handle back is all it takes. The push is detected by a micro switch under the sponge wheel and the tape is automatically advanced to the next label.



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