

EXTENSION BRIEFS

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Citrus Research International



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.

VALSKODLINGMOT J.H. HOFMEYR

Boordsanitasie is 'n ononderhandelbare deel van VKM-onderrukking. Alhoewel dit in die verlede baie afgeskeep is, het produsente die afgelope paar jaar boordsanitasie oor die algemeen met groter ywer begin toegepas en amper sonder uitsondering die vrugte van hul pogings letterlik gepluk! Ongelukkig word boordsanitasie nog steeds afgeskeep sodra oestyd begin. Dit is noodsaaklik om boordsanitasie deurentyd toe te pas aangesien besmette vrugte dié tyd van die jaar tot groter VKM-bevolkings die volgende seisoen kan bydra. Moenie vergeet om afgevalde en besmette vrugte ook in Valenciaboorde te verwyder en te vernietig nie.

CROP LOAD AND FRUIT QUALITY MANAGEMENT

J.S. VERREYNNE

Maturity indexing on late cultivars in late areas should commence. Refer to SAFJ of June/July 2007.

Degreening and post-harvest rind disorders. The publication "Common Defects Associated with Degreening of Citrus" by Andy Krajewski and Tim Pittaway is a must for any grower who degreens fruit. It puts degreening in perspective, gives the correct manner of treatment as well as a photographic identification of degreening defects. Another publication, "Post-harvest Rind Disorders of Citrus Fruit" by Paul J.R. Cronje is available. It is very useful in the correct identification of physiological rind disorders. Both are available from CRI. Contact Bella Thulare at 013 759 8000.

Pruning of early and late cultivars should be done during this period as soon as possible after harvest. 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. Prune heavier after a light crop if a heavy crop is expected and when the orchard has a history of alternate bearing. Pruning can also be used as a flower thinning technique when a very heavy set is expected. 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 affects 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 previous crop load. Moisture stress should be avoided during full bloom, fruit set and early fruit growth.

GEÏNTEGREERDE BEMESTING J.G.K. COETZEE

Enige sisteem het 'n stel basiese beginsels waarvolgens dit suksesvol bedryf moet word. Soveel meer vir 'n biologiese sisteem soos 'n sitrusboord. Ons kan nie die bome ompraat of oortuig om hul natuurlike prosesse te verander nie. Ons kan wel hierdie prosesse bestuur sodat ons meer finansiële daarby baat. Een van die beginsels waarvolgens optimale opbrengste gelewer kan word, is die bestuur van die stikstofstatus van die bome.

Nitrogen requirement Citrus trees require the major portion of their nitrogen during blossom and fruit set. Therefore change your fertiliser system to satisfy this requirement. It is no use and can be a financial disaster to try and convince the trees to change their requirements.

The application of nitrogen has to start in July for all areas except the Western Cape and Vaalharts where the application will usually start in August. Split applications give better results on sandy soils and the number of applications depends on the

Tabel 1. Verdeling van bemestingstowwe gebaseer op die klei-inhoud van die grond vir boorde wat met mikro-spuite besproei word. Die syfers dui die % van die totale toediening aan.

% Klei	Element	Julie	Aug	Sept	Okt	Nov	Des
<5	N	40 (0)*	30 (40)	20 (30)	10 (20)	0 (10)	
	P		100 (0)*	0 (100)*			
	K				33	33	33
	Gips		100 (0)*	0 (100)*			
	MgO				100		
	Kalk					100**	
5 tot 10	N	40 (0)*	40 (40)	0 (40)	20 (0)	0 (20)	
	P		100 (0)*	0 (100)*			
	K				33	33	33
	Gips		100 (0)*	0 (100)*			
	MgO				100		
	Kalk					100**	
11 tot 20	N	50 (0)*	25 (50)	25 (25)	0 (25)		
	P		100 (0)*	0 (100)*			
	K				50	50	
	Gips		100 (0)*	0 (100)*			
	MgO				100		
	Kalk					100**	
21 tot 30	N	50 (0)*	50 (50)	0 (50)			
	P		100 (0)*	0 (100)*			
	K				100		
	Gips		100 (0)*	0 (100)*			
	MgO				100		
	Kalk					100**	
>30	N	100 (0)*	0 (100)				
	P		100 (0)*	0 (100)*			
	K				100		
	Gips		100 (0)*	0 (100)*			
	MgO				100		
	Kalk					100*	

(50)* koue areas soos Wes Kaap en Vaalharts

** Enige tyd na die laaste stikstoftoediening tot April.

clay content of the soil as well and whether drip irrigation is used. (See table 1 above).

When drip irrigation is used, the fertilisers need to be applied at least once a week and the distribution is independent of the clay content of the soil. The applications are also stretched over a much longer period and the phenological phases can be used to direct the applications.

Distribution of nitrogen according to phenological stages of early cultivars.

Phase	Length in weeks	% N required
8 weeks prior to end of harvest	9 to 13	0
End harvest to 6 weeks prior to budding	5 to 9	5
6 Weeks prior to budding till full bloom	6 to 8	30
Full bloom to fruit drop	6 to 8	20
Fruit drop to 8 weeks prior to harvest	15 to 25	45

Distribution of nitrogen according to phenological stages of late cultivars:

Phase	Length in weeks	% N required
6 weeks prior to budding	6 to 8	35
Full bloom to fruit drop	6 to 8	20
Fruit drop till end March	22 to 24	35
Beginning April to 6 weeks prior to budding	12 to 18	10

Blaarbespuitings Suksesvolle blaarvoeding hang van drie basiese vereistes naamlik konsentrasie, kontaktyd en formulasie af.

Konsentrasie. Omdat die inhoud van die elemente in die blare verhoog moet word, is 'n sekere massa van die betrokke element daarvoor nodig. Byvoorbeeld, indien die konsentrasie sink van 20 na 40 mg per kg verhoog moet word, moet 20 mg sink vir elke kg blare opgeneem word. Die doeltreffendheid is egter selde 100% daarom moet minstens twee keer soveel toegedien word. Indien die konsentrasie van die oplossing wat gespuit moet word, egter te laag is kan dit nie fisies bereik word nie. The effective concentration for zinc is 80 to 100 mg Zn per litre of spray solution. That for boron is 300 to 400 mg per litre. Calculate and check the concentration after dilution and beware of expensive formulation

iluted too much in order to be competitive on price.

Contact time The plant nutrients can only be absorbed when in solution. Therefore the spray solution must stay as long as possible on the leaf surface. The contact time is determined by droplet size (the smaller the shorter the time), temperature and humidity. Therefore spray during cool or humid weather. The best times are pre-dawn, early in the morning, at night and in the afternoon, in that order.

Formulasie Plante benodig die voedingselemente in spesifieke vorms en hierdie vorms is die eenvoudige anorganiese ione. Formulasies wat die nadele van te hoë pH van die water, verlengde kontaktyd en die proses van opname kan bevorder, kan egter soms onordelig wees. Nietemin, is die anorganiese formulasies wat teen hoë konsentrasies gespuit kan word, meestal suksesvol.

RONDGEDRAAGDE 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 status in die wortels bepaal kan word. Die resultaat sal dien as 'n bestuurshulpmiddel om 'n koste doeltreffende aalwurmbeheerstrategie daar te stel.

Die gebruik van chemiese aalwurmdoders vir die beheer van die sitrusaalwurm word nie aanbeveel alvorens ten minste 30 mm reën geval het nie (Okt). Elke aalwurmdodertoediening behoort tot 'n behoorlike besproeiing opgevolg te word om daardeur te verseker dat die middels deeglik in die grondprofiel in gewas word. Toedienings behoort slegs volgens etiketaanbevelings toegelê te word. Afwykings van die geregistreerde dosisse, om kostes te bespaar, is glad nie 'n effektiewe benadering nie. JOERNAAL VIR DIE VERBOD

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 fitotoksiteit te voorkom. Indien kraagvrotletsels voorkom kan 'n stamverf/blaarbespuiting aangewend word, drie toepassings per seisoen met 6-8 weke intervalle. Vir wortelvrotbeheer word 'n blaarbespuiting, twee tot 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 leads 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.

POSTHARVEST PATHOLOGY – WASTE PREVENTION CHECKLIST K.H. LESAR

Post-harvest decay warning The 2007 citrus season is experiencing the following environmental conditions that are ideal for the development of high waste levels.

Late (June) rainfall together with a sudden drop in temperatures in the summer rainfall areas and high rainfall (some floods) also in the winter rainfall areas have already led to the following problems. • poor internal quality due to a drop in acid levels. • report of hail and freeze damage in some production areas - infected fruit on trees, after harvest and after degreening (Anthracnose). • reports of FCM and splitting of navels - infected fruit mainly by wound pathogens (green mould and sour rot).

The rainfall has also contributed to an increase in pathogen inoculum levels in orchards on all surfaces resulting in:

- infections by latent pathogens – Anthracnose, *Diplodia* stem-end rot and *Phomopsis* (especially during extended degreening).
- 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 packhouse. • handle the fruit as a perishable product because it is a perishable product • minimise delay between picking and treatment. The longer the delay the higher the risk for decay. • selectively pick for degreening. Place only fruit that has reached colour break in crates, not colour break fruit and green (T6-T7) fruit together. • fruit must not spend too long in degreening (72 hrs maximum) • extended time in degreening predisposes fruit to poor quality and waste. • Spray systemic phosphonates (Fighter) for extended protection of fruit against *Phytophthora* brown rot after rainfall or contact fungicides (copper oxychloride).

- do not dump wastey fruit (especially green and blue mould and sour rot), found in crates after degreening, into packhouse washing systems.

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

Remember Fruit in trees that are damaged by hail, windstorm or freeze will become a HIGH RISK commodity for export.

High Risk Latent and Wound Pathogen infections on the tree lead to further development of latent pathogen infections, and spread of wound pathogen infections in exported cartons. Producers must be aware of the risks involved in exporting this fruit and decide whether to export or not.