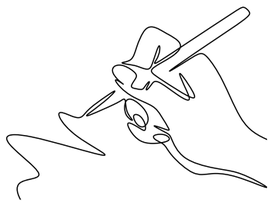

# Extension briefs

## DECEMBER AND JANUARY 2026

By Hannes Bester, MC Pretorius, Wayne Mommsen, Coenraad Fraenkel, André Combrink, Natasha Jackson, Jan Landman, Rudolph Strydom, Irma Raspel, and Vernon Jacobs (Citrus Research International)

### Integrated pest management

#### False codling moth (S.D. Moore)

It is imperative that the False Codling Moth Systems Approach (FCMSA) is implemented thoroughly and diligently. Neither growers nor the industry can afford a lapse in the implementation of comprehensive and effective management practices. The details of all these practices are explained in the FCMSA, with reference to the CRI IPM Guidelines for FCM Management (available on https://www.citrusres.com/). These Good Agricultural Practices (G.A.P.s) must be followed as described. One of the most important practices is orchard sanitation, which must be conducted at least weekly in all orchards, as well as for lemons. This involves collecting and destroying fallen fruit, as well as removing hanging fruit that appears damaged or infested in any way. It has been shown that such a practice can effectively remove an average of up to 75% of FCM larvae from an orchard. In the hotter summer months, for the same effect, orchard sanitation should be increased to at least twice weekly. Fruit must not be mulched inside the orchard. At the commercially ripe stage for export, lemons are not a host to FCM. However, very small and over-ripe lemons can host FCM. And this can result in lemon orchards being a source of FCM for adjacent and nearby orchards of FCM-susceptible cultivars. This makes sanitation in lemon orchards as important as in orchards of other citrus types.

The use of an area-wide control technique, such as the sterile insect technique (SIT) or mating disruption, from early in the season, will also provide effective suppression of the FCM population while it is still low. Initiating control measures only a few weeks or months before harvest is unlikely to be sufficiently effective.

Finally, monitoring of fruit infestation, as described in the FMS is extremely important, to ascertain FCM risk. Monitors must be trained and proven competent for this very important task. Colour plates are available from CRI, to assist with correct identification of FCM larvae and other insects that can internally infest citrus fruit. If there is any doubt as to whether a larva is FCM or not, it must be recorded as FCM, due to its phytosanitary status and the potential consequences of underestimating levels of incidence.

Hannes Bester

MC Pretorius



#### Fruit flies (A. Manrakhan)

Fruit flies are pests of phytosanitary concern. The fruit fly pests affecting citrus are: *Ceratitis capitata* (Mediterranean fruit fly or Medfly), *Ceratitis rosa* (Natal fly) and *Bactrocera dorsalis* (Oriental fruit fly). Oriental fruit fly has a restricted distribution in SA and is regulated within the country. There is a zero tolerance of fruit fly eggs and larvae in fruit consignments for export. Hence, monitoring and control are two important components in Fruit Fly G.A.P.s. It is essential to initiate monitoring activities for Medfly and Natal fly between December and mid-January, before the peak of fruit fly activities. Monitoring of Oriental fruit fly should be carried out throughout the year. Fruit fly control, using protein baits, should be initiated in mid to late summer (either January or February, depending on the region). However, for farms with either mixed fruit crops (such as mangoes, deciduous fruit or grapes) or near-fruit types prone to high fruit fly infestation, fruit fly control should already be implemented by December. In citrus production areas infested by Oriental fruit fly, the Male Annihilation Technique (MAT) must also be applied preferably by mid-January. All fruit fly control products should be applied correctly. And the frequency of application of fruit fly control products should be adjusted based on fruit fly catches, which should not exceed threshold levels for registered traps. Orchard sanitation is also an important practice in managing fruit flies and must be conducted at least weekly. Details of fruit fly monitoring and control practices are available in English and Afrikaans on the CRI website (register as a member for access to the guidelines). In all B. dorsalis infested areas, a removal permit is required for movement of fruit, except lemon, outside those areas. Start application for removal permits early. The contact email for the removal permit application is RemovalPermits@daff.gov.za.

#### Mealybug (S.D. Moore)

Apart from its obvious pest status, effective mealybug control can also mitigate the attraction and increased infestation of carob moth – a secondary pest. Growers should be scouting regularly for mealybug by inspecting underneath calyxes and, thereby, determining the scope of infested fruit. For on-point detection, detach the fruit from the calyx and inspect the fruit as well as the underside of the calyx. Where mealybug is under good biocontrol, infestation should start declining after January in the northern production areas, and after February in the Cape production areas. If mealybug infestation does not decline during January to March (region dependent) and parasitism activity remains low or not detected, suppression with a chemical treatment is advisable on early maturing cultivars. This is particularly important if the mealybug species present has phytosanitary status for export markets. Products such as spirotetramat and sulfoxaflor have been proven effective in this role. In addition, it is crucial that a full cover film spray be applied. However, extensive

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Pest mealybugs closeup on the citrus tree

on-farm experience indicates that in most cases, a natural decline in mealybug infestation is experienced due to the activity of naturally occurring biocontrol agents. Consequently, such late corrective spraying is rarely required and will often do more harm than good.

If it is necessary to spray for thrips during December or January, it is extremely important that only IPM compatible thripicides be used. Application of any harsh thripicides at this stage, will result

André Combrink

in mealybug repercussions. Augmentative releases of these parasitoids should be initiated as early in the season as possible for optimal efficacy: *Coccidoxenoides perminutus*, which is only effective against citrus mealybug, and *Anagyrus vladimiri*, which also attacks at least oleander mealybug, in addition to citrus mealybug. Initiation of releases later than December will be far less effective than early release programmes. Augmentation of predators, such as *Cryptolaemus montrouzieri* would be far more justifiable against high levels of mealybug infestation in mid to late summer, as these beetles are high density feeders.

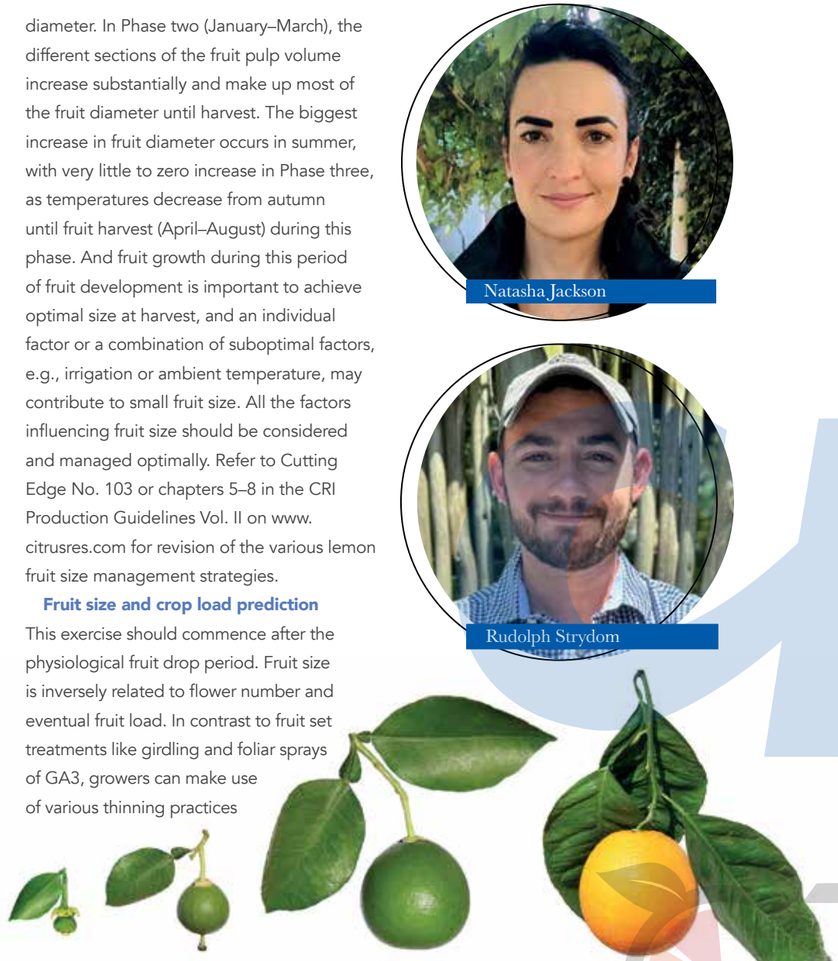
### Citrus thrips (S.D. Moore)

Thrips can still cause damage to citrus fruit in December, particularly in hotter production areas like the Lowveld, and on later-flowering cultivars like Valencias whose fruit is still relatively small at this time of year. Therefore, scouting should continue to be carried out at least twice weekly, to prevent a build-up of numbers, and to avoid possible late damage – known as "scribbling" or "browning" – on the sides of the fruit. Thrips control materials applied at this time of year should preferably not have a long residue, so that the activity of parasitoids of mealybug and scale insects is not unduly disturbed. From January, the chance of thrips damage declines with increasing fruit size. But continued vigilance is advised.

## Citriculture (P.J.R. Cronjé)

**Fruit growth and size** Citrus fruit development is divided into three distinct development phases, and fruit growth follows a sigmoidal curve. Phase one of fruit development (end of October–December) incorporates full bloom to the end of December. And it's characterised by cell division and the formation of most of the total cellular fruit structures. During this period, the rind constitutes most of the fruit diameter. In Phase two (January–March), the different sections of the fruit pulp volume increase substantially and make up most of the fruit diameter until harvest. The biggest increase in fruit diameter occurs in summer, with very little to zero increase in Phase three, as temperatures decrease from autumn until fruit harvest (April–August) during this phase. And fruit growth during this period of fruit development is important to achieve optimal size at harvest, and an individual factor or a combination of suboptimal factors, e.g., irrigation or ambient temperature, may contribute to small fruit size. All the factors influencing fruit size should be considered and managed optimally. Refer to Cutting Edge No. 103 or chapters 5–8 in the CRI Production Guidelines Vol. II on www.citrusres.com for revision of the various lemon fruit size management strategies.

**Fruit size and crop load prediction** This exercise should commence after the physiological fruit drop period. Fruit size is inversely related to flower number and eventual fruit load. In contrast to fruit set treatments like girdling and foliar sprays of GA3, growers can make use of various thinning practices



Citrus development and maturation

to control flower intensity and eventual crop load. Except for hand thinning, foliar applications of synthetic auxins are particularly successful in this regard, and are used to reduce fruit load in an "on year" and increase final fruit size. A reduction in the number of flowers will reduce the eventual percentage fruit set, reduce the inter-fruit competition, and increase fruit size. Fruit from trees bearing small yields experience increased growth rates. At high fruit loads, increased inter-fruit competition for nutrients and water – especially during the early stages of fruit development – lead to a decrease in potential fruit size. Refer to "Fruit size and crop load prediction for citrus" in chapters 5–7 on crop manipulation in the CRI Production Guidelines Vol. II (www.citrusres.com), or the *SA Fruit Journal* of Oct/Nov 2009 for details on how these predictions can be made.

**Regrowth** The adverse effects of regrowth on fruit size and fruit colour development demand vigilance, particularly for early maturing cultivars. Therefore, control should start promptly, while shoots are soft and easy to remove, especially after heavy pruning earlier in the season.



Natasha Jackson



Rudolph Strydom

**Creasing** Gibberellic acid (GA) is applied in January to reduce the incidence of creasing. However, it should be noted that improper timing of GA delays colour development. When applying GA, ensure that the side of the fruit facing inwards is also covered by the GA, as this part of the fruit is more prone to creasing. A heavy fruit set could also promote the incidence of creasing.

**Oleocellosis incidence** Late summer vegetative growth of bearing trees should be kept to a minimum, as excessive vegetative vigour during this period is associated with high incidence of oleocellosis at harvest.

**Rind colour development** Avoid late nitrogen application and the use of high concentration, heavy summer oil sprays after December. These treatments are antagonistic to rind colour development. Plus, GA treatment to reduce creasing incidence is also antagonistic to colour development and could reduce it if applied later than mid-January.

## Disease management

### Grondgedraagde siektes (J. van Niekerk en MC Pretorius)

***Phytophthora*-beheer** Alhoewel redelik goeie reënval gedurende Desember voorkom, is Januarie en Februarie gewoonlik droër en die dagtemperature heelwat hoër. Daarom die waarskuwing dat, indien daar van fosfonate gebruik gemaak gaan word om Phytophthora-wortelvrot te beheer, die middels met sorg en volgens gebruiksaanwysings toegedien moet word.

Dis van uiterste belang dat die middels nie onder dié omstandighede toegedien word nie:

- in dagtemperature van hoër as 28 °C
- indien bome onder enige mate van droogte- of hittestres verkeer
- te midde van warm bergwinde.

Geen wortelvrotbespuitings moet in bogenoemde warm maande op vroeë sagte-sitruskultivars, bv. Satsumas en Clementines, gespuit word nie.

***Aalwurmbeheer*** Reën en besproeiingswater is nodig om die aalwurmdoders effektief deur die grondprofiel te was. Dien aalwurmdoders toe op nat gronde, direk na 'n goeie reënbui. Volg dan die toediening op met ten minste 35 mm besproeiing.

### Wenk vir effektiewe bestuur van wortelgesondheid

Die neem van grond- en wortelmonsters is 'n effektiewe bestuurshulpmiddel.

Jan Landman

Irma Raspel

Vernon Jacobs

Gebruik dit om ten minste elke drie jaar die aalwurm en Phytophthora-status in die grond en wortels van sitrusboorde te bepaal. Dit is uiters belangrik om grond- en wortelmonsters te neem voordat 'n boord vir herplantdoeleindes verwyder word. Dis om die aalwurm en Phytophthora-status vir toekomstige verwysings te kan bepaal. Inligting aangaande die metode van monsterneming is beskikbaar by die Diagnostiese Sentrum in Nelspruit. Monsters kan ook vir ontleding na die Diagnostiese Sentrum gestuur word.

## Fruit and foliar diseases (P. Moyo)

**Citrus black spot** On-going fruit protection is critical for managing citrus black spot (CBS) throughout the season. Use CRI-PhytRisk to help plan your spray programme and to avoid gaps in your treatment programme. Ensure consistent coverage throughout the recommended fruit protection period, because difficulty in achieving effective spray coverage increases in tandem with fruit size development and tree canopy density. Refer to the Recommended Usage Restrictions document (No. 59, August 2025) for specific fungicide guidelines by different export markets. For example, Mancozeb may not be applied later than December for fruit destined for Canada, or later than the end of January for Japan. Copper can be used as an alternative to Mancozeb, offering longer spray intervals. But excessive use may cause phytotoxicity to fruit and foliage, especially when combined with low-pH products or applied in hot, dry conditions.

**CRI Production Guidelines Vol. II**