



Identification of mealybug species on citrus

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Seven different mealybug species are recorded as pests of citrus in South Africa. These are citrus mealybug (*Planococcus citri*), oleander mealybug (*Paracoccus burnerae*), longtailed mealybug (*Pseudococcus longispinus*), Karoo thorn mealybug (*Nipaecoccus viridis*), striped mealybug (*Ferrisia virgata*), citrophilous mealybug (*Pseudococcus calceolariae*) and Delotococcus (*Delotococcus aberiae*). In addition to these, cotton mealybug (*Phenacoccus solenopsis*) can occasionally be found on citrus trees, even though not regarded as a citrus pest i.e. not feeding on citrus.

Certain markets, such as South Korea, consider most of these species, with the consistent exception of citrus mealybug, as phytosanitary in nature. Consequently, fruit infested with these species must not be exported. It is therefore important to be able to accurately identify and differentiate between these species. This must be done during orchard monitoring throughout the season, at packhouse inspection and any further inspections thereafter, always with the use of a magnifying glass (or microscope, if possible).

Here we provide both a colour chart and a diagnostic key to assist in accurate identification of and differentiation between species. Both the key and the chart are based primarily on the characteristics of relatively mature female mealybug. These can be used, not only for training, but can be positioned where inspections are conducted, as a permanent reference point. These are also available for order from CRI as follows:

In A3 – R60

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Please contact Bella Thulare for orders:

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For procedures to obtain laboratory confirmation of mealybug species identification, if necessary, please consult Cutting Edge 315.

For any further queries contact Dr Sean Moore (seanmoore@cri.co.za).



Identifikasie van witluis-spesies op sitrus

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Sewe verskillende witluis-spesies is as plaë van sitrus in Suid-Afrika aangeteken. Dit is sitrus-witluis (*Planococcus citri*), oleander-witluis (*Paracoccus burnerae*), langstert-witluis (*Pseudococcus longispinus*), Karoodoring-witluis (*Nipaecoccus viridis*), gestreepte witluis (*Ferrisia virgata*), sitrofiliese witluis (*Pseudococcus calceolariae*) en Delotococcus (*Delotococcus aberiae*). Bykomend kan die katoen-witluis (*Phenacoccus solenopsis*) ook soms op sitrusbome voorkom, maar dit is nie 'n sitrusplaag nie dws dit kan nie op sitrus voed nie.

Sekere markte soos Suid-Korea, beskou meeste van hierdie spesies, met die konsekwente uitsondering van sitrus-witluis, as van fitosanitêre belang. Daarom mag vrugte wat met enige van hierdie spesies besmet is, nie uitgevoer word nie. Dit is belangrik om hierdie spesies akkuraat te kan identifiseer en tussen hulle te kan onderskei. Dit moet tydens die seisoen gedurende boordmonitering gedoen word, by pakhuis inspeksies en enige verdere inspeksies daarna, altyd met behulp van 'n vergrootglas (of mikroskoop, indien moontlik).

Ons bied 'n kleurplaat en 'n diagnostiese sleutel aan om met die akkurate identifikasie en onderskeid tussen spesies te help. Beide die sleutel en die kaart is hoofsaaklik op die kenmerke van volwasse wyfies gebaseer. Dit kan vir opleiding gebruik word en ook geplaas word waar inspeksies plaasvind, as 'n permanente verwysingspunt. Dit kan by CRI bestel:

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Plus die koste van verpakking en vervoer (koerier)
Kontak asseblief vir Bella Thulare vir bestellings:
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Vir prosedures om laboratorium bevestiging van witluis spesie identifikasie te bekom, indien nodig, raadpleeg asseblief Snykant 315.

Vir verdere navrae kontak Dr Sean Moore
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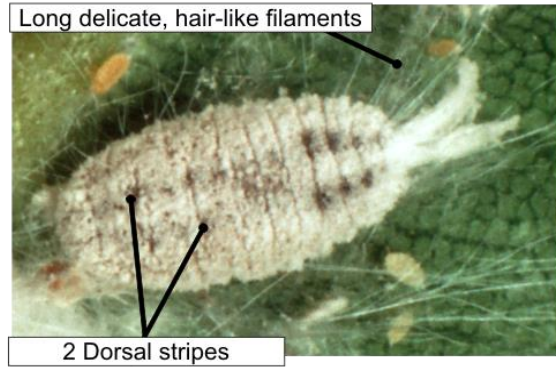


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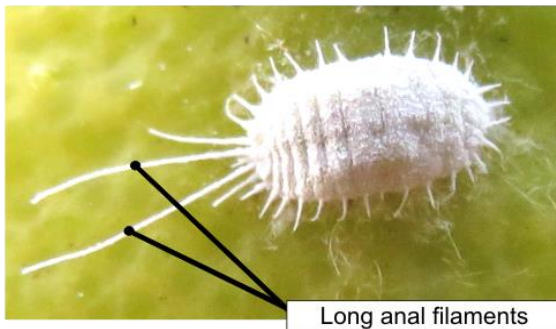
Citrus mealybug



Striped mealybug



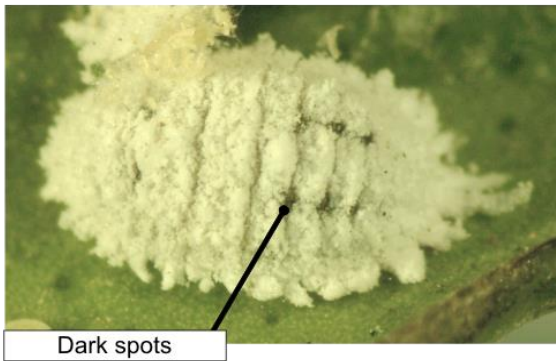
Longtailed mealybug



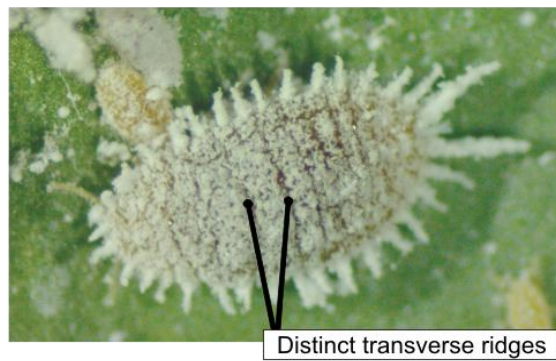
Citrophilous mealybug



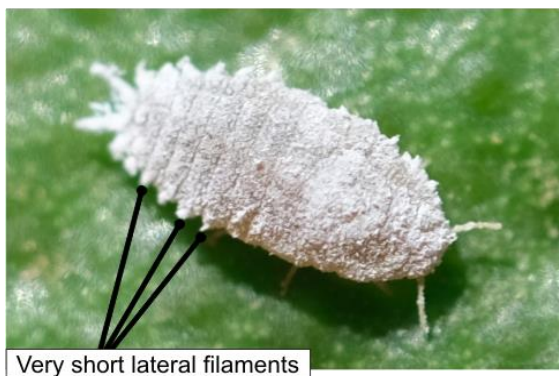
Cotton mealybug



Oleander mealybug



Delottococcus



Karoo thorn mealybug



This is a guide to help in the identification of females of mealybug species recorded on citrus in South Africa. Consult the CRI identification annexed for a step by step differentiation between species.



Key for identification of mealybugs on citrus

Vaughan Hattingh and Sean Moore

Adapted from: HATTINGH, V. (1993). Mealybugs and cottony cushion scale on citrus in southern Africa. *Citrus Journal* 3: 20 – 22

1. Body fluids, eggs and crawlers purple; globular, finely woven, smooth-surfaced ovisac; threads can be drawn out extensively **Karoo thorn mealybug, *Nipaecoccus viridis***
 - Body fluids not purple and ovisac not smooth **2**
2. Anal filaments as long, or longer, than body; body fluids yellow; no ovisac, females produce crawlers, not eggs **Long-tailed mealybug, *Pseudococcus longispinus***
 - Anal filaments not longer than 1/3 body length.....**3**
3. No longitudinal bare stripes visible on dorsal surface of adults **4**
 - One or more longitudinal bare stripes on dorsal surface of adult.....**5**
4. Distinct transverse ridges on dorsum; 17 pairs of filaments with no gradual elongation of marginal filaments towards the posterior end of the abdomen; anal pair of filaments markedly longer than the marginal filaments; body fluids grey; females embedded in ovisacs.....**Oleander mealybug, *Paracoccus burnerae***
 - Transverse ridges on dorsum less distinct; lateral filaments are very short, become progressively (albeit slightly) longer on the abdominal margin towards the posterior end of the body, caudal pair slightly longer than antennae; body fluids grey; cottony ovisac covers body and is longer than body of female***Delottococcus aberiae***
5. One longitudinal dorsal bare stripe visible on adults; 18 pairs of marginal filaments, gradually becoming longer towards the posterior end of the abdomen; body fluids yellow.....**Citrus mealybug, *Planococcus citri***
 - Dark patches forming 2 longitudinal dorsal lines; very long, delicate, hair-like filaments present; yellowish body fluids..... **Striped mealybug, *Ferrisia virgata***
 - Dark patches forming 4 longitudinal dorsal lines; body fluids blue-grey; anal filaments approximately 1/3 body length..... **Citrophilous mealybug, *Pseudococcus calceolariae***

Cotton mealybug, *Phenacoccus solenopsis*, occasionally also found on citrus, although not a citrus pest: Dorsum with a dark bar, spots on intersegmental areas of thorax and abdomen

Acknowledgement: Ian Millar (PPRI, ARC) for advice