

Surveillance of the Asian Citrus Psyllid in citrus production areas in Southern Africa

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The Asian citrus psyllid (ACP), *Diaphorina citri*, is an important pest of citrus in many parts of the world due to its effective ability to vector Asian Huanglongbing (HLB) caused by the phloem limited bacteria *Candidatus Liberibacter asiaticus* (LAS). ACP can also vector *Candidatus Liberibacter africanus* (LAF), which is present in certain parts of Southern Africa and causes African greening disease (or African HLB). African Greening is a serious disease, particularly in cooler production areas. However, HLB is the most serious disease of citrus worldwide because of its rapid spread, causing rapid tree decline and death and being extremely difficult to control.

ACP is of Asian origin and occurs in many citrus production regions in the world, including Asia, North America and South America. **ACP was, however, recently reported from Tanzania (including Zanzibar) and Kenya. Asian HLB has been reported in Ethiopia, Mauritius and Reunion. The presence of ACP and Asian HLB on the African continent and nearby Indian Ocean islands is therefore concerning and presents a direct threat to the Southern African citrus industries.**

The biology of ACP renders it a difficult pest to manage. ACP is capable of rapid population increase, is tolerant of temperature extremes and transmits HLB very rapidly. ACP affects mainly plants within the Rutaceae family (citrus and close relatives of citrus). Adult females of ACP lay eggs on young expanding leaves and nymphs develop on immature leaves and young stems. ACP adults, on the other hand, feed on young stems and leaves of all developmental stages.

In order to protect the Southern African citrus industries, we are urging citrus nurseries and producers, in particular those located in the northern and eastern borders of South Africa, to take part in a national ACP surveillance

programme. An early detection of the pest might render its eradication possible.

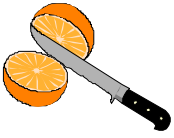
What can I do as a nursery or citrus producer?

- Monitor throughout the year for early detection of ACP using either yellow sticky traps or lime-green ACP traps (Figure 1).



Figure 1. Sticky traps for monitoring of ACP: (A) Chempac Yellow Sticky trap and (B) Lime-green ACP trap (Alpha Scents, USA)

- Suppliers of traps for ACP monitoring in South Africa are :
 - Chempac, Simondium Road, Suider Paarl (021 874 1055)
 - Insect Science, 9 Industria Street, New Industrial area, Tzaneen (015 307 1391)
- For effective detection of ACP, yellow sticky traps or lime-green ACP traps should be placed along orchard edges on a citrus farm. Traps should not be placed close to indigenous trees to prevent trapping of endemic *Diaphorina* species.
- In large commercial citrus plantings use 6 traps per 100 ha.
- For nurseries, use 6 traps per 10 ha.
- Label traps with nursery/farm name, trap number, date placed and date serviced.
- Place one trap per citrus tree on the outside canopy (Figure 2) and preferably on either the southern or eastern side of the tree. Hang the trap at about 1.5-2 m above ground. Clear leaves away around the trap. Remove waxy paper covering the yellow sticky card.



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Figure 2. Yellow sticky trap on the outside canopy of a citrus tree

- Inspect and collect traps at least once a month and replace with new traps. Place collected trap flat onto a transparent plastic film (Cling Wrap) and cover the two sticky sides with the film (Figure 3). Avoid creases in the plastic film for easy identification of insects.



Figure 3. Covering of sticky surfaces of the trap with transparent film

- Inspect traps for the presence of ACP using a hand lens. The ACP adult can be recognised by its brown body and brown mottled wings with an interrupted band at the wing-apex (Figure 4).



Figure 4. ACP adult on yellow sticky trap. Adult ACP recognised by its brown body and brown mottled wings with an interrupted band on the apex

- In case a suspected ACP specimen is found, report immediately to Citrus Research International, Nelspruit (CRI), South Africa [Tel: +27 (0)13 759 8000,

Contact persons: Tim Grout (tg@cri.co.za), Aruna Manrakhan (aruna@cri.co.za), MC Pretorius (mc@cri.co.za) & Wayne Mommsen (mommsenw@cri.co.za)] or to the Citrus Improvement Scheme [Tel: +27(0)41 992 5366, Contact person: Paul Fourie (phf@cri.co.za)].

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Monitering van die Asiatiese Sitrus Bladvlooi in sitrus produksie-areas in Suidelike Afrika

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Die Asiatiese sitrusbladvlooi (ACP), *Diaphorina citri*, is 'n belangrike plaag van sitrus in baie dele van die wêreld, weens sy effektiewe vermoë om as vektor vir Asiatiese Huanglongbing (HLB) (veroorzaak deur die floeëmbepaalde bakterie *Candidatus Liberibacter asiaticus* (LAS)) op te tree. ACP kan ook as vektor vir *Candidatus Liberibacter africanus* (LAF) optree, wat in sekere dele van Suidelike Afrika teenwoordig is, en Afrika vergroeningsiekte (of Afrika HLB) veroorsaak. Afrika Vergroening is 'n ernstige siekte, veral in koeler produksie-areas. HLB is egter die ernstigste siekte van sitrus wêreldwyd weens sy vinnige verspreiding, vinnige boom agteruitgang en afsterwe, en baie moeilik is om te beheer.

ACP is van Asiatiese oorsprong en kom in baie sitrus produksie-areas in die wêreld voor, insluitende Asië, Noord-Amerika en Suid-Amerika. **ACP is egter onlangs in Tanzanië (insluitende Zanzibar) en Kenia aangeteken. Asiatiese HLB is in Etiopië, Mauritius en Reunion aangeteken. Die teenwoordigheid van ACP en Asiatiese HLB op die Afrika kontinent en naasliggende Indiese Oseaan eilande, is dus kommerwekkend en hou 'n direkte bedreiging vir die Suidelike Afrika sitrus-industrieë in.**

Die biologie van ACP maak dit 'n moeilike plaag om te bestuur. ACP is in staat tot 'n baie vinnige populasie toename, is bestand teen temperatuur uiterstes, en dra HLB baie vinnig oor. ACP affekteer hoofsaaklik plante binne die Rutaceae familie (sitrus en naby-verwant aan sitrus). Volwasse wyfies van ACP lê eiers op jong, ontwikkelende blare en nimfe ontwikkel op onvolwasse blare en jong stamme. ACP volwassenes voed op jong stamme en blare van alle ontwikkelingsstadia.

Ten einde die Suidelike Afrika sitrus-industrieë te beskerm, versoek ons sitruskwekerie en produsente, veral dáárdie geleë aan die noordelike en oostelike grense van Suid-Afrika,

om aan 'n ACP moniteringsprogram deel te neem. Vroeë waarneming van die plaag mag sy uitwissing moontlik maak.

Wat kan ek as 'n kwekery of sitrusprodusent doen?

- Monitor regdeur die jaar vir vroeë waarneming van ACP deur gebruik te maak van geel kleeflokvalle of lemmetjie-groen ACP lokvalle (Figuur 1).



Figuur 1. Kleef lokvalle vir monitering van ACP: (A) Chempac Geel KleefLokval en (B) Lemmetjie-groen ACP lokval (Alpha Scents, VSA)

- Lokvalle vir die monitering van ACP in Suid-Afrika word veskaf deur:
 - Chempac, Simondium Straat, Suider Paarl (021 874 1055)
 - Insect Science, 9 Industria Straat, New Industrial area, Tzaneen (015 307 1391)
- Vir effektiewe waarneming van ACP, moet geel kleeflokvalle of lemmetjie-groen ACP lokvalle al om die rante van boorde op 'n sitrusplaas geplaas word. Lokvalle moet nie naby aan inheemse bome geplaas word nie om te verhoed dat inheemse *Diaphorina* spesies nie gevang word nie.
- In groot kommersiële sitrusaanplantings, moet 6 lokvalle per 100 ha gebruik word.
- Vir kwekerie, gebruik 6 lokvalle per 10 ha.
- Merk lokvalle met kwekery/plaas naam, lokval nommer, datum uitgeplaas, en datum gediens.
- Plaas een lokval per sitrusboom aan die buitenste lowerdak (Figuur 2) en verkieslik aan òf die suidelike òf die oostelike kant van die boom. Hang die lokval ongeveer 1.5-2m bokant die grondvlak. Verwyder



blare rondom die lokval. Verwyder die waspapier wat die geel kleefkaart bedek.



Figuur 2. Geel kleeflokval aan die buitenste lowerdak van 'n sitrusboom

- Kontroleer en versamel lokvalle ten minste een keer per maand en vervang met nuwe lokvalle. Plaas die ingesamelde lokval plat op 'n deursigtige plastiek film (Cling Wrap) en bedek die twee kleefkante met die film (Figuur 3). Vermy kreukels in die plastiek film vir maklike uitkenning van insekte.



Figuur 3. Bedekking van die kleef oppervlakte van die lokval met deursigtige film

- Inspekteer lokvalle vir die teenwoordigheid van ACP deur van 'n handlens gebruik te maak. Die volwasse ACP kan uitgekken word aan sy bruin liggaam en bruin gespikkelde vlerke met 'n onderbroke band by die vlerkpunt (Figuur 4).



Figuur 4. ACP volwassene op geel kleeflokval. Volwasse ACP uitgekken aan sy bruin liggaam en bruin gespikkelde vlerke met 'n onderbroke band op die punt

- Indien 'n verdagte ACP gevind word, moet dit dadelik aangemeld word by Citrus Research International (CRI), Nelspruit, Suid-Afrika [Tel: +27 (0)13 759 8000]; kontakpersone: Tim Grout (tg@cri.co.za), Aruna Manrakhan (aruna@cri.co.za), MC Pretorius (mc@cri.co.za) & Wayne Mommsen (mommsenw@cri.co.za)] of by die Sitrus Verbeteringskema [Tel: +27(0)41 992 5366, Kontakpersoon: Paul Fourie (phf@cri.co.za)].

Dokument is opgestel namens die CRI Biosekuriteit Advieskomitee