

Citrus Biosecurity



**Wayne Kirkman
&
Biosecurity Advisory
Committee**

Citrus Research International



Citrus in southern Africa



- 🍊 **Largest fruit farming sector in RSA**
 - 55% of fruit farming area (>100-thousand ha)
- 🍊 **Export-driven**
 - 2nd largest exporter of citrus fruit in the world
 - Citrus comprise 61% of RSA's fresh fruit exports
 - R30-billion export revenue p.a. (2.8% of SA's GDP)
- 🍊 **Employs 15% of people working in RSA's agriculture sector**
 - 140-thousand of 930-thousand jobs
 - > 1-million people dependant on the citrus industry for their livelihoods
- 🍊 **Drivers of success, sustainability and global competitiveness:**
 - Science, Market Access and Citrus Biosecurity



Citrus biosecurity in southern Africa

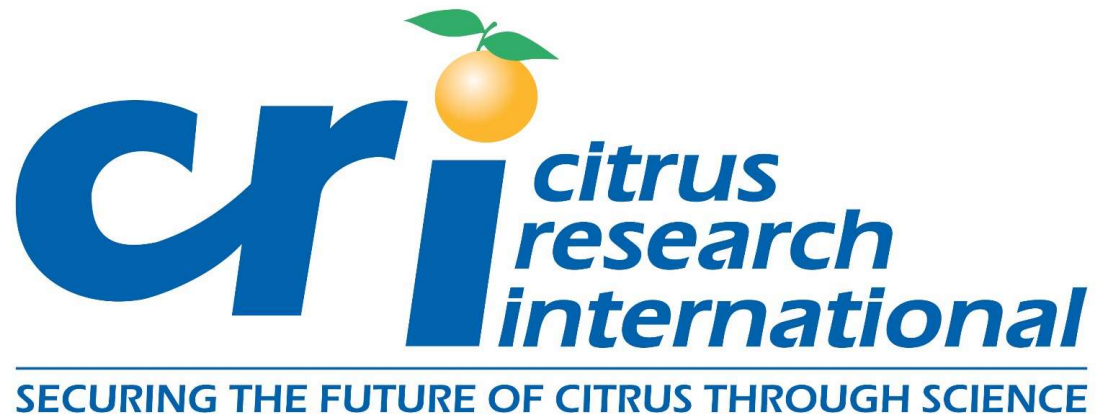


The southern African citrus industry has a remarkable history of organisation and visionary planning

🍊 In 1926, citrus growers formed the South African Citrus Exchange (SACCE), to secure the future of the industry

🍊 Today... **Citrus Research International (CRI)**

- Research and technical service provider to southern African citrus industry
- Not-for-profit
- Market Access + Biosecurity focus



CRI's Biosecurity strategic framework



 **Mission:** Protecting the southern African citrus industry through timely identification of biosecurity threats, the development of preparedness, awareness, early detection, rapid response and impact mitigation plans and ensuring effective application of the associated actions

Four pillars of Biosecurity

1. **Preparedness:** get the plans in place
2. **Operations:** effective roll-out of plans (surveillance, containment, eradication)
3. **Awareness + stakeholder engagement:** effective communication of plans
4. **Citrus Improvement Scheme:** starting clean is the first line of defence

Stakeholders

- **Primary stakeholder:** the citrus growers (CGA)
- **NPPOs,** national and provincial departments of Agriculture
- **Biosecurity service providers**
- **Research collaborators**
- **Citrus and retail nurseries**

Top 10 biosecurity threats



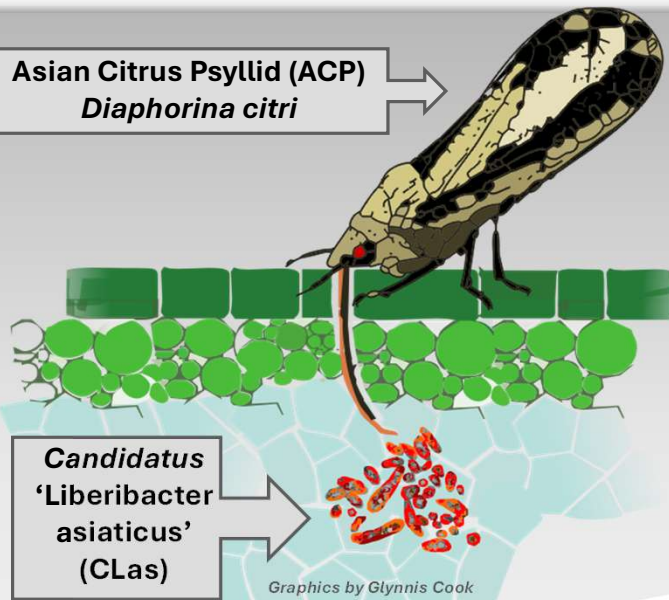
- 🍊 **Huanglongbing (HLB):** *Candidatus 'Liberibacter asiaticus'* vectored by *Diaphorina citri*
- 🍊 **Citrus Variegated Chlorosis:** *Xylella fastidiosa* subsp. *pauca*
- 🍊 **Citrus Canker:** *Xanthomonas axonopodis* pvs. *citri*, *aurantifolii*, *citrumelo*
- 🍊 **Sudden Death:** *Citrus sudden death associated virus*
- 🍊 **Citrus Leprosis:** *Citrus leprosis virus-C*, *Citrus leprosis virus-C2* and *Citrus leprosis virus-N*
- 🍊 **Postbloom fruit drop:** *Colletotrichum abscisum*
- 🍊 **Leaf and fruit spot:** *Pseudocercospora angolensis*
- 🍊 **Mal Secco:** *Plenodomus tracheiphilus*
- 🍊 **Yellow vein:** *Citrus yellow vein clearing virus*
- 🍊 **Peach Fruit Fly:** *Bactrocera zonata*

PRAs and Fact Sheets have been developed for all

Emergency Response plans drafted for some

**BUY DISEASE-FREE
PLANT MATERIAL**

HLB is the greatest threat and it is real !!!



THE CONTINUING DECLINE OF FLORIDA'S CITRUS INDUSTRY

SUBSCRIBE FLORIDA CITRUS SHOW GROWER RESOURCES ADVERTISE CONTACT US 2024

Citrus
INDUSTRY ACRIS

How Florida Orange Production Plummeted 92% in 20 Years

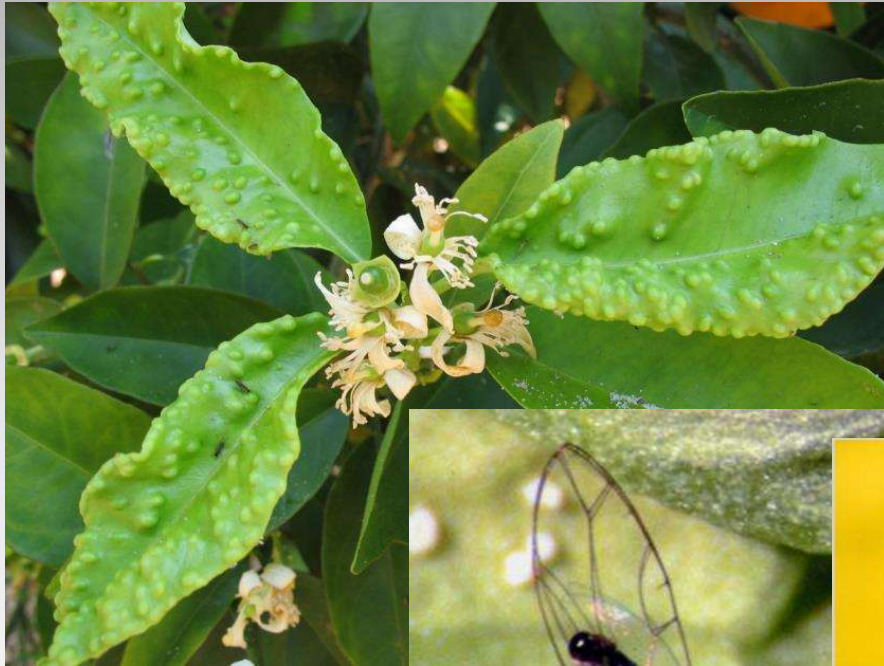
MAY 7, 2024 / FLORIDA PRODUCTION



Huanglongbing vs. African Greening



Trioza erytreae



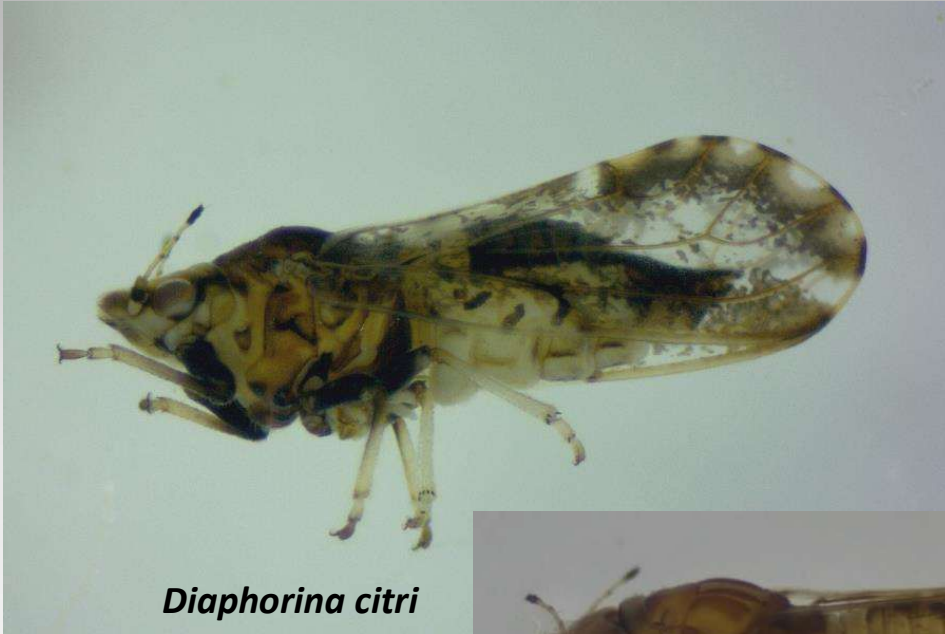
Diaphorina citri



www.apsnet.or



Complex vector identification



Diaphorina citri



D. punctulata



D. virgata



D. zebrana



Greening symptoms



Greening symptoms



Surveillance



Surveillance



CRI Cutting Edge

RESEARCH NEWS FROM
CITRUS RESEARCH INTERNATIONAL

Nov 2017

No 240

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

Aruna Manrakhan, Peter Stephen, MC
Pretorius, Tim Grout and Paul Fourie
Citrus Research International (CRI)

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.

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).

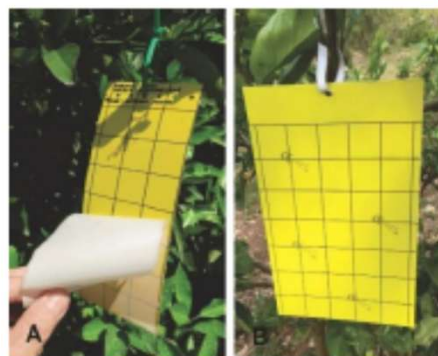


Figure 1. Sticky traps for monitoring of ACP: (A) Chempac Yellow Sticky trap and (B) Lime-green ACP trap (Alpha Scents, USA)



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



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)].

Document drafted on behalf of CRI
Biosecurity Advisory Committee

Surveillance – wrapping of traps

Clingwrap



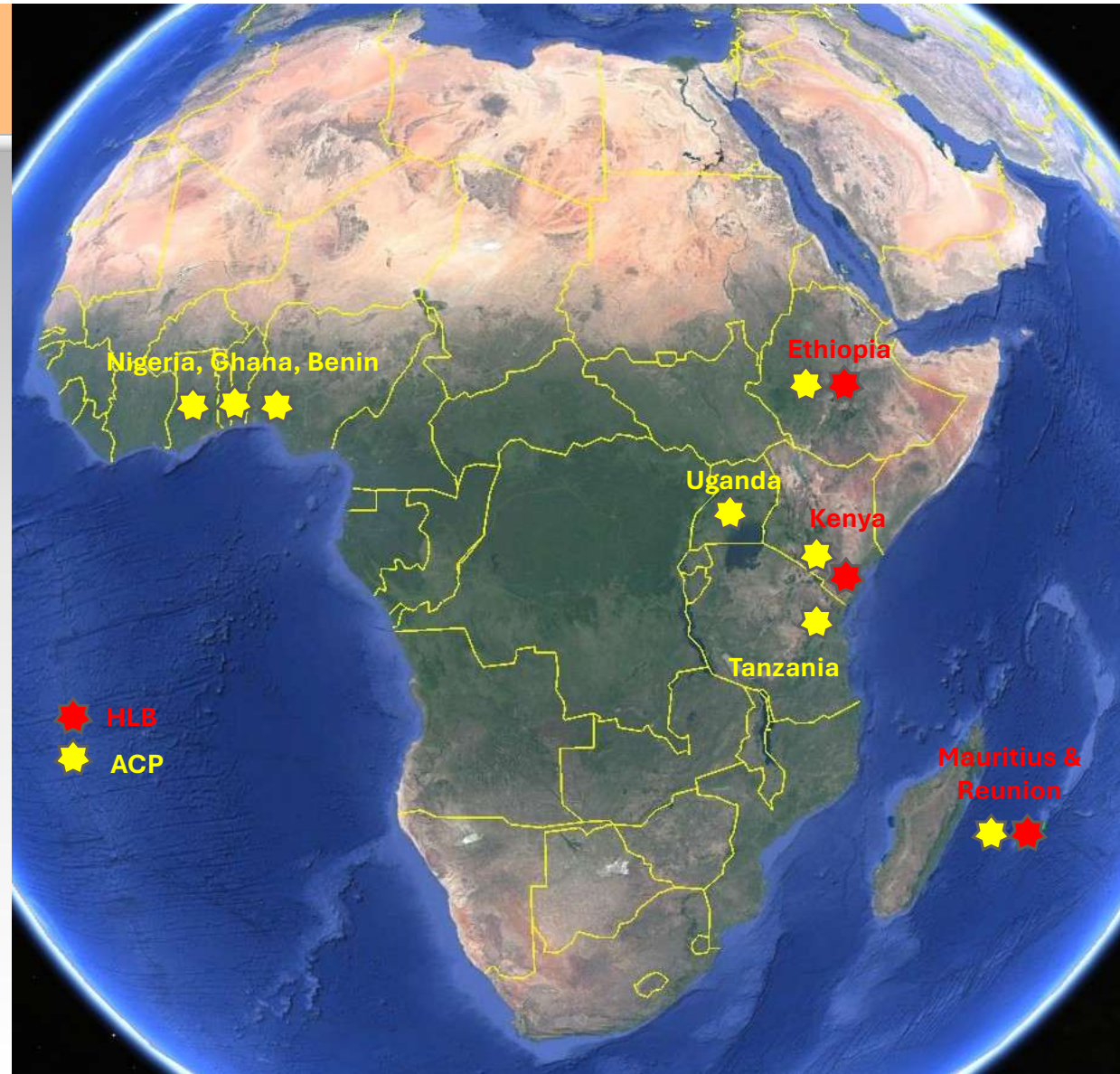
A4 plastic sleeve



Surveillance – bags for leaf samples



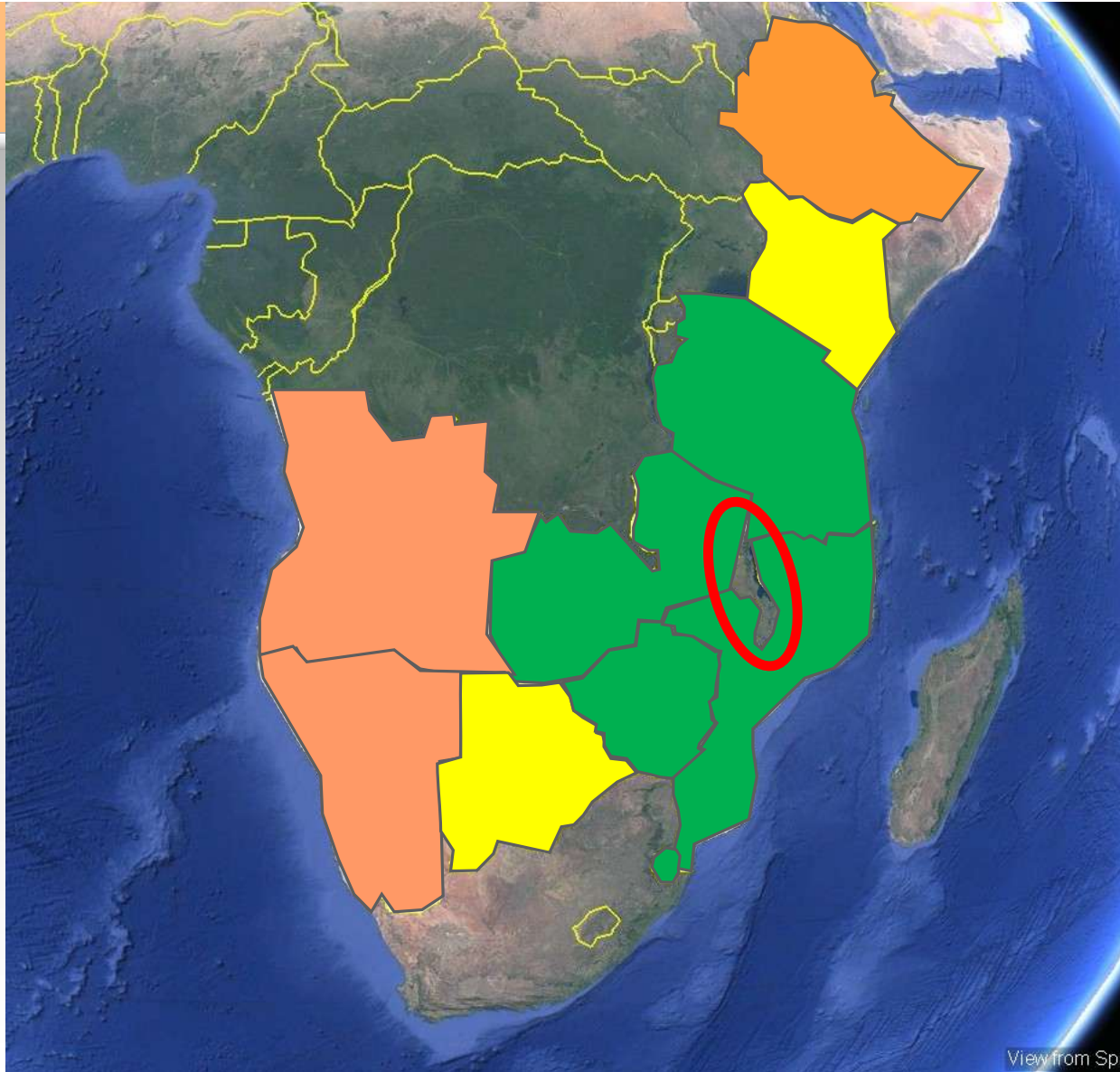
Status of HLB and ACP in Africa



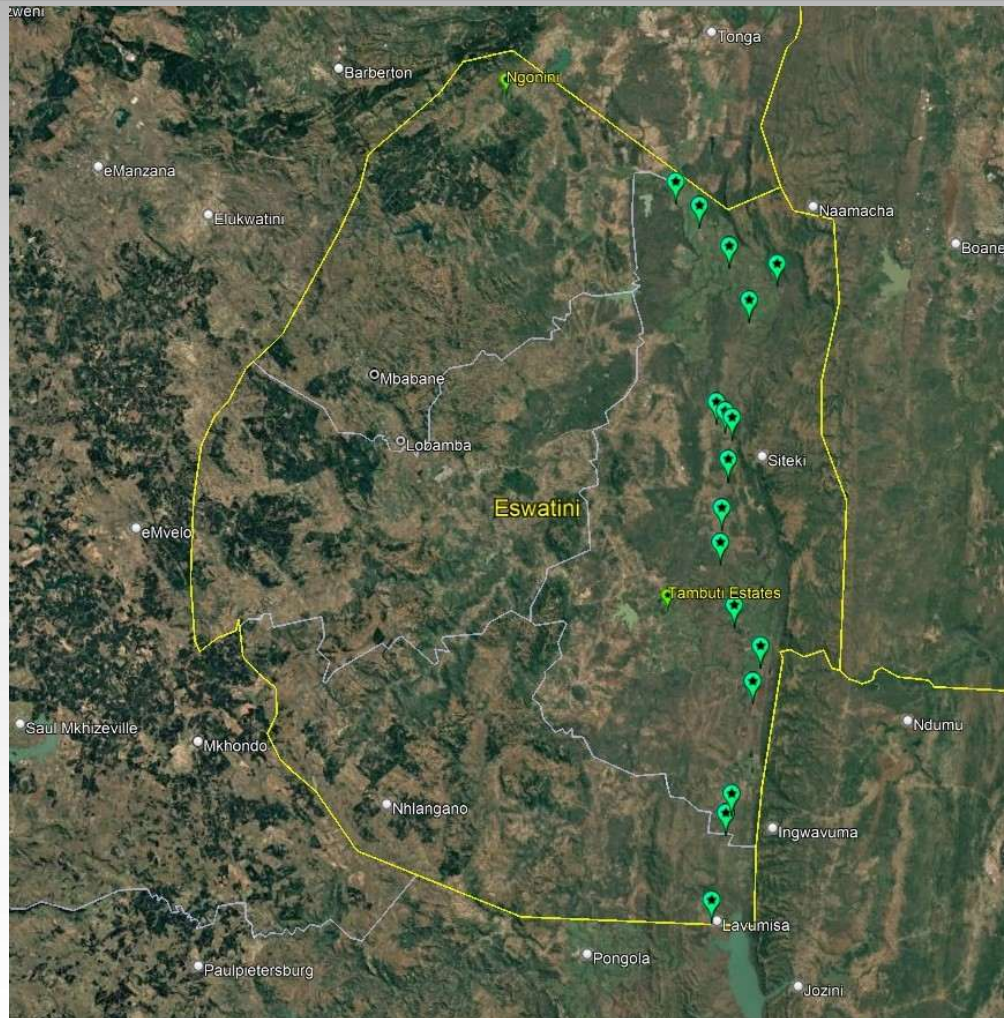
African Footprint



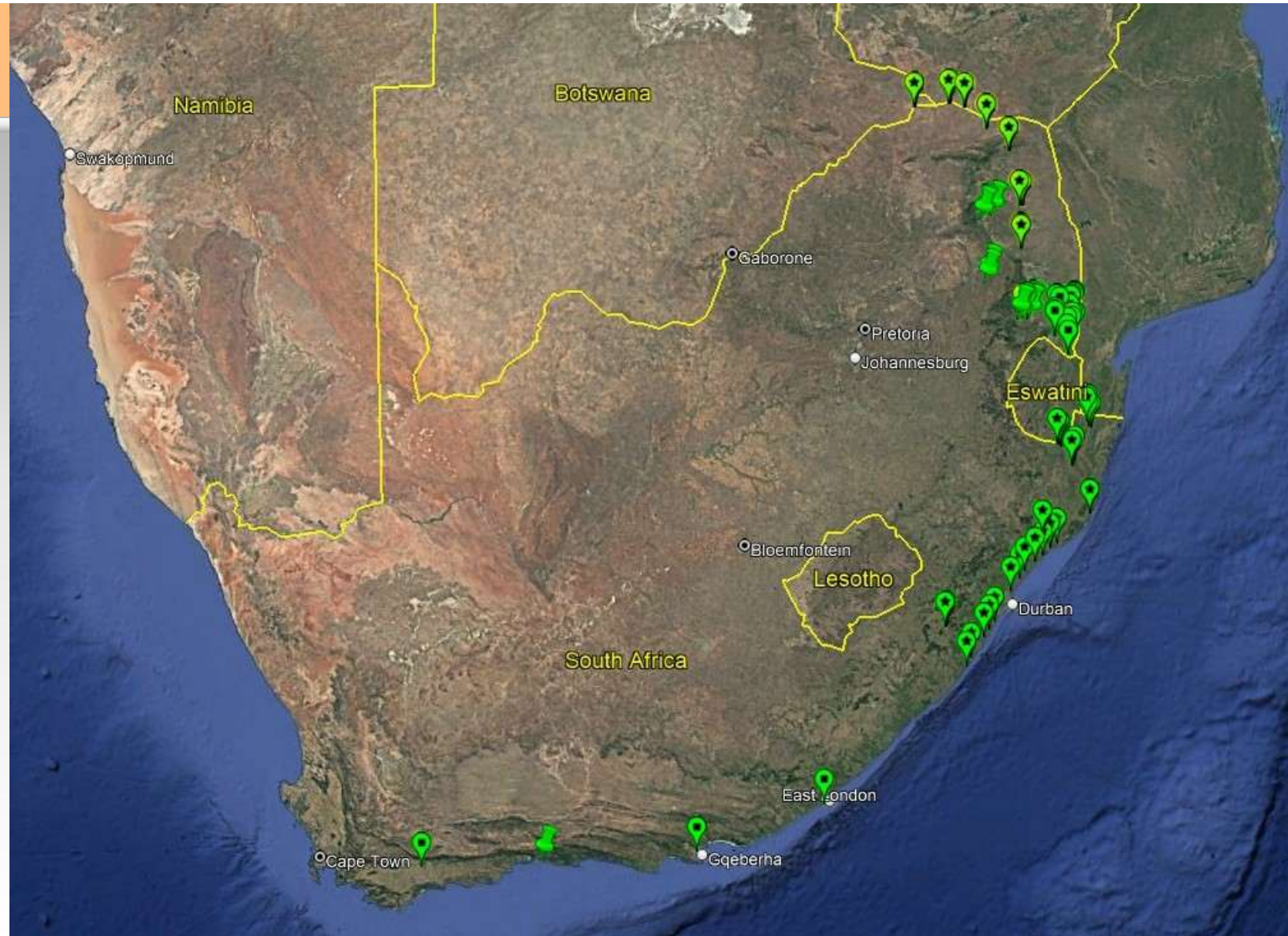
Bi-monthly
Annually
Per situation

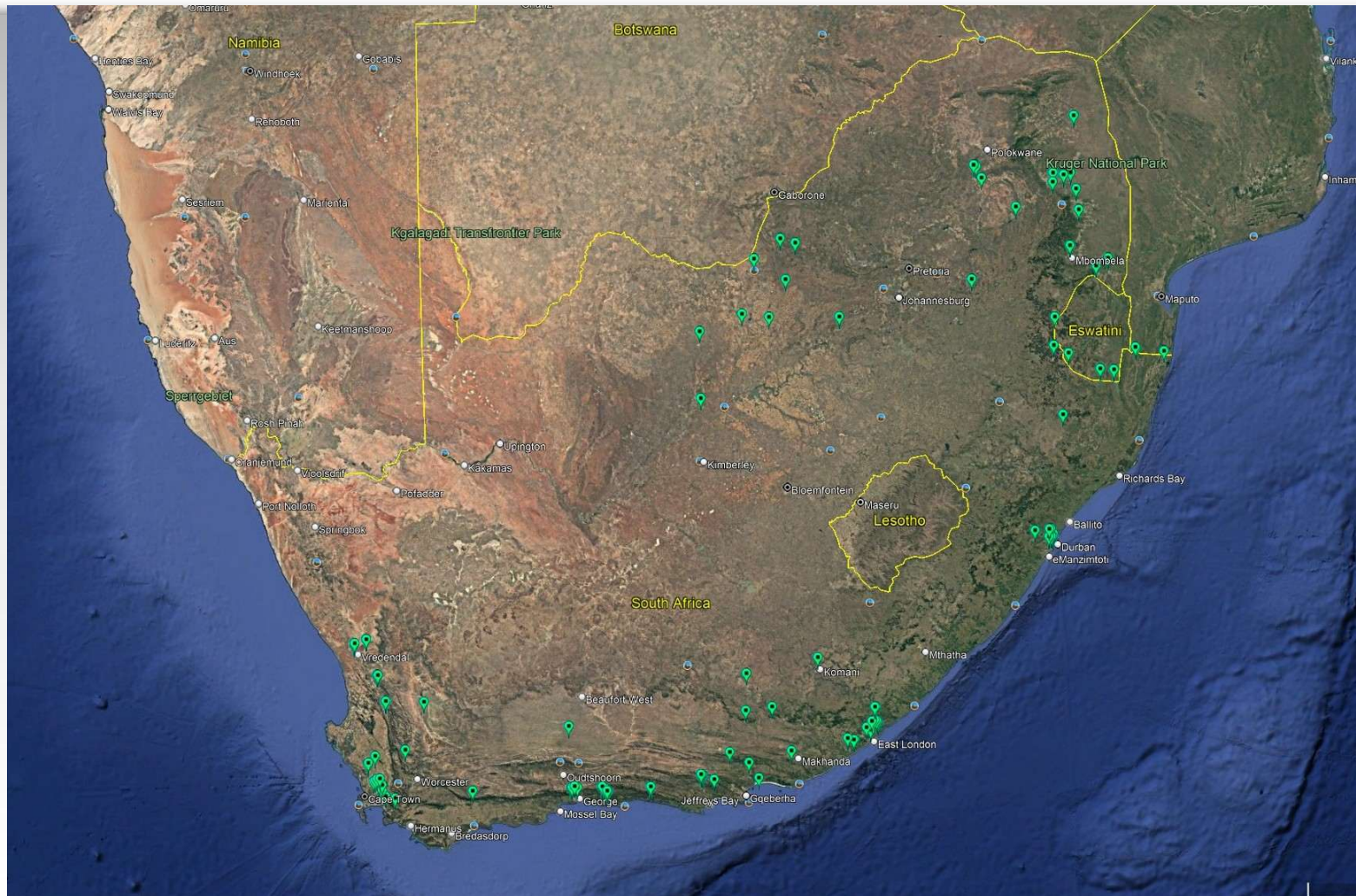


Eswatini



South Africa CRI traps





Starting clean is the first line of defense!



🍊 South African Citrus Improvement Scheme

- Promulgation as compulsory statutory scheme under the Plant Improvement Act is imminent
- All citrus trees sold in RSA must be made with CIS-certified propagation material



🍊 Promote the CIS in southern Africa

- Safe and biosecure citrus development in neighbouring countries

🍊 HLB Safe System for production of citrus trees in insect-secure nurseries

- Adopted as part of RSA's HLB Action Plan

🍊 Promote “safe citrus” in the retail sector



CRI Citrus Foundation Block

Biosecure production of certified citrus propagation material
(rootstock seed and scion budwood)

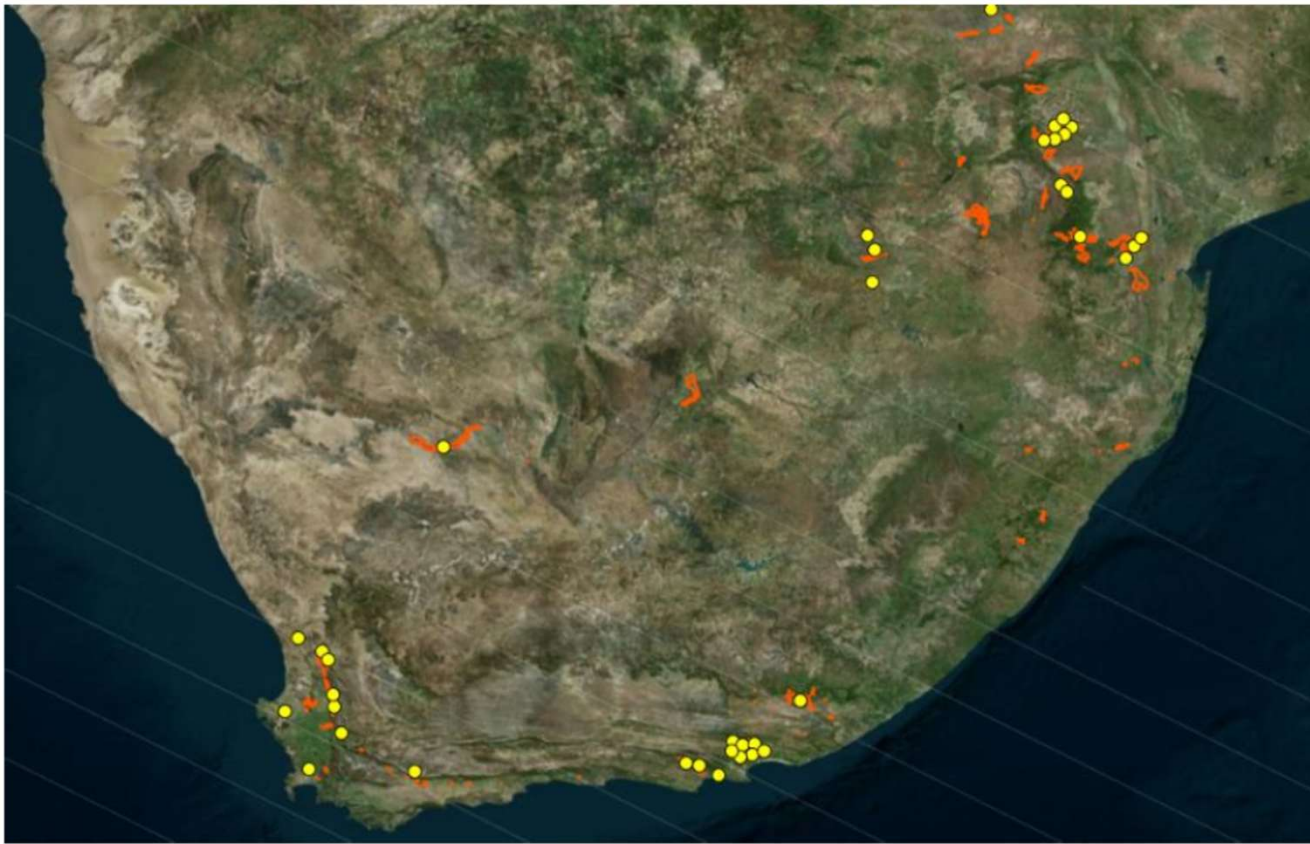
“The birthplace of Citrus in southern Africa”

CIS Certified Nurseries

SOUTH AFRICAN CITRUS IMPROVEMENT SCHEME: CERTIFIED NURSERIES (July 2025)					
NB!!! Please note that according to the Agricultural Pest Act (Act No. 36 of 1983), movement of propagation material (trees and budwood) of citrus and/or related plants is prohibited from Citrus Black Spot (CBS) and Citrus Greening infected districts to districts free from these diseases.					
Nurseries should advise their clients to adhere to these control measures, as they are in place to prevent the spread of CBS and Citrus Greening. The maps and tables illustrating where citrus plants can be moved legally within South Africa were described in Cutting Edge 162 and 170, available on the CRI website: www.cri.co.za . For more information contact the CIS at telephone 041-992 5366 or email cis@cri.co.za					
Nursery	Star-grading	Town	Contact	Cell phone	E-mail
CBS PRESENT but GREENING FREE					
EASTERN CAPE					
Appapandi Kwekery	★★★★★	KIRKWOOD	Nellis Meiring Marina Meiring CJ Meiring	082 550 6210 082 579 9040 084 951 9612	marina@meiringsgroup.co.za cj@meiringsgroup.co.za
Attwell Citrus Nursery	★★★★★	KIRKWOOD	Vaughan Attwell Wayne Attwell	082 820 7060 072 463 7115	di@attwellcitrus.onmicrosoft.com tubby@attwellcitrus.co.za
BF Joubert Kwekery	★★★★	KIRKWOOD	Francois Joubert Frens Joubert Janke Joubert	084 951 1922 071 237 5439 084 513 7080	bfjweeks@survalley.co.za fjouberts13@gmail.com kwekery@joubertcitrus.co.za
Lahnnette Kwekery	★★★★	KIRKWOOD	Francois Nel	082 412 1739	conel@survalley.co.za
Miskraal Nursery	★★★★★	KIRKWOOD	Tyna Ferreira Eddie Ferreira	082 789 5120 083 602 0469	beans@survalley.co.za ops@fermereddie.co.za
Moorland Seedlings	★★★★★	JEFFREY'S BAY	Rian Moore Ri-Ellen Kemp	082 460 3139 083 281 3213	rian@moorland.co.za ri-ellen@moorland.co.za
Paksam Kwekery	★★★★	PATENGE	Adri Ferreira Iste Klopper	082 923 4412 082 926 8086	adri@patensiecitrus.co.za loek@patensiecitrus.co.za
Waterfall Nursery	★★★	ADELAIDE	Rudy van der Meulen	082 695 3433	rudyvdmeylen@gmail.com
CBS PRESENT & GREENING PRESENT					
LIMPOPO					
Du Roi Nursery	★★★★★	LETSITILE	Anne-Helene Meyer Merika Benn	082 398 1287 072 475 2568	s.meyer@duroi.co.za merika@duroi.co.za
Groep 91 Kwekery	★★★★	LETSITILE	Jaco Lindeque	084 802 4708	jacob@groep91.co.za
Henley Nursery	★★★★	LETSITILE	André Swanepoel	084 513 8649	hennursery@FruitOne.com
Hishibi South Africa (bootstrap seedlings only)	★★★★	MOOKETSI	Juan Labuschagne	078 801 1125	juan@hishibisa.com
Hoedspruit Kwekery	★★★★	HOEDSPRUIT	Lafras Tremper	083 652 2167	tremper@hdonursery.com cora@hdonursery.com
Letsitele Kwekery	★★★	LETSITILE	Barend Vorster Carl Fourie Delney Conradie	083 259 5590 083 276 7726 076 273 0323	barend@mahela.co.za carl@mahela.co.za nursery@mahela.co.za
Nouvelle la Cotte Kwekery	★★★★	LETSITILE	Jean-Henri Ronder Elmarie Vermoort Albert Horn	083 251 1506 082 2509 364 079 499 6943	produksie@nouvellecotte.co.za emarie@nouvellecotte.co.za
Parma Kwekery	★★★★★	HOEDSPRUIT	Dolf Weyers Anneri Potgieter	083 413 3707 073 602 7170	parma@global.co.za
Rietvlei Kwekery	★★★★	TZANEEN	Lucas McLean	083 630 3236	rietvlei@global.co.za
MPUMALANGA					
Esselen Kwekery	★★★	MALALANE	Louis Esselen	078 803 7010	esselenkwekery@gmail.com
Esigro Seedlings (Jatjags)	★★★★★	WHITE RIVER	Bele Cook Jordan Green	073 231 4121 083 212 1342	bele@esigro.co.za jordan@esigro.co.za
Komati Fruit Nurseries	★★★★★	MALALANE	Milanie van der Merwe	082 418 7693	milanie@komatigroup.co.za
NORTH WEST					
Heuers Wholesale Nursery	★★	BRITS	David Seewald	082 887 4269	david@heuers.co.za
Wiltrans Kwekery	★★★★★	BOSHOFK	Linda Grobler Abrie Grobler Christiaan Grobler	082 414 4739 082 426 9026 082 733 4392	wiltrans1@mweb.co.za



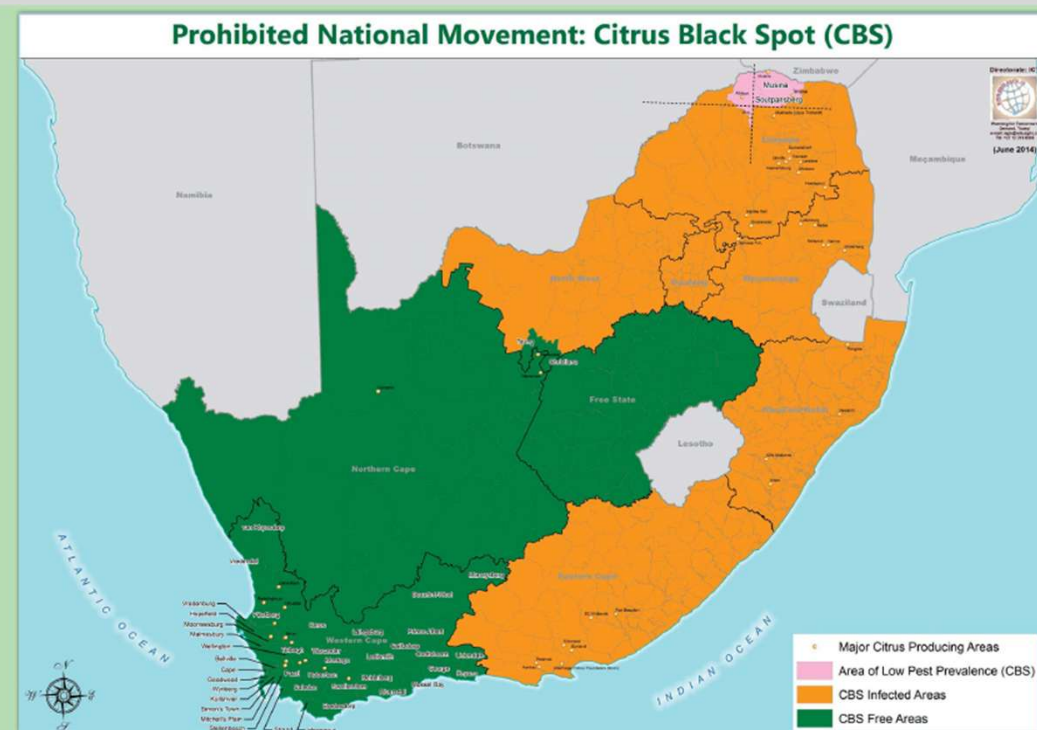
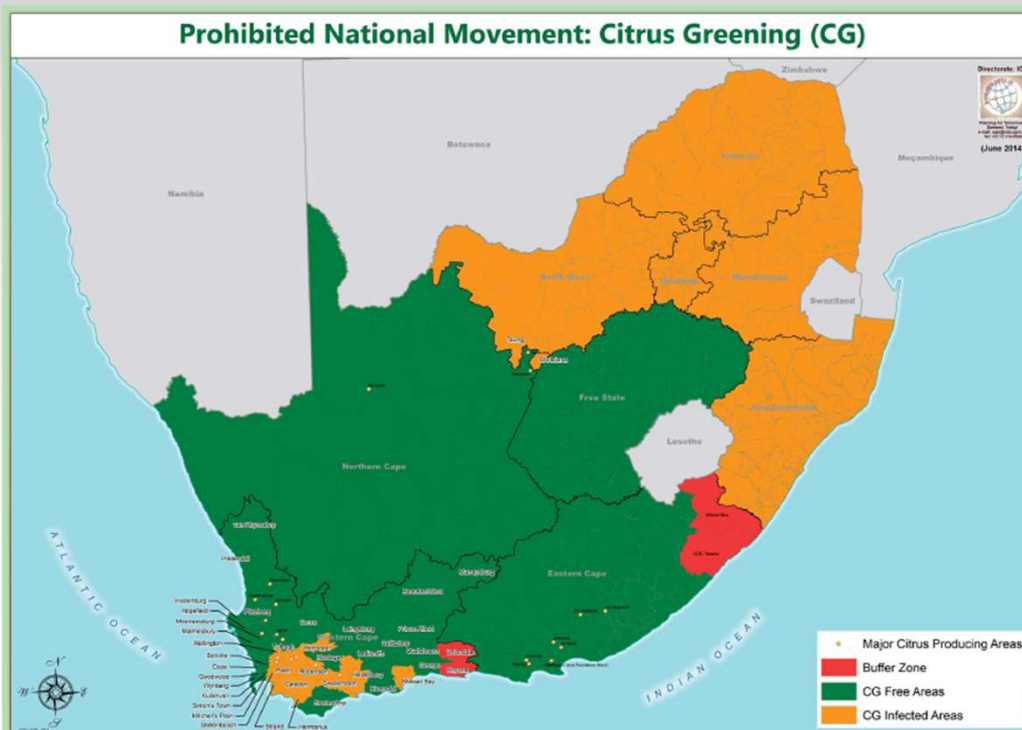
CIS Certified Nurseries



Regulation 110



No movement of *Citrus*, *Choisya*, *Fortunella*, *Murraya*, *Poncirus* budwood/trees/plants from areas where Citrus Greening and/or Citrus Black Spot diseases occur (orange/red areas on maps) to pest-free areas (green areas)





Buffer zone for African Citrus Greening disease

Knysna: Wards 3, 6, 7, 8, 9, 10, 11, and wards 4 and 5 below latitude 33.996

No movement of *Citrus*, *Choisya*, *Fortunella*, *Murraya*, *Poncirus* plant material from buffer zones to pest-free areas, according to R.110 of the Agricultural Pests Act



agriculture

Department:
Agriculture
REPUBLIC OF SOUTH AFRICA

For more information, contact YolandaT@nda.gov.za or Biosecurity@cri.co.za



Buffer zone for African Citrus Greening disease

Buffalo City: Wards 1-10, 15, 16, 18, 19, 27-29, 31, 46, 47 and 50 and Great Kei ward 1

No movement of *Citrus*, *Cholsya*, *Fortunella*, *Murraya*, *Poncirus* plant material from buffer zones to pest-free areas, according to R.110 of the Agricultural Pests Act



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Buffer zone for African Citrus Greening disease

Nelson Mandela Bay: Wards 1-15, 32 and 39 (South of Swartkops - Bethelsdorp - Seaview road indicated on map)

No movement of *Citrus*, *Choisya*, *Fortunella*, *Murraya*, *Poncirus* plant material from buffer zones to pest-free areas, according to R.110 of the Agricultural Pests Act



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Road ahead..?



🍊 NB – Biosecurity involves southern Africa

- Namibia, Botswana, Zimbabwe, Mozambique and Eswatini are CGA members

🍊 Closer working relationship between CRI and:

- Departments of Agriculture
- Agricultural Research Council
- South African Nurserymen's Association
- CGA Grower Development Company
- Provincial Departments of Agriculture

🍊 Awareness

🍊 Compliance

🍊 Training

🍊 Technical support



CONCLUSION



Biosecurity role of extension officers in provinces

- 🍊 Ensure that citrus is grown safely, responsibly and successfully on farms, smallholdings and backyards
 - Remember: **“Starting clean is the first line of defense”**
- 🍊 Ensure compliance with biosecurity legislation, particularly important and movement restrictions
- 🍊 Support biosecurity awareness in communities
- 🍊 Support surveillance efforts
 - Report suspicious signs or symptoms of pests and diseases
 - Participate in official surveillance
- 🍊 Support containment and eradication efforts

Thank you!



Keep our citrus smile



THINK BIOSECURITY

LEARN MORE



Please contact us...

www.cri.co.za
biosecurity@cri.co.za

