



INTERNATIONAL YEAR OF
PLANT HEALTH

2020

Status of quarantine pests in South Africa and their impact on food security and agricultural trade

National Sanitary and Phytosanitary (SPS) Workshop

JH Venter

10-11 March 2021



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In September 2015, 193 world leaders agreed to 17 Global Goals for Sustainable Development. If these Goals are completed, it would mean an end to extreme poverty, inequality and climate change by 2030.



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NATIONAL DEVELOPMENT PLAN 2030

We live with pests and we will have to live with more pests

- 1,300 known invasive pests pathogens cost over US\$540 billion per year worldwide (2016)

- The Centre for Agriculture and Biosciences International (CABI) Compendia full datasheets for 1,187 arthropod pests

- *Spodoptera frugiperda* (Fall Armyworm) is amongst the top 10 arthropod pests currently

CABI has published *Descriptions of Fungi and Bacteria* since 1964. This includes diagnostic descriptions and background biological information on over 2100 species of fungi and bacteria, including many of the most economically important taxa.

CABI's book "*Viruses of Plants*", covers more than 900 plant viruses.

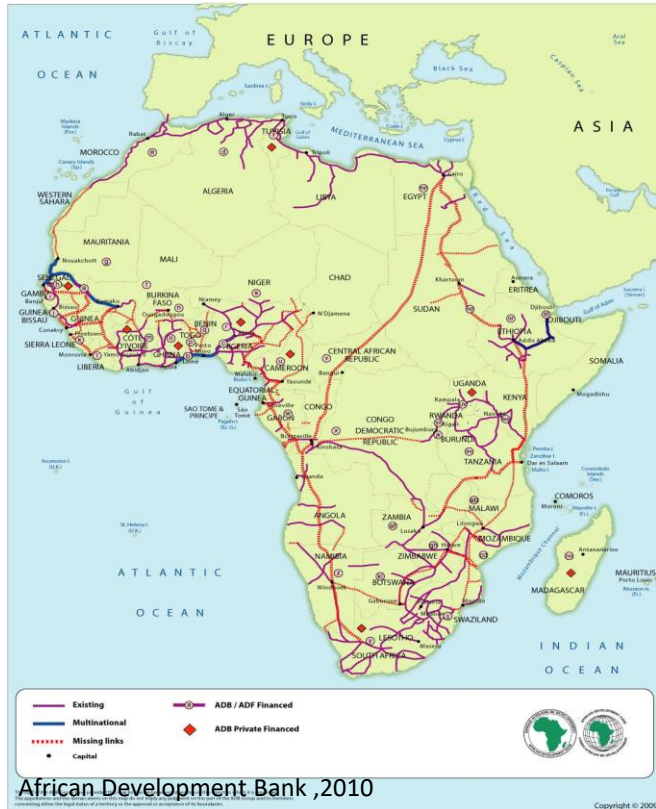


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Africa is open for trade

AFRICA'S POWER NETWORKS
MISSING LINKS AND ADB GROUP FINANCED PROJECTS



Trade and travelling increased exponentially since 1994 not only for the RSA but also for neighbours and other land-lock countries

It provide more opportunities to trade and to more countries

It also provided more opportunities for more pests to visit the region

Some decided to stay

Some pests are on their way



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What are we protecting?

- Our food and food for the region (Food security)
- Our ability to trade with food (reduce poverty and economic growth).

The value of primary agricultural production in South Africa was estimated at R286,4 billion in 2018, while its contribution to the GDP was estimated at R95,1 billion at prices in 2017 (DALRRD, 2020)

Value of five export products 2019:

Citrus fruit (R19 627 million), grapes (R9 154 million), wine (R8 741 million), apples, pears and quinces (R7 711 million) and nuts (R5 945 million) (DALRRD, 2020).



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PESTS

The International Plant Protection Convention (IPPC) defines pests as:

Any species, strain or biotype of plant, animal or pathogenic agent injurious to plants or plant products

In short: plant feeding insect mite or nematode, disease causing organism or, weed



Photo: Desiree Heerden



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QUARANTINE PEST

A pest of potential economic importance to the area endangered thereby and not yet present there, or present but not widely distributed and being officially controlled

Thus a pest (something which will harm plants and cause economic loss) which is not yet in a country or not yet established in some areas within a country or region and which is regulated through legislation



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Photo: JH Venter

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Some recent new pests in South Africa:

- *Prostephanus truncates*-Larger grain Borer (1999)
- *Bactrocera dorsalis*- Oriental Fruit Fly (2010)
- *Acalitus vaccinii* –Blueberry Bud Mite (2014)
- *Raoiella indica*- Red Palm Mite (2016)
- Banana Bunchy Top Virus (2015)
- *Tuta absoluta*-Tuta (2016)
- *Spodoptera frugiperda*-Fall Armyworm (2017)
- *Euwallacea fornicates* Polyphagous Shothole Borer and its pathogenic vector *Fusarium euwallaceae* (2017)
- *Eriococcus ironsidei* Macadamia felted coccid- (2017)



Pests which invaded most of Africa within 10 years after detection

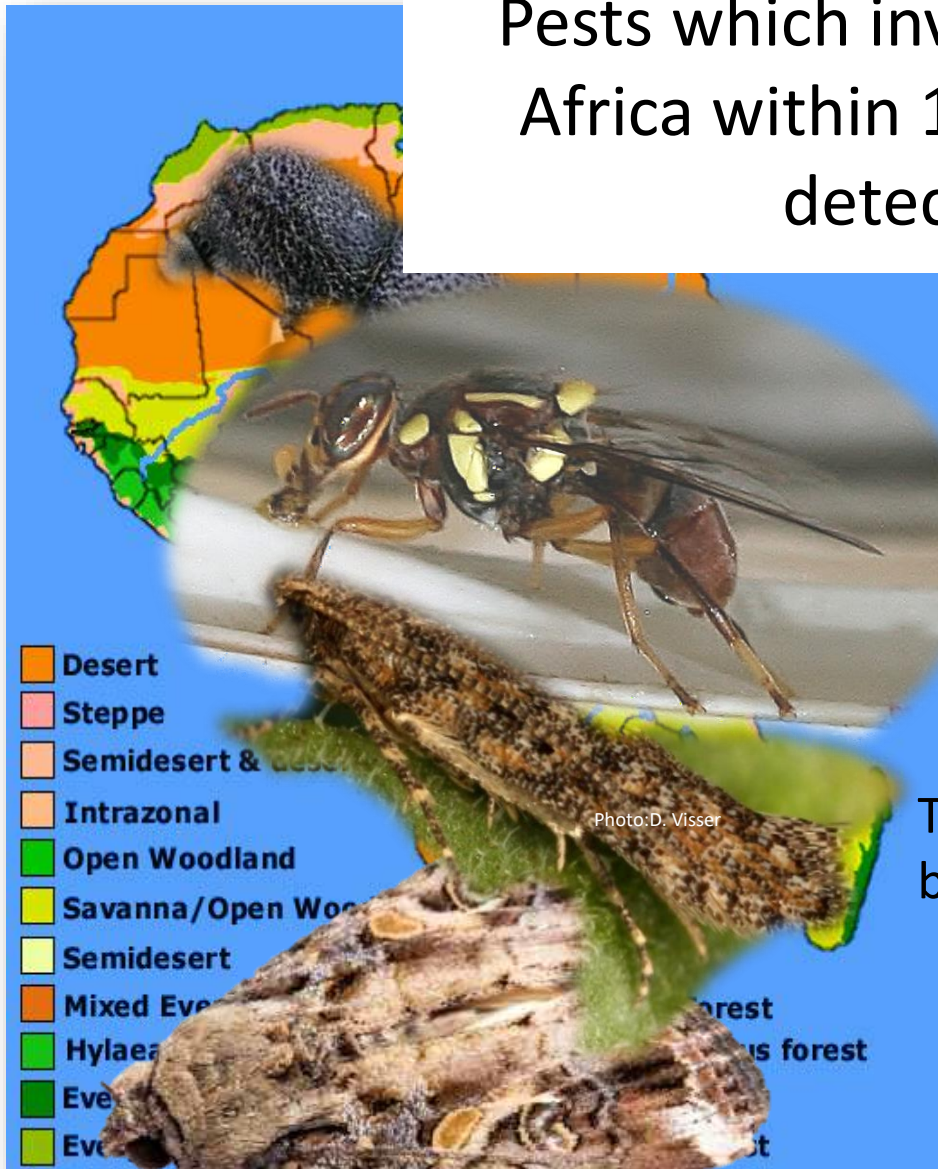
Prostephanus truncatus: 1981-1999

Bactrocera dorsalis: 2003-2013

Tuta absoluta: 2006-2016

Spodoptera frugiperda: 2016-2017

They all probably crossed our borders by simply flying over



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<http://www.infonet-biovision.org/PlantHealth/Pests/Larger-grain-borer-LGB>

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Regulatory and policy documents

- Plant Health Policy
- Agricultural Pests Act, 1983 (Act No. 36 of 1983)
- National Control Measures R.110
- South African Emergency Plant Pest Response Plan (SAEPPRP)
- Specific plant pest contingency or action plans



Examples of quarantine pests already in South Africa

- Fall Army worm (FAW) –Detected in 9 provinces but sporadic in Western Cape- Control measures R449
- Oriental fruit fly- Not established in Free state, Northern, Western and Eastern Cape (Control measures R110)
- Banana Bunchy Top Virus (BBTV), only established in the Ugu district KZN (Control measures R110)



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FAW

A migratory pest with a wide host range but causes mostly serious damage on maize crops in Africa
Causes serious leaf and stem damage
Also feeds on growth points, tassels and developing cobs

Compulsory notification and control is needed in terms of R449



Male *Spodoptera frugiperda* adult on maize.
Photo: Desiree van Heerden



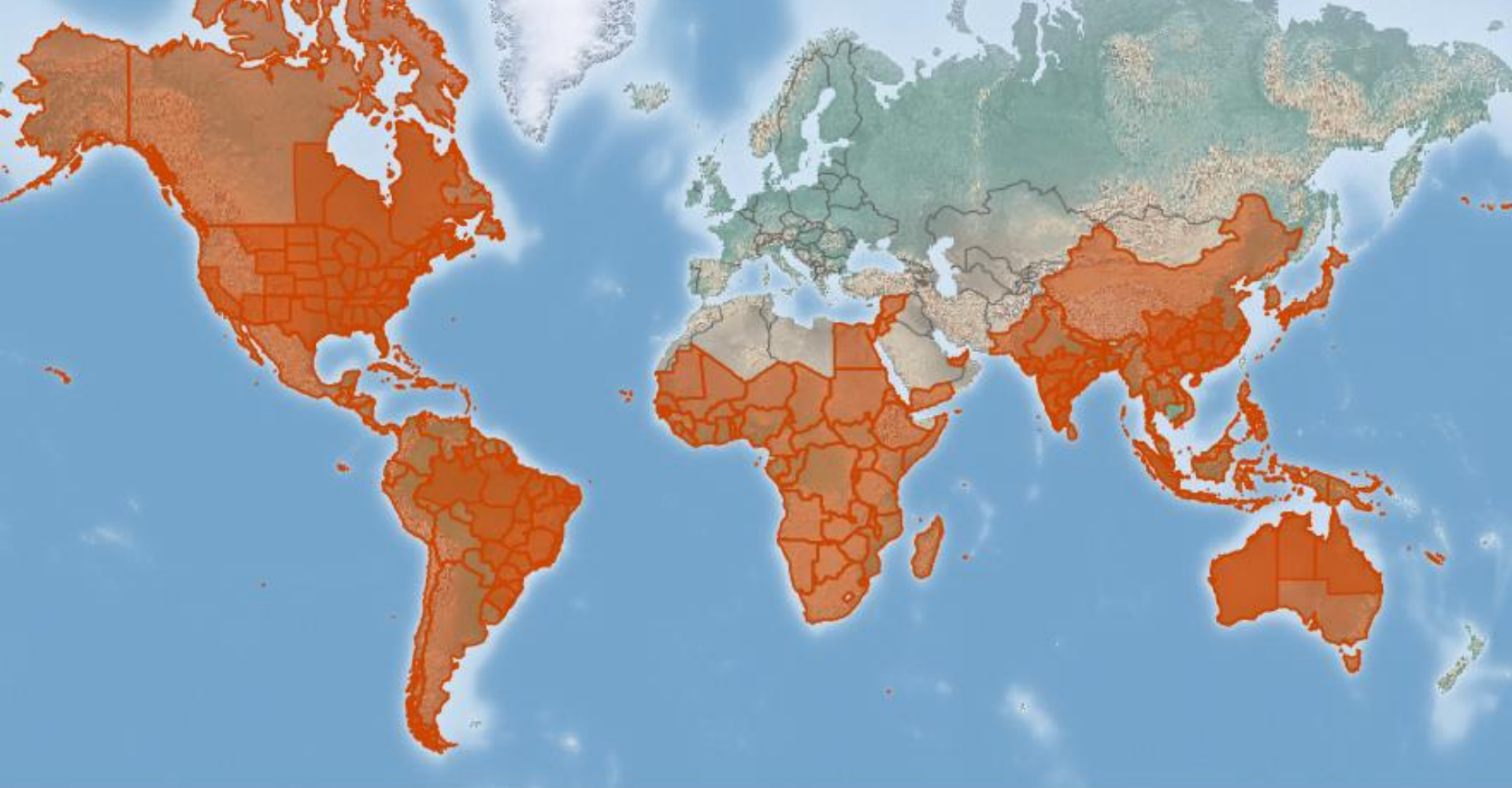
Photo: Desiree Heerden



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CABI, 2021. *Spodoptera frugiperda*. In: Invasive Species Compendium. Wallingford, UK: CAB International. <https://www.cabi.org/isc>

● CABI Summary Data



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Oriental fruit fly

Large host range

Short life cycle

Competitive, dominating fruit fly

Large amount of eggs per fruit

Causes large amount of damage if not controlled

Permanent surveillance (DALRRD, Fruit Fly Africa, Producers (Exporters))

One positive (free areas)– delimiting plus quarantine

Two or more positives (free areas)-delimiting plus quarantine actions and removal control

Quarantine: 5km radius minimum by means of an official order

Delimiting: 25 square km over a 5km radius depending on topography, available host material etc.

100km radiating road transect traps

Corrective and quarantine measures:
Official order

Restricted removal of fruit from infested(quarantine) areas are implemented in terms of R110

BBTV

Devastating virus on bananas

Spread by the Banana aphid and propagation material (nursery plants and suckers)

No cure and plants (normally whole mat) must be destroyed once infected while aphids are controlled chemically to avoid flying to new plants

Survey as part of the Strategic plan of DALRRD

The removal of propagation material is restricted in terms of R110



Reduced and underdeveloped fruit

Stunted growth

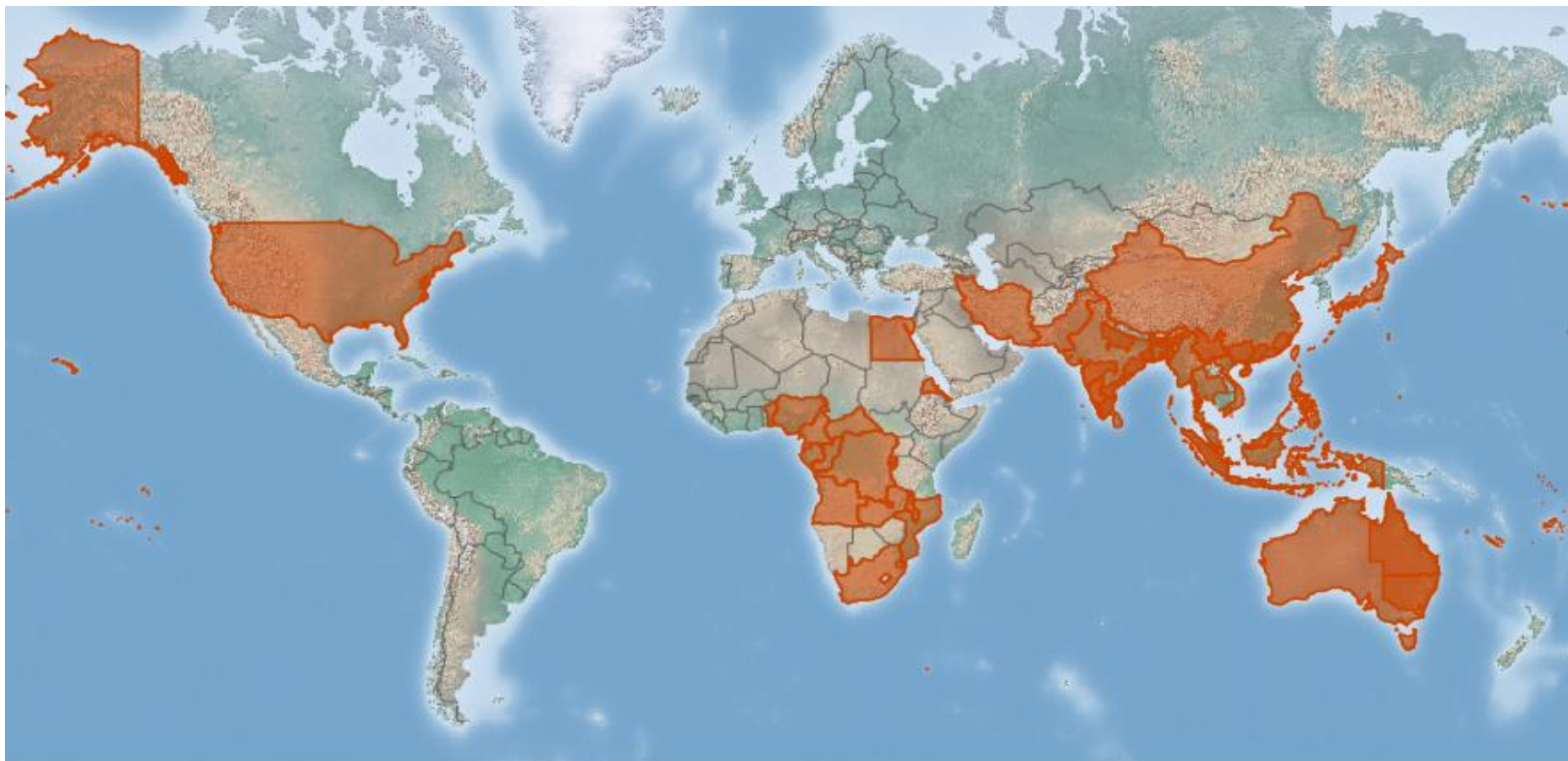


Photos JH Venter



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CABI, 2021. Banana bunchy top virus. In: Invasive Species Compendium. Wallingford, UK: CAB International. <https://www.cabi.org/isc>

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Serious quarantine pests in the region but not in South Africa yet

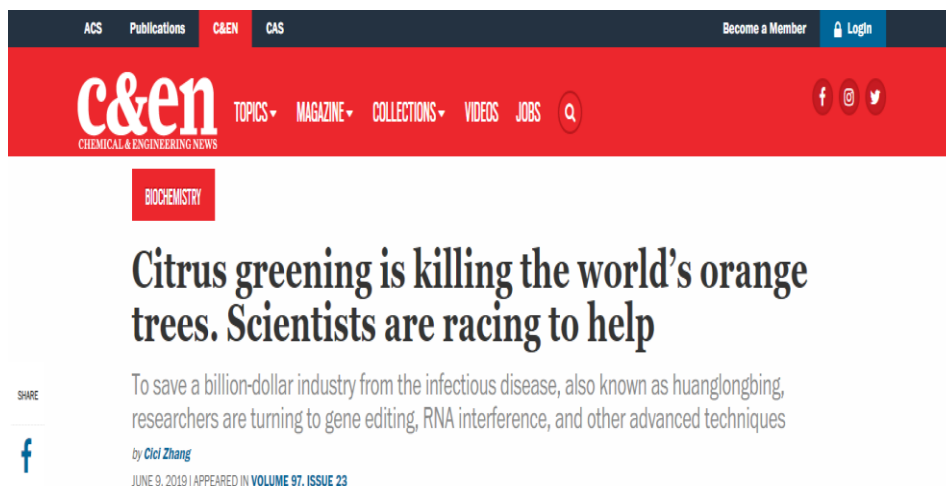
- *Candidatus Liberibacter asiaticus* (Citrus Greening Asian strain) and its Vector *Diaphorina citri* Asian citrus psyllid or HLB
- *Fusarium oxysporum f.sp. cubense* tropical race 4 or TR4
- *Bactrocera zonata* (Peach fruit fly)
- *Zeugodacus cucurbitae* (Melon fruit fly)



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Citrus greening (HLB)



Once plants are infected they must be removed as no cure exists and the plant cannot produce viable fruit



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“HLB spread so widely and easily in Florida that some in the business liken it to a measles outbreak. In the past decade in the US, HLB caused an approximately 21% decrease in the fresh citrus fruit market and about a 72% decline in the production of oranges used for juice and other products (*Front. Plant Sci.* 2019,

DOI: [10.3389/fpls.2018.01976](https://doi.org/10.3389/fpls.2018.01976)).

And HLB isn't a problem in just the US. In China, where the disease originated, top-producing Jiangxi Province has lost 25% of its groves as of the end of 2018. In Brazil, the disease has eliminated 52.6 million sweet orange trees, a 31% reduction in area, since 2004, when HLB was first detected there.”

HLB

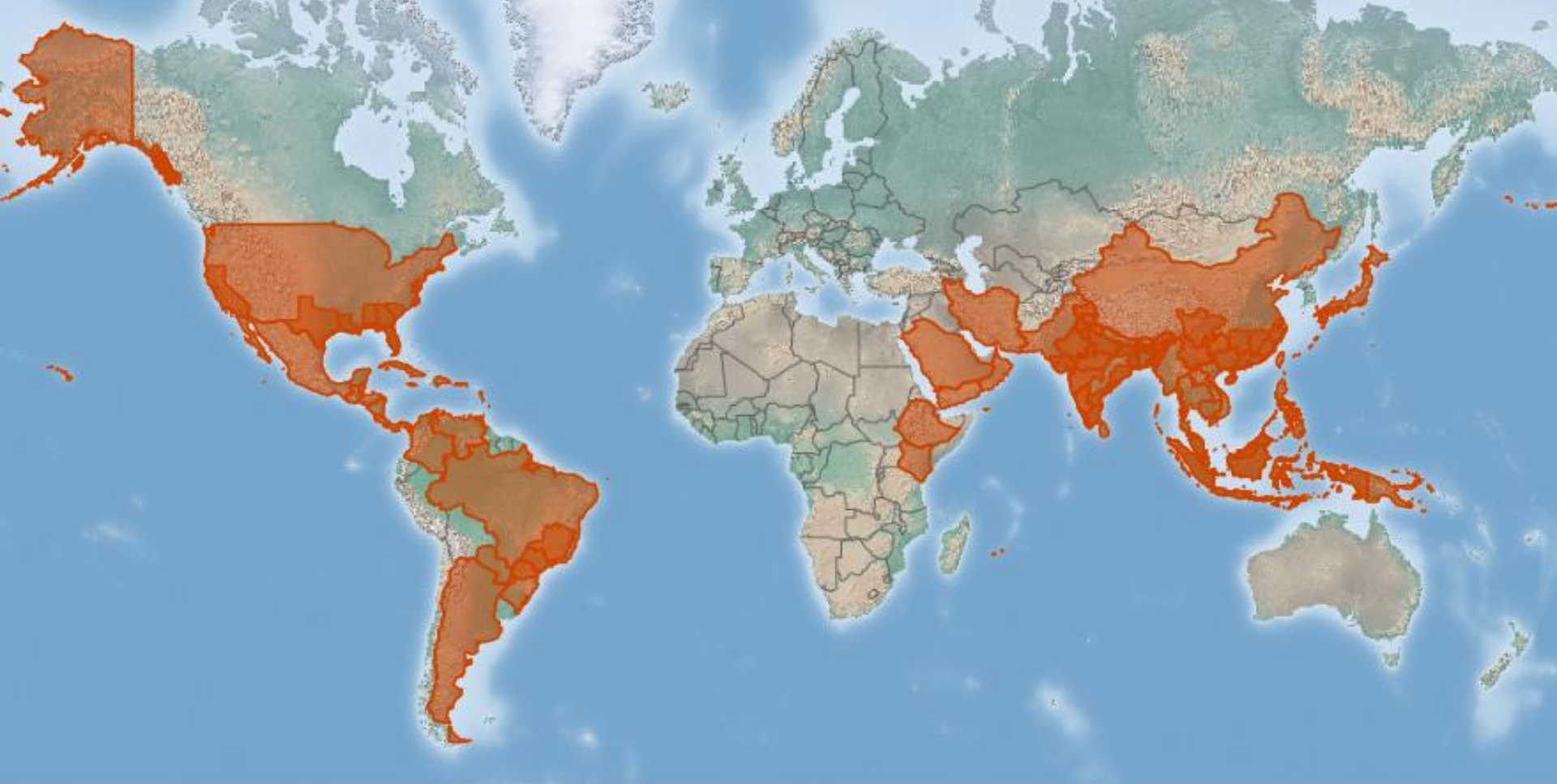
Regulated in terms of R110
and a new regulation for
the pathogen and vector
R121

HLB surveillance for early
detection forms part of the
Strategic Plan of the
DALRRD

Active steering committee
to ensure preparedness,
surveillance and response



Pestnet.org



CABI, 2021. *Liberibacter asiaticus*. In: Invasive Species Compendium. Wallingford, UK: CAB International. <https://www.cabi.org/isc>

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TR4

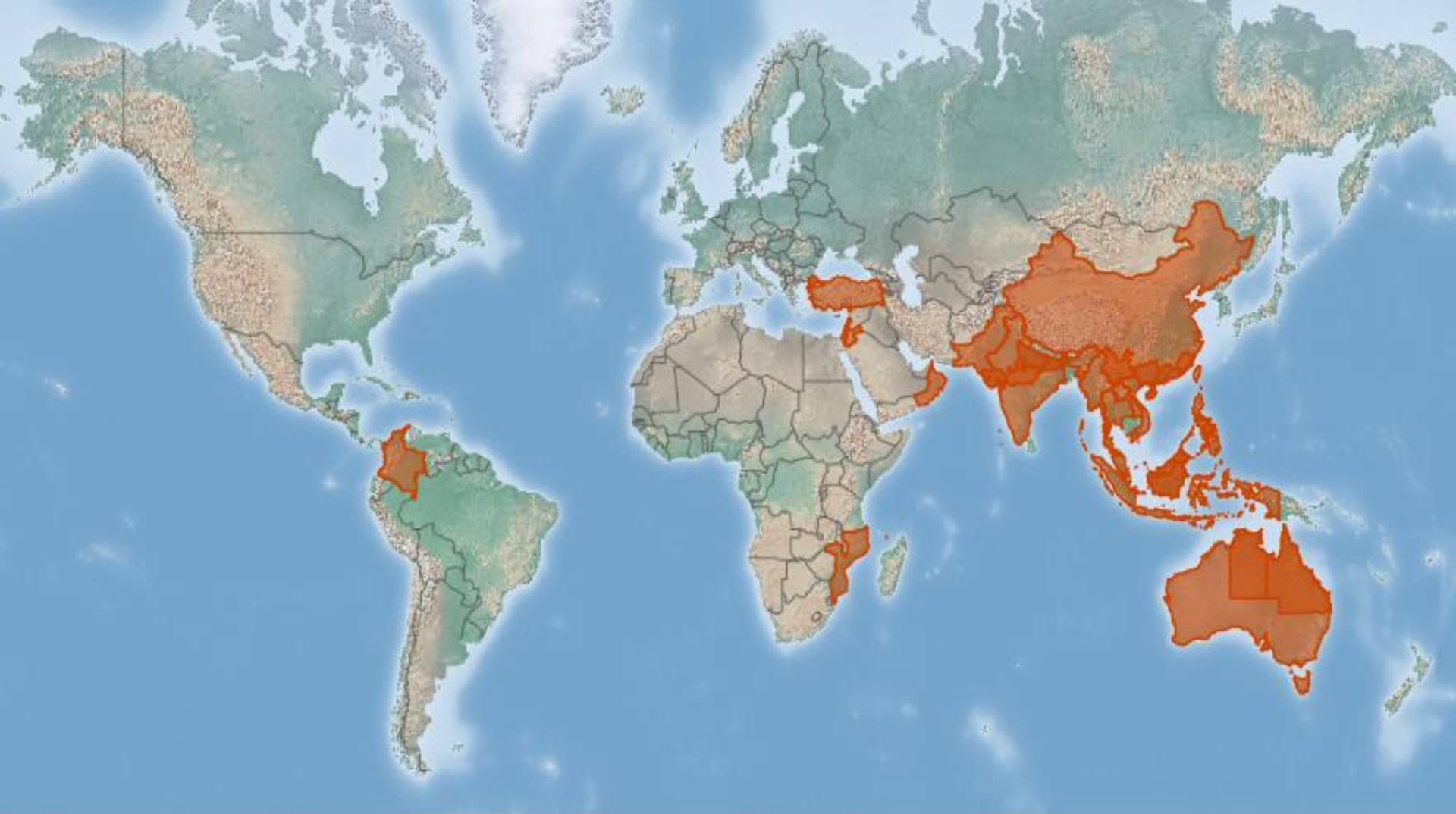


Soil borne
Spores in plant material, soil
and water spread the disease
Most serious pest attacking
popular Cavendish banana
cultivars and there is no cure
but to remove the whole
plantation once infection is
detected.



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CABI, 2021. *Fusarium oxysporum* f.sp. *cubense* tropical race 4. In: Invasive Species Compendium. Wallingford, UK: CAB International. <https://www.cabi.org/isc>

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Exotic fruit flies

Large fruit host range

Cause rotten fruit, thus **lower production and quality**

Serious threat to **market access** and the maintenance of existing export markets

Must be controlled to avoid **damage of 60-100%** and export rejections and interceptions

Exotic fruit fly surveillance forms part of the Strategic plan of the DALRRD



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What can be done?

Awareness

Regional response



WTO SPS STDF projects

AU-IAPSC

Inter-African Phytosanitary Council



Please talk to each other
Any suspicion please talk to
DALRRD- it's the law (R110)

Pest notification



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International pest alert systems

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Pests don't wait, they mate



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