



CITRUSWATCH

Early Detector Network

NEWSLETTER

Issue 01 - 21 July 2023

NOTE FROM THE TEAM

It's no secret that without your contribution as an Early Detector Network volunteer, our surveillance efforts would have nowhere near the impact that it does. Apart from its major function as an early detection system, through the EDN we have

been able to find psyllid species that had never before been identified. This adds to our knowledge base and overall preparedness for external threats, such as the Asian citrus psyllid. Apart from ensuring that early detection sticky trapping is

happening during Autumn and Spring, we want the EDN to be a source of knowledge for its volunteers. That is why we are introducing this newsletter. We hope you enjoy the inaugural edition!

- JESSICA LYE



IN THIS ISSUE

- Meet the CitrusWatch team.
- Putting the spotlight on past citrus canker incursions in northern Australia.
- Learnings from a recent biosecurity study tour in the USA - highlighting the impacts of Asian citrus psyllid and Huanglongbing disease on the citrus industry.
- Connecting growers and urban communities through biosecurity campaigns.



Northern and southern CitrusWatch representatives meet at the Rotary Far North Queensland (FNQ) Field Days held in Mareeba, QLD. Ben Burchett from the Northern Territory Government (left) and Andie Wong from Citrus Australia (right).



INTRODUCING THE CITRUSWATCH TEAM



Ben Burchett
Northern Territory Government
Engagement / Surveillance Officer

I coordinate the Early Detector Network (EDN) that involves the deployment of 400 sticky traps per year across Northern Australia. In addition, I organise and execute targeted surveys across commercial citrus growing regions each year. This extends to urban and peri-urban landscapes where citrus is prevalent.

From a community engagement perspective, I deliver presentations to schools, community groups and gardens, commercial growers, nurseries and other government and non-government agencies of citrus biosecurity.

I also attend agricultural shows, plant fairs, biosecurity forums and host work experience and tertiary student visits to our Berrimah Farm Science Precinct in Darwin.



Dr. Jessica Lye
Citrus Australia
Citrus Biosecurity Manager

I work on a variety of activities within the CitrusWatch project.

Activities that I contribute to include coordination of the EDN (with a focus on the citrus grower volunteers), organising and running targeted surveys across Southern Australia, developing protocols, plans, strategies, and technical reports that are

helping to boost our preparedness, and organising education and training activities for the citrus industry.

Recent education initiatives has included development of two online training courses for psyllid training and identification, and leading a study tour group to the USA, to better understand how US growers are managing certain citrus pests of concern.



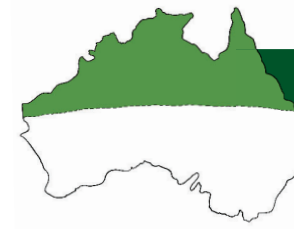
Andie Wong
Citrus Australia
Urban Biosecurity Coordinator

I coordinate various CitrusWatch activities involving surveillance and community engagement across urban areas in Southern Australia.

When it comes to surveillance, I coordinate the EDN sticky trapping activity (volunteers include urban residential gardeners, community gardens,

public gardens, zoos, waste transfer stations, and schools). I'm also involved in the diagnostics of traps in Victoria.

Besides attending plant fairs, I currently run community engagement campaigns with a focus on citrus and biosecurity. By working with local councils and libraries, I hope to extend our outreach and increase awareness and preparedness among urban and Culturally & Linguistically Diverse (CALD) communities.



NEWS FROM THE NORTH

Spotlight on Citrus Canker in Northern Australia

by Ben Burchett

Citrus canker is a disease affecting Citrus species caused by the bacterium *Xanthomonas axonopodis pv. citri*. Common hosts include lime, orange, and grapefruit however all citrus varieties may be affected.

citrus canker has been detected on several occasions and fortunately on all occasions has been eradicated.

The first recorded outbreak of the disease was in 1912 at Stapleton Station in the Northern Territory (NT). The detection was in an orchard with 95 citrus plants.

Infection on Citrus species causes lesions or cankers on the leaves, stems, and fruit of citrus trees causing leaves and fruit to drop prematurely resulting in reduced productivity.

It is thought that the source of the infection was a result of the importation of citrus plants into Darwin, likely to have originated from Japan or China. Citrus trees were imported from these countries into Darwin regularly at the time.

Citrus canker is present throughout Asia and some Pacific and Indian Ocean Islands. It is also present in some areas in the USA and the Middle East.

An eradication program was undertaken from 1916 to 1922 resulting in a ban of growing citrus until 1925. It took 11 years to completely eradicate the disease and consequently every citrus tree north of latitude 19 degrees south (Tanami, NT) was destroyed.

1912 Stapleton Station, Northern Territory

In Northern Australia,

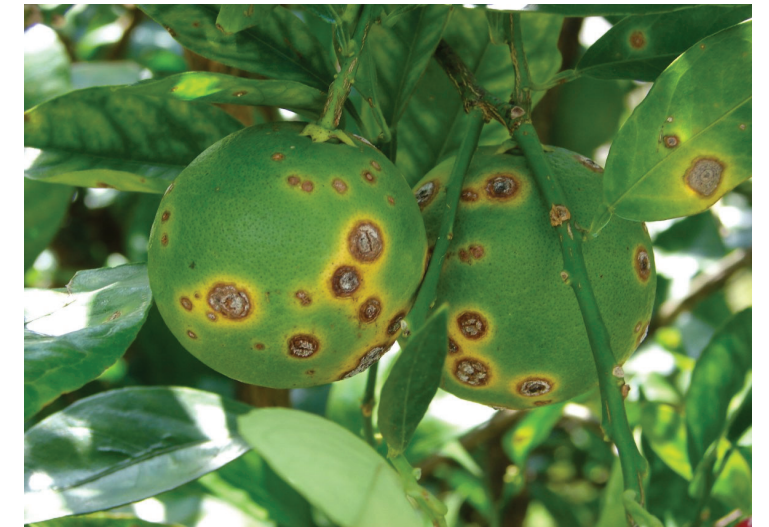


Image credit: United States Department of Agriculture (USDA)

1984 Thursday Island, Torres Strait

In 1984 in the Torres Strait, canker was detected on two lime trees and a sweet orange that were growing in gardens on Thursday Island.

Over a two-year period, ten plants were found to have canker-like symptoms and were subsequently destroyed. No further symptoms have been identified on the Island since February 1986. The disease was declared eradicated in September 1988.

1991 Lambells Lagoon, Northern Territory

In April of 1991, a NAQS survey resulted in a positive detection in a young pomelo tree in Lambells Lagoon

south of Darwin. The orchard was relatively small and all trees (approximately 150) were burnt in situ.

Another detection in the Lambells Lagoon was discovered in 1993. All affected trees were destroyed and the entire area extensively monitored for 2 years.

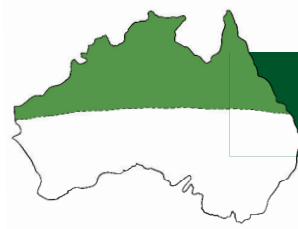
By 1995, the Northern Territory was officially declared free of citrus canker.

2004 Emerald, Queensland

Citrus canker was discovered in June 2004, near Emerald.

Further detections were made in October 2004 and May 2005.

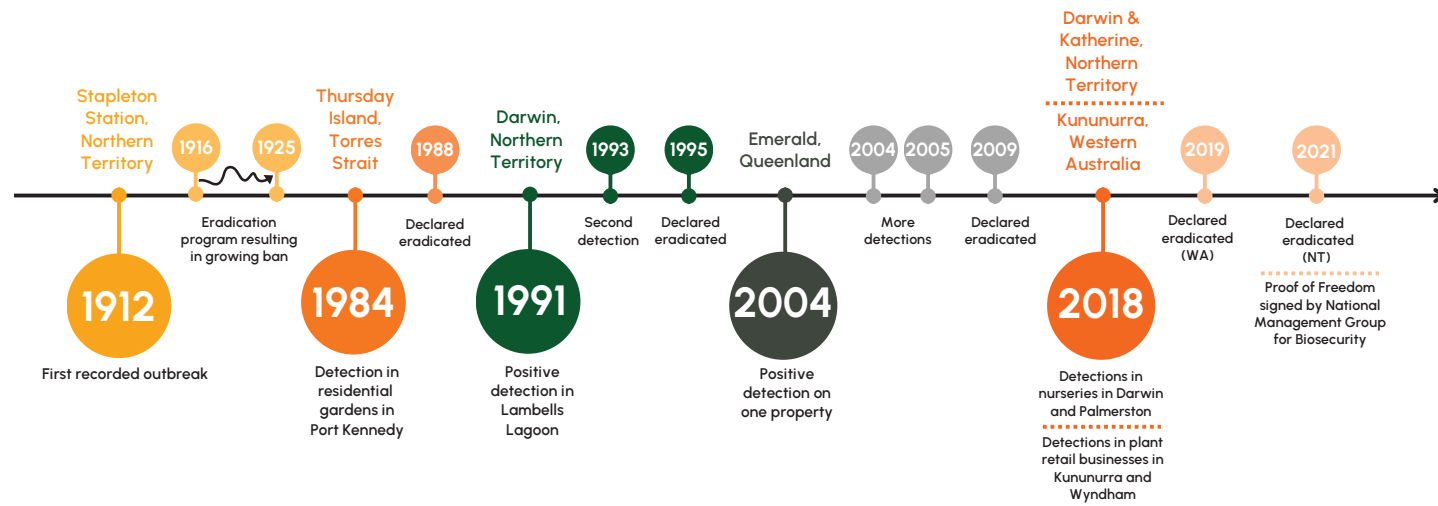
By January 2006, all high-risk plants



NEWS FROM THE NORTH

TIMELINE

Citrus Canker Incursions in Northern Australia



capable of harbouring the disease had been destroyed, including approximately: -

- 490,000 commercial citrus trees
- 4,000 residential trees
- 150,000 native citrus plants.

2018 Darwin and Katherine, Northern Territory

During April 2018, canker was detected on potted plants in nurseries in Darwin and Palmerston. The distribution of citrus plants prior to detection resulted in 16 infected premises throughout Darwin and Katherine (300km south of Darwin).

6,192 host plants were removed from prop-

erties and nurseries across Darwin and Katherine during a 3-year eradication and surveillance operation.

By April 2021, Proof of Freedom was signed by the National Management Group (NMG) for Biosecurity allowing for movement restrictions to be lifted.

2018 Kununurra, Western Australia

Citrus canker was first detected in May 2018 on imported citrus plants at two retail businesses at Kununurra and Wyndham. The plants were traced back as being of Northern Territory origin and was linked to the NT detections.

WA Department of

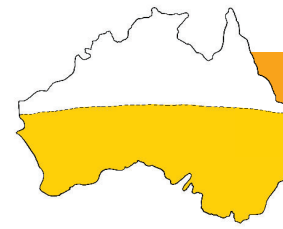
Primary Industry and Regional Development staff visited more than 13,000 farms and residential properties across northern WA resulting in the removal of around 1,520 citrus plants.

Western Australia was declared free of citrus canker 18 months after the first discovery of the disease in Kununurra.

These detections and successful eradications highlight the importance of regular surveillance, and reporting of unusual pests to protect Australia's citrus industry.

The NMG is the industry-government committee tasked with overseeing the response at a national level.

The severity of these incursions and the scale of the responses, which can cause significant impacts on farm businesses, also highlight the importance of surveillance and early detection. Catching an outbreak in the early stages of pest establishment means that eradication is a more simple and less impactful process.



NEWS FROM THE SOUTH

Recent Biosecurity Study Tour: What did we Learn in the USA?

by Jessica Lye



A visit to the Citrus Clonal Protection Program

For two weeks during May 2023, 12 citrus growers, citrus agronomists, entomologists, and citrus industry project managers travelled to California and Florida to find out just how much the Asian Citrus Psyllid and Huanglongbing disease had impacted on these overseas industries, and how to safeguard the Australian citrus industry from this pest-pathogen complex. Specifically, this tour has allowed us to

better understand how citrus industries in the US are managing these impactful exotic species, to learn how US governments are regulating these species, how to detect these species in the field, and to gain appreciation of the impact of these pests and diseases overseas.

What were some highlights and key learnings?

Each leg of the tour imparted the group with an appreciation

of two very different situations related to Asian citrus psyllid, Huanglongbing, and other citrus pests, such as citrus canker and the Glassy winged sharpshooter.

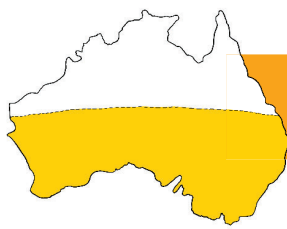
In California, the Asian citrus psyllid is endemic in the suburbs of Los Angeles. Outbreaks elsewhere in the state are eradicated as quickly as possible. The aim is to stop the spread of the pest out from the city to the citrus growing regions to the north and south. Strict regulations are in force that aim to limit movement of psyllid plant hosts, in an effort to reduce the spread of the psyllid itself. Huanglongbing is found sporadically in Los Angeles, and less commonly outside of the city. In Florida,

been endemic since 2005. Florida's focus is on management of the disease, through on farm control of the psyllid, tree nutrition programs, use of physical barriers (protective screening), and a number of other measures. Our tour started with a logical beginning, learning how the Citrus Clonal Protection Program in California is ensuring that their propagation material is high health and disease tested in the face of risks from Huanglongbing and other citrus diseases. This visit emphasized the importance of creating a robust, industry-wide base of disease-tested, high health citrus nursery stock when it comes to improving the overall resilience of our national citrus crop.

"This visit emphasized the importance of creating a robust, industry-wide base of disease-tested, high health citrus nursery stock when it comes to improving the overall resilience of our national citrus crop."

Asian citrus psyllid has been endemic throughout the state for more than two decades, and Huanglongbing has

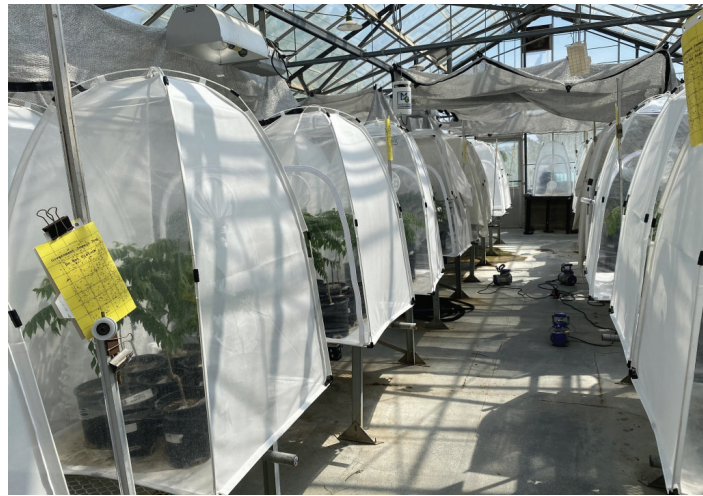
During our visit to the historic Entomology Department at University of California – a world leader in IPM research excellence –



NEWS FROM THE SOUTH

we heard about activities in Asian citrus psyllid and Glassywinged sharpshooter biocontrol via parasitoid wasp releases. In Los Angeles, where the Asian citrus psyllid is now endemic, strategic releases of the tiny wasp, *Tamarixia radiata*, is used as a common population suppression tactic by the state agricultural department. As such, a highlight of the day was a visit to the California Department of Food and Agriculture biocontrol rearing facility, where the group learnt about how Asian Citrus Psyllid is used to mass rear *Tamarixia radiata*, ready for deployment into the suburbs surrounding the city.

Strict regulations have been introduced by the state for citrus movement and citrus growing in production regions to the north of Los Angeles. Citrus must now be grown in psyllid-proof protected structures, which has increased the cost of plant production – a cost that ultimately flows on to citrus growers. Citrus fruit



The tiny parasitoid wasp, *Tamarixia radiata*, is reared in biocontrol facility.

from certain areas must be trucked to packsheds under tarpaulins, to limit any psyllids falling off trucks onto the roadside. A detection of Huanglongbing in a citrus growing region will result in a 6 month standstill in citrus harvesting and production within the zone affected. These measures are helping to keep the Asian citrus psyllid in urban areas around Los Angeles, however they are making citrus growing, harvest and packing ever more complex and costly.

In Florida, we were immediately confronted by the impacts of Huanglongbing disease. As we drove to our first meeting – an orchard discussion with a citrus grower – we

saw many large blocks of citrus 'skeletons'. These confronting blocks were the result of trees abandoned and left to die as they were no longer profitable, at an age when they should have been at peak production. During our time in the sunshine state,

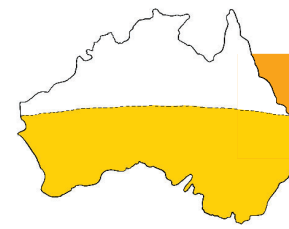
"In Florida, we were immediately confronted by the impacts of Huanglongbing disease."

we learned about the tactic of covering young citrus trees with psyllid-proof tree nets to protect them from infection while growing a strong root system. This tactic gives young citrus a further boost to fight off the worst symptoms of Huanglongbing when they eventually become infected. After

removing the tree net when the citrus are about three years of age, the trees are expected to become infected with the disease in as little as 30 days. We also learned about the new tactic of injecting infected trees with antibiotics, in a bid to extend the length of productivity. Unsurprisingly, infection with Huanglongbing makes trees much more susceptible to environmental stressors, such as heat, frost, high winds, water stress and other diseases. This added layer of complexity makes management of these trees a delicate balancing act – Florida citrus growers need to have extremely

detailed knowledge of plant nutrition and soil management to keep trees productive for as long as possible.

Florida citrus production has declined by more than 70% since detection of Huanglongbing disease in 2005. The US has spent approximately \$1 billion on research



NEWS FROM THE SOUTH

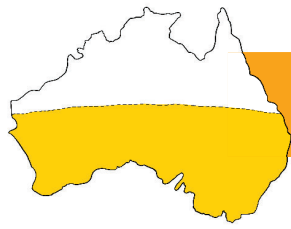
into combatting Huanglongbing, and its vector, the Asian citrus psyllid. By the time our tour had ended, our collective eyes were opened to the devastation that Huanglongbing disease can reap on a citrus industry. This one article really can't do justice to magnitude of the problem that the Florida industry now faces. The culture of an entire state is rapidly changing, over the course of only two decades, due to this disease and the extreme retraction in the size of its iconic industry. One of our hosts, a citrus nurseryman, put it well when he said "Food security is National Security; Food security is independence. Democracy goes out the window when people are hungry." Biosecurity is not simply an exercise in protecting farms or natural environments. It is about strengthening a national food supply, and supporting resilient supply chains, to make sure we can continue to access fresh, and high quality home grown products like our citrus.



Citrus under protective nets, to delay onset of the disease for as long as possible.



Florida Dept. Agriculture and Consumer Services Citrus Health Program Arboretum in Winter Haven.



NEWS FROM THE SOUTH (URBAN)

Urban Biosecurity for Australian Citrus - Connecting Growers and Communities in Major Capital Cities, One Campaign at a Time

by Andie Wong

Not many are aware that Australia is home to some of the best citrus-producing regions in the world – from commercial to small-scale orchards, we are spoilt for choice when it comes to citrus fruits and nursery trees – not to mention the many unique varieties on offer. CitrusWatch, a national citrus biosecurity program, was established to help safeguard this vibrant horticultural industry from exotic citrus pest threats. It also offers protection of the eye-catching, characteristic citrus trees in urban gardens and backyards, grown for ornamental and culinary purposes.

Citrus is a part of our lives for many good reasons, and for the avid residential or home gardener, it is a pleasurable way to connect with the earth and bring some colour and joy amidst the urban backdrop.

We may hear about biosecurity in the news from time to time, or maybe you've watched the TV show, 'Border Security: Australia's Front Line', but may not fully comprehend this significant government measure to prevent mild to severe catastrophes in agriculture. It sounds dramatic, but that is because Australia is home to some of the best agricultural produce in the world including citrus, which needs to be protected. The convenience of supermarkets and farmers' markets can make us forget the hardworking growers who have dedicated their lives to growing some of the freshest and best produce in the world. And while this bounty is at our doorstep, our growers are constantly at risk of biosecurity threats.

Australia benefits from its natural protection as an island nation,

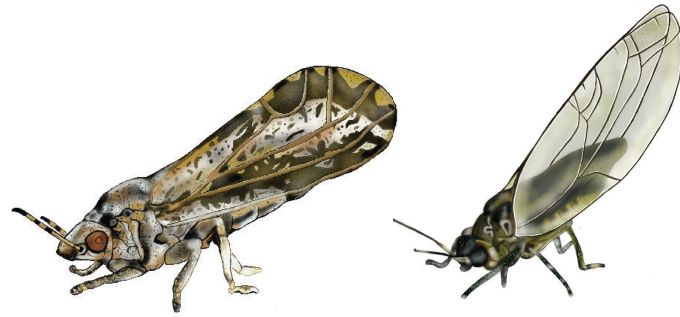
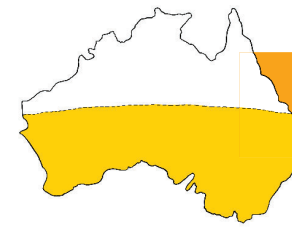


Illustration by: Andie Wong (Citrus Australia)
Illustration of adult Asian citrus psyllid (left) and African citrus psyllid (right)

however, many types of global biosecurity threats can enter the country with passengers or freight, such as insect pests and plant diseases. Although not present in Australia, we are at risk of invasion from the tiny sap-sucking insects, Asian citrus psyllid (ACP) and African citrus psyllid (AfCP), which strictly feed on citrus and closely related Rutaceae. These tiny insects can spread the

lethal bacterial plant disease, Huanglongbing (pronounced 'huan-glong-bing'; HLB), otherwise known as citrus greening disease. Furthermore, recognising that these serious citrus exotic pests can enter the country at any moment via seaports and airports of major capital cities, which are areas of high-foot traffic, we need strong action from everyone (including the public)

"Australia benefits from its natural protection as an island nation, however, many types of global biosecurity threats can enter the country with passengers or freight, such as insect pests and plant diseases."



NEWS FROM THE SOUTH (URBAN)

to protect one of Australia's tangy treasures with great urgency. A case in point is Florida in which the first detections of ACP in 1998, and subsequently HLB in 2005, have since resulted in a decline of more than 70% of citrus production – unfathomable to this day.

Central to CitrusWatch's surveillance efforts is a volunteer-based, Early Detector Network (EDN) that helps to deploy 1,000 psyllid sticky traps each year across Australia's farms, urban backyards and gardens. The program also aims to increase biosecurity awareness and preparedness by engaging communities (including culturally and linguistically diverse or CALD communities) across major capital cities on the importance of identifying exotic citrus pests threats, and growing healthy citrus trees to withstand transmissible diseases. The awareness and preparedness themes will be addressed in the form of urban

campaigns with collaboration from government and industry experts including entomologists and plant pathologists. Alongside biosecurity, other topics related to the broader citrus industry will also be communicated such as: 1) the importance of citrus across cultures, and the risk of smuggling illegal citrus plant material into Australia; and 2) citrus waste, juice production, and sustainability in the citrus industry. Key to these campaigns is a compendium of free and publicly accessible educational resources which will require the help of local councils and external project collaborators to distribute and broaden our outreach.

Kicking off our urban initiative is the 'Report top exotic citrus pests and diseases' campaign that focuses on the identification of the top six exotic citrus pest threats we are most worried about: ACP; AfCP; Glassy-winged sharpshooter; HLB (or citrus greening); citrus canker; and citrus

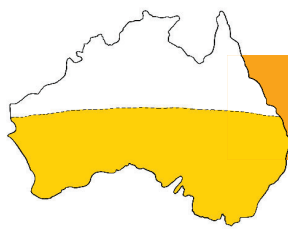
variegated chlorosis.

This campaign also encourages the use of the MyPestGuide Reporter app (developed by WA Department of Primary Industries and Regional Development) to record and report information in the event something unusual or uncommon is detected on citrus in the backyard or garden. Resources recently developed from this campaign include a poster for community gardens and community notice boards, as well as a fact sheet.

By acknowledging that our EDN volunteers and urban gardeners have important roles to play in this program, we hope that our campaigning efforts will help bridge the gap between citrus growers and gardening communities across Australia's bustling capital cities – all for the love of citrus!

To download the campaign poster and factsheet, head to: <https://citrusaustralia.com.au/biosecurity-training/>

MyPestGuide Reporter is available via app or online: <https://mypestguide.agric.wa.gov.au>



NEWS FROM THE SOUTH (URBAN)

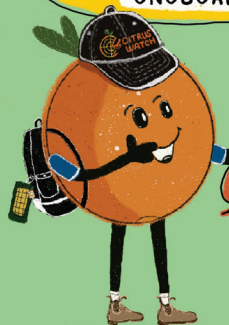


REPORT EXOTIC CITRUS PESTS:

What are we most worried about?

Spotted something UNUSUAL???

FACT SHEET



Please call the Exotic Plant Pest Hotline on 1800 084 881 OR...

Submit a report with MyPestGuide Reporter

Report your observations MyPestGuide® Reporter via app or online mypestguide.agric.wa.gov.au



Asian citrus psyllid (ACP)

What is it? A sap-sucking insect that can spread the disease, huanglongbing (HLB; also known as 'citrus greening') by feeding on plants' leaves and stems (refer to Page 2).

What does it look like? Adults are small (3-4 mm), brownish with mottled brown patches on forewings. Nymphs are dull orange with red eyes, and eggs are yellow-orange and almond shaped.

Which plants are affected? All commercial citrus; native and ornamental mock orange (*Murraya* spp.), and curry tree.

Image credit: David Hall, USDA Agricultural Research Service, Bugwood.org



African citrus psyllid (AFCP)

What is it? Like the ACP, it is also a sap-sucking insect that can spread the disease, huanglongbing (HLB; also known as 'citrus greening') by feeding on plants' leaves and stems (refer to Page 2).

What does it look like? The adults are small (4 mm) with large, transparent forewings that have distinct veins. Nymphs vary from yellow, olive-green to dark grey and are flat with distinct marginal fringe of white, waxy filaments. Eggs are yellowish orange, cylindrical with sharp points.

Which plants are affected? All commercial citrus; native and ornamental mock orange (*Murraya* spp.), and curry tree.

Image credit: S.P. van Vuuren, Citrus Research International, Bugwood.org



Glassy-winged sharpshooter (GWS)

What is it? Large leafhopper that causes direct damage through its feeding activities, and excrement 'showers'. It is also highly efficient at spreading a bacteria which causes citrus variegated chlorosis (refer to Page 2).

What does it look like? Adults are 12-14 mm long with a large flat head that have yellow dots, prominent eyes, and translucent wings with reddish veins. Nymphs are dark grey to grey, and eggs are 'sausage' shaped.

Which plants are affected? Over 100 plant species including commercial hosts like citrus.

Image credit: Russ Ottens, University of Georgia, Bugwood.org

THE COMIC SECTION

A CITRUS WATCH Cartoon



One sunny day in Spring...



Suddenly...

Oh what's that? I've never seen that before..

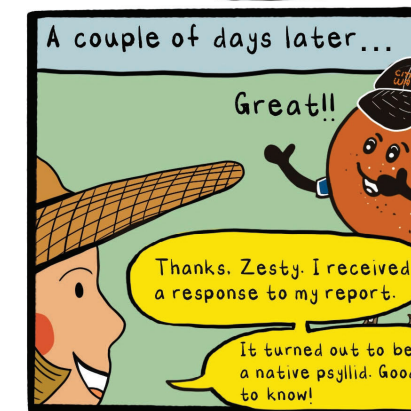


Call the Exotic Plant Pest Hotline if it's urgent or.. submit a report with MyPestGuide Reporter app to find out what it is!

That way, you can help us determine if it's an exotic pest that we are on the look out for...



No problem. Zesty...



A couple of days later...

Great!!

Thanks. Zesty. I received a response to my report.

It turned out to be a native psyllid. Good to know!

Scan here to learn how to submit a report



Comic by: Andie Wong, Citrus Australia



Remember, if you've spotted something UNUSUAL...

Report your observations MyPestGuide® Reporter via app or online mypestguide.agric.wa.gov.au

GET INVOLVED

Sticky-Trapping Spring Surveillance



Sign-up for Spring 2023!

If you have a citrus tree(s) in your garden or backyard and live within 8-10 km from the following major ports in your city: -

MELBOURNE
Port of Melbourne

BRISBANE
Port of Brisbane

SYDNEY
Port of Sydney, Port Botany

PERTH
Fremantle Port

ADELAIDE
Port Adelaide

We are looking for Early Detector Network (EDN) volunteers to help look detect Asian citrus psyllids as early as possible. We will send you a trapping kit with guidelines on how to set your trap up - it's pretty simple!

If you get put on the waitlist, not to worry, there are other ways you can help! Learn more below.

Scan to opt-in!



Help Spread the Word

Learn about our urban campaign, 'Report Top Exotic Citrus Pests and Diseases' and help us spread the word by distributing or putting up our poster and factsheet on a community notice boards. Download our resources here: <https://citrusaustralia.com.au/biosecurity-training/>

CitrusWatch Online Training

Take an online training course on exotic citrus pests via Plant Health Australia's (PHA) BOLT platform to learn about surveying and identifying exotic citrus psyllids.

Scan to learn!



CitrusWatch has been funded by Hort Innovation, using the citrus research and development levy and contributions from the Australian Government. Hort Innovation is the grower owned, not-for-profit research and development corporation for Australian horticulture. Funding is also supplied by Plant Health Australia using the citrus plant health levy.