Australian Government
Department of Agriculture

Agricultural Competitiveness White Paper

Improving plant health surveillance and analysis

September 2019

Biosecurity risks are on the rise. An increase in incoming passengers, mail and cargo, increasing urbanisation, climate change, a spread of pests and diseases closer to our region, and the development of northern Australia, all mean that better surveillance is needed to protect Australia from new plant pests.

At the same time Australia's trading partners and international organisations are asking for stronger evidence of our plant health status for market access. It is no longer enough to state that a particular pest isn't here—surveillance data showing pest absence is increasingly needed to justify import and export requirements.

Australia needs a strong national biosecurity surveillance system to respond to these challenges.

Since 2015, the Department of Agriculture and Water Resources has been leading a program of reform to strengthen surveillance for plant pests and establish a more sophisticated surveillance data reporting system, through the Agricultural Competitiveness White Paper (the White Paper).

Guided by a new national framework and expert consultative committee, this significant investment in the plant biosecurity system is only the start of a journey that will help our nation to better defend against plant pest threats, and support market access for our farmers.

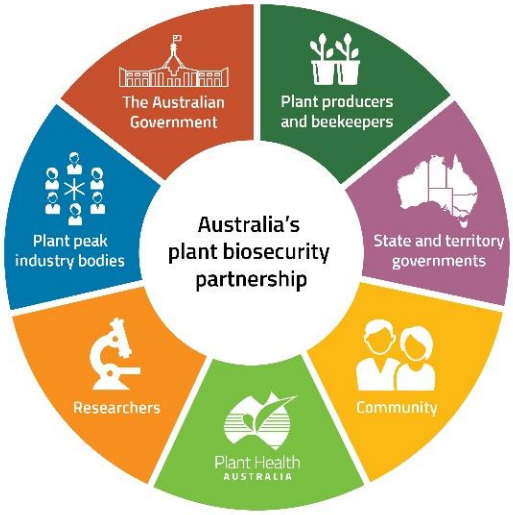


Image courtesy of Plant Health Australia

Importantly, the White Paper investment is already strengthening the plant biosecurity partnership in Australia. New strategies and systems are building a greater ability for individuals and organisations to undertake surveillance for agricultural and environmental biosecurity threats, a capability that will be ongoing.

From putting 'more boots on the ground' to enhancing diagnostics capability, projects begun under the White Paper are yielding stronger relationships and improved cooperation with Australia's near neighbours and amongst growers, peak industry bodies, governments, researchers, environmental and community groups and, ultimately, all Australians.

The White Paper investment in strengthening surveillance is set to deliver lasting benefits for Australia's agricultural industries, our environment, and our community, both now and into the future.

In July 2015 the Australian Government announced $200 million to improve biosecurity surveillance and analysis over four financial years through the Agricultural Competitiveness White Paper, to better target critical biosecurity risks and support market access.

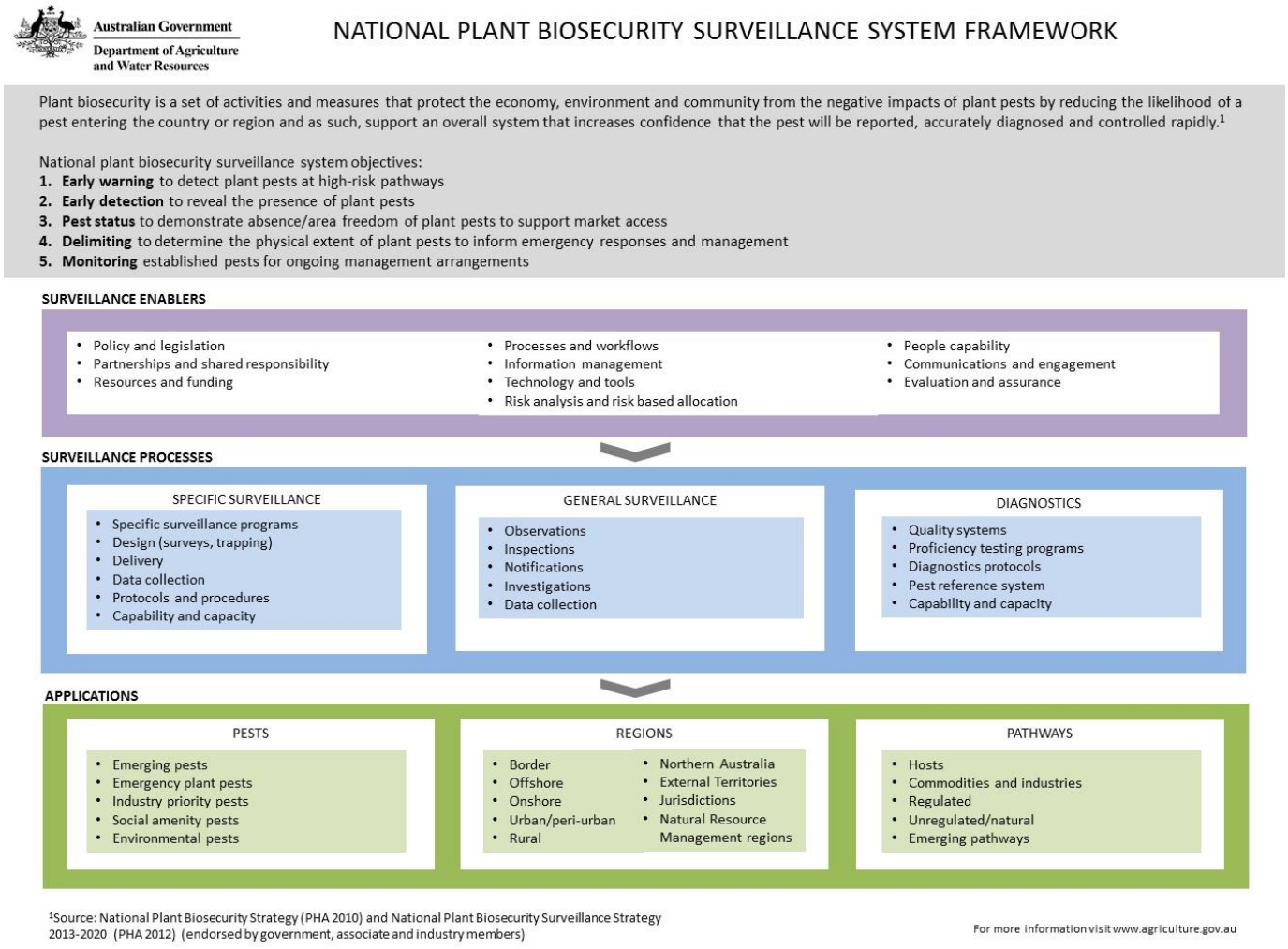
Setting the framework for a stronger national plant health surveillance system

To maximise the benefits of the White Paper investment and set the direction for a stronger system, a significant amount of consultation and analysis was carried out to develop the National Plant Biosecurity Surveillance Framework.

Launched in 2017, the Framework consists of surveillance objectives, processes and enablers, and depicts how these are applied to pests, pathways and regions. The framework is aligned with the goals of the **National Plant Health Surveillance Strategy 2013–2020,** a sub-strategy of the **National Plant Biosecurity Strategy 2013–2020**.

The Framework sets out five objectives for the system:

- **Early warning** to detect plant pests at high-risk pathways
- **Early detection** to reveal the presence of new plant pests
- **Pest status** to demonstrate the absence of plant pests to support market access
- **Delimiting** to determine the physical extent of plant pests to inform emergency responses and management
- **Monitoring** established pests for ongoing management arrangements.



The National Plant Biosecurity Surveillance Framework was launched in 2017

National Plant Biosecurity Surveillance Framework

Surveillance enablers

These aspects of the system underpin effective functioning. Enablers include the IT systems, the policies and legislation, reporting mechanisms, sufficient trained personnel, resources and funding, all of which are necessary for surveillance activities to be carried out.

Surveillance processes

These are the surveillance activities themselves, along with necessary supporting systems to allow data gathering and pest identification.

Applications

These are the risks that need to be targeted by surveillance activities. Surveillance targets types of pests, such as Emergency Plant Pests and environmental pests, and the critical pathways that could see these pests enter into or spread in Australia.

National Plant Health Surveillance Consultative Committee 2016–2019

The Framework was further refined by the Plant Health Surveillance Consultative Committee (PHSCC), an industry and government consultative group established in 2016 to guide the White Paper investment in improving plant health surveillance. The PHSCC included members from:

- Department of Agriculture and Water Resources
- Plant Health Committee
- Plant Health Australia
- AUSVEG
- Grains Research and Development Corporation
- National Resource Management Regions Australia
- Horticulture Innovation Australia Limited
- Summerfruit Australia
- Growcom
- Centre of Excellence for Biosecurity Risk Analysis.

With the end of the White Paper in June 2019 there was a need to re-evaluate the role and scope of this important advisory body. A new Plant Health Consultative Committee was formed, with the committee's membership expanded to include the Chief Environmental Biosecurity Officer and Australian Centre for International Agricultural Research (ACIAR).

The White Paper reforms

In line with the new **National Plant Biosecurity Surveillance System Framework** and the **National Plant Health Surveillance Strategy 2013–2020** projects have been set in train to improve many aspects of the surveillance system, creating a legacy that will last beyond the four year White Paper funding timeframe.

Much of this work reflects the overarching goals of the White Paper investment: to strengthen biosecurity surveillance and analysis (particularly surveillance activities themselves), improve scientific capability, improve information and analysis, and encourage community based action.

The Department of Agriculture and Water Resources is now working in partnership with peak industry bodies, state and territory governments, Plant Health Australia, researchers,

environmental groups, and community organisations to carry out biosecurity surveillance and analysis in accordance with the national framework.

Multiple White Paper plant health surveillance projects have been delivered or are in train offshore, at the border, and onshore. Many have been designed and delivered in partnership with industry. Some will continue beyond the end of the White Paper in 2019.

This new more coordinated national approach to the surveillance of plant pests is already delivering much greater efficiency and effectiveness.

Earlier detection of plant pests and diseases

Plant health surveillance supports the early detection of new pests, which is essential if they are to be contained and, hopefully, eradicated. If new plant pests are not found quickly, they inevitably spread, posing risks to our natural environment, our forests, farms, and plant nurseries, to our recreational areas, and the economy.

If pests are not able to be eradicated they will often be here to stay, bringing ongoing problems and management costs. Some pests will necessitate the use of more pesticides, increasing the cost of production and potentially reducing the appeal of our produce in overseas markets. Some can temporarily close markets to our produce as overseas trading partners seek to avoid an incursion of the pest as well.

Every day Australia engages in activities to guard against the entry of new plant pests and diseases, with surveillance conducted offshore (or overseas), at our borders (airports, seaports and mail centres), and onshore—from targeted surveillance conducted by industry groups and governments to individuals using a smartphone app to report something suspicious in their backyard (a form of general surveillance).

A key target for the White Paper investment in strengthening plant health surveillance is the risk posed by the nation's 'Top 40 exotic and unwanted' National Priority Plant Pests, with the incurable bacterial pathogen *Xylella fastidiosa* (known in Europe as the 'olive killer') topping the list as exotic priority plant pest number one.

Activities funded under the White Paper to combat the 'top 40' range from supporting new industry-led surveillance programs to research and analysis to better understand how pests could potentially enter Australia and spread e.g. 'hitchhiker' pests such as the brown marmorated stink bug can 'jump ship' from cargo containers and move into urban areas adjoining our seaports.

This 'pathway analysis' work is helping Australian governments and industry groups to better focus and prioritise our national plant health surveillance efforts, to ensure that national surveillance programs can be designed and delivered to more effectively target the most critical biosecurity risks, and help our nation to better detect, contain or eradicate plant pest threats.

Supporting the Enhanced National Bee Pest Surveillance Program

The ongoing National Bee Pest Surveillance Program, managed by Plant Health Australia, has been strengthened to protect Australia's honey bees and the pollination services that they provide.

Enhancements to the program have delivered more sentinel hives positioned for early detection of honey bee pests, including the *Varroa destructor* mite, increased Asian honey bee surveillance, deployment of catch-boxes in remote locations or areas of high risk, and a first ever trial of the use of traps for Asian hornets at key ports— an exotic pest to local honey bee populations.

Funding for virus diagnostics has also allowed Australia to confirm that we are free of the worst bee viruses that are commonly found in other honey bee colonies around the world.
White Paper funded achievements to strengthen early detection of plant pests also include:

- **Trial of 'smart' fruit fly traps.** This trial is comparing the effectiveness of 'smart' digital or automated smart traps for fruit fly against the use of existing manual traps in five locations around Australia during the fruit growing season of 2018–19. Developed by the CSIRO and being brought to market by the Aussie start-up RapidAIM Pty. Ltd., the traps are designed to detect the 'behavioural fingerprints' of fruit fly, with an alert sent to a grower's mobile phone in real time. This new home grown smart technology could save producers valuable time and money through reducing manual monitoring of traps, and providing earlier detection of outbreaks of Mediterranean or Queensland fruit flies.
- **A sentinel plant health surveillance network of botanic gardens and arboreta** has been initiated, to provide early detection of new plant pests. Gardens and arboreta hold a range of native flora, exotic species and relatives of crop species, making them ideal sentinels for any new plant pest or disease incursions in Australia. With millions of visitors every year they also offer an exciting new avenue to educate the community on plant biosecurity.
- **A national plan for managing the regionalised grapevine pest phylloxera**. Grape phylloxera, a tiny insect pest that destroys grapevines and ornamental vines, is currently confined to parts of NSW and Victoria. Preventing spread though our highly valued grape growing regions is a high priority, so in 2017 a new plan was developed to provide consistency in how biosecurity arrangements are managed across the country. National arrangements under the plan will help protect growers by improving measures to contain the pest and to help detect it should it spread beyond current zones.
- **Supporting grower-led surveillance in the nursery and garden industry** in collaboration with Nursery & Garden Industry Association of Australia. This project draws on White Paper funded behavioural science research conducted by CSIRO which developed a roadmap for future action on grower-led surveillance in Australia's plant industries, using the nursery and garden sector as a case study.

Sentinel hives set up in locations around Australia are regularly inspected for exotic bee pests as part of the National Bee Pest Surveillance Program

Image courtesy of Plant Health Australia

Stronger evidence of pest freedom for market access

In addition to protecting Australia from new plant pests, White Paper projects are improving Australia's ability to **provide evidence of absence** for particular pests to support trade. International trade provides large economic benefits, with around two-thirds of our national agricultural production exported. Surveillance data protects that trade.

There are over 130 targeted surveillance programs operating across the country, checking for pests of a range of crops and honey bees. As each check is made, results are recorded. Negative results (where pests are not found) support claims of ongoing area freedom, providing assurance to domestic and international markets.

Reforms are underway to improve the collection and accessibility of surveillance data, funded by the White Paper and other initiatives.

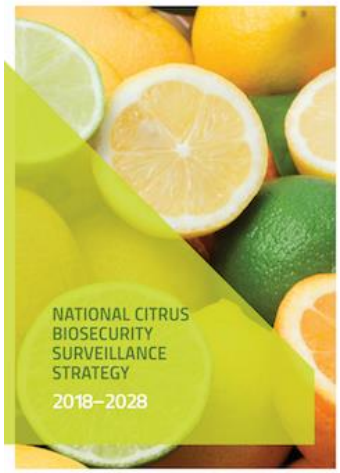
Support for market access

A central strategy of the White Paper investment in strengthening surveillance has been to work with members of the plant biosecurity partnership to increase 'boots on the ground' checking for plant pests. Increasing the capacity of our agricultural industries and governments to better collect and analyse surveillance data to support market access priorities has also been a key focus.

White Paper funded projects to support market access include:

- **Faster access to the surveillance data** needed for export market access. The AUSPest*Check* system developed by Plant Health Australia is now collecting and collating data for the National Plant Health Surveillance Program, which undertakes checks for exotic pests at points of entry and other high risk sites. AUSPest*Check* is designed to provide a real-time picture of pest numbers and spread and allow for the sharing of plant pest data by industry and government.
- **National biosecurity surveillance strategies for citrus and forest industries.** Key export crops now have greater protection from pests through the development of new strategies for surveillance. These strategies, developed in consultation with industry and other experts, identify the pests of greatest concern and set out a coordinated, long-term strategy for biosecurity surveillance. Opportunities for collaboration are identified to improve the effectiveness of resources. Strategies for citrus and forests were launched in 2018, and are now being implemented.
- Plant Health Australia is also developing s**urveillance strategies for the nation's potato, temperate fruit, and tropical fruit industries**, in consultation with growers, peak industry bodies and the Department of Agriculture and Water Resources. An overarching surveillance strategy for the highly valuable grains industry is also being explored.

A national surveillance program to protect our citrus industry



The *National Citrus Biosecurity Surveillance Strategy 2018–28* was developed by Plant Health Australia in conjunction with citrus growers, peak industry body Citrus Australia, and the Department of Agriculture and Water Resources.

The strategy provides a framework for national coordination and implementation of surveillance activities carried out by government and industry to better target national priority pests that could threaten the record breaking success of Australia's citrus industry in global export markets. This includes the exotic bacterial disease Huanglongbing (HLB) and the Asian citrus psyllid, as well as Australia's number one exotic unwanted plant pest, *Xylella fastidiosa*.

The strategy is now being implemented through the establishment of a dedicated surveillance program, forming part of a broader Citrus Biosecurity Program being delivered by Citrus Australia and Plant Health Australia, with funding provided by the Department of Agriculture and Water Resources and Horticulture Innovation Australia Limited.

Implementation of the strategy is being overseen by a National Citrus Biosecurity Surveillance Group, including representatives from Plant Health Australia and the Department of Agriculture and Water Resources.

The appointment of Mr Jeff Milne as the nation's first **National Citrus Surveillance Coordinator** in 2018 was a significant milestone in the life of the new program.

A national surveillance program to protect our forests

The *National Forest Biosecurity Surveillance Strategy 2018–23* was developed by Plant Health Australia in consultation with the Australian Forest Products Association and the Department of Agriculture and Water Resources, as well as a range of other stakeholders from state government agencies, environmental groups, and the R&D sector.

As increased trade, climate change and the movement of people and commodities increase the risk of an exotic forest pest incursion in Australia the strategy outlines activities and priorities to improve the management and coordination of exotic forest pest surveillance activities.

Many of Australia's national priority plant pests pose a significant threat to our forests, including *Xylella fastidiosa*, gypsy moth (which could 'hitch-hike' into Australia on cargo ships) and pinewood wilt nematode.

These unwanted and exotic pests could cause significant environmental, economic and social harm if they were to enter Australia and establish in urban, native or commercial plantation forests.

The strategy is now being implemented through the establishment of a Forest Biosecurity Surveillance Program, overseen by a National Forest Biosecurity Steering Group, including representatives from the Australian Forest Products Association, Plant Health Australia and the Department of Agriculture and Water Resources.

The appointment of Mr Francisco (Paco) Tovar as the nation's first **National Forest Surveillance Coordinator** in 2018 was a significant milestone in the life of the new program.

Strengthening plant biosecurity in our region

Biosecurity activities in our geographical region have received a boost under the White Paper investment. Greater emphasis is now placed on pre-border and pathway analysis, including pre-border surveillance activities that provide Australia with an 'early warning' system.

While collaboration with our nearest neighbours in surveillance for tropical pests is long standing, efforts are expanding with White Paper funding. Off-shore surveillance now checks for pests of temperate crops such as apples, coffee and potatoes as well as tropical varieties. Systems are also in place in Papua New Guinea and Timor-Leste to check for 'hitchhiker' pests such as exotic bees.

Analysis of trade and import data is helping to better identify biosecurity threats that could reach Australia through the movement of wind, tides, people and goods between northern Australia and the countries on our doorstep.

White Paper projects to strengthen plant biosecurity in our region include:

- **Working with Papua New Guinea and Timor-Leste to improve regional biosecurity capacity.** White Paper funds enabled additional plant health surveys to be undertaken in Papua New Guinea and Timor-Leste in 2017 and 2018, including the first surveys in 17 years of PNG coastal villages covered by the Torres Strait Treaty. Fortunately, no new significant biosecurity risks were found during the surveys.
- As well as working beside our NAQS scientists in the field plant scientists from these countries **undertook training in Australia**, helping to boost their skills and capabilities to undertake surveillance activities at home. The outcomes of these and other capacity development activities have increased our knowledge of pest threats to our north, and are contributing to efforts to build a strong and sustainable regional surveillance system.
- **Attendance at Australia's first international symposium on *Xylella fastidiosa.*** In 2017 delegates from our region were able to join their Australian counterparts to hear from world experts about the deadly exotic plant disease.
- **Understanding the plant health status of Australia's Indian Ocean Territories.** Plant health surveys were conducted on Christmas and Cocos (Keeling) Islands to map any pests present. Research was also carried out on how to better engage with these communities on biosecurity to ensure participation in Australia's biosecurity system.

Lynne Jones (NAQS Australia) and Marilyn Apia (NAQIA PNG) join forces to detect plant pests

Improved plant pest diagnostics

Effective surveillance is only possible when there is an equally strong capacity to rapidly and accurately identify plant pests and diseases. Ensuring Australia maintains a strong national diagnostics capacity is imperative to the long-term health of our biosecurity system.

Through the White Paper a substantial investment is being made in improving Australia's plant pest diagnostics, from proficiency testing to the development of practical tools and new strategic blueprints. The development of tests and tools for use in the paddock, nursery or backyard is particularly important, as these resources will help to reduce the diagnostic load on our laboratories by avoiding an excess of non-critical samples, and allowing for a faster response to potential incursions.

Highlights of the White Paper investment in strengthening plant health diagnostics include:

- **Enhancing diagnostic capability for National Priority Plant Pests** through providing better access to diagnostic images of the 'top 40' and other NPPP insects.
- **Implementing a National Plant Pest Biosecurity Reference Collection Strategy,** to support the maintenance of Australia's biological collections. As the foundation of the nation's plant health diagnostic system the sustainability of these collections is crucial to biosecurity, trade and market access.
- **The development of new diagnostic keys for Australian longhorn beetles** (*Cerambycidae*), and new **taxonomic keys** for the reliable identification of **downy mildews**.
- **Molecular diagnostic tests for termite frass** have also been developed, with diagnostic capacity for **tropical plant pests** also enhanced.
- **Awarding diagnostic scholarships** to help our scientists develop and improve national diagnostics protocols and standards, as part of the implementation of the National Plant Biosecurity Diagnostic Strategy 2012–2020. The website of the National Plant Biosecurity Diagnostic Network has also been upgraded with White Paper funding.
- Support for the launch of a **ten year plan for taxonomy and biosystematics** by the Australian Academy of Science and New Zealand's Royal Society Te Apārangi in 2018.

NAQIA (PNG) plant pathologist Balanama Asigau checks a specimen in the NAQS Cairns laboratory

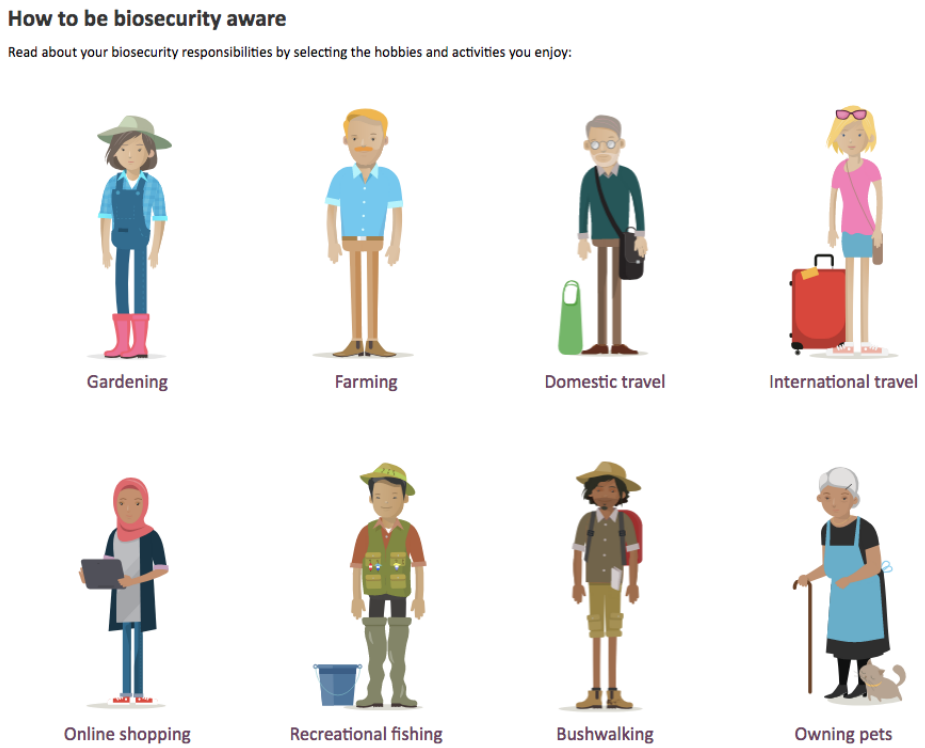
Surveillance by the Australian community

In addition to formal, targeted surveillance programs undertaken by government and industry, all Australians can help to keep our nation free from new pests. We know our own environment better than anyone else, so we can all help by monitoring places where we live and work, and reporting suspicious symptoms or pests without delay. This is known as general surveillance. Many significant detections in Australia have come from someone noticing something unusual and alerting the Exotic Plant Pest Hotline on 1800 084 881.

However, social attitudes research commissioned with White Paper funding in 2016 found that while our community wants to protect our environment and agricultural industries from unwanted pests and diseases, many Australians don't understand what biosecurity means, or know how everyone can play a part to detect, locate and report potential threats. Even farmers were at times unsure as to what to look for, or how to report something suspicious.

Helping Australians understand how to play their part in general surveillance is therefore a critical part of the White Paper investment. Engagement with both commercial growers and backyard gardeners will form part of the new national citrus surveillance program; while community, industry, and environmental groups are integral to the delivery of the new national forest surveillance program. Member organisations of the newly formed botanic gardens and arboreta sentinel surveillance network will also look to engage the community in surveillance.

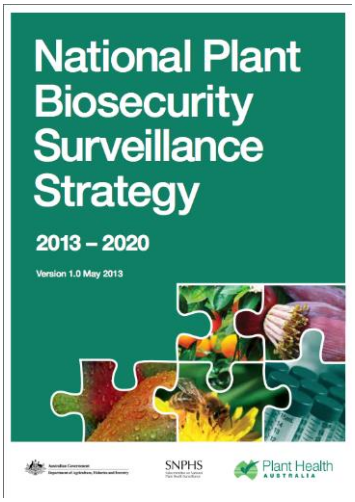
To further encourage a culture of general surveillance the Department of Agriculture and Water Resources launched the social media campaign, '*Don't be a Jeff: Biosecurity Matters*', in 2018. The campaign highlights how everyday actions can make a difference to Australia's plant health.



The 'Don't be a Jeff' videos have been viewed more than 300,000 times over various social media platforms, spreading the biosecurity message far and wide www.agriculture.gov.au/biosecuritymatters

Setting a new strategic direction for Australian plant biosecurity

A lot has been achieved, and there are more benefits to come as the reforms begun under White Paper are implemented more fully. The next step in Australia's journey to stronger plant health surveillance is to renew plant biosecurity strategies that are coming to an end in 2020.



With White Paper funding Plant Health Australia is embarking on consultation with other stakeholders in the plant biosecurity partnership—industry, government, environmental and community organisations—to review Australia's existing strategic approach to plant biosecurity, and develop new ten year plans to guide future investment and activity.

Work is underway on an updated **National Plant Biosecurity Strategy 2020–2030**, as well as a **National Plant Biosecurity Surveillance Strategy 2020–2030** and **National Plant Biosecurity Diagnostic Strategy 2020–2030**.

To reflect a stronger focus on prevention a new strategy will be also be developed, with the addition of a new ten year **National Plant Biosecurity Preparedness Strategy 2020–2030.**

The implementation of the national citrus and forest biosecurity surveillance strategies launched in 2018, as well as those strategies currently under development (for grains, potatoes, temperate and tropical fruit) will also form part of the new strategic framework for Australia's plant biosecurity.

These strategies will be supported by the implementation of new and ongoing measures to further strengthen plant biosecurity, and build on the White Paper legacy of stronger capacity and stronger relationships.

For more information on the White Paper investment in improving plant health surveillance and analysis please contact:

Plant Health Surveillance and Diagnostics Programs
Plant Health Branch, Plant Division
Department of Agriculture and Water Resources
www.agriculture.gov.au

We've achieved a lot, but there's much more to come as we continue to progress the implementation and adoption of the benefits flowing from White Paper funded projects.

Together we can continue to ensure that Australian farmers and the broader community reap the benefits from stronger plant health surveillance, now and well into the future.