

# Chapter 2

## Protecting Australia's plant resources







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The damage to plants caused by pests varies from species to species, but it can be significant. It is estimated that every year between 20 and 40 per cent of crops are lost to plant pests and weeds globally.<sup>23</sup>

Some invasive exotic pest species also have the potential to cause permanent damage to native plants in our unique natural ecosystems. Others can reduce the social value of public amenities such as parks and gardens.

Identifying exotic pest threats, the ways in which they might enter Australia, and prioritising them according to their potential impact, allows the most serious risks to be targeted.

Biosecurity activities such as surveillance, pathway analysis, border screening, inspection and planning can help increase the chance of detecting, identifying, containing and successfully eradicating pests should they arrive. This chapter describes the priority pest threats to the major plant production industries and to the environment, as well as describing the biosecurity and risk mitigation planning activities.

*Tomato potato psyllid (Bactericera cockerelli) nymph. Image courtesy of Pia Scanlon, WA DPIRD*

<sup>23</sup> Savery S, Ficke A, Aubertot J-N and Hollier C (2012). Crop losses due to diseases and their implications for global food production losses and food security. *Food Security*, 4(4):519-537

# National priority pests

## NATIONAL PRIORITY PLANT PESTS

The list of National Priority Plant Pests<sup>24</sup> developed by the Department of Agriculture, Water and the Environment (DAWE) includes Australia's most serious exotic plant pest threats. The National Priority Plant Pests shown in Table 4 were reviewed by the Plant Health Committee and endorsed in August 2019, with the top ten shown in Table 5.

To be considered a national priority:

- a pest must:
  - be injurious to plants, plant products, bees or impact social amenity
  - be exotic to Australia, or have limited distribution and be under official control
  - have potential to cause significant negative impact on national economies, the environment or community
  - have potential to enter, establish and spread in Australia
- there must be a clear benefit from, or requirement for, nationally coordinated action or approach.

The National Priority Plant Pests enable decision makers to focus biosecurity activities to achieve higher returns on investments in risk management, facilitating an integrated and harmonised approach to prevent and prepare for incursions of priority pests.

Potential areas to focus national investment include:

- national pre-border or border measures to reduce the likelihood of entry
- controls on the movement of plant products that can carry regionalised pests interstate
- surveillance for early warning of the presence of pests, area freedom from pests and delimiting the extent of an incursion
- diagnostics, surveillance and incursion responses
- contingency planning, which may highlight areas for improvement such as:
  - tracing the origin and spread of pests
  - developing mapping systems
  - breeding new plant varieties
  - negotiating access to markets
  - training to improve preparedness
  - identification of pesticides for use in incursions
  - identifying possible biological control agents
  - identifying R,D&E needs
  - gaps in the regulatory system.

Table 4. Australia's National Priority Plant Pests











National priority plant pests (2019)			
1	<i>Xylella fastidiosa</i> and exotic vectors	22	Panama disease tropical race 4
2	Khapra beetle	23	Cyst nematodes of cereals (exotic species)
3	Spotted wing drosophila	24	Plum pox virus
4	Exotic, economic fruit fly (lure and non-lure responsive)	25	Exotic drywood termites
5	Karnal bunt	26	Wheat stem sawfly (exotic species)
6	<i>Candidatus Liberibacter asiaticus</i> (and other strains) complex	27	Barley stripe rust (exotic strains)
7	Exotic invasive ants	28	Hessian fly ( <i>Mayetiola</i> spp.)
8	Gypsy moths	29	Exotic subterranean termites
9	Brown marmorated stink bug	30	Phytoplasmas 16Srl group
10	Internal and external mites of bees ( <i>Apis</i> spp.)	31	Armyworm (exotic species)
11	Guava (Eucalyptus) rust (exotic strains)	32	Exotic Tobamovirus
12	Exotic invasive snails	33	<i>Bursaphelenchus</i> spp. and exotic sawyer beetle vectors
13	<i>Candidatus Liberibacter solanacearum</i> complex	34	Exotic longhorn beetles ( <i>Anoplophora</i> spp.)
14	Airborne <i>Phytophthora</i> spp. (sudden oak death)	35	Grape phylloxera
15	Ug99 wheat stem rust	36	Exotic stem borers of sugarcane and cereals ( <i>Chilo</i> spp.)
16	Citrus canker	37	Potato late blight (exotic strains)
17	Exotic bees ( <i>Apis</i> spp.)	38	Pine pitch canker
18	Fire blight	39	Grapevine leaf rust
19	Potato cyst nematode (exotic strains)	40	Exotic Begomovirus and vectors
20	Leaf miners (exotic species)	41	Dutch elm disease
21	Texas root rot	42	Banana phytoplasma diseases

For more information on National Priority Plant Pests go to [www.agriculture.gov.au/pests-diseases-weeds/plant](http://www.agriculture.gov.au/pests-diseases-weeds/plant)

24 Plant pests and diseases, Department of Agriculture, Water and the Environment (2019). Accessed online 10 March 2021 [www.agriculture.gov.au/pests-diseases-weeds/plant](http://www.agriculture.gov.au/pests-diseases-weeds/plant)



Table 5. The top 10 National Priority Plant Pests

<p><b>1. <i>Xylella fastidiosa</i> and exotic vectors</b></p>  <p><i>Christine Harlock, QDAF</i></p>	<p><i>Xylella fastidiosa</i> is a bacteria that could devastate horticultural crops, native flora and gardens as hundreds of native, commercial and ornamental plant species are susceptible. There is no treatment and no documented example of it ever being eradicated once it has become established. It could enter Australia with illegally introduced plant material or with infected sap sucking insects that can hitch a ride to Australia.</p>
<p><b>2. Khapra beetle</b></p>  <p><i>Pest and Diseases Image Library, Bugwood.org</i></p>	<p>Khapra beetle is a pest of stored grain that would have a major impact on the grains industry if it were to establish in Australia, threatening access to export markets. The beetle is small but tough: larvae can survive in a dormant state for up to two years with very little food. It could arrive in cargo, machinery, food or mail items, or be brought in by travellers in personal effects. Once here, it could spread easily via the movement of seed, straw, stored grain, cargo, containers or machinery.</p>
<p><b>3. Spotted wing drosophila</b></p>  <p><i>John Davis</i></p>	<p>Spotted wing drosophila (SWD, <i>Drosophila suzukii</i>) is a major horticultural pest affecting many crops particularly soft-skinned fruit. SWD attacks healthy ripening fruit as well as damaged fruit, reducing crop yields and impacting upon fruit quality. If introduced into Australia, SWD is likely to spread rapidly, primarily through the human movement of infested produce.</p>
<p><b>4. Exotic, economic fruit fly (lure and non-lure responsive)</b></p> 	<p>Exotic fruit flies are one the world's most destructive group of horticultural pests and put at risk more than 300 types of fruit and vegetables. While Australia already has some fruit flies, other exotic species such as oriental fruit fly (<i>Bactrocera dorsalis</i>, pictured left) are kept out by ongoing biosecurity measures.</p>
<p><b>5. Karnal bunt</b></p>  <p><i>FAO</i></p>	<p>Karnal bunt is a disease caused by the fungus <i>Tilletia indica</i>, a highly invasive exotic grain pest which threatens Australia's wheat industry by its potential heavy impact on the quality and ability to sell infected crops. If introduced, Karnal bunt would be almost impossible to eradicate as its spores can persist in soil for up to four years.</p>
<p><b>6. <i>Candidatus Liberibacter asiaticus</i> (and other strains) complex</b></p>  <p><i>Pat Barkley</i></p>	<p>Huanglongbing is a disease caused by <i>Candidatus Liberibacter asiaticus</i> and was previously known as citrus greening disease. One of the worst diseases of citrus trees worldwide, it spreads through the tree canopy, causing decline and then death of the tree. There is no cure – the only way to stop the disease is to destroy all infected trees.</p>
<p><b>7. Exotic invasive ants</b></p>  <p><i>Scott Bauer, USDA Agricultural Research Service, Bugwood.org</i></p>	<p>Invasive (tramp) ants are a diverse group of aggressive, invasive ant species that can rapidly establish and spread if introduced. Several species of invasive ants are amongst the most serious global invasive pests. Australia's environmental, economic, and social wellbeing are threatened by these ants, some of which have already been introduced and are now established in Australia.</p>
<p><b>8. Gypsy moths</b></p>  <p><i>E. Bradford Walker, Vermont Department of Forests, Parks and Recreation, Bugwood.org</i></p>	<p>Gypsy moths (<i>Lymantria</i> spp.) are destructive pests of forests and horticulture. They pose a high biosecurity risk to Australia because of their tendency to hitchhike and their high reproductive rate. If gypsy moths became established, they would be extremely difficult and expensive to manage, partly because of their broad host range.</p>
<p><b>9. Brown marmorated stink bug</b></p>  <p><i>Steven Valley, Oregon Department of Agriculture, Bugwood.org</i></p>	<p>Brown marmorated stink bug (<i>Halyomorpha halys</i>) poses a high biosecurity risk because it affects a very wide range of horticulture and other crops and could also impact native and amenity plants. If it established in Australia it would be extremely difficult and expensive to manage and have a broad impact on the community. The ability of this stink bug to lie dormant and spread hidden in cargo has enabled it to make its way to new regions of the world and spread rapidly.</p>
<p><b>10. Internal and external mites of bees (<i>Apis</i> spp.)</b></p>  <p><i>Scott Bauer, USDA Agricultural Research Service, Bugwood.org</i></p>	<p>Mites of bees such as Varroa mite (<i>Varroa destructor</i>) would pose a serious threat to bees, reducing the numbers of unmanaged European honey bees and the pollination services they provide by 90 to 100 per cent if it established in Australia. Other exotic mites like tracheal mite (<i>Acarapsi woodi</i>) and Tropilaelaps mite (<i>Tropilaelaps</i> spp.) would also seriously impact the honey bee and honey bee reliant plant industries.</p>

## NATIONAL ACTION PLANS

The DAWE is developing national action plans for the National Priority Plant Pests. The plans identify what's needed to prepare for these pests if they enter Australia. The national action plans are 'living' documents to be regularly reviewed. Once finalised, the plans will be available on the DAWE website.

To date, two plans have been finalised:

**The National Invasive Ant Biosecurity Plan 2018–28<sup>25</sup>** provides a nationally agreed approach to enhance Australia's capacity to manage the ongoing threat of invasive ants establishing in Australia and the impacts caused by those species already established.

**The National Xylella Action Plan 2019–29<sup>26</sup>** provides a nationally agreed approach to enhance Australia's capacity to prevent the introduction of Xylella (and exotic vectors), and to improve detection and the ability to respond to an incursion should it enter Australia.

## NATIONAL PRIORITY LIST OF EXOTIC ENVIRONMENTAL PESTS, WEEDS AND DISEASES

In November 2020, DAWE released the National Priority List of Exotic Environmental Pests, Weeds and Diseases (EEPL)<sup>27</sup> after it was endorsed by the National Biosecurity Committee.

The EEPL identifies exotic pests, weeds and diseases that pose the highest risk to our environment, public spaces, heritage and way of life. The list will be used to prioritise and enable activities that help prevent their entry, establishment and spread.

Development of the list was led by the Australian Bureau of Agricultural and Resource Economics and Sciences through an extensive national multi-stage expert elucidation and public consultation process.

The EEPL identifies 168 exotic pests, weeds and diseases spread across eight thematic groups: aquatic animal diseases, freshwater invertebrates, marine pests, native animal diseases, plant pathogens, terrestrial invertebrates, vertebrates, and weeds and freshwater algae. A subset of 42 species that pose the greatest risk to Australia's environmental biosecurity includes five or six high-risk species from each of the eight thematic groups.

There are a number of species that are also found on the list of National Priority Plant Pests, such as gypsy moths, invasive ants and Xylella. Many of the species found on both lists have common pathways (e.g. hitch-hiker pests), controls, or similar host species, including where the natural environment may provide a reservoir of production pests, or vice versa. (Continued page 44)

<sup>25</sup> Environment and Invasives Committee (2019). National Invasive Ant Biosecurity Plan 2018–28. Accessed online 12 February 2020 [www.environment.gov.au/system/files/resources/cd1170d3-7e62-4340-b0d1-c366e495e238/files/invasive-ant-biosecurity-2019.pdf](http://www.environment.gov.au/system/files/resources/cd1170d3-7e62-4340-b0d1-c366e495e238/files/invasive-ant-biosecurity-2019.pdf)

<sup>26</sup> Plant Health Committee (2019). National Xylella Action Plan 2019–29. Accessed online 12 February 2020 [www.agriculture.gov.au/sites/default/files/documents/National-Thursdays-Action-Plan-2019-2029.pdf](http://www.agriculture.gov.au/sites/default/files/documents/National-Thursdays-Action-Plan-2019-2029.pdf)

<sup>27</sup> Department of Agriculture, Water and the Environment. The National Priority List of Exotic Environmental Pests, Weeds and Diseases. Accessed online 11 June 2021 <https://www.agriculture.gov.au/biosecurity/environmental/priority-list>

## Improving preparedness for spotted wing drosophila

Spotted wing drosophila (SWD, *Drosophila suzukii*) is an exotic pest whose geographical distribution and economic impact overseas has increased significantly in recent years.

In Australia, SWD has a wide potential host range and is listed as a National Priority Plant Pest and a High Priority Pest of pome fruit, berries, blueberries, cherries, dried fruit, summerfruit, table grapes and wine grapes. Unlike most *Drosophila* species, the females can infest ripening fruit before harvest, impacting fruit quality, production and market access.

To prepare for a possible incursion in Australia, a review of potential entry pathways, establishment potential, impact, surveillance techniques and control measures was done. Funded by Hort Innovation and conducted by PHA, Cesar Australia and Plant and Food Research New Zealand, the review looked at management practices and impacts overseas, to help prepare management plans and assess whether emergency permits for chemicals can be put in place. The assessment of pathways and establishment potential indicated that regions across southern Australia, much of eastern Australia and southern WA have climates that would support populations and enable their rapid spread.

Another part of the same project was the development and implementation of a cross commodity contingency plan, including a communication and awareness program for affected industries. A preparedness guide and a preparedness plan to help determine how to initially respond to a detection in Australia, along with a collection of educational and outreach resources, were also developed and are available in a downloadable SWD extension pack. The resources are available from [horticulture.com.au/growers/help-your-business-grow/research-reports-publications-fact-sheets-and-more/mt17005](http://horticulture.com.au/growers/help-your-business-grow/research-reports-publications-fact-sheets-and-more/mt17005)



Spotted wing drosophila female (left) and male (right). Image courtesy of Dr Elia Pirtle, Cesar Australia

## Defending against a new pest, fall armyworm

Since it was first detected in northern parts of QLD, NT and WA in February 2020, fall armyworm (*Spodoptera frugiperda*) has established in these locations and moved into parts of southern Australia.

As a new pest, little was known about fall armyworm, with a heavy reliance on information and experience available from overseas. In unmanaged situations overseas, fall armyworm has been known to decimate crops, specifically maize, sweetcorn and sorghum, and has been observed on 350 different plant species with crops from 11 local industries potentially at risk.

This threat prompted concerted efforts to research its likely effects in Australia and develop resources to guide management of the pest. Throughout 2020, PHA sourced and collated international knowledge of the pest to produce a new fall armyworm continuity guide and record a series of podcasts to help industry manage the invasive moth species.

The podcast series, funded by Plant Biosecurity Research Initiative (PBRI) members and PHA, features growers, agronomists and leading Australian researchers sharing their experiences and delves into the biology and behaviour of the pest. The podcasts are available on [pbri.com.au](http://pbri.com.au)

To bolster local information, identify gaps in our understanding of how fall armyworm will behave in Australia and how best to manage it, a National Fall Armyworm Forum was convened. Led by PHA, and supported by the Australian Government, the forum comprising representatives from government, industry and research sectors, assisted with the development of a national management plan.

The Fall Armyworm Continuity Plan for the Australian Grains Industry – a Grains Research and Development Corporation (GRDC) investment initiative led by Cesar Australia with project partners PHA, Centre for Agriculture and Bioscience International, and the Queensland Department of Agriculture and Fisheries – is a reference guide on the pest and provides a basis for designing area wide management plans, crop specific management manuals and strategies to avoid chemical resistance. The guide is available from [planthealthaustralia.com.au/fall-armyworm](http://planthealthaustralia.com.au/fall-armyworm)

(Continued from page 43)

The EEPL should not be considered as an exhaustive list of exotic environmental pests, weeds or diseases. This is due in part to there being some gaps in information and data on the potential risks or impacts of a species, both in their native environment and their estimated impact in Australia. Information gaps are compounded when estimating impacts in Australia due to the uniqueness of our native flora and fauna.

The Chief Environmental Biosecurity Officer is the custodian of the EEPL, and will administer its use and manage reviews, with oversight provided by the Environment and Invasives Committee. Reviews and amendments to the list will involve consultation with Plant Health Committee as required.

An implementation plan for the EEPL is currently being developed in consultation with government, community and industry stakeholders and is expected to be endorsed in the first half of 2021. More information on the EEPL implementation plan is on page 63.



Head lateral view of fall armyworm (*Spodoptera frugiperda*). Image courtesy of Pia Scanlon, WA DPIRD



## Plant industry biosecurity preparedness

There are a number of ways that industries and governments can prepare for and reduce the risks posed by exotic pests. Developing a biosecurity plan enables governments and industries to identify the exotic pests that pose the greatest risk to a specific industry, and the activities that will help to mitigate the risks associated with the pests.

Developing a contingency plan is another aspect of preparedness, as they identify the information needed during a response to an exotic pest incursion.

### BIOSECURITY PLANNING FOR PLANT INDUSTRIES

One of the first steps to reduce the biosecurity risks to an industry is to develop a biosecurity plan for the crop(s) produced. Each of PHA's industry members has developed a biosecurity plan in partnership with governments, and they are listed in Table 6. Biosecurity planning is a requirement for Emergency Plant Pest Response Deed signatories, and plans are generally funded by a research and development corporation (RDC) or plant industry peak body.

The first step in developing a biosecurity plan is to identify and prioritise exotic pests. Experts from industry and government are brought together to form a Technical Expert Group who assess the likelihood of entry, establishment and spread of each pest, as well as the economic impact if it established in Australia.

**Table 6. Current biosecurity plans covering Australia's plant industries**

Biosecurity plans		
Apple and Pear BP (Version 3.0)	Honey bee IBP (Version 1.1)	Rice IBP (Version 3.0)
Avocado BP (Version 3.0)	Lychee IBP (Version 1.0)	Sugarcane IBP (Version 3.0)
Banana BP (Version 3.2)	Mango BP (Version 3.1)	Summerfruit BP (Version 2.2)
Berry BP (Version 1.0)	Melon IBP (Version 2.0)	Sweetpotato BP (Version 1.1)
Blueberry BP (Version 1.0)	Nursery IBP (Version 3.0)	Tea Tree BP (Version 1.2)
Cherry BP (Version 3.1)	Olive BP (Version 2.0)	Tomato BP (Version 1.0)
Citrus BP (Version 3.0)	Onion BP (Version 3.1)	Tree nut BP (Version 3.0)
Coffee BP (Version 1.0)	Papaya IBP (Version 1.0)	Truffle BP (Version 1.0)
Cotton BP (Version 3.2)	Passionfruit IBP (Version 1.0)	Vegetable BP (Version 3.1)
Cut flower BP (Version 1.0)	Pineapple BP (Version 2.0)	Viticulture BP (Version 3.1)
Ginger BP (Version 2.2)	Plantation forest IBP (Version 2.0)	
Grains IBP (Version 3.0)	Potato BP (Version 3.1)	

The exotic pests that pose the greatest risk with the largest potential economic impact are deemed to be High Priority Pests. Table 7 lists all of the High Priority Pests identified in the 35 industry specific biosecurity plans developed by PHA. The same pests are also listed in the plant industry profiles throughout Chapter 3.

Unlike the National Priority Plant Pests (page 41), which are determined by the Australian Government and consider risks posed by a pest across multiple industries at a national level, High Priority Pests are industry specific pests. More information about risk assessment to determine High Priority Pests is available from [planthealthaustralia.com.au/biosecurity/risk-mitigation/risk-assessment](http://planthealthaustralia.com.au/biosecurity/risk-mitigation/risk-assessment)

Having identified the pests that pose the greatest risk, the next step is to develop and agree on effective biosecurity measures to protect against them. This involves the industry, governments, the relevant RDC(s) and PHA working in partnership with each other. Agreed risk mitigation activities are aligned to overarching strategies in the National Plant Biosecurity Strategy and the Intergovernmental Agreement on Biosecurity.

Each biosecurity plan is endorsed by the peak industry body and by all Australian governments through the Plant Health Committee. This means that key stakeholders in the plant biosecurity system have agreed on the priorities and risk mitigation efforts to protect that industry. Since 2017, a Biosecurity Reference Panel of government and industry experts has been appointed to review and prioritise the activities in individual plans on an annual basis.

This ensures that by the end of a plan's timeframe activities have been completed, providing a significant boost in biosecurity preparedness. Biosecurity plans undergo formal reviews every four to five years to ensure they remain up-to-date, taking into consideration new research, incursions overseas and changes to potential entry pathways.

In 2020, a new biosecurity plan was produced for the berry sector (rubus and strawberries), and revised biosecurity plans produced for the avocado, ginger and melon industries.

Growers too can support Australia's biosecurity status by planning and implementing biosecurity practices to protect their crops from established and exotic pests. See on-farm biosecurity and biosecurity manuals for producers in Chapter 7.

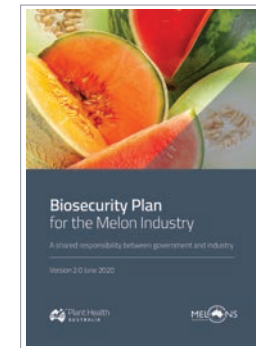




Image courtesy of Raspberries and Blackberries Australia

Table 7. High Priority Pest threats

Scientific name	Common name	High priority pest of
<i>Abaca bunchy top virus</i> (Babuvirus)	Abaca bunchy top	Banana
<i>Acanthocoris scabrator</i>	Squash bug	Mango
<i>Acarapis woodi</i>	Tracheal mite	Honey bee
<i>Achatina achatina</i>	Giant African snail, giant Ghana snail	Sweetpotato, Vegetable
<i>Acute bee paralysis virus</i> (Cripavirus)	Acute bee paralysis virus, ABPV	Honey bee
<i>Agrotis segetum</i>	Turnip moth, cutworm, black cutworm	Sweetpotato
<i>Aleurocanthus woglumi</i>	Citrus blackfly	Mango
<i>Aleurolobus barodensis</i>	Sugarcane whitefly	Sugarcane
<i>Alternaria humicola</i>	Leaf spot	Vegetable
<i>Amritodus atkinsoni</i>	Mango leafhopper	Mango
<i>Amyelois transitella</i>	Navel orangeworm	Nut
<i>Anastrepha ludens</i>	Mexican fruit fly	Citrus, Summerfruit
<i>Anastrepha obliqua</i>	West Indian fruit fly	Mango
<i>Anastrepha serpentina</i>	Sapodilla fruit fly, sapote fruit fly	Summerfruit
<i>Anastrepha striata</i>	Guava fruit fly	Summerfruit
<i>Anisogramma anomala</i>	Eastern filbert blight, hazelnut blight	Nut, Truffle
<i>Anthonomus grandis</i>	Boll weevil	Cotton
<i>Anthonomus grandis</i>	Black bean aphid	Potato, Vegetable
<i>Aphis gossypii</i> (exotic strains)	Cotton aphid	Cotton, Potato and Production Nursery
<i>Apis cerana</i> (exotic strains, genotypes and sub-species)	Asian honey bee	Honey bee
<i>Apis mellifera capensis</i>	Cape honey bee	Honey bee
<i>Apis mellifera scutellata</i>	African honey bee	Honey bee
<i>Apis mellifera scutellata</i> (hybrid)	Africanised honey bee	Honey bee
<i>Argyrotaenia citrana</i>	Orange tortrix	Viticulture
<i>Aristobia testudo</i>	Lychee longicorn beetle	Lychee
<i>Arthuriomyces peckianus</i>	Orange rust (long-cycled)	Rubus
<i>Ascochyta rabiei</i> (MAT1-1)	Ascochyta blight	Grains
<i>Aspidiella hartii</i>	Yam scale	Ginger
<i>Aulacophora foveicollis</i>	Red pumpkin beetle	Vegetable



Table 7. High Priority Pest threats (continued)

Scientific name	Common name	High priority pest of	Scientific name	Common name	High priority pest of
<i>Austropuccinia psidii</i> sensu lato (exotic variants) (syn. <i>Puccinia psidii</i> )	Myrtle rust, guava rust, eucalyptus rust	Cutflower, Plantation forest, Production nursery, Tea tree	<i>Bactrocera zonata</i>	Peach fruit fly	Mango
<i>Bactericera cockerelli</i> *	Tomato potato psyllid	Tomato	<i>Banana bunchy top virus</i> (Babuvirus) (Asian subgroup)	Bunchy top	Banana
<i>Bactrocera albistrigata</i>	White striped fruit fly	Mango	<i>Barley mild mosaic virus</i> (Bymovirus)	Barley mild mosaic virus	Grains
<i>Bactrocera carambolae</i>	Carambola fruit fly	Avocado, Citrus, Mango, Papaya, Passionfruit, Tomato, Vegetable	<i>Batocera rubus</i>	Lateral-banded mango longhorn	Mango
<i>Bactrocera correcta</i>	Guava fruit fly	Mango	<i>Batocera rufomaculata</i>	Red-spotted longhorn beetle	Mango
<i>Bactrocera curvipennis</i>	Banana fruit fly	Mango	<i>Bean common mosaic virus</i> (Potyvirus), peanut stripe strain	Bean common mosaic virus	Grains
<i>Bactrocera dorsalis</i> (syn. <i>B. invadens</i> , <i>B. papayae</i> , <i>B. philippinensis</i> )	Oriental fruit fly	Apple and Pear, Avocado, Banana, Cherry, Citrus, Coffee, Lychee, Mango, Papaya, Passionfruit, Summerfruit, Tomato, Vegetable, Viticulture	<i>Belonolaimus longicaudatus</i>	Sting nematode	Sweetpotato
<i>Bactrocera facialis</i>	Tropical fruit fly, Tongan fruit fly	Avocado, Mango, Passionfruit, Tomato	<i>Bemisia tabaci</i> (types Asia 1, China 1, China 2, Asia II (1-8), Italy, Sub-Saharan Africa (1-4), Uganda, New World, Mediterranean, Middle East-Asia Minor 2, Indian Ocean)	Silverleaf whitefly	Melon, Production nursery, Tomato, Vegetable
<i>Bactrocera kandiensis</i>	Fruit fly	Avocado, Citrus, Mango, Passionfruit	<i>Botrytis squamosa</i>	Leaf blight	Onion
<i>Bactrocera kirki</i>	Fijian fruit fly	Avocado, Mango, Passionfruit	<i>Burkholderia caryophylli</i> (syn. <i>Pseudomonas caryophylli</i> )	Bacterial wilt of carnation	Cutflower
<i>Bactrocera melanotus</i>	Fruit fly	Avocado, Mango, Passionfruit	<i>Bursaphelenchus</i> spp. including <i>B. xylophilus</i>	Pinewood nematode species complex	Plantation forest
<i>Bactrocera occipitalis</i>	Fruit fly	Citrus, Mango	<i>Cacoecimorpha pronubana</i>	Carnation tortrix	Cutflower
<i>Bactrocera oleae</i>	Olive fly	Olive	<i>Caliothrips fasciatus</i>	Bean thrips	Citrus
<i>Bactrocera passiflorae</i>	Fijian fruit fly	Avocado, Mango, Papaya, Passionfruit, Vegetable	<i>Calonectria brassicae</i> (syn. <i>C. gracile</i> )	No common name	Tea tree
<i>Bactrocera psidii</i>	South Sea guava fruit fly	Mango, Passionfruit	<i>Calonectria pteridis</i>	Blight, leaf spot, cutting and root rot	Tea tree
<i>Bactrocera trilineola</i>	Vanuatu fruit fly	Mango	<i>Candidatus Liberibacter africanus</i>	Huanglongbing (African strain)	Citrus
<i>Bactrocera trivialis</i>	New Guinea fruit fly	Citrus, Mango, Vegetable	<i>Candidatus Liberibacter americanus</i>	Huanglongbing (American strain)	Citrus
<i>Bactrocera tuberculata</i>	Fruit fly	Mango	<i>Candidatus Liberibacter asiaticus</i>	Huanglongbing (Asian strain)	Citrus, Production nursery
<i>Bactrocera xanthodes</i>	Pacific fruit fly	Avocado, Mango, Passionfruit	<i>Candidatus Liberibacter solanacearum</i> (syn. <i>Candidatus Liberibacter psyllaurosus</i> )	Zebra chip	Potato, Tomato, Vegetable
			<i>Candidatus Phytoplasma solani</i>	Bois noir	Viticulture
			<i>Carpocapsa sasakii</i>	Peach fruit moth, small peach fruit borer	Apple and Pear



Dorsal view of female banana lace-wing bug (*Stephanitis typica*). Image courtesy of Pia Scanlon, WA DPIRD



Table 7. High Priority Pest threats (continued)

Scientific name	Common name	High priority pest of	Scientific name	Common name	High priority pest of
<i>Cephus cinctus</i>	Wheat stem sawfly	Grains	<i>Citrus tristeza virus</i> (Closterovirus) (mandarin stem-pitting strain)	Mandarin stem pitting	Citrus
<i>Cephus pygmeus</i>	European wheat stem sawfly	Grains	<i>Cladosporium allii</i> (syn. <i>Heterosporium allii</i> , <i>Cladosporium allii-cepae</i> , <i>Mycosphaerella allii</i> )	Leaf spot	Onion
<i>Ceratitis rosa</i>	Natal fruit fly	Viticulture	<i>Colletotrichum higginsianum</i>	Anthraxnose	Vegetable
<i>Ceratocystis fimbriata</i> sensu lato	Mango sudden decline syndrome, ceratocystis blight	Coffee, Mango	<i>Colletotrichum kahawae</i> subsp. <i>kahawai</i> ( <i>Colletotrichum coffeanum</i> )	Coffee berry disease	Coffee
<i>Ceratocystis manginecans</i>	Mango sudden decline syndrome	Mango	<i>Colletotrichum lentis</i> (lentil strain)	Lentil anthracnose, soybean anthracnose	Vegetable
<i>Ceratovacuna lanigera</i>	Sugarcane woolly aphid	Sugarcane	<i>Colletotrichum truncatum</i> (lentil strain)	Lentil anthracnose	Grains
<i>Cercospora rubi</i>	Rosette	Rubus	<i>Conopomorpha sinensis</i>	Lychee fruit borer	Lychee
<i>Ceutorhynchus assimilis</i>	Cabbage seedpod weevil	Grains	<i>Conotrachelus aguacatae</i>	Small avocado seed weevil	Avocado
<i>Ceutorhynchus napi</i>	Rape stem weevil	Grains	<i>Conotrachelus perseae</i>	Small seed weevil	Avocado
<i>Ceutorhynchus pallidactylus</i>	Cabbage stem weevil	Grains	<i>Coptotermes formosanus</i>	Formosan subterranean termite	Plantation forest
<i>Cherry leaf roll virus</i> (Nepovirus) (exotic strains)	Blackline	Rubus	<i>Coptotermes gestroi</i>	Asian subterranean termite	Plantation forest
<i>Chickpea chlorotic dwarf virus</i> (Mastrevirus) (syn. <i>Chickpea chlorotic dwarf virus</i> (Geminivirus))	Chickpea chlorotic dwarf virus	Grains	<i>Cotinis mutabilis</i>	Fig beetle	Pineapple
<i>Chickpea chlorotic stunt virus</i> (Polerovirus)	Chickpea chlorotic stunt virus	Grains	<i>Cotton leaf curl virus complex</i> (Begomovirus)	Cotton leaf curl disease	Cotton
<i>Chilo auricilius</i>	Sugarcane internode borer	Sugarcane	<i>Cotton leafroll dwarf virus</i> (Polerovirus)	Cotton blue disease	Cotton
<i>Chilo infuscatellus</i>	Yellow top borer of sugarcane	Sugarcane	<i>Croesia curvalana</i>	Blueberry leaf tier	Blueberry
<i>Chilo orichalcociliellus</i>	Coastal stem borer	Grains	<i>Cryphonectria parasitica</i> *	Chestnut blight	Nut
<i>Chilo partellus</i>	Spotted stem borer	Grains	<i>Cryptosporella umbrina</i>	Brown rose canker	Cutflower
<i>Chilo sacchariphagus</i>	Sugarcane internode borer	Sugarcane	<i>Ctenopseustis herana</i>	Brown headed leafroller	Avocado
<i>Chilo terrenellus</i>	Sugarcane stem borer	Sugarcane	<i>Ctenopseustis obliquana</i>	Brown headed leafroller	Avocado
<i>Chilo tumidicostalis</i>	Spotted sugarcane stem borer	Sugarcane	<i>Cydia inopinata</i> (syn. <i>Grapholita inopinata</i> )	Manchurian fruit moth	Apple and Pear
<i>Chinavia hilaris</i> (syn. <i>C. hilare</i> , <i>C. halaris</i> , <i>Acrosternum hilare</i> , <i>A. hilaris</i> , <i>Nezara hilaris</i> , <i>Pentatoma hilaris</i> )	Green stink bug	Nut	<i>Cylindrocopturus adspersus</i>	Sunflower stem weevil	Grains
<i>Chlumetia transversa</i>	Mango shoot borer	Mango	<i>Daktulosphaira vitifoliae</i> (exotic strains)	Grapevine phylloxera	Viticulture
<i>Chromatomyia horticola</i>	Pea leafminer	Cutflower	<i>Dasineura amaramanjarae</i>	Mango gall midge	Mango
<i>Chrysosporthe austroafricana</i>	Eucalyptus canker disease	Plantation forest	<i>Dasineura mali</i>	Apple leaf curling midge	Apple and Pear
<i>Citripestis sagittiferella</i>	Citrus fruit borer	Citrus	<i>Deanolis sublimbalis</i> (syn. <i>Noorda albizonalis</i> )	Red banded mango caterpillar	Mango
<i>Citrus leprosis virus</i> (Cilevirus)	Citrus leprosis disease	Citrus	<i>Deformed wing virus</i> (Iflavivirus)	Deformed wing virus	Honey bee

Table 7. High Priority Pest threats (continued)

Scientific name	Common name	High priority pest of	Scientific name	Common name	High priority pest of
<i>Delia antiqua</i>	Onion fly	Onion, Vegetable	<i>Echinothrips americanus</i>	Poinsettia thrips	Production nursery
<i>Delia floralis</i>	Summer cabbage fly	Vegetable	<i>Elasmopalpus lignosellus</i>	Lesser corn stalk borer	Sweetpotato
<i>Delia florilega</i>	Bean fly	Onion, Vegetable	<i>Eldana saccharina</i>	African sugarcane stalkborer	Sugarcane
<i>Dendroctonus ponderosae</i>	Mountain pine beetle	Plantation forest	<i>Elsinoë perseae</i> (syn. <i>Sphaceloma perseae</i> )	Avocado scab	Avocado
<i>Dendroctonus valens</i>	Red turpentine beetle	Plantation forest	<i>Endocronartium harknessii</i>	Western gall rust	Plantation forest
<i>Diabrotica barberi</i>	Northern corn root worm	Grains	<i>Epichoristodes acerbella</i>	South African carnation tortrix, South African carnation miner	Cutflower
<i>Diabrotica undecimpunctata</i>	Southern corn root worm	Grains	<i>Ericaphis fimbriata</i> (with blueberry scorch carlavirus)	Blueberry aphid	Blueberry
<i>Diabrotica virgifera</i>	Western corn root worm	Grains	<i>Erionota thrax</i>	Banana skipper butterfly	Banana
<i>Diaphorina citri</i>	Asian citrus psyllid	Citrus, Production nursery	<i>Erwinia amylovora</i>	Fire blight	Apple and Pear
<i>Diaporthe helianthi</i> (syn. <i>Phomopsis helianthi</i> )	Sunflower stem canker	Grains	<i>Erwinia herbicola</i> pv. <i>gypsophillae</i>	Bacterial gall	Cutflower
<i>Diaprepes abbreviatus</i>	Citrus weevil, West Indian weevil, sugarcane rootstalk borer	Sweetpotato	<i>Erwinia papayae</i>	Bacterial crown rot	Papaya
<i>Dickeya dianthicola</i> (syn. <i>Erwinia chrysanthemi</i> pv. <i>dianthicola</i> )	Slow wilt	Cutflower	<i>Erwinia</i> spp.	Mushy canker	Papaya
<i>Dickeya</i> spp. (onion infecting exotic pathovars) (syn. <i>Erwinia chrysanthemi</i> )	Bacterial soft rot	Onion	<i>Erwinia tracheiphila</i>	Cucurbit bacterial wilt	Melon
<i>Dickeya</i> spp. (pineapple infecting strains) (syn. <i>Erwinia chrysanthemi</i> )	Bacterial fruit collapse, bacterial heart rot	Pineapple	<i>Eumerus strigatus</i>	Lesser bulb fly	Vegetable
<i>Ditylenchus destructor</i>	Potato tuber nematode	Sweetpotato	<i>Eumetopina flavipes</i>	Sugarcane leafhopper (vector of Ramu stunt disease)	Sugarcane
<i>Diuraphis noxia</i> *	Russian wheat aphid	Grains	<i>Eurygaster integriceps</i>	Sunn pest	Grains
<i>Drosophila suzukii</i>	Spotted wing drosophila	Apple and Pear, Blueberry, Cherry, Rubus, Summerfruit, Viticulture	<i>Euscepes postfasciatus</i> (syn. <i>Euscepes batatae</i> )	West Indian sweetpotato weevil	Sweetpotato
<i>Dryocosmus kuriphilus</i>	Oriental chestnut gall wasp	Nut	<i>Euschistus conspersus</i>	Conspere stink bug	Rubus
<i>Dysaphis plantaginea</i>	Rosy apple aphid	Apple and Pear	<i>Eutetranychus banksi</i>	Texas citrus mite	Coffee
<i>Dysdercus</i> spp. (including <i>D. honestus</i> , <i>D. maurus</i> , <i>D. suturellus</i> (American species))	Cotton stainer	Cotton	<i>Frankliniella bispinosa</i>	Florida flower thrips	Citrus
<i>Dysmicoccus neobrevipes</i>	Grey pineapple mealybug	Banana, Pineapple	<i>Frankliniella intonsa</i>	Flower thrips	Cutflower, Tomato
<i>East Asian passiflora virus</i> (Potyvirus)	East Asian passiflora virus	Passionfruit	<i>Frankliniella invasor</i>	Thrips	Banana
			<i>Frankliniella tritici</i>	Eastern flower thrips	Cutflower
			<i>Fusarium circinatum</i>	Pitch canker	Plantation forest
			<i>Fusarium oxysporum</i> f. sp. <i>chrysanthemi</i>	Fusarium wilt of chrysanthemum	Cutflower



Table 7. High Priority Pest threats (continued)

Scientific name	Common name	High priority pest of
<i>Fusarium oxysporum</i> f. sp. <i>ciceris</i>	Fusarium wilt of chickpea	Grains
<i>Fusarium oxysporum</i> f. sp. <i>cubense</i> (exotic vegetative compatibility groups)	Fusarium wilt, Panama disease	Banana
<i>Fusarium oxysporum</i> f. sp. <i>glycines</i>	Fusarium wilt of soybean	Grains
<i>Fusarium oxysporum</i> f. sp. <i>lagenariae</i>	Fusarium root and stem rot of melons	Melon
<i>Fusarium oxysporum</i> f. sp. <i>lupini</i>	Fusarium wilt of lupin	Grains
<i>Fusarium oxysporum</i> f. sp. <i>melonis</i> (exotic races)	Fusarium root and stem rot of melons	Melon
<i>Fusarium oxysporum</i> f. sp. <i>niveum</i> (exotic races)	Fusarium root and stem rot of melons	Melon
<i>Fusarium oxysporum</i> f. sp. <i>radicis-cucumerinum</i>	Fusarium root and stem rot of melons	Melon
<i>Fusarium oxysporum</i> f. sp. <i>vasinfectum</i> (exotic races)	Fusarium wilt	Cotton
<i>Fusarium</i> spp. ( <i>F. ananatum</i> and <i>F. guttiforme</i> syn. <i>F. subglutinans</i> f.sp. <i>anasas</i> )	Fusariosis, fusarium stem rot, pineapple eye rot, fruitlet core rot	Pineapple
<i>Fusarium virguliforme</i>	Sudden death syndrome	Grains
<i>Fusarium xylarioides</i> f. sp. <i>Abyssiniae</i> , <i>F. xylarioides</i> f. sp. <i>canephorae</i>	Coffee wilt	Coffee
<i>Fusicladium effusum</i> (syn. <i>Cladosporium caryigenum</i> )	Pecan scab	Nut
<i>Globodera pallida</i>	Pale potato cyst nematode	Potato
<i>Globodera rostochiensis</i> (pathotypes RO2, RO3, RO4 and RO5)	Golden potato cyst nematode	Potato
Grapevine red blotch-associated virus (Geminivirus) (with vector)	Grapevine red blotch associated virus, GRBaV	Viticulture
Grassy shoot phytoplasma	Grassy shoot	Sugarcane
<i>Groundnut bud necrosis virus</i> (Tospovirus)	Bud necrosis disease	Grains, Melon, Vegetable
<i>Groundnut ringspot virus</i> (Tospovirus)	Groundnut ringspot virus	Grains
<i>Guignardia bidwellii</i>	Black rot	Viticulture
<i>Gymnoconia nitens</i>	Orange rust (short-cycled)	Rubus

Scientific name	Common name	High priority pest of
<i>Halyomorpha halys</i>	Brown marmorated stink bug	Apple and Pear, Cherry, Nut, Rubus, Summerfruit, Truffle, Vegetable, Viticulture
<i>Haplothrips chinensis</i>	Chinese thrips	Cutflower
<i>Harpophora maydis</i> (syn. <i>Acremonium maydis</i> , <i>Cephalosporium maydis</i> )	Late wilt	Grains, Vegetable
<i>Heilipus lauri</i>	Large seed weevil, avocado seed weevil	Avocado
<i>Helicoverpa armigera</i> (carrying Bt resistance alleles)	Cotton bollworm	Cotton
<i>Hemileia vastatrix</i>	Coffee leaf rust	Coffee
<i>Heterocrossa rubophaga</i> (syn. <i>Carposina rubophaga</i> , <i>C. adreptella</i> )	Raspberry bud moth	Rubus
<i>Heterodera carotae</i>	Carrot cyst nematode	Vegetable
<i>Heterodera ciceri</i>	Chickpea cyst nematode	Grains, Vegetable
<i>Heterodera filipjevi</i>	Cereal cyst nematode	Grains
<i>Heterodera glycines</i>	Soybean cyst nematode	Grains
<i>Heterodera latipons</i>	Mediterranean cereal cyst nematode	Grains
<i>Heterodera sorghi</i>	Sorghum cyst nematode	Grains
<i>Homalodisca vitripennis</i> (syn. <i>Homalodisca coagulata</i> )	Glassy winged sharpshooter	Citrus, Production nursery, Viticulture
<i>Homalodisca vitripennis</i> (with <i>Xylella fastidiosa</i> )	Glassy winged sharpshooter	Blueberry, Cherry, Summerfruit, Viticulture
<i>Homoeosoma electellum</i>	Sunflower moth	Grains
<i>Hoplostoma fuliginous</i>	Large hive beetle	Honey bee
<i>Hylesia nigricans</i>	Burning moth	Plantation forest
<i>Hypocryphalus dilutus</i>	Ambrosia beetle	Mango
<i>Hypothenemus hampei</i>	Coffee berry borer	Coffee
<i>Hypothenemus obscurus</i>	Tropical nut borer	Nut
<i>Idioscopus nagpurensis</i>	Mango leafhopper	Mango
<i>Ips typographus</i>	Spruce bark beetle	Plantation forest

Table 7. High Priority Pest threats (continued)

Scientific name	Common name	High priority pest of	Scientific name	Common name	High priority pest of
<i>Kyuri green mottle mosaic virus</i> (Tobamovirus)	Tobamovirus group, KGMMV	Melon	<i>Magnaporthe grisea</i>	Rice blast	Grains, Rice
<i>Leptinotarsa decemlineata</i>	Colorado potato beetle	Potato	<i>Mayetiola destructor</i>	Hessian fly	Grains
<i>Leptoglossus clypealis</i>	Leaf footed bug	Nut	<i>Mayetiola hordei</i>	Barley stem gall midge	Grains
<i>Leptoglossus occidentalis</i>	Western conifer seed bug	Nut	<i>Meloidogyne enterolobii</i> (syn. <i>Meloidogyne mayaguensis</i> )	Root knot nematode	Ginger, Onion, Potato, Sweetpotato, Vegetable
<i>Leptoglossus zonatus</i>	Western leaf footed bug	Nut	<i>Meloidogyne naasi</i>	Barley root knot nematode	Vegetable
<i>Lettuce infectious yellows virus</i> (Crinivirus) and other exotic whitefly transmitted viruses	Lettuce infectious yellows virus	Production nursery	<i>Melon severe mosaic virus</i> (Tospovirus)	Tospovirus, melon severe mosaic	Melon
<i>Liriomyza bryoniae</i>	Tomato leaf miner	Melon, Tomato, Vegetable	<i>Melon yellow spot virus</i> (Tospovirus)	Tospovirus group	Melon
<i>Liriomyza congesta</i>	Pea leaf miner	Cutflower	<i>Monilinia fructigena</i>	Brown rot	Apple and Pear, Blueberry, Cherry
<i>Liriomyza huidobrensis</i>	Serpentine leaf miner	Cutflower, Production nursery, Potato, Tomato, Vegetable	<i>Monilinia mali</i>	Monilinia leaf blight, blossom wilt	Apple and Pear
<i>Liriomyza sativae</i>	Vegetable leaf miner, American leaf miner	Melon, Onion, Potato, Tomato, Vegetable	<i>Monilinia polystroma</i> (syn. <i>Monilia polystroma</i> )	Asiatic brown rot	Apple and Pear
<i>Liriomyza trifolii</i>	American serpentine leaf miner	Cutflower, Potato, Tomato, Vegetable	<i>Monilinia vaccinii-corymbosi</i>	Mummy berry, cotton ball disease	Blueberry
<i>Lissachatina fulica</i> (syn. <i>Achatina fulica</i> )	Giant African snail	Banana, Production nursery, Sweetpotato, Tomato, Vegetable	<i>Monoctonus</i> spp. including <i>M. alternatus</i> , <i>M. galloprovincialis</i> , <i>M. scutellatus</i> , <i>M. titillator</i>	Longhorn beetles	Plantation forest
<i>Lissorhoptrus oryzophilus</i>	Rice water weevil	Rice	<i>Monosporascus cannonballus</i>	Monosporascus root rot	Melon
<i>Lobesia botrana</i>	European grapevine moth	Viticulture	<i>Mungbean yellow mosaic virus, mungbean yellow mosaic India virus, dolichos yellow mosaic virus, horsegram yellow mosaic virus</i> (Begomovirus)	Mungbean yellow mosaic virus	Grains
<i>Lycorma delicatula</i>	Spotted lanternfly	Viticulture	<i>Mycosphaerella eumusae</i>	Eumusae leaf spot	Banana
<i>Lygus hesperus</i>	Western plant bug	Cotton, Strawberry, Vegetable	<i>Nemorimyza maculosa</i>	Chrysanthemum leaf miner	Cutflower
<i>Lygus lineolaris</i>	Tarnished plant bug	Cotton, Production nursery, Strawberry	<i>Neonectria ditissima</i> (syn. <i>Nectria galligena</i> and <i>Neonectria galligena</i> )	European canker	Apple and Pear, Cherry
<i>Lymantria dispar</i>	Asian gypsy moth	Apple and Pear, Nut, Plantation forest, Production nursery, Summerfruit	<i>Nysius huttoni</i>	Wheat bug	Grains
<i>Lymantria mathura</i>	Rosy gypsy moth, pink gypsy moth	Apple and Pear	<i>Oligonychus ilicis</i>	Southern red mite	Coffee, Production nursery
<i>Lymantria monacha</i>	Nun moth	Apple and Pear, Plantation forest, Truffle	<i>Oligonychus perseae</i>	Persea mite	Avocado
			<i>Orgyia thyellina</i>	White spotted tussock moth	Plantation forest
			<i>Pantoea stewartii</i>	Stewart's wilt of maize	Grains
			<i>Paracoccus marginatus</i>	Papaya mealybug	Avocado, Coffee, Papaya



Table 7. High Priority Pest threats (continued)

Scientific name	Common name	High priority pest of
<i>Paradasynus longirostris</i>	Hong Kong stink bug	Lychee
<i>Parasa lepida</i>	Blue striped nettle grub	Mango
<i>Passiflora chlorosis virus</i> (Potyvirus)	Passiflora chlorosis virus	Passionfruit
<i>Passionfruit crinkle virus</i> (Potyvirus)	Passionfruit crinkle virus	Passionfruit
<i>Passionfruit ringspot virus</i> (Potyvirus)	Passionfruit ringspot virus	Passionfruit
<i>Passionfruit severe leaf distortion virus</i> (Begomovirus)	Passionfruit severe leaf distortion virus	Passionfruit
<i>Passionfruit Sri Lankan mottle virus</i> (Potyvirus)	Passionfruit Sri Lankan mottle potyvirus	Passionfruit
<i>Passionfruit vein clearing virus</i> (Rhabdovirus)	Passionfruit vein clearing rhabdovirus	Passionfruit
<i>Passionfruit yellow mosaic virus</i> (Tymovirus)	Passionfruit yellow mosaic virus	Passionfruit
<i>Peanut clump virus</i> (Pecluvirus)	Peanut clump virus	Grains
<i>Pennisetia hylaeiformis</i>	Raspberry crown borer	Rubus
<i>Pennisetia marginata</i>	Raspberry crown borer	Rubus
<i>Perkinsiella vastatrix</i>	Sugarcane plant hopper	Sugarcane
<i>Perkinsiella vitiensis</i>	Sugarcane plant hopper	Sugarcane
<i>Peronophythora litchii</i>	Brown blight	Lychee
<i>Peronosclerospora philippinensis</i>	Philippine downy mildew of maize	Grains, Sugarcane
<i>Peronosclerospora sacchari</i>	Sugarcane downy mildew	Sugarcane
<i>Peronosclerospora sorghi</i>	Downy mildew of sorghum	Grains
<i>Phialophora cinerescens</i>	Phialophora wilt	Cutflower
<i>Philaenus spumarius</i> (with <i>Xylella fastidiosa</i> )	Meadow frog hopper, meadow spittle bug	Summerfruit
<i>Phomopsis cucurbitae</i> (syn. <i>Diaporthe melonis</i> )	Melon black rot, phomopsis fruit rot	Melon
<i>Phyllosticta</i> spp. (including <i>P. cavendishii</i> and <i>P. sydowniana</i> )	Banana freckle	Banana
<i>Phytomyza gymnostoma</i>	Allium leaf miner	Vegetable
<i>Phytophthora fragariae</i> var. <i>fragariae</i>	Red steale root rot	Strawberry
<i>Phytophthora infestans</i> (A2 mating type and exotic strains of A1 mating type)	Late blight	Potato, Vegetable

Scientific name	Common name	High priority pest of
<i>Phytophthora megei</i>	Bark canker	Avocado
<i>Phytophthora pinifolia</i>	Dano foliar del pino	Plantation forest
<i>Phytophthora ramorum</i>	Sudden oak death	Avocado, Blueberry, Cutflower, Nut, Plantation forest, Production nursery, Tea tree, Truffle
<i>Planococcus ficus</i>	Vine mealybug	Viticulture
<i>Planotortrix octo</i>	Green headed leaf roller	Cherry
<i>Plasmopara halstedii</i>	Downy mildew of sunflower	Grains
<i>Plum pox virus</i> (Potyvirus)	Plum pox virus, sharka	Cherry, Summerfruit
<i>Polychrosis viteana</i>	American berry moth	Viticulture
<i>Polyocha depressella</i>	Root borer	Sugarcane
<i>Pomacea canaliculata</i>	Golden apple snail	Production nursery, Rice
<i>Popillia japonica</i>	Japanese beetle	Rubus
<i>Potato spindle tuber viroid</i> (Pospiviroidae) (exotic strains)	Potato spindle tuber viroid	Potato, Vegetable
<i>Prays oleae</i>	Olive moth	Olive
<i>Procontarinia allahabadensis</i>	Mango gall midge	Mango
<i>Procontarinia fructiculi</i>	Gall midge	Mango
<i>Procontarinia frugivora</i>	Mango fruit gall midge	Mango
<i>Procontarinia mangiferae</i>	Mango blossom gall midge	Mango
<i>Procontarinia matteiana</i>	Mango leaf gall midge	Mango
<i>Procontarinia pustulata</i>	Mango leaf gall midge	Mango
<i>Procontarinia schreineri</i>	Mango gall midge	Mango
<i>Prostephanus truncatus</i>	Larger grain borer	Grains
<i>Pseudocercospora fijiensis</i> (syn. <i>Mycosphaerella fijiensis</i> )	Black Sigatoka	Banana
<i>Pseudococcus comstocki</i>	Comstock's mealybug	Viticulture
<i>Pseudococcus cryptus</i> (syn. <i>Pseudococcus citriculus</i> )	Citrus mealybug, citriculus mealybug, cryptic mealybug	Coffee

Table 7. High Priority Pest threats (continued)

Scientific name	Common name	High priority pest of
<i>Pseudococcus jackbeardsleyi</i>	Jack Beardsley mealybug	Banana
<i>Pseudococcus maritimus</i>	Grape mealybug	Viticulture
<i>Pseudomonas avellanae</i> (syn. <i>P. syringae</i> pv. <i>avellanae</i> )	Bacterial canker	Truffle
<i>Pseudomonas syringae</i> pv. <i>syringae</i> (exotic races)	Bacterial canker	Production nursery
<i>Pseudomonas syringae</i> pv. <i>syringae</i> , <i>Pantoea agglomerans</i> , <i>Xanthomonas campestris</i>	Bacterial canker complex, avocado blast complex	Avocado
<i>Pseudothraupis wayi</i>	Coconut bug	Lychee
<i>Psila rosae</i>	Carrot rust fly	Vegetable
<i>Puccinia agrophila</i>	No common name	Vegetable
<i>Puccinia allii</i>	Koike's race, rust of garlic and chives	Onion
<i>Puccinia apii</i>	Rust of celery	Vegetable
<i>Puccinia graminis</i> f. sp. <i>tritici</i> (exotic pathogenic races e.g. Ug99)	Stem rust of wheat	Grains
<i>Puccinia mixta</i>	Rust of chives	Onion
<i>Puccinia nitida</i>	Rust of dill	Vegetable
<i>Puccinia opizii</i>	Rust	Vegetable
<i>Puccinia porri</i>	Rust of leek	Onion
<i>Puccinia</i> spp. (exotic species)	Rusts	Vegetable
<i>Puccinia striiformis</i> f. sp. <i>hordei</i>	Barley stripe rust	Grains
<i>Pucciniastrum coryli</i>	Hazelnut rust	Truffle
<i>Pyrrilla perpusilla</i>	Sugarcane pyrilla	Sugarcane
<i>Radopholus similis</i> (exotic strains)	Burrowing nematode	Ginger
<i>Raffaelea lauricola</i>	Laurel wilt	Avocado
<i>Ralstonia solanacearum</i> phylotype IIB (banana infecting strains)	Moko	Banana
<i>Ralstonia syzygii</i> subsp. <i>celebesensis</i> (syn. <i>Ralstonia solanacearum</i> race 2, biovar 1)	Blood disease	Banana
<i>Ralstonia syzygii</i> subsp. <i>indonesiensis</i> (syn. <i>Ralstonia solanacearum</i> race 4, <i>Pseudomonas solanacearum</i> )	Bacterial wilt	Potato
<i>Raspberry ringspot virus</i> (Nepovirus)	Raspberry ringspot virus	Rubus, Strawberry

Scientific name	Common name	High priority pest of
<i>Rastrococcus invadens</i>	Mango mealybug	Banana, Mango
<i>Rastrococcus spinosus</i>	Mango mealybug	Banana, Coffee
<i>Rhagoletis pomonella</i>	Apple maggot	Apple and Pear
<i>Rhipiphorothrips cruentatus</i>	Grapevine thrips	Mango
<i>Rhizoctonia solanif.</i> sp. <i>sasakii</i> (AG1) (teleomorph <i>Corticium sasakii</i> (syn. <i>Thanatephorus cucumeris</i> ))	Banded leaf, sheath spot	Grains, Vegetable
<i>Rhizoglyphus setosus</i>	Bulb mite	Cutflower, Vegetable
<i>Rhodococcus fascians</i>	Leafy gall	Cutflower
<i>Rice grassy stunt virus</i> (Tenuivirus)	Rice grassy stunt virus	Rice
<i>Rice ragged stunt virus</i> (Oryzavirus)	Ragged stunt virus	Rice
<i>Rice tungro bacilliform virus</i> (unassigned)	Rice tungro bacilliform virus	Rice
<i>Rice tungro spherical virus</i> (Waikavirus)	Waikavirus, rice tungro spherical virus	Rice
<i>Riptortus dentipes</i>	Pod sucking bug	Grains
<i>Schizaphis graminum</i>	Greenbug	Grains
<i>Scirpophaga excerptalis</i>	Top shoot borer	Sugarcane
<i>Scirtothrips perseae</i>	Avocado thrips	Avocado
<i>Sesamia griseocens</i>	Stem borer	Sugarcane
<i>Slow paralysis virus</i> (Iflavivirus)	Slow paralysis virus	Honey bee
<i>Soil-borne wheat mosaic virus</i> (Furovirus)	Soil-borne wheat mosaic virus	Grains
<i>Spiroplasma citri</i>	Stubborn	Citrus
<i>Spodoptera eridania</i>	Southern armyworm	Cutflower
<i>Spodoptera frugiperda</i> *	Fall armyworm	Cotton, Cutflower, Melon, Vegetable
<i>Spodoptera littoralis</i>	Cotton leafworm	Cutflower
<i>Stagonospora sacchari</i>	Leaf scorch	Sugarcane
<i>Stenoma catenifer</i>	Seenomid (avocado) moth, avocado fruit borer, avocado seed moth	Avocado
<i>Sternochetus frigidus</i>	Mango pulp weevil	Mango
<i>Strawberry latent ringspot virus</i> (Sadwavirus)	Strawberry latent ringspot virus	Rubus
<i>Strymon megarus</i> (as a vector of fusariosis)	Pineapple fruit borer	Pineapple
<i>Sugarcane streak mosaic virus</i> (Poacevirus)	Sugarcane streak mosaic	Sugarcane



Table 7. High Priority Pest threats (continued)

Scientific name	Common name	High priority pest of
<i>Sweet potato chlorotic stunt virus</i> (Crinivirus)	Sweet potato chlorotic stunt virus, SPCSV	Sweetpotato
<i>Sweet potato mild mottle virus</i> (Ipomovirus)**	Mild mottle of sweet potato, SPMMV	Sweetpotato
<i>Sweet potato mild speckling virus</i> (Potyvirus)**	Sweet potato mild speckling virus, SPMSV	Sweetpotato
<i>Teratosphaeria gauchensis</i>	Coniothyrium eucalyptus canker	Plantation forest
<i>Teratosphaeria zuluensis</i>	Coniothyrium eucalyptus canker	Plantation forest
<i>Tetranychus pacificus</i>	Pacific spider mite	Viticulture
<i>Tetranychus piercei</i>	Spider mite	Banana
<i>Thaumotobia leucotreta</i> (syn. <i>Cryptophlebia leucotreta</i> )	False codling moth	Cotton, Grains, Mango, Pineapple, Vegetable
<i>Thrips tabaci</i> (exotic strains and biotypes)	Onion thrips	Onion
<i>Tilletia indica</i>	Karnal bunt	Grains
<i>Tomato black ring virus</i> (Nepovirus)	Tomato black ring virus	Strawberry
<i>Tomato brown rugose fruit virus</i> (Tobamovirus)	Tomato brown rugose fruit virus, ToBRFV	Vegetable
<i>Tomato mottle mosaic virus</i> (Tobamovirus)	Tomato mottle mosaic virus, ToMMV	Vegetable
<i>Tomato ringspot virus</i> (Nepovirus)	Tomato ringspot virus, backberry mosaic virus, red currant mosaic virus	Rubus, Strawberry
<i>Tomicus piniperda</i>	Pine shoot beetle	Plantation forest
<i>Toxotrypana curvicauda</i>	Papaya fly	Mango, Papaya
<i>Trichoplusia ni</i>	Cabbage looper	Vegetable
<i>Trioza erytreae</i>	African citrus psyllid	Citrus
<i>Trogoderma granarium</i>	Khapra beetle	Grains, Nut, Rice, Viticulture
<i>Tropilaelaps clareae</i>	Tropilaelaps mite	Honey bee
<i>Tropilaelaps mercedesae</i>	Tropilaelaps mite	Honey bee
<i>Tuta absoluta</i>	South American tomato moth, tomato leaf miner	Tomato, Vegetable

Scientific name	Common name	High priority pest of
Unknown	Ramu stunt disease	Sugarcane
Unknown (suspected phytoplasma)	Longan and lychee witches' broom disease	Lychee
<i>Urocerus gigas</i>	Giant wood wasp	Plantation forest
<i>Urocystis cepulae</i>	Onion smut	Onion
<i>Uromyces lineolatus</i>	Rust	Vegetable
<i>Varroa destructor</i>	Varroa mite	Honey bee
<i>Varroa jacobsoni</i>	Varroa mite	Honey bee
<i>Veronicella cubensis</i>	Cuban slug	Sweetpotato
<i>Verticillium dahliae</i> (defoliating strain)	Verticillium wilt	Cotton, Nut, Olive
<i>Vespa</i> spp. (exotic species including <i>V. orientalis</i> , <i>V. velutina</i> , <i>V. crabro</i> )	Hornets	Honey bee
<i>Watermelon bud necrosis virus</i> (Tospovirus)	Watermelon bud necrosis	Melon, Vegetable
<i>Watermelon green mottle mosaic virus</i> (Tobamovirus)	Tobamovirus	Melon
<i>Watermelon silver melon virus</i> (Tobamovirus)	Tobamovirus	Melon
White leaf phytoplasma	White leaf	Sugarcane
<i>Xanthomonas albilineans</i> (exotic strains, serological groups 2 or 3)	Leaf scald	Sugarcane
<i>Xanthomonas axonopodis</i> pv. <i>allii</i>	Xanthomonas leaf blight	Onion
<i>Xanthomonas axonopodis</i> pv. <i>passiflorae</i>	Bacterial blight	Passionfruit
<i>Xanthomonas citri</i> subsp. <i>citri</i> (syn. <i>Xanthomonas axonopodis</i> pv. <i>citri</i> )	Citrus canker	Citrus
<i>Xanthomonas citri</i> subsp. <i>malvacearum</i> (syn. <i>X. axonopodis</i> pv. <i>malvacearum</i> )	Bacterial blight, angular leaf spot	Cotton
<i>Xanthomonas fragariae</i>	Strawberry angular leaf spot	Strawberry
<i>Xylella fastidiosa</i> (subspecies not specified)	Pierce's disease, blueberry leaf scorch, olive leaf scorch, olive quick decline, phony peach, plum leaf scald	Blueberry, Cherry, Production nursery, Summerfruit, Viticulture

Table 7. High Priority Pest threats (continued)

Scientific name	Common name	High priority pest of
<i>Xylella fastidiosa</i> subsp. <i>fastidiosa</i>	Pierce's disease, blueberry leaf scorch, olive leaf scorch	Coffee, Nut
<i>Xylella fastidiosa</i> subsp. <i>multiplex</i>		Nut, Olive
<i>Xylella fastidiosa</i> subsp. <i>pauca</i>	Pierce's disease, blueberry leaf scorch, olive quick decline	Citrus, Coffee, Olive
<i>Xylella fastidiosa</i> subsp. <i>piercei</i>		Nut
<i>Xylosandrus compactus</i>	Black twig borer	Mango, Tea tree
<i>Zea mosaic virus</i> (Potyvirus)	Zea mosaic virus	Grains
<i>Zeugodacus cucurbitae</i> (syn. <i>Bactrocera cucurbitae</i> )	Melon fruit fly	Avocado, Mango, Melon, Papaya, Passionfruit, Vegetable
<i>Zucchini green mottle mosaic virus</i> (Tobamovirus)	Tobamovirus group, ZGMMV	Melon

## Legend

f. sp. forma specialis

pv. pathovar

sp. species

spp. multiple species

subsp. subspecies

syn. synonym

\*established in Australia

\*\*with sweet potato feathery mottle virus and sweet potato chlorotic stunt virus

## CONTINGENCY PLANNING

Contingency planning is a pre-emptive preparedness initiative that improves readiness for a particular exotic pest threat. Contingency plans are developed by PHA, industries and governments.

Before an incursion occurs, experts are brought together to collate information on a particular pest or pest group, its biology and available control measures. This includes identifying gaps in diagnostics, surveillance and R&D for the pest. Each contingency plan provides guidelines and options for steps to be considered and undertaken when developing a response plan for the pest.

Table 8 provides a list of 101 contingency plans that have been developed to date. These plans make a considerable contribution to Australia's preparedness for serious exotic plant pest threats. These contingency plans are located on PHA's website in the Pest Information Document Database at [planthealthaustralia.com.au/pidd](http://planthealthaustralia.com.au/pidd)



Table 8. Contingency plans

Scientific name	Common name	Year	Location of document	Scope
<i>Acarapis woodi</i>	Tracheal mite	2012	PHA	National – honey bee industry
<i>Agromyza ambigua</i> , <i>A. megalopsis</i> , <i>Cerodontha denticornis</i> , <i>Chromatomyia fuscata</i> and <i>C. nigra</i>	Cereal leaf miners	2009	PHA	National – grains industry
<i>Agrotis segetum</i>	Turnip moth	2011	PHA	National – grains industry
<i>Alternaria humicola</i>	Leaf spot of field pea	2009	PHA	National – grains industry
<i>Alternaria triticina</i>	Leaf blight of wheat	2009	PHA	National – grains industry
<i>Anoplophora chinensis</i>	Citrus longicorn beetle	2009	PHA	National – production nurseries
<i>Anoplolepis gracilipes</i> , <i>Linepithema humile</i> , <i>Solenopsis invicta</i> and <i>Wasmannia auropunctata</i>	Tramp ants – yellow crazy, Argentine, fire and electric ants	2015 draft	DJPR	National – production nurseries
<i>Aphis fabae</i> , <i>Haplorthrips tritici</i> and <i>Schizaphis graminum</i>	Exotic sap-sucking pests	2015	PHA	National – grains industry
<i>Atherigona soccata</i>	Sorghum shoot fly	2008	PHA	National – grains industry
<i>Austropuccinia psidii</i> (syn. <i>Uredo rangelii</i> )	Myrtle rust	2015	PIRSA	State
<i>Bactericera cockerelli</i> and <i>Candidatus Liberibacter solanacearum</i>	Zebra chip complex	2011	Hort Innovation, PHA	National – vegetable and potato industries
<i>Bactrocera tryoni</i> and <i>Ceratitis capitata</i>	Queensland fruit fly and Mediterranean fruit fly	2013	DPIPWE	State
<i>Bactrocera tryoni</i> , <i>Ceratitis capitata</i> and exotic fruit fly species	Fruit flies	Updated bi-annually	PIRSA	State
<i>Barley stripe mosaic virus</i> (Hordeivirus)	Barley stripe mosaic virus	2009	PHA	National – grains industry
<i>Beet pseudo yellows virus</i> (Closterovirus), <i>diodia vein chlorosis virus</i> (Crinivirus), <i>lettuce infectious yellows virus</i> (Crinivirus) and <i>tomato yellow leaf curl virus</i> (Begomovirus)	Whitefly transmitted viruses	2010	PHA	National – production nurseries
<i>Brachyponera chinensis</i> , <i>Camponotus pennsylvanicus</i> , <i>Lasius neglectus</i> , <i>Myrmica rubra</i> , <i>Nylanderia fulva</i> , <i>Solenopsis richteri</i> , <i>Tapinoma sessile</i> , <i>Technomyrmex</i> spp. (excluding <i>T. difficilis</i> and <i>T. vitensis</i> that are already established), <i>Tetramorium tsushimae</i>	Asian needle, carpenter, invasive garden, European fire, tawny crazy or raspberry ant, black imported fire, odorous house, white footed (about 100 species) and Japanese pavement ants	2019	QDAF, GIA	National – production nurseries
<i>Braula coeca</i>	Braula fly	2012	PHA	National – honey bee industry
<i>Burkholderia glumae</i>	Panicle blight	2009	PHA	National – rice industry
<i>Candidatus Liberibacter africanus</i> , <i>Ca. L. americanus</i> , <i>Ca. L. asiaticus</i> , <i>Diaphorina citri</i> and <i>Trioza erytreae</i>	Huanglongbing and vectors	2009 (under review)	PHA, Hort Innovation	National – citrus and nursery industries
<i>Candidatus Liberibacter africanus</i> , <i>Ca. L. americanus</i> , <i>Ca. L. asiaticus</i> , <i>Diaphorina citri</i> and <i>Trioza erytreae</i>	Huanglongbing and vectors	2013	QDAF, GIA	National – production nurseries
<i>Candidatus Liberibacter africanus</i> , <i>Ca. L. americanus</i> , <i>Ca. L. asiaticus</i> , <i>Diaphorina citri</i> and <i>Trioza erytreae</i>	Huanglongbing and vectors	2015	Hort Innovation, PHA	National – citrus and nursery industries
<i>Cephus cinctus</i> and <i>Thaumatotibia leucotreta</i>	Wheat stem sawfly and false codling moth	2015	PHA	National – grains industry

Table 8. Contingency plans (continued)

Scientific name	Common name	Year	Location of document	Scope
<i>Cephus pygmeus</i>	European wheat stem sawfly	2008	PHA	National – grains industry
<i>Ceratocystis ulmi</i>	Dutch elm disease	2001	DJPR	State
<i>Ceutorhynchus assimilis</i> and <i>Dasineura brassicae</i>	Cabbage seedpod weevil and brassica pod midge	2011	PHA	National – grains industry
<i>Chilo partellus</i>	Spotted stem borers	2009	PHA	National – grains industry
<i>Chilo</i> spp.	Sugarcane stem borer	2002	SRA	National – sugarcane industry
<i>Chortoicetes terminifera</i>	Plague locust	2010	PIRSA	State
<i>Chromatomyia horticola</i> , <i>Liriomyza bryoniae</i> , <i>L. cicerina</i> , <i>L. huidobrensis</i> , <i>L. sativae</i> and <i>L. trifolii</i>	Agromyzid leaf miners	2008	PHA	National – grains industry
<i>Chrysanthemum stem necrosis virus</i> (Tospovirus), <i>impatiens necrotic ringspot virus</i> (Tospovirus), <i>pelargonium flower break virus</i> (Carmovirus) and <i>tomato spotted wilt virus</i> (Tospovirus)	Thrips-transmitted viruses	2011	PHA	National – production nurseries
<i>Colletotrichum truncatum</i> (lentil strain)	Lentil anthracnose	2008	PHA	National – grains industry
<i>Curvularia spicifera</i> (syn. <i>Bipolaris spicifera</i> )	Leaf blotch of cereals	2009	PHA	National – grains industry
<i>Daktulosphaira vitifoliae</i>	Grape phylloxera	Updated bi-annually	PIRSA	State – viticulture industry
<i>Deanolis sublimbalis</i>	Red banded mango caterpillar	2008	PHA	State
<i>Diatraea</i> spp.	Sugarcane borer	2008	SRA, PHA	National – sugarcane industry
<i>Diuraphis noxia</i>	Russian wheat aphid	2012	PHA	National – grains industry
<i>Dorystenes buqueti</i>	Sugarcane longhorn stemborer	2009	SRA, PHA	National – sugarcane industry
<i>Echinothrips americanus</i>	Poinsettia thrips	2010	PHA	National – production nurseries
<i>Eldana saccharina</i>	African sugarcane moth borer	2002	SRA	National – sugarcane industry
<i>Eoreuma loftini</i>	Mexican rice borer	2008	SRA, PHA	National – sugarcane industry
<i>Erwinia amylovora</i>	Fire blight	2007	PHA	National – apple and pear industry
<i>Erwinia amylovora</i>	Fire blight	2014	PHA	National – production nurseries
<i>Erwinia papayae</i>	Bacterial crown rot	2011	PHA	National – papaya industry
<i>Eumetopina flavipes</i>	Island sugarcane planthopper	2009	SRA, PHA	National – sugarcane industry
<i>Eurogaster integriceps</i>	Sunn pest	2008	PHA	National – grains industry
<i>Fulmekiola serrata</i>	Oriental sugarcane thrips	2009	SRA, PHA	National – sugarcane industry
<i>Fusarium oxysporum</i> f. sp. <i>ciceris</i> , <i>F. oxysporum</i> f. sp. <i>lentis</i> and <i>F. oxysporum</i> f. sp. <i>lupini</i>	Fusarium wilt of chickpea, lentil and lupin	2009	PHA	National – grains industry
<i>Fusarium oxysporum</i> f. sp. <i>conglutinans</i>	Fusarium wilt of canola	2007	PHA	National – grains industry
<i>Gibberella fujikuroi</i>	Bakanae	2008	PHA	National – rice industry
<i>Halyomorpha halys</i>	Brown marmorated stink bug	2016	GIA	National – production nurseries

Table 8. Contingency plans (continued)

Scientific name	Common name	Year	Location of document	Scope
<i>Halyomorpha halys</i>	Brown marmorated stink bug	2017	PHA	Not specific to a particular industry
<i>Harpophora maydis</i> and <i>Plasmopara halstedii</i>	Exotic soil-borne pathogens of grains	2013	PHA	National – grains industry
<i>Helicoverpa zea</i>	Corn earworm	2009	PHA	National – grains industry
<i>Heterodera avenae</i> , <i>H. filipjevi</i> and <i>H. latipons</i>	Cereal cyst nematodes	2012	PHA	National – grains industry
<i>Heterodera carotae</i>	Carrot cyst nematode	2008	DPIRD, Hort Innovation	National – vegetable industry
<i>Heterodera ciceri</i> , <i>H. glycines</i> and <i>H. zea</i>	Exotic nematodes of grains	2013	PHA	National – grains industry
<i>Homalodisca vitripennis</i>	Glassy winged sharpshooter	2017	PHA, GIA	National – production nurseries
<i>Liriomyza bryoniae</i> , <i>L. cicerina</i> , <i>L. huidobrensis</i> , <i>L. sativa</i> , <i>L. trifolii</i> and <i>Chromatomyia horticola</i>	Agromyzid leaf miners	2009	PHA	National
<i>Liriomyza bryoniae</i> , <i>L. huidobrensis</i> , <i>L. sativa</i> , <i>L. trifolii</i> and <i>Chromatomyia horticola</i>	Agromyzid leaf miners	2008	QDAF, Hort Innovation	National
<i>Liriomyza huidobrensis</i>	Serpentine leaf miner	2009	PHA	National – production nurseries
<i>Lissachatina fulica</i> (syn. <i>Achatina fulica</i> )	Giant African land snail	2015	GIA	National – ornamentals, vegetables, legumes
<i>Lissorhoptrus oryzophilus</i>	Rice water weevil	2009	PHA	National – rice industry
<i>Lygus lineolaris</i>	Tarnished plant bug	2011	PHA	National – production nurseries
<i>Lymantria dispar dispar</i>	Gypsy moth (Asian and European strains)	2009	PHA	National – production nurseries
<i>Magnaporthe grisea</i>	Rice blast	2008	PHA	National – rice industry
Maize dwarf mosaic virus (Potyvirus)	Maize dwarf mosaic virus	2011	PHA	National – grains industry
<i>Mayetiola destructor</i>	Hessian fly	2005	PHA	National – grains industry
<i>Mayetiola hordei</i>	Barley stem gall midge	2008	PHA	National – grains industry
<i>Meromyza americana</i> and <i>M. saltatrix</i>	Wheat stem maggots	2009	PHA	National – grains industry
<i>Nysius huttoni</i>	Wheat bug	2008	PHA	National – grains industry
<i>Ophiostoma</i> spp.	Dutch elm disease	2016	QDAF, GIA	National – production nurseries
<i>Paracoccus marginatus</i>	Papaya mealy bug	2011	PHA	National – papaya industry
<i>Peronosclerospora philippinensis</i> and <i>P. sorghi</i>	Downy mildew of maize and sorghum	2009	PHA	National – grains industry
<i>Phyllophaga</i> spp.	May beetle	2008	PHA	National – grains industry
<i>Phytophthora ramorum</i>	Sudden oak death	2019	PHA, GIA	National – production nurseries
Plum pox virus (Potyvirus) and tobacco etch virus (Potyvirus)	Aphid-transmitted viruses	2011	PHA	National – production nurseries
<i>Pomacea canaliculata</i>	Golden apple snail	2009	PHA	National – rice industry
<i>Psila rosae</i>	Carrot rust fly	2009	DPIRD, Hort Innovation	National – vegetable industry



Table 8. Contingency plans (continued)

Scientific name	Common name	Year	Location of document	Scope
<i>Puccinia psidii</i>	Myrtle rust	2015 (Updated 2020)	DPIRD	State
<i>Puccinia psidii</i> sensu lato	Eucalyptus rust	2009	PHA	National – production nurseries
<i>Puccinia striiformis</i> f. sp. <i>hordei</i>	Barley stripe rust	2010	PHA	National – grains industry
<i>Pyrenophora teres</i> f. sp. <i>teres</i>	Net form of net blotch	2009	PHA	National – grains industry
Red clover vein mosaic virus (Carlavirus)	Red clover vein mosaic virus	2008	PHA	National – grains industry
<i>Scirpophaga</i> spp.	Top borers	2008	SRA, PHA	National – sugarcane industry
<i>Sesamia</i> spp.	Sugarcane and maize borers	2001	SRA	National – sugarcane industry
<i>Sitobion avenae</i>	Wheat aphid	2009	PHA	National – grains industry
<i>Sitona</i> spp. complex, especially <i>S. lineatus</i>	Pea leaf weevils	2005	DPIRD, PHA	National – grains industry
<i>Solenopsis invicta</i>	Red imported fire ant	2013	QDAF, NBC	National
<i>Solenopsis invicta</i>	Red imported fire ant	2013	QDAF, TACC	State
<i>Tilletia barclayana</i>	Kernel smut of rice	2008	PHA	National – rice industry
<i>Tilletia controversa</i>	Dwarf bunt of wheat	2007	PHA	National – grains industry
<i>Tilletia indica</i>	Karnal bunt	2006 draft	PHA	National – grains industry
<i>Trogoderma granarium</i>	Khapra beetle	2005	PHA	National – grains industry
<i>Tropilaelaps clareae</i> and <i>T. mercedesae</i>	Tropilaelaps mites	2012	PHA	National – honey bee industry
<i>Uromyces pisi</i> and <i>U. viciae-fabae</i>	Field pea and lentil rust	2009	PHA	National – grains industry
<i>Varroa destructor</i> and <i>V. jacobsoni</i>	Varroa mites	2012	PHA	National – honey bee industry
<i>Verticillium longisporum</i>	Verticillium wilt of canola	2011	PHA	National – grains industry
<i>Wasmannia auropunctata</i>	Electric ant	2013	QDAF, TACC	State
<i>Xanthomonas translucens</i> pv. <i>translucens</i> and <i>X. translucens</i> pv. <i>undulosa</i>	Bacterial leaf streak	2011	PHA	National – grains industry
<i>Xylella fastidiosa</i>	Pierce's disease	2011	PHA	National – production nurseries
<i>Xylella fastidiosa</i>	Pierce's disease	2016	GIA, QDAF	National – production nurseries

Legend  
f. sp. forma specialis  
pv. pathovar  
spp. multiple species  
syn. synonym





*Image courtesy of Madeleine Quirk, AUSVEG*



## Environmental Biosecurity Webinars: Building connections for better biosecurity

The Environmental Biosecurity Office of DAWE hosted a series of eight webinars between July and December 2020 with over 1,000 participants joining the 90-minute sessions. Each webinar featured presentations by biosecurity experts followed by 30 minutes of facilitated discussion.

Three webinars were dedicated to invasive plant pathogens *Phytophthora* and myrtle rust, pathogens that have created significant issues for plants growing in man-made and natural environments.

A number of constructive insights, lessons, messages and outcomes emerged from the discussions:

- stories and shared experiences are highly motivating and bring us together
- publicly and freely sharing research results and data is empowering
- there is a need to better understand and draw on Indigenous knowledge and past lessons
- early action and intervention is better and more cost-effective than waiting for the perfect plan
- everyone has an important role in protecting our environment, and those who want to be involved need more support.

Given its success, the Environmental Biosecurity Webinar Series will return in the first half of 2021. For more information, contact the Environmental Biosecurity Office at [acebo@awe.gov.au](mailto:acebo@awe.gov.au)



## Environmental biosecurity preparedness

Environmental biosecurity supports our long-term mental and physical health, economic prosperity, national identity and underpins our existence on Earth. Caring for ecosystems, land, seas and aquatic environments benefits us all.

Environmental biosecurity often appears to be distinct from agricultural biosecurity, which focuses on pests that could have an economic impact on Australia's agricultural productivity. However, there is a significant overlap in pests, pathways, controls, and host species that affect plants grown for agricultural purposes and those found in the natural environment or that have social amenity in urban, rural and regional spaces. Our unique natural environment and wildlife also support a multi-billion dollar domestic and (pre-Covid-19, international) tourism sector.

Environmental biosecurity can make use of and build on many aspects of the system established for agricultural biosecurity. Environmental biosecurity risk mitigation objectives frequently overlap with other biosecurity risk mitigation programs, which will provide collaboration and efficiency opportunities.

In particular, the EEPL will be used to guide actions and programs that seek to reduce the chance of these organisms becoming established in Australian ecosystems and increase our ability to detect, contain and eradicate them from the Australian environment if they occur.

The Chief Environmental Biosecurity Officer is responsible for developing and delivering an EEPL implementation plan that takes into account recommendations made in the 2017 Intergovernmental Agreement on Biosecurity Review that cover a broad set of risk mitigation approaches, including:

- undertaking detailed risk assessments where required
- identifying risk management measures
- developing surveillance measures pre-border, at the border and post-border
- improving and creating diagnostic capabilities
- building response capacity
- supporting research and development
- undertaking communication activities.



The EEPL contains a diverse set of species that possess diverse traits affecting the likelihood of incursion and environmental impact. Some traits allow EEPL species to be targeted as a group for risk reduction measures.

A number of principles have guided development of the EEPL implementation plan. The most fundamental principle is to seek the greatest reduction to environmental risk for the investment. This will be achieved by using a set of guiding rationales to reveal where the greatest risk mitigation improvement may be made for the cost required to achieve the expected outcome.

Mitigation and preparedness activities are not limited to the species in the EEPL or its implementation plan. In 2019 and 2020, PHA was engaged by the Chief Environmental Biosecurity Officer to develop Environmental Risk Mitigation Plans for Acacia, mangroves and associated communities, and native Australian bees. The plans are the first of their kind, consider all environmental stakeholders and provide a template for similar work in the future.

## National Plant Biosecurity Preparedness Strategy

To reflect a stronger focus on prevention, a new ten-year National Plant Biosecurity Preparedness Strategy (NPBPS) is being developed. Once completed, the NPBPS will underpin the National Plant Biosecurity Strategy and complement the national diagnostic and surveillance strategies.

The NPBPS will be underpinned by an implementation plan that identifies and prioritises investments and activities required to undertake a coordinated approach to addressing national plant biosecurity preparedness. Work on these documents is expected to be completed by mid-2021.





