



# Chapter 2

Protecting Australia's plant resources



## Protecting Australia's plant resources

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>16</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 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 then help increase the chance of 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.

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16. 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 National Priority Plant Pests (2019) is a list of Australia's most serious exotic plant pest threats. The list shown in Table 3 was reviewed by the Plant Health Committee and endorsed in August 2019, with the top ten shown in Table 4.

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 Pest list enables 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 priority pest threats.

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 3. Australia's National Priority Plant Pests

National priority plant pests (2019)			
1	<i>Xylella fastidiosa</i> and exotic vectors	22	Panama 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.	35	Grape phylloxera
15	Ug99 wheat stem rust	36	Exotic stem borers of sugarcane and cereals
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)

Table 4. The top 10 National Priority Plant Pests

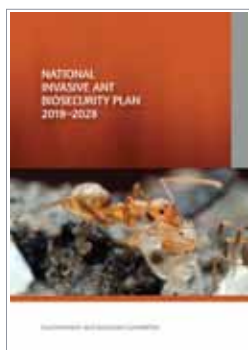
<p>1. <i>Xylella fastidiosa</i> and exotic vectors</p>  <p>Christine Horlock, QDAF</p>	<p><i>Xylella fastidiosa</i> is a bacteria that could devastate horticultural crops, native flora and gardens as hundreds of native, commercial and ornamental plant species are susceptible. There is no treatment and 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>2. Khapra beetle</p>  <p>Pest and Diseases Image Library, Bugwood.org</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 or machinery.</p>
<p>3. Spotted wing drosophila</p>  <p>John Davis</p>	<p>Spotted wing drosophila (<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>4. Exotic, economic fruit fly (lure and non-lure responsive)</p> 	<p>Exotic fruit flies are one the world's most destructive group of horticultural pests and put at risk more 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>5. Karnal bunt</p>  <p>FAO</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>6. <i>Candidatus Liberibacter asiaticus</i> (and other strains) complex</p>  <p>Pat Barkley</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>7. Exotic invasive ants</p>  <p>Scott Bauer, USDA Agricultural Research Service, Bugwood.org</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>8. Gypsy moths</p>  <p>E. Bradford Walker, Vermont Department of Forests, Parks and Recreation, Bugwood.org</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>9. Brown marmorated stink bug</p>  <p>Steven Valley, Oregon Department of Agriculture, Bugwood.org</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>10. Internal and external mites of bees (<i>Apis</i> spp)</p>  <p>Scott Bauer, USDA Agricultural Research Service, Bugwood.org</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 Department of Agriculture are developing national action plans for the National Priority Plant Pests. The plans identify the capabilities required 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 Department of Agriculture website.

To date, two plans have been finalised:



- **The National Invasive Ant Biosecurity Plan 2018–28**<sup>17</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>18</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.

17. 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)

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

## National workshop prioritises action on Khapra beetle

On 13–14 June 2019, the Department of Agriculture, Water and the Environment convened a workshop to increase Australia's preparedness for Khapra beetle by identifying activities to enhance Australia's capacity to manage the threat posed by this devastating pest. Khapra beetle is the number two National Plant Priority Pest and strong preventative and response measures are needed to protect Australia and industry from an incursion.

Participants included representatives from peak industry bodies from the grain, rice and seed industries, GRDC and PHA, along with state, federal and New Zealand biosecurity agencies.

During the workshop, there was strong support for a more coordinated national approach and the development of a national preparedness action and implementation plan for Khapra beetle, similar to those developed for *Xylella fastidiosa* and invasive ants.

Aspects of the behaviour and biology of the pest were discussed, particularly its hitchhiking habits, lifecycle, and resistance to many pest treatments. Several discussions were about the beetle's extraordinary ability to enter a hibernation-like state called diapause, making it hard to detect and treat.

Attendees were informed about the need for morphological and molecular expertise to identify Khapra beetle, and the decline in this former field within Australia. Also highlighted were several recent border interceptions, what led to them, and how such interceptions might be avoided in the future.

Outcomes from the workshop include:

- increased awareness the pest threat
- activities to raise awareness, potential areas for research, and the findings from the response to interception or detection of the pest
- where and how industry, jurisdictions, and the public could do surveillance for the pest
- recognition that fumigation to control Khapra beetle is untenable in the long-term or ineffective due to product packaging, requiring further research
- the need to review import conditions for host commodities and non-host commodity pathways to ensure these conditions reflect current understanding of pest risk and emerging pathways.

## New program to prepare for *Xylella fastidiosa*

A national initiative began in 2019 to help Australia prepare for a potential incursion of our top – or most unwanted – exotic plant pest, *Xylella fastidiosa*.

The bacteria infects xylem vessels of host plants and is transmitted by sap sucking insects, with the potential to impact many crops and plants in our environment. Over 560 plant species, including grapevines, coffee, olives, citrus, berries, tree nuts and some ornamental and native species are now recognised as hosts of *Xylella*.

Due to the potential impacts on horticulture crops in Australia, Hort Innovation and Wine Australia are jointly funding the National *Xylella* Preparedness Program.

In February 2019, Craig Elliott was appointed as coordinator of the program to help work out how the bacteria could be detected, contained and eradicated as quickly, effectively and cost efficiently as possible.

Craig has been liaising with industries at risk and government biosecurity managers to raise awareness of the issue and address existing gaps.

“For winemakers and grape growers alone, the potential impact has been estimated at between \$2 billion and \$8 billion in production losses and management costs over a 50-year period.

He visited the wine industry in California to see how they are managing the disease by restricting the spread of the main insect vector and searching for resistant or tolerant varieties. He also met with European researchers examining *Xylella*, its insect vectors and ways to detect and contain it.

“The key is prevention, so growers are encouraged to review their biosecurity measures across their business and supply chains,” he said.

Hort Innovation is also funding work to update Australia’s diagnostic protocols for *Xylella*, including trialling field diagnostics kits, and tapping into international work underway to help be better prepared for the disease.

A National *Xylella* Action Plan 2019–29 was approved in late 2019. The plan provides a nationally agreed approach to enhance Australia’s capacity to prevent the introduction of *Xylella* and exotic vectors and prepare for a response, should it be detected in Australia. It also sets out the actions to achieve this outcome.

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

In August 2019 the Department of Agriculture released a draft list of priority exotic environmental pests, weeds and diseases.

Development of the list was led by the Australian Bureau of Agricultural and Resource Economics and Sciences and other areas of the Department of Agriculture, in collaboration with over 100 experts.

Over 40 species were assessed as being a high risk to Australia, including the top five or six highest risk species for each of eight thematic groups: aquatic animal diseases, freshwater invertebrates, marine pests, native animal diseases, plant pathogens, terrestrial invertebrates, vertebrates, and weeds and freshwater algae.

The list includes some pests which pose a threat to plants in Australia, with a significant overlap between pests that threaten plants in the environment and the high priority pests of plant industries. Pests in common with the National Priority Plant Pests list include gypsy moths, invasive ants and *Xylella*.

The Chief Environmental Biosecurity Officer is the custodian of the National Priority List of Exotic Environmental Pests, Weeds and Diseases, and is responsible for coordinating amendments and reviews of the list, with oversight by the Environment and Invasives Committee.

Following approval by the National Biosecurity Committee, the inaugural National Priority List of Exotic Environmental Pests, Weeds and Diseases is expected to be announced by the Chief Environmental Biosecurity Officer in mid-2020.



## 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 an 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 plant industry members has developed a biosecurity plan in partnership with governments, and they are listed in Table 5. 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 each pest's likelihood of entry, establishment and spread, as well as the economic impact if it established in Australia.

The exotic pests that pose the greatest risk with the largest potential economic impact are deemed to be High Priority Pests. Table 6 lists all of the High Priority Pests identified in the 35 biosecurity plans developed by PHA. The same pests are also listed in the plant industry profiles throughout Chapter 3.

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 research and development corporation(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 2019 new biosecurity plans were produced for the tea tree and sweetpotato industries, and revised biosecurity plans were produced for the mango and summerfruit 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.

Table 5. Current biosecurity plans covering Australia's plant industries

Biosecurity plans		
Apple and Pear BP (Version 3.0)	Lychee IBP (Version 1.0)	Rubus IBP (Version 1.0)
Avocado IBP (Version 2.01)	Mango BP (Version 3.1)	Strawberry IBP (Version 2.0)
Banana BP (Version 3.1)	Melon IBP (Version 1.0)	Sugarcane IBP (Version 3.0)
Blueberry BP (Version 1.0)	Nursery IBP (Version 3.0)	Summerfruit IBP (Version 2.1)
Cherry BP (Version 3.1)	Olive BP (Version 2.0)	Sweetpotato BP (Version 1.0)
Citrus BP (Version 3.0)	Onion BP (Version 3.1)	Tea Tree BP (Version 1.1)
Coffee BP (Version 1.0)	Papaya IBP (Version 1.0)	Tomato BP (Version 1.0)
Cotton BP (Version 3.2)	Passionfruit IBP (Version 1.0)	Tree nut BP (Version 3.0)
Cut flower BP (Version 1.0)	Pineapple BP (Version 2.0)	Truffle BP (Version 1.0)
Ginger IBP (Version 1.0)	Plantation forest IBP (Version 2.0)	Vegetable BP (Version 3.1)
Grains IBP (Version 3.0)	Potato BP (Version 3.1)	Viticulture IBP (Version 3.0)
Honey bee IBP (Version 1.1)	Rice IBP (Version 3.0)	

## Preparedness for vegetable leaf miner

A collaborative R,D&E program is helping Australia prepare for vegetable leaf miner (*Liriomyza sativae*), serpentine leaf miner (*L. huidobrensis*) and American serpentine leaf miner (*L. trifolii*).

Leaf miners are small flies that damage a wide range of plants including horticultural and broadacre crops. The larvae feed inside of plant leaves and stems creating tunnels or mines, reducing yield and quality. Serpentine and American serpentine leaf miners are widespread exotic pests. The vegetable leaf miner is widespread overseas and was first detected at the tip of Cape York in 2015. To date it has not spread much further south of its original detection.

The Hort Innovation funded project is being led by research company cesar in partnership with PHA, AUSVEG, Northern Australia Quarantine Strategy and the University of Melbourne. The program aims to improve Australia's preparedness for these three leaf miner species by undertaking the following:

- reviewing chemical and biological control options
- developing an interactive tool to guide surveillance and awareness raising activities to forecast the risk of establishment and spread
- developing statistically sound visual surveillance methods and new diagnostic tests for damaged plants
- securing minor use permits for at risk crops
- developing contingency plans to guide actions in the event of a detection
- holding workshops in high risk locations to improve awareness of the pest amongst growers.



Vegetable leaf miner damage to siratro leaf on Thursday Island, Queensland. Image courtesy of Elia Pirtle, cesar

Table 6. High Priority Pest threats

Scientific name	Common name	High priority pest of
<i>Abaca bunchy top virus</i> (Babuvirus)	Abaca bunchy top virus	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>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	Tree 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	Tree nut, Truffle
<i>Anthonomus grandis</i>	Boll weevil	Cotton
<i>Aphis fabae</i>	Black bean aphid	Potato, Vegetable
<i>Aphis gossypii</i> (exotic strains)	Cotton aphid	Nursery and Garden, Potato
<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>Aristobia testudo</i>	Lychee longicorn beetle	Lychee
<i>Arthuriomyces peckianus</i>	Orange rust (long-cycled)	Rubus
<i>Ascochyta rabiei</i> (exotic mating types)	Ascochyta blight	Grains
<i>Aspidiella hartii</i>	Yam scale, rhizome scale	Ginger
<i>Aulacophora foveicollis</i>	Red pumpkin beetle	Vegetable
<i>Austropuccinia psidii</i> sensu lato (exotic variants) (syn. <i>Puccinia psidii</i> )	Myrtle rust, guava rust, Eucalyptus rust	Cutflower, Nursery and Garden, Plantation forest, Tea tree
Avocado sunblotch viroid (asymptomatic strains)	Avocado sunblotch	Avocado
Avocado sunblotch viroid (symptomatic strains)	Avocado sunblotch	Avocado



Table 6. High Priority Pest threats (continued)

Scientific name	Common name	High priority pest of
<i>Bactericera cockerelli</i> *	Tomato potato psyllid	Tomato
<i>Bactrocera albistrigata</i>	White striped fruit fly	Mango
<i>Bactrocera carambolae</i>	Carambola fruit fly	Avocado, Citrus, Mango, Papaya, Passionfruit, Tomato, Vegetable, Viticulture
<i>Bactrocera correcta</i>	Guava fruit fly	Mango
<i>Bactrocera curvipennis</i>	Banana fruit fly	Mango
<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, Melon, Papaya, Passionfruit, Summerfruit, Tomato, Vegetable, Viticulture
<i>Bactrocera facialis</i>	Tropical fruit fly, Tongan fruit fly	Avocado, Mango, Passionfruit, Tomato
<i>Bactrocera kandiensis</i>	Fruit fly	Avocado, Citrus, Mango, Passionfruit
<i>Bactrocera kiriki</i>	Fijian fruit fly	Avocado, Mango, Passionfruit
<i>Bactrocera latifrons</i>	Solanum fruit fly	Melon
<i>Bactrocera melanotus</i>	Fruit fly, Cook Islands fruit fly	Avocado, Mango, Passionfruit
<i>Bactrocera occipitalis</i>	Fruit fly, Bezzi fruit fly	Citrus, Mango
<i>Bactrocera oleae</i>	Olive fly	Olive
<i>Bactrocera passiflorae</i>	Fijian fruit fly	Avocado, Mango, Papaya, Passionfruit, Vegetable
<i>Bactrocera psidii</i>	South Sea guava fruit fly	Mango, Passionfruit
<i>Bactrocera trilineola</i>	Vanuatu fruit fly	Mango
<i>Bactrocera trivialis</i>	New Guinea fruit fly	Citrus, Mango, Vegetable
<i>Bactrocera tuberculata</i>	Fruit fly	Mango
<i>Bactrocera xanthodes</i>	Pacific fruit fly	Avocado, Mango, Passionfruit
<i>Bactrocera zonata</i>	Peach fruit fly	Mango
<i>Banana bunchy top virus</i> (Babuvirus) (Asian subgroup)	Bunchy top	Banana
<i>Barley mild mosaic virus</i> (Bymovirus)	Barley mild mosaic virus	Grains
<i>Batocera rubus</i>	Lateral-banded mango longhorn beetle	Mango
<i>Batocera rufomaculata</i>	Red-spotted longhorn beetle	Mango
<i>Bean common mosaic virus</i> (Potyvirus), peanut stripe strain	Bean common mosaic virus	Grains

Scientific name	Common name	High priority pest of
<i>Belonolaimus longicaudatus</i>	Sting nematode	Sweetpotato
<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, Nursery and Garden, Tomato, Vegetable
<i>Botrytis squamosa</i>	Leaf blight	Onion
<i>Burkholderia caryophylli</i> (syn. <i>Pseudomonas caryophylli</i> )	Bacterial wilt of carnation	Cutflower
<i>Bursaphelenchus</i> spp. including <i>B. xylophilus</i>	Pinewood nematode species complex	Plantation forest
<i>Cacoecimorpha pronubana</i>	Carnation tortrix	Cutflower
<i>Caliothrips fasciatus</i>	Bean thrips	Citrus
<i>Calonectria brassicae</i> (syn. <i>C. gracile</i> )	No common name	Tea tree
<i>Calonectria pteridis</i>	Blight, leaf spot, cutting and root rot	Tea tree
<i>Candidatus Liberibacter africanus</i>	Huanglongbing (African strain)	Citrus
<i>Candidatus Liberibacter americanus</i>	Huanglongbing (American strain)	Citrus
<i>Candidatus Liberibacter asiaticus</i>	Huanglongbing (Asiatic strain)	Citrus, Nursery and Garden
<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>Carposina sasakii</i>	Peach fruit moth, small peach fruit borer	Apple and Pear
<i>Cephus cinctus</i>	Wheat stem sawfly	Grains
<i>Cephus pygmeus</i>	European wheat stem sawfly	Grains
<i>Ceratocystis fimbriata</i> sensu lato	Mango sudden decline syndrome, Ceratocystis blight	Coffee, Mango
<i>Ceratocystis manginecans</i>	Mango sudden decline syndrome	Mango
<i>Ceratocystis omanensis</i>	Mango sudden decline syndrome	Mango
<i>Ceratovacuna lanigera</i>	Sugarcane woolly aphid	Sugarcane
<i>Cercospora rubi</i>	Rosette	Rubus

Table 6. High Priority Pest threats (continued)

Scientific name	Common name	High priority pest of
<i>Ceutorhynchus assimilis</i> (syn. <i>C. obstrictus</i> )	Cabbage seedpod weevil	Grains
<i>Ceutorhynchus napi</i>	Rape stem weevil	Grains
<i>Ceutorhynchus pallidactylus</i>	Cabbage stem weevil	Grains
<i>Cherry leaf roll virus</i> (Nepovirus) (exotic strains)	Blackline	Rubus
<i>Chickpea chlorotic dwarf virus</i> (Mastrevirus)	Chickpea chlorotic dwarf virus	Grains
<i>Chickpea chlorotic stunt virus</i> (Ploverovirus)	Chickpea chlorotic stunt virus	Grains
<i>Chilo auricilius</i>	Sugarcane internode borer	Sugarcane
<i>Chilo infuscatellus</i>	Yellow top borer of sugarcane	Sugarcane
<i>Chilo orichalcociliellus</i>	Coastal stem borer	Grains
<i>Chilo partellus</i>	Spotted stem borer	Grains
<i>Chilo sacchariphagus</i>	Sugarcane internode borer	Sugarcane
<i>Chilo terrenellus</i>	Sugarcane stem borer	Sugarcane
<i>Chilo tumidicostalis</i>	Spotted sugarcane stem borer	Sugarcane
<i>Chinavia hilaris</i> (syn. <i>C. hilare</i> )	Green stink bug	Tree nut
<i>Chromatomyia horticola</i>	Pea leaf miner	Cutflower
<i>Chrysoportha austroafricana</i>	Eucalyptus canker disease	Plantation forest
<i>Chlumetia transversa</i>	Mango shoot borer	Mango
<i>Citripestis sagittiferella</i>	Citrus fruit borer	Citrus
<i>Citrus leprosis virus</i> (unassigned)	Citrus leprosis disease	Citrus
<i>Citrus tristeza virus</i> (Closterovirus) (mandarin stem-pitting strain)	Mandarin stem-pitting	Citrus
<i>Cladosporium allii</i> (syn. <i>C. allii-cepae</i> , <i>Heterosporium allii</i> , <i>Mycosphaerella allii</i> )	Leaf spot	Onion
<i>Colletotrichum higginsianum</i>	Anthraxnose	Vegetable
<i>Colletotrichum kahawae</i> subsp. <i>kahawai</i> (syn. <i>C. coffeanum</i> )	Coffee berry disease	Coffee
<i>Colletotrichum lentis</i> (lentil strain)	Lentil anthracnose, soybean anthracnose	Vegetable

Scientific name	Common name	High priority pest of
<i>Colletotrichum truncatum</i> (lentil strain)	Lentil anthracnose	Grains
<i>Conopomorpha sinensis</i>	Lychee fruit borer	Lychee
<i>Conotrachelus aguacatae</i>	Small avocado seed weevil	Avocado
<i>Conotrachelus perseae</i>	Small seed weevil	Avocado
<i>Coptotermes formosanus</i>	Formosan subterranean termite	Plantation forest
<i>Coptotermes gestroi</i>	Asian subterranean termite	Plantation forest
<i>Cotinis mutabilis</i>	Fig beetle	Pineapple
<i>Cotton leaf curl virus complex</i> (Begomovirus)	Cotton leaf curl disease	Cotton
<i>Cotton leafroll dwarf virus</i> (Ploverovirus)	Cotton blue disease	Cotton
<i>Croesia curvalana</i>	Blueberry leaftier	Blueberry
<i>Cryphonectria parasitica</i>	Chestnut blight	Tree nut
<i>Cryptosporella umbrina</i>	Brown rose canker	Cutflower
<i>Cydia inopinata</i> (syn. <i>Grapholita inopinata</i> )	Manchurian fruit moth	Apple and Pear
<i>Cylindrocopturus adspersus</i>	Sunflower stem weevil	Grains
<i>Daktulosphaira vitifoliae</i> (exotic strains)	Grapevine phylloxera	Viticulture
<i>Dasineura mali</i>	Apple leaf curling midge	Apple and Pear
<i>Dasineura amaramanjarae</i>	Mango gall midge	Mango
<i>Deanolis sublimbalis</i> (syn. <i>Noorda albizonalis</i> )	Red banded mango caterpillar	Mango
<i>Deformed wing virus</i> (Iflavivirus)	Deformed wing virus	Honey bee
<i>Delia antiqua</i>	Onion fly	Onion, Vegetable
<i>Delia floralis</i>	Summer cabbage fly	Vegetable
<i>Delia florilega</i>	Bean fly	Onion, Vegetable
<i>Dendroctonus ponderosae</i>	Mountain pine beetle	Plantation forest
<i>Dendroctonus valens</i>	Red turpentine beetle	Plantation forest
<i>Diabrotica barberi</i>	Northern corn root worm	Grains
<i>Diabrotica undecimpunctata</i>	Southern corn root worm	Grains
<i>Diabrotica virgifera</i>	Western corn root worm	Grains
<i>Diaphorina citri</i>	Asian citrus psyllid	Citrus, Nursery and Garden



*Image courtesy of Cotton Australia*

Table 6. High Priority Pest threats (continued)

Scientific name	Common name	High priority pest of
<i>Diaporthe helianthi</i>	Sunflower stem canker	Grains
<i>Diaprepes abbreviatus</i>	Citrus weevil, West Indian weevil, sugarcane rootstalk borer	Sweetpotato
<i>Dickeya dianthicola</i> (syn. <i>Erwinia chrysanthemi</i> pv. <i>dianthicola</i> )	Slow wilt	Cutflower
<i>Dickeya</i> spp. (pineapple infecting strains) syn. <i>Erwinia chrysanthemi</i>	Bacterial fruit collapse, bacterial heart rot	Pineapple
<i>Dickeya</i> spp. (onion infecting exotic pathovars) syn. <i>Erwinia chrysanthemi</i>	Bacterial soft rot	Onion
<i>Diuraphis noxia</i> *	Russian wheat aphid	Grains
<i>Ditylenchus destructor</i>	Potato tuber nematode	Sweetpotato
<i>Drosophila suzukii</i>	Spotted wing drosophila	Apple and Pear, Blueberry, Cherry, Rubus, Summerfruit, Viticulture
<i>Dryocosmus kuriphilus</i>	Oriental chestnut gall wasp	Tree nut
<i>Dysaphis plantaginea</i>	Rosy apple aphid	Apple and Pear
<i>Dysdercus</i> spp. including <i>D. honestus</i> , <i>D. maurus</i> , <i>D. suturellus</i> (American species)	Cotton stainer	Cotton
<i>Dysmicoccus neobrevipes</i>	Grey pineapple mealybug	Banana, Pineapple
East Asian passiflora virus (Potyvirus)	East Asian passiflora virus	Passionfruit
<i>Echinothrips americanus</i>	Poinsettia thrips	Nursery and Garden
<i>Elasmopalpus lignosellus</i>	Lesser corn stalk borer	Sweetpotato
<i>Eldana saccharina</i>	African sugarcane stalkborer	Sugarcane
<i>Elytroteinus subtruncatus</i>	Fijian ginger weevil	Ginger
<i>Endocronartium harknessii</i>	Western gall rust	Plantation forest
<i>Epichoristodes acerbella</i>	South African carnation tortrix, South African carnation miner	Cutflower
<i>Ericaphis fimbriata</i> (with blueberry scorch Carlavirus)	Blueberry aphid	Blueberry
<i>Erionota thrax</i>	Banana skipper butterfly	Banana
<i>Erwinia amylovora</i>	Fire blight	Apple and Pear
<i>Erwinia herbicola</i> (exotic strains)	Avocado blast	Avocado
<i>Erwinia herbicola</i> pv. <i>gypsophillae</i>	Bacterial gall	Cutflower

Scientific name	Common name	High priority pest of
<i>Erwinia papayae</i>	Bacterial crown rot	Papaya
<i>Erwinia</i> spp.	Mushy canker	Papaya
<i>Erwinia tracheiphila</i>	Cucurbit bacterial wilt	Melon
<i>Euscepes postfasciatus</i> (syn. <i>E. batatae</i> )	West Indian sweetpotato weevil	Sweetpotato
<i>Eumerus strigatus</i>	Lesser bulb fly	Vegetable
<i>Eumetopina flavipes</i>	Sugarcane leafhopper (vector of Ramu stunt disease)	Sugarcane
<i>Eurygaster integriceps</i>	Sunn pest	Grains
<i>Euschistus conspersus</i>	Conspere stink bug	Rubus
<i>Eutetranychus banksi</i>	Texas citrus mite	Coffee
<i>Frankliniella bispinosa</i>	Florida flower thrips	Citrus
<i>Frankliniella intonsa</i>	Flower thrips	Cutflower, Tomato
<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
<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>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>ananas</i> )	Fusariosis, Fusarium stem rot, pineapple eye rot, fruitlet core rot	Pineapple

Table 6. High Priority Pest threats (continued)

Scientific name	Common name	High priority pest of
<i>Fusarium virguliforme</i>	Sudden death syndrome	Grains
<i>Fusarium xylarioides</i> f. sp. <i>abyssiniae</i> and <i>F. xylarioides</i> f. sp. <i>canephorae</i>	Coffee wilt	Coffee
<i>Fusicladium effusum</i> (syn. <i>Cladosporium caryigenum</i> )	Pecan scab	Tree nut
<i>Globodera pallida</i>	Pale potato cyst nematode	Potato
<i>Globodera rostochiensis</i> (pathotypes R02, R03, R04 and R05)	Golden potato cyst nematode	Potato
Grapevine flavescence dorée phytoplasma	Flavescence dorée	Viticulture
Grassy shoot phytoplasma	Grassy shoot	Sugarcane
<i>Groundnut bud necrosis virus</i> (Tospovirus)	Bud necrosis disease	Grains, 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
<i>Halyomorpha halys</i>	Brown marmorated stink bug	Apple and Pear, Cherry, Rubus, Summerfruit, Tree nut, Truffle, Vegetable
<i>Haplothrips chinensis</i>	Chinese thrips	Cutflower
<i>Harpophora maydis</i>	Late wilt	Grains, Vegetable
<i>Helipus lauri</i>	Large 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>	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

Scientific name	Common name	High priority pest of
<i>Heterodera sorghi</i>	Sorghum cyst nematode	Grains
<i>Homalodisca vitripennis</i> (syn. <i>H. coagulata</i> )	Glassy winged sharpshooter	Cherry, Citrus, Nursery and Garden, Summerfruit, Viticulture
<i>Homalodisca vitripennis</i> (with <i>Xylella fastidiosa</i> )	Glassy winged sharpshooter	Blueberry
<i>Homoeosoma electellum</i>	Sunflower moth	Grains
<i>Hoplostoma fuligineus</i>	Large hive beetle	Honey bee
<i>Hyalesthes obsoletus</i>	Cixiidae planthopper	Viticulture
<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	Tree nut
<i>Idioscopus nagpurensis</i>	Mango leafhopper	Mango
<i>Ips typographus</i>	Spruce bark beetle	Plantation forest
<i>Leptinotarsa decemlineata</i>	Colorado potato beetle	Potato
<i>Leptoglossus clypealis</i>	Leaf footed bug	Tree nut
<i>Leptoglossus occidentalis</i>	Western conifer seed bug	Tree nut
<i>Leptoglossus zonatus</i>	Western leaf footed bug	Tree nut
<i>Lettuce infectious yellows virus</i> (Crinivirus)	Lettuce infectious yellows virus	Nursery and Garden
<i>Liriomyza bryoniae</i>	Tomato leaf miner	Melon, Tomato, Vegetable
<i>Liriomyza congesta</i>	Pea leaf miner	Cutflower
<i>Liriomyza huidobrensis</i>	Serpentine leaf miner	Cutflower, Melon, Nursery and Garden, Potato, Tomato, Vegetable
<i>Liriomyza sativae</i>	Vegetable leaf miner, American leaf miner	Melon, Onion, Potato, Tomato, Vegetable
<i>Liriomyza trifolii</i>	American serpentine leaf miner	Cutflower, Melon, Potato, Tomato, Vegetable
<i>Lissachatina fulica</i> (syn. <i>Achatina fulica</i> )	Giant African snail	Banana, Nursery and Garden, Sweetpotato, Tomato, Vegetable
<i>Lissorhoptrus oryzophilus</i>	Rice water weevil	Rice
<i>Lobesia botrana</i>	European grapevine moth	Viticulture

Table 6. High Priority Pest threats (continued)

Scientific name	Common name	High priority pest of
<i>Lygus hesperus</i>	Western plant bug	Cotton, Strawberry, Vegetable
<i>Lygus lineolaris</i>	Tarnished plant bug	Cotton, Nursery and Garden, Strawberry
<i>Lymantria dispar</i>	Asian gypsy moth	Apple and Pear, Nursery and Garden, Plantation forest, Summerfruit, Tree nut
<i>Lymantria mathura</i>	Rosy gypsy moth, pink gypsy moth	Apple and Pear
<i>Lymantria monacha</i>	Nun moth	Apple and Pear, Plantation forest, Truffle
<i>Magnaporthe grisea</i>	Rice blast	Grains, Rice
<i>Mayetiola destructor</i>	Hessian fly	Grains
<i>Mayetiola hordei</i>	Barley stem gall midge	Grains
<i>Meloidogyne enterolabii</i> (syn. <i>M. mayaguensis</i> )	Root knot nematode	Onion, Potato, Sweetpotato, Vegetable
<i>Meloidogyne naasi</i>	Barley root knot nematode	Vegetable
<i>Monilinia fructigena</i>	Brown rot	Apple and Pear, Blueberry, Cherry
<i>Monilinia mali</i>	Monilinia leaf blight, blossom wilt	Apple and Pear
<i>Monilinia polystroma</i> (syn. <i>Monilia polystroma</i> )	Asiatic brown rot	Apple and Pear, Summerfruit
<i>Monilinia vaccinii-corymbosi</i>	Mummy berry, cotton ball disease	Blueberry
<i>Monochamus</i> spp. including <i>M. alternatus</i> , <i>M. galloprovincialis</i> , <i>M. titillator</i> , <i>M. scutellatus</i>	Longhorn beetles	Plantation forest
<i>Monosporascus cannonballus</i>	Monosporascus root rot	Melon
<i>Mungbean yellow mosaic virus</i> (Begomovirus)	Mungbean yellow mosaic virus	Grains
<i>Mycosphaerella eumusae</i>	Eumusae leaf spot	Banana
<i>Nemorimyza maculosa</i>	Chrysanthemum leaf miner	Cutflower
<i>Neonectria ditissima</i> (syn. <i>N. galligena</i> and <i>Nectria galligena</i> )	European canker	Apple and Pear, Cherry
<i>Nysius huttoni</i>	Wheat bug	Grains
<i>Oligonychus ilicis</i>	Southern red mite	Coffee, Nursery and Garden
<i>Oligonychus perseae</i>	Persea mite	Avocado

Scientific name	Common name	High priority pest of
<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 mealy bug	Coffee, Papaya
<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 virus	Passionfruit
<i>Passionfruit vein clearing virus</i> (Rhabdovirus)	Passionfruit vein clearing virus	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>Phyllosticta</i> spp. including <i>P. cavendishii</i> , <i>P. sydowiana</i>	Banana freckle	Banana
<i>Phytomyza gymnostoma</i>	Allium leaf miner	Vegetable
<i>Phytophthora fragariae</i> var. <i>fragariae</i>	Red steele root rot	Strawberry

Table 6. High Priority Pest threats (continued)

Scientific name	Common name	High priority pest of
<i>Phytophthora infestans</i> (A2 mating type and exotic strains of A1 mating type)	Late blight	Potato, Vegetable
<i>Phytophthora kernoviae</i>	Phytophthora blight	Avocado
<i>Phytophthora menzei</i>	Trunk canker	Avocado
<i>Phytophthora pinifolia</i>	Dano foliar del pino	Plantation forest
<i>Phytophthora ramorum</i>	Sudden oak death	Avocado, Blueberry, Cutflower, Nursery and Garden, Plantation forest, Tea tree, Tree nut, 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	Nursery and Garden, Rice
<i>Popillia japonica</i>	Japanese beetle	Rubus
Potato spindle tuber viroid (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> (syn. <i>Dasineura mangiferae</i> , <i>Erosomyia mangiferae</i> , <i>E. indica</i> , <i>Mangodiplosis mangiferae</i> , <i>Rhabdophaga 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

Scientific name	Common name	High priority pest of
<i>Pseudococcus cryptus</i> (syn. <i>P. citriculus</i> )	Citrus mealybug, citriculus mealybug, cryptic mealybug	Coffee
<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	Avocado, Nursery and Garden
<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)	Stem rust of wheat	Grains
<i>Puccinia mixta</i>	Rust of chives	Onions
<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>Pyrilla 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 solanacearum</i> , race 4 (exotic strains)	Bacterial wilt	Ginger
<i>Ralstonia syzigii</i> (syn. <i>R. solanacearum</i> race 4, <i>Pseudomonas solanacearum</i> )	Bacterial wilt	Potato
<i>Ralstonia syzigii</i> subsp. <i>celebesensis</i> (syn. <i>R. solanacearum</i> race 2, biovar 1)	Blood disease	Banana
<i>Raspberry ringspot virus</i> (Nepovirus)	Raspberry ringspot virus	Rubus, Strawberry

Table 6. High Priority Pest threats (continued)

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 solani</i> f. sp. <i>sasaki</i> (AG 1) (teleomorph <i>Corticium sasakii</i> (syn. <i>Thanatephorus cucumeris</i> )	Banded leaf and 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> (Waika virus)	Rice tungro spherical virus, waikavirus	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 griseascens</i>	Stem borer	Sugarcane
<i>Slow paralysis virus</i> (Iflavirus)	Slow paralysis virus	Honey bee
<i>Soil-borne wheat mosaic virus</i> (Furovirus)	Soil-borne wheat mosaic virus	Grains
<i>Sphaceloma perseae</i>	Avocado scab	Avocado
<i>Spiroplasma citri</i>	Stubborn	Citrus
<i>Spodoptera eridania</i>	Southern armyworm	Cutflower
<i>Spodoptera frugiperda</i>	Fall armyworm	Cotton, Cutflower, Vegetable
<i>Spodoptera littoralis</i>	Cotton leafworm	Cutflower
<i>Stagonospora sacchari</i>	Leaf scorch	Sugarcane
<i>Stenoma catenifer</i>	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

Scientific name	Common name	High priority pest of
<i>Sugarcane streak mosaic virus</i> (Poacevirus)	Sugarcane streak mosaic	Sugarcane
<i>Sweet potato chlorotic stunt virus</i> (Crinivirus)	Sweet potato chlorotic stunt virus	Sweetpotato
<i>Sweet potato mild mottle virus</i> (Ipomovirus)**	Mild mottle of sweet potato	Sweetpotato
<i>Sweet potato mild speckling virus</i> (Potyvirus)**	Sweet potato mild speckling virus	Sweetpotato
<i>Teratosphaeria gauchensis</i>	Coniothyrium eucalyptus canker	Plantation forest
<i>Teratosphaeria zuluensis</i>	Coniothyrium eucalyptus canker	Plantation forest
<i>Tetranychus piercei</i>	Banana spider mite	Banana
<i>Thaumatotibia leucotreta</i> (syn. <i>Cryptophlebia leucotreta</i> )	False codling moth	Citrus, 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	Rubus, Strawberry
<i>Tomicus piniperda</i>	Pine shoot beetle	Plantation forest
<i>Toxotrypana curvicauda</i> (syn. <i>Anastrepha curvicauda</i> )	Papaya fly	Mango, Papaya
<i>Trichoplusia ni</i>	Cabbage looper	Vegetable
<i>Trioza erytrae</i>	African citrus psyllid	Citrus
<i>Trogoderma granarium</i>	Khapra beetle	Grains, Rice, Tree nut
<i>Tropilaelaps clareae</i>	Tropilaelaps mite	Apple and Pear, Honey bee, Tree nut
<i>Tropilaelaps mercedesae</i>	Tropilaelaps mite	Apple and Pear, Honey bee, Tree nut
<i>Tuta absoluta</i>	South American tomato moth, tomato leaf miner	Tomato, Vegetable
Unknown	Ramu stunt disease	Sugarcane



Table 6. High Priority Pest threats (continued)

Scientific name	Common name	High priority pest of
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	Apple and Pear, Honey bee, Tree nut
<i>Varroa jacobsoni</i>	Varroa mite	Honey bee
<i>Veronicella cubensis</i>	Cuban slug	Sweetpotato
<i>Verticillium dahliae</i> (defoliating strain)	Verticillium wilt	Cotton, Olive, Tree nut
<i>Vespa</i> spp. (exotic species)	Hornets	Honey bee
<i>Watermelon bud necrosis virus</i> (Tospovirus)	Watermelon bud necrosis	Vegetable
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 campestris</i> (avocado strain)	Bacterial canker	Avocado
<i>Xanthomonas citri</i> subsp. <i>citri</i> (syn. <i>X. 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> (subsp. not specified)	Pierce's disease, blueberry leaf scorch, olive leaf scorch, olive quick decline, phony peach, plum leaf scald	Blueberry, Cherry, Nursery and Garden, Summerfruit, Viticulture
<i>Xylella fastidiosa</i> subsp. <i>fastidiosa</i>	Pierce's disease, blueberry leaf scorch, olive leaf scorch	Coffee, Tree nut
<i>Xylella fastidiosa</i> subsp. <i>multiplex</i>	No common name	Olive, Tree nut
<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>	No common name	Tree nut
<i>Xylosandrus compactus</i>	Black twig borer	Mango, Tea tree

Scientific name	Common name	High priority pest of
<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, Tomato, Tropicals, Vegetable

## 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*

## Review of environmental risk management

In 2018, the Inspector-General for Biosecurity conducted a review of environmental risk management in Australia. The review was instigated to examine how effectively the Department of Agriculture manages environmental biosecurity concerns. The report was published on 12 April 2019 and is available from [igb.gov.au](http://igb.gov.au)

The review found that Australia's framework for managing environmental biosecurity challenges has improved considerably in recent years, with the respective roles of the agriculture and environment departments in implementing pre-border and border biosecurity risk management measures much clearer.

The report praised the appointment of the Chief Environmental Biosecurity Officer but noted that there remained a need to engage with agricultural and environmental agencies in all jurisdictions, non-government organisations and communities to develop a greater acceptance of the shared responsibility for better biosecurity outcomes.

The government was advised to source a high level of scientific expertise and innovation, both nationally and internationally, to ensure that novel and more efficient solutions to new biosecurity threats can be rapidly developed and applied as needed.



## 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 7 (on page 58) 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. Most contingency plans are located on PHA's website in the Pest Information Document Database at [planthealthaustralia.com.au/pidd](http://planthealthaustralia.com.au/pidd)

## Environmental biosecurity preparedness

Environmental biosecurity is distinct from agricultural biosecurity, which focuses on pests that could have an economic impact on Australia's agricultural productivity. Although distinct, there is a significant overlap in pests that affect plants grown for agricultural purposes and those found in the natural environment or that have social amenity in urban spaces.

Environmental biosecurity can make use of and build on many aspects of the system established for production biosecurity. The approach to environmental biosecurity is similar to that used for production pests: preparedness, response, management, and actions taken to address the issues.

In 2019 the development of Environmental Risk Mitigation Plans for Acacia and mangroves were commissioned by the Chief Environmental Biosecurity Officer, with the work being progressed by PHA. The Environmental Risk Mitigation Plan for Australian Acacia Species is the first developed by PHA specifically considering all environmental stakeholders and will provide a template for similar work in the future. In 2019 PHA identified potential biosecurity risks and risk pathways to selected mangrove ecosystems to enable the development of a risk mitigation plan in 2020.

In May and October of 2019, Environmental Biosecurity Roundtables were held in Canberra and Melbourne, respectively. The roundtables are held to facilitate discussion on environmental biosecurity issues, to identify potential solutions to shape future actions and share information. They are an initiative of the Department of Agriculture and the Department of the Environment and Energy.



Table 7. 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>Haplothrips 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 rangeli</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 erytrae</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 erytrae</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 erytrae</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 7. 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 7. 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
<i>Maize dwarf mosaic virus</i> (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
<i>Plum pox virus</i> (Potyvirus) and <i>Tobacco etch virus</i> (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 7. Contingency plans (continued)

Scientific name	Common name	Year	Location of document	Scope
<i>Puccinia psidii</i>	Myrtle rust	2015	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





*There are more than 130,000 hectares of vineyards in Australia, tended by 6,200 wine grape growers. Image courtesy of Australian Vignerons*