exercise yellowdragon

EXERCISE REPORT

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Plant Health AUSTRALIA

About the report

The Exercise Report for Exercise Yellow Dragon was authored by Plant Health Australia (PHA). The purpose of this report is to provide a summary of activities and a critical analysis of the outcomes and learnings. The information presented was informed by the Exercise Evaluation Report. The recommendations presented in the report were developed by the authors with the intent of providing direction on potential approaches to implement the lessons of the exercise. These recommendations have not been endorsed by relevant stakeholders.

Any feedback or questions in relation to the Exercise Report, or the Exercise Yellow Dragon activities and outcomes can be directed to PHA through the details below.

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1. Overview of the exercise

1.1. Background

Huanglongbing (HLB; *Candatitus* Liberibacter asiaticus) and its vector Asian citrus psyllid (ACP; *Diaphorina citri*) are serious pests of citrus, from which Australia is currently free. HLB infected fruit become bitter and misshapen, and infection eventually leads to tree death, with spread occurring through ACP and other related psyllids acting as vectors.

To understand the ability of industry and governments to respond to ACP and HLB, and identify potential gaps in the biosecurity preparedness, Exercise Yellow Dragon ("the exercise") tested elements of an emergency response to a simulated detection of ACP and HLB in the Sydney Basin.

The urban environment was selected for the exercise scenario, as opposed to a production setting used in most other training and exercise activities, in acknowledgement of the potential biosecurity risk this environment poses, particularly for horticultural crops. In addition, the urban environment poses added challenges in the eradication strategies that can be implemented and multiple pathways for rapid pest spread.

The exercise was delivered by PHA as a component of the Citrus Biosecurity Project, which was funded by Horticulture Australia Limited[1] and jointly managed by PHA and Citrus Australia.

1.2. Exercise planning

The planning of the exercise was undertaken by the Exercise Planning Group, which contained members from PHA, Citrus Australia, Auscitrus, NSW Department of Primary Industries (NSW DPI), Victorian Department of Economic Development, Jobs, Transport and Resources (Vic DEDJTR) and the Australian Government (Section 4.2).

PHA had primary responsibility for the development of the scenario and the exercise inputs, and received technical contributions from NSW DPI. PHA and NSW DPI were jointly responsible for the local arrangements, including the exercise venue and catering.

1.3. Exercise control

The conduct of the exercise was managed by the Exercise Control Team comprising of Stephen Dibley and Natalie O'Donnell from PHA, who were responsible for monitoring the exercise to ensure the objectives were met. This was achieved by the delivery of exercise briefings and debriefings, management of exercise inputs and outputs and providing appropriate direction to participants. The Exercise Control Team was supported during simulation activities by group facilitators. The facilitators were not part of the Exercise Planning Group, but were provided specific guidance on the expected outcomes from each group and tasked with enabling the groups to achieve these outcomes.

[1] Now Horticulture Innovation Australia Limited

Independent evaluation of the exercise was undertaken by NSW DPI staff members Andrew Elms, Leeanne Raines and Lyn Stenos. The evaluators were provided with the exercise aim and objectives, supporting key performance indicators and the evaluation report template by the Exercise Planning Group. Using this information, the evaluators provided an *Exercise Yellow Dragon Evaluation Report* to the Exercise Planning Group, which was used in the drafting of this report. A summary of the evaluation against the aim, objectives and KPIs is provided in Section 4.3.

1.4. Participating organisations

Participation was open to representatives of EPPRD Parties that would be Affected Parties in the event of a detection of ACP or HLB in Australia, which included the citrus and production nursery industries, together with the Australian and state/territory governments. Most of these Parties were represented as part of the 39 participants who attended the exercise (Section 4.1).

Participants brought a range of skills and experience to the exercise, but no communication specialists were present. As a result, this limited the ability to deliver on community engagement activities.

1.5. Aim and objectives

The exercise was planned and undertaken to address the agreed aim and objectives (Table 1).

Table 1. Aim and objectives of the exercise

Aim	To test the preparedness of industry and government to respond to a detection of Asian citrus psyllid (ACP) and Huanglongbing (HLB) in an urban setting.
Objective 1	Evaluate the suitability of available eradication strategies for ACP/HLB to an urban setting.
Objective 2	Test the ability to obtain tracing data on ACP/HLB host material through: a) The identification of the information required to determine trace forward and back of citrus material through commercial nursery trade and in alternate pathways in an urban setting. b) The exploration of tracing information available from commercial nursery trade and in alternate pathways in an urban setting.
Objective 3	Understand how to utilise community engagement in an ACP/HLB response in an urban setting through: a) The identification of the specific benefits that community engagement could add to an ACP/HLB response in an urban setting. b) The drafting of the core components of a communications plan that relate to community engagement.

1.6. Overview of exercise activities

Activities were delivered in a variety of functional discussion, workshopping and facility tour approaches (Table 2) to address the exercise aim and objectives (Table 1). All activities were undertaken at the NSW DPI Elizabeth Macarthur Agricultural Institute on the 11th and 12th of March 2015.

Table 2. Summary of the activities undertaken during the exercise

Session	Day 1 – 11th March	Day 2 – 12th March

Morning	**Introduction and scene setting**
	• Welcome.
	• Learning from the USA: the 2014 citrus biosecurity study tour – HLB/ACP.
		Response Plan development (simulation)
		• Completion of a Response Plan for the eradication of ACP/HLB from the Sydney Basin, with specific focus on:
		  ○ Treatment and control.
		  ○ Quarantine and movement restrictions.
		  ○ Surveillance.

	Diagnostic laboratory tour	**Glasshouse facility tour**
Afternoon	**Determining early response operations (simulation)** • Development of a tracing questionnaire for host material from infected nursery operations. • Development of a delimiting surveillance plan that covered the Sydney Basin and wider NSW citrus production regions. • Determination of the quarantine operations to be implemented at the Infected Premises (IP) through the development of key elements of the Incident Action Plan.	**Community engagement plan for response day 20 (simulation)** • Development of a simplified public information strategy that focused on community engagement during the Emergency Response Phase of the response.
	Community engagement plan for response day 6 (simulation) • Development of a simplified public information strategy that focused on community engagement during the Incident Definition Phase of the response.	

All simulation activities listed in Table 2 were undertaken by participants in small groups lead by a designated group facilitator. Group facilitators were exercise participants and each was provided with guidance material from Exercise Control. All groups were tasked with producing identified outputs, such as plans or checklists, for which templates were provided.

Group membership was changed for each activity to ensure experience and knowledge was shared amongst all participants, with each group containing a mix of industry and government personnel.

1.7. Scenario

The scenario used for this exercise was based on a simulated incursion of ACP and HLB in the Sydney Basin, NSW. Activities at the exercise utilised the scenario at day 6 or day 24 of the incursion (Table 3) to test different aspects of the response actions.

Table 3. Scenario summary

Stage of incursion	Scenario
Day 6	• ACP was detected in office plants (orange jasmine) supplied by a plant for hire business (Infected Premises 1; IP1). • Surveys of the plant for hire business identified ACP in two additional locations (IP3 and IP4) supplied by this business, together with the greenhouses at their head office (IP2). • Trace back investigations led to the further detections of ACP at a green life nursery (IP5) and a citrus production nursery (IP6). • Consultative Committee on Emergency Plant Pests (CCEPP) had met, but decided that more surveillance and tracing data was required before a recommendation on technical feasibility of eradication could be determined.
Day 24	• Delimiting surveillance did not detect any further properties with ACP. • Testing of ACP and plant material found 10% of plants at IP6 tested positive for HLB. • No other IPs or locations had returned positive results for HLB. • CCEPP recommended the eradication of ACP and HLB was feasible, and a Response Plan should be finalised for submission to NMG for endorsement. • All IPs were located in the Sydney Basin (Figure 1).

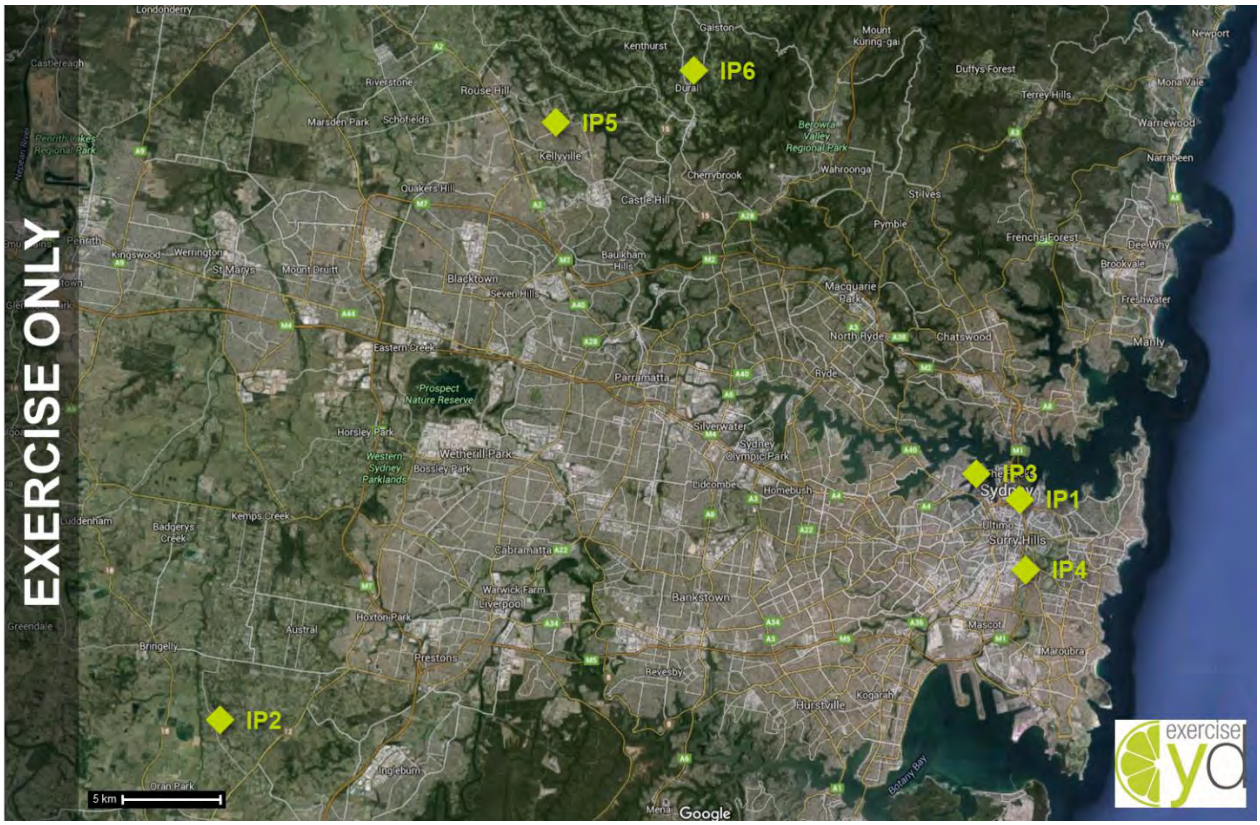

Figure 1. Locations of the Infected Premises in the scenario used in exercise activities

2. Key observations and findings

The key observations and findings are presented below under headings consistent with the objectives. Each key observation or finding is presented with supporting text to provide context. There is also an assessment, as represented by the associated coloured border, as shown below:

Positive

Neutral

Identified gap

Figure 2. Presentation of the scenario to participants

Figure 3. Industry and government representatives developing the tracing requirements from an IP

2.1. Eradication strategies for ACP/HLB

Objective 1	Evaluate the suitability of available eradication strategies for ACP/HLB to an urban setting.

Chemicals for eradication of ACP are available and registered in Australia

The preferred chemicals for use in the eradication of ACP as determined by exercise participants are Spinetoram and Imidacloprid. These chemicals are currently registered for use in Australia on citrus plants, reducing the regulatory burden to use these in a response situation.

Contingency plan use was limited

Two contingency plans for the eradication of ACP and HLB, focussing on citrus or the nursery industries, have been developed and were available to participants at the exercise. While these documents were referred to occasionally by participants, the majority of the information used in the activities was sourced from the internet. From the observations it could not be determined why the contingency plans were not utilised.

Appropriate treatment and control options were agreed

Participants developed and agreed on the treatment and control options to be undertaken at the IPs as part of the eradication response. These treatment and control options covered the containment of the pest, removal from the site and destruction, which was all included in the draft Response Plan prepared by participants.

Host surveillance and destruction in office environment not agreed

Participants were not able to reach an agreed position on the level of surveillance and subsequent host destruction that should be carried out in the office buildings where ACP was detected. This outcome was due to a lack of an agreed risk level for ACP between multiple floors in the building and/or the external environment. There were varying concerns over human assisted movement of the pest.

Human resource capacity to carry out an emergency response exists

The view of participants was that within NSW DPI and Local Land Services, there exists a pool of human resources sufficient to undertake the emergency response in the presented scenario.

Conflicting priorities of Affected Parties in relation to eradication strategy

An agreed position on the implementation of movement restrictions within, and out of, the Sydney Basin, in relation to the host plants carried by the general public and nursery trade, was not reached by participants. The assessment of risk versus potential impact was varied between participants. The exercise provided the opportunity to have the issues aired, but an agreed position was not achieved.

Access to suburban properties to undertake surveillance and eradication

Host plants of ACP and HLB, primarily citrus and murraya, are widely grown on suburban properties across the Sydney Basin, and these would need to be accessed by response staff to undertake surveillance and eradication activities. The potential for access to be limited by the owners unless an effective community engagement campaign can be delivered was identified by participants.

2.2. Tracing ACP/HLB host material

Objective 2	Test the ability to obtain tracing data on ACP/HLB host material through: a) The identification of the information required to determine trace forward and back of citrus material through commercial nursery trade and in alternate pathways in an urban setting. b) The exploration of tracing information available from commercial nursery trade and in alternate pathways in an urban setting.

Tracing request information requirement identified

Participants identified the information required from nursery operators to enable the completion of effective tracing of host material. This included the agreement on fields classified as critical or desired. The information field listing is available from PHA upon request.

Tracing information readily available from major nurseries

The information systems implemented at major commercial nurseries allows for the rapid provision of all data relating to plant material movement identified in the tracing requests.

Potential for small nursery operators to not have the ability to provide tracing information

In contrast to the major commercial nurseries, the information systems in place in smaller nursery settings is highly variable, with the potential that many operations would not be able to provide the required data to support tracing of plant material. This was identified as a major risk in a response situation.

Tracing targets identified

Tracing in the ACP and HLB response scenario was not limited to host plants, but encompassed a range of potential hitchhiker pathways. As such, the agreed list of targets for tracing covered, people, equipment, and host/non-host plant material moving on and off nursery premises.

Critical fail points for tracing not identified

The scope of the exercise limited tracing investigations to the formulation of the tracing request and potential ability of nursery operators to supply the data. It was noted by participants that the actual completion of tracing for potential ACP and HLB movement requires a more thorough investigation to determine where the critical fail points in the process lie.

2.3. Community engagement

Objective 3	Understand how to utilise community engagement in an ACP/HLB response in an urban setting through: a) The identification of the specific benefits that community engagement could add to an ACP/HLB response in an urban setting. b) The drafting of the core components of a communications plan that relate to community engagement.

Community engagement effectively linked to response actions

Participants undertook a critical analysis of the response actions required, and determined the appropriate contributions that can be achieved through community/grower/general public actions. This re-affirmed the potential benefits of community engagement in a response, and these elements were used as a basis for the development of the community engagement plan.

Target audience for pest response in the citrus industry identified

Participants successfully identified the primary target audiences for community engagement activities in a ACP/HLB response. These ranged from citrus growers (in and out of the infected zone) and nursery operators, through to retailers and school groups. It was acknowledged by participants that the multicultural audiences encountered in the urban environment present additional challenges to achieve effective communication, which may require alternative approaches to overcome.

Community engagement plan template for ACP/HLB developed

An exercise output was a draft community engagement plan for a ACP/HLB response, containing target audiences, messages, mechanisms and timings. Two versions of the plan were developed, one for each stage of the response investigated through the scenario (Table 3). These community engagement plans will provide a strong basis for the development of specific community engagement plans in any horticultural pest response that occurs in an urban environment. Copies of this draft are available from PHA.

Strategies to gain full support for response operations on suburban properties

Response operations conducted on suburban properties will be hindered by the potential access issues. Participants identified this as a critical issue to be addressed, with community engagement a primary solution. While this was identified, participants were not able to determine an effective strategy to improve access to suburban properties to carry out surveillance and destruction of host plants.

3. Recommendations and future actions

The exercise activities and outputs demonstrated a strong preparedness position for Australia in relation to the ability to effectively respond to the simulated ACP and HLB detection in an urban environment. Nonetheless, a number of areas have been identified as potential gaps, and based on the observations and feedback provided, a number of recommendations and potential future actions are proposed (Table 4) to improve our preparedness position.

Table 4. List of recommendations and future actions identified from Exercise Yellow Dragon activities

Topic/area	Recommendation or future action
Response operations	Conduct a risk analysis for the spread of ACP, and/or other hitchhiking insects, within an office or city environment to determine the likely surveillance and destruction requirements in an emergency response.
	Conduct research into the record keeping infrastructure of small nursery operations to determine the risk to completing tracing of host materials on and off the premises.
	Promote the implementation of record keeping systems capable of tracing plant material movement on, off and within small nursery operations to support effective tracing in an emergency response.
	Further develop a shared understanding of the drivers and desired outcomes from the citrus and nursery industries in relation to the implementation of response operations and restrictions for a pest that is potentially moved with nursery stock and detected in an urban environment.
	Conduct a risk-benefit analysis on the potential movement restriction options in relation to the impact on nursery and horticultural industry productivity versus the pest eradication feasibility, to inform future eradication strategies in an urban environment.
	Conduct a functional test of tracing host plant material through nursery systems, based on the tracing requests developed in this exercise
Community engagement	Conduct a community engagement program to promote the importance of the Australian citrus industry, with the intent of achieving increased compliance with potential response operations in the urban environment. Examples of effective campaigns can be seen internationally, such as how communities in the USA are managing ACP/HLB.
	Review approaches to gaining supported access to suburban properties from other responses (local and overseas).
Documentation	Review the contingency plans for ACP and HLB to: • Include new response approaches developed through the exercise activities, such as for implementation in urban environments, where appropriate. • Improve their usability to drive their use as the reference documents when developing response strategies.
	Create a central repository of resources that could be drawn upon in a response, including resources developed through simulation exercises.

PHA and Citrus Australia will work with stakeholders to develop appropriate implementation mechanisms for these recommendations and future actions as part of the continuous improvement to Australia's biosecurity system.

4. Appendices

4.1. Exercise participants

Table 5. Exercise participant list

Organisation	Name	Organisation	Name
AgDynamics	Stuart Pettigrew	NSW LLS	Geoff Mills
Auscitrus	Tim Herrman		Ray Willis
	Gary Eyles	PHA	Felicity Andriunas
Citrus Australia	Judith Damiani		Natalie O'Donnell
	Tania Chapman		Stephen Dibley
	Steve Burdette		Susanna Driessen
DAFWA	Richard Johnston	PIRSA	Bonny Vogelzang
Department of Agriculture[2]	Afsheen Shamshad		Ian Campbell
	Rachel Granton	QDAF	Michael Benham
	Sarah Hilton	Tas DPIPWE	Peter Cross
NGIA	Chris O'Conner		Tania Jensen
	John McDonald	Vic DEDJTR	Cynthia Kefaloukos
NSW DPI	Andrew Elms		Gabrielle Vivian-Smith
	Chris Anderson		Lana Russell
	Grant Chambers		
	Kathy Gott		
	Leanne Raines		
	Leigh Pilkington		
	Louise Rossiter		
	Lyn Stenos		
	Megan Power		
	Nerida Donovan		
	Sarah Sullivan		
	Satendra Kumar		
	Toni Chapman		

[2] Now Department of Agriculture and Water Resources

4.2. Exercise planning and control

Table 6. Members responsible for the planning and conduct of the exercise

Organisation	Name	Exercise Planning Group	Exercise Control Team
AgDynamics	Stuart Pettigrew	✓	
Auscitrus	Tim Herrmann	✓	
Citrus Australia	Andrew Harty	✓	
Department of Agriculture	Rachel Granton	✓	
NSW DPI	Andrew Elms	✓ (Evaluation only)	✓ (Exercise evaluator)
	Kathy Gott	✓	
	Leanne Raines	✓ (Evaluation only)	✓ (Exercise evaluator)
	Lyn Stenos		✓ (Exercise evaluator)
	Nerida Donovan	✓	
	Sarah Sullivan	✓	
PHA	Natalie O'Donnell	✓	✓
	Stephen Dibley	✓ (Chair)	✓ (Exercise Controller)
Vic DEDJTR	Cynthia Kefaloukos	✓	
	Gabrielle Vivian-Smith	✓	

4.3. Evaluation report

The evaluation of Exercise Yellow Dragon was undertaken by NSW DPI at the request of the Exercise Planning Group. The final evaluation report was provided to PHA and the Exercise Planning Group for consideration during the development of the Exercise Report (this document).

Key performance indicators (KPIs) developed by the Exercise Planning Group, and agreed by evaluators, were utilised in the evaluation of exercise objectives. The information presented in Table 7 provides a summary of the evaluation outcomes against the KPIs based on the Evaluation Report.

Table 7. Evaluation outcome summary[3]

Aim	**Test the preparedness of industry and government to respond to a detection of Asian citrus psyllid (ACP) and Huanglongbing (HLB) in an urban setting.**	
Objective 1	**Evaluate the suitability of available eradication strategies for ACP/HLB to an urban setting.**	
	KPI 1-1	Available eradication strategies for ACP, HLB and ACP/HLB complex, were identified.
	KPI 1-2	The effectiveness of each identified eradication strategy was assessed.
	KPI 1-3	The suitability of different surveillance approaches for this scenario was assessed.

[3] The aim, objectives and KPIs have been colour coded to express whether they were achieved, not achieved, not able to be determined.

	KPI 1-4	The suitability of different destruction, disposal and decontamination approaches for this scenario was assessed.
	KPI 1-5	The suitability of different quarantine and movement control strategies for this scenario was assessed.
Objective 2a	**Test the ability to obtain tracing data on ACP/HLB host material through:** • **The identification of the information required to determine trace forward and back of citrus material through commercial nursery trade and in alternate pathways in an urban setting.**	
	KPI 2a-1	The agreed outcomes of tracing activities for the exercise scenario were discussed.
	KPI 2a-2	Potential data fields to include in a tracing request were identified and explored.
	KPI 2a-3	Critical information required for the completion of tracing in this exercise scenario was identified.
	KPI 2a-4	Information requirements to achieve effective tracing from nurseries was compared to information required from other locations/operations.
Objective 2b	**Test the ability to obtain tracing data on ACP/HLB host material through:** • **The exploration of tracing information available from commercial nursery trade and in alternate pathways in an urban setting.**	
	KPI 2b-1	Availability of the required information identified in the previous objective was assessed.
	KPI 2b-2	The potential limitations of provided tracing data were discussed.
	KPI 2b-3	The critical information fail points for the completion of tracing in the exercise scenario were identified.
	KPI 2b-4	Mechanisms and approaches to obtain tracing data were identified.
Objective 3a	**Understand how to utilise community engagement in an ACP/HLB response in an urban setting through:** • **The identification of the specific benefits that community engagement could add to an ACP/HLB response in an urban setting.**	
	KPI 3a-1	Response activities that the public and growers can contribute to were identified.
	KPI 3a-2	Specific aspects of the response activities that the public and growers can impact on were identified.
	KPI 3a-3	Contributions to response actions or changes in behaviour that can be reasonably achieved through community engagement were discussed and identified.
Objective 3b	**Understand how to utilise community engagement in an ACP/HLB response in an urban setting through:** • **The drafting of the core components of a communications plan that relate to community engagement.**	
	KPI 3b-1	Target audiences for community engagement relevant to this exercise scenario were identified.
	KPI 3b-2	Messages and delivery mechanisms to generate public and grower interest and contribution to response actions were discussed and documented.
	KPI 3b-3	Specified components of the community engagement sections of a communications plan were identified.

4.4. Abbreviations

Table 8. Abbreviations used throughout the report

Acronym	Full name
ACP	Asian citrus psyllid
CCEPP	Consultative Committee on Emergency Plant Pests
DAFWA	Department of Agriculture and Food, Western Australia
EPPRD	Emergency Plant Pest Response Deed
HLB	Huanglongbing
IP	Infected Premises
KPI	Key performance indicator
NGIA	Nursery and Garden Industry Australia
NMG	National Management Group
NSW DPI	New South Wales Department of Primary Industries
NSW LLS	New South Wales Local Land Services
PHA	Plant Health Australia
PIRSA	Primary Industries and Regions, South Australia
QDAF	Queensland Department of Agriculture and Fisheries
Tas DPIPWE	Tasmanian Department of Primary Industries, Parks, Water and Environment
Vic DEDJTR	Victorian Department of Economic Development, Jobs, Transport and Resources

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