

National Xylella Action Plan 2019–2029: implementation schedule 2023

The success of the [National Xylella Action Plan 2019–2029](#) depends on cooperation and collaboration between importers, shipping businesses, agricultural industries, all levels of government, non-government organisations and individuals, experts and research agencies. This implementation schedule will be used to:

- record the progress of actions set out in the plan
- document roles, responsibilities and funding mechanisms
- communicate progress with stakeholders.

Actions in this plan will complement actions in other [national action plans for priority plant pests](#).

Plant Health Committee (PHC) is responsible for endorsing plans and overseeing implementation. The Department of Agriculture, Fisheries and Forestry (DAFF) will host annual forums with key stakeholders to monitor and review implementation schedules. The purpose of these forums is to collect implementation information and discuss potential proposals to support the plan. PHC will be provided with forum findings. PHC will consider how implementation will occur where no lead has been identified for an action.

The overall success of the plan will be assessed against 6 measures:

- 1) High level of engagement and support from stakeholders (e.g. over 50 stakeholders at annual forums).
- 2) Improved diagnostic capacity and treatment capability since the development of the plan.
- 3) Increased awareness among importers, international and domestic shipping providers, Australian industry, governments and the general public, of the potential risks to Australian industry, the environment and social amenity from Xylella since the development of the plan.
- 4) Number of projects initiated to provide data to fill knowledge gaps, and number of projects successfully concluded since the development of the plan.
- 5) High level of confidence in national surveillance and diagnostic capability to provide evidence of Australia's pest-free status for Xylella.
- 6) Higher level of preparation among stakeholders to respond to a border incident or incursion of a Xylella since the development of the plan.

Implementation of the plan's actions are shown in Table 1 (prevention), Table 2 (detection), Table 3 (response) and Table 4 (cross-cutting). Indicative timeframes are short term (up to 3 years), medium term (4 to 8 years) and long term (up to 10 years).

Status key






	Ongoing – business as usual activity underway
	Completed – project finished
	On track – project commenced
	Pending – project or activity is yet to commence
	Deleted – project has been deleted or incorporated into another project

Table 1 Implementation of activities for Area 1: Prevention

Action	Project or business as usual activity	Status	Lead organisation	Contributors (financial and in-kind)	Dependencies
<p>Action 1.1: Conduct a pest risk assessment and maintain appropriate regulation at the Australian border to minimise the risk of introduction into Australia.</p> <p>Expected benefit and outcome: A pest risk assessment is being conducted to support emergency measures. New information on geographical distribution and host range will be taken into consideration as it becomes available and import conditions will be revised as appropriate.</p> <p>Priority: high</p> <p>Time frame: short term</p>	1.1.1 Draft pest risk assessment	On track – project commenced Draft report for the Pest Risk Analysis for bacterial pathogens in the genus <i>Xylella</i> is available on <i>Xylella</i> bacterial pathogens was released in December 2022 [available from DAFF (agriculture.gov.au)]. The final report has been delayed due to needing a regulatory solution for testing tissue cultured plantlets without growing them out.	Commonwealth (BPSSD, PSARA, PIO)	Not applicable	Supports many other action areas. Related to project 1.1.2
	1.1.2 Diagnosis of <i>Xylella fastidiosa</i> : detection on dormant plants and tissue culture plantlets	On track – project commenced The 12-month project has been funded by DAFF and will commence February 2024. This is a joint project between the NSW and Victorian Governments.	Jurisdiction	Commonwealth	Not applicable
<p>Action 1.2: Identify plants that occur in Australia that are known, or have potential, to be hosts.</p> <p>Expected benefit and outcome: To (i) identify nationally agreed list of true and experimental hosts, (ii) identify risk material and pathways, (iii) identify control/eradication methods and (iv) propose phytosanitary treatment options for <i>Xylella fastidiosa</i>.</p>	1.2.1 NPPP True Host List and Risk Pathways project delivered	Completed – project finished (2023) Discussion ongoing regarding accessibility to the project outcomes	Jurisdiction	Commonwealth	Relates to action 1.1
	1.2.2 Research the time from infection to transmission to determine a period for preventative screening	Pending – project to commence when funding available Project will be needed to consider host, vegetative/dormant state, xylella strains etc	To be determined	To be determined	Relates to action 1.1

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Action	Project or business as usual activity	Status	Lead organisation	Contributors (financial and in-kind)	Dependencies
To initiate project(s) to test the ability of plants present in Australia to host <i>Xylella</i> spp. Priority: high Time frame: short term	1.2.3 Duplicate NZ MPI project to 'Undertake research to determine if iconic Australian native plant species could be xylella hosts'	Pending – project to commence when funding available NZ project information: Xylella fastidiosa (Xf) and its New Zealand vectors - B3 Science Solutions for Better Border Biosecurity (b3nz.org.nz)	To be determined	To be determined	Not applicable
Action 1.3: Identify insects that occur in Australia that are known, or have potential, to vector xylella. Expected benefit and outcome: To conduct research that will contribute to a better understanding of the potential for native insects to be vectors for <i>Xylella</i> spp. Priority: high Time frame: short term	1.3.1 Tools and knowledge to mitigate the potential spread of <i>Xylella fastidiosa</i> in Australia and New Zealand by understanding its potential vectors	On track – project commenced and to be completed in 2024. This project demonstrates potential native vector present in abundance in Australia and New Zealand. Discussion with PBRI/B3 NZ and DAFF on how to continue this investigation is underway. Hort Innovation Xylella insect vectors (ST19018) (horticulture.com.au)	Jurisdiction Macquarie University	Wine Australia Hort Innovation Commonwealth (PPEBD)	Relates to action 1.1
Action 1.4: Analyse known and potential vectors and hosts to improve understanding of potential risks. Expected benefit and outcome: To conduct research to improve understanding of potential risks from known and potential vectors and hosts, drawing on outcomes from Actions 1.1 to 1.3. Priority: medium	1.4.1	Deleted In 2023, this project was agreed to be deleted, as the project title was missing in earlier versions and stakeholders were unclear about the intent of the work.	To be determined	To be determined	Dependent on action 1.1, 1.2, 1.3 (in particular project 1.3.1) Relates to action 1.3, 4.4
	1.4.1 Analyse vectors to determine if there are any differences in the strains/species they can vector	Pending – project to commence when funding available Project proposed at 6 May 2021 forum. This proposal is under review by the Commonwealth.	Commonwealth (BPSSD, PSARA)	To be determined.	Dependent on action 1.1, 1.2, 1.3

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Action	Project or business as usual activity	Status	Lead organisation	Contributors (financial and in-kind)	Dependencies
Time frame: medium term					
<p>Action 1.5: Build biosecurity capacity in our southeast Asian and Pacific neighbours.</p> <p>Expected benefit and outcome: To build biosecurity capability and capacity by exchanging information about emerging pests as part of ongoing dialogue, including in relation to the Pacific Plant Protection Organisation and Asia and Pacific Plant Protection Commission.</p> <p>Priority: medium</p> <p>Time frame: long term</p>	1.5.1 Bilateral support	Ongoing – business as usual The Commonwealth provides technical and operational xylella surveillance and diagnostics support to biosecurity and plant protection agencies in our near neighbours (Timor-Leste, PNG and Solomon Island). The Commonwealth has also facilitated xylella diagnostics training of near neighbour plant pathology representatives and also facilitated and funded near neighbour CPPOs to attend the International Xylella Symposium (held in Brisbane, May 2017).	Commonwealth (PPEBD)	Not applicable	Supports many other action areas Dependent on outcome of bilateral discussions and approvals
	1.5.2 Regional support	Ongoing – business as usual The Commonwealth has also provided regional technical support through the Asia Pacific Plant Protection Commission (APPPC) by coordinating and delivering a series of 5 annual technical surveillance workshops, focusing on Regional Priority Plant Pests (of which xylella is a priority target). These workshops have focussed on priority pest surveillance, monitoring, reporting and surveillance information management for member countries of the Asia and	Commonwealth (PPEBD)	Not applicable	Supports many other action areas Dependent on outcome of bilateral discussions and approvals

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Action	Project or business as usual activity	Status	Lead organisation	Contributors (financial and in-kind)	Dependencies
		Pacific Plant Protection Commission. These workshops will also support national and regional xylella monitoring and management programs and link into regional xylella management programs.			
	1.5.3 Global support	Ongoing – business as usual The Commonwealth is represented within the International Plant Protection Convention (IPPC) by surveillance subject matter experts on the IPPC Implementation and Capacity Building Committee. The representative is currently leading the IPPC ‘Global Surveillance Initiative’ project and the development of ‘international’ protocols, guidelines and tools for xylella surveillance, inspection, diagnostics and modelling are one of the key deliverables of this project.	Commonwealth (PPEBD)	Not applicable	Supports many other action areas Dependent on outcome of bilateral discussions and approvals
	1.5.4 Whole of government Support	Ongoing – business as usual The DFAT/DAFF International Agricultural Biosecurity Technical Working Group (IABTWG) is coordinating regional biosecurity response, preparedness and food security programs and activities across our regional near neighbours (Timor-Leste, PNG, Solomon Islands, Vanuatu) and the broader pacific region. While the focus of the IABTWG is currently on fall armyworm,	Commonwealth (PPEBD)	Not applicable	Supports many other action areas Dependent on outcome of bilateral discussions and approvals

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		<p>African swine fever and Khapra beetle, xylella remains a priority 'emerging' regional pest and the IABTWG is closely monitoring its pest status within the Asia Pacific Region to raise awareness and initiate preparedness and response arrangements in the event of a xylella detection and incursion within the near neighbour countries.</p>			

Table 2 Implementation of activities for Area 2: Detection

Action	Project or business-as-usual activity	Status	Lead organisation	Contributors (financial and in-kind)	Dependencies
<p>Action 2.1: Develop diagnostic testing capacity and capability to differentiate between species of xylella, subspecies (and genotypes) of <i>X. fastidiosa subsp. fastidiosa</i>, and to identify vectors.</p> <p>Expected benefit and outcome: To improve preparedness and response capability through the adoption of best practice diagnostic methods for the detection and identification of <i>Xylella</i> spp.</p> <p>Initiate project(s) to develop tools and protocols for the diagnosis of vectors.</p> <p>Priority: high</p> <p>Time frame: short term</p>	<p>2.1.1 Improving preparedness of the Australian horticultural sector to the threat potentially posed by <i>Xylella fastidiosa</i> (a severe biosecurity risk)</p>	<p>Completed – project finished (2023)</p> <p>The project strengthened Australia’s diagnostic capabilities by delivering a new National Diagnostic Protocol identification of all <i>X. fastidiosa</i> subspecies and generic xylella detection. Capability training across Australian labs was also a highlight of the project.</p> <p>Hort Innovation Improving preparedness of the Australian horticultural sector to the threat potentially posed by <i>Xylella fastidiosa</i> (a severe biosecurity risk) (MT17006) (horticulture.com.au)</p> <p>The NDP has been submitted and is nearing acceptance. Following endorsement it will be published on https://www.plantbiosecuritydiagnostics.net.au/national-diagnostic-protocol-list/</p> <p>The <i>Xylella</i> spp. National Diagnostic Protocol was updated as part of Hort Innovation Improving preparedness of the Australian horticultural sector to the threat potentially posed by <i>Xylella fastidiosa</i> (a severe biosecurity risk) (MT17006) (horticulture.com.au).</p> <p>The NDP is currently undergoing review/verification through SPHD. It is expected that the NDP will be submitted for endorsement early 2024.</p> <p>Training on the xylella NDP has been delivered through NPBDN at the 2023</p>	Jurisdiction	Hort Innovation	<p>Dependent on action 1.3</p> <p>Relates to action 2.2, 2.3, 2.4, 2.5</p>

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Action	Project or business-as-usual activity	Status	Lead organisation	Contributors (financial and in-kind)	Dependencies
		Annual Diagnosticians and Surveillance workshop (ADSW). There was also a xylella workshop in Nov 2023 as part of the APPS conference APPS2023 (eventsair.com)			
	2.1.2 Development of the xylella vectors National Diagnostic Protocol	On track – project commenced The peer review and verification of the draft National Diagnostic Protocol for xylella vectors are in progress. <i>1. The Homalodisca vitripennis</i> (glassy winged sharpshooter) NDP23 is currently being reviewed and updated. <i>2. The Philaenus spumarius</i> (xylella exotic vectors) NDP has been developed and is currently undergoing review/verification through SPHD. <i>3. The xylella exotic vector leafhopper NDP (Acrogonia terminalis, Cicadella viridis, Dilobopterus costalimai, Draeculacephala minerva, Graphocephala atropunctata, Oncometopia fascialis and Xyphon fulgidum)</i> has been developed and is currently undergoing review/verification through SPHD.	PHA	Not applicable	Not applicable
	2.1.3 Investigate a potential strategy for importation of live xylella cultures to enhance diagnostic testing capability, including development of diagnostic controls	Completed – project finished (2023) On 24 May 2023, the Department of Agriculture, Fisheries and Forestry granted an import permit to NSW DPI to permit a single importation of live cultures of the bacterial pathogen xylella into Australia for in vitro uses	Jurisdiction Commonwealth (PIO, PSARA) SPHD	Not applicable	Not applicable

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Action	Project or business-as-usual activity	Status	Lead organisation	Contributors (financial and in-kind)	Dependencies
		within a biosecurity containment laboratory. Xylella cultures were imported 1 July 2023.			
	2.1.4 RRD4P – Boosting diagnostic capacity for plant production industries (WA1907)	Completed – project finished (2023) Xylella for research undertaken through Better Border Biosecurity (B3). Relevant information is being exchanged with our collaborators within the Boosting Diagnostics programme. RRD4P – Boosting Diagnostic Capacity for Plant Production Industries Wine Australia	GRDC		Not applicable
	2.1.5 Review and update list of draft and endorsed NDPs for NPPP, as part of the National Diagnostic Protocol Implementation Plan	Ongoing – business as usual Review evaluation every 5 years unless triggered sooner.=	SPHD	Not applicable	Supports: <ul style="list-style-type: none"> National Khapra Beetle Action Plan action 2.1 National Hitchhiker Action Plan action 2.2
Action 2.2: Establish high-throughput diagnostic testing capacity and capability. Expected benefit and outcome: To improve preparedness and response capability in relation to incursions by <i>Xylella fastidiosa</i> through the adoption of best practice diagnostic strategies to increase national surge capacity. SPHD to advise on strategies to improve national surge capacity. Initiate project(s) to develop tests and procedures for high-	2.2.1 Exercises to test surge capacity workflow simulators	Ongoing – business as usual	SPHD	Not applicable	Relates to action 2.1, 2.3, 2.4, 2.5
	2.2.2 Investigate project being established to utilise next gen sequencing to allow rapid diagnostics	Pending – project to commence when funding available Project proposed at 6 May 2021 forum	To be determined	To be determined	Not applicable
	2.2.3 Including xylella in the National Plant Health Proficiency Testing Program (NPHPTP)	Pending – project to commence when funding available SPHD has delivered the National Plant Health Proficiency Testing Program (NPHPTP) since 2012. The Proficiency Testing Coordinator, appointed by SPHD, manages the delivery of the	NPBDN SPHD		Not applicable

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<p>throughput screening, including ELISA, PCR, qPCR, and LAMP if not addressed in Hort Innovation diagnostic project (see Action 2.1).</p> <p>Priority: medium</p> <p>Time frame: short term</p>		<p>program in conjunction with Australian National Quality Assurance Program (ANQAP).</p> <p>A review of the National Plant Health Proficiency Testing program has been completed by DAFF. SPHD are currently considering the outcomes from this review including options for the inclusion of NPPPs within the program. For more information see: Proficiency Testing</p> <p>Xylella is not currently included in the program. As xylella cultures available in the country we can now prepare DNA for inclusion of proficiency testing. We can also provide 80% ethanol preserved solutions of <i>Xylella</i> spp. for MALDI-Tof testing.</p>			
	<p>2.2.4 Surge capacity workflow simulators</p>	<p>Completed – project finished</p> <p>Plant Health Australia has completed the Commonwealth funded project for Surge capacity workflow simulators. However, the model requires further validation and real-time testing to ensure the projections are accurate.</p> <p>The purpose of the project was to pilot workflow simulators and determine the most useful, effective tool for evaluating surge capacity for rollout to all relevant laboratories likely to be involved in emergency responses. Surge capacity workflow simulators were designed for six Australian diagnostic laboratories. The current model is useful for leaf foliar pathogens which utilises PCR-based techniques; however, the model</p>	<p>PHA</p>	<p>Commonwealth</p>	<p>Relates to action 2.1</p>

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Action	Project or business-as-usual activity	Status	Lead organisation	Contributors (financial and in-kind)	Dependencies
		requires further validation and real-time testing to ensure the projections are accurate.			
	2.2.5 Developing rapid, accurate and field deployable diagnostics (Phase 2 CRISPR-CAS)	<p>Completed – project finished (2023)</p> <p>CRISPR-Cas enzymes offer rapid, sensitive and field based detection of pathogens. DETECTR and Cas12a method can produce a rapid fluorescence readout on amplified products. Cas12a can be coupled with current DNA/RNA amplification detection methods to improve sensitivity, speed, portability and ease of use.</p> <p>The Plant Innovation Centre has published the outputs of this work using xylella as a ‘proof of concept’ [Australasian Plant Pathology (springer.com)]. Attention will now turn to refining, optimising and multiplexing with other priority pests (HLB, citrus canker etc). Further progression of this work for xylella could occur in partnership with other parties e.g. CSIRO under the CAB initiative if relevant.</p>	Commonwealth (BPSSD, PIO)		Supports the National Action Plan for pests of Horticultural crops (in development)
	2.2.6 Developing rapid, accurate and field deployable diagnostics (Phase 2 CRISPR-CAS) for deployment	<p>Pending – project to commence when funding available</p> <p>Proof of concept has been demonstrated, but considerably more work is needed to develop a finished product for deployment. Ongoing work currently has no resources and is not progressing.</p>	To be determined	To be determined	Supports the National Action Plan for pests of Horticultural crops (in development)

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Action	Project or business-as-usual activity	Status	Lead organisation	Contributors (financial and in-kind)	Dependencies
<p>Action 2.3: Develop and validate cost-effective field-based diagnostic tools and procedures to support surveillance.</p> <p>Expected benefit and outcome: To improve detection capability in relation to <i>Xylella fastidiosa</i> through cost-effective field-based diagnostic tools and procedures as part of surveillance activities.</p> <p>Priority: high</p> <p>Time frame: short term</p>	2.3.1 Hyperspectral image analysis to detect (pre-visual) <i>Xylella fastidiosa</i> symptoms	Completed – project finished (2022) The University of Melbourne is leading a project to assess baseline data to use hyperspectral image analysis to detect (pre-visual) <i>Xylella fastidiosa</i> symptoms. Case study focused on the Mallee region. The project ended 31 May 2022.	University of Melbourne	Commonwealth (PPEBD)	Dependent on action 2.1, 2.2 Supports action 2.4, 2.5
	2.3.2 Expand identification assays to support broad scale surveillance programs to identify xylella	Pending – project to commence when funding available Project proposed at 6 May 2021 forum	To be determined	To be determined	Not applicable
	2.3.3 Improve accuracy of sampling, including on ornamental species, key hosts, and on what tissue to sample on a plant, in relation to sampling at the border	Pending – project to commence when funding available Project proposed at 6 May 2021 forum	To be determined	To be determined	Not applicable
	2.3.4 Consider if research is needed to identify xylella within vectors, as a means of detection	Pending – project to commence when funding available Project proposed at 6 May 2021 forum and built upon at the 6 December 2022 forum to include detection of gram-negative bacteria using insect-derived DNA Research is needed for Australian insects to ensure false positives are not an issue and laboratories are using appropriate DNA extraction methods for the different insects	To be determined	To be determined	Not applicable
	2.3.5 BeXyl-remote sensing Xylella	Pending – project to commence when funding available.	Wine Australia	Hort Innovation	
<p>Action 2.4: Target and test potential vectors in current and future surveillance programs.</p>	2.4.1 Jurisdictions and industry to target and test potential vectors in current surveillance programs	Ongoing – business as usual	Jurisdiction Industry	Jurisdiction Commonwealth	Dependent on action 2.1, 2.2, 2.3

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Action	Project or business-as-usual activity	Status	Lead organisation	Contributors (financial and in-kind)	Dependencies
<p>Expected benefit and outcome: To improve detection capability in relation to <i>Xylella fastidiosa</i> through enhanced targeting of potential vectors as part of current surveillance programs.</p> <p>Priority: high</p> <p>Time frame: short term</p>					Informed by action 1.1, 1.2, 1.3, 1.4, 4.5
	2.4.2 Monitor public enquires and online reporting for plants that exhibit symptoms of infection with <i>Xylella fastidiosa</i> and other pathogens	Ongoing – business as usual States and territories monitor public enquires through the exotic plant pest hotline and online reporting. If symptoms raise concerns, the jurisdiction will organise a collection of samples to be tested.	Jurisdiction	Not applicable	Not applicable
	2.4.3 Update awareness material	Ongoing – business as usual Queensland has updated awareness material and focuses on citrus.	Jurisdiction	Not applicable	Not applicable
	2.4.4 Surveillance bycatch is screened for exotic species	Ongoing – business as usual In SA, all surveillance bycatch is screened for exotic species including glassy-winged sharpshooter. Victoria – all surveillance diagnostic samples in Victoria are screened for potential EPPs.	Jurisdiction	Not applicable	Not applicable
	2.4.5 Survey for TPP, Asian citrus psyllid and other targeted exotics including, glassy-winged sharpshooter	Completed – project finished WA is managing a three-year nationwide project to survey for TPP, Asian citrus psyllid and other targeted exotics including, glassy-winged sharpshooter.	Jurisdiction	Not applicable	Not applicable
	2.4.6 MyPestGuide reporting	Ongoing – business as usual The MyPestGuide Reporter Agriculture and Food reporting platform has been developed by WA. This platform is supported by the WA Pest and Disease Information Service	Jurisdiction	Not applicable	Not applicable

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Action	Project or business-as-usual activity	Status	Lead organisation	Contributors (financial and in-kind)	Dependencies
		and specialist staff diagnosing pests and diseases.			
	2.4.7 Undertaking multi crop and operational NPHSP surveillance	On track – project commenced NT completed surveillance for glassy winged sharpshooter (GWSS) at 30 high-risk survey sites across peri-urban and regional areas of the NT, including at nurseries, community gardens, farms, and community and tourist facilities. Over 450 sticky traps were placed in proximity to preferred hosts of GWSS between January to June 2022 as part of the NPHSP and the Citrus Watch project. There were no suspect samples or detections of GWSS during this period. Surveillance will continue in 2022-2023.	Jurisdiction Citrus Australia	Not applicable	Not applicable
	2.4.8 <i>Xylella fastidiosa</i> is a target pest for the National Plant Health Surveillance program (NPHSP)	On track – project commenced Program expires in 2025. Xylella and xylella vectors are mandatory targets under the NPHSP being carried out by jurisdictions.	Commonwealth (PPEBD) Jurisdiction	Not applicable	Not applicable
	2.4.9 Investigate potential to undertake an urban/peri-urban surveillance program	Pending – project to commence when funding available Project proposed at 6 May 2021 forum	To be determined	To be determined	Not applicable
	2.4.10 Investigate overseas xylella diagnostic tests with endemic Australian bacteria to verify result accuracy	Deleted In 2023, this project was incorporated into project 2.1.1. The 6 May 2021 forum proposed this project, which is already being undertaken as part of the National Diagnostic Protocol work.	National Diagnostic Protocol work	Not applicable	Not applicable

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Action	Project or business-as-usual activity	Status	Lead organisation	Contributors (financial and in-kind)	Dependencies
<p>Action 2.5: Develop and implement national surveillance utilising best practice tools and methods for xylella and exotic vectors.</p> <p>Expected benefit and outcome: To promote consistency in surveillance for <i>Xylella</i> spp. and exotic vectors through a nationally endorsed surveillance protocol/ strategy.</p> <p>Initiate project(s) to review current approaches to surveillance against international best practice and outcomes of CEBRA project and develop national surveillance strategy.</p> <p>Implement national surveillance strategy for <i>Xylella</i> spp. and exotic vectors.</p> <p>Priority: medium</p> <p>Time frame: short term</p>	2.5.1 The national surveillance protocol for <i>Xylella fastidiosa</i>	<p>On track – project commenced</p> <p>The <i>Xylella fastidiosa</i> national surveillance protocol has been internally reviewed and is currently undergoing external review prior to SNPNS endorsement, due early 2023.</p> <p>Based on recent findings in Europe, collection of stem material is better for xylella detection.</p>	SNPNS	Not applicable	<p>Dependent on action 2.1, 2.2, 2.3, 2.4</p> <p>Informed by action 1.1, 1.2, 1.3, 1.4, 4.5</p>
	2.5.2 Targeting of glassy-winged sharpshooter in operational surveillance and through ‘VG16086 Area Wide Management of vegetable diseases: viruses and bacteria’ project’	<p>Completed – project finished (2023)</p> <p>Glassy-winged sharpshooter surveillance is occurring under NPHSP.</p> <p>Hort Innovation Area wide management of vegetable diseases: viruses and bacteria (VG16086) (horticulture.com.au)</p>	<p>Jurisdiction</p> <p>NPHSP</p>	Hort Innovation	Not applicable
	2.5.3 Jurisdictions (including local government) and industry to implement national surveillance strategy for <i>Xylella</i> spp. and exotic vectors	On track – project commenced	<p>Jurisdiction</p> <p>Industry</p>	Not applicable	Not applicable
	2.5.4 Citrus Industry biosecurity preparedness strategy (CT20006)	<p>This project will conduct trapping and visual surveys targeting various pests including glassy-winged sharpshooter (a major vector of xylella). The program collects budstick samples to support surveillance for graft transmittible pathogens including xylella.</p>	<p>Citrus Australia</p> <p>PHA</p> <p>Jurisdiction</p>	Hort Innovation (delivered under the Citrus Watch banner)	Not applicable

Table 3 Implementation of activities for Area 3: Response

Action	Project or business-as-usual activity	Status	Lead organisation	Contributors (financial and in-kind)	Dependencies
<p>Action 3.1: Develop comprehensive national contingency plans and supporting operational procedures, and test through a national simulation exercise.</p> <p>Expected benefit and outcome: To increase Australia’s response capability in relation to an incursion by <i>Xylella fastidiosa</i> through our capacity to rapidly implement a national contingency plan and operational procedures.</p> <p>Initiate project(s) to develop a comprehensive national contingency plan for eradication covering all industries and the environment and supporting operational procedures.</p> <p>Priority: high</p> <p>Time frame: short term</p>	3.1.1 Conduct a gap analysis of the National Priority Plant Pests	<p>Ongoing – business as usual</p> <p>Plant Health Committee’s Plant Biosecurity Preparedness Working Group conducted a gap analysis of the National Priority Plant Pests and identified gaps in preparedness for future work.</p> <p>Limited activities during 2022 while a decision on the ongoing working group was made. It was agreed the working group would continue in late 2022 and therefore activities are expected to re-commence in 2023.</p>	PBPWG	Not applicable	<p>Informed by many other action areas</p> <p>Relates to action 3.2</p>
	3.1.2 Hold a national xylella simulation workshop	<p>Pending – project to commence when funding available</p> <p>This workshop will develop a range of scenarios and reach agreement on key eradication and management decisions, such as buffer zones for containment, host free periods, destruction zones and strengthen the biosecurity capability of primary producers including in relation to Xylella.</p> <p>A project proposal has been created and a suitable supplier is being sought to deliver a national simulation workshop, with representation from government, industry and environmental stakeholders.</p>	To be determined	Not applicable	Not applicable
	3.1.3 Develop an Emergency Coordination Plan for the Australian wine sector	<p>Completed – project finished</p> <p>An Emergency Coordination Plan for the Australian wine sector has been developed to engage the various national, state and regional wine industry organisations to meet and enhance EPPRD responsibilities and engagement with Control Centres. Further work to identify and train Industry Liaison Officers has been completed to support this and is supplemented</p>	Commonwealth (PPEBD)	Not applicable	Not applicable

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Action	Project or business-as-usual activity	Status	Lead organisation	Contributors (financial and in-kind)	Dependencies
		by a reference guide for Industry Liaison Officers. The National Xylella Coordinator position has finished.			
	3.1.4 Streamlining plant pest contingency plans	On track – project commenced This project will deliver a nationally agreed approach to the contingency planning framework that will allow EPPRD members to select the modules from a full contingency plan template that is relevant to a response to a particular plant pest. <i>Xylella fastidiosa</i> is being used in a pilot case study for the project and to update the existing xylella contingency plan. Approval process for revisions to be confirmed by PHC. At the 6 December 2022 forum it was suggested that a transition to management component may need to be considered for inclusion in the xylella contingency plan.	Jurisdiction	Not applicable	Not applicable
	3.1.5 Evaluate information gathering and communication processes for an industry association as per their EPPRD responsibilities (under a xylella scenario)	Completed – project finished Two-day exercise conducted with Australian Olive Association in 2022 reviewing organisational preparedness and considering key issues re capability and capacity to provide industry liaison officers and input into response planning and communications. The National Xylella Coordinator position has finished.		Not applicable	Not applicable
	3.1.6 Exercise to test arrangements to induct and deploy personnel without a plant/horticulture background into surveillance roles under a xylella scenario	Pending Was planned with Agriculture Victoria; however, the pandemic and repeated biosecurity responses limited the ability of Agriculture Victoria to contribute or commit and the project was not continued (as per 4.2.1).	National Xylella Coordinator	Not applicable	Not applicable

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Action	Project or business-as-usual activity	Status	Lead organisation	Contributors (financial and in-kind)	Dependencies
	3.1.7 Workshop to examine the lessons learnt from overseas vector control and containment efforts	On track – project commenced Planned to be held in conjunction with the Hemipteran Plant Interactions Symposium in December 2022. The National Xylella Coordinator position has finished.	Wine Australia	Not applicable	Not applicable
	3.1.8 Hold national exercise for the wine sector	Completed – project finished National exercise held in 2021 for the wine sector held over three days. Held a series of smaller exercises as a component of the development of a Wine Industry Liaison Officer network. This will continue as a part of ongoing industry preparedness activities. The National Xylella Coordinator position has finished.		Not applicable	Not applicable
Action 3.2: Develop tools and systems to capture, store and analyse real-time surveillance, spatial and diagnostic data to support a response in the Australian context Expected benefit and outcome: To increase Australia’s detection and response capability in relation to <i>Xylella fastidiosa</i> through the use of real-time surveillance tools and data best suited to Australian conditions. Priority: medium Time frame: medium term	3.2.1 Standardise response system data	Completed – project finished Jurisdictions have a variety of response systems used for biosecurity response, minimum data standards have been agreed and no further action is planned.	Jurisdiction	Not applicable	Informed by many other action areas
	3.2.2 RNAi control for <i>Xylella fastidiosa</i> (Eradicating HLB and Xylella using novel genetic technologies)	On track – project commenced Project included at 6 December 2022 forum. Hort Innovation contracted the following project in February 2022: A gene technology platform for disease resistance in horticultural tree crops (huanglongbing and Xylella) (AS21005)	Silvec Biologics	Hort Innovation	Not applicable

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Action	Project or business-as-usual activity	Status	Lead organisation	Contributors (financial and in-kind)	Dependencies
<p>Action 3.3: Engage with the nursery and garden industry to enable the safe movement of nursery stock plants within Australia to prevent the spread of the pathogen, should xylella be detected.</p> <p>Expected benefit and outcome:</p> <p>To impede the spread of <i>Xylella fastidiosa</i> during an incursion through industry adoption of developed protocols that promote the safe movement of nursery stock.</p> <p>Priority: low</p> <p>Time frame: medium term</p>	3.3.1 Hold a simulation exercise (Exercise Fastidious)	<p>Completed – project finished</p> <p>Hort Innovation has funded Exercise Fastidious through its nursery fund to improve Australia’s preparedness to respond to a detection of <i>Xylella fastidiosa</i>. The learnings and outcomes report is available on the Plant Health Australia website:</p> <p>Exercise Fastidious a success</p>	Hort Innovation	Hort Innovation	Informed by action 1.1, 1.2, 1.3, 1.4, 2.5, 4.5
	3.3.2 Promoting safe movement of nursery stock	<p>Completed – project finished</p> <p>Greenlife Industry Australia has developed a nursery paper on the symptoms, diagnosis, management and prevention of a plant virus, using reference to the common Apple Mosaic Virus. This paper could assist industry in the event of a xylella incursion:</p> <p>Managing a Plant Virus in Nursery Production 2020</p>	Greenlife Industry Australia	Hort Innovation	Not applicable
	3.3.3 Development of a grapevine propagation standard	<p>Ongoing – business as usual</p> <p>The wine sector has commenced consultation and development of a grapevine propagation standard that includes movement of plant material. Phase 1 (Desktop Review & Industry Consultation) has been completed. This work is being completed as part of a larger National Grapevine Collection project.</p>	Wine Australia	Not applicable	Not applicable
	3.3.4 Determine pre-agreed movement conditions between jurisdictions	<p>Pending – project to commence when funding available</p> <p>Project proposed at 6 May 2021 forum</p>	To be determined	To be determined	Relates to action 3.1
<p>Action 3.4: Analyse literature and overseas experience to identify control and management options relevant to the Australian context.</p>	3.4.1 Stocktake of overseas experiences and literature to identify potential control and management options for xylella in Australia and any gaps	Completed – project finished	Commonwealth (CSIRO)	Commonwealth	Supports many other action areas

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Action	Project or business-as-usual activity	Status	Lead organisation	Contributors (financial and in-kind)	Dependencies
<p>Expected benefit and outcome: To mitigate the risk from potential <i>Xylella fastidiosa</i> transmission pathways through the adoption of best practice control and management options, where these are conducive to Australian conditions.</p> <p>Priority: Medium</p> <p>Time frame: medium term</p>	3.4.2 Further develop on-going management plans to manage/minimise the impact of xylella in the event that eradication is not technically feasible	Pending – project to commence when funding available	To be determined	To be determined	Not applicable
	3.4.3 Consider testing potential Australian vectors for bacterial flora in their mouthparts/gut for ability to outcompete xylella	Pending – project to commence when funding available	To be determined	To be determined	Not applicable
	3.4.4 Investigate ‘proof of concept’ to use RNAi methods to eradicate, or minimise effect, of host infection or to interrupt vector transmission	Deleted In 2023, this project was agreed to be deleted, because it is the same as project 3.2.2.	To be determined	To be determined	Not applicable

Table 4 Implementation of activities for Area 4: Cross-cutting

Action	Project or business-as-usual activity	Status	Lead organisation	Contributors (financial and in-kind)	Dependencies
<p>Action 4.1: Develop an overarching communication and engagement strategy and deliver targeted activities relevant to the stakeholder group (industry, community, government)</p> <p>Expected benefit and outcome:</p> <p>To mitigate the risk of <i>Xylella fastidiosa</i> transmission through raising biosecurity awareness among stakeholder groups (industry, community, government).</p> <p>Initiate project(s) to develop an overarching communication and engagement strategy and deliver targeted activities relevant to the stakeholder group (industry, community, government).</p> <p>Priority: high</p> <p>Time frame: short term</p>	4.1.1 Continue current engagement and communication activities to raise awareness of Xylella and plant biosecurity	Ongoing – business as usual	All stakeholders	All stakeholders	Supports many other action areas
	4.1.2 Hold face-to-face activities to raise <i>Xylella fastidiosa</i> awareness	<p>Completed – project finished (2023)</p> <p>Online discussion and industry articles were developed by the National Xylella Coordinator (position now finished).</p> <p>A xylella workshop was held at the Australian Plant Pathology Society Conference 2023.</p>	Jurisdiction National Xylella Coordinator	PHA, Commonwealth	Not applicable
<p>Action 4.2: Build national surveillance and diagnostics capability and capacity through training and post graduate opportunities.</p> <p>Expected benefit and outcome: To increase Australia’s detection and</p>	4.2.1 Induct and deploy personnel without a plant/horticulture background into surveillance roles under a xylella scenario	<p>Pending</p> <p>Exercises planned in 2021 to test arrangements to induct and deploy personnel without a plant/horticulture background into surveillance roles under a xylella scenario.</p> <p>Proposed exercise with Agriculture Victoria cancelled due to ongoing COVID-19 situation and response workload of Agriculture Victoria staff.</p>	SPHD National Xylella Coordinator	Commonwealth	Supports many other action areas, including action 2.1

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Action	Project or business-as-usual activity	Status	Lead organisation	Contributors (financial and in-kind)	Dependencies
response capability in relation to <i>Xylella fastidiosa</i> through building expertise.		National Xylella Coordinator: this position is finished.			
Commonwealth to consider use of funding to develop laboratory capability for <i>Xylella</i> spp., including relating to professional development opportunities. Priority: high Time frame: ongoing	4.2.2 Building DAFF’s in-house R&D diagnostic capability	Deleted In 2023, this project was agreed to be deleted, because it is a generic project and not specific to xylella. PIC@PEQ has established ‘In-house’ diagnostic capability to develop and validate new molecular tests to rapidly and reliably identify exotic pests and diseases. PIC@PEQ’s diagnostic team work in partnership with external research agencies, policy developers and operational end users to ensure new diagnostic technologies are fit for purpose, evidence based and ‘adoption ready’ for operational implementation.	Commonwealth (BPSSD, PIO)	Not applicable	Not applicable
	4.2.2 MinION: Faster accurate border diagnostics (Implementation phase)	Completed – project finished (2023) Third-generation sequencing platform, Oxford Nanopore Technologies (ONT, Oxford, UK) MinION is the smallest and most user-friendly sequencer enabling rapid and cost-effective identification of species at the border. Compared with existing diagnostics, MinION: <ul style="list-style-type: none">• Enables real-time analysis of DNA or RNA fragments for rapid detection• Is portable and field-adaptable• Provides immediate access to results• Allows multiplexing samples• Offers a more cost-effective and faster alternative to Sanger sequencing Hort Innovation Xylella coordinator (MT17006) (horticulture.com.au)	Commonwealth (BPSSD, PIO, PIC)	Not applicable	Supports many other action areas

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Action	Project or business-as-usual activity	Status	Lead organisation	Contributors (financial and in-kind)	Dependencies
	4.2.4 PhD Project: Developing a cost effective HTS system for identifying all plant viruses	Deleted In 2023, this project was agreed to be deleted because it is a generic project and not specific to xylella. The PhytoPath v5 sequencing pipeline is a third generation sequencing platform that offers in-house MinION sequencing combined with hybrid capture technology that offers a cost-effective, rapid and sensitive probe-based sequencing system. Can be combined with different outputs to suit a range of departmental detection needs. A single-use assay for all plant viruses across multiple hosts.	Commonwealth (BPSSD, PIO)	Not applicable	Not applicable
	4.2.3 To be determined	Deleted In 2023, this project was agreed to be deleted because there is project detail and no related action in 2.1.	Commonwealth (BPSSD, PIO)	To be determined	Relates to action 2.1
Action 4.3: Establish governance arrangements to coordinate and monitor national actions. Expected benefit and outcome: To increase Australia’s detection and response capability in relation to <i>Xylella fastidiosa</i> through, among other things, the coordination of cross-sectoral biosecurity preparedness and high-priority RD&E. Priority: high Time frame: short term	4.3.1 The Plant Biosecurity Preparedness Working Group will coordinate input into the National Xylella Action Plan to focus prioritisation preparedness discussions	Ongoing – business as usual The Plant Health Committee has established the Plant Biosecurity Preparedness Working Group consisting of representatives from jurisdictions and PHC. A Terms of Reference and 2021 Workplan have been developed. The working group will provide a mechanism to support progress against the National Xylella Action Plan.	PBPWG	Commonwealth (PPEBD), Jurisdictions	Supports many other action areas Supports: <ul style="list-style-type: none"> National Khapra Beetle Action Plan action 4.2 National Hitchhiker (Contaminating) Plant Pest Action Plan action 4.2
	4.3.2 Develop governance proposal for the National Xylella Action Plan	Ongoing – business as usual A proposal to further develop governance is being provided to PHC for consideration. In the future the Commonwealth will submit an evaluation proposal to PHC for consideration for the formal 5-year review of the plan and input	Commonwealth (PPEBD)	Not applicable	Supports many other action areas Supports: <ul style="list-style-type: none"> National Khapra Beetle Action Plan 2021–2031 action 4.2

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Action	Project or business-as-usual activity	Status	Lead organisation	Contributors (financial and in-kind)	Dependencies
		from annual xylella forums will be taken into account.			<ul style="list-style-type: none"> National Hitchhiker (Contaminating) Plant Pest Action Plan 2022-2032 action 4.2
<p>Action 4.4: Map suitability zones for the spread and survival of Xylella, considering the dynamics between xylella, plant hosts, vectors, and the Australian environment.</p> <p>Expected benefit and outcome: To increase Australia’s detection and response capability in relation to <i>Xylella fastidiosa</i> through more targeted surveillance of high-risk locations.</p> <p>Priority: medium</p> <p>Time frame: medium term</p>	4.4.1 Map suitability zones for the spread and survival of xylella species., considering the dynamics between <i>Xylella</i> spp., hosts, vectors and the Australian environment	<p>Completed – project finished (2023)</p> <p>The completed ‘Draft pest risk analysis for bacterial pathogens in the genus <i>Xylella</i>’ (agriculture.gov.au) has mapped suitability zones for establishment of xylella species, and also for four key vectors, within the Australian environment.</p> <p>Draft pest risk analysis for bacterial pathogens in the genus Xylella (agriculture.gov.au)</p>	Commonwealth (PPEBD) PSARA	Not applicable	Relates to action 1.3 project 1.3.1 and action 2.5
<p>Action 4.5: Identify research and development priorities for investment.</p> <p>Expected benefit and outcome: To improve preparedness and response capability in relation to incursions by <i>Xylella fastidiosa</i> through the coordination of R&D to focus investment on national R&D priorities and projects.</p> <p>Priority: medium</p>	4.5.1 National Xylella Coordinator has completed developing a national research and development investment program	<p>Completed – project finished</p> <p>Hort Innovation Xylella coordinator (MT17006) (horticulture.com.au)</p>		Wine Australia Hort Innovation	<p>Relates to action 3.4 Supports:</p> <ul style="list-style-type: none"> National Khapra Beetle Action Plan action 2021-2031 4.3 National Hitchhiker (Contaminating) Plant Pest Action Plan 2022-2032 4.3

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Action	Project or business-as-usual activity	Status	Lead organisation	Contributors (financial and in-kind)	Dependencies
Time frame: medium term					
<p>Action 4.6: Assess the potential environmental and economic impacts of xylella.</p> <p>Expected benefit and outcome: To gain an improved understanding of the impact of a <i>Xylella fastidiosa</i> incursion on the Australian economy as part of an ongoing evaluation of biosecurity investment priorities.</p> <p>Priority: high</p> <p>Time frame: short term</p>	4.6.1 Develop a report on the economic impacts of <i>Xylella fastidiosa</i> on the Australia wine grape and wine making industries	<p>Completed – project finished</p> <p>This report has been published on the ABARES website:</p> <p>Economic impacts of <i>Xylella fastidiosa</i> on the Australian wine grape and wine making industries</p>	Commonwealth (ABARES)	Not applicable	Supports many other action areas
	4.6.2 Develop a report on the impacts of <i>Xylella fastidiosa</i> on Australian horticulture and the environment	<p>Completed – project finished</p> <p>This report has been published on the ABARES website:</p> <p>Protecting Australia’s horticultural industries from disease: The impacts of <i>Xylella fastidiosa</i> on Australian horticulture and the environment</p>	Commonwealth (ABARES)	Not applicable	Supports many other action areas
<p>Action 4.7: Support international collaboration with researchers, experts, and laboratories to build national capability and to deliver relevant actions from the plan.</p> <p>Expected benefit and outcome: To improve national preparedness and response capabilities in relation to <i>Xylella fastidiosa</i> by engagement and collaboration with experts in the field.</p> <p>Priority: high</p> <p>Time frame: ongoing</p>	4.7.1 Ongoing engagement with university and government research institutes including formal engagement with EUPHRESKO through PBRI into <i>Xylella fastidiosa</i> research activities in addition to direct connections with key researchers in the USA and Europe	<p>Ongoing – business as usual</p> <p>A NSW researcher undertook international travel to meet and collaborate with international counterparts on xylella in 2023. Was successful in bringing back some samples for research in Australia, including dormant xylella-infected plant samples, plus xylella cultures (under an approved permit).</p>	Commonwealth (PPEBD) PBRI Jurisdiction	Not applicable	Relates to action 1.2
	4.7.2 Viticulture Industry Biosecurity Reference Group established to provide principles and recommendations for sectors to follow in relation to preparedness, prevention and response activities	<p>Ongoing – business as usual</p> <p>The National Xylella Coordinator position has finished. May now be referred to as the National Wine Biosecurity Committee (chaired by Hill-Smith Family Estates)</p>	National Xylella Coordinator (prior to 2023) PHA (prior to 2023) Hill-Smith Family Estates	Not applicable	Not applicable

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Action	Project or business-as-usual activity	Status	Lead organisation	Contributors (financial and in-kind)	Dependencies
			Australian Grape and Wine		

Glossary

Term	Definition
ABARES	Australian Bureau of Agricultural and Research Economics and Sciences
BPSSD	Biosecurity Plant and Science Service Division (DAFF)
CSIRO	Commonwealth Scientific and Industrial Research Organisation
DAFF	Department of Agriculture, Fisheries and Forestry
NPBDN	National Plant Biosecurity Diagnostic Network (through SPHD)
NPHSP	National Plant Health Surveillance Program (through SNPHS)
PBPWG	Plant Biosecurity Preparedness Working Group (under PHC)
PBRI	Plant Biosecurity Research Initiative
PHA	Plant Health Australia
PHC	Plant Health Committee
PIC	Plant Innovation Centre (DAFF)
PIO	Plant Import Operations (DAFF)
PPEBD	Plant Protection and Environmental Biosecurity Division (DAFF)
PSARA	Plant Sciences and Risk Assessment (DAFF)
SNPHS	Subcommittee on National Plant Health Surveillance (under PHC)
SPHD	Subcommittee on Plant Health Diagnostics (under PHC)

Acknowledgement of Country

We acknowledge the Traditional Custodians of Australia and their continuing connection to land and sea, waters, environment and community. We pay our respects to the Traditional Custodians of the lands we live and work on, their culture, and their Elders past and present.

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