National Plant Biosecurity Diagnostic Strategy Implementation Plan 2021-2031





Australian Government Department of Agriculture, Water and the Environment

Prepared by Plant Health Australia, with funding provided through the Agricultural Competitiveness White Paper.

Acknowledgements

The *National Plant Biosecurity Diagnostic Strategy Implementation Plan* was prepared by Plant Health Australia (PHA) for the Commonwealth of Australia (Department of Agriculture, Water and the Environment).

PHA would like to acknowledge the input of the Subcommittee on Plant Health Diagnostics (SPHD) and other plant biosecurity diagnostic stakeholders into the development of this implementation plan. Plant Health Australia also gratefully acknowledges the contributions made by the Strategy Advisory Group. The group comprised:

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This project was an initiative funded under the Agricultural Competitiveness White Paper and supports the Australian Government's continued focus on growing agricultural exports.

Subcommittee on Plant Health Diagnostics (SPHD)

SPHD provides leadership in plant pest diagnostics policy, standards and coordination for Australia. The subcommittee was established in December 2004 by the Plant Health Committee to sustain and improve the quality and reliability of plant pest diagnostics in Australia. Key roles and responsibilities of SPHD include:

- reviewing and developing diagnostic policies, protocols and standards
- reviewing, developing and implementing strategies to address national capability and capacity issues
- endorsing National Diagnostic Protocols
- coordinating and fostering the National Plant Biosecurity Diagnostic Network
- coordinating national capability building through a professional development framework
- driving the development and uptake of accreditation and quality management systems for diagnostic laboratories
- improving the surge capacity of diagnostic services to support plant pest responses.

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ISBN 978-0-6453914-2-8

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Overview

The *National Plant Biosecurity Diagnostic Strategy Implementation Plan* (implementation plan) has been developed to support the rollout of the *National Plant Biosecurity Diagnostic Strategy 2021–2031* (the strategy).

The strategy is structured around a shared vision and outlines goals and expected outcomes for implementation. It provides a framework to strengthen Australia's plant biosecurity diagnostic system and ensure Australia has the people, resources, infrastructure, policies, standards and tools to provide delivery of plant pest diagnostic services. The vision, goals and expected outcomes are shown below.



Each goal is supported by a series of actions that will guide and support policy relating to the delivery of plant pest diagnostic services and inform investment in research and development. The actions can also be used to guide state/territory, regional and local efforts or efforts by individual governments, plant industries and stakeholder groups.

The implementation plan complements the goals and actions presented in the strategy. It has been developed to measure progress and provide more detail on the implementation of these measures, including performance measures, key contributors¹ and indicative timeframes for delivery². A planned timeline for implementing the different components of the strategy is provided in Appendix 1 – Implementation plan timeline.

Together the strategy and implementation plan form part of a suite of strategies that supports the broader national biosecurity system through their alignment with the Intergovernmental Agreement on Biosecurity and the National Plant Biosecurity Strategy.

1 A key contributor is considered to be an organisation and/or group that contributes cash or in-kind support towards the delivery of an action in the strategy.

2 All timeframes are indicative and should not preclude the commencement of any actions before the date set out in the implementation plan.



Governance

The National Plant Biosecurity Strategy Implementation Group (implementation group) will oversee implementation, reporting and review of the suite of national plant biosecurity strategies to ensure continued alignment and complementarity across the strategy suite.

The implementation group will be coordinated by PHA and include representatives from the following groups:

- PHA
- Australian Government Department of Agriculture, Water and the Environment
- Plant Health Committee (PHC)
- Subcommittee on Plant Health Diagnostics (SPHD)
- Subcommittee on National Plant Health Surveillance
- Plant Biosecurity Preparedness Working Group (or similar)
- Environment and Invasives Committee
- Plant Industries Biosecurity Committee
- Plant Biosecurity Research Initiative (PBRI)
- A non-government organisation with environmental and/or community interests.

Representatives, with support from PHA, will be responsible for integrating and influencing the work of the group they represent in delivering or supporting delivery of the actions identified in the strategies.

Action plans

The strategy will be supported by detailed action plans to ensure a more coordinated and focused approach.

The action plans will outline the specific tasks required for each action to achieve the outcomes, goals and vision in the strategy. These plans will also identify organisations and/or groups with responsibility for implementing each task, resources required and timeframes. To ensure tasks achieve the intended quality, value and applicability, a program logic approach could be used that includes process and outcome components of how the implementation measures the impact of actions.

Development of the action plans will be guided by the implementation group in consultation with relevant plant pest diagnostic stakeholders, national committees and/or working groups.

Review and reporting

The implementation group will monitor and review progress in implementing the strategy. Annual evaluation reports will be developed and presented to PHC, SPHD and PBRI. A comprehensive review of implementation will be undertaken on two occasions, in the fourth and the eighth year.

The status reports and findings from the review will be made publicly available and used by the implementation group to refresh the strategy, implementation plan and action plans. This process will ensure national, regional and local effort in delivering the 2031 vision remains agile and responsive to changing priorities and a changing biosecurity context.

National Plant Biosecurity Diagnostic Strategy at a glance

Vision	A plant biosecurity diagnostic system that sustains and improves the quality and					
Goals	Strengthen national and international diagnostic connections	Develop the expertise required to enable the delivery of world-class plant pest diagnostics	Promote the use of innovative tools, technologies and approaches for improved diagnostics			
Actions	 1.1 Develop the National Plant Biosecurity Diagnostic Network (NPBDN) to be the central coordination point for all activities within the national diagnostics system. 1.2 Extend membership of the NPBDN to better connect the broader diagnostic system. 1.3 Foster global partnerships and connections with different sectors to encourage collaboration and increase responsiveness. 	 2.1 Address current and emerging gaps in the capacity of the national diagnostic system. 2.2 Deliver professional development pathways for diagnosticians. 	 3.1 Develop and implement a framework to assess the suitability of tools, technologies and approaches for the national diagnostic system. 3.2 Identify, assess and promote laboratory and in field diagnostic methods that increase diagnostic capacity and support surveillance activities. 3.3 Develop, update and endorse National Diagnostic Protocols and facilitate the use of non NDP resources for priority and emerging plant pests. 3.4 Enhance community and citizen science contributions to diagnostics. 			
Expected outcomes	A world-class coordinated plant biosecurity diagnostic system built on expertise shared through national and global collaboration	Australia has the highest calibre of plant pest diagnostic expertise to identify priority and emerging plant pests	Australia has fit for purpose tools and strategies to identify priority and emerging plant pests			
Implementation	National Plant Biosecurity Diagnostic Strategy					

reliability of diagnostic outcomes to support Australia's economy, environment and community

Ensure appropriate, sustainable and coordinated resourcing to support the diagnostic system	5 Coordinate systems, policies and infrastructure to deliver reliable diagnoses	Enhance data analytics to inform biosecurity decision making
 4.1 Design and adopt a framework to assess the current and future needs of the diagnostic system in terms of human resources, skills and infrastructure. 4.2 Establish the critical and appropriate resource requirements for the national diagnostic system. 4.3 Identify and implement appropriate funding and resource allocation models. 	 5.1 Implement and maintain proficient quality laboratory and management procedures for the diagnostic system. 5.2 Develop and maintain appropriate national reference standards. 5.3 Ensure access to equipment, consumables and other resources to deliver reliable diagnoses. 5.4 Develop improved processes to facilitate the collection, storage and rapid transfer of positive controls (including live) and suspect samples. 	 6.1 Implement and maintain an interoperable and integrated national diagnostic information management system to capture, share and analyse data. 6.2 Ensure capability for best practice management of diagnostic data within the NPBDN. 6.3 Enhance the quality and accessibility of reference collections across Australia.
The national plant biosecurity diagnostic system is sustainably resourced to identify priority and emerging plant pests	Australian plant pest diagnostics are delivered to a world-class standard	Enhanced biosecurity decision-making supported by coordinated and accurate diagnostic data
implementation Plan and action plan	5	

Strategic direction to 2031

GOAL 1

STRENGTHEN NATIONAL AND INTERNATIONAL DIAGNOSTIC CONNECTIONS

EXPECTED OUTCOME:

A world-class coordinated plant biosecurity diagnostic system built on expertise shared through national and global collaboration

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Performance indicators					
Short term (1–3 years)	 Increase in NPBDN membership both nationally and internationally outside of government representatives/organisations. 				
	 Strong linkages established with multiple international diagnostic networks, such as the National Plant Diagnostic Network (USA) and the Association of Southeast Asian Nations (ASEAN) Regional Diagnostic Network. 				
	 Independent review of the NPBDN completed with outcomes addressed. 				
Medium term (4–6 years)	 All plant pest diagnostic training in Australia is listed on the NPBDN website. 				
	 NPBDN membership increased by 100 per cent compared to 2020. 				
	 Increased engagement within the NPBDN membership as evidenced by participation in development events, and an up-to-date and relevant website. 				
Long term	 NPBDN is the recognised facilitator of plant pest diagnostic training in Australia. 				
(7–10 years)	 NPBDN is recognised internationally for excellence in plant pest diagnostics. 				
	 Increase in participation by NPBDN members in international diagnostic forums. 				
	 Independent review of the NPBDN completed with outcomes addressed. 				

Action	Priority	Timeframe	Key contributors (cash and in-kind)	Dependency
1.1 Develop the National Plant Biosecurity Diagnostic Network to be the central coordination point for all activities within the national diagnostic system.	High	Ongoing	 Australian Government State/territory governments PHA Plant industries 	Links to 1.2, 1.3, 2.1, 2.2
1.2 Extend membership of the National Plant Biosecurity Diagnostic Network to better connect the broader diagnostic system.	Medium	Ongoing	Australian GovernmentState/territory governmentsPHA	Links to 1.1
1.3 Foster global partnerships and connections with different sectors to encourage collaboration and increase responsiveness.	Medium	Ongoing	 Australian Government State/territory governments PHA Research and development corporations Australian Centre for International Agricultural Research 	Links to 1.1

DEVELOP THE EXPERTISE REQUIRED TO ENABLE THE DELIVERY OF WORLD-CLASS PLANT PEST DIAGNOSTICS

EXPECTED OUTCOME: Australia has the highest calibre of plant pest diagnostic expertise to identify priority and emerging plant pests

Performance indicators					
Short term (1–3 years)	• Critical gaps in the human capacity (i.e. people with technical skills) of the national diagnostic system identified.				
	 Mitigation plan developed to address identified gaps in human capacity across the national diagnostic system. 				
	 Professional development framework aligned to critical gaps in human capacity across the national diagnostic system. 				
	 Professional development pathways for new diagnosticians identified. 				
	 Mechanisms to measure national diagnostic expertise investigated. 				
Medium term	 Emerging gaps in the human capacity of the national diagnostic system identified. 				
(4–6 years)	Diagnostic expertise available through NPBDN to identify nationally prioritised plant pests.				
	 National Plant Health Proficiency Testing Program outcomes reviewed as one measure of national diagnostic expertise. 				
	 Mechanisms established for the ongoing review and monitoring of diagnostic expertise. 				
Long term	 Emerging gaps in the human capacity of the national diagnostic system identified. 				
(7–10 years)	 National Plant Health Proficiency Testing Program outcomes reviewed as one measure of national diagnostic expertise. 				

Action	Priority	Timeframe	Key contributors (cash and in-kind)	Dependency
2.1 Address current and emerging gaps in the capacity of the national diagnostic system.	Very high	Ongoing	 Australian Government State/territory governments PHA Research and development corporations Diagnostic providers¹ 	Links to 1.1, 1.2, 2.2 and 4.1
2.2 Deliver professional development pathways for diagnosticians.	High	Ongoing	 Australian Government State/territory governments PHA Plant industries Research and development corporations 	Links to 1.1, 1.2 and 2.1

1 An institution engaged in plant pest diagnostics including universities, consultants and museums.



PROMOTE THE USE OF INNOVATIVE TOOLS, TECHNOLOGIES AND APPROACHES FOR IMPROVED DIAGNOSTICS

EXPECTED OUTCOME:

Australia has fit-for-purpose tools and strategies to identify priority and emerging plant pests

Performance in	dicators
Short term (1–3 years)	 Framework developed and endorsed to assess the minimum requirements for the adoption of new tools, technologies and approaches.
	 Reference standards developed and endorsed to cover non-National Diagnostic Protocol (NDP) resources for priority and emerging plant pests.
Medium term (4–6 years)	 Suitability of tools, technologies and approaches identified through the framework.
	 Increase in the number of NDPs for nationally prioritised plant pests.
	 Increase in the adoption of in-field and laboratory-based diagnostic methods.
	 Mechanisms identified to support citizen science contributions to diagnostics.
Long term	• Suitability of all new tools, technologies and approaches assessed against the framework.
(7–10 years)	 Increase in the adoption of new tools, technologies and approaches across the national diagnostic system.
	• All NDPs have diagnostic procedures to support surveillance for inclusion of in-field approaches.

Action	Priority	Timeframe	Key contributors (cash and in-kind)	Dependency
3.1 Develop and implement a framework to assess the suitability of tools, technologies and approaches for the national diagnostic system.	High	Short term	 SPHD 	Links to 3.2 and 3.4
3.2 Identify, assess and promote laboratory and in field diagnostic methods that increase diagnostic capacity and support surveillance activities.	Very high	Ongoing	 Australian Government State/territory governments PHA Research and development corporations Diagnostic providers¹ 	Links to 3.1
3.3 Develop, update and endorse National Diagnostic Protocols (NDPs) and facilitate the use of non NDP resources for priority and emerging plant pests.	High	Ongoing	 Australian Government State/territory governments PHA Research and development corporations Diagnostic providers¹ 	Links to 5.2
3.4 Enhance community and citizen science contributions to diagnostics.	Medium	Long term	 Australian Government State/territory governments Research and development corporations Diagnostic providers¹ 	Links to 3.1

• Increase in the number of citizens actively contributing to plant pest diagnostics.

1 An institution engaged in plant pest diagnostics including universities, consultants and museums.

ENSURE APPROPRIATE, SUSTAINABLE AND COORDINATED RESOURCING TO SUPPORT THE DIAGNOSTIC SYSTEM

EXPECTED OUTCOME: The national plant biosecurity diagnostic system is sustainably resourced to identify priority and emerging plant pests

Performance indicators					
Short term (1–3 years)	 Framework developed and endorsed to assess the current and future needs of the national plant biosecurity diagnostic system. 				
	 Assessment of current and future needs of the national diagnostic system completed. 				
Medium term (4–6 years)	• Resource requirements identified to enable the delivery of world-class plant pest diagnostics.				
	 Sustainable funding model developed for the national plant biosecurity diagnostic system, including a mechanism for evaluation. 				
Long term (7–10 years)	 Sustainable funding model implemented for the national plant biosecurity diagnostic system and evaluated on a regular basis. 				

Action	Priority	Timeframe	Key contributors (cash and in-kind)	Dependency
4.1 Design and adopt a framework to assess the current and future needs of the diagnostic system in terms of human resources, skills and infrastructure.	Very high	Short term	 Australian Government State/territory governments SPHD Plant industries 	Links to 2.1, 4.2 and 5.3
4.2 Establish the critical and appropriate resource requirements for the national diagnostic system.	High	Ongoing	 Australian Government State/territory governments Plant industries 	Links to 4.1 and 5.3
4.3 Identify and implement appropriate funding and resource allocation models.	High	Ongoing	Australian GovernmentState/territory governmentsPlant industries	Links to 4.1 and 4.2

COORDINATE SYSTEMS, POLICIES AND INFRASTRUCTURE TO DELIVER RELIABLE DIAGNOSES

EXPECTED OUTCOME: Australian plant pest diagnostics are delivered to a world-class standard

Performance in	dicators						
Short term	• An enhanced National Plant Health Proficiency Testing Program is in place within the NPBDN.						
(1–3 years)	• Sustainable funding model developed for the National Plant Health Proficiency Testing Program.						
	 Needs analysis for reference standards across the national plant biosecurity diagnostic system completed. 						
	 Reference standards developed for high throughput testing. 						
	 Positive control requirements determined for all priority plant pests. 						
	 Improved process endorsed to facilitate the movement/sharing of all necessary diagnostic materials, including positive controls, within the NPBDN and into Australia. 						
	 Participation in the development of IPPC diagnostic standards. 						
	 Diagnostic data is recognised internally to support market access. 						
Medium term (4–6 years)	 Reference standards endorsed for high throughput testing, sample and, in-field diagnostic methods testing. 						
	 Audit of the capacity and capability across the NPBDN conducted (equipment/technology/ human resources/data sharing platform). 						
	 All priority plant pests have accessible and appropriate positive controls within the NPBDN that are connected via a centralised database. 						
	 Participation in the development of IPPC diagnostic standards. 						
Long term	All NPBDN laboratories participate in National Plant Health Proficiency Testing Program.						
(7–10 years)	 A self-sustainable National Plant Health Proficiency Testing Program is in place within the NPBDN. 						
	 Agreements established to allow for the sharing/cross-utilisation of equipment and resources by laboratories across the NPBDN. 						

Action	Priority	Timeframe	Key contributors (cash and in-kind)	Dependency
5.1 Implement and maintain proficient quality laboratory and management systems for the diagnostic system.	High	Ongoing	 Australian Government State/territory governments PHA All laboratories involved in plant biosecurity 	
5.2 Develop and maintain appropriate national reference standards.	High	Ongoing	Australian GovernmentState/territory governments	Links to 3.3
5.3 Ensure access to equipment, consumables and other resources to deliver reliable diagnoses.	Very high	Ongoing	 Australian Government State/territory governments Diagnostic providers¹ 	Links to 4.2
5.4 Develop improved processes to facilitate the collection, storage and rapid transfer of positive controls (including live) and suspect samples.	High	Short term	Australian GovernmentState/territory governmentsSPHD	

• Participation in the development of IPPC diagnostic standards.

1 An institution engaged in plant pest diagnostics including universities, consultants and museums.

ENHANCE DATA ANALYTICS TO INFORM BIOSECURITY DECISION MAKING

EXPECTED OUTCOME:

Enhanced biosecurity decision-making supported by coordinated and accurate diagnostic data

Performance in	dicators						
Short term	Needs analysis of national diagnostic information systems conducted.						
(1–3 years)	• NPBDN reference collection databases are accessible nationally through a virtual environment.						
Medium term (4–6 years)	Data standards and system requirements developed.						
	 Review of the diagnostic information systems used within the NPBDN conducted. 						
	All reference collection material is current and digitised.						
	• Increase in the number of specimens that meet nationally agreed reference collection standards.						
Long term	 Appropriate information system established that facilitates the sharing of diagnostic data. 						
(7–10 years)	 All specimens (or specimen details) in reference collections are accessible nationally through a virtual environment. 						

• Most specimens critical for the diagnosis of priority plant pests available long-term in reference collections.

Action	Priority Timeframe		Key contributors (cash and in-kind)	Dependency
6.1 Implement and maintain an interoperable and integrated national diagnostic information management system to capture, share and analyse data.	High	Long term	 Australian Government State/territory governments PHA Diagnostic providers¹ 	
6.2 Ensure capability for best practice management of diagnostic data within the National Plant Biosecurity Diagnostic Network.	High	Medium term	 Australian Government State/territory governments Research providers² 	
6.3 Enhance the quality and accessibility of reference collections across Australia.	High	Long term	 Australian Government State/territory governments Diagnostic providers¹ Reference collections 	Relies on delivery of the National Plant Pest Reference Collections Strategy

1 An institution engaged in plant pest diagnostics including universities, consultants and museums.

2 A provider that does research, and can develop diagnostics, yet does not deliver diagnostics.

Appendix 1. Implementation Plan Timeline¹

VERY HIGH PRIORITY HIGH PRIORITY MEDIUM PRIORITY

Goal 1. Strengthen national and international diagnostic connections

Acti	on
1.1	Develop the NPBDN to be the central coordination point for all activities within the national diagnostic system.
1.2	Extend membership of the NPBDN to better connect the broader diagnostic system.
1.3	Foster global partnerships and connections with different sectors to encourage collaboration and increase responsiveness.
Goa	l 2. Develop the expertise required to enable the delivery of world-class plant pest diagnostics
Acti	on
2.1	Address current and emerging gaps in the capacity of the national diagnostic system.
2.2	Deliver professional development pathways for diagnosticians.
Goa	l 3. Promote the use of innovative tools, technologies and approaches for improved diagnostics
Acti	on
3.1	Develop and implement a framework to assess the suitability of tools, technologies and approaches for the national diagnostic system.
3.2	Identify, assess and promote laboratory and in field diagnostic methods that increase diagnostic capacity and support surveillance activities.
3.3	Develop, update and endorse National Diagnostic Protocols (NDPs) and facilitate the use of non NDP resources for priority and emerging plant pests.
3.4	Enhance community and citizen science contributions to diagnostics.
Goa	l 4. Ensure appropriate, sustainable and coordinated resourcing to support the diagnostic system
Acti	on
4.1	Design and adopt a framework to assess the current and future needs of the diagnostic system in terms of human resources, skills and infrastructure.
4.2	Establish the critical and appropriate resource requirements for the national diagnostic system.
4.3	Identify and implement appropriate funding and resource allocation models.
Goa	l 5. Coordinate systems, policies and infrastructure to deliver reliable diagnoses
Acti	on
5.1	Implement and maintain proficient quality laboratory and management procedures for the diagnostic system.
5.2	Develop and maintain appropriate national reference standards.
5.3	Ensure access to equipment, consumables and other resources to deliver reliable diagnoses.
5.4	Develop improved processes to facilitate the collection, storage and rapid transfer of positive controls (including live) and suspect samples.
Goa	l 6. Enhance data analytics to inform biosecurity decision making
Acti	on
6.3	Implement and maintain an interoperable and integrated national diagnostic information management system to capture, share and analyse data.
6.3	Ensure capability for best practice management of diagnostic data within the NPBDN.
6.3	Enhance the quality and accessibility of reference collections across Australia.
1 All	timeframes are indicative and should not preclude the commencement of any actions before the date set out in the implementation plan.

2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31

2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31

2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31

2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31

2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31

2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31

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Australian Government Department of Agriculture, Water and the Environment

Prepared by Plant Health Australia, with funding provided through the Agricultural Competitiveness White Paper.