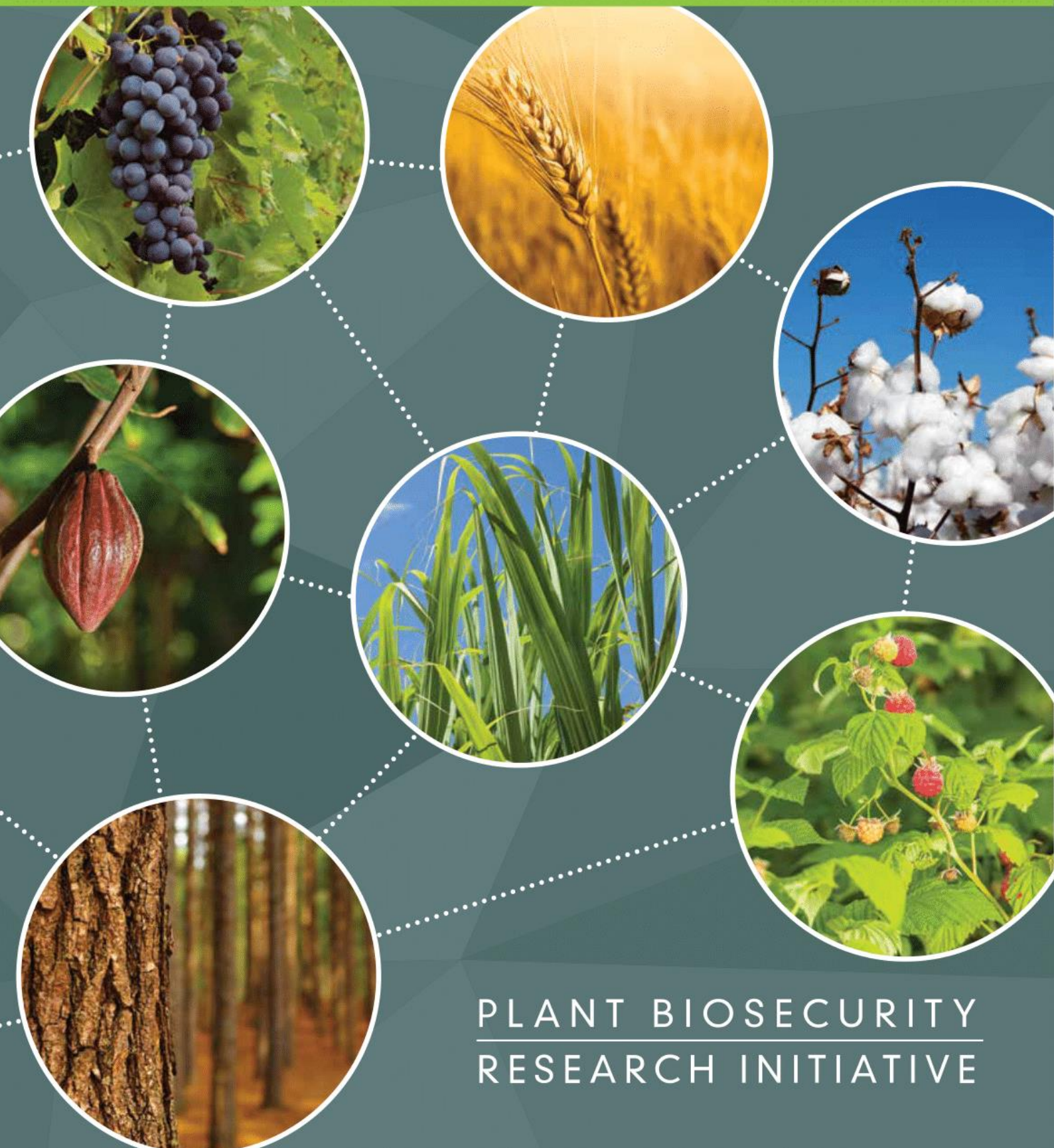
PHASE I REPORT 2017-2020

July 2020



PLANT BIOSECURITY RESEARCH INITIATIVE

PBRI Purpose

To drive efficiency and impact in plant biosecurity RD&E across industries, through coordinated and targeted investment.

PBRI Vision

Recognised as the leading source of RD&E excellence in biosecurity across plant industry sectors with benefits to the environment.

Outcome Statement

Australia has long term capability for high impact RD&E to safeguard and minimise the impact of plant biosecurity threats to our plant production industries.

Strategic Goals

- Coordinate investment in plant biosecurity RD&E to support Australia's plant production system.
- Promote and facilitate collaboration for better plant biosecurity outcomes.
- Build and retain RD&E capability in plant biosecurity based on a strong culture of innovation and science.

PBRI Key Focus Areas of Research

Preparedness | Diagnostics | Surveillance | Management | Capability Building | Industry Resilience

PBRI parties

- AgriFutures Australia
- Cotton Research and Development Corporation (CRDC)
- Council of Rural Research and Development Corporations
- Australian Government Department of Agriculture, Water, and the Environment (DAWE)
- Forest and Wood Products Australia (FWPA)
- Grains Research and Development Corporation (GRDC)
- Horticulture Innovation Australia Limited
- Plant Health Australia (PHA)
- Sugar Research Australia (SRA) Limited
- Wine Australia

PBRI contributes to implementing the strategic direction of the **Intergovernmental Agreement for Biosecurity** report and the **National Biosecurity Committee** priorities.

Acknowledgements

The PBRI members dedicate this report to our foundation member, Dr Kim Ritman (DAWE), who tragically passed away in September 2020. We would like to recognise his enthusiasm and advocacy for the PBRI and acknowledge his important role in the initiation of the Australian chapter of the International Year of Plant Health.

The establishment of the PBRI committee has been a genuine collaboration of all members past and present, sharing their knowledge, time, and good will towards improving the coordination of biosecurity RD&E investment across plant industry sectors.

While many of the following people have changed roles over the last three years, their significant contribution in establishing the PBRI needs to be duly acknowledged, as they have been integral to its success so far.

Dr David Moore (formerly General Manager (GM) Research Marketing and Investment, Hort Innovation) and Mr Greg Fraser (formerly Executive Director and CEO of PHA) played a critical role in driving and initiating the cross-sectoral collaboration. Mr Michael O'Shea (Executive Manager Operations, SRA) and Dr Ian Taylor (CEO, CRDC) provided excellent advice on a strategic framework for PBRI. Other substantial contributions were made by Dr Kevin Clayton-Greene (biosecurity consultant) who wrote a position paper that identified the need for a cross-sectoral investment vehicle, such as PBRI. Dr Dave Alden (formerly GM AgriFutures), Mr Michael Beer (GM AgriFutures) and Dr Chris Lafferty (GM FWPA) all provided strategic insights and advice to assist in the establishment of the PBRI. Ms Josephine Kwan (Executive Assistant, Hort Innovation) and Ms Georgia Garlick (formerly Graphic Designer PHA) for their tireless assistance in delivering the successful PBRI Symposium, and Ms Sharon Abrahams (Communications Officer, PHA) for communications support.

Executive Summary

Plant biosecurity continues to be a challenge for Australian agriculture with several incursions of high priority pests and diseases affecting industry over the past three years.

The recent arrival of pests that affect multiple crops, such as the fall armyworm in the northern regions of Australia and the repeated detection of brown marmorated stink bug (BMSB) at our borders, are a reminder that biosecurity remains a constant issue for Australian agriculture and associated communities.

Australia's national biosecurity system relies on partnerships between the Australian and state and territory governments, local governments, industry, environmental bodies, land managers and the broader community. This system is facing continued biosecurity challenges arising from increasing global and domestic trade and travel.

Continued investment in research development and extension (RD&E) in plant biosecurity is vital to the sustainability of our plant production systems. In the past however, investments have been confined to single industry issues with a need to explore national collaborative cross-sectoral RD&E investment.

To address the need for better coordination and national collaboration in plant biosecurity research, the Plant Biosecurity Research Initiative (PBRI) was established in June 2017. This collaboration emphasised the importance of coordinated biosecurity RD&E and building and maintaining critical expertise for Australian plant-based industries.

In 2017-2018, the plant research and development corporations (RDCs) collectively invested $118 million into biosecurity RD&E on industry-specific issues. The PBRI collaboration provides a vehicle to leverage some of this investment with a focus on cross-sectoral biosecurity issues, to optimise impact for Australian plant industries and to better align to broader national goals.

In this report, we describe how the PBRI established a successful collaboration model aiming to minimise duplication in plant biosecurity RD&E investment.

The PBRI Strategy and Investment Plan were developed to provide a national framework outlining priority areas for collaboration and co-investment activities. Since 2017, fifteen collaborative projects have been coordinated and contracted though PBRI members in six Key Focus Areas.

Examples of these projects include:

- a Xylella diagnostics project and Xylella coordinator position
- the R&D for Profit projects - iMapPESTS and national diagnostic capability building
- Post Entry Quarantine diagnostics
- DNA detection of BMSB; and
- the PBRI Symposium.

These projects are delivered by research providers from state jurisdictions, Australian universities, CSIRO, and Plant and Food New Zealand.

The total value of the portfolio over the three-year period, including cash and in-kind, is approximately $50 million.

The PBRI has been identified as a successful RD&E collaboration model by the European group, the European Phytosanitary Research Coordination (Euphresco) network, in a paper that was submitted to *Nature Plants* in March 2020.

Through Memorandums of Understanding (MOUs) the PBRI has been extending the concept of collaboration and RD&E investment efficiency to international partnerships with Better Border Security (B3) New Zealand and Euphresco.

The PBRI recently played an important role in supporting the national efforts of the UN-declared 2020 International Year of Plant Health. To mark the beginning of the year, an Australian launch at Parliament House was delivered with follow-up communications and activities planned across the year.

In a recent submission to the Minister for Agriculture's review on Modernising the Research and Development Corporation system, it was outlined how the PBRI supports a modern collaborative RDC system through:

- coordination of investment and delivering better value for money for levy payers and taxpayers who fund the RDC system,
- core activities that are focussed on cross-industry and government collaboration, and
- participation across the agricultural innovation system, targeting long-term cross-sectoral and transformative R&D.

The PBRI members have created a quarterly forum for sharing RD&E opportunities to leverage investments in research. Identifying common biosecurity outcomes and building national research capacity together has been an impressive achievement of this initiative.

An independent review of the PBRI found that stakeholders acknowledge the critical importance of PBRI in driving collaboration of national plant biosecurity RD&E and they envisage even greater benefits from the next phase of the PBRI.

Dr Jo Luck

PBRI Program Director

31 July 2020

Contents

1. Introduction

In June 2017, the plant industry RDCs agreed to collaborate on a new Plant Biosecurity Research Initiative, prompted by the need for:

- Less duplication and greater efficiencies in investing in biosecurity RD&E through setting research priorities across plant industries together
- Better connectivity of researchers to growers and government through a coordinated development and delivery of RD&E
- Coordinated support for the next generation of plant biosecurity experts to continue to uphold robust biosecurity for Australian plant industries into the future

The PBRI was created to drive efficiency and impact in plant biosecurity RD&E across industries, through coordinated and targeted investment that supports the long-term protection of Australia's plant sector from biosecurity threats.

The initiative will develop innovative tools, knowledge, and capacity to be used across plant industries and regional communities to safeguard them from the consequences of pests entering and establishing in Australia.

To support Australia's plant production industries, the PBRI aims to:

- Identify and coordinate national plant biosecurity RD&E priorities through consultation with industry, state, and Australian government biosecurity agencies
- Support cross-sectoral research that avoids duplication between RDCs, leading to greater efficiency with shared biosecurity outcomes
- Promote collaboration between industry, researchers, government, and the community to support coordinated and targeted cross-sectoral outcomes
- Translate R&D efforts through to extension and adoption by including end-users in the design and delivery of proposed research
- Increase links with strategic partners to leverage national and international investment opportunities

All Australian rural industries operate in a complex and dynamic environment and face a common set of evolving challenges and opportunities due to global, national, and local change.

The arrival and spread of damaging invasive species can have wide-ranging short and long-term impacts across industries. Our national biosecurity system relies on a partnership between the Australian and state and territory governments, industry and environmental groups, and the broader public.

Biosecurity works at the pre-border, border and across the states and regions to prevent and respond to the arrival and spread of harmful pests and diseases. This arrangement is facing new challenges arising from a significant increase in global trade and travel.

A continued investment in cross-sectoral RD&E is vital to support a strong biosecurity system, contributing to:

- Preparing for and preventing pests, diseases and weeds entering Australia
- Accurately detecting and diagnosing the biosecurity threat with gold standard diagnostics
- Quickly responding to minimise the damage caused by a pest if it enters the country before widespread damage occurs
- Providing intelligence and quality assurance to maintain and grow market access for plant industries
- Protecting Australia's unique natural environment

2. PBRI Membership

The PBRI is a partnership between Australia's seven plant Research and Development Corporations, Plant Health Australia and the Australian Government Department of Agriculture, Water and the Environment.

Each PBRI member organisation includes plant biosecurity and plant health RD&E as priority areas in their strategic plans, and this is reflected in PBRI's strategy. All 10 parties were signatories to the PBRI collaboration agreement, which was effective from June 2017 to June 2020.

The PBRI members are:

- AgriFutures Australia
- Cotton Research and Development Corporation
- Council of Rural Research and Development Corporations
- Australian Government Department of Agriculture, Water, and the Environment
- Forest and Wood Products Australia
- Grains Research and Development Corporation
- Horticulture Innovation Australia Limited
- Plant Health Australia
- Sugar Research Australia Limited
- Wine Australia

The PBRI committee membership includes General Managers of R&D or equivalent, the Australian Chief Plant Health Officer (DAWE), the CEO of Plant Health Australia, the Executive Officer of the Council of Rural RDCs and the Program Director of the PBRI (see below).

During the first phase of PBRI, Greg Fraser presided as Chair of PBRI and Tim Lester as Deputy Chair.

PBRI Committee members as of June 2020

Mr John Smith

General Manager, Research
AgriFutures Australia

Ms Susan Maas

R&D Investment & Impact Manager
Cotton RDC

Ms Jodie Mason

Forest Research Manager
Forest and Wood Products Australia

Dr Liz Waters

General Manager, RD&E
Wine Australia

Dr Ken Young

Senior Manager Crop Protection
GRDC

Dr Alison Anderson

General Manager, Research and Development
Hort Innovation

Dr Kim Ritman

Australian Chief Plant Protection Officer
Department of Agriculture

Dr Harjeet Khanna

General Manager, Research Funding Unit
Sugar Research Australia

Mr Greg Fraser

Executive Director and Chief Executive Officer
Plant Health Australia

Dr Jo Luck

Program Director
Plant Biosecurity Research Initiative

Mr Tim Lester

Executive Officer
Council of Rural Research and Development Corporations

The strategic outcomes of the member organisations align well to the objectives of the PBRI (**Table 1**).

TABLE 1. STRATEGIC AREAS FOR EACH PBRI MEMBER WHICH ALIGNS TO PBRI STRATEGY

PBRI member's Strategic Plan	Relevant strategic outcome area aligned to PBRI Strategy
AgriFutures Australia Strategic R&D Plan (2017 - 2022)	**Arena 1:** People and Leadership **Arena 2:** National challenges and opportunities
Cotton RDC Strategic R&D Plan (2018 - 2023)	**Goal 1:** Protection from biotic threats and environmental stresses **Goal 3:** Science and innovation capability and new knowledge
Forestry and Wood Products Australia Strategic Plan (2018 - 2023)	**Outcome 1** Increased productivity **Outcome 5** Increased industry capacity
Grains RDC RD&E Plan (2018 - 2023)	Biosecurity is part of the core Framework underpinning the GRDC RD&E Plan **Objective 1** Improve yield and yield stability **Objective 3** Optimise input costs
Hort Innovation Strategic Plan (2016 - 2018)	Support industry efficiency and sustainability Improve productivity of the supply chain through innovative technologies Drive the horticulture value chain capacity Drive long term domestic and export growth
Sugar Research Australia Strategic Plan (2017/18 – 2021/22)	**Key Focus Area 2:** Soil health, nutrient management, and environmental sustainability **Key Focus Area 3:** Pest, disease and weed management **Key Focus Area 7:** Knowledge and technology transfer and adoption **Key Focus Area 8:** Capability development, attraction, and retention
Wine Australia Strategic Plan (2015 - 2020)	**Strategy 4:** Improving resource management and sustainability **Strategy 7:** Enhancing market access **Strategy 8:** Building capability
Plant Health Australia	Minimise plant pest impacts Enhance Australia's plant health status Assist trade of Australia's produce Safeguard the livelihood of producers Support the future of Australia's plant industries and communities Preserve Australia's environmental health and amenity
Department of Agriculture, Water, and the Environment	Various - see **Table 2**

The goals and key focus areas for this strategy were closely aligned to eight national plant biosecurity strategies in addition to individual PBRI member strategies.

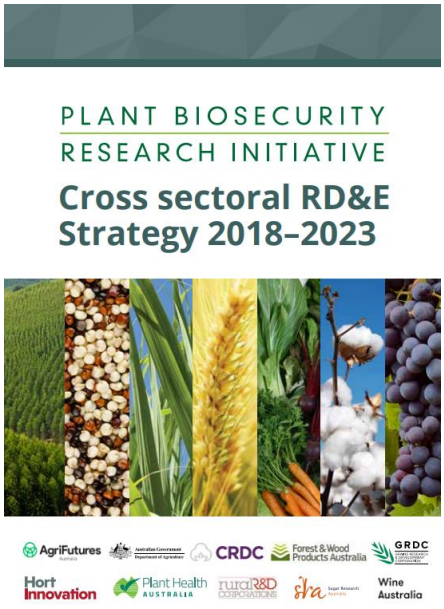
TABLE 2: ALIGNMENT TO INDUSTRY AND AUSTRALIAN GOVERNMENT STRATEGIES

National Strategy	Aligned strategic recommendations and goals
Priorities for Australia's Biosecurity System (Intergovernmental Agreement on Biosecurity 2012)	Clear national biosecurity research and investment (R&I) priorities are needed to focus investment, and improved coordination of biosecurity R&I is needed to drive cross-sectoral research, technological developments, and behavioural change.
Department of Agriculture and Water Resources Biosecurity RD&E Strategic Statement 2018-2025	Establish, promote, and review RD&E priorities to guide investment decisions. Plan and conduct activities and projects collaboratively to maximise return on investment. Ensure research projects provide scientifically sound evidence to inform policy decisions. Implement and communicate opportunities and new approaches to biosecurity operations.
National Plant Biosecurity RD&E Strategy (Primary Industries Standing Committee 2013-2016)	Develop, implement, and evaluate Australia's long-term strategic RD&E needs and priorities. Promote and facilitate collaboration. Coordinate RD&E effort between sector specific and this cross-sector strategy to ensure maximum benefit to all stakeholders and to minimise duplication of effort. Monitor Australia's RD&E capability.
Agriculture Competitiveness White Paper (Australian Government 2015)	Boost Australia's emergency pest and disease eradication capability. Improve biosecurity surveillance and analysis nationally, including in northern Australia.
Decadal Plan for Agriculture (Australian Academy of Science 2017-2026)	Prevent invasive weeds, pests and diseases entering the country. Respond more effectively to novel incursions with the aim of elimination. Devise efficient, durable methods for countering those that are already present and cannot be eliminated.
National Science and Innovation Agenda (NISA 2015)	Collaboration: Australia's rate of collaboration between research and industry sectors is the lowest in the OECD. We need to encourage Australia's world-class researchers and businesses to collaborate to shape our future industries and generate wealth. We will change funding incentives so that more university funding is allocated to research that is done in partnership with industry; and invest over the long term in critical, world-leading research infrastructure to ensure our researchers have access to the infrastructure they need.
Rural R&D for Profit priority area (2015-2022)	To improve understanding and evidence of pest and disease pathways to help direct biosecurity resources to their best uses, minimising biosecurity threats and improving market access for primary producers.

3. PBRI Cross-sectoral RD&E Strategy

A PBRI strategy was developed by drawing on a range of national strategies, including the seven RDC strategies, the Intergovernmental Agreement for Biosecurity (IGAB) review, the National Plant Biosecurity RD&E Strategy, the National Biosecurity Committee RD&E priorities, and the Decadal Plan for Agriculture from the Australian Academy of Science (see **Table 2**).

The PBRI RD&E Strategy is a primary planning document, providing a high-level framework and direction for coordinating and implementing cross-sectoral priorities for national plant biosecurity RD&E.



The five-year Strategy outlines a vision, goals, investment model and planned impact of the Initiative to protect Australia's plant production industries through RD&E excellence, which will have benefits to the environment.

Through this Strategy, the PBRI aims to deliver efficiencies in plant biosecurity RD&E through strong leadership, national and international collaboration, and better coordination of existing resources.

The PBRI represents a coherent system for setting, reviewing, and funding biosecurity research priorities across plant industries. It also provides a process for the assessment and distribution of RD&E findings in plant biosecurity. The Initiative will enhance the connectivity of researchers through to end-users by involving industry and government stakeholders in the priority setting process and the funding and delivery of RD&E.

The strategy contains six Key Focus Areas for collaboration and co-investment, including: Preparedness, Diagnostics, Surveillance, Sustainable management of pests, diseases, and weeds, Capability Building and Industry Resilience.

One measure of success of the PBRI will be in the demonstration of advances in these Key Focus Areas which will contribute to the national plant biosecurity system, the economy, and the broader community.

The PBRI has a set of agreed principles it will operate under:

- Provide leadership and coordination to ensure research is well-targeted and innovative
- Long-term investment in new knowledge and skills across all plant industries
- Support cross-sectoral research to avoid duplication leading to greater efficiency, with outcomes shared across industries
- Provide a mix of short, medium, and long-term research
- Strengthen industry's connections to National Plant Biosecurity frameworks

4. Concept development and evaluation

At the start of the PBRI, cross-sectoral ideas for RD&E research were submitted on an agreed concept template for consideration by the PBRI members. Feedback on each concept was provided and the concepts were either progressed through to contracting or deemed not suitable for further development.

Concepts were received and assessed against the PBRI strategy six Key Focus Areas at each quarterly meeting. If a concept had cross-sectoral benefit and aligned to the PBRI strategy, interested RDCs progressed the concept through to contracted projects, subject to RDC processes and funding availability.

One or more PBRI members co-invested in a project at the contracting stage through a process agreed to by the investing parties. The concepts generally were subjected to an open tender process, with responses assessed by an evaluation panel before contracting the successful research provider. All milestones and payments are managed by the lead RDC.

The development and refinement of research ideas with research providers through PBRI was not compatible with subsequent open tender processes run by most of the RDCs.

As such, from January 2020 the PBRI will move to targeted project development for cross-industry research, based on its agreed annual investment plan.

5. R&E prioritisation and Investment Plan

Gap analysis

A list of investments in plant biosecurity was extracted from the PHA status report (2017). This inventory included active RD&E projects funded from 1 July 2017 and was used as background to identify gaps in RD&E across sectors.

Additional investments made by RDCs and the DAWE were documented, and gaps and priorities were identified (Canberra workshop, January 2018).

PBRI Symposium RD&E prioritisation

In August 2019 at the PBRI Symposium, a panel session was held on future RD&E priorities, chaired by Susan Maas (CRDC) and including Dr James Buwalda (Chair B3), Dr David Teulon (Director B3), Greg Fraser (Chair PBRI) and Dr Jo Luck (Program Director PBRI).

After presentations on a broad range of research, the audience was asked to contribute their ideas for priorities via polling. The response will be used to develop the 2020-2021 Annual Investment Plan.

The 2019-2020 Annual Investment Plan

The PBRI Annual Investment Plan describes the research investments planned for 2019-2020 supporting the PBRI strategic goals and meeting research priorities. This is the PBRI's annual planning document which implements the PBRI Strategy, providing direction for coordinating cross-sectoral priorities.

The information in the Investment Plan is gathered from several key documents or

consultations, such as the PBRI Agreement, the PBRI Strategy and the PBRI RD&E priority setting workshops held in January 2018.

The Investment Plan aligns to our vision, goals, investment model and planned impacts outlined in our three-year strategy (**Table 3**) to protect Australia's plant production industries through RD&E excellence which will have benefits to the environment.

Coordinated Investment Model

The PBRI funding is managed by a lead RDC with co-investment made by other interested RDCs, providing additional cash support. The collective cross-sectoral research is targeted and coordinated by the PBRI.

Hort Innovation has agreed to manage the PBRI, and assume responsibility for the administration, monitoring, performance delivery and evaluation of the PBRI delivery under the terms and conditions of the Agreement.

Funds may be leveraged by external sources e.g. through research providers cash and in-kind investments, and/or where eligible, through other national or international funding schemes e.g. Rural R&D for Profit.

Cross sectoral research contracting is managed by a nominated PBRI member organisation with co-investment made by other interested PBRI members, providing additional cash on a project-by-project basis.

The management of these research investments is the responsibility of the respective lead RDC.

TABLE 3: RELATIONSHIP BETWEEN THE PBRI STRATEGY AND THE INVESTMENT PLAN

STRATEGY 2018-2023					INVESTMENT PLAN 2019-2020
	Who we are	A collaboration between the nation's plant Research and Development Corporations, Plant Health Australia and the Department of Agriculture, Water and the Environment			
	Our purpose	To drive efficiency and impact in plant biosecurity RD&E across industry, through coordinated and targeted investment			
	Our vision	Protecting Australia's plant industries through RD&E excellence in plant biosecurity with benefit to the environment			
	Our outcome statement	Australia has long term capability for high impact RD&E to safeguard and minimise the impact of plant biosecurity threats for our plant production industries			
	Strategic Goals	**Key Focus Areas**	**Key Outcomes**	**Cross-sectoral Investment Priorities***	
	1. Coordinate investment in plant biosecurity RD&E to support Australia's Plant Biosecurity system (includes all 6 Key Focus Areas)	1.Preparedness	Industry is better prepared for the arrival of a biosecurity threat	1.1-1.4	
		2.Diagnostics	Rapid, accurate and cost-effective detection of high priority pests and diseases at the border and in-field	2.1-2.4	
		3.Surveillance	Cost effective and coordinated surveillance activities for pests and diseases that pose the greatest threat to our export markets	3.1	
	2. Promote and facilitate collaboration for better Plant Biosecurity outcomes (Key Focus Area 5&6)	4.Management	Management of pests and diseases with minimal impact to the environment and trade	4.1-4.2	
		5.Capability Building	Developing capability in plant biosecurity to support industry into the future	5.1-5.3	
	3. Build & retain RD&E capability in plant biosecurity based on a strong culture of innovation & science (Key Focus Area 5)	6.Industry resilience	Greater participation of industry in biosecurity decision making to reduce economic and social consequences	6.1	

*See **Attachment 1**

6. Implementation of PBRI Strategic Goals

Achievements 'at a glance'

Strategic Goals	PBRI Achievements 2017-2020
1. Coordinate investment in plant biosecurity RD&E to support Australia's plant biosecurity system	• In June 2020, approximately $50 million of RD&E investment has been coordinated to protect Australian Agriculture and the environment from the serious consequences of high priority pest threats • For the first time, ten PBRI member organisations signed a collaboration agreement for a three-year program, facilitating collaboration and coordination of plant biosecurity RD&E • A new cross-sectoral Strategy was developed to provide a framework to guide the coordination of investment • A PBRI Trans-Tasman and cross-sectoral Xylella and brown marmorated stink bug (BMSB) R&D workshop was held in December 2018 • An independent review found the PBRI had coordinated investment in projects of national significance which will make a real difference to plant biosecurity
2. Promote and facilitate collaboration for better plant biosecurity outcomes	• Collaboration of all plant RDCs, states and territories has been achieved in 14 RD&E projects (see below) • An MOU was signed between PBRI and B3 NZ in November 2018 to increase Trans-Tasman biosecurity RD&E collaboration • An MOU with the European Plant Health network, Euphresco, was signed in February 2020. This MOU has facilitated a new collaboration on Xylella insect vectors • PBRI committee members played an expert advisory role, contributing to national plant biosecurity strategies such as the National Surveillance Strategy, the National Diagnostic Strategy, the National Plant Biosecurity RD&E Strategy, and the National Biosecurity Statement • The appointment of a 2020 International Year of Plant Health coordinator has led to the development of partnerships with peak industry bodies, such as GreenLife Australia, to promote the year's UN messages • A paper on Global Science Diplomacy for Plant Health, led by Euphresco and co-authored by PBRI members, was accepted for publication by the prestigious journal *Nature Plant* in June 2020 • An independent review found the collaborations and formal partnerships achieved by PBRI were highly beneficial with recommendations made to continue to strengthen and expand strategic partnerships
3. Build and retain RD&E capability in plant biosecurity based on a strong culture of innovation and science	• Biosecurity expertise and capability is being developed and maintained around the country in each PBRI investment • In August 2019, the inaugural PBRI Symposium was held in Brisbane which included presentations from award winning high school students and RDC supported PhD students • PhD students have been included in the co-investments made through PBRI e.g. National Diagnostics Project

6.1 Strategic Goal 1: Coordinate investment in plant biosecurity RD&E to support Australia's Plant Biosecurity system

The PBRI has coordinated 15 investments since its establishment in 2017 (**Attachment 1**), which are outlined below.

PBRI Program

The first phase of PBRI was financially supported by all seven plant RDCs with significant funding from PHA (50%). The project included the full-time Program Director position, supported to drive PBRI activities included in this report. The program funds were managed by Hort Innovation according to the collaboration agreement. The funding also provided the resources to complete an independent review of the three-year program. The aim of this review was to determine if the original goals were met and to identify areas that could strengthen and build on PBRI's achievements.

iMapPESTS

This project was contracted during the first year of PBRI and aligns to the objectives and principles of the PBRI Strategy. The iMapPESTS project is a collaboration of government, industry, and science to develop a mobile cross-industry plant pest surveillance network, which will provide information to primary producers and government on endemic, established, trade sensitive or exotic pests. The project will work towards enhanced pest management, biosecurity, and area freedom. iMapPESTS aims to validate a proof-of-concept surveillance system that can rapidly monitor and report the presence of high-priority pests and diseases.

Improving preparedness of the Australian horticultural sector to the threat potentially posed by *Xylella fastidiosa*

This project is funded across the horticulture sector, linked to a Xylella coordinator position (below) and focused on enabling the quick and accurate detection of the number one plant biosecurity threat to Australia, *Xylella*.

The project will review and allow Australia to adopt world's best practice methods for detecting and identifying strains of the *Xylella fastidiosa* bacteria, if it is introduced. This project will develop state-of-the-art diagnostic tools, technologies, and protocols to screen plant material entering the country and to support active surveillance programs. It will provide associated training to technical staff in diagnostic laboratories.

Improved Post Entry Quarantine Diagnostics

This project will deliver next generation sequencing tools to fast-track screening for pathogens of imported horticultural plant material in post-entry quarantine facilities.

The technology has the potential to allow plants to move through the quarantine process much more quickly – allowing industry earlier access to new germplasm.

Currently, plant material entering Australia can spend up to three years in post-entry quarantine facilities undergoing pathogen testing. Next generation sequencing offers a fast, reliable, and cost-effective method to identify all known plant pathogens in a single test.

This Hort Innovation and DAWE investment will provide technology that can be adopted for other plant commodities.

Xylella coordinator

The role is a joint initiative between Wine Australia and Hort Innovation to coordinate research and emergency response activities to improve Australia's preparedness. Experienced biosecurity and emergency response coordinator, Craig Elliott (below), was appointed to work with a national steering committee to coordinate the program to safeguard the nation against Xylella. Xylella is an exotic bacteria that has the potential to infect many different plant industries (over 500 host species). The Coordinator will manage cross-sectoral biosecurity preparedness, act in a liaison role for potentially affected sectors, and ensure there is national awareness and coordination of high-priority RD&E to prevent the disease arriving and establishing in Australia.

Xylella vectors

This project, funded by Wine Australia, Hort Innovation and DAWE, will develop knowledge on potential Xylella insect vectors, to support a biosecurity response to a Xylella incursion. It aims to identify potential vectors of *X. fastidiosa* in Australian plant industries at risk, understand the population dynamics of identified insects, understand the plant host range of potential vector species, and understand the biology and feeding behaviour of potential vectors on selected plants at risk.

Xylella vector *Philaenus spumarius* (Image: Tomasz Klejdysz, shutterstock.com)

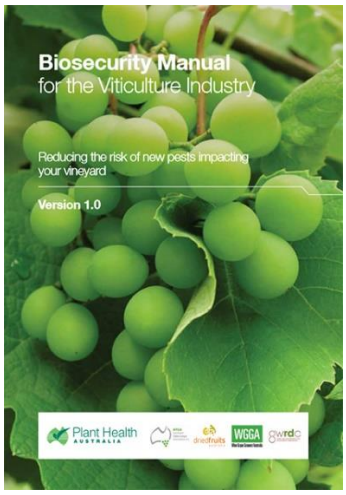
Area Wide Management for cropping systems weeds

This project will identify the benefits, key principles and practices of successful weed Area Wide Management (AWM) by developing

an improved understanding of the bio-physical, geographic, economic and social drivers of AWM success through studying key weed species across diverse landscapes. The project will also characterise and identify the social and economic costs and benefits of weed management across a range of land uses. This project aims to take an area-wide approach across three pilot areas: The Darling Downs, the Riverina and Sunraysia.

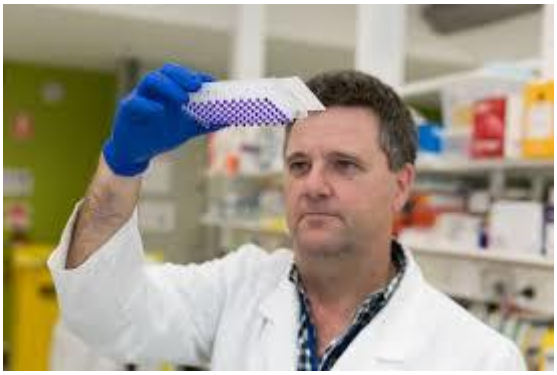
Review of the Biosecurity Plan and Manual for the Viticulture Industry

This project will deliver an updated viticulture biosecurity plan for the grape-growing industries and was supported by Wine Australia and Hort Innovation. The biosecurity plan, developed by PHA, is a national document identifying high-priority endemic and exotic pests and diseases, along with the risk mitigation activities required to reduce their biosecurity threat for growers. The project will also deliver a biosecurity manual with key information on managing biosecurity threats, as well as series of fact sheets detailing high-priority threats for the industry.



Boosting diagnostic capacity for plant production industries

This project was successfully funded under the Rural R&D for Profit scheme on National Diagnostic capability building for Australian plant industries. This large project includes all plant RDCs, PHA, all states and territories and B3NZ. The project aims to integrate industry networks into the national diagnostic network and build capability for the early detection and accurate diagnosis of high priority pests.



Environmental (e)DNA detection of Brown Marmorated Stink Bug (BMSB)

The project led by Hort Innovation with co-investment by Wine Australia and the DAWE focuses on eDNA based assays and sampling protocols for the real-time detection of BMSB. The technology will be developed to increase the sensitivity and cost-efficiency of detection of this species in biosecurity activities. The eDNA methods and assays will be field-tested as part of a collaborative project with Plant and Food Research New Zealand in an outbreak area such as Santiago, Chile, with sensitivity and cost-efficiency modelling used to determine optimised sampling protocols for Australia (and New Zealand). This project will build on this research to establish eDNA as a key detection tool for BMSB surveillance and outbreak activities in Australia and New Zealand.

2020 International Year of Plant Health

The United Nations declared 2020, the International Year of Plant Health, creating a unique opportunity to elevate the importance of plant health to the world.

As part of IYPH, the PBRI members co-funded a project to support an events coordinator position, a launch, a dedicated website, communications plan and activities across the year such as school activities, field demonstrations, videos, and social media campaigns.

The funds supported the appointment of an Australian event coordinator for the International Year of Plant Health, Ms Michelle Portelli (see below).

The year was officially launched on 6 February in Australia at Parliament House by the Minister for Agriculture, the Hon David Littleproud (see below).

As the dedicated event coordinator, Michelle works closely with the IYPH steering committee, chaired by DAWE, the RDCs and their industries, Plant Health Australia and the state primary industry agencies to develop a calendar of events to highlight the IYPH to the broader community.

Throughout the year, Michelle will be working with the community, to introduce them to growers, researchers, gardeners, scientists, biosecurity specialists and 'plant health heroes' to create a greater appreciation of what plant health means to our everyday lives.

Inaugural PBRI Plant Biosecurity RD&E Symposium

The inaugural PBRI Plant Biosecurity Research Symposium was held at the Queensland State Library in Brisbane on the 15 and 16 August 2019. A gathering of 220 researchers, industry and state and federal government plant biosecurity practitioners participated in the two days. The purpose of the symposium was to share plant biosecurity RD&E across plant industries in Australia and New Zealand, with an aim to avoid duplication of research on common biosecurity themes. This 'sold-out' event was the first-time biosecurity research, supported by seven plant RDCs and Better Border Biosecurity (B3) New Zealand, had been discussed in one forum. The program included an industry panel session on RD&E priorities from an industry perspective, which will inform future PBRI investment. The intention is to hold this event biannually and will alternate with a similar B3NZ event held every second year. For more detail see the Symposium report.

Podcasts for Fall armyworm management in northern farming systems

In response to the Fall armyworm arrival in northern Australia in March 2020, increased grower awareness of the pest was required. Several proposed regional workshops were placed on hold due to COVID-19 travel restrictions; however, this was adapted to delivering grower podcasts. This CRDC-led project was co-funded by GRDC, Hort Innovation, AgriFutures and SRA. Featuring interviews with international experts, two podcasts with Australian scientists on current advice and knowledge gaps and four podcasts featuring growers and advisors covering tropical and sub-tropical areas of Australia (Burdekin, Atherton, Katherine and Kunanurra). PHA will deliver the podcasts in addition to a digital resource on FAW and RD&E gaps will be identified.

FAW Genetics and Preparedness

This co-investment brings together partners in government, RDCs, the private sector and the research community to address an immediate priority – the characterisation of FAW in Australia and South East Asia.

A detailed gap analysis will include pre- and post-incursion RD&E priorities, a communication and extension strategy and contingency plan for Fall Armyworm.

Data that will be key to management strategies, such as the molecular characterisation of insecticide resistance, will be also delivered in this project.

Bioclay

This investment aims to minimise the economic impact of pest infestation on vegetables and cotton through the development of an innovative topical protection medium, BioClay. The high-tech BioClay spray is anticipated to prime the plant's own defences, which has been likened to how a vaccine works, helping the plant to naturally attack specific crop pests and pathogens. Co-investors include CRDC, GRDC, Hort Innovation and the Australian Research Council.

6.2 Strategic Goal 2: Promote and facilitate collaboration for better Plant Biosecurity outcomes

Collaboration Agreement

The independent review of PBRI recognised a high level of collaboration has been achieved, particularly between member RDCs, Plant Health Australia and the Australian Government through the DAWE.

This collaboration is supported by having an agreement in place which outlines the aims, principles, and governance of the Initiative. This was developed and signed by all members. Collaboration between members is also underpinned by the PBRI Strategy which sets an agreed direction for collaborative projects over a five-year timeframe.

Committee Meetings

Quarterly committee meetings have been held at member offices around the country with structured agendas focussed on delivering the strategic goals. As of 30 June 2020, there have been 12 PBRI Meetings held (**Attachment 2)**. The continued high representation at these meetings has been a testament to the commitment and sense of collaboration of members in driving the PBRI forward.

Collaboration with the states

Collaboration between the state jurisdictions and PBRI has been advanced by national projects contracted through PBRI e.g. the national diagnostics capability building project and iMapPESTS. The states and territory and plant RDCs were included as cash or in-kind contributors on these projects.

The independent review recommended further collaboration with the states should be considered through similar large-scale national plant biosecurity projects and ideally through more strategic engagement.

Contribution to National Strategies and collaborations

PBRI committee members contributed an expert advisory role to national plant biosecurity strategies such as the following:

- National Surveillance Strategy
- National Diagnostic Strategy
- National Plant Biosecurity RD&E Strategy

International Partnerships

Better Border Biosecurity (B3) New Zealand

In August 2018, an MOU was signed with Better Border Biosecurity (B3) New Zealand which outlines the intention to collaborate on Biosecurity R&D with the PBRI. The B3 unincorporated joint venture integrates investment and expertise from five science agencies – Plant & Food Research, AgResearch, Scion, Landcare Research, the Bio-Protection Research Centre at Lincoln University - and three New Zealand end-user partners - the Ministry for Primary Industries, the Department of Conservation and the New Zealand Forest Owners Association. The PBRI - B3 MOU underpins a collaboration to focus on preventing shared biosecurity threats with greater efficiency around investments between the two countries.

Regular discussions throughout 2018-2020 were held between Directors, David Teulon and Jo Luck, to ensure potential synergies were maximised. This included the following activities:

- Joint planning for a Trans-Tasman *Xylella* and BMSB workshop in December 2018

- Joint planning for the PBRI Symposium in August 2019, including a range of NZ speakers
- Collaboration on research projects - boosting national diagnostic capacity for plant production industries, eDNA detection of BMSB, iMapPESTS and native insect vectors of *Xylella*

A review of the achievements against this MOU by the Chairs and Program Directors found that the collaboration is working well with some improvements to make on developing biosecurity expertise through Trans-Tasman professional development and networks. The intention is to continue this collaboration in line with the next phase of the PBRI in a more strategic manner.

Euphresco

The PBRI also signed an MOU with an international counterpart, the European Phytosanitary Research Coordination (Euphresco), to share topics of research investment so as to identify areas for collaboration. The purpose is to make sure Australia is not duplicating research already underway in Europe (where appropriate) and linkages are made on projects focussed on biosecurity threats of mutual concern, such as *Xylella*.

Under the MOU, regular meetings are being held with the Coordinator, Baldissera Giovani. The process for interacting with Euphresco researchers, International Year of Plant Health initiatives, and a specific European – Australian biosecurity collaboration have been discussed. The first Euphresco collaboration will be with the Australian team investigating native insect vectors in Australia with SASA, a Scottish science agency working on the same topic.

6.3 Strategic Goal 3: Build and retain RD&E capability in plant biosecurity based on a strong culture of innovation and science

Education and Training

In 2018, PhD students funded by the RDCs were identified with a view to provide professional development or networking opportunities as a national plant biosecurity cohort.

Some RDCs have PhD scholarship programs, awarding stipends each year, others invest in projects where PhD scholarships are often built into research program. Some examples are:

- CRDC offer summer scholarships, Honours stipends and travel exchanges, and entrepreneurial bootcamps. In 2018 they supported five PhD students.
- SRA had a PhD scholarship supported as part of the R&D4P diagnostic project and usually have two postgraduate scholarships on offer per year. Other PhDs have been embedded in projects. SRA also offer Early and Mid-Career Research awards (two per year, $10-15K).
- In 2019, FWPA invested in a PhD student working on Giant Pine Scale through La Trobe University.Wine Australia had six PhD students in biosecurity in 2018 in the areas of diagnostics, surveillance, and pest management. They also offer an 'Incubator Initiative' which supports early career researchers working with regional grape and wine associations and groups on regionally specific research.
- Capability building is a focus for every GRDC investment and the existing bilateral agreements support capability for research providers.
- Hort Innovation had eight fruit fly PhD projects linked to the SIT-Plus initiative in 2018. There were also training and capability projects identified in biosecurity for banana, avocado and vegetable industries.
- Under the Hort Frontiers Leadership Fund, a program was established to increase graduate interest in careers across the horticulture sector and build a new pool of industry leaders by drawing on the networks of young professionals to drive innovation across the sector.
- AgriFutures have a focus on developing agtech through entrepreneurial engagement, e.g. GrowAg, Think Tank, AgriHack, SproutX. They support undergraduate, post graduate and industry professional development through Horizon, Science & Innovation Awards, Nuffield Australia, and through postgraduate positions that are embedded in research projects.

The PBRI Symposium was a successful forum for students to be involved in sector networking and to deliver presentations in the 'fast science' sessions, which was an opportunity to highlight their biosecurity research.

7. Communications

Communications plan

A communications plan for the PBRI aims to ensure the way in which the Initiative activities are communicated is appropriate, credible, inclusive, and of high quality.
The main communications goal is to undertake a strategic and coordinated approach to ensure stakeholders and interested parties are adequately informed of the objectives, activity, and outcomes from project. Key objectives include:

- **Raising awareness of the PBRI** - ensuring that key target audiences are made aware of the PBRI, its role, value proposition, independence, and professionalism.
- **Building the credibility of the Initiative and its work** - PBRI to be recognised and acknowledged within government, industry, and the community as a leader in supporting nationally coordinated plant biosecurity RD&E.
- **Facilitating a coordinated communication strategy** – relevant and engaging information generated by the Initiative is distributed to target audiences.
- Consistent branding - to provide a unified response on national plant biosecurity RD&E supported by the PBRI.
- **Responsibility for implementation of PBRI communications** - oversight and ownership of the plan rests with the Management Committee. Assistance with delivery of the communications plan was provided by the communications staff of all partners, predominantly PHA and Hort Innovation.

Digital communications activities

Website

The PBRI website contains information about our purpose, members, goals, strategy and news and events.

The target audience for the website is primarily biosecurity researchers and PBRI members.

Web analytics from 1 October 2017 to 30 June 2020 show:

- 6,356 users, 10,384 sessions, 20,906 page views
- 60% of visitors were from Australia, 20% from the United States, 4% from New Zealand
- 49% got to the site through direct visits, 35% through searches, 10% referrals, and 5% from social media.

Twitter

The PBRI Twitter account, @BiosecurityRDE, was established at the time of the PBRI Symposium (July 2019). As of June 2020, there were 450 followers.

The purpose of the Twitter account is to continue to raise the profile of the PBRI among the research community in Australia and internationally. It also serves as a vehicle for communicating research projects and outcomes.

Publications

Refereed journals

Luck, J., Elliott, C. and Lee, I. (2019) Australian Wine Biosecurity - Are we keeping up?

Proceedings from the 17th Australian Wine Industry Technical Conference pp 56-60.

Giovani, B., Blümel, S., Lopian, R. *et al.* Science diplomacy for plant health. *Nat. Plants* **6,** 902–905 (2020). https://doi.org/10.1038/s41477-020-0744-x (2020)

Non-referred publications

National Biosecurity statement (2018) https://www.agriculture.gov.au/sites/default/files/sitecollectiondocuments/biosecurity/national-biosecurity-statement.pdf

Presentations

As part of communicating the establishment of PBRI, the Program Director was invited to present at a variety of meetings, conferences, and workshops

Media

The following print articles were published during the first phase of PBRI:

- http://www.fruitnet.com/asiafruit/article/172614/jo-luck-to-head-up-biosecurity-initiative
- http://www.theaustralianagronomist.com/coordinated-defence-against-australias-most-threatening-plant-disease/
- https://ausveg.com.au/articles/bright-future-for-plant-health-research/
- https://farmtable.com.au/australia-and-nz-join-forces-on-plant-biosecurity-research/
- https://grdc.com.au/resources-and-publications/groundcover/groundcovertm-129-july-august-2017/plant-biosecurity-research-initiative
- https://hmaaustralia.com.au/trans-tasman-alliance-to-stamp-out-threats-to-national-biosecurity/
- https://leadingagriculture.com.au/plant-biosecurity-to-be-strengthened/
- https://minister.awe.gov.au/littleproud/media-releases/pbri-renewal
- https://olivebiz.com.au/research-initiative-ramps-up-plant-biosecurity-investment/
- https://olivebiz.com.au/xylella-co-ordinator-appointed/
- https://researchforagriculture.com.au/2020/02/06/launch-of-the-international-year-of-plant-health-in-australia/
- https://researchforagriculture.com.au/2020/07/28/renewed-funding-for-plant-biosecurity-research/
- https://summerfruit.com.au/news-items/australia-joins-international-plant-health-research-network/baldissera-giovani-and-dr-jo-luck/
- https://vinehealth.com.au/2019/02/preparing-for-xylella/
- https://www.abc.net.au/news/rural/2017-03-08/rdcs-team-up-on-plant-biosecurity/8335518
- https://www.agribusiness.asn.au/communications?command=article&id=11692&contact_id=2&r=A&message_id=1145&utm_source=communications&utm_medium=email&utm_campaign=3.+Trans-Tasman+biosecurity+alliance
- https://www.countrynews.com.au/2020/07/15/1453897/funding-renewed-for-plant-biosecurity-research
- https://www.drinkstrade.com.au/wine-australias-battle-to-prevent-devastating-bacteria-outbreak
- https://www.farmonline.com.au/story/4751978/luck-heads-national-plant-biosecurity-research-initiative/
- https://www.freshplaza.com/article/2177776/dr-jo-luck-appointed-director-of-new-plant-biosecurity-push/
- https://www.goodfruitandvegetables.com.au/story/6696628/australia-joins-international-plant-health-research-network/
- https://www.graincentral.com/news/funding-for-plant-biosecurity-research-renewed/

- https://www.greenlifeindustry.com.au/Story?Action=View&Story_id=2760
- https://www.horticulture.com.au/hort-innovation/news-events/research-initiative-ramps-up-investments-to-secure-plant-biosecurity/
- https://www.ippc.int/en/news/australia-kicked-off-the-international-year-of-plant-health/
- https://www.miragenews.com/renewed-funding-for-plant-biosecurity-research/
- https://www.nationaltribune.com.au/renewed-funding-for-plant-biosecurity-research/
- https://www.queenslandcountrylife.com.au/story/4751978/luck-heads-national-plant-biosecurity-research-initiative/
- https://www.stockjournal.com.au/story/6696628/australia-joins-international-plant-health-research-network/
- https://www.theland.com.au/story/6834310/bright-future-for-plant-health-research/
- https://www.treecrop.com.au/news/bright-future-plant-health-research/
- https://www.walnut.net.au/media-release-australia-joins-international-plant-health-research-network/
- https://www.wineaustralia.com/news/media-releases/australias-most-threatening-plant-disease

8. Stakeholder Engagement

The Initiative engages with a wide range of interested parties through its project development process. This includes peak industry bodies, state and territory primary industry departments, CSIRO, universities, consultants, National Biosecurity Committee, Better Border Biosecurity (B3) New Zealand, Ministry for Primary Industries New Zealand, cesar, Plant and Food Research New Zealand, Royal Botanic Gardens Science and Conservation, Wine NZ and Euphresco.

PBRI also represents a contact point for interested parties for leveraging investment in plant biosecurity RD&E.

9. PBRI Independent Program Review

An independent review was conducted in April 2020 as part of the collaboration agreement to assess the progress of the PBRI and to consider any improvements to the model.

This review, conducted by RM Consulting Group Pty Ltd (RMCG), found the PBRI was functioning well in an important area of plant biosecurity RD&E. It was acknowledged as a good 'fit for purpose' model for coordinating and collaborating investment in this area. It is considered value for money for levy payers and other funders given that duplication of RD&E efforts is avoided.

There is acknowledgment that critical elements of a collaborative model are present, including:

- The right people at the table with strong connections
- Strong relationships built on trust
- A high degree of commitment and good will
- Recognition that collaboration will result in better outcomes

A natural evolution and maturity of the collaboration has occurred during Phase I, with an expectation of building on this foundation and increasing its impact in the national plant biosecurity RD&E arena in the next phase of the PBRI.

The evolution of the PBRI has steered it towards focusing on projects of national significance. This trend is supported and the PBRI should continue to focus on larger and

more complex projects that can make a real difference to plant biosecurity.

The review outlined recommendations to support the strengthening and sustainability of the PBRI to support vital biosecurity RD&E, across Australian industries, into the future. Overwhelmingly, stakeholders acknowledge the critical importance of having PBRI drive collaboration of national plant biosecurity RD&E and envisage even greater benefits from the next phase of PBRI.

10. Looking ahead

Coordinated investment in RD&E for plant biosecurity continues to be important to the sustainability of our plant production systems and surrounding environment. Minimising duplication in RD&E investment will be an ongoing need and will be effectively addressed by the PBRI.

The PBRI collaboration provides a vehicle to leverage investment with a focus on cross-sectoral biosecurity issues, to create greater impact for Australian industries as opposed to making multiple, individual industry-based investments.

An independent review found the PBRI had coordinated investment in projects of national significance, which have the potential to create a real difference to plant biosecurity.

In July 2020, the five-year cross-sectoral RD&E Strategy will be revised to provide a contemporary national framework for co-investment activities. From this Strategy, annual implementation planning against the six Key Focus Areas, will be done to ensure that RD&E priorities reflect current national biosecurity issues.

Although the first phase of PBRI has focussed on collaboration and defining common priorities, an impressive portfolio of projects has been built along the way.

Since 2017, there have been 15 collaborative RD&E projects coordinated and contracted though PBRI members. The total value of the cross-sectoral portfolio over the three-year period, including cash and in-kind, is approximately $50 million.

For the remainder of 2020, the PBRI will play an important role in supporting the national efforts of the UN-declared International Year of Plant Health. The Minister for Agriculture's involvement in PBRI's Australian launch highlighted the importance of the global issue of plant health. The PBRI provides a strong focal point for collaboration between industry and government on this initiative.

The inaugural two-day Plant Biosecurity Symposium was a keystone event for the PBRI, demonstrating a need to provide a forum to exchange knowledge on biosecurity science across the plant sectors. There is wide support from the plant biosecurity community for this event to continue in partnership with the B3 NZ conference.

The independent review found that strategic international partnerships, through MOUs with B3 NZ and Euphresco, were considered important to PBRI's position in global biosecurity RD&E and recommended that further partnerships be supported where relevant.

The review also found that stakeholders acknowledge the critical importance of PBRI driving collaboration of national plant biosecurity RD&E and envisage even greater benefits from the next phase of PBRI.

In June 2020, the PBRI Collaboration Agreement was re-signed for another three years. The PBRI looks forward to further coordinating targeted investment and building plant biosecurity RD&E capability that protects plant industries in the long-term.

11. List of Attachments

Attachment 1: PBRI projects mapped to the Annual Investment Plan (2019-2020)

Attachment 2: PBRI Committee Meetings (2017-2020)

Attachment 1: Project investments aligned to the Annual Investment Plan (2019-2020)

KFA	PROJECT TITLE	TOTAL CASH	TOTAL* PROJECT VALUE	LEAD RDC	PROJECT STATUS
Preparedness					
1.1	Understanding the risk of native insects vectoring in Australia and New Zealand	$1,890,000	$3,026,437	Wine Australia	CONTRACTED
1.2	Review of the Biosecurity Plan and Manual for the Viticulture Industry	$146,203	$146,203	Wine Australia	CONTRACTED
1.3	Podcast for Fall Armyworm management in northern farming systems	$25,452	$25,452	CRDC	CONTRACTED
1.4	Prevention and preparedness for fall armyworm (Spodoptera frugiperda) - Output 2	$145,000	$582,229	GRDC	CONTRACTED
Diagnostics					
2.1	The development of environmental DNA detection of the Brown Marmorated Stink Bug and other high priority plant pests.	$858,337	$957,737	Hort Innovation	CONTRACTED
2.2	National Xylella diagnostics	$1,103,866	$1,762,822	Hort Innovation	CONTRACTED
2.3	R&D4P project- Boosting diagnostic capacity for plant production industries	$7,683,806	$15,709,380	GRDC	CONTRACTED
2.4	Rapid diagnostic screening for Post Entry Quarantine	$750,000	$1,609,254	Hort Innovation	CONTRACTED
Surveillance					
3.1	iMapsPESTS - (R&D4P national cross-industry surveillance project)		$21,657,392	Hort Innovation	CONTRACTED
Sustainable management of pest, diseases, and weeds					
4.1	R&D4P Area wide management of weeds across sectors	$2,800,828	$3,943,939	GRDC	CONTRACTED
4.2	Novel Topical Vegetable, Cotton Virus and Whitefly Protection - BioClay	$1,828,301.00	$4,268,690	Hort Innovation	CONTRACTED
Capability Building					
5.1	PBRI inaugural Plant Biosecurity RD&E Symposium	$66,554	$66,554	Hort Innovation	COMPLETED
5.2	IYPH 2020 Coordinator and IYPH activities	$175,000	$175,000	Hort Innovation	CONTRACTED
5.43	PBRI Program -Phase I	$740,921.00	$740,921.00	Hort Innovation	COMPLETED
Industry Resilience					
6.1	Xylella coordinator position	$495,000	$495,000	Wine	CONTRACTED
	TOTAL coordinated Investment	**$23,352,423**	**$50,534,265**		

*Not including PBRI member in-kind contribution

Attachment 2: PBRI committee meetings (2017-2020)

Meeting	Date	Location	Attendees
1	19 June 2017	DAWE, Canberra	Dr Dave Alden (AgriFutures), Mr Greg Fraser (PHA), Dr Marion Healy (DAWR), Dr Chris Lafferty (FWPA), Mr Tim Lester (CRRDC), Dr Victoria Ludowici (PHA), Dr Jo Luck (PBRI), Mr David Moore (Hort Innovation), Dr Michael O'Shea (SRA), Dr Kim Ritman (DAWR), Dr Ian Taylor (CRDRC), Dr Ken Young (GRDC).
2	18 August 2017	SRA, Brisbane	Dr Dave Alden (AgriFutures), Mr Greg Fraser (PHA), Dr Con Goletsos (DAWR), Dr Anthony Kachenko (Hort Innovation), Dr Chris Lafferty (FWPA), Mr Tim Lester (CRRDC), Dr Jo Luck (PBRI), Mr David Moore (Hort Innovation), Dr Michael O'Shea (SRA),Dr Kim Ritman (DAWR), Dr Peter Samson (SRA), Dr Ian Taylor (CRDRC), Dr Jim Thomson (DAFQ), Dr Andrew Ward (SRA), Dr Liz Waters (Wine Australia) Dr Ken Young (GRDC).
3	17 November 2017	FWPA, Melbourne	Mr Michael Beer (AgriFutures),Mr Greg Fraser (PHA), Dr Con Goletsos (DAWR), Dr Sharon Harvey (Wine Australia), Dr Matt Koval (DAWR), Dr Chris Lafferty (FWPA), Mr Tim Lester (CRRDC), Dr Jo Luck (PBRI), Mr David Moore (Hort Innovation), Dr Leigh Nelson (GRDC), Dr Michael O'Shea (SRA), Dr Ian Taylor (CRDRC).
4	16 February 2018	Hort Innovation, Sydney	Mr Michael Beer (AgriFutures),Mr Greg Fraser (PHA), Dr Chris Lafferty (FWPA), Mr Tim Lester (CRRDC), Dr Jo Luck (PBRI), Mr David Moore (Hort Innovation), Dr Leigh Nelson (GRDC), Dr Michael O'Shea (SRA), Dr Kim Ritman (DAWR), Dr Ian Taylor (CRDRC), Dr Liz Waters (Wine Australia), Dr Ken Young (GRDC).
5	15 May 2018	PHA, Canberra	Mr Michael Beer (AgriFutures), Dr Lee Cale (DAWR), Mr Greg Fraser (PHA), Dr Chris Lafferty (FWPA), Mr Tim Lester (CRRDC), Dr Jo Luck (PBRI), Mr David Moore (Hort Innovation), Dr Leigh Nelson (GRDC), Dr Michael O'Shea (SRA), Dr Ian Taylor (CRDRC), Dr Liz Waters (Wine Australia).
6	22 August 2018	Wine Australia, Adelaide	Dr Sharon Harvey (Wine Australia), Dr Rohan Kimber (SARDI), Mr Tim Lester (CRRDC), Dr Jo Luck (PBRI), Ms Susan Maas (CRDC), Ms Jodie Mason (FWPA), Mr David Moore (Hort Innovation), Dr Kim Ritman (DAWR), Dr Peter Samson (SRA), Dr Liz Waters (Wine Australia).
7	12 November 2018	GRDC, Canberra	Mr Greg Fraser (PHA), Mr Tim Lester (CRRDC), Dr Jo Luck (PBRI), Ms Jodie Mason (FWPA), Mr David Moore (Hort Innovation), Dr Leigh Nelson (GRDC), Dr Kim Ritman (DAWR), Dr Michael O'Shea (SRA), Dr Liz Waters (Wine Australia), Dr Ken Young (GRDC).
8	14 March 2019	Hort Innovation, Sydney	Mr Greg Fraser (PHA), Dr Harjeet Khanna (SRA), Mr Tim Lester (CRRDC), Ms Jodie Mason (FWPA), Ms Susan Maas (CRDC), Dr Jo Luck (PBRI), Dr Kim Ritman (DAWR) Mr John Smith (AgriFutures), Dr Liz Waters (Wine Australia), Dr Ken Young (GRDC).
9	June 2019	SRA, Brisbane	Dr Stephen Dibley (PHA), Mr Greg Fraser (PHA), Dr Harjeet Khanna (SRA), Mr Tim Lester (CRRDC), Ms Jodie Mason (FWPA), Ms Susan Maas (CRDC), Mr David Moore (Hort Innovation), Dr Jo Luck (PBRI), Dr Kim Ritman (DAWR), Mr Peter Samson (SRA), Mr John Smith (AgriFutures), Dr Liz Waters (Wine Australia), Dr Ken Young (GRDC).
10	11 December 2019	FWPA, Melbourne	Dr Alison Anderson (Hort Innovation), Mr Greg Fraser (PHA), Tim Lester (CRRDC), Ms Jodie Mason (FWPA), Ms Susan Maas (CRDC), Dr Jo Luck (PBRI), Dr Sarah Hilton (DAWE), Mr Peter Samson (SRA), Mr John Smith (AgriFutures), Dr Liz Waters (Wine Australia), Dr Ken Young (GRDC).
11	17 March 2020	Teleconference	Dr Alison Anderson (Hort Innovation), Mr Greg Fraser (PHA), Dr Harjeet Khanna (SRA), Dr Jeevan Khurana (GRDC).Tim Lester (CRRDC), Ms Jodie Mason (FWPA), Ms Susan Maas (CRDC), Dr Jo Luck (PBRI), Mr John Smith (AgriFutures), Dr Gabrielle Vivian-Smith (DAWE), Dr Liz Waters (Wine Australia).
12	10 June 2020	Teleconference	Dr Alison Anderson (Hort Innovation), Dr Robyn Cleland (DAWE), Mr Greg Fraser (PHA), Dr Stuart Kearns (PHA), Dr Harjeet Khanna (SRA), Dr Ken Young (GRDC), Tim Lester (CRRDC), Ms Jodie Mason (FWPA), Ms Susan Maas (CRDC), Dr Jo Luck (PBRI).