Agricultural Competitiveness White Paper

Plant Biosecurity Cooperative Research Centre Submission

17 April, 2014

Contents

Executive summary

Australian plant industries, which include agriculture, horticulture, forestry and amenity plants and plant products have been estimated to contribute in excess of $25 billion to Australia's gross domestic product (GDP) annually[1]. Over half of this produce is exported.

With the growth of agriculture, and expansion of trade traffic, over the next 15 years it is estimated there will be:

- more than 300 responses to exotic plant pests
- more than 40 trade incidents related to plant pests
- at least five occurrences of loss of area freedom resulting in export challenges

While our geographic isolation is a natural advantage, biosecurity knows no borders. As a consequence, Australia places a high priority on the maintenance of plant biosecurity and has developed a sophisticated system in which government and industry share the responsibility as well as the benefits.

The mass movement of people and trade, along with the proximity of Australia's northern neighbours, means biosecurity must be an enduring and high priority for government and industry.

Australia's current and future agricultural competitiveness must be underpinned by a strong and comprehensive national biosecurity system.

Delivering effective biosecurity outcomes is complex, relying on the capabilities and interactions of many government agencies, industries, communities and individuals. Every day, farmers and agribusinesses across the country play their part in the biosecurity system. For farmers, pests (including endemic weeds, diseases and pests) can reduce crop yields, significantly increase costs and potentially bring about the failure of plant production systems.

Well-resourced and integrated biosecurity RD&E is essential to a national biosecurity system that successfully protects Australian agriculture.

Specifically, plant biosecurity RD&E contributes to:

- Enhancing returns at the farm gate by providing the scientific evidence necessary to ensure our agricultural produce is welcome in export markets
- Efficiency and competitiveness of inputs through the development of new technologies and systems to control damaging pests and diseases and minimise the cost of their management
- Assessment and management of biosecurity risk in new agricultural production systems
- A strengthened biosecurity shield for Australia, and our region, that provides an insurance policy for our farmers
- Food security by ensuring the biosecurity risk to on-farm productivity and food supply is minimised

Effective and efficient plant biosecurity RD&E is cross-sectoral and national in approach, drawing on learnings in one sector, to aid and assist others.

In an environment of increasing biosecurity risk, the Plant Biosecurity Cooperative Research Centre (PBCRC) is the only organisation providing a coherent, co-ordinated national approach to plant biosecurity RD&E in Australia.

A fully functioning biosecurity system requires significant and enduring resources, including sustained investment in RD&E.

Current resourcing of biosecurity RD&E is low and presents a risk to the long-term effectiveness of Australia's biosecurity shield and its on-going competitiveness.

[1] National Plant Biosecurity Strategy. Plant Health Australia, 2010

The national coordination and leadership of the biosecurity system and its supporting RD&E must be a priority for both government and industry.

Timely implementation of the National Plant Biosecurity Strategy is vital to maintenance and improvement of Australia's biosecurity status in the face of increasing risk.

While, the National Plant Biosecurity RD&E Strategy provides the plan for nationally coordinated biosecurity RD&E supporting management across our borders, authorised and supported leadership is also essential to its delivery. The National RD&E Framework must provide this authority in order to support a competitive agricultural value chain in to the future.

Australia must also recognise the need to provide regional leadership in biosecurity and biosecurity RD&E, and the opportunity that affords. By assisting in building the capacity of our neighbours, we help further develop their biosecurity systems, continue to improve the quality of science, and ultimately strengthen Australia's biosecurity.

The PBCRC builds on seven years' of research and capacity building by the CRC for National Plant Biosecurity and offers continued national leadership and co-ordination.

The PBCRC is prepared to lead the implementation of the National Plant Biosecurity RD&E Strategy.

The PBCRC is prepared to lead the development, co-ordination and implementation of a national fruit fly RD&E plan under the auspices of National RD&E Framework, Intergovernmental Agreement on Biosecurity (IGAB) and the National Fruit Fly Strategy.

Over the next four years, the National Plant Biosecurity RD&E Strategy and the PBCRC offer the opportunity for Australia to develop a new and enduring national RD&E model in a regional context. Implemented efficiently and effectively, it will strengthen Australia's biosecurity 'shield' in a changing regional and global environment, and prove vital to Australia's future agricultural competitiveness. (Agricultural Competitiveness Issues Paper: Issue 1, 2, 4, 5 6, 8 and 9)

Introduction

The Plant Biosecurity Cooperative Research Centre (PBCRC) welcomes the opportunity to contribute to the Agricultural Competitiveness White Paper process.

Maintaining Australia's current biosecurity status is vital to the future of agricultural production in Australia. A biosecurity and quarantine system that underpins produce quality and our ability to market this produce is integral to a profitable agriculture sector.[2]

The White Paper process provides an opportunity to set the agenda for the research, development and extension (RD&E) that is required to maintain Australia's biosecurity 'shield' and support a sustainable and competitive Australian agricultural industry.

Our submission aims to demonstrate how Australia's biosecurity system – which includes the science that supports it – is fundamental to maintaining and enhancing the contribution of agriculture to economic growth, employment creation and national prosperity through increased innovation, productivity, and trade.

The breadth and depth of biosecurity means it impacts significantly on almost all aspects of agricultural competitiveness. Of those issues highlighted in the the Agricultural Competitiveness Issues Paper the following have been specifically addressed:

Issue 1: Ensuring food security in Australia and globally
Issue 2: Farmer decisions for improving farm gate returns
Issue 4: Increasing the competitiveness of the agriculture sector and its value chains
Issue 5: Enhancing agriculture's contribution to regional communities
Issue 6: Improving the competitiveness of inputs to the supply chain
Issue 8: Enhancing agricultural exports
Issue 9: Assessing the effectiveness of incentives for investment and job creation

What is biosecurity?

Biosecurity is defined as the safeguarding of resources from biological threats. This involves the management of risks to the economy, the environment and the community, of pests and diseases entering, emerging, establishing or spreading.

Plant biosecurity is a set of measures which protect the economy, environment and community from the negative impacts of plant pests.

Delivering effective biosecurity outcomes is complex, relying on the capabilities and interactions of many government agencies, industries, communities and individuals.

THE BIOSECURITY CONTINUUM *(Issue 8)*

Biosecurity encompasses activity across the continuum: offshore, at the border and onshore. It involves:

- *working offshore to build the capabilities of our near neighbours and the systems of the countries we import from to reduce risks reaching our border*
- *working with scientists, policy makers, community and industry to identify high priority risks and develop contingency plans*

[2] The Coalition's Policy for a Competitive Agriculture Sector, August 2013

- *working in partnership with importers before they bring animal and plant products to Australia to ensure they are aware of their responsibilities and can comply*
- *working with the Australian export supply chain including farmers to ensure that exports are free from pests and diseases*
- *managing outbreaks of pests and diseases when they occur to prevent or reduce their spread within Australia, thereby minimising the impact to Australia's economy and trade status*
- *managing pests and diseases that have established in Australia to minimise their harm and damage, and working to prevent them from spreading*[3]

Our national biosecurity system

Australian plant industries, which include agriculture, horticulture, forestry and amenity plants and plant products have been estimated to contribute in excess of $25 billion to Australia's gross domestic product (GDP) annually. Over half of this produce is exported.

THE SCENARIO

With the growth of agriculture, and expansion of trade traffic, over the next 15 years it is estimated there will be:

- *more than 300 responses to exotic plant pests*
- *more than 40 trade incidents related to plant pests*
- *at least five occurrences of loss of area freedom resulting in export challenges*

As a consequence, Australia places a high priority on the maintenance of plant biosecurity and has developed a robust system in which government and industry share the responsibility, as well as the benefits. While our geographic isolation appears to be a natural advantage, in reality we are not biologically – biosecurity knows no borders. The mass movement of people and trade, along with the proximity of Australia's northern neighbours, means biosecurity must be an enduring and high priority for government and industry. The maintenance and improvement of this system will underpin Australia's current and future agricultural competitiveness. (Issue 1, 2, 4, 5, & 8)

Those along the entire agricultural supply chain recognise the value which the shield Australia's biosecurity system affords their industry, and the productivity and profitability of their individual businesses.

Every day, farmers and agribusinesses across the country play their part in the biosecurity system. For farmers, pests (including endemic weeds, diseases and pests) can reduce crop yields, significantly increase costs and potentially bring about the failure of plant production systems. (Issue 2)

A TOP PRIORITY

A survey of South Australian wine industry stakeholders undertaken this year demonstrates the priority that industry places on biosecurity. Rated as one of the major risks to the industry as a whole, qualitative reports clearly indicated it was a factor in almost every business:

- *"Biosecurity is an important consideration and we factor this into our fruit purchasing strategy to minimise risk"*
- *"Biosecurity and R&D management factor significantly into our organisation. We have two research team that focus on these issues"*

[3] http://www.daff.gov.au/bsg

- *"It is important to our business as dealing with the issue impacts on our bottom line. Once you know what the issues are, you set up"*[4]

It is estimated that introduced invertebrate pests (insects and related organisms) cost over $4.7 billion in agricultural production losses annually and a further $750 million in control costs. The total cost of the impact of weeds on agriculture is estimated to be $4.5 billion annually, with some $1.7 billion spent each year on mitigation activities such as cultivation and herbicide application.[5]

These figures represent a significant and growing burden on farm businesses, regional economies and the nation.

FARMERS ARE THE KEY

I think it's really important that growers understand what is required of them. We all play a part in the system. The more educated growers are the better off the industry is going to be.

Richard Konzag, grain grower, South Australia

An outbreak of an exotic disease has the potential to destroy entire sectors of Australian agriculture, with a devastating impact on income and jobs, and flow-on consequences for public health and environmental biodiversity. (Issue 5)

Take for example, the presence of red fire ant on Australian soil. First detected in the Brisbane area in February 2001, red fire ant poses a serious social, economic and environmental threat. While the outbreak has been restricted to a small region of southeast Queensland, the potential social, economic, and ecological damage prompted a rapid response that is on-going. If red fire ant was allowed to spread, the agricultural, environmental and human impacts are estimated at $8.9 billion by 2041[6]

DOING IT RIGHT FROM THE BEGINNING

If citrus greening otherwise known as Huanglongbing (HLB) hits Australia, our growers will be put to a test they can't afford to fail, Florida expert Mike Irey told industry at the Citrus National Conference in 2013.

Mike warned growers that if HLB did arrive it would be difficult to detect – and would already have spread. "There's no such thing as one infected tree."

He said Australia must have a plan of action in place should HLB appear and laboratories established to check citrus samples for infection.

He said leaving the response too late would mean increased production costs, yield losses and could potentially impact on fruit quality. Growers in Florida who acted too late were now pursuing a nutritional program that was slowing but not curing the problem of citrus greening.

"You also have to decide how long your time frame is. If you want your grandkids to be farming this land you need to be doing this right from the beginning."[7]

Australia's plant industries have a strong reliance on cost-effective access to international markets to remain profitable and viable. In 2012-13 Australian farm exports were worth $37.97 billion. Wheat is Australian largest agricultural export, worth $6.75 billion in 2012-13. Horticulture exports were valued at $1.90 billion (including

[4] South Australian Wine Industry Stakeholder Survey Report 2014. Commissioned by Phylloxera and Grape Industry Board of SA (PGIBSA), 2014.

[5] National Plant Biosecurity Strategy. Plant Health Australia, 2010

[6] Natural Resource Management Ministerial Council, 2008

[7] www.citrusaustralia.com.au/news/Industry

$678 million worth of vegetable exports and $634 million worth of fruit exports), and wine exports were valued at $1.82 billion.[8]

Australia's biosecurity system is acknowledged and respected internationally. It provides the proof our export partners require to ensure markets are open and available to Australian agricultural produce. (Issue 8)

PERCEPTION VERSUS PROOF

Australian grain growers are aware of the risk that an outbreak of Karnal bunt poses to their livelihoods. The fungal wheat disease could cost Australia up to $1 billion per year in lost export markets and downgrading of grain quality. And it is not an empty threat. In 2004, Australian wheat exports to Pakistan were disrupted when Karnal bunt was erroneously identified in a shipment. The perception of presence resulted in market access being denied by many countries. It is critical to the sustainability of our markets that we provide proof of the absence of disease.

THE STRATEGIC ENVIRONMENT

Several key documents provide strategic direction for Australia's biosecurity system, and the RD&E that supports it. Work is being undertaken to link these strategies, and implement the many actions agreed. However sustained, resourced and authorised leadership is essential to ensure these strategies deliver a robust, coordinated and efficient biosecurity system than underpins Australia's agricultural competitiveness.

The **Intergovernmental Agreement of Biosecurity** (IGAB) was established to improve the national biosecurity system by identifying the roles and responsibilities of state and federal governments. IGAB identifies priority areas for collaboration.

The **National Plant Biosecurity Strategy** (NPBS) provides 10 strategies that will strengthen Australia's plant biosecurity over the next decade. It addresses challenges posed by plant pests to Australia's food security and primary production, and has been developed in alignment with Australia's state government biosecurity strategies. The strategy covers pests of agriculture, horticulture, forestry and amenity plants and plant products. The scope of the NPBS covers the national response to exotic plant pest incursions as well as the containment and management of established plant pests by government, industry and other affected stakeholders. The Strategy does not identify resources, leadership or the outcomes desired.

The **National Primary Industries RD&E Framework** was developed through the Primary Industries Ministerial Council, and endorsed by all stakeholders, to encourage greater collaboration and promote continuous improvement in the investment of RD&E provision nationally.

The 2013 **National Plant Biosecurity Research, Development and Extension Strategy** is a component of the National Primary Industries RD&E Framework. The Strategy established the future direction for improving biosecurity RD&E for Australia's plant industries, with implementation reliant on effective linkages between investors, providers and research adopters, integration with sector specific strategies and the IGAB, and committed co-investment in priority areas. Endorsed in late 2013, no one has taken responsibility to implement it.

Plant biosecurity research, development and extension

Well-resourced and integrated biosecurity RD&E is essential to a national biosecurity system that successfully protects Australian agriculture. (Issues 2 & 8)

The nature of biosecurity threats, means sustained and coordinated RD&E is essential at every stage – before pests reach Australian shores, at our borders, and then across the length and breadth of Australia.

[8] Agricultural commodity statistics 2013, Australian Bureau of Agricultural and Resource Economics and Sciences, 2013

Without science to support effective preparedness, response, containment and management, plant pests have the potential to impact massively on the survival of farming across Australia and the sustainability of regional centres and communities.

The risk is tangible, for example, in 2001, a strain of fungus destroyed 80% of Kenya's wheat crop within a year of detection.[9] Should such an incident take place in Australia, regional centres in the heart of Australia's grain growing regions would be decimated by the loss of production in the following years.

Soundly-based R&D is recognised as having significant and important benefits. Specifically, plant biosecurity RD&E contributes to:

- global food security by ensuring the biosecurity risk to on-farm productivity and post farm gate storage is minimised (Issue 1)
- enhancing returns at the farm gate by increasing our ability to access and maintain new export markets (Issue 2)
- efficiency and competitiveness of inputs through the development of new technologies and systems to control endemic pests and minimise the cost of their management (Issue 6)
- assessment and management of biosecurity risk in new agricultural production systems (Issue 2)
- a strengthened biosecurity 'shield' for Australia, and our region, that provides an insurance policy for our farmers by minimising the risks of pest entry and establishment (Issue 1)

AN INSURANCE POLICY FOR AUSTRALIA'S NORTH

The development of agriculture in Northern Australia must go hand-in-hand with consideration of the biosecurity challenges the region presents. A well-resourced and targeted RD&E program must address challenges which include:

- *understanding the climatic conditions and environment conducive to the establishment and spread of pests from countries to the north*
- *determining the biosecurity risks associated with growing new crops in the north*
- *the possibility of windborne spread pests from the Asian region*
- *remote areas with low populations which means the risk that pests will establish and spread before detection are increased*
- *sometimes sparse information on pests in near neighbour countries*
- *biosecurity management that must pay due respect to traditional people movement rights*
- *increasing prevalence of high impact pests (e.g. citrus greening, rice pests, banana diseases, fruit fly) in Asia*

The potential impacts are well illustrated by a few pests that have already entered the region. For example, sugar cane smut was first detected in the Ord region and has subsequently spread to the east coast sugar industry. The disease spread was relatively slow and this allowed research work to provide timely advice on resistant varieties thus minimising losses. However, the Queensland Government spent $15.6 million over four years to help manage the disease and losses in some areas as the disease advanced resulted in sugar value losses of up to 10% until resistant varieties became available. (Issues 1,2 & 8)

The most effective and efficient plant biosecurity RD&E is cross-sectoral and national in approach, drawing on learnings in one sector, to aid and assist others. It takes a long term perspective, recognising the social and climatic environment means biosecurity will be a growing challenge into the future. (Issue 6)

In the past decade – despite recognition of a need – cross-sectoral investment has generally suffered a decline and existing rural RDCs have responded slowly to the government directive to increase cross-sectoral programs.[10]

[9] Consultative Group on International Agricultural Research (2010)

Current RD&E activity

Plant biosecurity RD&E activities are conducted and coordinated by numerous organisations including Research and Development Corporations (RDCs), PBCRC, the Australian Government, CSIRO, state and territory agencies as well as universities and private organisations. This complex mix requires coordination to ensure an integrated approach to discovering and delivering the plant biosecurity science that Australia needs. (Issue 6)

Broadly speaking, the contributions of various stakeholders are:

- *RDCs:* Six RDCs focus on Australia's plant production industries: Cotton RDC, Forest and Wood Products Australia, GRDC, Grape and Wine RDC, HAL and RIRDC. Three RDCs deal with plant-based products: Dairy Australia, Australian Wool Innovation and Meat & Livestock Australia. RDCs produce funding and support to research and extension providers.
- *CRCs:* The CRC Program is funded by the Australian Government. PBCRC is the only CRC directly related to plant production. It involves 27 national and international organisations across the plant biosecurity R&D continuum.
- *Australian Government*: The Australian Government departments of Agriculture, Industry, Environment and Foreign Affairs and trade are the end-used of research. They also provide R&D funding.
- Statutory authorities and agencies involved in plant biosecurity R&D include the Australian Centre for International Agricultural Research, The Australian Research Council, and CSIRO through the Biosecurity Flagship.
- *State and territory governments:* State and territory agricultural departments undertake biosecurity activity and research to support Australia's agricultural industries. They focus on areas of plant biosecurity relating to the priorities of their state or territory.
- *Universities and private research institutions:* Universities play a significant role in the delivery of biosecurity R&D. Their contribution is essential to the overall effort.
- *Extension services:* Extension is the key to facilitating uptake of biosecurity RD&E by primary producers. Plant biosecurity extension services are provided by industry, state and territory governments and private organisations.

Industry is increasingly proactive in raising awareness and fostering uptake and adoption of cost-effective biosecurity measures among their members. Industries are also responsible for incorporating regulated and non-regulated biosecurity measures in their quality and market assurance programs.

Plant Biosecurity Cooperative Research Centre

In an environment of increasing biosecurity risk, the PBCRC is the only organisation providing a coherent and coordinated national approach to plant biosecurity RD&E in Australia. Through its collaborative research programs including government and industry end-users, the PBCRC protects Australian agricultural competitiveness by:

- identifying pathways for plant pests to enter Australia
- creating smarter tools and technologies to diagnose, discover and destroy or contain plant pests
- creating improved pest management methods which are integrated into production systems
- building technical networks both in Australia and our near neighbours to reduce risks and maximise the regional capacity to deal with plant pests
- increasing knowledge transfer, technology adoption, and community engagement in biosecurity
- developing training and education to increase national and international plant biosecurity capacity

[10] Food and Fibre: Australia's opportunities. A report of a study by the Australian Academy of Technological Sciences and Engineering (ATSE), April 2014

Over its six year life, the PBCRC has resources of $128m contributed by the CRC Program and its 27 participants from Australian agribusiness, government agencies, universities, international organisations. This builds on the preceding CRC for National Plant Biosecurity (CRCNPB) investment of $126m over seven years. For every $1.00 invested by the Commonwealth, CRC participants will invest $3.06.

Benefits from PBCRC investments include:

- reduced costs to plant-based industries (Issue 2)
- maintenance and improvement in global markets for Australian plant products (Issue 8)
- safer access to products from overseas (Issues 4 & 8)
- improved environmental protection for Australia's unique flora

The CRCNPB successfully built a strong network of research organisations and activity within Australia to support Australia's biosecurity system. The success of the CRCNPB was confirmed by a second round of funding, including the expansion of its networks to include international partners – further strengthening Australia's biosecurity shield.

The PBCRC will deliver significant value to participating industries: based on representative plant pests from each participating industry, is conservatively estimated at 2.56 times the cost of PBCRC.[11] (Issue 6)

Future biosecurity requirements

The National Plant Biosecurity Strategy (NPBS) articulates 10 strategies to respond to the challenges currently facing the plant biosecurity system. These strategies are underpinned by 17 recommendations and 51 specific actions. Timely implementation of this Strategy is vital to maintenance and improvement of Australia's biosecurity status in the face of increasing risk. Its success requires significant **resourcing**, **leadership**, and **coordination** - both of the system, and the RD&E that supports it.

In the RD&E arena, improvement has been made over the past eight years, with the CRCNPB (2005-2012) and the PBCRC (2012-2018) authorised to lead and coordinate national plant biosecurity RD&E. However, with limited resources the CRC has only funded a relatively small proportion of the required RD&E activity, despite high rates of leverage with its partners.

Resourcing

A fully functioning biosecurity system requires significant and enduring resources, including sustained investment in RD&E. Current resourcing of biosecurity RD&E is low and presents a risk to the long-term effectiveness of Australia's biosecurity shield and its on-going competitiveness. The PBCRC funding is set to end in 2018. (Issue 6)

While Australia has a well-established rural R&D capability, funding has stagnated. Little real growth in investment has occurred since the mid-1970s. If Australia is to achieve sustainable growth in food and fibre the investment in export-oriented industry CRCs that including cross-sectoral natural resources considerations will need to increase.[12]

[11] PBCRC Response to Selection Criteria form. Page 2

[12] Food and Fibre: Australia's opportunities. A report of a study by the Australian Academy of Technological Sciences and Engineering (ATSE), April 2014

VALUE IN THE CRC MODEL:

With many of the agricultural CRCs nearing the end of their funding cycle, Australia's main collaborative R&D program will have little investment in agriculture at a time of lagging productivity growth and growing opportunities. The economic benefits generated from these agricultural CRCs appear better than other sectors. In the period 1991 to 2012 agriculture CRCs generated 43 per cent of the direct economic benefits, but only accounted for 27 per cent of CRCs.

Furthermore, there is a significant tail to those benefits with agricultural CRCs projected to deliver 43 per cent of the direct economic benefits despite declining investment by the CRC program. By including sustainability within commercially-oriented research programs, environmental benefits including impacts on land, ecosystems, pollutants, natural resources, plants, animals and biodiversity can also be contributed by CRCs.[13]

Leadership

The National Primary Industries RD&E Framework must be led by the Commonwealth and supported by all agencies in order to ensure a competitive agricultural value chain in to the future. Equally, the National Plant Biosecurity RD&E Strategy must have strong leadership and be authorised by its stakeholders in order to deliver a more efficient and effective RD&E effort. (Issue 6)

In particular, the strategies identified in the National Plant Biosecurity RD&E Strategy in need of immediate RD&E resourcing and prioritisation are:

1. Monitor key activities in plant biosecurity RD&E
2. Identify and prioritise RD&E areas in plant biosecurity
3. Develop a mechanism that ensure that fundamental research is a significant component of the national plant biosecurity R&D effort
4. Develop a commissioned research plan which includes a feedback mechanism to underpin succession planning
5. Ensure funding providers consider the impact of endemic pest R&D on preparedness for exotic incursions
6. Conduct an annual national stakeholders workshop to contribute to the determination priories for plant biosecurity RD&E
7. Develop a dynamic mechanism for collating and providing strategic plant biosecurity information, R&D priorities and infrastructure needs to funding bodies and research providers
8. Support R&D funding directed towards national centres of excellent for plant biosecurity research
9. Develop systems and strategies for efficient storage, effective distribution and uptake of R&D knowledge and outcomes

The need for cross-sectoral collaboration and coordination of RD&E is nowhere more evident than in the preparation for incursion of the devastating Varroa mite that has destroyed honey bee populations worldwide.

VARROA MITE: THE NEED FOR COORDINATION OF BIOSECURITY RESEARCH

Pollination services to Australian horticulture and agriculture were valued at $1.7 billion a year in 1999-2000 for the 35 honeybee dependent crops. If all agriculture is included, the estimates run as high as $4-$6 billion. It is generally accepted that it is only a matter of time before the Varroa is detected and spreads through Australia's healthy and productive honeybee and pollination industry.

In Europe and the USA, 95-100 per cent of unmanaged hives disappeared within three to four years of Varroa infestation.

[13] Food and Fibre: Australia's opportunities. A report of a study by the Australian Academy of Technological Sciences and Engineering (ATSE), April 2014

Australia's preparation for inclusion and establishment of Varroa is essential to the on-going sustainability of honey-bee dependent crop industries. A 2011 DAFF document entitled "A honey bee industry and pollination continuity strategy should Varroa become established in Australia" lists actions to be taken in order to prepare the industry. PHA (Plant Health Australia), RIRDC (Rural Industries Research and Development Corporation), HAL (Horticulture Australia Limited), DAFF (Department of Agriculture, Fisheries and Forestry), HortResearch, CSIRO, the Almond Board of Australia and the Australian Honey Bee Industry Council are making arrangements to prepare the broader industry and government. Varroa's detection, and industry's response and adaption to minimise its impact, will depend on the level of preparedness and willingness to co-ordinate and resource effective and reliable control programs.

A singular approach will not prove effective. Rather, collaboration across industry around a range of programs will be necessary. Additional to the funding and activities currently dedicated to Varroa, the Australian Government needs to invest further in facilitating industry access to research and training resources through an organisation such as PBCRC.

Recognising the need for leadership and coordination in plant biosecurity RD&E to support the NPBS, the **PBCRC is prepared to lead, and fund, the implementation of the National Plant Biosecurity RD&E Strategy**, under the National RD&E Framework and IGAB.

STRATEGY NEEDS ACTION

Sustainable management of fruit fly is a significant concern to Australia's $6.9b horticultural industries.

A National Fruit Fly Strategy was developed in 2008 and aims to improve Australia's management of the world's most economically significant horticultural pest. It aims to develop a viable, cost-effective and sustainable national approach to fruit fly management, with commitment from all stakeholders.[14]

Beyond strategy development, leadership, implementation and resourcing has been limited.

In 2014 numerous detections of fruit fly in previously 'certified' areas of freedom have threatened the loss of export markets. **The PBCRC is prepared to lead the development, co-ordination and implementation of a national fruit fly RD&E plan under the auspices of National RD&E Framework, IGAB and the National Fruit Fly Strategy**. It will also build off the developing and important SITplus Initiative. Authorisation and further resourcing of this leadership from across government and industry will ensure the success of this approach.

Australia must also recognise the need to provide regional leadership in biosecurity and biosecurity RD&E, and the opportunity that affords. PBCRC initiatives demonstrate that by assisting in building the capacity of our neighbours, we help further develop their biosecurity systems, continue to improve the quality of science, and ultimately strengthen Australia's biosecurity.

KIWI COLLABORATION

The benefits of regional collaboration in plant biosecurity RD&E are evident through the work of the PBCRC. Specific examples include projects around tomato potato psyllid. The psyllid is a small pest that spreads a devastating disease of many plants. If established in Australia it would result in millions of dollars being lost from the tomato and potato sector. It was detected in New Zealand in 2006, and the PBCRC is drawing on the expertise and experience of NZ to consider how to protect the Australian potato industry.

In a similar fashion, New Zealand is benefitting from Australia's expertise on myrtle rust, a disease that would wreck cultural and economic havoc should it impact on New Zealand's iconic Pohutakawa trees, and the Manuka forests that sustain NZ's honey industry.

[14] Draft National Fruit Fly Strategy, March 2008. Commissioned by the Primary Industries Health Committee

Coordination

Current rural RD&E is largely driven along industry lines through the RDCs. As a cross-sectoral issue, biosecurity struggles to achieve the scope and collaboration required to support Australian agriculture's future competitiveness. The national coordination of the biosecurity system and its supporting RD&E must be a priority partnership for both government and industry. (Issue 6 & 8)

An enduring national approach will ensure strategic and efficient investment in programs, infrastructure and capability. The National Plant Biosecurity RD&E Strategy provides the fundamentals for such an approach.

RD&E Capability

Improved coordination will also help address the on-going reduction of biosecurity RD&E capacity and resource. If sustainable growth is to be achieved in Australian agriculture a range of educated and skilled people will be required not only across the value chain, but in supporting disciplines. At present a decline in human resources at all levels of government is resulting in a decreasing ability to effectively and efficiently manage pest and disease responses. There is also a growing disconnect between research and extension delivery services, at the same time as farming practices and rural land ownership profiles are changing.

> ***DECLINING CAPABILITY***
>
> *Plant pathology and entomology are two key disciplines in plant biosecurity RD&E. The age profile of those employed in both disciplines has shifted sharply towards an older profile over the past seven years. The number of plant pathologists now in the over 55 age bracket has increased with lower numbers now evident in the under 35 age brackets. It is a similar result for entomology.*
>
> *These shifting profiles are of concern when put alongside service expectations. Of the 275 currently employed respondents, 28% will retire within the next 10 years and 40% within 15 years.*
>
> *A further 12% will be lost due to other factors and, therefore, in excess of 50% of the current capacity requiring replacement within 15 years just to maintain the status quo.*[15]

The PBCRC education and training program is central to creating a future generation of plant biosecurity scientists that will protect the productivity and market access of our agricultural industries. Rural and regional Australia is experiencing a shortage of skilled science professional to meet industry's demands which will be addressed through this education and training strategy. In addition to this, a general decline in plant biosecurity practitioners has been reported in a recent Australasian Plant Pathology Society survey.
To address these issues, the primary goal of the PBCRC's Education and Training program is to increase Australia's capacity and capability in plant biosecurity sciences through:

- A postgraduate program
- Undergraduate courses
- Specialised biosecurity training workshops
- Science exchange
- Short courses and vocational training
- Research delivery sites
- Promoting Biosecurity Science in schools and the community

[15] Plant Pathology and Entomology Capability Study 2012. Commissioned by APPS and Australian Entomological Society.