Cooperative Research Centre for National Plant Biosecurity

2005-06

CRC Plant Biosecurity

Annual Report 2005-06

CRC PLANTbiosecurity

Established and supported under the Australian Government's Cooperative Research Centres Programme

about CRC PLANTbiosecurity

The Cooperative Research Centre for National Plant Biosecurity is the central coordinating body for plant biosecurity research across all Australian states and territories.

CRC Plant Biosecurity is a cooperative venture between the following (core and supporting) Participant organisations, established and supported under the Australian Government's Cooperative Research Centres Programme.

CRC Plant Biosecurity's Core Participants:

- Plant Health Australia Ltd
- Commonwealth Department of Agriculture, Fisheries and Forestry
- CSIRO Entomology
- Department of Agriculture and Food, Western Australia
- Department of Primary Industries, Victoria
- Queensland Department of Primary Industries & Fisheries
- New South Wales Department of Primary Industries
- South Australian Research and Development Institute
- Murdoch University
- Charles Darwin University
- Grains Research and Development Corporation
- Saturn Biotech Limited

Supporting Participants:

- University of Adelaide
- Horticulture Australia Ltd
- Northern Territory Dept of Primary Industry, Fisheries and Mines
- Southern Cross University

OUR VISION is to be a world leader in the generation, development and delivery of plant biosecurity science and education.

OUR MISSION is to foster scientific collaboration and engage stakeholders to deliver plant biosecurity technologies that will reduce risk to, and ensure sustainability of, Australia's plant industries.

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ISSN 1834-1314 (Print)
1834-1322 (Online)

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Biosecurity Research & Education for Australia's Plant Industries

Pierce's disease and the glassy-winged sharpshooter could cost the Australian viticulture industry ...

BIOSECURITY RISKS

Grapevines infected with Pierce's disease will die within 3 years which can result in complete loss of a vineyard.

DIAGNOSTIC CAPACITY

The 'glassy-winged sharpshooter' transmits the bacteria, *Xylella fastidiosa*, that causes Pierce's disease.

SURVEILLANCE

Australia's viticulture industry is currently free of Pierce's disease.

FOOD SECURITY

Around 90% of grapes grown in Australia are used in wine production.

MARKET ACCESS

Australia's wine industry depends on a strong national biosecurity capability.

... over $500 million annually in lost income if it entered and became established in Australia

CRC PLANT biosecurity

EXECUTIVE SUMMARY

The Cooperative Research Centre for National Plant Biosecurity (CRC Plant Biosecurity) formally commenced operations on 18 November 2005, when its Commonwealth Agreement was executed. The Centre is an unincorporated joint venture (managed by the incorporated entity CRC NPB Ltd) between the following (core and supporting) Participants, established and supported under the Australian Government's Cooperative Research Centres Programme:

- Plant Health Australia Ltd
- Department of Agriculture, Fisheries and Forestry
- CSIRO Entomology
- Department of Agriculture and Food, Western Australia
- Department of Primary Industries, Victoria
- QLD Department of Primary Industries & Fisheries
- New South Wales Department of Primary Industries
- South Australian Research and Development Institute
- Murdoch University
- Charles Darwin University
- Grains Research and Development Corporation
- Saturn Biotech Limited
- University of Adelaide
- Horticulture Australia Ltd
- NT Dept of Primary Industry, Fisheries and Mines
- Southern Cross University

Emergency plant pests and diseases represent an increasing economic and environmental threat to Australia's plant industries and natural ecosystems. Despite having much of the world's leading research expertise in biosecurity, plant biosecurity research in Australia has, up until this point, lacked the benefits of a nationally coordinated effort. CRC Plant Biosecurity has taken on the role of the central coordinating body for plant biosecurity research across Australia, and enjoys support from all Australian States and Territories as well as major rural research and development corporations, research and industry bodies. The Centre's mission is to foster scientific collaboration and engage stakeholders to deliver plant biosecurity technologies that will reduce risk to, and ensure sustainability of, Australia's plant industries.

The Centre's objectives will be achieved through the Centre's six research, education and delivery programs:

- Preparedness and Prevention Research
- Diagnostics Research
- Surveillance Research
- Impact Management Research
- Education and Training
- Delivery and Adoption (Commercialisation and Utilisation)

An extended contract process for the CRC and changes in leadership of two programs over the last year have caused inevitable delays in the Centre's activities. Both are now resolved and the Centre's research and education programs are now on track. With one exception, all milestones have been met during the reporting period, which reflects the energy and commitment of the CRC's Participants, Program and Project Leaders.

As of 30 June 2006, the Centre had 18 research projects underway (including 9 postgraduate projects), with a further 15 due to begin in 2006-07 and a further 12 under development. Notwithstanding this good progress, the Centre's late start also delayed contracts for those research projects that were finalised during 2005-06, and it is possible that this may impact on the CRC's research and delivery milestones over the next financial year. The Centre will appoint its Delivery and Adoption Program Leader in early 2006-07, a position that will finalise the CRC's complement of six Program Leaders, increase resource capacity, and assist the Centre in meeting its future commitments.

A major focus of CRC Plant Biosecurity in its first year of operation has been to develop linkages with other research centres, both in Australia (such as with the Centre of Excellence for Risk Analysis and National ICT Australia) and internationally. The Centre intends to develop strong links with the three other CRCs involved in biosecurity, and two workshops are proposed in conjunction with the Australian Biosecurity CRC for Emerging Infectious Disease during 2006-07. A number of international collaborations on research projects were established during the reporting period: three with New Zealand and three in the United States. The Centre's linkage work will continue during 2006-07 towards establishing formal collaborative agreements with equivalent research centres overseas.

CHAIRMAN'S REPORT

Biosecurity has emerged as a global issue, with new pests and diseases representing a serious threat to Australia's plant industries and its natural ecosystems. Emergency Plant Pests (EPPs) can impact on food security, trade, market access and, ultimately, the viability of Australia's plant industries.

Australia is in the enviable position of being relatively free from many of the plant pests and diseases that seriously impact on agricultural industries in other countries and this freedom confers a valuable competitive advantage in terms of securing market access and maintaining lower production costs.

Given these factors, the bid to establish a Cooperative Research Centre for National Biosecurity (CRCNPB) received very strong support from both government and industry, not least the sponsoring organisation, Plant Health Australia Ltd. Similarly, there was widespread and enthusiastic support from a broad range of potential Participants in the Centre.

The putative Participants supported the selection of an independent, skills-based Board of six members, together with an independent Chairman.

Having selected the foundation Chief Executive Officer, Dr Simon McKirdy, from an international field, the Board concentrated on the preparation of a Strategic Plan. Input from the Participants Committee has been valuable in formulating both the Strategic Plan and the Annual Operational Plan.

Professor John Lovett
CHAIRMAN

In its first year of operation, the Board has settled down to the business of governance through quarterly meetings and active liaison with existing and potential future participants. A Finance and Audit Committee is in place and the preparation of registers of intellectual property, and of risk, has been initiated. A small Management team has been put in place and is functioning smoothly.

While the CRCNPB was established as a network with national reach, the Board has recognised the desirability of filling gaps in the network both on a geographic and skills basis. This process is actively in train, against a set of rigorous criteria and with the support of the existing participants.

An encouraging feature of this CRC has been engagement with the international biosecurity community. The formalisation of some linkages, in Europe, North America and with some nearer neighbours, is anticipated for the second year of Centre operations.

The Board was approached early in the life of the Centre to consider endorsing a Supplementary Bid. Covering pests of stored grains, the Board considered that the interests of proponents were compatible with the CRCNPB; that existing research programs would be enhanced; and that an additional program could be accommodated to meet the specific needs of stored grains. If successful, the bid will also bring significant additional resources to the Centre.

The CRCNPB is one of four Cooperative Research Centres that are addressing the broad challenge of biosecurity. In itself, this is an indication of the extent to which biosecurity is recognised as a major challenge to governments, the agricultural industries, and to the community at large.

The CRCNPB looks forward to playing its part in meeting the biosecurity challenge through its approaches to preparedness and prevention, diagnostics, surveillance, impact management, and education and training.

Overall, the Centre subscribes to the dictum 'prevention is better than a cure' and will work to achieve that end in respect of the issues presented by Emergency Plant Pests.

CEO's REPORT

Dr Simon McKirdy
CHIEF EXECUTIVE OFFICER

The CRC for National Plant Biosecurity formally commenced operation on 18 November 2005 when the Commonwealth Agreement was executed. The initial focus of CRC activities since this time has been to recruit the Centre's Management team, set up CRCNPB's head office, develop and start the first set of research projects, and begin education activities.

CRC Plant Biosecurity is the central coordinating body for plant biosecurity research across Australia. To ensure the CRC has a strategic path for its seven-year life, a Strategic Plan was developed in early 2006. Our motto is *biosecurity built on science*, and our vision is to be a world leader in the generation, development and delivery of plant biosecurity science and education. This will be achieved by fostering scientific collaboration and engaging stakeholders to enable the delivery of plant biosecurity technologies. The Centre will supply scientific expertise and training to increase Australia's capacity to deal with future plant biosecurity incursions and to minimise the social, economic and environmental impact.

The Centre has four Science and Technology Programs that focus on the needs identified by key stakeholders, combined with the scientific expertise available to ensure the Centre has the capacity to enhance Australia's plant biosecurity system. The projects undertaken in each of the programs are considered through a rigorous project selection process by the Centre's Science Committee before they are recommended to the Board for approval.

One of the major challenges for the Science Committee in the first year was ensuring the maximum use of Participant committed resources in projects. The committed resources include staff in-kind, non-staff in-kind and cash. With our Participants, the CRC brings together a large proportion of the plant biosecurity research capacity in Australia. With the greater network we will develop with colleagues overseas and within other CRCs or like organisations, this capacity will be substantial. In a system where research resources are limited, the development of collaborative projects enhances Australia's ability to build our plant biosecurity scientific capacity. Having access to project teams that utilise the many skill sets present across our Participants and other networks provides research funders with a central non-competitive organisation that can deliver outputs that will provide a higher level of plant biosecurity.

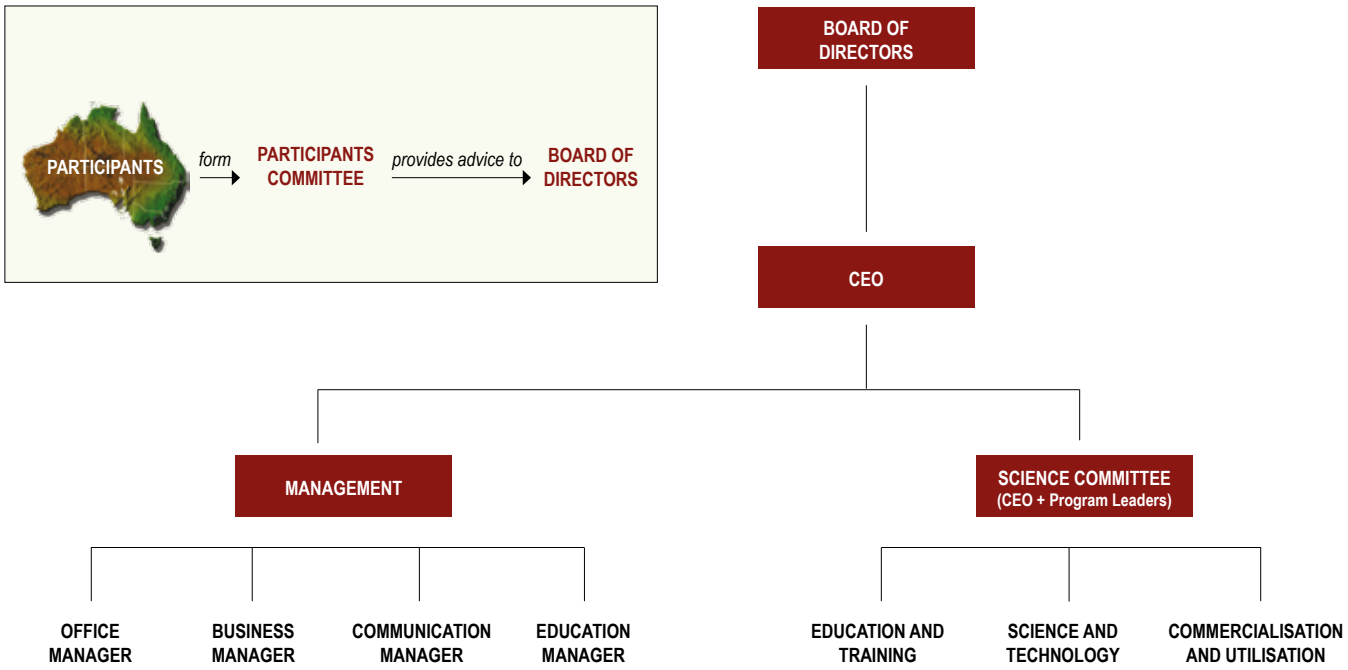
Australia's future plant biosecurity capacity will also depend heavily on education. The education program will help provide Australia's future capacity to deal with future plant biosecurity incursions. Australia faces an ageing and declining expertise base in plant biosecurity fields. The CRCNPB investment in education will be critical to building the future capacity needed for Australia's plant biosecurity. One of the biggest challenges for our education program is making the study of science and, in our case, plant biosecurity exciting again so that we can attract the next generation of school leavers.

In the coming year, the CRC will focus on having a full portfolio of research projects under way, enrolling more PhD and Honours candidates, and developing a postgraduate course in plant biosecurity. The Centre's delivery and adoption program will also be fully implemented and we will be developing strategies to deliver the Centre's outputs to our industry partners.

GOVERNANCE, STRUCTURE AND MANAGEMENT

The Cooperative Research Centre for National Plant Biosecurity was established on 18 November 2005 as an unincorporated joint venture, managed through the incorporated entity CRC NPB Ltd. An overview of the CRC's organisational structure is provided in the chart below, with details of the Centre's Board and committees following.

FIGURE 1: CRCNPB ORGANISATION CHART



GOVERNING BOARD

CRC Plant Biosecurity's Board meets quarterly to develop and deliver the Centre's strategic objectives. The CRC's independent, skills-based Board was established with careful consideration to ensure a broad spectrum of expertise and to maximise the Board's input to CRC direction and management.

- Meets 4 times a year.
- Changes during 2005/06: Dr Peter Merriman replaced Mr Brian Newman on the Board.
- CRCNPB Board Membership:

» Professor John Lovett (Chair)

Key skills: *Leadership in plant science research.*

Brief CV: *Chair: Agrifood Awareness Australia Ltd. Chair: CRC for Greenhouse Accounting. Board member: HRZ Wheats Pty Ltd. Nominee to Executive Board: Global Crop Diversity Trust (2006). Managing Director: Grains Research and Development Corporation (1994–2003). Professor of Agronomy: University of New England (1987–1993). Professor of Agricultural Science: University of Tasmania (1984–1987).*

» Mr Barry Windle (Deputy Chair)

Key skills: *Leadership in plant science research.*

Brief CV: *Executive Director: Agriculture, Food and Fisheries, Primary Industries and Resources SA (PIRSA) (2002–August 2004). Senior Executive: PIRSA (1993–2002). Acting Chief Executive: PIRSA (2002). General Manager: Agricultural Industries (1995–1997). Principal Horticulturist and General Manager Horticulture (1988–1993). Horticultural Development Consultant: World Bank, India (1989–90).*

» Ms Christine Campbell

Key skills: *Leadership in finance and management for the plant industries.*

Brief CV: *Executive Chair: Twynam Agricultural Group. CEO (1983) and Financial Controller (1977) Twynam Agricultural Group. Chair: Australian Cotton Industry Council (2002–2005). Chair: Cotton Australia (2001–2003). Private Sector Advisory Panel to International Cotton Advisory Council (2004–2005). Director: Cotton Australia (1999–2005).*

» Dr Jim Cullen

Key skills: *Leadership in plant science research.*

Brief CV: *Member: Quarantine & Exports Advisory Council (1997–2003). Chief: CSIRO Entomology (1997–2002). Board Member: CRC for Australian Weed Management (Weed Management Systems) (1995–2002) (Acting Director 1995). Member: Australian Weeds Committee (1988–2002). External Advisor (Science & Research): Environmental Risk Management Authority NZ (2002). President: Australian Entomological Society (1997–2000).*

» Professor John Irwin

Key skills: *Leadership in plant science research and education.*

Brief CV: *Professor of Botany: School of Integrative Biology, University of Queensland (1993–present). CEO: CRC for Tropical Plant Protection (1999–2006). CEO: CRC for Tropical Plant Pathology (1992–1999). Member: National Crop Improvement Committee, Grains Research and Development Corporation (1991–1993). Lecturer, Senior Lecturer, Reader: University of Queensland (1982–1992). Plant Pathologist / Research Fellow: Queensland Department of Primary Industries / University of Wisconsin (1972–1982).*

» Dr Peter Merriman

Key skills: *Leadership in plant biosecurity research.*

Brief CV: *Chair of the Board, Victorian Strawberry Industry Certification Authority. Chair Institute Biosafety Committee, Hexima Pty Ltd. Consultant in Plant Protection and Biosecurity to Horticulture and Grains industries. Member Plant Health Committee and Consultative Committee for Exotic Plant Pests and Diseases (1980–2003). Principal Research Scientist Department of Primary Industries, Victoria (1990–2003). Member of the Advisory Board, Centre for Environment Stress and Adaptation research (1999–2002). Director, Australian Development Assistance Project, Control of Coffee Leaf Rust in PNG (1988–1992).*

» Mr Chris Richardson

Key skills: *Leadership in management and biosecurity for the agricultural industries.*

Brief CV: *Chair, Agriculture Protection Board of WA (Board member since 1998 and Chair since 2002); Chair, WA Footrot Eradication Campaign Advisory Committee (1999 – present); Chair, WA Ovine Johnes Disease Advisory Committee (2004 – present); Board member Corredene Pty Ltd; CEO Australian Merino Society Inc 1999 – present)*

CRC PLANT BIOSECURITY BOARD

Dr Peter Merriman, Dr Jim Cullen, Mr Barry Windle, Mr Chris Richardson, Prof John Irwin, Prof John Lovett, Dr Simon McKirdy (CEO), Ms Christine Campbell.

FINANCE & AUDIT COMMITTEE

- The Finance and Audit Committee was established during 2005-06 to review and recommend the financial statements of the Company and the Centre for approval by the Board.
- Meets as required.
- Membership:
  - Ms Christine Campbell (Chair)
  - Professor John Lovett
  - Mr Chris Richardson
  - Mr Sunther Suntheraraj

MANAGEMENT COMMITTEE

- The Management Committee administers the policies and delegation authorities of the Board, and provides executive support to the Centre.
- Meets monthly.
- Membership:
  - Dr Simon McKirdy, CEO (Chair)
  - Ms Mellanie Balment-Sanders, Office Manager/Executive Assistant
  - Dr Kirsty Bayliss, Education Manager
  - Ms Sue McKell, Communications Manager
  - Mr Sunther Suntheraraj, Business Manager

SCIENCE COMMITTEE

- The Science Committee manages and delivers the science program as agreed by members, and is responsible for recommending new projects to the Board.
- Meets monthly.
- Changes during 2005/06:
  - Dr Gary Kong replaced Dr Caroline Hauxwell as Program 2 Leader
  - Dr Kirsty Bayliss replaced Professor Peter Baverstock as Program 5 Leader
- Membership:
  - Dr Simon McKirdy, CEO (Chair)
  - Dr Kirsty Bayliss, Program 5 Leader – Education and Training
  - Dr Paul De Barro, Program 1 Leader – Preparedness and Prevention Research
  - Dr David Eagling, Program 4 Leader – Impact Management Research
  - Dr Darryl Hardie, Program 3 Leader – Surveillance Research
  - Dr Gary Kong, Program 2 Leader – Diagnostics Research
  - Dr James Ridsdill-Smith, Science Coordinator
  - to be appointed, Program 6 Leader – Delivery and Adoption

THE CRC PLANT BIOSECURITY TEAM

Standing (L-R): Paul De Barro, Kirsty Bayliss, Peter Merriman, James Ridsdill-Smith, John Irwin, Mellanie Balment-Sanders, Chris Richardson, Sue McKell, Jim Cullen, Sunther Suntheraraj, Gary Kong.
Seated (L-R): Darryl Hardie, David Eagling, Christine Campbell, Simon McKirdy, Barry Windle, John Lovett.

PARTICIPANTS COMMITTEE

- The Participants Committee monitors the progress of the Centre, including current and proposed projects, and commercialisation of Centre IP.
- Meets twice yearly
- Membership:
  - Ms Jane Moran, Department of Primary Industries Victoria (Chair)
  - Mr Jeff Bilman, Murdoch University
  - Mr John Chapman, Queensland Department of Primary Industries and Fisheries
  - Mr Chris Florides, Saturn Biotech Limited
  - Dr David Hall, Department of Primary Industries New South Wales
  - Mr Phillip Fitch, Commonwealth Department of Agriculture, Fisheries and Forestry
  - Dr Pauline Mooney, South Australian Research and Development Institute
  - Dr Andy Sheppard, CSIRO
  - Mr John Sandow, Grains Research and Development Corporation
  - Dr Shashi Sharma, Department of Agriculture and Food Western Australia
  - Mr Rodney Turner, Plant Health Australia Ltd
  - Professor Robert Wasson, Charles Darwin University

INDUSTRY CONTEXT

Biosecurity has emerged as a major global issue. Pest incursions, both insects and diseases, directly threaten the economic viability of Australia's plant industries which have a farm gate value of over $18 billion and contribute approximately $14 billion to export income. The ongoing supply of agricultural products to the domestic market, and the commerce associated with the entire supply chain are also at risk. In addition to the economic impacts of pest and disease incursions there can also be significant social and environmental impacts. The global market is becoming more aware of plant biosecurity issues further emphasising the importance of the activities of the CRCNPB.

MAJOR DEVELOPMENTS DURING THE YEAR

The CRC's late start on 18 November 2005, resulting from the delayed execution of the Centre's Agreements, has not enabled a full utilisation of all staff in-kind, non staff in-kind and cash commitments in 2005/06. The CRCNPB is working with its Participants to ensure the shortfall is covered as quickly as possible.

Key Staff Appointments

In 2005/06 the following appointments of key staff were made:

- Chief Executive Officer: Dr Simon McKirdy
- Business Manager: Mr Sunther Suntheraraj
- Office Manager / Executive Assistant: Ms Mellanie Balment-Sanders

Major Equipment Purchases

No major equipment was purchased.

IP MANAGEMENT

The potential Intellectual Property arising from each Centre project is considered in the development and project recommendation stages. An IP register will be established in 2006/07 utilising the Centre's project management system. The Centre has taken steps to protect intellectual property arising from its projects by stipulating confidentiality in its project agreements and the establishment of procedures to ensure the preservation of confidential information. All project confidential information and any infringement thereof are required to be notified to the Company.

The CRC's management company CRC NPB Ltd, through its Intellectual Property Register, will be responsible for securing, maintaining, and protecting any patents and other intellectual property associated with the Centre, where applicable. CRCNPB's Business Manager will be responsible for maintaining the Centre's IP register.

TECHNOLOGY TRANSFER

The overall aim of this CRC is to develop novel technologies, and to rapidly and efficiently transfer tools, knowledge and technology to end-users—agribusiness, producers, and the Australian and State governments—to pre-empt and diminish the economic and environmental impact of pest and disease incursions across Australia. The underlying imperative is to identify the strategy/process that will enable rapid and ongoing availability of the new technology to Australian end-users: growers and other SMEs; agribusiness and other companies who provide services to, or are part of the supply chain for, agriculture (many of which are also SMEs); and government bodies with biosecurity responsibilities.

The CRC will use existing extensive national and state networks of the public agencies, coordinated by PHA and the RDCs. There is a move away from the vertical, "top-down" approach of transfer of information from scientist to farmer, towards methodologies that emphasise information flows, adult learning principles and participation by stakeholders: there is now more attention to "demand-pull" as opposed to "science-push".

Since CRC Plant Biosecurity's inception in November 2005, the first seven months of the Centre's activities have been focussed on development of the science and technology portfolio. In 2006/07, a Program Leader will be appointed to the Commercialisation and Utilisation Program and a detailed delivery strategy will be developed for the CRC's outputs.

Table 1: Commercialisation Milestones 2005-06

Output	Milestone	Achieved	Progress	Reason not achieved	Strategies towards achievement
Establish End-user Advisory Group for each Research Program to prioritise, monitor and advise on delivery	Identify key stakeholders and representatives for each research program (March 2006)	Yes	Key stakeholders regularly engaged in advising Science Committee and Board.		
	Determine priorities and establish projects (March 2006)	Yes	System in place to enable regular re-assessment of priorities and continued development of new projects		
	Develop project progress evaluation system to enable establishment and monitoring of priorities (March 2006)	Yes	A project selection and review process is in place.		
Effective communication and delivery strategy operational.	At least one training workshop conducted (June 2006)	Yes	Training workshops will be conducted regularly		
Comprehensive, world class diagnostics for emergency plant pests available through national and international databases	Priorities and agreements on data standards, distance diagnostics and databases established through international workshops (June 2006)	No	--	The first workshop was held in September 2006 with a second being held in December 2006.	The completion of the two workshops in late 2006 will enable milestone to be achieved by January 2007.
Effective communication and delivery strategy operational	At least one training workshop conducted (June 2006)	Yes	Further diagnostic training workshops will be held		
	At least one training workshop conducted (June 2006)	Yes	Further surveillance training workshops will be held		
	At least one training workshop conducted (June 2006)	Yes	Further response training workshops will be held		

Table 2: Involvement of End-users in CRC Activities

Industry or other research users and the basis of their interaction	Type of activity and location of activity	Nature and scale of benefits to end-users	Actual or expected benefit to user
Plant Health Australia (Core Participant)	Research and Delivery and Adoption. Located in Canberra.	Represent the majority of plant industries. Active in communicating activities of CRC to industry and ensuring adoption. Involved in projects to develop national grains industry surveillance strategy, to develop a biosecurity planning framework for emerging industries and to develop a national communication strategy for plant biosecurity.	Adoption of CRC outputs will enhance the plant biosecurity status of Australia's plant industries.
Field and Horticultural plant industries	Main beneficiary of CRCNPB outputs	CRC outputs will minimise economic, social and environmental impacts of future pest incursions leading to increased export opportunities and stable production costs.	Enhanced plant biosecurity will ensure market access and enable new market potential. Production costs will not increase due to minimising impact of future incursions.
Commonwealth Department of Agriculture, Fisheries and Forestry (Core Participant)	Research. Located in Canberra plus some regional locations.	Input to research activities to ensure outputs address national plant biosecurity gaps. Outputs will enhance the regulatory delivery of plant biosecurity at the border. Involved in projects to develop an economic model to assist in incursion response and advisory role on projects covering diagnostics and surveillance.	Outputs will be utilised by Commonwealth government in delivery of national biosecurity.
CSIRO Entomology (Core Participant)	Research. Located in Canberra, Perth and Brisbane.	Outputs will assist CSIRO in delivering plant biosecurity capacity to plant industries. Involved in projects to explore new tools to enable early warning of new threats and to develop more effective risk analysis tools.	Greater involvement in collaborative research activities.
Department of Agriculture and Food, Western Australia (Core Participant)	Research and Delivery and Adoption. Main office Perth.	Input to research activities to ensure outputs address state plant biosecurity gaps. Outputs will enhance the regulatory delivery of plant biosecurity at the state and national border. Involved in projects to develop more accurate and timely diagnostics for Karnal bunt, the development of new tools to enable early warning of new threats and to develop more effective risk analysis tools.	Outputs will be utilised by state government in delivery of state and national biosecurity.
Department of Primary Industries, Victoria (Core Participant)	Research and Delivery and Adoption. Main office Melbourne.	Input to research activities to ensure outputs address state plant biosecurity gaps. Outputs will enhance the regulatory delivery of plant biosecurity at the state and national border. Involved in advisory role in projects covering the full biosecurity continuum.	Outputs will be utilised by state government in delivery of state and national biosecurity.

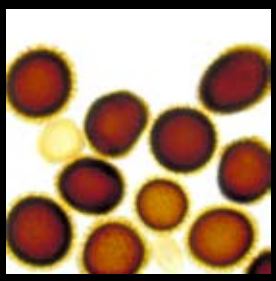
Industry or other research users and the basis of their interaction	Type of activity and location of activity	Nature and scale of benefits to end-users	Actual or expected benefit to user
Queensland Department of Primary Industries and Fisheries	Research and Delivery and Adoption. Main office Brisbane.	Input to research activities to ensure outputs address state plant biosecurity gaps. Outputs will enhance the regulatory delivery of plant biosecurity at the state and national border. Involved in projects investigating new diagnostic technologies and advisory role for projects in diagnostic and surveillance programs.	Outputs will be utilised by state government in delivery of state and national biosecurity.
New South Wales Department of Primary Industries (Core Participant)	Research and Delivery and Adoption. Main office Orange.	Input to research activities to ensure outputs address state plant biosecurity gaps. Outputs will enhance the regulatory delivery of plant biosecurity at the state and national border. Involved in projects to develop new diagnostic systems for Karnal bunt, to determine the importance of rice blast strains in Australia and advisory role on projects.	Outputs will be utilised by state government in delivery of state and national biosecurity.
South Australian Research and Development Institute (Core Participant)	Research and Delivery and Adoption. Main office Adelaide.	Input to research activities to ensure outputs address state plant biosecurity gaps. Outputs will enhance the regulatory delivery of plant biosecurity at the state and national border. Involved in projects to determine the most cost-effective methods for pest eradication.	Outputs will be utilised by state government in delivery of state and national biosecurity.
Grains research and Development Corporation (Core Participant)	Research investor and Delivery and Adoption. Main office Canberra.	Outputs enable greater rigour in identification of priority plant biosecurity research activities for Australia grains industry.	Greater effectiveness of plant biosecurity research investment.
Horticulture Australia Ltd (Supporting Participant)	Research investor and Delivery and Adoption. Main office Sydney.	Outputs enable greater rigour in identification of priority plant biosecurity research activities for Australian horticultural industry.	Greater effectiveness of plant biosecurity research investment.
Saturn Biotech Ltd (Core Participant)	Delivery of plant pest diagnostic service to plant industries. Based in Perth.	Outputs from diagnostic projects will enhance the service provided to plant industries.	New technologies and tools will provide faster, most cost-efficient and accurate diagnostics
OrdGuard (Primary Industry Body)	Delivery and Adoption of research activities. Based in Kununurra.	Sociology outputs that will enhance the greater community involvement in biosecurity activities. Actively co-supervising CRCNPB PhD student.	Strategies for engaging community will enhance the delivery of the OrdGuard program.

biosecurity built on science ...

Karnal bunt disease could cost the Australian wheat industry ...

BIOSECURITY RISKS

Symptoms of Karnal bunt disease in wheat grains.



DIAGNOSTIC CAPACITY

Teliospores of the Karnal bunt pathogen, *Tilletia indica*.

SURVEILLANCE

The wheat industry, Australia's largest plant industry, is currently free of Karnal bunt.

FOOD SECURITY

Wheat infected with Karnal bunt can result in tainted flour that is not suitable for human consumption.

MARKET ACCESS

The presence of Karnal bunt would result in the loss of major export markets for Australia.

... up to $1 billion annually in lost income if it entered and became established in Australia

CRC PLANT biosecurity

CRC PLANT biosecurity

Preparedness and Prevention Research

Diagnostics Research

Surveillance Research

Impact Management Research

Education and Training

RESEARCH COLLABORATION

The CRC for National Plant Biosecurity was established to strengthen the plant biosecurity scientific capacity in Australia. A science team, consisting of the CEO, the Science Coordinator, the four Science Program Leaders plus the Leader of the Education Program, in this first year have been visiting as many of the Participants as possible to discuss the requirements for the strategic objectives and the key actions for each program as laid out in the Strategic Plan (2005-2012). The aim was to help the seconded scientists and the science managers of the Participants know about the science directions of the CRCNPB and to establish areas of interest for the different Participants. In addition, most Program Leaders have been organising workshops in specific areas to bring together the key scientists from different organisations in order to help focus and identify project areas for further development. The workshops are not aimed to result in a single project but more to explore the strengths and weaknesses of alternative approaches. Workshops have been held on: molecular analysis systems, antibodies as diagnostic tools, distance diagnostics, spatial modelling, emerging technologies for surveillance, and climate change.

Key research achievements

CRC Plant Biosecurity's research program commenced in 2005-06, with a total of 18 projects (listed overleaf) under way by 30 June 2006.

Reasons for milestones not being reached

The late start of the CRCNPB due to legal discussions between Participants (November 2005) has meant that all projects are now running later than originally proposed in the agreement. Many of the Participants have a major involvement in the managing of plant biosecurity, but a smaller involvement in the underpinning research. Thus, open calls for project proposals did not produce many projects that would have contributed to achieving agreed Commonwealth milestones and addressing critical research gaps in Australia's plant biosecurity system. As a result, the Science Committee of the CRC has spent much more time than anticipated in helping to identify research areas and projects, then collaborating with participant organisations to identify the people to be involved. The funding bodies have also requested to make their investment on a project-by-project basis, which requires separate approvals through their systems. The Board of the CRC makes the final decisions on funding projects put up by the Science Committee. The agreed science program will be much stronger resulting from this process and the milestones will be achieved, but there will be delays in the completion dates of some of these milestones due to the Centre's late start.

Dr James Ridsdill-Smith
SCIENCE COORDINATOR

Major consultancies

James Ridsdill-Smith was a member of a Centre for International Economics team member that produced a Biosecurity Strategic Discussion Paper for the Queensland Department of Primary Industries and Fisheries during 2005-06.

External grants

Several Research and Development Corporations have expressed an interest in investing in the research carried out by CRCNPB. All have requested that funding should be on a project by project basis up to a certain value. The Grains Research and Development Corporation (Core Participant) have funded three projects up to a value of $300,000 a year for three years (CRC40004, CRC40006, and CRC10009). GRDC are currently considering a second group of projects that have been presented to them. The Rural Industries Research and Development Corporation have funded two projects to a value of $100,000 a year for three years (CRC20005 and part of CRC10010). Horticulture Australia Limited (Supporting Participant) are still negotiating but have indicated funding projects to at least $300,000 a year (part of CRC10010, CRC30022, another fruit fly trapping project and a smaller project on Diagnosis of fireblight).

Contribution to national research priorities

CRC Plant Biosecurity contributes to two goals within the Australian Government National Research Priority of *Safeguarding Australia*, those being Priority Goals 3 (Protecting Australia from invasive diseases and pests) and 4 (Protecting Australia from terrorism and crime). The CRC's whole program, still being developed, will contribute to both of these goals and, in particular, to Goal 3.

Changes to future directions

The Centre's research program areas represent a biosecurity continuum. Discussions about specific projects through the first year have resulted in a better definition of what each program will undertake, and some of the boundaries have been shifted slightly. Program Leaders from all research programs have been actively involved in identifying possible postgraduate student projects that will contribute to the outcomes and some of the milestones of the CRCNPB across the whole program. One milestone (Milestone 1.3.2 in Program 1) will now be achieved through Program 5. Milestone 1.1.3 in program 1 (Analysis of risk perception in communities and industries completed) will be undertaken by Program 6 where the Centre's communication research will be located.

Number of collaborations entered

There is considerable potential for collaboration in this CRC with 12 core Participants and four supporting Participants. All projects have scientists from at least two Participants, and frequently more. There is also the potential to involve non-members on a project-by-project basis, and this has been used in particular to bring additional expertise into the CRC. It is intended that all PhD students will have a university-based supervisor as well as a supervisor from one of the CRC's non-university Participants, and will spend some time working with that organisation. Fifteen of the sixteen Participants are so far involved in projects either contracted or under development.

Number of international collaborations

There are two reasons that the CRC has engaged in international collaboration. One is to access world-class expertise, and the second is to be able to work overseas to obtain information on emergency plant threats that have not yet arrived in Australia. International scientists are or will be contributing to CRCNPB projects from Lincoln University, New Zealand (CRC10001), Kansas State University, USA (CRC4006), and Utah State University (CRC5008, CRC4007). Several CRCNPB members attended the 3rd New Zealand Biosecurity Summit in Chistchurch, New Zealand to develop a relationship with the Better Border Biosecurity initiative which is funded by the Foundation for Research, Science and Technology. Key stakeholders are Biosecurity New Zealand, Environmental Risk Management Authority, Forestry Biosecurity Research Council, and the Department of Conservation.

Collaboration adds value to the CRC

The CRC for National Plant Biosecurity, which represents most of the Australian players in the science of plant biosecurity, is increasingly being seen as the organisation through which Participants could develop research outputs. Dr Simon McKirdy, the CEO of CRCNPB is an observer on the Plant Health Committee. The Market Access Group of Horticulture Australia Limited has set up a national committee to consider research coordination for fruit fly control to improve trade and market access. The CRC is seen as a major science resource for this group, and the committee includes two CRCNPB members, Director Mr Barry Windle (Committee Chair) and Science Coordinator Dr James Ridsdill-Smith. Dr Gary Kong, Program leader for Diagnostics in the CRC, has been appointed a member of the Subcommittee on Plant Health Diagnostics Standards.

Developing collaborative linkages within the CRC across activities

The Centre's science team are all involved in evaluating projects for their ability to: contribute to CRC outcomes; demonstrate quality science and collaborative research; and meet end-user needs. This means that all Program Leaders are familiar with, and have input into, all the projects in the CRC, ensuring appropriate linkages across activities. Projects involving modelling and economics in each program in particular have the potential for overlap. Complementarity between projects has been achieved through discussions to make sure that important areas are covered but not duplicated.

Linkages with research users and external linkages (including other CRCs)

Linkages are being developed with the Centre of Excellence for Risk Analysis at the University of Melbourne and National ICT Australia Ltd. Joint projects are currently under discussion with the Australian Biosecurity CRC for Emerging Infectious Diseases, the CRC for Australian Weed Management, and the CRC for Spatial Information. A Biosecurity Forum has been set up and has already met several times involving the Australian Biosecurity CRC for Emerging Infectious Diseases, Invasive Animals CRC, CRC for Australian Weed Management and the CRC for National Plant Biosecurity, with the aim of promoting better cooperation and collaboration. A future CRCNPB PhD project will be based with US collaborators in plant biosecurity research at Utah State University.

ACTIVE CRCNPB PROJECTS 2005-06

PREPAREDNESS AND PREVENTION RESEARCH		
CRC10001	Early Warning Threat Identification	Early warning of pre-emergent pests
CRC10010	Enhanced Risk Analysis Tools	Enhanced risk analysis tools
DIAGNOSTICS RESEARCH		
CRC20004	Karnal Bunt Detection	Enhancing the detection of *Tilletia indica*, the cause of Karnal Bunt
SURVEILLANCE RESEARCH		
CRC30009	Grains Surveillance Strategy	Development of national grains industry surveillance strategy
CRC30014	PDA-assisted Surveillance	Using PDA technology to provide a national system for rapid and secure plant biosecurity surveillance data capture
IMPACT MANAGEMENT RESEARCH		
CRC40005	Rice Blast	Survey of Australian rice blast races and cultivar susceptibility
CRC40006	Russian Wheat Aphid	Evolution of Russian wheat aphid virulence and resistance sustainability
CRC40007	Predictive Economic Model	Development of an economic module as a key component of a national predictive simulation system
CRC40016	Pathogen Eradication Strategies	Optimising eradication strategies for EPP incursions on perennial crops
EDUCATION AND TRAINING		
CRC50002	Lettuce Aphids	Biotic factors affecting the spread of small wind-dispersed insect
CRC50003	Ascochytia Wind Tunnel	Biotic factors affecting the spread of an air-borne/splash-borne fungus
CRC50008	Terrestrial Observation Predictive Systems	Postgraduate training in terrestrial data assessment
CRC50011	OrdGuard Community Engagement	Community engagement in biosecurity – the Ordguard case study
CRC50017	Detection in Pathogen Mixtures	Novel approaches to surveillance monitoring for EPP pathogens
CRC50026	Citrus Canker Fingerprinting	Characterisation of citrus canker isolates and validation of new diagnostic methods
CRC50027	Scarab Beetle Barcoding	Development of DNA barcoding system for the identification of Australian insect species: a case study of scarab beetle larvae in NSW
CRC50028	Fusarium Head Blight Characterisation	Aetiology and epidemiology of the Fusarium head blight epidemic in wheat in 2005 in North West NSW
CRC50029	Taxonomy of *Phytophthora citricola*	Taxonomy, biology and pathology of *Phytophthora citricola*-like pathogen

RESEARCH :: PROGRAM 1
Preparedness and Prevention

Program 1 has set as its focus over the next four years a regimen of research focusing on the key aspects of the risk analysis pathway, those being: threat identification, threat prioritisation, probability of entry, probability of establishment, probability of spread and impact of climate change. For each of these areas, the driving focus of project development has been to pull together partnerships that involve team members who provide skill sets that will enable the project to deliver the required outputs and outcomes to end-users. All projects developed to date involve collaborations with a range of CRC participants as well as Australian and international collaborators: ACERA; CRC for Australian Weed Management; CSIRO; DAFF; each of the State Departments of Primary Industries; Lincoln University (New Zealand); and PHA.

This Program is currently developing a framework to respond to risks associated with climate change and plant biosecurity. Climate change is increasingly recognised as a major threat to natural and agricultural systems. The expected increase in climatic changes (atmospheric CO_2, frost, heavy and unseasonal rains, increased humidity, drought, cyclones and hurricanes and warmer winter temperatures) is likely to affect crops, pests and diseases and pathogen host interactions. However, the extent to which climate change will affect EPPs, their hosts and environment is not well understood. To respond to future climates, changes to industry practices and government policies may be required. This project will identify the potential risks associated with climate change and plant biosecurity. A framework will be developed around these risks to inform industry practice and policy. A project involving DPIF, PIRVIC, PHA and CSIRO is currently in development with DPIF and PIRVIC taking the lead on project development.

Dr Paul De Barro
Program Leader,
PREPAREDNESS AND PREVENTION RESEARCH

Table 3: Preparedness and Prevention Research Milestones 2005-06

Output	Milestone (date)	Achieved	Progress
1.1 Knowledge to underpin decisions of risk of entry, establishment and spread of EPPs	1.1.1 Establish Program End-user Group including PHA and Biosecurity Australia (Dec-05)	YES	A steering committee, the Centre's Participants Committee, has been established as the end-user group of Program 1 outputs.
	1.1.2 Review biosecurity plans prepared by the plant industries with the Steering Committee to identify key issues to be explored quantitatively. (Mar-06)	YES	Existing industry biosecurity plans have been discussed with our major industry partners and a series of gaps in regards to threat identification and prioritisation identified. In response, two projects (CRC10001 and CRC10010) were developed that directly address the gaps identified. The outputs of these projects will enable us to critically review the rigour of existing industry biosecurity plans.
1.2 New risk assessment, economic and complex systems models for biosecurity	1.2.1 Select biological systems to develop models to predict the spread of different functional groups of emergency plant pests. (Mar-06)	YES	A number of biological systems have now been identified. These systems will be used as models to develop and test ideas being explored through the Program's projects.
1.3 More efficient and effective responses to EPPs through better understanding of their biology and epidemiology	1.3.1 Gaps in knowledge requiring research about selected emergency pests identified. (Jun-06)	YES	These were identified through end-user and stakeholder discussions.

RESEARCH :: PROGRAM 2
Diagnostics

Significant progress was made during the 2005-06 period with the achievement of all Commonwealth Agreement milestones relating to Diagnostics. A change of Program Leader in February 2006 did, however, cause delays in progress towards the diagnostics-related milestone specified for Delivery and Adoption Program. Nonetheless, several workshops were conducted over the reporting period by the former Program Leader, Dr Caroline Hauxwell, where scientists at a national and international level were engaged in the development of ideas and potential projects for improved and innovative diagnostic procedures. Many of the ideas generated at these workshops, which included molecular analysis systems (Canberra), antibodies as diagnostic tools (Brisbane) and distance diagnostics (Brisbane) have been refined and are currently being considered as preliminary project applications within the CRCNPB.

Considerable progress has been made towards development of a national diagnostic database, with the CRC proactively engaging biosecurity policy-makers, by proposing standards and protocols for national consideration and promoting the adoption of an agreed framework for implementation. Some progress towards international acceptance of an agreed standard for web-based diagnostic data was achieved through recent discussions with representatives from the USA and New Zealand.

Contracted projects during the 2005-06 period have made good progress while those recently contracted are either under way or expected to proceed soon. A modest amount of funding has been received from research and development corporations but which, at this stage, has fallen short of the level of support expected for diagnostics when the CRC was established. There is, however, an expectation that this situation might improve over the following year. State support for diagnostics in terms of staffing and resourcing projects has been of a high level and there is a good prospect that this will be even greater over time.

Dr Gary Kong
Program Leader,
DIAGNOSTICS RESEARCH

Table 4: Diagnostics Research Milestones 2005-06

Output	Milestone	Achieved	Progress
2.1 National and international databases for world-class diagnostics of emergency plant pests.	2.1.1 Priorities and agreements on data standards, distance diagnostics and databases established. (Jun-06)	YES	Agreement reached through the subcommittee on plant health diagnostic standards (SPHDS) to modify and adopt the IPPC (International Plant Pest Convention) diagnostic protocols for emergency plant pests. SPHDS will finalise adoption of IPPC standards for diagnostic data in September 2006 and recommend adoption to the Plant Health Committee (PHC). Discussions with US and NZ biosecurity researchers have commenced to centralise all web-based diagnostic data under the QUADS (Quadrilateral Agreement on Plant Health) agreement.

RESEARCH :: PROGRAM 3
Surveillance

Emergency Plant Pest (EPP) Surveillance is a key component of Plant Biosecurity. The challenge for Australia is to have a pest surveillance system that takes into account the diverse plant industries and range of production as well as the large area over which production occurs (including urban areas as well as natural ecosystems). This has to be considered in the global setting where increases in trade and travel have increased the potential for pest introductions. CRC Plant Biosecurity's surveillance program will develop technically sound sample/survey methodologies and systems to enhance the ability to capture a wide range of high quality information in an accurate and cost-effective manner that will be accepted domestically and internationally by trading partners.

The first year of CRC Plant Biosecurity has been a challenging but rewarding experience with an array of project concepts being developed. A mix of short, mid-term and blue-sky projects are in various stages of readiness. Extensive visits and meetings with stakeholders have helped to identify the research required to support an integrated surveillance system across a wide range of industries. Currently, all field-collected surveillance information for the plant industries is recorded manually on paper. A project has been developed using software and hardware to provide state agencies with a field-based digital interface using hand-held Personal Data Assistants (PDAs). The software will be BIOSIRT compliant and will interface with the National Plant Surveillance Reporting Tool, or the staging databases in the state agencies.

A second project has commenced to provide a national surveillance strategy for the grains industry, with funding support from the grains industry (GRDC). Following a successful workshop in Canberra, collaborative projects have been developed with National ICT Australia Ltd investigating the use of hyperspectral imaging in detection of pathogens on plants, and of spectral imaging and pattern recognition to record the species of EPPs entering autoreporting traps. Negotiations are well under way for projects to improve trap placement for optimal detection of incursions or for measuring area freedom following eradication of an EPP. The model system being considered is with fruit flies, and negotiations are under way for co-funding with the horticulture industry (HAL).

Significant planning and progress was made by this Program over the 2005-06 reporting period towards milestones in the Commonwealth Agreement; however, no milestones are due for the 2005-06 reporting period.

Dr Darryl Hardie
Program Leader,
SURVEILLANCE RESEARCH

RESEARCH :: PROGRAM 4
Impact Management

Significant progress was made during the 2005-06 period with all Commonwealth Agreement milestones achieved. A program logic was completed for Program 4 to focus on project development, with the Program having a full complement of contracted projects signed to deliver the listed outcomes in each of the four output areas.

The contracted projects included co-investment from the Rural Industries Research and Development Corporation and the Grains Research Development Corporation. Highlights have been strong representation from all of the CRCNPB Participants in the contracted projects and international collaboration achieved through the involvement of leading researchers from agencies in the US and New Zealand. These factors have contributed to enhanced collaboration and synergy across our Participants in the area of incursion management and represent an early achievement for Program 4 in the development of science capability.

The project development process also included significant end-user input. In some instances, this has led directly to the development of reference groups to assist in the identification and management of risk and route-to-market processes.

The contracted projects have also formed the basis for training opportunities. In particular, the projects have driven the development of postgraduate training opportunities for Program 4 which have been progressed in partnership with the CRCNPB Program 5.

Dr David Eagling
PROGRAM LEADER,
IMPACT MANAGEMENT RESEARCH

Table 5: Impact Management Research Milestones 2005-06

Output	Milestone	Achieved	Progress
4.1 Tools to underpin optimal response strategies	4.1.1 Identify modelling and pre-emptive tools needed to fill knowledge gaps. (June-06)	YES	A proof-of-concept predictive simulation system (PSS) was developed jointly by ABARE and PHA in 2004. Evaluation of this system has identified the economic component as a critical knowledge gap and a key factor in being able to improve confidence in the model outputs and in the PSS as a support tool. Accordingly, the CRCNPB has contracted a project (CRC40007) to develop this tool. The project includes the socio-economic responses of farmers to incursion management strategies which have also been identified as integral to accurately assessing the likely effectiveness and economic impact of these strategies.
4.2 Capacity to respond to new virulence in emergency plant pests	4.2.1 Develop understanding of varying virulence in high priority emergency plant pests. (June-06)	YES	Two projects have been contracted by the CRCNPB as pilots. The first, co-funded by the Rural Industries Research Development Corporation, focuses on exotic pathogen virulence evolution using rice blast as the pilot (CRC40005); while the second, co-funded by the Grains Research Development Corporation, focuses on the exotic insect pest Russian wheat aphid (CRC40006).
4.3 Enhanced disinfestation technologies for imported and exported produce	4.3.1 Detailed review of non-chemical disinfestation technologies completed. (June-06)	YES	A Strategic Research and Development plan for disinfestation has been developed through a National Horticulture Research Network / Horticultural Market Access Committee working group. The strategic plan incorporates findings from a HAL-funded national workshop on fruit fly (the key insect pest affecting exports of horticultural products) at which the CRCNPB was represented. The CRCNPB has remained an active participant in project development negotiations led by HAL to identify priority R&D for which the outcome will be known by early 2007.

EDUCATION & TRAINING :: PROGRAM 5

CRC Plant Biosecurity's Education and Training program began in earnest with enrolment of our first PhD student in February 2006. As of 30 June 2006, we have five PhD projects approved: two students have enrolled, with applications from another three students expected to fill the currently available projects. All student projects have at least one supervisor from a non-university Participant. We have another 20 projects in various stages of development and new proposals arriving regularly. We are on track to successfully reach our target of 32 PhD completions. In addition to our PhD program, we are supporting four Honours students in 2006, and aim to also attract undergraduate students to our Vacation projects in 2007. It is anticipated that some of these students will continue with the CRC to conduct their PhD studies, or pursue careers within the plant biosecurity industry.

The Education program will be capitalising on links developed with the Australian Biosecurity CRC for Emerging Infectious Disease (AB-CRC) by running joint courses over the next year. Development of the Centre's vocational training program has commenced, with two courses set for delivery in early 2006-07. Further workshops and training days covering a range of topics are planned across the the CRC's remaining six years of funding.

Six workshops have been held for researchers and stakeholders as part of the project development process for CRCNPB's four research programs:

1. 20–21 Apr 2005 Nucleic acids platforms workshop. ANU. Convenor: Dr Carrie Hauxwell.
2. 31 Oct – 18 Nov 2005 Application of antibodies in plant biosecurity [workshop]. Brisbane. Convenor: Dr Andrew Geering (QDPI&F)
3. 15–16 Feb 2006 Distance diagnostics workshop. CSIRO Entomology Brisbane. Convenors: Dr John La Salle (CSIRO), Rodney Turner (PHA), and Dr Carrie Hauxwell (QDPI&F)
4. 5–6 Apr 2006 National plant biosecurity spatial modelling and surveillance workshop for emergency plant pests (EPPs). University of Adelaide. Convenors: Dr Darryl Hardie (CRCNPB) and Dr Paul De Barro (CRCNPB)
5. 16 May 2006 Emerging technologies for plant biosecurity [workshop]. School of Information Sciences and Engineering (RSISE), Australian National University. Convenors: Dr Darryl Hardie (CRCNPB) and Dr Antonio Robles-Kelly (NICTA)
6. 29–30 May 2006 National climate change and plant biosecurity workshop. PIRVIC. Convenor: Dr Victor Sposito.

A proportion of CRC Plant Biosecurity's public awareness activities will fall under its Education and Training program, with the main target being school children. A prototype interactive Plant Biosecurity board game has been developed and once our Education Officer is appointed will be trialled at various schools. A model city incorporating various aspects of biosecurity has also been developed which will be used in our school program.

Dr Kirsty Bayliss
PROGRAM LEADER,
EDUCATION AND TRAINING

Table 6: Education and Training Milestones 2005-06

Output	Milestone	Achieved	Progress
Provide short courses and vocational training to plant biosecurity professionals	5.2.1 First short courses and vocational training developed. (Jun-06)	YES	Two courses have been developed in conjunction with the Australian Biosecurity CRC for Emerging Infectious Disease (AB-CRC), for delivery in early 2006-07.

COMMUNICATION STRATEGY

Successful delivery of CRC Plant Biosecurity's strategic plan will depend heavily on being able to successfully translate the Centre's goals and research outcomes into end-user benefits. Articulating formal mechanisms for the CRC's external and internal communications processes will be an important element in managing the Centre and ensuring successful adoption of its research outcomes. CRC Plant Biosecurity's communications function is appropriately positioned within the Centre's Delivery and Adoption Program (Program 6), and will form a major component of this Program's activities.

As a newly formed organisation, and one with a limited funding term, CRC Plant Biosecurity has invested a lot of energy into formalising its business, strategic and operating plans, and these will help to ensure that the Centre is focussed on delivering its well-defined goals and objectives. A Communications Strategy has been developed for CRC Plant Biosecurity that will help the CRC to deliver its research and education outputs to industry and enable the Centre to achieve its broader objectives to safeguard Australia's plant biosecurity.

A key recommendation of the Centre's Communications Strategy is to develop Delivery Plans for each of the Centre's Programs and Projects. Thus, an important goal for the Centre's Communications program over the next year will be to meet with Project Leaders to further develop the pathways to adoption for research outputs. Development of these Project Delivery Plans will elucidate the appropriate mix of communications activities, outputs and budget that will be required for the Centre's annual Communications function.

The Centre's Communications Strategy has organised the Centre's communications activities into four separate communications areas: corporate communications, internal (organisational) communications, collaborative communications and delivery communications. This division provides a tool with which to organise the Centre's communications activities and, in doing so, also provides a meaningful separation of the objectives and responsibilities for each communications area. The communications strategy's vision, mission and key stakeholder groups have been identified for the Centre as a whole, with key messages, agents, objectives and benefits being developed for each of the four communications areas.

Increasing public awareness of plant biosecurity issues is a CRC goal that presents a number of challenges for CRC Plant Biosecurity. There is general agreement amongst research and industry stakeholders that increased public awareness will be a critical element to successful biosecurity programs; however, consensus on the best road to follow to reach this outcome is not so clear. The Centre will undertake some direct public awareness activities, particularly as part of its Education and Training Program, but is also committed to providing enhanced biosecurity communication tools to equip industry for future biosecurity programs. To achieve this, the CRC has already commenced its first communications research project with a goal of analysing previous plant biosecurity communications programs, and evaluating the relative success of these programs against their level of investment and measurable outcomes. This will be the first of a number of communications research projects that the Centre will undertake to improve our understanding of effective biosecurity communications strategies, and which will provide the tools to increase industry's ability to effectively implement plant biosecurity programs in the future.

Sue McKell
COMMUNICATIONS MANAGER

SPECIFIED PERSONNEL

Specified personnel from the Commonwealth Agreement, and details of changes during 2005-06.

Specified Personnel	Contributing Organisation	Position in CRCNPB	Percentage of Time Contributed to CRCNPB Activities	Any Changes during the Year
Dr Paul De Barro	CSIRO	Program 1 Leader, Preparedness and Prevention Research	50%	--
Dr Gary Kong	QDPI&F	Program 2 Leader, Diagnostics Research	70%	Dr Gary Kong (QDPI&F) replaced Dr Caroline Hauxwell (QDPI&F) in this role on 16 February 2006. QPI&F's in-kind contribution for this position increased during 2005-06 by 20% (from 50%, as listed in the Commonwealth Agreement, to 70%). This contribution is planned to return to 50% in future years.
Dr Darryl Hardie	DAFWA	Program 3 Leader, Surveillance Research	80%	DAFWA's in-kind contribution for this position increased during 2005-06 by 30% (from 50%, as listed in the Commonwealth Agreement, to 80%). This increased contribution is planned to continue in future years.
Dr David Eagling	VDPI	Program 4 Leader, Impact Management Research	50%	Dr David Eagling (VDPI) replaced Dr Simon McKirdy (formerly of PHA) in this role on 8 August 2005 when Dr McKirdy took up the full-time position of CEO for CRCNPB.
Dr Kirsty Bayliss	Murdoch	Program 5 Leader, Education and Training	30%	Dr Kirsty Bayliss (Murdoch) replaced Professor Peter Baverstock (SCU) in this role on 3 April 2006. The contribution for this position increased during 2005-06 by 10% (from 20%, as listed in the Commonwealth Agreement, to 30%). Murdoch's contribution for this role is planned to increase to 50% in future years.
Yet to be appointed	CRCNPB	Program 6 Leader, Delivery and Adoption	tbd	--

GLOSSARY

ABARE	Australian Bureau of Agricultural and Resource Economics
AB-CRC	Australian Biosecurity CRC for Emerging Infectious Disease
ACERA	Australian Centre of Excellence for Risk Analysis
ANU	Australian National University
CO2	carbon dioxide
CRC	Cooperative Research Centre
CRCNPB	CRC for National Plant Biosecurity
CSIRO	Commonwealth Scientific and Research Organization (CSIRO)
CVPR	Computer Vision and Pattern Recognition
DAFWA	Department of Agriculture and Food, Western Australia
DNA	deoxyribonucleic acid
QDPI&F	Queensland Department of Primary Industries and Fisheries
DPIWE	(Tasmania) Department of Primary Industries, Water and Environment
EPP	Emergency Plant Pest
GRDC	Grains Research and Development Corporation
HAL	Horticulture Australia Limited
ICT	information and communications technology
IEEE	Institute of Electrical and Electronics Engineers
IPPC	International Plant Protection Convention
Murdoch	Murdoch University
NICTA	National ICT Australia
OCPPO	Office of the Chief Plant Protection Officer
PDA	personal digital assistant
PIRVIC	Primary Industries Research Victoria
PHA	Plant Health Australia Ltd
PSS	predictive simulation system
QDPI&F	(Queensland) Department of Primary Industries and Fisheries
QUADS	Quadrilateral Agreement on Plant Health
R&D	research and development
RIRDC	Rural Industries Research and Development Corporation
RSISE	Research School of Information Sciences and Engineering, ANU
SCU	Southern Cross University
SME	small to medium sized enterprise
SPHDS	Subcommittee on Plant Health Diagnostic Standards
USDA	United States Department of Agriculture
VDPI	Department of Primary Industries, Victoria

Design by Sue McKell
Printing by Lasercolour Digital

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