

Operational Plan 2009 – 2010



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.

overview

By continuing to build strong links with end-users, the Cooperative Research Centre for National Plant Biosecurity will deliver essential biosecurity tools for Australia's plant industries.

A highlight of 2008-09 was completing the Third Year Review of our activities. In 2009-10 recommendations from this review will be addressed by:

- seeking greater end-user involvement
- developing a legacy and succession plan
- preparing a stakeholder management plan as well as a comprehensive communication strategy, and
- convening a Science Exchange in September 2009 to further consolidate our collaborative ethos.

The year ahead will also see the primary school teaching unit, *Plant Pest Investigators* made available to schools Australia wide. *Plant Pest Investigators* will be marketed via workshops, conferences and through our website. Commencing our re-bid for another term will be a key activity for 2009-10. Our Participants have been invited to be part of a working group (with Board and Management) to identify the structure and scope of a re-bid. The formal process will begin in March 2010 with the re-bid submitted in August 2010.

We will continue to foster international linkages by undertaking collaborative research and activities in the United States, Canada, New Zealand, Thailand, Malaysia, Indonesia, Singapore, the United Kingdom and Europe.

In partnership with the Australian Biosecurity CRC for Emerging Infectious Disease and Invasive Animals CRC, we will convene the first international conference focusing on agricultural and environmental biosecurity. *Global Biosecurity 2010: safeguarding agriculture and the environment* will be held in Brisbane from 28 February to 3 March 2010.

Sim Mek

Dr Simon McKirdy Chief Executive Officer

Professor John Lovett Chairman

in 2009-2010 our programs will...



- Deliver threat identification and threat prioritisation tools.
- Develop a proposal to extend the functionality of *Early Warning Threat Identification* to include quantification of likelihood of entry.
- Develop a user-friendly interface to ensure the *Multi-Criteria Decision Analysis* tool is more easily adopted by end-users.
- Deliver draft pest risk maps and pest practice guidelines and a draft Barley yellow dwarf virus model which incorporates climate change.
- Revise project plans for *Evaluating Risk Analysis Systems* and *Comparison of Quarantine Risk Analysis Systems* to better align with current project results and the *Beale Review*.
- Deliver draft multi-layered functional groups classification system as part of the spread model integration process.

- Deliver a series of workshops in partnership with the Sub-committee on Plant Health Diagnostic Standards.
- Finalise new diagnostics through engagement with Australia's plant biosecurity diagnosticians .

Diagnostics Research

- Develop knowledge on insect receptors for novel detection of stored grain pests.
- Deploy a network of remote microscopes and web-based biosecurity tools.



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Impact Management Research

Deploy a Personalised Digital Assistant-based urban surveillance application

Surveillance Research

- for use by state and federal government agencies.
 Develop a phosphine monitoring application for PDAs for use in postharvest/storage grain applications.
- Deploy a mobile spore trap that can function in both ground-based and aerial settings.
- Deliver a new statistical tool for the design and analysis of surveillance programs to end-users.
- Develop new generic virus detection strategies with validation in New Zealand laboratories.
- Further develop chemical and non-chemical pest and disease eradication technologies suitable for production and peri-urban landscapes.
- Develop legal, safe and swift packaging protocols for movement of samples between diagnostic laboratories.
- Conduct preliminary investigations into possible pathogens that may be carried on airline passengers' clothing.
- Further understand the pathogenicity of Russian wheat aphid to inform preemptive breeding strategies.
- Begin development of a through-chain integrated pest management system for fruit fly that meets market requirements.

Post-Harvest Integrity Research

- Undertake and implement a major review of stored grain insect resistance research.
- Deliver a prototype aeration-fumigation system to the grains industry for use in silos.
- Deploy a national resistance monitoring protocol for the post harvest grains industry.
- Develop knowledge of the basic ecology of key post-harvest grain pests.
- Monitor and model fumigant gas flow in grain storages with the aim of improving design and application.
- Design better grain storage structures to improve grain biosecurity.



Education and Training

- Assist PhD students to complete their theses.
- Encourage PhD students to publish their research in peer-reviewed journals.
- Provide on-going professional development for students.
- Deploy the national postgraduate curriculum in plant biosecurity.
- Deliver and evaluate the pilot Grains Biosecurity Course.
- Deliver and evaluate the *Plant Pest Investigators* school strategy.

Delivery and Adoption

- Execute delivery frameworks for key CRCNPB project investments across five major impact areas: Risk, Diagnostics, Area Freedom, Response and Phosphine Resistance Management.
- Deliver recommendations from the *Grains Knowledge Networks* project to form a program for knowledge exchange in the grains industry through which key CRCNPB post-harvest grains research outcomes will be communicated.
- Develop an economic model for biosecurity protection systems that will provide a framework for considering research investment and implementation.
- Implement the CRCNPB's community management model in Indigenous communities in Northern Australia and Eastern Indonesia.

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Outcome	Output	Milesto	ne	Due date	Our projects	
Outcome 1: Prevention – Reduced incidence of harmful	1.2 New risk assessment, economic and complex system models for biosecurity	1.2.2	Develop risk assessment models	Dec 09	CRC10001 CRC100 CRC10067 CRC100)10)68
plant pest incursions		1.2.3	Determine prioritisation systems for biosecurity threats	Dec 09	CRC10010	
	1.4 Effective strategies for the containment of resistance through the supply chain (gene flow)	1.4.1	Identify key variables for selection for phosphine resistance	Jun 10	CRC50089	
Outcome 3: Detertion - More effective national	3.1 Surveillance procedures linked to information detabases GTS detasets and other technologies to	3.1.5	Role of urban surveillance in early detection	Jun 10	CRC30133	
surveillance systems	capture survey data required to define plant heath status	3.1.6	National standards for surveillance staff training	Jun 10	CRC70085	
Outcome 4: Response - Reduced losses for incursions of emergency plant pests	4.1 Tools to underpin optimal response strategies, area freedom protocols and crop management strategies. Capacity to evaluate and validate incursion response strategies through predictive simulation system.	4.1.6	Predictive simulation system	Jun 10	CRC10073 CRC10	124
	4.2 Capacity to respond to new virulence in plant biosecurity threats	4.2.2	Identification of virulence determinants	Jun 10	CRC40006 CRC60	111
	4.4 Validated hygiene science strategies for incursion response	4.4.2	Validated hygiene strategies	Jun 10	CRC40121 CRC60	045
	4.5 Novel control/containment strategies developed	4.5.2	Crop destruction technologies for annual crops	Jun 10	CRC40016	
		4.5.3	Non-destructive strategies for containment	Jun 10	CRC40024 CRC40 CRC40136 CRC60	088 106
Outcome 5: Post-Harvest grain biosecurity	5.1 Strategies for containment of resistance through supply chain	5.1.1	Testing for major genes and resistance gene frequency	Dec 09	CRC50116 CRC30 CRC30065 CRC301 CRC60123 Also contribute to Ou CRC50060 CRC500	064 066 1tput 198
Outcome 6: Education and Training – Increased awareness, knowledge and skills levels of industry personnel, and supply of trained scientists	 6.1 At least 32 PhD graduates with the following characteristics: Specific training in plant biosecurity A broad understanding of the plant biosecurity industry Certified formal training in IP management, commercialisation and business acumen 	6.1.5	Final 16 PhD students recruited	Jun 10	CRC60056 CRC60070 CRC60075 CRC60075 CRC60097 CRC60107 CRC60107 CRC60107 CRC60107 CRC60107 CRC601104 CRC60111 CRC60111 CRC60111 CRC60113 CRC60138 CRC60138 CRC60138	063 774 005 005 20 29 29

program budget 2009-10

The program budget for 2009-10 is represented in the following chart. The Post-Harvest Integrity Research and Delivery and Adoption programs are expected to grow as the CRCNPB reaches full-term, while investment declines slightly in the other programs as expected.



The Cooperative Research Centre for National 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 Program.

Core participants

ABB Grain Ltd Charles Darwin University CSIRO Entomology Department of Primary Industries, Victoria Grains Research and Development Corporation La Trobe University Plant Health Australia Ltd Queensland University of Technology South Australian Research and Development Institute

Supporting participants

Charles Sturt University Northern Territory Department of Regional Development, Primary Industry, Fisheries and Resources Southern Cross University University of Western Australia Horticulture Australia Ltd University of Adelaide

Australian Government Department of Agriculture, Fisheries and Forestry Co-operative Bulk Handling Limited Department of Agriculture and Food, Western Australia GrainCorp Operations Ltd Industry & Investment, New South Wales Murdoch University Queensland Primary Industries and Fisheries Saturn Biotech Limited



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