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CEO's Report

Simon McKirdy
CEO

The CRC has received a great deal of positive support over the last year from investors in plant biosecurity research. At the end of last year, I reported on the Centre's successful Supplementary Bid to DEST for a new Post-Harvest Integrity research program, and a separate successful application to DEST through its Collaborative and Structural Reform Fund to develop a National Plant Biosecurity Curriculum. Our challenge as a CRC is now to ensure that we can seamlessly integrate both activities into our existing CRC and ensure that we deliver high quality outputs across all of our programs.

Extra funding has also brought new Participants into the CRC. I would like to welcome Queensland University of Technology (QUT) as a core participant in the CRC, and the University of Western Australia as a supporting participant. QUT's involvement with the CRC began early with Tony Clarke's leadership on the National Plant Biosecurity Curriculum project. With QUT's leadership on this project, and with the CRC's international networks, we have the capacity to develop a curriculum that will be recognised internationally.

After a long association with the Centre, Sue McKell formally commenced employment with the CRC on 1 December as Communications Manager and Program Leader for the Centre's Delivery and Adoption work (Program 6). Sue will be based at the Indooroopilly Research Centre in Brisbane (see our website for Sue's new contact details), and is currently developing Delivery Plans for each of the Centre's research projects in conjunction with Project Leaders.

I don't need to remind anyone involved in the CRC that we have a big challenge to ensure that we deliver timely outputs for all our research projects. I encourage everyone in projects to endeavour to meet their agreed milestones on time, and deliver on required outputs, as the success of our CRC will be judged on our capacity to do this. Our most recent quarterly reports were managed through our online project management system and I thank project leaders for their efforts in meeting this deadline. The CRC's Science Committee has now commenced the project review process and will be providing feedback and recommendations to Project Leaders, the Board and Participants Committee in the near future.

I look forward to a successful 2007 and encourage all of our members to feel free to drop in to our office whenever you're next in Canberra.

Program Update: Post-Harvest Integrity Research

Ray Akhurst
Interim Program Leader,
Post-Harvest Integrity

The CRC's successful Supplementary Bid to develop technologies and strategies to address biosecurity threats to stored grain has resulted in a new CRC research program (Post-Harvest Integrity), to be established from 1 July 2007 with some new projects arising out of the bid also being added to existing programs. The Supplementary Bid brings with it valuable new industry partners – bulk handling and marketing companies (ABB, CBH and GrainCorp) and the support of growers through the GRDC.

The Australian grain industry is an important contributor to Australia's national economy, producing 30–40 million tonnes of grain per annum, approximately 65% of which is exported with a value of around $6 billion.

Australia's competitive position depends on its continued reputation as a reliable supplier of quality grains, free of insect infestation, and specified plant pathogens, and with very low or zero chemical residues. The perception that export grain might be infested or contaminated has a rapid and negative impact on Australia's reputation and competitiveness. The false report of the disease Karnal bunt in a shipment of Australian wheat to Pakistan in February 2004 sent a strong message on the importance of biosecurity to this very important industry.

In order to remain competitive and to deal with new challenges, the grains industry has to develop a raft of new technologies and strategies to make handling practices more efficient while retaining the requisite level of grain quality. This will require new approaches to fumigant and protectant usage (such as application technologies and strategies), improved sampling technologies for the detection of endemic pests/moulds and of invasive threats, rapid methods for monitoring grain quality, a quality analysis of the value chain to maximise profit for all elements of the supply chain from farmer to end-user, identity preservation technologies, and more.

A significant problem in the storage and handling sector is the threat of new insect strains that are strongly resistant to fumigants. Approximately 80% of Australia's grain is fumigated with phosphine because it is low cost, easy to use in various forms, and leaves little or no residues. However, its use is under threat as a strong resistance to phosphine has been detected across the five major insect pests of stored grains.

Some projects are already being developed to commence in July 2007 in areas of: resistance monitoring, phosphine toxicity and resistance mechanisms, fumigation technology, phosphine fumigation of cool grain, and diagnostics for phosphine resistance. Other projects under development include gene flow in the grain supply chain, value chain analysis, and chemometric early warning of grain contamination. As these projects are not expected to exhaust the expanded budget of the CRC, we are seeking ideas from the CRC for additional projects. I encourage any CRC staff who believe they can contribute to these or new projects to contact me to discuss ways that they can be involved.

CRC Showcase

5 December 2006, Parliament House, Canberra

Above: The Hon Julie Bishop, Minister for Education, Science and Training at the CRC Showcase event.

Right: a screenshot from the pacman-like game, "Invasion", showing spreading potato beetles through the landscape. *Courtesy* Ric Colasanti.

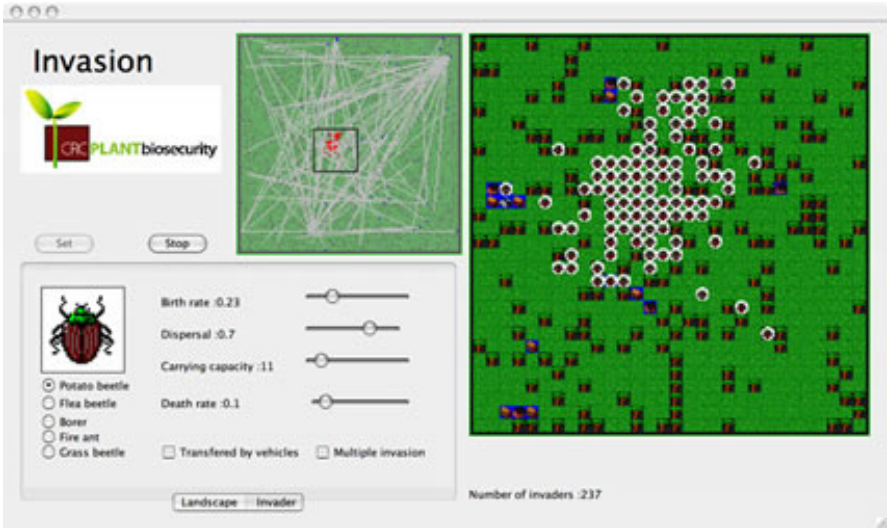
Twenty CRCs showcased their activities to parliamentarians at Parliament House in Canberra on 5 December 2006. The event was an opportunity for MPs and Senators to see the broad range of work being undertaken by CRCs around Australia. An interesting array of displays demonstrated CRCs' innovative achievements.

CRC Plant Biosecurity was pleased to be one of the CRCs invited to participate in the event and Dr Rick Colasanti from CSIRO demonstrated a computer modelling game called “Invasion” that focused on the spread of bugs across the landscape (see screenshot below).

A number of parliamentarians attended the event and the Minister for Education, Science and Training, the Hon Julie Bishop, announced the winner of the CRC Programme's inaugural STAR Award, recognising high level achievement in engaging with and helping to build successful small businesses through the transfer of CRC innovation.

The 2006 STAR award was awarded to the CAST CRC for its work in providing a technological edge to o.d.t. Engineering, a small family-owned Australian casting machine manufacturer. The CRC's support has helped o.d.t. to compete more effectively with European, North American and low-cost Asian manuf acturers.

Other CRC displays at the event included the Beef CRC's huge model of a bull and a flight test for tenderness which visitors were able to try; tuna and salmon to sample from Aquafin CRC; and a trading day visualised through animation from the Capital Markets CRC.



Using MIST to achieve Security

12-13 December 2006, Waikiki, Hawaii

by **Rob Emery**
Project Leader: PDA-assisted Surveillance

The CRCNPB initiated a workshop for experts from four Quads ('Quadrilateral Scientific Collaboration') nations in Hawai in December last year to develop a strategy for collaboration on MISTs for improved plant biosecurity surveillance.

The first job for the workshop was to decide on a term that would cover the wide range of electronic devices being discussed (such as PDAs, hand-held computers, smart-phones, PocketPCs, PDAs or tablet PCs): "Mobile Information Systems Technologies" (MIST) was the result.

The workshop included an presentations from delegates on current and potential uses for MIST. The Canadians demonstrated several pilot studies, including an Asian longicorn beetle incursion response which surveyed 100,000 trees and a BSE surveillance program. Our US colleagues have been working on several MIST approaches, including a USDA/APHIS/CPHST tool called ISIS (Integrated Information Systems Technology) for managing point records and several applications based on ArcPad, one of which has been well received in Costa Rica for pre-clearance programs and fruit fly surveillance. New Zealand is in the early stages of using MIST devices and has some MIST-based applications in horticultural and forestry surveillance as well as remote sensing in insect traps. Australia has used MIST for several field operations, in both Queensland and Western Australian, for applications including wild dog control, helicopter surveys for mesquite weed distribution, and rangeland monitoring of pasture condition. The Australian BioSIRT database and reporting system has been developed for use in managing pest and disease incursion responses, and there are plans for it to “go mobile” soon.

Quads Workshop on MIST Surveillance Devices (delegates are, appropriately, holding cans of "Mist" soft drink), **Back L-R**: Darryl Hardie (AU), Robert Favrin (CA), John Kean (NZ), Adam Twarog (CA), Karl Suiter (US), Ron Weeks (US), Sue McKell (facilitator, AU), Tom Kalaris (US); **Front L_R**: Greg Beeston (AU), Rob Emery (AU), Nic Liquido (US).

So where to from here? The first goal for the Quads collaboration is to improve surveillance data quality to provide surveillance information that is more accurate, consistent, complete, verifiable and auditable. This goal acknowledges that one of the biggest advantage of MISTs include the ability to capture data at the point of observation, where the best appreciation of data lies. Preliminary work will develop data standards based on the BioSIRT checklist. The second goal is to improve technology adoption by end-users initially by summarising lessons learned from pilot studies with a third goal is to promote information sharing between Quads countries to allow faster implementation of the technology. This will start with preparation of a White Paper and a Quads MIST website to permit access to new standards documents and inventories together with other relevant information, such as evidence how MIST technologies improve plant biosecurity surveillance in Quads countries.

Education & Training

The Education and Training Program has been moving forward at a rapid rate since our last newsletter. I am pleased to announce we now have 17 PhD projects approved, with students having already commenced or about to commence on 15 of these projects. We still require students for the projects below, and have a number of new projects in development, so please don't hesitate to contact me if you are interested in completing a PhD in Plant Biosecurity.

Based in WA:

- Development and evaluation of optimum strategies for early detection and recognition of exotic plant parasitic nematodes.
- The introduction, transmission and spread of plant pathogens in plant nurseries using *Phytophthora* as a model.

In December, we were successful not only in our CRC Supplementary Bid, but also in a grant application to support the development of a National Postgraduate Curriculum in Plant Biosecurity. Funded by the Collaborative and Structural Reform Fund (part of DEST), five universities will form a Consortium to develop and then deliver postgraduate Certificate, Diploma and Masters courses in Plant Biosecurity. The universities involved in the grant application were the Queensland University of Technology (the project leader), Adelaide University, Charles Darwin University, Murdoch University and LaTrobe University. It is anticipated that the first students will commence in 2009.

Congratulations to two of our students who have recently completed their Honours projects with the CRC. Jono Terlich and Phil Davies are now enjoying well deserved breaks. If you are interested in an Honours scholarship or Vacation scholarship please get in touch with me.

Kirsty Bayliss
Program Leader: Education and Training

5th International Workshop for Grapevine Trunk Diseases

11-15 Sep 2006, Davis, California

Mark Sosnowski (right) with Trevor Wicks (SARDI) in the Lodi wine region in California. Their visit was part of the workshop's tour of Californian wine regions with attention to disease issues in each region.

Australia's successful wine industry relies on keeping vines safe from exotic diseases, and the recent discovery of glassy-winged sharpshooter insects in the Cook Islands highlights the increasing importance of biosecurity to the Australian grape and wine industries.

Dr Mark Sosnowski from SARDI travelled to the USA in September last year to attend the 5th International Workshop for Grapevine Trunk Diseases and with funding from the CRCNPB, met with US researchers working with black rot and Pierce's disease – two high priority plant pathogens for grapevines.

This meeting highlighted the fact that other xylem feeding vectors that exist in Australia could potentially spread the bacteria causing Pierce's disease and if GWSS were introduced, climatic conditions in Australia would suit the establishment of the disease, resulting in an increased threat to our wine industry. Mark recommends that studies be done on the population dynamics and biology of potential vectors of Pierce's disease in Australia to understand the likely spread if an incursion of the pathogen or vector does occur. These would indicate the likely areas of disease development in Australia's grape growing areas and improve the chances of effective eradication.

Mark Sosnowski
Project Leader: Pathogen Eradication Strategies

Following the workshop, Mark flew to the US east coast and spent three days visiting Professor Wayne Wilcox of Cornell University, a world expert into the fungal pathogen black rot (*Guignardia bidwelli*). Many wine growing regions in Australia have similar climates to regions in North America where black spot is prevalent. *Vitis Vinifera* varieties are reported to be susceptible, highlighting the threat of this disease to the Australian viticulture industry. As a sub-project of CRC40016, Mark is focusing research on optimising strategies for the eradication of black rot disease.

During the visit, Mark was able to observe the many phases of black rot symptoms in the field and hopes to increase future collaboration between CRCNPB, SARDI and Cornell University in the diagnosis and eradication of black rot to prepare Australia in the event of an outbreak. Mark hopes to pursue further specialised training in black rot during July/ August of 2007 when symptoms will be prevalent in the field and conditions most conducive for a potted plant trial.