



# the Innovator

A Newsletter from the EH Graham Centre for Agricultural Innovation

WINTER 2007 EDITION

Riverina Outlook Conference - Thursday 23 August 2007

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Riverina Outlook  
Conference *find  
out more...*

## Message from the Director

Welcome to the first edition of the Innovator, the Graham Centre's newsletter which will be distributed quarterly.



Our objective is to keep you well informed of our research progress, as well as student and staff activities. This issue will be longer than those in the future as we bring you up to date on events and projects.

The aim of the Graham Centre is to undertake excellent quality research, and to generate new knowledge and practice that underpins future sustainable and profitable land management. The cost-price squeeze and the recent prolonged drought have put a lot of pressure on farmers. This provides an added urgency to keep our research relevant. Climate variability, water scarcity and increasing costs of other resources such as fertiliser, energy and labour, mean that our research must target reducing inputs and increasing resource use efficiencies. This will help farmers reduce the risk associated with agricultural production in a highly variable environment.

During the first two years we have consolidated the DPI/CSU partnership, developed the organisational structure and operating procedures, refined our vision and strategic direction, at the same time encouraging staff and stakeholder engagement. We have established a strong and confident basis on which to build our new initiatives.

While other universities and governments are cutting back on applied science, we are building our agricultural capacity. The appointments of Professor Jim Pratley and Professor Len Wade will considerably strengthen that capacity.

We have a number of very clear advantages compared to other agricultural research and training providers in Australia:

- we conduct broad spectrum research from the laboratory to the farm,
- we integrate multi-disciplined research, from soil to food science, i.e. 'from paddock to plate',
- we investigate the impacts of agriculture on the environment and human health, and
- we cover a wide range of agro-ecosystems, from intensive irrigated systems to extensive grazing.

Thank you to our committed staff, our Board of Management and Industry Advisory Committee and the agricultural industries for your support during the last two years and I look forward to working closely with you in the future – feedback on this issue of the newsletter is welcome.

Regards

Professor Deirdre Lemerle

# Secretariat

Who's who and how to contact us ...

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## Our Location:

Wagga Wagga Agricultural Institute  
NSW Department of Primary Industries  
Pine Gully Road  
Wagga Wagga NSW 2650

## Mailing Address:

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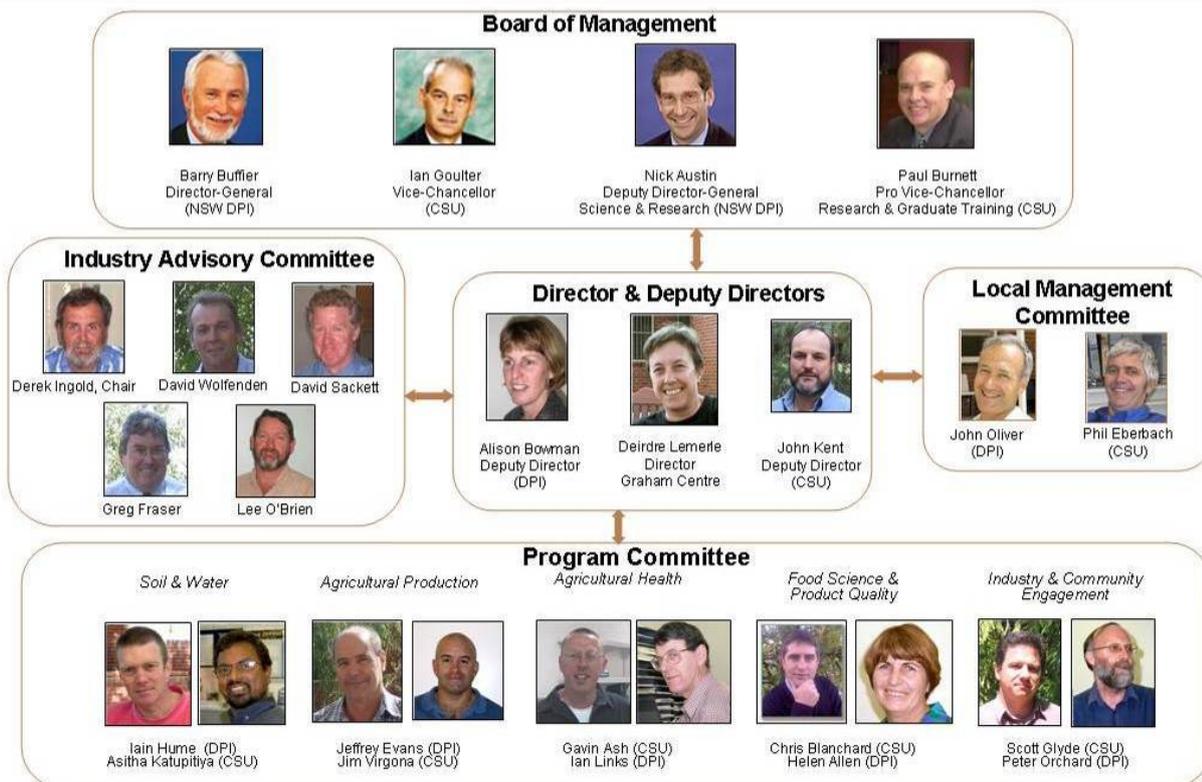
# Overview of the Centre

## Vision & Mission

To establish a cutting-edge scientific research organisation inventing technologies to support sustainable and profitable mixed farming systems.

- To create and develop agricultural innovations that meet the needs of land managers
- To accelerate the dissemination of technology and encourage feedback from stakeholders
- To increase our scientific capacity through investment and enhanced national and international networks

## Organisation



## Research Programs, Disciplines & People

The people in the Centre are broadly grouped within their scientific disciplines in the following five programs:

- **Soil & Water** - Providing practical management options for landholders to sustain or enhance qualities of soil and water in agro-ecosystems.
- **Agricultural production** - Increasing capacity and viability of crop and animal production systems.
- **Agricultural Health** - Maintaining animal and crop health and welfare and providing bio-security to minimize future threats.
- **Food Science & Product Quality** - Value-adding to products of the agricultural supply chain, targeting high quality "clean green" products as desired by consumers.
- **Industry & Community Engagement** - Improving techniques and skills to accelerate delivery of information.

## Research Priorities & New Initiatives 2007 - 2011

Following considerable consultation with industry and staff, three Research Priorities have evolved. These reflect a focus for the outputs and outcomes of the Centre and integrate across multi-discipline teams for the next five years.

### Crops

- Stubble management initiative and soil biology
- New improved and rotational crops

### Pastures & Animals

- Profitable perennials - Future Farm Industries CRC
- National forage conservation initiative

### Pests & Bio-security

- Weed management
- Ruminant parasites
- Biological control of pests

The most advanced new initiatives are described below.

## New Initiatives

### Future Farm Industries CRC

The Future Farm Industries CRC was announced in December 2006 and commenced at the start of July 2007 with a total investment of \$14 million. The aim of this CRC is to 'transform Australian agriculture and rural landscapes by developing and applying profitable perennials technologies to innovative farming systems and new regional industries'. This CRC will bring together 13 research collaborators, nine extension organisations and nine commercial partners.

The CRC has six R&D focused programs and two adoption and utilised programs. Two Graham Centre members are Program Leaders: **Alison Bowman** - Program 2 Future Cropping Systems and **Scott Glyde** - Program 7 Education and Training.

### National Forage Conservation Research Initiative

The National Forage Conservation Research Initiative recognises the importance of forage conservation to sustainable livestock industries as Australia faces the threats posed by global warming - changing climatic conditions, reduced water availability and increasing occurrence of drought. The initiative is built upon the forage conservation expertise and history of research excellence within NSW DPI's Wagga Wagga Agricultural Institute, and capitalises on the success of NSW DPI/Dairy Australia's national TopFodder Silage program and provides opportunities for excellent research, development, education and extension not available elsewhere in Australia. This initiative builds on the foundation built by the late Dr Alan Kaiser.



*Heavy stubbles block seeding gear, reduce herbicide performance, and retard crop growth.*

## Stubble Initiative

The Stubble Initiative developed in response to growing concerns over the impact of stubble burning on agriculture and the broader community. This initiative brings together parties from diverse fields and backgrounds, including agricultural research and extension, human health, meteorology, local government and farmers, and creates a unique opportunity to develop priority areas for joint research and extension projects. The aim is to develop new technologies to enable stubble retention.

## Major Events

### Riverina Outlook Conference

“Agriculture: Opening the Gate - Issues, new direction and opportunities for agriculture”

- Thursday, 23 August 2007, 9.00 am – 4.00 pm
- Convention Centre, CSU, Pine Gully road, Wagga Wagga
- \$50 (incl. lunch, morning and afternoon tea and proceedings)
- See website [for more information](#) – **REGISTER ONLINE NOW!**

### Graham Centre Weed Management Field Day

The Weed Management Field Day will highlight the broad range of research currently underway at NSW DPI and CSU.

The Field Day will be located at the NSW DPI, Wagga Wagga Agricultural Institute - off Pine Gully Road at 2.00-5.00 PM on Thursday, 18 October 2007.

Topics to be covered include:

- Current distribution and management of herbicide resistant weeds
- Strategies for long-term reduction in weed seed banks
- Reducing crop damage to winter crops and forage legumes
- New tactics for management of deep-rooted summer perennial weeds - silverleaf nightshade and prairie ground cherry
- Potential for new weed control agents - allelopathy and bioherbicides
- Improved control strategies for stubble retention systems
- Using forage legumes and other smother crops for weed control
- Biological control agents for weed management
- Changes in legislation regarding weed control.

## International Visitors

### Graham Centre develops closer ties with Indonesian agricultural scientists

Twenty-two high ranking Indonesian agricultural scientists visited the Graham Centre recently to identify opportunities for collaborative projects in agricultural research and extension.

The visit was organised by the Australian Centre for International Agricultural Research (ACIAR).



*Indonesian visitors discuss research collaboration.*

The group included scientists from government agencies and universities, and the visitors were also interested in the establishment of the Graham Centre's alliance between Charles Sturt University and NSW Department of Primary Industries, as they were planning to undertake similar collaborative arrangements in Indonesia.

They are keen to develop similar alliances that develop strong linkages between research and extension, to ensure that research is relevant to farmers' needs.



*Scientists explain a wheat experiment to Indonesian visitors at the Grain&Graze site, Ben Cruickshank's property, Ganmain.*

## Updates of Some New Projects

A complete list of all Centre Projects will be available on the website soon.

**Project:** Optimizing the quality and yield of spelt and other specialty grains under organic production

**Funding Body:** RIRDC

**Project Team:** Robyn Neeson, David Lockett, Jeffrey Evans, Esther van Meeuwen, Viv Burnett (Vic DPI)



*Robyn Neeson shows spelt wheat lines to organic growers.*

This project aims to identify potentially new and more reliable cultivars of spelt wheat that are better adapted to organic production. The 3 year project involves a number of trials investigating: i) Genetics, ii) Crop Nutrition, and iii) Agronomy.

During 2006, 57 spelt genotypes from 3 sources: Australian Winter Cereals Collection and on-farm selections from Central West NSW and Cootamundra; were planted in the field at NSW DPI's, Yanco Organic Research Site. 25 additional genotypes were planted in the glasshouse. 18 additional genotypes are being imported from overseas. The spelt genotypes were seed increased (field and glasshouse) and observations were recorded of their physiological characteristics and disease susceptibility. Organic farmers

provided valuable input by ranking the key attributes which best adapted spelt to their organic production systems. The top 20 spelt genotypes will be planted in further trials at Yanco, Rutherglen and Cootamundra in 2007.

In 2006 a glasshouse experiment was established at Yanco to determine the response of spelt (3 genotypes) and other specialty grains (Kamut® and cereal rye) compared to traditional wheat, to 5 levels of phosphorus (P). Preliminary results showed that for similar amount of total P uptake some spelt lines are able to produce larger biomass than traditional wheat. This could have implications for yield potential and weed competitiveness. P trials will continue in 2007.



**Project:** Integrated Weed Management in Southern NSW

**Funding Body:** GRDC

**Project Team:** Deirdre Lemerle, Hanwen Wu, Eric Koetz, De Li Liu, Randall Jones, John Kent, John Broster, Jim Pratley, Min An, Neil Coombes

This project aims to develop new techniques for managing herbicide resistance.

A GRDC survey identified that 79% of grain growers rate herbicide resistance as a major concern for future cropping profitability. The project team will work closely with local farmer groups, district agronomists and consultants to investigate weed population dynamics and the economic consequences of managing herbicide resistance. A herbicide resistance survey across central and southern NSW will identify the current spread of herbicide resistance weeds, in particular problem weeds such as annual ryegrass, wild oats and wild radish.

The project will evaluate new and existing Integrated Weed Management tactics for SE Australia. These tactics will be examined in experiments and demonstration sites across the region and data collected will be used to validate the RIM herbicide resistance model developed in Western Australia.

The project will identify gaps in knowledge about herbicide resistance management and conduct extension activities within the region to raise awareness of seed bank dynamics and the impact on herbicide resistance. A benchmarking survey will identify emerging weed threats and monitor changes in practices adopted to counter herbicide resistance. The project will build on the recently released Weeds CRC manual on Integrated Weed Management.



**Project: Characterising annual ryegrass in Australia**

**Funding Body:** ARC Discovery

**Project Team:** Jim Pratley, Min An, Hanwen Wu, David Hume (NZ AgResearch), Andrzej Kilian (CAMBIA)

Annual ryegrass is the most challenging weed of Australian winter crop production. It responds to almost every herbicide challenge by evolving resistance to the chemicals used for its control. Despite long-term research on this weed it still remains one of the greatest challenges to Australian farmers.

CSU, through its herbicide resistance testing service has accumulated a national collection of annual ryegrass samples from across southern Australia. This provides the opportunity to evaluate the species in respect of several characters. We know that it is genetically diverse. We also know that the species contains an endophyte, *Neothphodium occultans*, although its role is uncertain due to the lack of investigation of this particular endophyte. In other species, the endophyte is responsible for the development of allelochemicals, notably alkaloids, which play a role in plant community dynamics as well as influencing herbivore behaviour and well-being.



*Plant root following biopore.*

The project aims to address several questions including the following:

- Are we dealing with one very genetically diverse species or are there distinct types that might behave independently?
- Does the endophyte play a role in the expression of herbicide resistance?
- What other roles does the endophyte play in the growth and development of the ryegrass?
- What allelochemicals, if any, are produced by this plant-endophyte symbiosis and what role do they play in plant competition?



**Project: Developing Environmental Service Policy for Salinity**

**Funding Body:** RIRDC

**Project Team:** Thomas Nordblom, Iain Hume, Kevin Paton, Robyn Hean, Atakelty Hailu (UWA Perth), Steven Schilizzi (UWA Perth), John Finlayson, Jason Kelly

Since funding was approved by RIRDC, the Murray Darling Basin Commission (MDBC) committed support and the CRC Salinity provided funds to extend the overall activities of its Catchment-Level Economics project, which supports this

activity. Significant in-kind support is contributed by CRC Salinity, NSW DPI, CSU, UWA, Vic DPI, and the Central-West (NSW) and North-Central (Victoria) Catchment Management Authorities (CMAs).

The project is making good progress towards meeting its agreed outcomes: the identification of market and policy instruments able to link downstream demand for environmental services such as water yield and water quality, to upstream land use changes.

The project uses 'experimental economics' in which people, given different resource constraints and cost structures, generated by catchment-specific hydrology/economic models, respond to different policy options in replicated trials. This will allow testing of policy options for catchment management that arise in the project's NSW, WA and Vic study areas.

Model calibration and testing is near completion and experimental designs are being developed, all with the help of local expertise, CMAs and landholder communities in the study areas. Iterative processes of collaboration, cross-checking and local review insures ownership and practical interest in the problem as well as a solid basis for policy analysis.



**Project: Canola Yield Decline**

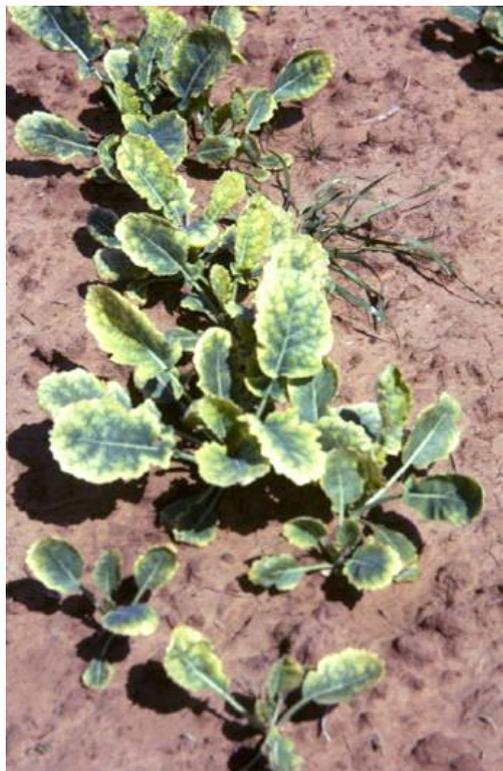
**Funding Body:** GRDC

**Project Team:** Mark Conyers, Sergio Moroni, Yin Chan, Albert Oates, Graeme Poile, Neil Coombes, Roger Armstrong (Vic DPI), Rob Norton (Uni Melbourne), James Nuttall (Vic DPI), Kirrily Condon (FarmLink), Mark Peoples (CSIRO PI), John Kirkegaard (CSIRO PI), Tony Swan (CSIRO PI), John Angus (CSIRO PI)

The yields of canola declined in many areas of southern Australia during the 1990s. This could have been due to the increased frequency of canola in the crop rotation and hence due to an increased disease pressure. Disease has been shown to be a key factor in yield decline in some areas. The decline in relative canola performance could also be due its increasing popularity during the 1990's and the consequent spread of canola onto less suitable soils.



*The impact of subsoil constraints on canola root growth.*



The aim of this project is to assess the relative contribution of subsurface soil constraints to the poor performance of canola. These constraints include hardpans (whether natural or induced), salinity (osmotic effects or elemental toxicity), acidity and sodicity. This will enable us to provide best bet management strategies to ameliorate these constraints to canola yield.

Our goal is to improve canola productivity so that its important role in the farming system is maintained.

*Mn toxicity symptoms in canola.*

# Graham Centre Grants in 2007

## New Initiatives Grants

Eleven New Initiative Grants were awarded.

Recipient	Full Project Title
Gavin Ash	Improving plant health: turning enemies into friends
Kath Bowmer	Potential off-site benefits of stubble farming (water quality and quantity)
Peter Chenoweth	Factors affecting livestock semen quality and fertility
Jason Condon	Influence of tillage and stubble retention on the nitrogen management of wheat
Remy Dehaan	Improving the airborne mapping of soil moisture
Victoria Grillo	Population genetic analysis of the parasitic nematode <i>Ostertagia (Teladorsagia) circumcincta</i> in Australia
John Harper	The role of mastigonemes in oomycete zoospore motility and their contribution to infection
Stephanie Knott	Temperament and sensitivity to adrenocorticotropin hormone in Merino sheep
David Luckett	Genetic diversity of putative spelt genotypes - towards non-allergenic cereals
Chris Scott	Genomic approach to investigate the actions of endocrine disruptors on the brain in male sheep
Bree Wilson	Genetic diversity of mycorrhizal fungi in saline soil



## Travel Grants

Ten Travel Grants were awarded.

Recipient	Reason	Destination
Min An	International Conference of EcoSummit 2007	Beijing, China
Chris Blanchard	Royal Australian Chemical Institute Cereal Chemistry Division Conference	Melbourne
David Deery	Visit research laboratories and attend combined annual meeting of American Soc of Agron, Crop SciSoc of America and Soil Sci Soc of America	USA & Switzerland
Michael Friend	7 <sup>th</sup> International Symposium on the Nutrition of Herbivores	Beijing, China
Tiggy Grillo	Australian Society for Parasitology Conference	Canberra
Geoff Gurr	Ecology of Aphidophaga International Conference	Athens, Greece
Vincent Lanoiselet	Australasian Plant Pathology Society Biennial Conference	Adelaide
Rod Mailer	Develop collaborative initiatives concerning olive oil research and education	Chile
Sergio Moroni	Develop collaborative initiatives concerning olive oil research and education	Chile
Ben Stodart	Australasian Plant Pathology Society Biennial Conference	Adelaide

## Student News

### Graduations in 2007

Graduation during March and April was a worthy reward for the following Graham Centre students:

- **Graeme Baxter** – Doctor of Philosophy
- **Louisa Best** – Doctor of Philosophy
- **Jeffrey Hoffmann** – Doctor of Philosophy
- **Curtis Kalua** – Doctor of Philosophy
- **Hassan Obied** – Doctor of Philosophy
- **Ragini Ravindran** – Doctor of Philosophy
- **Sarah Spackman** – Doctor of Philosophy
- **Birgitte Verbeek** – Master of Applied Science
- **Nicola Wunderlich** – Honours 1st Class
- **Warren Burgess** – Honours 1st Class
- **Matthew Lieschke** – Honours 1st Class
- **Craig Muir** – Honours 1st Class
- **Kah Yaw Ee** – Honours 1st Class
- **Melissa Gan** – Honours Class 2 Div 1
- **Andrew Lieschke** – Honours Class 2 Div 1



*PhD Graduates from the Faculty of Science and Agriculture, April 2007, L-R: Hassan Obied, Curtis Kalua, Nicole Dimos, Skye Wassens, Ragini Ravindran, Sarah Spackman, Jessica Wade, Graeme Baxter and Jeffrey Hoffmann.*

### New PhD Students in 2007

- **Cina Zachariah** – Lupin/pleiochaeta molecular plant pathology (Supervisors: H Raman, D Luckett, G Ash, J Harper)
- **Karen Kirkby** – Annual ryegrass endophytes (Supervisors: J Pratley, H Wu, M An)
- **Clive Kirkby** – Stubble/carbon flux interaction (Supervisors: A Katupitiya, J Kirkegaard, C Blanchard)
- **John Broster** – Evergraze (Supervisor: M Friend)
- **Ray Cowley** – Phomopsis resistance in albus lupins (Supervisors: G Ash, D Luckett, J Harper)
- **Navneet Brar** – Stubble/water interaction (Supervisors: J Condon, J Evans)
- **Jamshaid Ali Khan** – Weed seedbank modelling (Supervisors: H Wu, De Li Liu, D Lemerle)
- **Kah Yaw Ee** - Characterisation and functional properties of proteins and protease inhibitors from Australian wattle seed (*Acacia victoriae*) (Supervisors: S Agboola, J Zhao, A Rehman)

### Honours Scholarships

- **Matthew Gardner** – Do acidic subsurface layers increase nitrogen efficiency? (Supervisors: J Condon, M Conyers).
- **Megan Kendall** – Matching health claims of dietary supplements to actual outcomes. (Supervisors: P Prenzler, K Robards).
- **Andrew Todd** – Phenological impact on herbicide efficacy in Silverleaf Nightshade. (Supervisors: R Stanton, J Kent, H Wu).
- **Stephen Chan** –The application of rennet-like proteases from Australian cardoon in making cheese from bovine milk. (Supervisors: S Agboola, J Zhao, A Rehman).
- **Lauren Forrest** – Developing and delivering integrated weed management to farmers in the crop-pasture and permanent pasture zones. (Supervisors: P Orchard, S Glyde).

### Internship (pre-Honours research experience)

- **Peter McEntee** (Supervisor: G Ash).

## Interesting Points & Links

### Royal Easter Show

The following report was provided by **Kerry Wratten**.

The Graham Centre was invited to display at the Sydney Royal Easter Show on 5 – 18 April 2007 and to provide material that would enable an interactive experience for children, parents and grandparents.

The display set up was on cereal grains. We provided 20,000 small zip lock bags with labels for visitors to take home a small sample of the grain. To make a complete package, we printed 5,000 copies of a Kondinin fact sheet on what to do with the grain and an experiment on how to tell the difference between pulses and cereals.

The stall was overwhelmingly popular. Two Tocal (NSW DPI college) students were assigned to help on the first day, but eight Tocal students ended up having to help as the response from the public was so overwhelming. We need to plan now for next year. Anyone interested?

## Awards

Congratulations are extended to the following Graham Centre members:

- **Mark Norton** was awarded a PhD on 21 May by the University of Queensland. His thesis topic was 'The role of summer dormancy in improving survival of temperate perennial pasture grasses in drought-prone environments'.
- **Graeme Batten** was selected by the Eastern Analytical Symposium to receive their 2007 award for outstanding achievements in NIR spectroscopy. The Eastern Analytical Symposium will be held the week of 12 November in Somerset, New Jersey, USA.

## Congratulations!

The Graham Centre was recently accredited by CSU's Research Management Committee until 31 December, 2011 – this means continued support!

## Recent Publications

The following is a selection of recently published papers by Graham Centre members.

### Crops

- Chan KY, Oates A, Swan AD, Hayes RC, Dear BS, and Peoples MB (2006). Agronomic consequences of tractor wheel compaction on a clay soil. *Soil and Tillage Research*, **89**, 13-21.
- Doran G, Eberbach P and Helliwell S (2006). The impact of rice plant roots on the reducing conditions in flooded rice soils. *Chemosphere*. **63(11)**, 1892-1902.
- Evans J, Murray GM, Scott G, Orchard B, Brennan J, Lemerle D, Kaiser A and Armstrong EL (2006). Impact of legume 'break' crops on the yield and quality of canola in comparison with impact on wheat. *Australian Journal of Experimental Agriculture*, **46**, 1489-1497.
- Yang S, Pang W, Ash GJ, Harper J, Carling J, Wenzl P, Huttner E, Zong X. and Kilian A (2006). Low level of genetic diversity in cultivated Pigeonpea compared to its wild relatives is revealed by Diversity Arrays Technology (DArT). *Theoretical and Applied Genetics*. **113(4)**, 585-595.

### Pastures & Animals

- Dear BS, Hodge A, Lemerle D, Pratley JE, Orchard BA and Kaiser AG (2006). The influence of forage legume species, seeding rate and seed size on competitiveness with annual ryegrass (*Lolium rigidum* L.) seedlings. *Australian Journal of Experimental Agriculture*, **46**, 627-636.
- Jahromi F, Van de Ven R, Cother EJ and Ash GJ (2006). The interaction between *Plectosporium alismatis* and sublethal doses of bensulfuron-methyl reduces the growth of starfruit (*Damasonium minus*) in rice. *Biocontrol Science and Technology*. **16(9)**: 929-940.
- Li GD, Helyar KR, Welham SJ, Conyers MK, Castleman LJC, Fisher RP, Evans CM, Cullis BR, and Cregan PD (2006). Pasture and sheep responses to lime application in a grazing experiment in a high-rainfall area, south-eastern Australia. I. Pasture production. *Australian Journal of Agricultural Research*, **57**, 1045-1055.
- Wolfe EC, Paul JA and Cregan PD (2006). Monitoring ley pastures and their response to winter cleaning. *Australian Journal of Experimental Agriculture*, **46**, 1023-1033.

## Pests & Bio-security

- An M, Wu HW, Liu DL, Antolovich M and Liu YH (2006). Metabolomic characterization of lavender plant species by profiling volatile metabolites from living flowers using SPME-GC/MS. *Metabolomics*, **2(2)**, 328.
- Lemerle D, Smith A, Verbeek B, Koetz E, Lockley P, and Martin P (2006). Incremental crop tolerance to weeds: a measure for selecting competitive ability in Australian wheats. *Euphytica*. **149**, 85-95.
- Liu YH, Zeng RS, Liu DL, Luo SM, Wu HW. and An M (2006) Modelling dynamics of plant defence volatiles using the An-Liu-Johnson-Lovett model. *Allelopathy Journal*, **18(2)**, 215-224.
- Simmons AT and Gurr GM (2006). The effect on the biological control agent *Mallada signata* of trichomes of F1 *Lycopersicon esculentum* x *L. cheesmanii* f. *minor* and *L. esculentum* x *L. pennellii* hybrids. *Biological Control*, **38(2)**, 174-178.

## In the Limelight ...

Jim Pratley



**Position:** Strategic Research Professor of Agriculture  
**Organisation:** Charles Sturt University

### Career Brief

- Research Scientist, UNSW 1971
- Lecturer, then Senior Lecturer at Wagga Agricultural College/Riverina College of Advanced Education 1972-1989
- Associate Professor then Professor of Agronomy, CSU 1989-2006
- Dean, Faculty of Science and Agriculture, CSU 1990-2006
- Emeritus Professor, CSU 2006-
- Professor of Agriculture, Graham Centre, CSU 2006-

### Research and Teaching Activities

- Lectured in agronomy for much of my academic career and supervised higher degree students
- Research initially on selenium in pastures and the interactions with sulphur
- Subsequently evolved to tillage systems and conservation farming, into weed management issues and herbicide resistance and then to allelopathy as a potential weed management tool

### Professional Links

- Australian Society of Agronomy (President 1996-1998)
- NSW Weed Society
- NSW Grassland Society
- International Allelopathy Society (Vice President 2003-2005)
- Australian Institute of Agricultural Science and Technology
- NSW Minister for Primary Industries Science Council
- Australian Farm Institute Research Committee
- Australian Research Council Reviewer
- Australian Council of Deans of Agriculture (Secretary 2007-)

### Research Interests

- Conservation farming
- Weed management
- Allelopathy

**A typical day for me includes** ... Email management, writing and reviewing papers, planning research and supervising postgrads.

**My main project at the moment is** ... an Australian Research Council Discovery grant on 'The Characterisation of Annual Ryegrass (ARG)'. The issue is that ARG is the major weed of winter crop production and it has the capability to evolve resistance to almost all herbicides used for its control. It contains endophytes but no research has been done on this association. We do not know what role these endophytes have on the performance of ARG and its response to

herbicides. We do know that endophytes in other species encourage the production of alkaloids which are allelochemicals. These may play a role in the competitiveness of ARG.

**My favourite part of my job is** ... facing new research challenges and interacting with other scientists.

**When I am not in the office I like to** ... read newspapers and books and watch sport.

**Current CD in my car is** ... incompatible with the car which does not have a CD player. I do like toe-tapping jazz and big orchestra popular classics, and don't mind Robbie Williams and Rod Stewart. Of course my vintage grew up on a diet of Elvis, The Beatles, and Roy Orbison *et al*, so it can't have been all bad!



## Mark Conyers



**Position:** Principal Research Scientist

**Organisation:** NSW Department of Primary Industries

### Career Brief

- Research Student (MScAgr) at Sydney University 1979-81
- Research Officer, Southern Limestone, 1982-85
- Chemist –Soils, NSW Agriculture/DPI 1985-present (includes PhD at La Trobe, 1987-92)

### Research and Teaching Activities

- Early research focussed on mechanisms of soil acidification, the chemistry of Al and Mn, liming technology and screening species/cultivars for tolerance to Al and Mn toxicities
- My research broadened to include N and P fertility, soil and water salinity, and carbon accumulation in soils
- Teaching activity is restricted to supervising honours and higher degree students

### Professional Links

- Australian Society of Soil Science (Federal Secretary 1992-94 ; Branch Secretary 1996-98, Vice President 2002-04, President 2004-06)
- Royal Australian Chemical Institute
- Australian Research Council Reviewer

### Research Interests

- Soil fertility and plant nutrition
- Environmental chemistry i.e. off site and long term effects of agriculture on the environment, both in soil and water

**A typical day for me includes** ... No day is typical; that is the beauty of a life in research.

**My main project at the moment is** ... a GRDC funded project on the contribution of subsoil constraints to "Canola Yield Decline". The project involves staff from the Graham Centre, CSIRO Plant Industry, Victorian DPI, Melbourne University and FarmLink. Also funded at present are an Australian Research Council Linkage grant on subsoil acidity, a Climate Action Grant on carbon sequestration, an IWS (wool) project on the benefits of lime to wool and sheep meat production, a GRDC project on fluid P fertilisers, an ACIAR project with DPRK (North Korea) on the N benefits of legumes in new rotations, a Consolidated Revenue desktop study of the nature of the salts in the Murrumbidgee River, and student projects on the influence of subsurface soil acidity on N use efficiency and on water use efficiency.

**My favourite part of my job is** ...The mix of field, laboratory and office work makes for an ideal job.

**When I am not in the office I like to** ... coach and administer the local running scene (Wagga Wagga Road Runners, Little Athletics), play Bach (with 5 or 10 thumbs) with other tone deaf friends, assist new arrivals to Australia (Anglican/Lutheran sponsored) and attend endless working bees. Also visit home occasionally to check on the family.

**Current CD in my car is** ... nil. (None of my CD's could be called 'current'.)