the Innovator

The Newsletter from the EH Graham Centre for Agricultural Innovation

CHARLES STURT UNIVERSITY

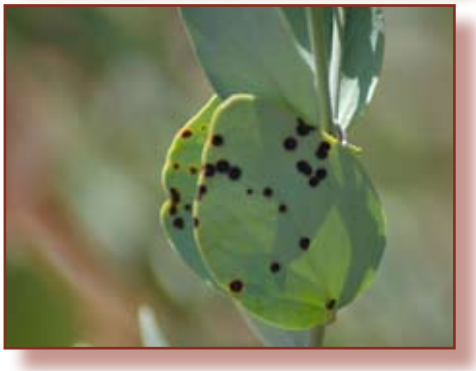
NSW DEPARTMENT OF PRIMARY INDUSTRIES

SUMMER 2008 EDITION

Message from the Director

Welcome to the third edition of the Innovator and happy new year. Last year we were very busy with at least eight new PhD students. This year we expect to enrol at least a further 10 funded by the Future Farming Industries CRC, GRDC and a number of other sources. We commenced eleven new research projects in 2007 including two ARC grants. Staff members attracted over $200,000 of the CSU RIBG funds for equipment - four out of the nine awarded by the University. **Professor Lesley Weston** of Cornell University in USA was recently awarded a NSW Science First Award to work with Professor Jim Pratley on natural herbicides.

Congratulations to two staff who received awards. Professor Graeme Batten was selected by Eastern Analytical Symposium to receive their 2007 award for outstanding achievements in NIR spectroscopy. The Eastern Analytical Symposium is on 12 November 2008 in Somerset, New Jersey, USA. **Associate Professor Gavin** Ash was the recipient of The Vice-Chancellor's Award for Research Excellence for 2007. This annual award was instituted to recognise and reward outstanding contributions to research within the University.



2007 recipient of The Vice Chancellors Award for Research Excellence, Assoc Prof Gavin Ash, has identified a new disease of jojoba not found anywhere else in the world. It is closely related to a devastating pathogen of citrus which doesn't occur in Australia.

2008 will be a year of continued growth for the Centre with increasing funding from a broad range of sources. Climate change is clearly on the agenda of the new Federal Government and we are well placed to continue our research to develop profitable, adaptive and sustainable agricultural industries. We will have an increasingly balanced portfolio of plant and animal based projects to accommodate the development of the research within our multi-discipline research teams. We will draw from our four broad expertise groups: Soil and Plant Sciences, Animal and Veterinary Sciences, Bio-security and Pest Sciences, and Economic and Social Sciences. We are strengthening links with our stakeholders to ensure delivery and adoption of new technologies.

We say farewell and thanks to Mr Barry Buffier (previous Director-General of NSW DPI) and member of the Board of Management of the Graham Centre since the Centre formed in 2005, and we welcome Dr Richard Sheldrake the new DG. I would like to thank the Board and the Industry Advisory Committee for their support and guidance in 2007. Also thanks to the Program and Local Management Committees who advised on resource allocation and the day-to-day running of the Centre.

Significant rainfall in late January has started to fill the soil profile and create optimism for our 2008 crops and pastures. I hope you enjoy this Summer Edition of the Innovator. Your comments and suggestions are welcome.

Professor Deirdre Lemerle

THIS ISSUE

QUICK LINKS

- Centre Website
- Centre Diary
- Seminar Series
- CSU Website
- DPI Website

Key Research Initiatives

We expect to make real progress towards our research priorities for the next five years through our new Key Research Initiatives and increase our capacity to adapt to climate change and develop more diverse farming systems:

- Conservation Farming & Stubble Management Initiative to increase ground cover, increase soil carbon and optimise nutrient use efficiency, improve water and air quality and human health, and biodiversity.
- Feed Gaps & Forage Conservation Initiative to develop and deliver improved technologies for forage conservation to manage feed gaps for livestock production, drought mitigation, water conservation, and environmental protection.
- Weed Management Initiative to develop chemical and non-chemical technologies (e.g. allelopathy, bio-control, competition) for integrated management strategies in crops and pastures to reduce the impact and spread of weeds, reduce land managers' dependence on herbicides and retard the development of herbicide resistance.
- Australian Bio-Protection Initiative to develop alternative non-chemical control tactics for the important pests of agricultural systems through the development of ecologically-based and innovative new tactics and quantify the impacts of agricultural practice on ecosystem biodiversity and environmental stewardship.
- Healthy Food Products Initiative to develop new plant and animal products that have human health attributes for niche markets and value-add post farm gate.
- Ruminant Parasites Initiative to reduce the impact of internal parasites and reduce chemical resistance by developing practical and sustainable methods of parasite control incorporated into whole farm enterprises; providing disease surveillance, thus giving parasite diagnosis and control advice; and evaluating potential impacts from climate change and wildlife reservoirs of disease.
- Resilient Farmers & Landscapes Initiative to use 'Resilience Theory' to provide a clear understanding of current farming system drivers and sustainability indicators, and work with farmers to define limitations of current practice and identify systems that are more attuned to existing and potential landscape resources and constraints.

Student News

PhD Update: Bree Wilson

'Mycorrhizal fungi in saline soil of south-eastern NSW'
Supervisors: Gavin Ash and John Harper
Funded by: Future Farm Industries CRC (formerly Salinity CRC)

Background

Mycorrhizal fungi form a symbiotic association with plant roots and colonise the majority of land plants worldwide. Mycorrhizas are known to enhance plant growth by increasing the uptake of nutrients (e.g. phosphorus) through the development of a hyphal network in soil and subsequent nutrient translocation to the host plant. The deleterious effects of dryland salinity are well known; however, the impact of salinity on mycorrhizal fungal communities is still unclear. The aims of this project include: assessment of the infectivity and the subsequent affect of salinity on mycorrhizal fungal colonising balansa clover in a saline environment, determining the range of sodium chloride in which the fungi can germinate, assessing the mycorrhizal responsiveness of *Melilotus siculus* under varying salt conditions, and investigating the genetic diversity of the mycorrhizal fungi from a saline field site. This information would provide a greater understanding of how soil microorganisms such as mycorrhizal fungi respond to high stress environments and enable better management salt-stressed land.

Results so far using clover in intact soil cores in tubes indicate that mycorrhizal inoculum potential or total amount of root length colonised by mycorrhizal fungi in the non-saline was significantly different to that in moderately, very and extremely saline soil. The difference in mycorrhizal colonisation may be attributed to the number of fungal propagules present in the soil and how these populations were affected by high saline levels. Spore composition and numbers were similar between saline levels but it is likely that the spore types may have differed in their ability to germinate and colonise the plant roots. Moreover, they may have differed in their effectiveness to supply nutrients such as phosphorus to the plants, which can often decrease the stress associated with salinity.

The non-saline treatment plants had significantly larger shoot and root biomass than all other saline treatments. The high salt levels clearly affected the growth of the plants and possibly the plants responsiveness to the mycorrhizal fungi. In all saline treatments the roots were concentrated in the top 15 cm of the tubing compared with the roots in the non-saline soil, which explored the entire soil volume. The top 15 cm of the tube was always more saline than the bottom half, which attributed to the restriction of root growth and possible reduction in exposure to the mycorrhizal fungi. Therefore, the mycorrhizal fungi at this field site display low infectivity at high salinity levels but do express a degree of salt tolerance at lower saline levels. This information can be used to understand how environmental extremes such as salinity affect soil microorganisms such as mycorrhizal fungi and may provide methods to better manage these populations in different cropping systems.

Travel Grant Reports & Visitors

The EH Graham Centre awards a number of Travel Grants each year. The aim of these grants is to assist Centre members to attend both domestic and international conferences and develop new collaborative links in Australia and internationally. We also want to increase the number of scientists visiting on sabbatical leave.

The 7th International Symposium on the Nutrition of Herbivores

Dr Michael Friend, Senior Lecturer in Animal Production, School of Animal & Veterinary Sciences

Dr Michael Friend presented a paper on the EverGraze project at the 7th International Symposium on the Nutrition of Herbivores in Beijing, China, 16-21 September 2007. This conference is held every four years and is the premier international conference for the discipline, with over 400 delegates attending from China, Holland, Israel, Australia, New Zealand, Iran, France, USA, Spain, Mexico, Korea, Denmark, Japan, Tanzania, Canada, Germany, Indonesia, Uganda, Nigeria, India and the UK. The paper was well received and a number of delegates discussed the work after the presentation. Highlights of the conference included plenary papers on microbial ecology in herbivores, assimilation of carbohydrates and nitrogen in the herbivore intestines, molecular approaches to plant breeding and intestinal microbial manipulation, and nutritional manipulation for functional food production and environmental benefits. Michael had the opportunity to explore potential collaboration with some of these speakers, and strengthened existing collaborative links (including discussion on a paper in preparation) with Dr Bob Mayes from the Macaulay Institute in Aberdeen.

Hippodamia variegata, the white collared ladybird, a newly-arrived exotic insect preadtor being researched in a joint NSW DPI/CSU project. Photo: V Heimoana, CSU).

Aphidophaga 10, 8 - 12 September 2007

Prof Geoff Gurr, School of Agricultural & Wine Sciences, CSU Orange

The travel grant allowed Geoff to present two talks at Aphidophaga 10 an international conference on biological control of aphids in Athens September 2007 (http://www.aphidophaga10.gr/). One talk included results from a Horticulture Australia Ltd.-funded project being conducted in collaboration with NSW-DPI entomologists on biological control in field vegetable crops. The second talk reviewed work in several agricultural systems that is concerned with the role of generalist predators in biological control of agricultural pests. Both relate directly to the new 'bio-protection' initiative of the Graham Centre.

Feedback on the talks and more general interactions at the meeting proved invaluable in interpretation of results, particularly for Hippodamia variegata, an exotic ladybird species that has recently arrived in Australia but has been relatively intensively researched in Europe, its origin. This information is helping the current preparation of a manuscript reporting the results from one PhD study, to be submitted to the Australian Journal of Entomology in the near future.

Geoff also visited the leading Greek expert on ladybird research, Dr Dimitris Kontodimas at the Benaki Phytopathological Institute, Athens, including the rearing facilities established for *Hippodamia variegata*. These methods had been adopted by a commercial

biological control agent company in Greece so were 'best practice'. Since his return he has briefed his Gosford Horticultural Institute collaborators of NSW DPI on rearing methods, and these are now being implemented.

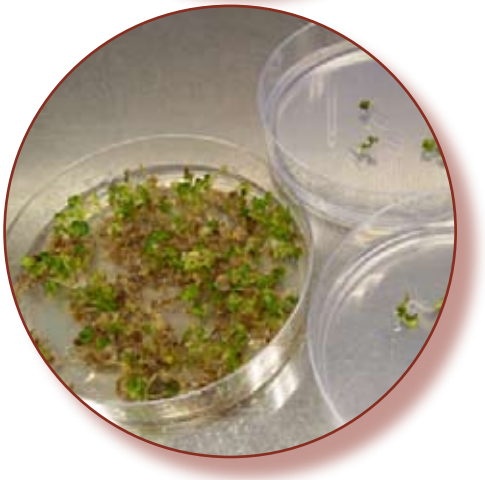
16th Biennial Australasian Plant Pathology Society Conference

Three Graham Centre members attended this conference which was held in Adelaide 23 – 28 September 2007

Dr Ben Stodart, Post Doctoral Research Fellow

The conference attracted approximately 300 delegates from around the world. Several Graham Centre members attended, as did Dr Ny Vuthy, a researcher in crop protection, from the Cambodian Agricultural Research and Development Institute, who is collaborating on a Graham Centre project funded by ACIAR. While the conference theme of back to basics attracted a concentration of presentations on basic science, several speakers examined the future direction of plant pathology research and the application of new technology to the discipline. In general, the conference highlighted the need for continued training and research in basic plant pathology, thereby developing a sound understanding of pathogen biology, to ensure continued success in disease management.

Ms Melissa Gan, Honours Student



Even though the seminars attended during this conference focused heavily on vine health and diseases caused by fungi, this was still relevant to Melissa's work on lupins. The most outstanding seminar was about the use of grey water to irrigate the vineyard. According to the findings, the use of grey water does not affect the taste and quality of the berries produced. This is definitely an idea to tap into and incorporate with our current works during this extended drought period.

The posters presented during this conference covered a wide range of topics, with many interesting contributions from overseas. Many of the posters were about the diseases in potatoes. Ideas and findings were exchanged with other poster presenters, especially those working with lupins. Amongst the presenters was Geoff Thomas from WA, who works with *Pleiochaeta setosa* in lupins. Melissa exchanged results and findings, which will help set future directions of any further work for the lupin breeding program both in Wagga Wagga and Western Australia.

Mr Ray Cowley, PhD Student and Technical Officer

The conference, with the theme Back to Basics: Managing Plant Disease, was commenced after being opened by the South Australian Minister for Science and Information Economy. The first plenary presentation highlighted the difference of opinion between the science and the society over the controversial issue of GMOs. Whilst being presented form a pro-GMO perspective, it was interesting to see how the GMO debate in New Zealand has been considerably more heated than has been occurring in Australia. It seems unlikely that the two sides of the argument will come to a consensus in the short term.

Three posters were presented on the research conducted at the EH Graham Centre on *Lupinus albus* pathology. A number of workshops and conference tours were available for the delegates both pre and post-conference. A Pulse Pathology workshop on the Monday was held before the conference. This was a great opportunity to meet with the other pathologists focusing on leguminous species. At the workshop there were 30 or so representatives from all mainland Australian states, as well as international delegates from Pakistan, Syria, and Israel.

The main benefit of attending the conference was the opportunities provided for networking with other pathologists.

World Association for the Advancement of Veterinary Parasitology Meeting, Belgium

Prof Nick Sangster, Professor of Veterinary Pathobiology, School of Animal & Veterinary Science

In August 2007 Nick undertook a trip to Saudi Arabia, Belgium and Germany. The major purpose was to attend the World Association for the Advancement of Veterinary Parasitology (WAAVP) meeting in Belgium, but it also afforded the opportunity to visit laboratories, meet with colleagues and to seek research contracts.

In Saudi Arabia he met with National Agricultural and Animal Resource Research in the Ministry of Agriculture and also visited the King Abdullah Aziz Science and Technology Institute of Animal Resource Research and the Technology City.

He was also taken to a horse and a dairy farm. While the main purpose was to discuss equine research, aspects of ruminant health were discussed with a view to future collaborative research and student training opportunities. He gave a seminar entitled 'Anthelmintic Resistance' to an audience in the Ministry including the Director General. There are opportunities for postgraduate training in veterinary science especially for dairy practice.

Milking at AL Safi dairy in Saudi Arabia where 18,000 cows are milked three times a day and 500,000 L of milk is processed daily in the factory. Photo: N Sangster, CSU.

In Belgium Nick attended the World Association for the Advancement of Veterinary Parasitology Conference with about 800 other parasitologists.

Prior to the conference the Consortium for Anthelmintic Resistance SNPs, a research-based group developing diagnostics for anthelmintic resistance, also met. This provided an update on the field and gave an opportunity to highlight the Graham Centre affiliation. During the main conference he also met formally with two pharmaceutical companies and discussed contract research and ARC Linkage proposals in ruminant parasitology. These discussions continue. He had informal discussions with three other companies, and also presented a poster (on horse parasites) presented an obituary in the opening ceremony and chaired a session.

In Germany Nick visited the Veterinary School in Hannover (TiHO) and also gave a seminar on genes involved in parasite establishment in sheep and was again able to introduce the Graham Centre cooperation. This institution has a strong parasitology research and teaching program and are collaborators. They are also one of the top centres we wish to emulate.

Several activities on this trip reinforced strategic international alliances especially to improve research, education and training in veterinary parasitology.

Nick is seeking funding from pharmaceutical companies for research into parasite control, especially the use of anthelmintics in ruminants in sustainable ways. The Graham Centre parasitology activities are now known in the international arena and this will assist in targeting our group to be in the top five laboratories researching ruminant parasites.

International Visitor - 12 to 14 December 2007

Professor Roberto Tuberosa from the University of Bologna, Italy visited the Graham Centre to discuss cereal breeding, physiology and molecular biology. Roberto presented a Graham Centre Seminar on 13 December 2007 on "Genomic Approaches to Improve Drought Tolerance in Cereals".

Interesting Articles!

Theoretical basis for new research initiative – Resilient Farmers & Landscapes

Dr Peter Orchard, Manager Industry Development Pastures, NSW DPI

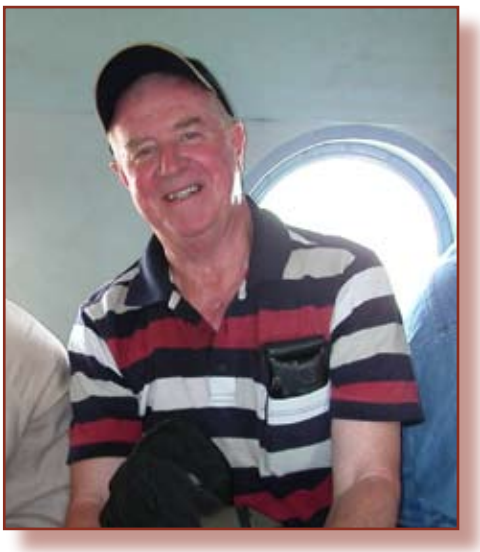
"Resilience Theory" looks at systems (agricultural, Agro-ecological, etc) as having four repetitive phases namely (1) Growth-Exploitation, (2) Conservation, (3) Release, and (4) Reorganisation. Australian farming systems have moved through Phase 1 (clearing, monocultures, input-driven) to Phase 2 characterised by a few dominant species and interest groups, uniformity of ideas and culture, low rates of innovation and low capacity to adapt to new problems and opportunities (loss of resilience). Arguably, there is a great deal of uniformity in present systems, and a need to adapt to cost-price squeeze, several years of drought and future climate change-increased variability. The Release Phase could be foreshadowed or already exists in terms of farmers selling-up, reduced equity-increased debt, decline in rural services etc. But will reorganisation generally involve new owners doing the same things? The idea is to manage change rather than for uncontrolled change.

It is argued that present farming systems are a result of historical, political, social and economic influences and that the success of these is dependent on climatic, edaphic and biotic factors coupled with individual management responses and strategies to these. Basically, people never question that they should be growing a wheat crop but are more concerned with how to grow it. They operate on the level of what and how, not why. By engaging landholder groups in an interactive way through their historical, social, economic and political background, the 'why' is put onto the agenda. An evaluation of the present system can be cooperatively made from the perspectives of landscape potential, economic need and social/community structure. Issues can be addressed across a range of scales from broader implications of globalisation, regional climate change and catchment targets, to individual paddock themes of carbon, no-till and GM. Groups can develop future scenarios and visions that can be benchmarked against the current system and tested via trial data and modelling with a view to identifying opportunities for change. The Resilient Farmers and Landscapes Initiative group has met and is developing a strategy to test some of these hypotheses.

An analysis of crop-livestock interactions in world farming systems

Prof Ted Wolfe

Professor Ted Wolfe, now in an 'active retirement' role with the Graham Centre, recently reviewed crop-livestock interactions in world farming systems for a forthcoming book. He was particularly interested in exploring the organization of crop-livestock systems, especially where these enterprises occur on the same farm (mixed farming) or in regions (integrated businesses, between farms).



Rainfall, tradition, population pressures, land tenure arrangements, government policies and individual farmer preferences help determine the nature and organization of crop-livestock enterprises. Natural synergies and skilful management produce positive interactions between crops and livestock, at both the farm and regional levels. In Australia, the low fertility of local soils is an important factor in the continuing use of a mixed farming system that combines pastures, livestock and crops to maintain soil fertility, to cope with seasonal risk and to manage pests, diseases and weeds. However, this system is complex and it is understandable that many managers may prefer the simplicity of specialization, as occurs in North America. There, a continental climate (cold winters, humid

A mixed farm, east of Marrar NSW. Photo: T Wolfe.

summers), the availability of cheap fertilizer and fuel resources, a culture of cropping and a low level of interest in sheep (compared with cattle and pigs) help explain the preferences of most prairie farmers to integrate crop and livestock businesses from farm-to-farm rather than on-farm.

In an uncertain future, how will farmers handle the increased complexity of managing towards multiple goals (agricultural, environmental, economic, social and political)? What will be the impact on mixed/integrated farming of continuing local and global perturbations, such as catchment policies, climate change and fuel hikes? The 'specialise or diversify' conflict could be addressed in several ways. First, when farms become bigger there are extra opportunities to delegate management responsibilities to individuals in the family or partnership, allocating them a specific enterprise to manage while still preserving their involvement in mixed or integrated crop-livestock businesses. A second possible way of allowing specialization within Australian mixed farming systems may be to cut or vary the traditional link between livestock ownership/control and land ownership, and develop new partnerships that place crop and livestock operations in the care of enthusiasts. For example, a livestock specialist could be responsible for livestock production on (say) five to six mixed farms, providing livestock services to crop specialists while exploiting economies of scale through larger flocks and the consolidation of livestock facilities (yards, shearing sheds, supplementary feeding set-ups) across several farms. Hence, farm managers and agribusiness need encouragement from policy-makers to develop equitable business arrangements and social adjustments that enable simultaneous specialization and diversification in mixed and integrated crop and livestock businesses.

Ted is now helping farmers in southern and northern NSW compile 'case studies' on their farming system. Hopefully, summaries will appear in the next issue of The Innovator. For further information, contact Ted Wolfe on 02 6922 4347 or twolfe@csu.edu.au .

News

CSU Research Infrastructure Block Grants for 2007

Recipient	Equipment	Amount
Jian Zhao & Sampson Agboola	Avestin Small-volume Homogeniser and GE Phastsystem Electrophoresis Unit	$50,000
Deirdre Lemerle & Harsh Raman	Genome Lab XP Genetic analysis System	$45,000
Michael Friend	Equipment for grazing animals, GPS loggers and proximity collars	$50,000
Jim Virgona	Li-Cor 6400 – Portable Photosynthesis System	$60,000

New Australian Research Council (ARC) Discovery Grant

Sweet Smell of Success in Pest Control

A new ARC-funded project led by Professor Geoff Gurr may have farms smelling sweetly of lolly shops. The work involves applying compounds to vines and field crops to attract the beneficial insects that can bring pests under control. Though they rejoice in fancy names like methyl salicylate, (Z)-3-hexenyl acetate and methyl anthranilate these compounds are quite natural and are emitted by plants when under attack from pests. They are responsible for banana, grape or mint smells. 'All we are doing

in this project' says Gurr 'is taking an idea that plants have been using for millennia and giving it a tweak to get beneficial insect to move into specific crops when it suits us'. Because plants are unable to literally run away from pests they have had to evolve all sort of crafty mechanisms to defend themselves. One of these methods that scientists have discovered relatively recently is to produce volatile signals when under attack. Predators and parasites of caterpillars, aphids and similar pests are attracted to these chemical signals. 'The plants are, in effect, recruiting bodyguards to take care of the pests' says Gurr.

Marja Simpson, PhD student working on natural sprays to attract beneficial insect to control crop pests.

The PhD student working on this project, Marja Simpson, has completed the first experiment which took place in a commercial vineyard close to Orange in NSW. Co-supervisor, Dr Aaron Simmons helped analyse numbers of insects trapped in the experimental plots and has come up with exciting trends. The 'minty' compound attracted to vines large numbers of ladybirds and predatory bugs. In contrast, the grapey-smelling treatment attracted certain parasitic wasps, spider and lacewings.

The Australian project will eventually cover three crop species that are economically important in temperate areas and in which new pest management options would readily be adopted: grapevines, lettuce and sweet corn.

The project has also rich international links. Collaborators Dr David James of Washington State University and Professor Steve Wratten of Lincoln University in New Zealand are running similar projects that include hops and forage brassicas. In a few years time the work will build up a comprehensive picture of how this new method can be put to work in various locations and crop systems. Overall this work will lessen reliance on pesticide applications and avoid widely-recognised hazards such as environmental contamination and human health risk thereby contributing towards environmental sustainability and providing healthier foodstuffs.

Seminar Series

In 2007 the Graham Centre launched its first seminar series, which aimed to expose the research being performed at Charles Sturt University and the NSW Department of Primary Industries. The series has been a great success and we have also had five international speakers and several interstate speakers. A broad range of topics were covered including plant pathology, phytochemicals and allelopathy, endophytes in agriculture, the GMO debate, arthropod fauna, animal parasitology and genomics, sustainable pest management, drought tolerance in crops and more.

Seminars during 2007 were well attended..

The seminar series for 2008 kicks off on 11 February. For previous and upcoming seminars check the out the Graham Centre web site.

We are currently calling for speakers for the 2008 series and welcome visiting interstate and international speakers. For more information please contact Bree Wilson (brwilson@csu.edu.au), Alexa Seal (aseal@csu.edu.au) or Deirdre Lemerle (deirdre.lemerle@dpi.nsw.gov.au).

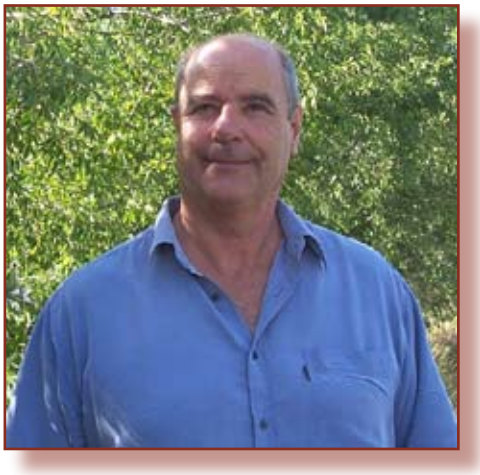
Mark Your Diaries ...

EH Graham Riverina Outlook Conference

Thursday, 14 August 2008

In the Limelight

Dr Jeffrey Evans



Position: Senior Research Scientist & Associate Professor (Adjunct) CSU

Organisation: NSW Department of Primary Industries/EH Graham Centre

Career Brief:

- 1993 - Present: NSW Department of Agriculture, Wagga Wagga Agricultural Institute
- 1991 - 1992: Western Australian Department of Agriculture, Perth, WA
- 1982 - 1990: NSW Department of Agriculture, Agricultural Research Institute, Wagga
- 1976 - 1982: NSW Department of Agriculture, Australian Inoculant Research and Control Service (AIRCS), Gosford
- 1975: Graduated University of New South Wales (PhD; Microbiology)
- 1972: Graduated Sydney University, BSc(Agr; Hons)

Research Activities:

- Investigating the role of elemental sulphur in facilitating the release of orthophosphate (plant available P) from reactive phosphate rock. The aim is to find an alternative to superphosphate for the management of P fertility in broadacre organic cropping systems. Funded by RIRDC.
- Evaluating the P requirement of spelt wheats in comparison to traditional wheat. The aim is to assess whether the more ancient spelt wheats are more tolerant of low soil P fertility, as well as to define critical plant P concentrations for optimal yield of spelt wheat. Funded by RIRDC.
- Investigating the role of winter-tolerant legumes, direct drilling and stubble retention in the sustainable recovery of rice and maize grain yields in North Korea. The aim is to increase food security in impoverished North Korea and reduce its reliance on urea fertiliser. Funded by ACIAR.
- Investigating the interaction between annual crop legumes and cereals in south-east Australia. The aim is to simulate the effect of pulse and forage conservation legumes on wheat production to explore strategies for optimising this component of cropping systems. Funded by ACIAR.
- Supervising a PhD study into the effects of rice stubble on the N management of succeeding wheat. The aim is to optimise N management in rice-wheat cropping systems in India and Australia. Funded by John Allwright Fellowship.

Professional Links:

- Australian Nitrogen Fixation Society.

Research Interests:

- Optimising the supply of nutrients to crops from biological cycling processes.
- Making a success of organic agriculture.

A typical day for me … includes a kick-start with wheat bix and a cappuccino, a morning glued to the computer documenting submissions and reports, meet with my staff. Lunch usually turkey and salad sandwich and another cappuccino. Afternoon glued to the computer analysing data, answering emails, more reporting. Home for half-hour of guitar practice, evening meal (various), TV relaxation till can't keep the eyes open any more. Dreams – some very good ones.

At work my main projects are … determining ways to manage P fertility in organic cropping systems and how to improve food grain production in North Korea. Outside of work my main projects are property speculation and trying to be a competent finger-picking guitarist.

My favourite part of my job is … discovering the unknown and identifying solutions to significant problems. I also get a kick out of discovering how things relate to each other … I like an orderly world, but am usually managing chaos.

Current CD in my car is … this presupposes that I have succumbed to such luxuries but if I did have one there would be a Bon Jovi and a Doc Watson CD close by.

Favourite saying … If it ain't broken you're not trying hard enough!

Prof Len Wade

Position: Strategic Research Professor - Agronomy

Organisation: Charles Sturt University/EH Graham Centre

Career Brief:

- 2007-Present: Strategic Research Professor, Charles Sturt University (CSU)
- 2002-2007: Professor of Agronomy, The University of Western Australia (UWA)
- 1993-2002: Agronomist/Crop Physiologist, Program Leader/Consortium Coordinator (Rainfed), International Rice Research Institute (IRRI), Philippines
- 1974-1993: Agronomist/Senior Agronomist/Principal Agronomist, Queensland Department of Primary Industries (QDPI), Emerald, Queensland
- 1989-1990: Visiting Scientist, Texas A&M University, Temple, Texas, USA
- 1980: Research Fellow, ICRISAT, Hyderabad, India
- 1977-1979: PhD Student, The University of Western Australia
- 1970-1973: BAgrSc Student, The University of Queensland

Research & Teaching Interests:

- Agronomy: cropping systems, water nutrient & carbon balance, stubble
- Physiology: roots, drought avoidance, genotype by environment interaction
- Improving water productivity of wheat and rice in rainfed and irrigated systems
- [At UWA, I lectured to third-year students in Rainfed Cropping Systems 3312]

Professional Links:

- Editor, Plant and Soil; Section Editor 2003-present
- Editor, Field Crops Research; Editorial Advisory Board 2001-present
- Editor, Plant Production Science; Editorial Advisory Board 1997-present

President, Australian Society of Agronomy 2004-2006

A typical day for me includes … Guiding research, papers, proposals, linkages.

My main project at the moment is … Establishing the Stubble Initiative of the Graham Centre.

My favourite part of my job is … Set-up and completion of substantial projects

When I am not in the office I like to … Relax, Scuba Diving, Whisky

Current CD in my car is …Jimi Hendrix, Yardbirds, John Lee Hooker!!

Southern NSW Events Calendar 2008

Date	Event	Details
12 & 13 February	GRDC Technical Update	Location: Charles Sturt University, Wagga Wagga NSW Contact: Jon Lamb Communications Ph: (08) 8362 5417; Email: jlcom@chariot.net.au
21 February	2008 Conservation Agriculture Field Day "Covering our Future" A field day jointly hosted by NSW DPI, Central West Conservation Farming systems, Central West Conservation Farming Association	Location: Condobolin, NSW DPI Agricultural Research & Advisory Station Contact: Jodie Dean Ph: 02 6895 1025; Email: jodie.dean@dpi.nsw.gov.au
12 March	GRDC Farmer Update	Location: Coolamon, NSW Contact: Katrina Sait Ph: 02 6924 4633; Email: katrina@farmlink.com.au
13 March	Rural Australia Without Petroleum Workshop 10 am - 4 pm	Location: NSW DPI - Wagga Wagga Institute (Conference Room) Contact: Kate Roberts or Ian Gray Ph: 02 6933 2680; Email kroberts@csu.edu.au As the number of participants will be limited, please indicate your interest before Monday, 3 March.
23 July	Graham Centre Field Day "Optimising Production from Canola"	Location: Culcairn, NSW Contact: Helen Burns Ph: 02 6938 1947; Email: helen.burns@dpi.nsw.gov.au
14 August	Graham Centre Riverina Outlook Conference	Location: Charles Sturt University Convention Centre, Wagga Wagga NSW Contact: Helen Burns Ph: 02 6938 1947; Email: helen.burns@dpi.nsw.gov.au
23, 24 & 25 September	Henty Machinery Field Days	Location: Henty NSW
3 - 5 October	Yanco Experiment Farm Centenary Celebrations	Location: Yanco, NSW DPI Agricultural Institute Contact: George Stevens Ph: 6951 2652; Email: george.stevens@dpi.nsw.gov.au
16 & 17 October	FarmLink Bus Tour	Location: Southwest Slopes, NSW Contact: Katrina Sait Ph: 02 6924 4633; Email: katrina@farmlink.com.au
3 - 6 November	7th International Safflower Conference	Location: Wine and Food Industry Training Centre, Wagga Wagga NSW Contact: Rodney Mailer Ph: 6938 1818; Email: rod.mailer@dpi.nsw.gov.au

Autumn Edition of The Innovator

The Autumn Edition of The Innovator will be released in mid April 2008. Submission of articles for this edition closes on **Wednesday, 26th March 2008**.

Secretariat

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