

# the INNOVATOR

Charles Sturt  
University



Department of  
Primary Industries

AUTUMN 2012 EDITION

The Newsletter from the EH GRAHAM CENTRE for Agricultural Innovation



## From the Director's desk

Welcome to the Autumn 2012 Edition of *the Innovator*.

With sowing starting over the coming weeks, many growers will be managing heavy stubble loads and weed burdens. This is a timely reminder about our brochure 'Stubble management - an integrated approach'. The brochure provides an overview of stubble management options and is available on our website [www.grahamcentre.net](http://www.grahamcentre.net) or hard copies are available from our office.

Our new look Industry Advisory Committee (IAC) met in March, and will play an active role in developing key research initiatives and focus for the Centre. Information about our new IAC members will be available on the website soon. The IAC provides advice on strategic direction and helps strengthen our industry links and communication.

A number of Centre members have been involved in mitigation crews assisting with the movement of livestock and domestic animals during the recent floods across the region. Our thoughts are with those affected by the floods and I encourage everyone to support the rural recovery following the devastation from this natural disaster.

The Centre continues to host a number of International visitors, strengthening our links overseas. Recent visitors include two Chinese delegations, one from the Northeast Institute of Geography, Chinese Academy of Sciences, who visited the Centre in Wagga during January, and the second who visited and participated in an Entomology Workshop at Charles Sturt University, Orange, organised by Professor Geoff Gurr in late February.

Centre members have been heavily focussed in recent months on RD&E planning. A number of workshops (Break Crops Forum, Irrigated Systems Forum and Fleabane

**CSU's eye in the sky is launched:** Development of an unmanned platform capable of mapping and monitoring weeds in agricultural and environmental landscapes is underway. Researchers hope to be able to use the system to investigate key targets such as Paterson's curse and silverleaf nightshade in managed agricultural locations, and serrated tussock and lantana in natural and less managed settings. Photo: Rex Stanton.

Management Workshop) involving growers, researchers and industry representatives have been held analysing the current situation and identifying future research needs. Reports will be available from the workshops.

This issue contains current research project updates, news of recent Centre workshops and events, travel reports, staff profiles and upcoming events.

Enjoy reading this edition of *the Innovator*.

## Professor Deirdre Lemerle

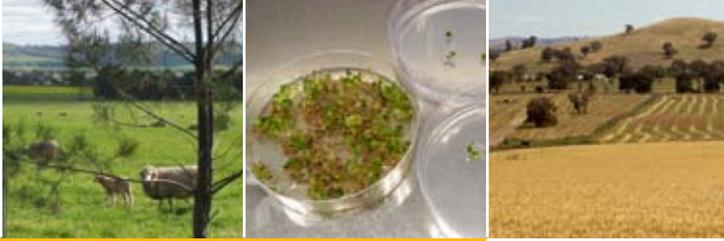
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### quick links

Graham Centre website  
Seminar series  
CSU website  
DPI website





## NEWS

### A P<sup>3</sup> presentation

Still spreading the results of his 2010 Graham Centre and GRDC supported honours project, David Gale recently delivered a short four minute 'soapbox' presentation at the 3rd Sustainable Phosphorus Summit in Sydney.

He made sure that his presentation stuck in the minds of delegates by throwing away the now commonplace use of PowerPoint and giving his whole presentation on a cardboard box.

The presentation summarised the key findings of one part of his project that found that by increasing the ratio of compost, in a combined application of compost and synthetic phosphorus (P) fertiliser, P-uptake efficacy was increased.

The presentation led to a number of people making conversation, to find out more about the project and its outcomes, later in the day.

As a delegate David also contributed to the production of the summit document, 'A Blueprint for Global Phosphorus Security', which brought in a range of perspectives, from those of the fertiliser industry, through agriculture, to environment, and P recycling engineering. International government, environmental agencies, and overseas aid funding bodies were also represented.

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**On your soapbox:** Making a lasting stand, David Gale recently delivered a presentation on his honours project findings at the 3<sup>rd</sup> Sustainable Phosphorus summit, Sydney.

*Congratulations to Leslie Weston who was recently inducted as President of the World Congress on Allelopathy, while attending the 6<sup>th</sup> World Congress on Allelopathy in Guangzhou China.*

### Post-graduate representative update

Congratulations to **Randy Adjonu** as he takes on the position of post-graduate representative for the Centre, joining Joe Moore who is continuing in the position during 2012.

A big thank you to outgoing post-graduate representative **Jen Spinner** for her time as post-graduate representative over the past two years.

### Recent publications & presentations

#### Journal papers

Tan, PL, Bowmer, KH, Baldwin, C (2012). Continued Challenges in the Policy and Legal Framework for Collaborative Water Planning. *Journal of Hydrology*, DOI: 10.1016/j.jhydrol.2012.02.021

Tan, PL, Bowmer, KH, Mackenzie, J (2012). Deliberative tools for meeting the challenges of water planning in Australia. *Journal of Hydrology*, DOI: 10.1016/j.jhydrol.2012.02.032

Zhu, XC, Wu, HW, Raman, H, Lemerle, D, Stanton, R and Burrows, GE (2012). Evaluation of simple sequence repeat (SSR) markers from Solanum crop species for *Solanum elaeagnifolium*. *Weed Research*, DOI: 10.1111/j.1365-3180.2012.00908

#### Posters

Raidal, SL, Hughes, KJ, Charman, AL, Nielson, S and Noble GK (2012). Effects of mexolxicam and phenylbutazone on renal responses to furosemide, dobutamine and exercise in health horses. *American College of Veterinary Internal Medicine conference*, New Orleans, USA.

Khalfan, S, Edwards, S and Raidal, SL (2012). Pharmacokinetics of intravenous constant rate infusions of ceftiofur sodium in the adult horse. *American College of Veterinary Internal Medicine conference*, New Orleans, USA.

#### Workshops

Gopurenko, D (2012). DNA barcoding for species identifications: theoretical considerations and applications to Entomology and Biosecurity research at NSW Department of Primary Industries. *Plant Pathology Molecular Workshops 2012*.

Gopurenko D (2012) DNA barcoding for species identifications: historical development, standards, BOLD, search engines and methodological pipeline. *Plant Pathology Molecular Workshops 2012*.

## Workshops address emerging fleabane weed in the southern region

Two successful workshops - a regional workshop and a national workshop on fleabane were run by the Graham Centre, in collaboration with Queensland's DEEDI, at Wagga Wagga on 21-22 March. The workshops were timely, and organised in response to the rapid spread of flaxleaf fleabane in the southern region over the last five years.

A total of 70 growers, advisors and researchers attended the two workshops. The close collaboration between researchers was a key highlight of the workshop.

Invited speakers across Australia covered a broad range of topics including the biology and ecology of fleabane, identification of fleabane species, dispersal mechanisms, glyphosate resistance, the most up-to-date management information on fleabane control in crops, pastures and fallows, and the potential for biological control of fleabane.

"The excellent results presented by researchers from the northern grain region have led to better management options for fleabane in the southern region," Dr Hanwen Wu said.

### Workshops evaluation

Feedback was sought from workshop participants, with about half the delegates completing evaluation forms.

"One of the great outcomes of the workshops was the identification of knowledge gaps for future research. Pastures, as key components of the mixed farming systems in southern Australia, have been identified as one of the weakest links toward the overall management of fleabane control, along roadsides and fence rows," explained Hanwen.

Several responses by workshop attendees also highlighted the need for a better understanding of the impact of fleabane on livestock.

"Integrated management, with more detail sought on systems approaches and the economics of various management approaches was also sought by workshop participants," Hanwen said.

"Packaging and dissemination of currently available information was another key issue identified at the workshops."

Respondents indicated they gained new knowledge in the areas of fleabane biology/morphology, chemical usage, in terms of tank mixes, legal options and timing.

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**Editor's note:** The workshop proceedings are available on the Graham Centre website [www.csu.edu.au/research/grahamcentre/conferences\\_workshops](http://www.csu.edu.au/research/grahamcentre/conferences_workshops). The workshops were supported by GRDC.

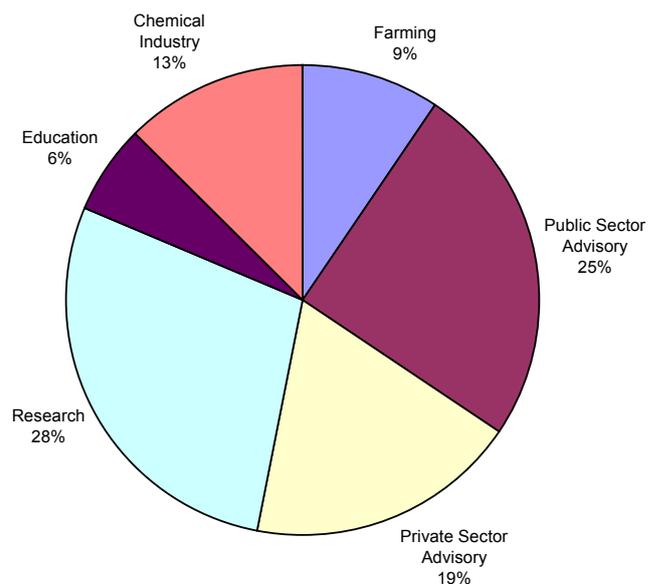
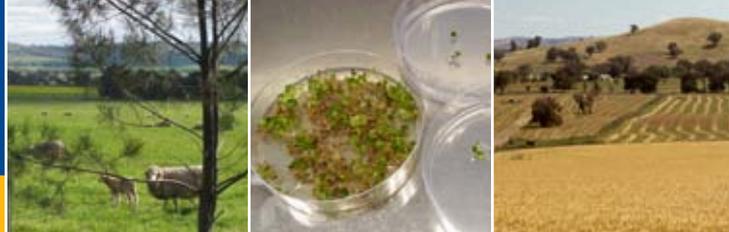


Figure 1. Evaluation responses by industry sector.

**Fleabane spreading rapidly:** Fleabane has spread rapidly across the southern region of Australia over the past five years





## NEWS

### Research Centre Fellows

Congratulations to our Research Centre Fellows (RCFs) for 2012. Charles Sturt University is committed to providing funding to support the full-time release from teaching commitments of key researchers for a period of six months. The 2012 RCFs are: Dr Remy Dehaan, Associate Professor Shane Raidal, Professor Peter Wynn, Dr Michael Friend, Associate Professor Scott Norman, Dr Gaye Krebs, Dr Sharanne Raidal, Dr Jane Heller, Dr Paul Prenzler, Associate Professor Geoff Burrows, Professor Geoff Gurr, Professor Gavin Ash, Dr Jim Virgona and Dr Rebecca Doyle.

### Internal Grants Scheme 2012

Congratulations to Kylie Crampton who has been awarded a Graham Centre PhD scholarship. Kylie's thesis is titled "*Biological control of root lesion nematode*" and is supervised by Professor Gavin Ash.

The Internship 2012 award has been received by Dione Schmutter. She will work on a range of Graham Centre projects to gain research experience during her final year as an undergraduate.

Recipients of further Centre awards are listed below.

#### Summer Scholarships 2012

Name	Degree Course	Project title	Supervisor(s)
Thomas Draper	Bachelor of Vet Science	Agricultural production and associated research	Peter Torley (CSU) Rachelle Ward (DPI)
Sarah Gough	Bachelor of Vet Science	Assessment of the efficacy of ivermectin, pyrantel and fenbendazole treatments against <i>Parascaris equorum</i> infection in foals in Australia	Kris Hughes (CSU)
Clare Flakelar	Bachelor of Vet Science	Enhancing Bioactive Components In Canola Oil	Paul Prenzler (CSU) David Luckett (DPI)
Kate Mitchell	Bachelor of Animal Science	Incidence of <i>Taenia ovis</i> in foxes in the Riverina	David Jenkins, Nigel Urwin (CSU)
Kyle Reynolds	Bachelor of Biotechnology	Functional properties of pulse extracts	Chris Blanchard, Pdraig Strappe (CSU) Jenny Wood (DPI)

#### Honours Scholarships 2012

Name	Project title	Supervisor(s)
Vanessa Farrell	Increasing male lamb proportion by feeding ewes omega-3 fatty acids - On Farm study	Michael Friend (CSU) Ed Clayton (DPI)
Michael Hopwood	Grazing management of dual-purpose barley; defining the benefits and boundaries	Jim Virgona (CSU) Peter Martin (DPI)
Emily Martin	Investigating vitamin D as a prior enrichment strategy to promote growth of equine mesenchymal stem cells for therapeutic use as an equine veterinary therapy	Jane Quinn, Bryan Hilbert , Pdraig Strappe (CSU)
Kyle Reynolds	Investigating the functional properties of pulse extracts	Chris Blanchard, Pdraig Strappe (CSU) Jenny Wood (DPI)

#### PhD Top-Up Awards

Name	Project title	Supervisor(s)
Emma Hand	Mechanisms behind the alteration of sex ratios of offspring when ewes are fed a ration either high in omega-3 or omega-6 at mating	Michael Friend, Belinda King (CSU) Ed Clayton (DPI)
Crystall Swarbrick	Molecular characteristics and inhibitor screening of the role of thioesterases within the infectious bacterial unit	Jade Forwood, Rebecca Doyle (CSU)



**Industry Advisory Committee changeover:** The new IAC met in March. Back row left to right: Andrew Bouffler, Mark Harris, David Wolfenden, Mike O'Hare, Russell Ford and John Passioura. Front row: Deirdre Lemerle, Lucinda Corrigan (Chair), Diana Gibbs and Angela Avery. Photo: Toni Nugent.

## The issues and RD&E needs of break crops

The Graham Centre, in consultation with stakeholders, has identified break crops as a key research priority for the next three to five years. A forum focussing on the role of break crops in the mixed farming systems of central and southern NSW, was on 8 February 2012, and identified the RD&E needs of the break crops, with a particular focus on canola, field peas, lupins and chickpeas.

### The forum:

- Provided a snapshot of current cropping programs;
- Identified the main drivers determining the current crop combinations and sequences;
- Identified the issues that growers perceive could impact on the long-term profitability of each break crop (i.e. what issues need RD&E investment to ensure specific crop types remain part of their cropping system.)

The 13 growers that attended the forum provided a geographical spread, from the 450 mm rainfall zone north of Temora, south to Walbundrie, north east to Young and into the higher (650 mm) rainfall zone near Holbrook. Intentional demographic spread of grower participants also provided an insight into the long-term strategies being adopted on farm.

The remaining 20 attendees included representatives from Pulse Australia, NSW DPI extension agronomists and research team members from NSW DPI and CSU.

Growers discussed individual strategies and management decisions, highlighting three distinct farming systems that exist in the focus area:

1. Continuous or intensive cropping - in which a 'break crop' does not have to demonstrate an immediate return on investment; benefits are often intangible e.g. disease or weed management, low input option, management of soil N levels.
2. Mixed farming systems on fully arable land - the 'break crop' has to demonstrate a return on investment with a relatively profitable pasture/livestock phase - predominantly sheep/lamb production.
3. Mixed farming system with topographic and/or soil type limiting the area suitable for cropping - cropping often on 'better performing cropping paddocks' dedicated to an extended cropping phase. Management decisions are often based on similar challenges to continuous cropping systems (mainly weed management) but with more options and capacity to integrate with livestock enterprise e.g. green manure crops, high density legumes.

Although the forum focused on break crops (canola, lupins, field peas and chickpeas), other alternatives were identified by some growers as being increasingly more attractive than the traditional break crops. These included green or brown manure crops, high density legumes, annual and perennial-based pasture phase, fallow and opportunistic summer cropping.

### Break crops in the system

Late autumn breaks and some severe disease events have resulted in 5-10 years of challenging seasons for most break crops. Canola has become the focus on the strength of high yields and strong prices in 2010 and 2011, and is currently the most profitable crop in the rotation, with growers referring to wheat as 'the break crop'.

While wheat remains the dominant crop, in 2012 canola will make up about 50% of the cropping area on many farms with



**RD&E issues of break crops identified:** Researchers and growers attended a forum focussing on the role of break crops in the mixed farming systems of central and southern NSW, identifying RD&E needs of canola, field peas, lupins, chickpeas and other break crops. Photo: Toni Nugent.



## NEWS

an intensive cropping program and is likely to remain so while prices are relatively high.

Pulse crops in general are out of favour. They are considered high risk crops, with well-publicised failures due to disease epidemics (field peas, fababeans and chickpeas), with a proactive approach essential to manage disease. The publicity is not balanced by success stories and the advances in RD&E. Production levels and constancy of supply has affected market activity in southern NSW for the major pulse crops lupins (*albus* and *angustifolius*), field peas and fababeans.

Lack of experience and negative sentiment has caused reduced interest among growers and advisors. Newer generation farmers and advisors have had less exposure to pulses and this decline snowballs into lack of interest, further loss of expertise and reduced demand for technical information and updates at GRDC meetings. Growers at the forum were concerned that they rely on information filtering from other regions, which may not always be pertinent to the local region.

There is also concern about the failure of growers and advisors to include rotation effects and nitrogen saving into gross margins.

Growers who have retained pulses in their cropping system spoke of the specific skill set and attention to detail required to maximise opportunities from pulse crops. They actively seek new information, while the more passive growers are not exposed to up-to-date information.

### Improving the profitability and opportunities from break crops

The growers raised concerns at the inability to access accurate up-to-date pulse crop information relevant to the southern cropping regions of NSW and the following solutions were put forward.

1. Up-to-date agronomy packages with a regional focus clearly documenting the specific agronomic and management requirements for canola, field peas, lupins, chickpeas and fababeans. Information on the economic implications for a range of crop sequences should also be included. A decision-tree-style package clearly distinguishing break crop options, the adaptability and strengths of each option and the best fit for soil type, sowing and harvest window, disease management, susceptibility to insect attack, relative scores for susceptibility to frost damage, drought and waterlogging, registered herbicides, potential N inputs and marketing options and cash flow planning.
2. Improve skills and knowledge of advisors - extension specialist targeting the complex issues relevant to the central and southern NSW and NE Victoria.
3. Case studies of successful growers with emphasis of systems management
4. Improved market awareness of growers.

### Issues and RD&E needs

A summary for each of the break crops (canola, lupins, field peas and chickpeas) of current research programs were presented by the research teams. Growers were asked to highlight the strengths of each crop (i) why they are an important component of the cropping system; and (ii) what they see as the main RD&E needs to ensure the crop has a long-term role in the mixed farming zone of central and southern NSW.

Common cropping systems RD&E questions included:

- Nitrogen balance under current intensive cropping systems - What are the long-term implications for wheat protein levels in intensive cropping systems; include



**Market activity decline:** Production levels and constancy of supply has affected market activity for major pulse crops including field peas in southern NSW. Photo courtesy of NSW DPI Photo Library.

economic analysis of the reliance on N fertiliser versus pasture phase versus grain legume in crop sequences.

- Comparison of soil health under intensive wheat /canola rotations versus pulse crop component versus phase farming (i.e. includes pasture phase).
- Weed spectrum studies by herbicide management options.
- Lack of economic analysis of crop sequence options - include economic benefits of less tangible outcomes, e.g. weed management, diversity and spread of risk, optimum use of labour and machinery
- Comprehensive agronomy packages for promising pulse crops, highlighting agronomy features and management needs.
- Case studies highlighting the role of break crops in the farming system - identify industry champions.

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## Second crop of canola poses a huge risk

The planting of a second crop of canola in the same ground needs to be avoided at all cost as there is a huge risk of it succumbing to blackleg disease.

This was one of the key messages to emerge from a conference dedicated to the number one canola threat held at Wagga Wagga on 7 February.

All sections of the industry were represented at the well attended event which heard the latest research and control measures to fight blackleg.

The conference was jointly hosted by Ag Institute Australia and the Graham Centre.

One of the leaders of the national blackleg research group, Steve Marcroft, said the current high price for canola could tempt farmers and their advisers to consider planting crops back into the same paddock this year.

With blackleg spores carrying over in crop residue from the last harvest, there was an extremely high risk of crop failure.

Not only could the farmer lose his crop, the practice threatened to break down the disease resistance of canola varieties which would be a huge setback for the industry.

Dr Marcroft, Marcroft Grains Pathology, Horsham, Victoria, said successful blackleg control relied on a multi facet strategy which included selecting resistant varieties, good farm cultural practices and the use of fungicides.

“There is no magic bullet when it comes to blackleg. Every farm growing canola needs to have a plan matched to the level of disease risk.”



**Blackleg research unveiled:** Dr Rosy Raman and Ray Cowley catch up at the blackleg symposium. Photo: Gordon Collie, AIAST.

Dr Marcroft said the national blackleg research group, coordinated through the University of Melbourne and funded by the Grains Research and Development Corporation, had been active for almost a decade.

This work was vital if the industry in Australia was going to develop to meet the demand for canola oil.

“Blackleg fungus can be quite devastating if there is no control strategy in place.”

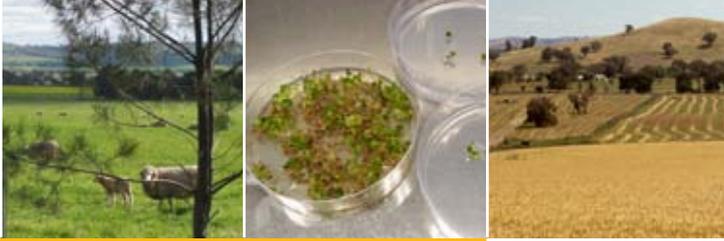
Dr Marcroft said researchers were on the verge of a major breakthrough.

All cultivars have been placed into groups based on their resistance complement. Blackleg will most likely overcome resistance if cultivars with the same resistance complement are sown in close proximity for three years or more. By rotating resistance groups, growers can avoid resistance breakdown and reduce disease severity.

This information will be released to industry in the spring.

“We want to get this information out every year so farmers can make an informed selection of varieties for their next planting. It has the potential to make a real difference,” Dr Marcroft said.

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## RESEARCH ACTIVITIES

### Workshop on entomology and sustainable agriculture

What are the hot issues in applied entomology and how can entomologists help deliver sustainable agriculture? These were the central questions addressed by Australian and Chinese researchers at a workshop organised by the Graham Centre on 29 February in Orange.

Honoured guests at the event were Professor Zhu Zeng Rong of Zhejiang University, Dr Lu Zhong Xian of the Zhejiang Academy of Agricultural Sciences and Dr Fu Qian of the China National Rice Institute. The visitors were joined by 15 Australian-based entomologists from Orange and as far afield as Yanco. The subject of presentations ranged from rice growing in both countries to mixed farming systems and agroforestry.

“A major success story amongst the presentations was the use of ‘ecological engineering’ to boost biological control of serious planthopper pests in various Asian countries. Strategies such as growing sesame on the bunds around rice fields have proven popular in China, Thailand and Vietnam because farmers gain a valuable secondary crop whilst the flowers provide nectar to beneficial insects that have delivered lower pest densities with fewer sprays (see [ricehoppers.net](http://ricehoppers.net) for details),” explained Professor Geoff Gurr.

“A clear theme that emerged from the presentations was that traditional field ecology and pest management studies increasingly use advanced molecular, chemical and modelling methods to understand the underlying mechanisms behind insect:plant interactions.”

A field trip to visit a mixed farm, organic vineyard and forests, as well as the Elizabeth MacArthur Research Institute, provided the Chinese guests with further insights into current research projects.

As an outcome of the workshop and associated interactions, several directions were identified to guide future collaboration: (i) responding to the altered behaviour and distribution of pests under climate change (ii) developing ecological pest management systems for a wider range of crop types that will emulate the current success of ‘ecological engineering’ against rice pests and (iii) increased application of molecular techniques to gain fundamental insights into the behaviour of pests and their natural enemies.

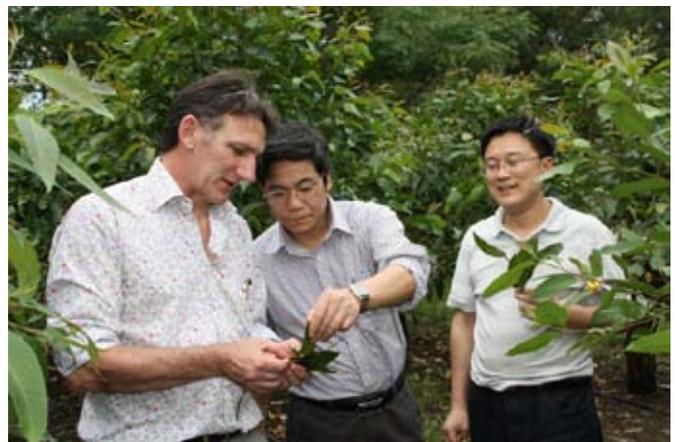
Several Graham Centre members have active collaboration with Chinese partners and plans are now afoot to dramatically expand this. Professor Gurr of the Graham Centre and Professor Zhu Zeng Rong recently coordinated submissions to the Australian and Chinese Governments to establish a joint research centre for Food Security and Functional Biodiversity. With approximately 30 staff and a projected budget of \$2.5 million over its first two years, the proposed centre seeks to make major contributions to reducing dependence on insecticide use by harnessing the power of biodiversity providing natural suppression of crop pests, diseases and guarding against exotic weeds.

The NSW Government has already pledged \$100,000 to the initiative which, it is hoped, will get underway in mid 2012.

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**Climate change affects pests:** Professor Geoff Gurr of the Graham Centre (right) discusses the effect of climate change on pests with workshop participants.



**Native insect pests:** Professor Geoff Gurr discusses native insect pests with Dr Lu Zhong Xian, Zhejiang Academy of Agricultural Sciences and Dr Fu Qian, China National Rice Institute.

## Summer scholarship aids rice quality evaluation program

The NSW DPI at Yanco plays host to the Australian Rice Breeding Program, with an emphasis on releasing varieties with agronomic advantages suitable to our climate, and with superior grain quality that maintains and strengthens the reputation of Australian grown rice in the marketplace.

Texture of cooked rice is one of five key quality attributes analysed in the Quality Evaluation program that runs parallel to the Breeding program. Given the importance of the trait, the methodology has been revisited to further understand the measurement.

During summer, Thomas Draper was supported by a Graham Centre Summer Scholarship to further optimise the method and correlate findings to a preliminary sensory trial.

Preliminary results generated in the project have prompted further research that will continue under the newly formed Collaborative Rice Research Program.

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## Sheep measles investigated

Following the revelation that sheep measles is now common and widespread in Australia and, anecdotally, according to processors, is also causing considerable financial losses to the Australian sheep meat industry, Meat and Livestock Australia has funded a two year study to revisit the life cycle of the sheep measles parasite, *Taenia ovis*, including the role of wild dogs and foxes in parasite transmission.

The study will also determine the financial impact of the parasite on producers and processors. Dr David Jenkins and Dr Jan Lievaart from the School of Animal and Veterinary Sciences, Charles Sturt University, operating through the Graham Centre, are conducting a study to reveal what may be stimulating the upsurge of this parasite infection in Australian sheep. David and Jan will be undertaking their investigation in Tasmania, New South Wales and southern Western Australia, areas with contrasting climatic conditions.

The life cycle of the sheep measles parasite is not complicated. Dogs have a tapeworm in their intestine producing eggs that pass into the environment with their faeces. Sheep become infected with sheep measles through accidentally eating the tapeworm eggs whilst grazing. These eggs hatch in their intestine releasing microscopic parasites that leave the intestine, enter a blood vessel and are transported in the blood to body muscles.

In the muscles these microscopic parasites grow into sheep measles cysts. Dogs become infected through eating

sheep meat containing sheep measles cysts, each of which contains a tapeworm head.

“Control of this parasite is also not difficult, de-worm dogs and do not feed raw sheep meat to dogs. Meat should be cooked thoroughly or frozen for two weeks before being fed to dogs,” Dr Jenkins said.

The first phase of the study identifying risk factors associated with infection, involves sending questionnaires to 80 farmers in each region. Farmers with and without sheep measles infection in their sheep have been selected from abattoir infection data generated as part of the National Sheep Health Monitoring Program, a sheep health monitoring program supported by the Sheep Meat Council of Australia and Australian Wool Producers and coordinated by Animal Health Australia.

The questionnaires have been compiled and ‘road tested’ by 10 producers. Based on the producers’ comments the questionnaires have been modified and printed, and are ready for distribution. It is expected the questionnaires will be distributed by the second week of April.

### Summer scholarship

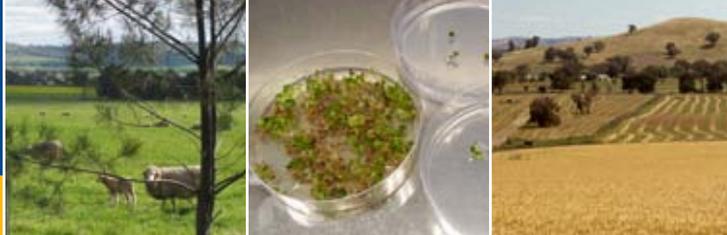
The Graham Centre recently funded a Summer Scholarship for CSU student Kate Mitchell, who has been working with David on the wildlife aspect of the study, under the supervision of a molecular biologist, Dr Nigel Urwin.

Kate has developed a molecular test to identify *T. ovis* DNA in eggs passed in dog faeces and in tapeworms collected from infected domestic or wild dogs or foxes. Kate has undertaken a small study on 40 foxes collected from sheep raising areas in the Riverina to determine if any of them were carrying *T. ovis* tapeworms, and is currently awaiting the results from preliminary tests.

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**An unpleasant aspect of research:** Dr David Jenkins collecting dog faeces as part of a study into sheep measles.



## TRAVEL & CONFERENCES

### Visit to Myanmar

Professor Ted Wolfe visited Myanmar in February with Mr Myo Win, a former CSU lecturer in agricultural engineering, now living in Canberra. Ted and Myo travelled for a week with Mr Tin Htut Oo and Mr Hashimuddin Koh of Agribusiness and Rural Development Consultants, a local firm building networks between Myanmar and the world.

Agricultural systems in Myanmar were evaluated by way of a literature survey, a rapid appraisal of four agricultural zones, interviews and reflection. The general state and characteristics of local agricultural systems were related to world agriculture and described from a perspective of potential synergism and antagonism between crop and livestock production.

Future pathways for the development of agriculture in Myanmar were broadly defined, with emphasis on the dominance of the smallholder systems, the compatibility of low-input technologies with smallholder agriculture, and the need to prepare for a future characterised by climate change and restricted supplies of energy.

In the extensive areas of well-watered croplands in Myanmar, grazing livestock are a minor source of human food but cattle and buffalo are valued, as they provide draft power for cultivation and transport. There is future scope for the expansion of ruminant production from dairy cattle and goat herds, situated near large population centres, where small- to medium-sized poultry and aquaculture enterprises are already evident, or on wastelands that are of low value for crop production or plantations. In addition, beef cattle enterprises are possible in zones that are well located in relation to export markets, provided these zones are free of foot and mouth disease.

### Recommendations

It is recommended that Australian aid agencies invest in the future of Myanmar agriculture, as such investments enhance future food security, reduce poverty and boost rural development (64 percent of the population currently live in rural areas). Unless the supply, quality and utilisation of forages for ruminants are enhanced, local systems will not meet the future demand for milk and meat for local consumption and meat for export.

For Myanmar, as for most South East Asian countries, suitable forage legumes and grasses are potentially available for a range of production niches, and there are research/extension pathways that are likely to be effective. It is recommended a centrally-located Forage for Animals Unit be established at Yezin in Myanmar, to coordinate research, education and extension on the value of improved forage for ruminants.

The Graham Centre deals with the plant-animal interface, and is in a strong position to facilitate a balanced program of collaboration between Myanmar and Australia at the research, educational and industry levels.

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**Images from Myanmar:** Top - Delta Region (Thanlwin R.); Centre - Hill country, Maw Tin Estate; Bottom - Goat herd near Hapa-An. Photos: Ted Wolfe.

## Wild bird trapping and sampling in western province

Sinafa Robby, PhD student, Papua New Guinea University of Technology (PNG Unitech) worked with Andrew Peters, Graham Centre PhD student during December and January, doing field work trapping wild birds along the Fly River in Western Province, PNG.

Andrew is doing his research on the *Trichomonas* species of parasites found in Pied Imperial-Pigeons in Australia and is extending the scope of his study to PNG. The *Trichomonas* species have been associated primarily with domestic pigeons despite causing morbidity and mortality in many species of pigeons and doves including birds of prey and a number of other bird species. But the main aim of this field work was to trap or catch wild birds including Imperial-Pigeons, Crowned Pigeons and doves. They also collected blood samples from the wing veins, tissue samples from the beak and the crop and a primary wing feather was cut or plucked out as part of the sample. Other measurements recorded included wing, feet and head length, body weight, crop size and body condition score.

Andrew also did postmortems on some birds hunted for food by local villagers and collected parasites from the internal organs, especially from the intestine, for future analysis.

The main technique used to trap wild birds was a mist net technique designed by Andrew. This technique involved using two metre poles fitted to metal joints, reaching a maximum height of 12-16 metres. The metal joints have loops with rope tied to the ground pegs to provide support when the poles are raised upright. The fitted poles (16m high) were placed 18m apart and the black mist nets were tied from one pole to the other and levered up the pole (similar to flag raising) covering the vertical space between the poles. Recordings of different bird sounds were played on an MP3 player, luring the birds into the mist net trap.

But this technique was not effective, and they resorted to techniques used by the local people for catching wild birds. The total bird count for the four week period was 22 birds (four using the mist net method and 18 using local techniques).

“From Andrew’s research work I noted that wildlife pose a threat in transmitting infectious diseases, parasites and pests from one area to the other, and especially in countries where a common border is shared like PNG and Indonesia or countries in close proximity like Australia and PNG,” Sinafa said.

Infectious disease passed through wildlife movement from country to country or even within a country will



**Wild birds shed light on parasites:** PhD student, Sinafa Robby (pictured), says trapping and collecting samples from birds along the Fly River, PNG, has provided invaluable information that will assist future research. Photo: Andrew Peters.

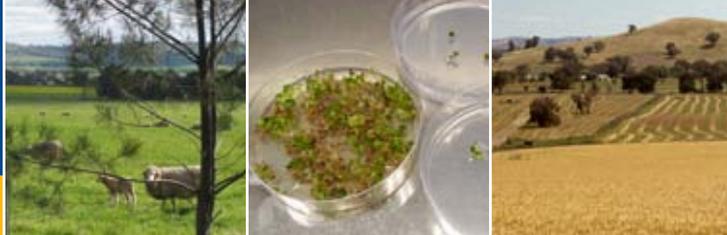
greatly endanger other wildlife species, domestic animals, agricultural products and human beings.

“This research has shown evidence of wild birds (pigeons) moving from Australia to PNG. A local teenager from Lewada village in Western Province found a metal band on a Pied Imperial-Pigeon in an island along the Fly River. The number on the metal band on the pigeon’s foot is believed to be from Andrew’s research conducted some years ago when Andrew put metal bands on more than 200 wild Pied Imperial-Pigeon feet in the northern part of Australia and released them,” Sinafa explained.

“This research and Andrew’s previous research work, has shown there is a greater need for wildlife research especially in areas where a common border is shared.”

“This field work has been a great privilege to learn and gain some practical hands-on experience pertaining to my career field of interest. I look forward to any opportunities for future studies or research related to veterinary science.”

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## IN THE LIMELIGHT

### John Piltz

**Position:** Livestock Research Officer

**Organisation:** NSW Department of Primary Industries

#### Career Brief

John Piltz joined NSW DPI in 1985 as a Technical Officer working in ruminant nutrition and forage conservation. In 1993 he gained a MRurSc degree from the University of New England for his thesis titled 'Digestibility of Australian Maize Silages'. Prior to his current appointment he was National Coordinator of the 'TopFodder Silage' program (2003-2005).

#### Research Activities

Feed evaluation research including evaluation of new legume species and cereal based forage crops, and new feed testing methods; the role for conserved forage to improve livestock production and whole farm productivity with special emphasis on the mixed farming zone; and the use of forage conservation, especially silage, to control weeds.

#### Teaching Activities

Recently supervised Ms Wang Li and Ms Xiangba Zhouga during their postgraduate (Masters) studies at CSU. Currently co-supervisor of CSU PhD student Mr Shoaib Tufail.

#### Professional Links

Member, and previous chairman, Australian Fodder Industry Association's Quality Evaluation Committee.

**A typical day for me includes ...** Watering the plants in my office while the computer boots up, checking (deleting) emails, checking field sites/harvesting, working at the animal house with most time spent working on and writing up data.



**My main project at the moment is ...** An ACIAR supported project 'Integrated crop and dairy systems in Tibet Autonomous Region, China' which includes a substantial research component at Wagga. This includes field trials to evaluate cereal and cereal/vetch forage crops for hay and silage production, an animal house experiment investigating the feed quality of cereal silages produced from barley and oats, and determining the response to lucerne silage in steers fed barley straw ad lib. A complementary study, supported by RIRDC is evaluating triticale/pea forage crops for hay and silage.

**My favourite part of my job is ...** Talking with other staff over morning or afternoon tea.

**When I am not in the office I like ...** Getting out to the paddock to look around at sheep, cattle, pastures and forage crops.

**When I am driving I like to listen to ...** ABC radio, music from the 70s and 80s.

### Promotion Goes Pink



Toni Nugent and Peter Wynn with Glenn McGrath, Ambassador for the Australian Year of the Farmer, promoting the Graham Centre at the Agricultural Careers Expo, Royal Easter Show, Sydney.

## Shawn McGrath, PhD Student

**Supervisor(s):** Dr Michael Friend, Dr Jim Virgona, Dr Marie Bhanugopan (CSU), Dr Ed Clayton (NSW DPI), Dr Hugh Dove (CSIRO)

**Thesis title:** Studies in grazing late pregnant and lambing ewes on dual-purpose wheat

**Funding body**

Australian Wool Education Trust and NSW Rural Assistance Authority

**Career and studies till now**

- Bachelor of Science in Agriculture, The University of Sydney (1998-2001)
- Elders Ltd (2002-2010), including Elders graduate program, beef supply chain and agribusiness banking

**Currently studying:** PhD

**Research Interests:** Feedbase management in mixed-farming and grazing systems.

**A typical day for me includes ...** In the autumn I am typically fencing trial plots and in the winter my days are spent trudging wheat paddocks doing lambing rounds or weighing lambs. The remainder of the time I can be found in my office reading papers or attempting to decipher results and get some writing done.

**My main project at the moment is ...** Planning a field trial to study the effect of varying wheat forage availability on animal performance.

**My favourite part of my studies is ...** Planning and running field trials.



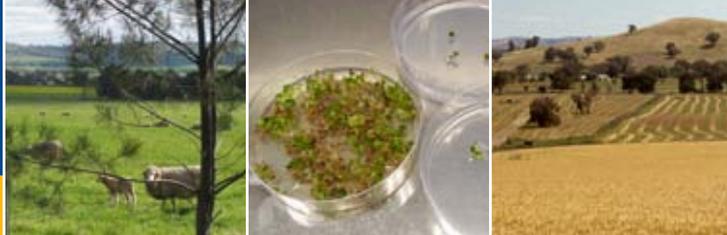
**When I am not studying I like to ...** Do odd jobs around our block - assisted enthusiastically (if not ably) by my 18-month-old daughter.

**When I am driving I like to listen to ...** Local ABC - to see if the Billabong is in flood at Culcairn (cutting my access to Wagga).

### Riverina in flood



Spectacular aerial photograph taken by Peter Miller, looking east of Griffith towards Barellan. There was wide spread flooding in Yoogali, Hanwood, Barellan, Yenda and downstream of Mirrool Creek (6 March 2012).



## EVENTS CALENDAR 2012

Date	What	Where	More information
30 Apr – 3 May	6 <sup>th</sup> Australasian Controlled Environment Working Group (ACEWG) Conference	CSU, Wagga Wagga	<a href="http://www.weiss-gallenkamp.com/news/2012-03/australasian-cewg-2012/">www.weiss-gallenkamp.com/news/2012-03/australasian-cewg-2012/</a>
26-27 May	Farm Day 2012		<a href="http://www.farmday.com.au">www.farmday.com.au</a>
1 Jun	Ag Enrichment Day	Graham Centre/Joyes Hall CSU, Wagga Wagga	Toni Nugent E: <a href="mailto:tnugent@csu.edu.au">tnugent@csu.edu.au</a>
13 Jul	Annual Graham Centre Sheep Field Day	Convention Centre CSU, Wagga Wagga	Toni Nugent E: <a href="mailto:tnugent@csu.edu.au">tnugent@csu.edu.au</a>
18 Jul	FarmLink Mixed Farming Forum	Temora, NSW	<a href="http://www.farmlink.com.au">www.farmlink.com.au</a>
24-26 Jul	NSW Grasslands Conference	Convention Centre CSU, Wagga Wagga	Nathan Ferguson E: <a href="mailto:nathan.ferguson@dpi.nsw.gov.au">nathan.ferguson@dpi.nsw.gov.au</a>
8 Aug	FarmLink Ag Tech Show	Temora, NSW	<a href="http://www.farmlink.com.au">www.farmlink.com.au</a>
10 Aug	Annual Graham Centre Beef Field Day	Convention Centre CSU, Wagga Wagga	Toni Nugent E: <a href="mailto:tnugent@csu.edu.au">tnugent@csu.edu.au</a>
22 Aug	Industry Information Day: Crops, Rumps and Woolly Jumpers - what's the balance?	Joyes Hall CSU, Wagga Wagga	<a href="http://www.sheepconnectnsw.com.au">www.sheepconnectnsw.com.au</a>
5 Sept	Annual Graham Centre Field Day	Graham Centre Field Site Cnr Coolamon & Prices Road	Toni Nugent E: <a href="mailto:tnugent@csu.edu.au">tnugent@csu.edu.au</a>
18-20 Sept	Henty Machinery Field Days	Henty, NSW	<a href="http://www.hmfd.com.au">www.hmfd.com.au</a>
10 Oct	Graham Centre Agribusiness Field Day	Graham Centre Field Site Cnr Coolamon & Prices Road	Toni Nugent E: <a href="mailto:tnugent@csu.edu.au">tnugent@csu.edu.au</a>
17 Oct	Hart Bros Seeds Field Day	Hart Bros Seeds, Junee	<a href="http://www.hartbrosseeds.com.au">www.hartbrosseeds.com.au</a>
2013 15-19 Sept	22 <sup>nd</sup> International Grassland Congress/IGC2013	Sydney	<a href="http://www.igc2013.com">www.igc2013.com</a>

## Winter Edition of The Innovator

The Winter Edition of The Innovator will be available mid July 2012. Submission of articles for this edition closes on **Friday, 22 June 2012**. Please email articles to Toni Nugent or Sharon Kiss.

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