THE UNIVERSITY OF WESTERN AUSTRALIA
Achieve International Excellence

The UWA Institute of Agriculture

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Photo courtesy of The Royal Agricultural Society of WA

His Excellency Malcolm McCusker, Governor of Western Australia, and his wife, Mrs Tonya McCusker, with scholarship winners Miss Charissa White, Miss Georgia Pugh and Miss Joanna Lang at the Perth Royal Agricultural Show 2011.

UWA agricultural science students scoop scholarship awards at Royal Agricultural Show

Recently three students from UWA's Faculty of Natural and Agricultural Sciences have made a clean sweep of the regional scholarships awarded by The Australian Council of Agricultural Societies (ACAS) this year.

The purpose of these scholarships is to support rural youth to complete their tertiary studies in courses that will benefit regional Australia. ACAS and Coca-Cola have been supporting Australian students studying in agriculture and related fields for the past 5 years. Since 2005, almost 200 scholarships to the value of $2,000 each have been given to some of Australia's most talented young people to help them develop careers in agriculture.

To be eligible for consideration, applicants must demonstrate their passion and commitment to agriculture – an easy task for the three UWA students who blitzed the competition this year:

Charissa Wright, a second year student from Boyup Brook is pursuing a Science degree in Natural Resource Management and has experienced farm-life on a number of farms: "My dad works as a farm manager and although our family has moved around a bit, I have always lived on farms and am loving it." For the past several years her father, Michael Wright, has been managing an 8,000 acre farm with livestock and mixed cropping, which reinforced Charissa's interest in resource management: "When I look around the property, it becomes so obvious that we are the custodians of the land. By studying resource management at UWA, I knew I would get the best training available so that I will be able to make a real contribution to responsible resource management and sustainable development for the future."

Charissa is particularly impressed with the breadth and range of option units offered in her course. "Because my course has a lot of optional units, I can combine units from agricultural science with environmental units, and even arts units, so I can develop a truly broad and balanced perspective."

Charissa has been a regular volunteer at her local agricultural show - the 'Upper Blackwood Show' – and, after her studies, hopes to commence a career in natural resource management in the region. She has spent part of her $2,000 scholarship prize money to attend the WA Natural Resource Management conference in September, and the remainder will help with the costs of her studies.

The second scholarship winner, Joanna Lang, is in her fifth year at UWA, studying agricultural science and commerce. She grew up on a 6,000 acre wheat and cattle farm near Gingin and although she moved to Claremont to be close to university during her studies, she is a frequent visitor back home, to practice her equestrian skills and exercise her horse. Joanna has been competing in showjumping and stockhorse events both in

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Director's column

Winthrop Professor Kadambot Siddique (kadambot.siddique@uwa.edu.au)

2011 has been an exciting year for The UWA Institute of Agriculture (IOA):

The contributions made by IOA this year cover all aspects of agriculture: research, education, training and technology exchange.

Many of these contributions have been through collaboration with the IOA's extensive network of research and educational partners, both domestic and international. As our partnerships evolve and mature, they become stronger and able to produce far-reaching outcomes.

A good example is our long standing relationship with CSIRO, which has become even stronger this year through the establishment of two new joint laboratories (Laboratory for Molecular Plant Pathology and Crop Genomics; Animal Production Laboratory). The partnership has brought together the top scientists and postgraduate students to work with the latest technology and equipment.

Another outstanding partnership exits between IOA and Lanzhou University, China, which has been further boosted this year by continued funding of the '111 Project' for another five year term, and by the progress in establishing a joint Centre for Dryland Agricultural Ecosystem (see also page 12).

Kerala Agricultural University (KAU) in India represents another success story about an effective alliance. Since our MoU in 2009, IOA and KAU have been collaborating on climate change science, including the development of an integrated Masters program (3 plus 2), which has become a highly sought-after course (see also page 11).

Strong links with Iraq represent another example of a relationship which has matured and plays a significant part in the reconstruction of agriculture in the war torn country: A visit in January by Iraqi government officials discussed new ideas for agricultural development and management in Iraq. Later in the year, a group of staff selected by the Iraqi Ministry for Agriculture came to UWA to participate in the second training course on plant breeding funded by AusAID.

Seeds of Life is another long-term collaborative project, with lasting tangible benefits for farmers in Timor-Leste. This has been boosted with a further $27.5 m funding over the next five years by ACIAR and AusAID (see also page 11). Continued innovation and improvement of agriculture in Timor-Leste is no longer a dream, but an action, with Dr Marcal Gusmao returning to his home country as the first UWA PhD graduate from Timor-Leste (see also page 3).

Postgraduate education in agriculture is also a key feature of the alliance between IOA and the University of Agriculture, Faisalabad, Pakistan, with five faculty members currently undertaking their PhD studies at UWA.

As the future of Australian agriculture lies in the hands of our students, I am extremely proud that so many of them achieve at an outstanding level, as reflected by the awards and prizes bestowed on them this year (see also cover story). The achievements of students also reflect the commitment of their teachers and mentors, and I feel privileged to work with such distinguished and internationally recognised academics and researchers at UWA.

The quality of research undertaken by UWA PhD students in agriculture and related areas was also evident in this year's postgraduate showcase (see newsletter #14, August 2011).

2011 has also been a productive year in terms of research publications. To date we have published 150 refereed journal papers, 17 book chapters and 6 books. Our research culture and focus on international research and teaching quality has placed UWA in 110th position of universities world-wide this year, while our Life and Agricultural Sciences ranked 33 in the world and number one in Australia (Shang Jai Tong Academic Ranking of World Universities).

Last but not least, 2011 has been a year of active engagement with the wider community: The Industry Forum in July (see also page 10) attracted a large and diverse audience and extensive press coverage, as did the UWA Future Farm Field Day in October, which raised awareness and provided timely information about on farm emissions and ways to reduce them (see also page 4). We also actively participated in the 2011 Dowerin Field Days (see also page 7).

At the end of this year Professor Alan Robson, Vice-Chancellor and the key architect for the establishment of three Institutes at UWA (Agriculture, Ocean and Minerals & Energy) will retire from the position. Following his retirement as UWA Vice-Chancellor, Professor Robson will return to IOA to focus on his research and mentorship in Soil Science and Plant Nutrition.

Professor Robson has been a great teacher, researcher, friend of the farming community, as well as an inspiring higher educational leader, mentor and an outstanding boss. His passion, commitment, humility and mentoring ability have inspired many students and staff at UWA and other institutions.

My interaction with Professor Robson over the years has helped me enormously to develop new ideas and maintain a positive attitude. Thank you, Professor Robson, for all the great things you have done for UWA and many of us.

I am confident that with the tireless support of our dedicated team, IOA is well-placed to advance its diverse yet focused initiatives and efforts in 2012 and beyond, for the benefit of agriculture and future generations.

I wish you all very best for the festive season and thank you for your support and look forward to another productive and rewarding year in 2012.

Best paper award for IOA young scientist Dr Helen Bramley

Photo courtesy Hans Schmidt, HS Photos Cairns

Dr Helen Bramley (centre) with Assoc/Prof. Ros Gleadow (left), President of Australian Society of Plant Scientists (ASPS) and W/Prof. Rana Munns – Editor-in-Chief of Functional Plant Biology, receiving her 'Best Paper' award at the ComBio 2011 Conference.

Dr Helen Bramley, Research Associate at IOA, took out the 'Best Paper Award for Young Scientists for 2010', for her paper *"The contrasting influence of short-term hypoxia on the hydraulic properties of cells and roots of wheat and lupin"*, published in Functional Biology (February 2010).

The award was presented at *ComBio2011*, held in Cairns in September this year, and as part of the prize, Dr Bramley has been invited to present a talk on her topic at the *ComBio2012* conference in Adelaide next year.

UWA's first PhD graduate from Timor-Leste

Dr Marcal Gusmao after his graduation, with UWA Vice Chancellor W/Prof. Alan Robson (left), one of the supervisors Prof. Erik Veneklaas (right) and Dean of the Graduate Research School, W/Prof. Alan Dench (far right).

A researcher working on a legume crop that is drought- and waterlogging-tolerant is UWA's first PhD graduate from Timor-Leste.

Dr Marcal Gusmao will use the knowledge gained at UWA to continue working on improving crop yields and training agricultural science graduates for his country.

His doctorate in agricultural science will enable him to pass on methods of improving crop yields to his students at the National University of Timor-Leste, where he is also working for a United Nations development program on climate change.

Timor-Leste is among the world's 10 poorest countries with almost half its population relying on subsistence agriculture and going through a 2-3 month 'hunger season' every year, between one harvest and the next.

Dr Gusmao's research involved assessing grass pea, which, unlike other legumes, produces a respectable seed-yield under stress. He presented his findings at international food legumes conferences in Turkey and Syria, thanks to funding from Australian Centre of International Agricultural Research (ACIAR) and a UWA Post Graduate Research Travel Award.

Dr Gusmao enrolled at UWA after meeting IOA Director, Winthrop Professor Kadambot Siddique, in Timor-Leste in 2006. Professor Siddique encouraged him to apply for a John Allwright Fellowship from ACIAR.

UWA is also involved in a major program to alleviate hunger in Timor-Leste. A collaboration between ACIAR, AusAID, UWA, and the Timor-Leste Ministry of Agriculture and Fisheries, the Seeds of Life III program aims to increase production of Timor-Leste's staple food crops (see also page 11).

"Dr Gusmao has every reason to be very proud of himself. There is no doubt in my mind he will make a valuable contribution to achieving food security in Timor-Leste and will serve as an inspiration to other bright students in his country to choose agricultural studies as a career path which is rewarding on both on a personal and national level," said Professor Siddique.

UWA presence at the Agricultural & Applied Economics Association conference

Assistant Professor Marit Kragt (marit.kragt@uwa.edu.au)

Three researchers from UWA's School of Agricultural & Resource Economics, presented papers at the annual conference of the Agricultural & Applied Economics Association, held in Pittsburgh (USA) in July.

Assistant Professor Amin Mugera presented his paper entitled 'Measuring technical efficiency of dairy farms with imprecise data', Assistant Professor Marit Kragt's paper addressed 'The costs of storing carbon in agricultural soils', and Research Assistant Professor Morteza Chalak presented his research on 'Economics of controlling invasive species: A stochastic optimisation model for a spatial-dynamic process'.

With nearly 700 presented papers, the conference was a great success. It provided a great networking opportunity with our North-American colleagues, which will hopefully result in ongoing collaborations with UWA.

Photo courtesy of AAEA

Asst/Prof. Marit Kragt's trip to Pittsburgh was supported by the 2011 'Heading North Award' by the Australian Agricultural and Resource Economics Society (AARES). From left: Prof. John Quiggin, President of The Australian Agricultural and Resource Economics Society (AARES) with Asst/Prof. Marit Kragt, School of Agricultural and Resource Economics (UWA) and Prof. Thomas W Hertel, President of the American Agricultural & Applied Economics Association (AAEA).

New QTL course at UWA to optimise plant breeding

A new two-day course titled 'Mixed model based Quantitative Trait Locus (QTL) mapping in GenStat' was hosted at UWA's International Centre for Plant Breeding Education and Research (ICPBER) in July. The course presented a flexible mapping approach for QTL and an introduction to the simulation of breeding strategies.

The course was sponsored by the Grain Research and Development Corporation (GRDC) with the support of The University of Wollongong (UoW), The University of Western Australia and CSIRO Mathematics and Statistics. The presenters were Professor Fred van Eeuwijk and Assistant Professor Marcos Malosetti of Biometris, Wageningen University, the Netherlands and Dr Scott Chapman, Senior Scientist, Crop Physiology and Simulation at CSIRO, Brisbane.

The course was aimed at graduate students and professionals interested in a flexible QTL mapping approach in GenStat for single traits in single environments as well as multiple traits and multiple environments. Additionally, a simulation of breeding strategies was illustrated using QuGene software. Feedback from the 18 participants was positive.

"Providing that the phenotypic and genotypic information is collected, the main steps in QTL mapping are: looking for linkage between marker loci, constructing a genetic map and detecting QTL, which is basically testing for association between a phenotypic trait and a marker," says Associate Professor Katia Stefanova.

The course outlined the challenging task of statistical modelling in modern plant-breeding, namely predicting phenotypic expression (i) for multiple traits; (ii) across a range of environments; (iii) over developmental time; (iv) from molecular marker variation and genomic information; (v) for various types of (offspring) populations.

‘Carbon Emissions’ a hot topic at UWA Future Farm Field Day

‘On-farm carbon emissions and their measurement’ drew a large crowd to the UWA Future Farm (Ridgefield) Field Day, held in Pingelly on 18 October.

More than 150 farmers, agricultural scientists and students braved chilly winds and the occasional shower to view on-site demonstrations and presentations about the latest technology and findings about measurement and mitigation strategies of on-farm green house gas emissions.

Also present was the Steering Committee of the Reducing Emissions from Livestock Research Program (RELRP) – a nation-wide program, funded mainly through the Federal Government’s Climate Change Research Program and co-ordinated by ‘Meat and Livestock Australia’, with demonstration sites in each state, including The UWA Future Farm as the Western Australian site.

Professor Phil Vercoe (UWA), leader of IOA’s Animal Production Systems Program, and also leader of the RELRP demonstration site project, outlined the carbon emission programs in place at the UWA Future Farm and provided an overview of the day which featured eight presentations and visits to two demonstration sites.

The first speaker, Professor Ross Kingwell, Chief Economist, (DAFWA/UWA), discussed the economics of farm level emissions. He emphasised that it is government policies which determine the economics of carbon emissions: “With carbon priced at $23 per tonne from July 2012, a typical central grain belt farm would be up for around $25K per year and a farm like The UWA Future Farm with its emphasis on sheep production would need to pay around $50K a year – if farms did have to pay for their CO_2 emissions. Under the current legislation they are excluded.” Professor Kingwell warned that despite the price exemption for farm emissions, the carbon tax imposed on Australia’s 500 biggest emitters would adversely impact on farmers. “These companies will pass on their cost increases to growers and a typical central grain belt farm could suffer as much as a 10% reduction in their farm profits, arising from things like higher electricity costs and freight charges.”

Professor Kingwell also urged caution before embarking on any carbon credit schemes: “Farmers need to look closely at the financial costs and returns associated with any option they are encouraged to use to reduce emissions,” he said. “Tree plantations, for example, are only economically viable when the carbon price is very high >$60 per tonne.”

His views on carbon trading were shared by Mr David Cattanach, a grain grower from NSW and the first farmer to attempt an emissions audit from a farm in Australia. Mr Cattanach outlined what motivated him to engage in an emissions audit and the experiences he gained: “I grow grain under irrigation and see emissions as a waste of inputs so for me, an emissions audit, was primarily a management tool to flag areas of inefficiency that could be improved.”

Photo courtesy David Mallard

Prof. Ross Kingwell (UWA/DAFWA) presenting on the economics of carbon emissions at the UWA Future Farm Field Day.

The main source of emissions on his farm was nitrogen fertiliser (42%); followed by the diesel-powered bore (35%) and farm equipment (7%). He found, that 1 tonne of carbon tied up $190 worth of Nitrogen, Phosphorus and Sulphur, and summed up his take home message: “Efficient agriculture is profitable agriculture and is greenhouse friendly agriculture.” In his view farmers should focus on defining and addressing pathways for losses of soil carbon (rather than abatement), such as reducing nitrous oxide through matching application rate and timing with crop requirements.

Senior Scientist (CSIRO, Animal Industries at Floreat) Dr Dean Revell addressed the impact of climate change on stock feeding systems. “Variability in rainfall is our key challenge,” said Dr Revell. “Therefore, we need to develop grazing systems that can cope with very low rainfall and yet be able to capitalise on the opportunities presented by high rainfall.” He suggested that the answer may lie in plant diversity, by adding drought-hardy perennial shrubs to the feed base: “Adding perennial shrubs suited to our environment to our grazing systems can boost whole-farm profit, achieve better management of natural resources and may reduce methane emissions from livestock systems.”

Dr Andrew Thompson (DAFWA/Murdoch University) briefed on improving maternal efficiency and resilience in sheep. Dr Frances Phillips (University of Wollongong) demonstrated in-field measurement, using near-infrared equipment (NIR) capable of generating accurate data of whole herd methane emissions in the field.

Assistant Professor Ken Flower (UWA) presented comparisons of soil water and nitrous oxide emissions after different crop sequences. Two year trials showed weeds to cause significant depletion of soil water conserved from fallows. Crop sequences had no significant effects on nitrous oxide emission levels.

Ms Laura Fagan (UWA) discussed integrated pest management (IPM) in grain cropping. “IPM can reduce the amount of pesticides used and help avoid chemical resistance by using alternative management methods,” she said. ”Our field trials have also shown, that monitoring, a key IPM component, can reduce the need for conventional chemical sprays without affecting yield.”

Restoring carbon through planting native species was the topic of Dr Michael Perring’s (UWA) talk. “A greater diversity of species may provide more secure long-term carbon stocks, “said Dr Perring, “so we are running an experiment (Ridgefield Multiple Ecosystem Services) to investigate how different mixtures of eight native species affect multiple ecosystem services, including soil erosion control, nutrient cycling”.

The highly informative afternoon ended with a sausage sizzle which proved an excellent networking opportunity.

AHRI Harvest Weed Seed Management Seminars across Australia

Ms Neree Martinez (neree.martinez@uwa.edu.au)

During September AHRI Associate Professor Michael Walsh, along with DAFWA's Peter Newman and prominent WA grain growers Rod Messina (Mullewa), Lance Turner (Corrigin) and Ray Harrington (Darkan), toured south eastern Australia delivering a series of RIRDC-funded seminars on harvest weed seed management. Similar seminars were held at Wubin, Corrigin and Kojonup in 2010.

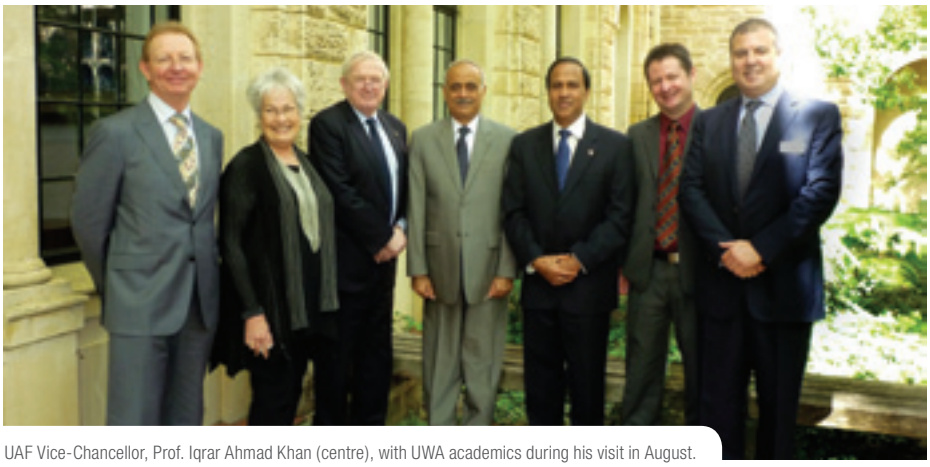
Over the course of two weeks the team delivered seven seminars across South Australia, Victoria and NSW, speaking to a combined audience of over 250 grain producers. Seminars included presentations on the weed control efficacy of chaff carts, windrow burning, bale direct system and the Harrington Seed Destructor (HSD); Corrigin farmer Lance Turner demonstrated how he has modified the chaff delivery system on his chaff carts to control ryegrass populations effectively; Mullewa farmer Rod Messina explained how he has used windrow burning across 10,000ha as a tool to drive down weed numbers on his property; Darkan farmer Ray Harrington, inventor of the HSD, discussed the current and future developments of this unique seed destruction system. Finally, Peter Newman (DAFWA) explained how the successful integration and extended use of any one of these systems in a cropping program leads to the decimation of in-crop weed numbers.

Feedback on the seminars was very positive, with growers appreciating the opportunity to learn from other growers about harvest weed seed control.

Photo courtesy Emma Leonard

From left: Darkan farmer Mr Ray Harrington, Mullewa farmer Mr Rod Messina, Corrigin farmer Mr Lance Turner, DAFWA's Mr Peter Newman, AHRI's Assoc/ Prof. Michael Walsh and YP Alkaline Soils Group Vice Chairman and farmer Mr Matthew Pointon pictured at the seminar held in Minlaton, SA.

Vice-Chancellor of Pakistan's foremost university visits UWA



UAF Vice-Chancellor, Prof. Iqrar Ahmad Khan (centre), with UWA academics during his visit in August.

New ideas for enhanced collaborations between the University of Agriculture, Faisalabad (UAF), Pakistan and UWA were flagged during a recent visit by UAF Vice Chancellor, Professor Iqrar Ahmad Khan, to UWA.

The visit was facilitated by IOA Director, Winthrop Professor Kadambot Siddique, and created opportunities for Professor Khan to meet with Senior UWA Executives. "Professor Siddique's contribution in bringing us all together was remarkable," said Professor Khan. "During the visit I had discussions with UWA on further collaboration with special focus on food and water security, climate change, social mobilisation, microcredit, articulation programs for joint/double degrees and faculty exchange."

In a subsequent letter, Professor Khan invited UWA Vice Chancellor, Professor Alan Robson and Noble Laureate Professor Barry Marshall to visit UAF as his guests. "Visiting UWA was a learning opportunity for me and an outstanding event for international linkages," wrote Professor Khan.

Professor Khan's visit reflects the growing strength of the links between UWA and UAF, which began in 2008 with a Memorandum of Understanding between the two universities. Under the above agreement, UAF and UWA have also established a jointly funded PhD program with five high-quality PhD students from UAF currently undertaking their research at UWA, and another five due to commence in 2012. UWA has recently funded two flood reconstruction full scholarships to Pakistan.

12 year old Tim a guest at UWA's Centre for Integrative Bee Research (CIBER)

12 year old Timothy Read, of Parkwood, visited the UWA display at the Dowerin Field Days (see page 7) and was the winner of the competition to spot and name the live soils bugs under the microscope.

He claimed his prize – spending a day with a UWA scientist – in September, when he visited the Centre for Integrative Bee Research (CIBER).

"I got to wear a bee suit and was allowed to go to the beeyard and help Professors Boris, Ben and Barbara to try and find the Queen bee," said an excited Timothy. "It was really cool!" Timothy was equally impressed by the high-tech facilities and the friendly staff who gave him a tour of the centre and presented him with a jar of honey at the end of the day.

For more information about CIBER visit www.ciber.science.uwa.edu.au/

Photo courtesy Boris Baer

Timothy Read in the bee yard of UWA's Centre for Integrative Bee Research (CIBER).

Vital Statistics provided by new IOA staff member

Associate Professor Katia Stefanova

Katia Stefanova has joined the UWA Institute of Agriculture as an Associate Professor in Biometrics for the next five years. Her position is fully funded by GRDC as part of the National Statistics Project for Australian Grains Industry. Associate Professor Stefanova is seconded from DAFWA during the above period.

Associate Professor Stefanova's research career commenced with a Masters degree in the area of Applied Probability, after which she completed a PhD in Applied Statistics. She has maintained an interest in Applied Statistics, particularly with applications in Agriculture and Biological Sciences. For the last 15 years, her research interests have been linked to her consultancy work and have emerged more specifically from the application of linear mixed models, spatial statistics, experimental design and multivariate techniques to plant breeding and genetics.

Associate Professor Stefanova was also the primary statistical consultant at the Department of Mathematics and Statistics at UWA, where she ran the Statistics Clinic for UWA PhD and Masters students during 1996 – 1997.

Apart from the National Statistics Project commitments, Associate Professor Stefanova's future work will be focused on integration of biometrical research across UWA (Agriculture, Biology and Genetics) through collaboration with researchers and active engagement with undergraduate and postgraduate training and supervision in Biometrics. Associate Professor Stefanova can be contacted via email: katia.stefanova@uwa.edu.au

French agronomist latest weapon in fight against herbicide resistance

Photo courtesy Lisa Mayer

Ms Myrtille Lacoste

Ms Myrtille Lacoste joined UWA's Australian Herbicide Resistance Initiative (AHRI) as Decision Support Agronomist. Ms Lacoste is funded by GRDC through a national research grant (managed by the University of Adelaide) which explores detailed methods for understanding and management of resistance to Group M, Group L and Group I herbicides.

Ms Lacoste was educated in France and has previously worked with Charles Sturt University on a study to determine how producers manage both production and the environment in the face of prolonged drought. Prior to this she worked on the Seeds of Life project which engaged with subsistence farmers and she was a major player in the design and analysis of the national variety program in Timor-Leste.

In her new role in at AHRI, Ms Lacoste is responsible for updating the Ryegrass Integrated Management (RIM) program focused on weed, crop and herbicide management in broad-acre Australian cropping. The role will also provide the opportunity to extend this program to farmers and consultants through workshops and through other avenues of communication.

Applied Entomologist joins UWA

Assoc/Prof. Christian Nansen in Niger, inspecting a pearl millet spike for millet head miner.

Dr Christian Nansen will take up the position of Associate Professor in Applied Entomology in early January 2012, to join researchers at UWA's Institute of Agriculture and School of Animal Biology in the fight to 'beat the bugs'.

The position is a joint initiative between GRDC and UWA to address the problem of crop protection by establishing an exciting new program of research, development and teaching in Applied Entomology, aimed at developing technologies and integrated pest management practices (IPM) that will enable Australia's grain producers to adopt best practice insecticide inputs while maintaining profitability.

To achieve this, a clear understanding of the complex interactions between insects, plants and their environment is needed, and this is where Dr Nansen's expertise comes in.

Dr Nansen has developed a multi-disciplinary research program, which incorporates agro-economic considerations as well as a wide range of abiotic and biotic factors, including: climate, soil environment, crop phenology, farming practices, and native vegetation, underpinned by theoretical ecological concepts as framework for studies.

His research interests and experience focus on four broad areas:
1. reflectance-based stress detection in crops;
2. insecticide performance evaluations;
3. arthropod sampling and interpretation of trap captures; and
4. host selection ecology by herbivorous insects.

Dr Nansen holds a PhD in Zoology from the Royal Veterinary and Agricultural University in Denmark, and a Master of Biology from the University of Copenhagen, Denmark.

He joins UWA from the USA, where for the past five years he has worked as Assistant Professor in Grain Entomology and Imaging Analysis at the Department of Entomology at Texas A&M University, and in the Department of Soil Science at Texas Technical University. Besides his research activities, Dr Nansen has taught both undergraduate and graduate students and coordinated exchange programs between US and Brazilian universities.

For more information about Dr Nansen, visit his website www.pssc.ttu.edu/cnansen/Website.html

‘Salt of the Earth’ research from UWA at Dowerin Field Days 2011

Ms Ully Fritsch (ully.fritsch@uwa.edu.au)

The UWA Institute of Agriculture (IOA) presented its latest achievements and future directions in agricultural research and education at this year’s Dowerin Field Days in August.

The IOA display was located in the DAFWA pavilion which focused on the theme ‘Futures in Agriculture’.

“Dowerin 2011 was a great success for UWA on several fronts,” said Ms Ully Fritsch, Communications and Development Officer for IOA. “Visitors to our display were able to learn about the research we pursue in addressing the challenges arising from climate change, salinity and greenhouse gas emissions.”

Researchers from UWA’s School of Animal Biology displayed their three-pronged approach to lowering methane emissions from sheep: sheep breeding (changing the sheep), animal nutrition (changing the sheep’s diet), and the organisms responsible for methane production in the sheep’s gut (changing the bugs).

“We also had a lot of interest in the UWA Future Farm at Ridgefield,” said Dr Vanadhabuthi, a Research Associate from UWA’s School of Animal Biology. “People had a good look at the banner of the UWA Future Farm and were impressed that there is a site where the research can be applied and tested in a real farm environment, and not just a laboratory or glasshouse.” (see also page 4).

Other displays which generated a lot of interest with farmers were the salt- and Ascochyta blight-resistant chickpea and a new pasture legume ‘messina’, which boasts two amazing features: it actually thrives on salt water (it will even grow in sea water) and is extremely waterlogging tolerant.

While messina still needs to undergo 2-3 years of evaluation before it can be released commercially, it nevertheless generated a lot of enthusiasm and Dr Teakle fielded countless enquiries from growers and sheep farmers across Western Australia.

“It was great to see so many visitors engage with scientists about our research in a variety of areas, which will assist farmers in animal production and new crop varieties,” said Dr Teakle.

A big hit with the younger audience was the interactive display to look at microscopic bugs in the soil and the competition to spend a day with a UWA scientist (see page 5). The Centre of Legumes in Mediterranean Agriculture (CLIMA) ran a popular seed identification quiz.

Prospective students appreciated the opportunity to quiz Ms Bonnie Hargreaves, 2nd year student at UWA in Agricultural Science, and PhD student Mr Federico Ribalta, about their experiences and their opportunities since commencing their study in agriculture.

Ms Fritsch summed up the event: “Sustainable agriculture is a common goal for all and while innovative science is an essential ingredient to achieve this, for it to be adopted widely and effectively, we need to have good relationships with producers, community and industry. UWA’s presence at Dowerin helped foster these good relations.”

From left: Ms Margaret Campbell (International Centre for Plant Breeding Education and Research), Mr Federico Ribalta (PhD student), Ms Ully Fritsch (IOA), and representatives from theSchool of Animal Biology: Dr Joy Vadhanabhuti, Prof. Phil Vercoe and Dr Megan Chadwick, at UWA’s Dowerin Field Days display.

Alumni

Dr Shirley Watt

Dr Shirley Watt (right) with Vice-Dean of UWA’s Faculty of Natural and Agricultural Sciences, W/Prof Lyn Abbott, at the Graduate Women (WA) Annual Dinner and Celebrations of 40 Years of Awarding Bursaries.

Dr Shirley Watt enrolled in a Bachelor of Agriculture at UWA in 1944, at the age of 16. She was the third female student to study Agricultural Science at UWA.

Dr Watt stated that it was her interest in Animal Physiology (then taught by Professor Underwood) and Biochemistry which influenced her decision. Following her graduation in 1944, She stepped back – temporarily – from her academic career to raise a family.

Twenty years later Dr Watt resumed her studies at UWA: she completed a Preliminary Master of Science degree, followed by a PhD in the area of Physiology, researching ‘The effect of bile salts on intestinal absorption of cholesterol’.

For her PhD research Shirley received support from the Australian Federation of University Women (WA). She was awarded the inaugural Foundation Bursary in 1971.

After completing her PhD, Dr Watt was offered a research and teaching appointment in the – then- Physiology Department (UWA) where she remained until her retirement in 1992.

Dr Watt has maintained an active interest in UWA: she became a member of many ‘Friends of the UWA’ groups, including that of Life Member of ‘Friends of UWA Grounds’.

She has taken an interest in the academic career of her children and grandchildren, including that of her granddaughter who graduated from UWA with a Masters degree in Natural Resource Management.

A healthy heart from wholesome apples

An apple a day keeps the doctor away – and researchers at UWA and DAFWA are closer to understanding exactly why.

A three-year research project funded by UWA, DAFWA and the Australian Research Council (ARC) has found that apples rich in flavonoids – often referred to as antioxidants – have the potential to improve heart health: Out of more than 30 apple varieties screened, 'Pink Lady™' emerged as the clear winner with the highest flavonoid level, found mainly in the skin.

Project leader and Research Professor Jonathan Hodgson (School of Medicine and Pharmacology, UWA) and his colleague, Assistant Professor Michael Considine (School of Plant Biology, UWA and DAFWA), set out to assess the effects of flavonoid-rich apples in 30 healthy men and women over one day. "Participants were given an apple meal that either was or wasn't enriched with apple flavonoids. The treatments were switched on different days, at least one week apart, so all participants had each treatment," said Professor Hodgson.

"We found that flavonoid-rich apples improve blood vessel relaxation and enhance nitric oxide status – the molecule that causes blood vessel relaxation. A reduced ability of the blood vessels to relax may cause high blood pressure and heart disease."

Assistant Professor Considine explained: "We screened 25 advanced pre-breeding lines and seven commercial varieties for flavonoids, and the popular WA-bred Cripps Pink variety (sold as Pink Lady™) had the highest flavonoid level."

Photo courtesy Peter Maloney DAFWA

Mr Terry Hill, DAFWA Executive Director of Irrigated Agriculture and Diversification (left) with Assist/Prof. Michael Considine and a selection of apples.

"Since this research confirms that apples can contribute to a direct and measurable effect on human health, it provides the foundation for a long-term investment: We can now advance research and development towards developing new apple varieties with even greater health benefits – through increased flavonoid levels in either the skin or the pulp or the whole fruit. Although it takes several years to develop a new apple variety, our findings are encouraging and it is well worth waiting for."

External Advisory Board: Farewell to Dr Tony Fischer and Dr Peter Trefort

UWA Vice-Chancellor, Prof. Alan Robson (centre) with EAB members Dr Tony Fischer (right) and Dr Stephen Loss (left).

The UWA Institute of Agriculture's External Advisory Board (EAB) provides the Institute with feedback on agricultural industry needs and issues, and advice to the IOA director on policy and direction.

At the September meeting, fellow Board members and UWA Vice-Chancellor, Winthrop Professor Alan Robson, bid farewell to Dr Tony Fischer AO FTSE, an inaugural member. Dr Fischer has contributed his wealth of agricultural science knowledge and industry experience to enable the EAB to fulfill its role at the highest possible level. He has worked for the International Maize and Wheat Improvement Centre (CIMMYT) in Mexico and with the CSIRO Plant Industry as Principal and Senior Principal Research Scientist. He has also been a director of the Grains Research and Development Corporation (GRDC).

"The UWA Institute of Agriculture is doing a great job in capacity building in agricultural science and technical knowledge, as well as in promoting careers in agriculture, all of which are of tremendous benefit to the farming community and the industry at large. It has been a privilege to be part of this exciting institution!" said Dr Fischer.

Dr Peter Trefort, Director, Meat and Livestock Australia, who served five years on the EAB Board also retired. Although mounting commitments have prompted Dr Treford's retirement from the board, he remains very interested in the Institute's activities and keen to provide support on an informal basis.

Agricultural sciences spread across the pages

Ms Lindy Brophy (lindy.brophy@uwa.edu.au)

From dung beetles to elegant writing: four new books (and a French adaptation of one of them) were celebrated in August by UWA.

The books were all written or edited by academics in the Faculty of Natural and Agricultural Sciences.

Scientific writing = Thinking in Words, by Emeritus Professor David Lindsay, contains the essence of 11 years' experience in running workshops on scientific writing. "Writing is the same the world over, regardless of the language," Professor Lindsay said. "The most important part is getting the logic of things right."

Evolutionary biologist Winthrop Professor Leigh Simmons has published *Ecology and Evolution of Dung Beetles*.

"They are found on every continent except Antarctica and there is no better group with which to study biodiversity," he said.

Winthrop Professor Simmons' book brings together the collective knowledge about dung beetles, with the help of co-editor Adjunct Professor James Ridsdell-Smith.

Professor David Pannell's book, *Changing Land Management: Adoption of New Practices by Rural Landholders*, looks at what drives or inhibits farmers to change their land management.

"It is useful for scientists, policy makers and environmental managers," Professor Pannell said. "The book is the culmination of a long journey to get this research into the hands of the practitioners."

Human Geographer Professor Matthew Tonts and economist Associate Professor Abu Siddique edited *Globalisation, Agriculture and Development: Perspectives from the Asia-Pacific*.

It brings together agriculture, economics, sociology and geography to revisit old questions about agriculture and economic and social development and wellbeing.

Winthrop Professor Kadambot Siddique, Associate Dean Research, Faculty of Natural and Agricultural Sciences told the gathering that the Faculty contributed about 21% of UWA's publications in 2010 and that high quality books and book chapters represented an important part of UWA's publications portfolio.

Another publication milestone within the faculty has since been achieved by the Australian Herbicide Initiative AHRI (see page 13).

Photo courtesy Lindy Brophy

Prolific Writers: FNAS colleagues compare their publications (from left): Prof. Matthew Tonts, W/Prof. David Pannell, W/ Prof. Leigh Simmons and E/Prof. David Lindsay.

French interns expand their horizons at UWA Institute of Agriculture

Ms Ully Fritsch (ully.fritsch@uwa.edu.au)

French intern Miss Edith Herbout and Assoc/Prof. Dominique Blache working with Alpacas.

Two agricultural Masters students from France are getting their hands dirty – and loving it – as part of their internship at The UWA Institute of Agriculture (IOA). Working closely with experienced scientists from the School of Animal Biology, they are assisting in several research projects, focused on animal nutrition. These exchanges take place on an ongoing basis, and UWA IOA has hosted many students on a similar arrangement in the past.

Ms Justine Aubril, from Agrocampus-Ouest, Rennes, is here on a 5 month internship which will count as the first semester of her Master's program at her home university, upon meeting the objectives set by her home university: "In the first two months I have to become familiar with the structure and the function of my host organisation," explains Ms Aubril, " and in the last three months I have to carry out and take responsibility for a set of necessary tasks assigned by the host institution."

Miss Edith Herbout, (from AgroParis Tech), is taking a formal gap year from her studies, in order to fit in two 6-month-internships before choosing her area of specialisation at the commencement of the second year of her Master's program. "After I completed the first year of my Master's degree in Vienna (as an exchange student) I could not make up my mind in which of the agricultural sciences I wanted to specialise," said Miss Herbout. "So when my home university in France gave me the option to take a year off before starting the final year of my Masters program, I jumped at it and I feel very lucky to have been accepted for an internship by UWA where I can work together with world class scientists." Ms Herbout will embark on her second internship in early 2012 in Madagascar, working in the area of rural policy development.

Both girls are in agreement: "Our internships are a fantastic opportunity to gain first-hand experience in major challenges of agriculture – such as global warming and climate change – and to learn about their implications."

At UWA, both students are supervised by Assistant Professor Zoey Durmic, and assist with experiments either in the laboratory or in the paddock, aiming to manipulate methane emissions from livestock through different diets. In addition, they lend a hand with alpaca experiments, investigating the effect of seaweed on their behaviour and growth.

UWA Institute of Agriculture Industry Forum 2011: **a 'health check' on wheat deregulation**

Photo courtesy Brendon Cant & Associates

Presenters fielding questions from the audience. From left: Mr Rod Birch (farmer), Mr Ron Storey (Australian Crop Forecasters), Mr Banfield (CBH), Mr Nathan Cattle (Market Ag), Mr John Orr (Premium Grain Handlers).

While the deregulation of Australia's wheat industry in 2008 marked the dawn of a new era, the full implications for wheat growers now and into the future continue to emerge and were the subject of spirited debate at the 2011 Industry Forum held by The UWA Institute of Agriculture (IOA).

Now in its 5th consecutive year, the event attracted over 60 farmers and other stakeholders up and down the grain chain, all keen to hear and then challenge fired-up speakers how they had coped and what would influence them in the near future.

Keynote Speaker Ron Storey, ex AWB Manager and now a respected crop forecaster and chair of a leading plant breeding company, commended Australian wheat growers for proving themselves to be savvy sellers in a price volatile market.

"Overall, deregulation has proved positive for the wheat industry," said Mr Storey, citing a record export program in the 2010/11 season, flourishing container trade, more buyers of Australian wheat, more marketing choices for growers, an increase in grower advisory services, more industry innovations and greater investment in the supply chain.

"The world's wheat industry is more determined by global traders than whether or not Australia has a single desk," said Mr Storey. While acknowledging the importance of global factors, Mr Storey also pointed out two areas in which growers have been disadvantaged since deregulation: "The segmented market has been unable to provide national grower representation. In addition, growers should work hard to obtain access to the data gained by bulk handlers at the weighbridge and receival points," he said, "as this enables them to differentiate their grain and their marketing. Currently these data are held only by bulk handlers and warehousers."

Bryce Banfield, representing bulk handler, CBH, said deregulation had allowed growers to network with CBH and had also allowed differentiation for WA grain.

While saying that grain pools still had a place in the next 5-10 years, Mr Banfield agreed that pool transparency needed to be lifted.

Nathan Cattle, a UWA Agricultural Science First Class Honours graduate now working with Market Ag, an independent commodity market and price risk management advisory company, suggested price volatility was not a direct function of deregulation.

"To manage price risk effectively, growers need to establish three things," he said: "Work out what the risks are, determine what products are the most sustainable and access good market information."

His advice for dealing with service providers was simple: "Growers should always question service providers; they should expect the providers to demonstrate exactly how their product or service will benefit them."

John Orr of Premium Grain Handlers, a Fremantle-based grain trader focused on container trade, admitted that a post-deregulation market was stretching his company's resources and facilities, although the prospect of a new port at Kwinana was likely to improve that situation.

"The container trade is now happening at a level it should always have been at," Mr Orr said.

Coorow farmer Rod Birch, a regular participant at IOA events, was delighted that in a deregulated market grain traders were "climbing over themselves to get a share of our business" and suggested that choice could be as complicated or as simple as a grower chose to make it.

He also declared support for a centralised storage system, saying that he had no on-farm storage to speak of and that during a frenetic harvest, he needed and valued time talking to grain traders.

He did, however, express a grave concern: "Industry good functions are falling through the cracks", he said. "Quality assurance needs to be adequately advocated and, for the benefit of WA growers, the whole world needs to know our grain is produced in a quality environment," concluded Mr Birch.

Summing up, DAFWA economist and UWA Professor Ross Kingwell (from the School of Agricultural and Resource Economics), said he saw a great window of opportunity: "Australia is an important producer in the global wheat market and with Western Australia contributing between 40-45 per cent, wheat will always be an important commodity. WA's economy is buoyant and so I encourage participants to take advantage of this environment as we move forward, blessed with very good institutions."

Top students enrolled for Integrated Masters course in Climate Change

UWA entered into a formal relationship with Kerala Agricultural University (KAU) in 2009, through a Memorandum of Understanding (MoU) and has since assisted KAU in developing an integrated Masters course (3 plus 2 programme) on 'Climate Change Adaptation and Mitigation'. The two universities also collaborate on climate change adaptation research.

The Masters course at KAU commenced in September 2010 with 19 top-performing students.

This year the second batch of 20 students commenced their programme in September. Winthrop Professor Kadambot Siddique delivered a 'big picture' introductory lecture to the students and interacted with them during his recent visit to India. "It is fantastic to see the commitment and passion of both staff and students at KAU. The demand to enrol in this course has been overwhelming and as a result, the students accepted into this program are of the highest calibre and I have no doubt that with the education they receive at KAU in collaboration with UWA, these students will make valuable contributions in years to come in meeting the challenges posed by climate change," said Professor Siddique.

KAU was established in 1971 and out of India's 57 agricultural universities KAU is ranked in the top three.

W/Prof. Kadambot Siddique (IOA) with Course Director Prof. Prasad Rao and the second batch of students at KAU, India.

Seeds of Life: continuous low-cost supply of superior seeds in Timor-Leste

Australia's Foreign minister, The Hon. Kevin Rudd with Timor-Leste president Hon. Jose Ramos-Horta (left) and Mr Rob Williams (right), Research Advisor to Seeds of Life, and a local farmer at a media conference about agriculture in Timor-Leste.

An agricultural development program, *Seeds of Life (SoL)*, is set to tackle Timor- Leste's food shortage and malnutrition problem. In its third phase SoL aims to achieve continuous and widespread access to seeds of high-yielding crop varieties, to ensure ongoing use of improved crop varieties by more than 100,000 farmers.

This measure is deemed to produce the (single) most significant increase in crop production, so sorely needed in this country where half the population lives below the 'basic-needs' poverty line and go through a 2-3 month 'hungry season' every year, between one harvest and the next.

SoL I commenced in 2001 with the support of the Australian Centre for International Agricultural Research (ACIAR) and introduced and tested new genetic stocks, mainly on research stations; it was focused on identifying suitable higher-yielding varieties and improving farmers access to these varieties while at the same time building capacity in the Timor-Leste Ministry of Agriculture and Fisheries (MAF) to evaluate, produce and distribute improved varieties.

In 2005, AusAID and ACIAR jointly sponsored a 5-year second phase (SoLII), led by UWA through its Centre for Legumes in Mediterranean Agriculture (CLIMA), during which the research and demonstration trials were implemented in on-farm trials producing, significant yield increases in major crops, especially sweet potato (>60%) and maize (47%).

In February 2011 Seeds of Life entered its third phase, supported by the Australian Government (AusAID and ACIAR) and the Timor-Leste Ministry of Agriculture and Fisheries (MAF), with a $27.5 million grant over the next five years.

The hallmark of SoL III – launched in February this year by Professor Alan Robson, UWA Vice-Chancellor – and a measure of its success will be the transition of seed production for selected high-yielding varieties into the (low-cost) informal seed production channels by community seed production groups.

Director of CLIMA and SoLIII, Professor William Erskine, explained: "In SoL I the foundation seed was produced at research stations with a very high production cost. In SoL II, seed production was delegated to contracted specialist growers, but the cost was still high, so that only limited quantities were available. As a result, if a small landholder lost his (high-yielding variety) crop – due to pigs, for instance – the farmer would normally have to revert back to local seeds (of inferior varieties) for his next crop. Integration into informal local seed production channels, is a pre-requisite for wide-spread use of improved varieties for food crop production."

IOA Director Winthrop Professor Kadambot Siddique said "Seeds of Life is a wonderful program which will have a long-lasting impact and I am confident that over the next decade, we will see prosperity in Timor-Leste, which will lead to fewer problems, and eventually peace in the region."

China honours UWA Professor with prestigious Dunhuang Award

As part of the 62nd anniversary of the foundation of the People's Republic of China on 1 October 2011, Winthrop Professor Neil C. Turner from The UWA Institute of Agriculture and CLIMA was awarded the Dunhuang Award by the Gansu People's Provincial Government.

W/Prof. Neil Turner (third from right) receives his Dunhuang award in China from the Gansu People's Provincial Government.

The award, only available to foreigners, was bestowed on Professor Turner in recognition of his "outstanding service and remarkable contribution to the economic, scientific, academic development and educational program in Gansu Province," by the Governor of Gansu Province in front of a gathering of over 300 foreign experts and Gansu government officials. Of the 10 awardees in 2011, Professor Turner was the only recipient given the opportunity to thank the Gansu Provincial Bureau for Foreign Expert Affairs for their assistance in working with the Key Laboratory for Grassland and Arid Ecology at Lanzhou University (LZU) and to detail his participation in assisting LZU in the development of agricultural systems in Gansu province.

"Ten years ago, my interest in dryland agriculture and in assisting farmers to increase their production and livelihood from the rainfall on their farms, took me to the Gansu Loess plateau where I was brought to see the way in which farmers manage their land on very low rainfall. So when the opportunity arose – five years later – to work with the Key Laboratory for Grassland and Arid Ecology at LZU which works on problems of sustainable dryland agriculture in the dry semi-arid area of the Loess plateau I was very eager to join the UWA Institute of Agriculture team."

Professor Turner has worked with dryland farmers in Western Australia for the past 25 years in areas with similar rainfall to that of the Loess plateau.

"Chinese agriculture has made incredible advances over the past five years, with a 900% increase in wheat yields through the introduction of new cultivars, the widespread use of fertilizer and the development of water-saving agriculture. Nevertheless, a study in 2006 suggests that there is room for further improvement – especially through farmers using precipitation more efficiently – so I am looking forward to coming to Gansu for the next five years to assist the Key Laboratory for Grassland and Arid Ecology at LZU to work with farmers to improve their yields and water use and increase their income."

In his acceptance speech for the award, Professor Turner emphasised the important role of colleagues at The UWA Institute of Agriculture (IOA) and the support and encouragement from his wife Jennifer. "The award honours not only my work, but is the culmination of a team effort from IOA and LZU. I am also deeply grateful to the staff of the Gansu Provincial Bureau for Foreign Expert Affairs for all their assistance."

Professor Turner has been actively involved in the joint program of research and teaching between the Key Laboratory for Grassland and Arid Ecology at LZU spending one month per year for the past four years in Lanzhou helping staff and postgraduate students with their research and research publications.

In July 2010, Professor Turner also assisted in arranging an international workshop, co-hosted by IOA and LZU, and held in Lanzhou.

He is a member of a team at UWA and LZU to develop a joint Centre for Dryland Agricultural Ecosystems that will conduct collaborative research and development for the benefit of both Australia and China (see article below).

Stellar China-UWA collaboration

Winthrop Professors Kadambot Siddique and Neil Turner with postgraduate students and staff during their visit to Lanzhou University.

The long-established ties between The UWA Institute of Agriculture (IOA) and Lanzhou University (LZU) have received a further boost during the recent visit to LZU by IOA Director, Winthrop Professor Kadambot Siddique, and Winthrop Professor Neil Turner. LZU and UWA have made significant achievements during the first phase of the 111 Project (2007-2012).

LZU President, Professor Zhou Xuhong, confirmed in a meeting with Professors Siddique and Turner, that the Chinese Department of Education (CDE) has approved funding for another five years for the second phase of the 111 Project (2012-2016).

During their visit, Professors Siddique and Turner also had discussions on the establishment of a joint Centre for Dryland Agricultural Ecosystem (CDAE), between LZU, UWA and the International Centre for Agricultural Research in the Dry Areas (ICARDA) with the aim to conduct collaborative research, development and teaching. Professors Siddique and Turner also delivered several lectures on dryland agricultural systems to postgraduate students and staff at LZU.

During the visit Professor Siddique congratulated Professor Zhou Xuhong for his reappointment as the President of LZU for a second term of five years.

IOA research prominent at WA soils conference

Dr Jennifer Carson
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The diverse range of soil research being conducted at The UWA Institute of Agriculture (IOA) was highlighted at the West Australian branch of the Australian Soil Science Society conference held in Busselton from 22-24 September.

Contributions from IOA researchers and students accounted for ten of the 45 presentations at the conference and covered a wide range of soil research including deep drainage of saline soils, mycorrhizal fungi in plantation forestry, biochar, the carbon footprint of grain production and assessing soil carbon stocks.

PhD candidate Ms Georgina Holbeche described her research into why some deep drains installed to manage salinity don't work very well. "My aim is to identify the soil characteristics that play the most significant role in determining the effectiveness of deep drainage. Key soil characteristics which may need to be considered before installing deep drains include texture, structure and hydrological properties."

Dr Yinglong Chen assessed phenotypic variability in root characteristics among ten wild narrow-leafed lupins (*Lupinus angustifolius*) that had different root structures, in a discovery project funded by the Australian Research Council. "Results of this research have the potential to incorporate root traits from the wild germplasm collections into narrow leaf lupins with improved root architecture for water and unturned capture."

Professor Ed Barrett-Lennard (DAFWA and UWA) found grain yield from 50 wheat varieties in a sodic soil at Merriden was decreased by low rainfall and high magnesium levels in soil, in a research project funded by GRDC. "We don't believe that magnesium was toxic to wheat," Professor Barrett-Lennard said. "Rather the high level of magnesium was also associated with increased salinity and decreased infiltration of water into the subsoil."

Masters student Mr Obed Freddy Madiba with wheat plants which he used to investigate whether biochar decreased phosphorus leaching from sandy soil.

Associate Professor Louise Barton presented calculation on the carbon footprint of two grain products from Western Australia, using local measurements of nitrous oxide emissions from soil. "Incorporating local measures of nitrous oxide greatly decreased the carbon footprint of wheat and biodiesel from canola produced from the West Australian grain belt," said Associate Professor Barton. "This may give local farmers a competitive advantage when marketing their product based on its carbon footprint."

Staff and students from the Soil Biology Group gave three presentations on the influence of biochar on soil nutrients, based on research funded by GRDC. Masters student Mr Obed Freddy Madiba found that biochar increased phosphorus uptake by wheat on a sandy soil but also increased phosphorus leaching because of the high amount of phosphorus in the biochars themselves. Research by Dr Zakaria Solaiman showed that biochar may not have a positive effect on plant growth in terms of nitrogen even though it decreased nitrogen leaching from a sandy soil.

PhD student Mr Daniel Dempster found that biochar was not causing significant amounts of nitrogen in simple organic compounds to become available for plant uptake. "This means that applying biochar is unlikely to alter recommendations for nitrogen fertiliser in the first few years after application," said Mr Dempster.

Dr Karen Holmes, from UWA's School of Earth and Environment and DAFWA, discussed using neutron density meters as a faster method of measuring soil carbon stocks. The research was undertaken jointly with Dr Andrew Wherret and Associate Professor Daniel Murphy (IOA), and was funded by GRDC and the Federal government's Climate Change Research Program.

Dr Holmes said the neutron density meter "allows us to accurately measure soil carbon stocks with less time spent measuring soil bulk density than needed using standard industry methods." This research will help define sampling methods to assess soil carbon stocks and whether management practices affect them.

Dr Linda Maccarone discussed the potential to use the NanoSIMS facility at UWA to investigate competition for nutrients between micro-organisms and plant roots. "The NanoSIMS can visualise soil at the nanometre scale and the facility at UWA is the only one of its kind in the southern Hemisphere," Dr Maccarone said. "It allows us to see and measure nutrient uptake by individual roots and microbes."

The Australian Herbicide Resistance Initiative (AHRI) celebrates 100 Research Publications

Photo courtesy Lisa Mayer

The Australian Herbicide Resistance Initiative (AHRI) research team reached a significant milestone of 100 research publications in ISI ranked international research journals this October. This is a significant achievement since the commencement of AHRI in 1998.

To celebrate the milestone of 100 papers, a cocktail function was held to mark the occasion. Brief comments were provided by Winthrop Professor Robyn Owens, Deputy Vice-Chancellor (Research) and AHRI Research Fellow, Associate Professor Martin Vila-Aiub.

From left: Prof. Tim Colmer, W/Prof. Steve Powles and W/Prof. Hans Lambers at the function celebrating the milestone of 100 AHRI research publications.

Bid to host 2015 world conference of 'Global Consortium of Higher Education and Research for Agriculture' in Perth

Associate Professor Dominique Blache (dominique.blache@uwa.edu.au)

Mr Dallas Tonsager, Under Secreatry, Rural Development U.S. Department of Agriculture (back row, left), and Mr Philippe Choquet, former president of the GCHERA, presiding over the conference opening ceremony in 2011.

In June this year, UWA professional development award winner Associate Professor Dominique Blache attended the 7th World Conference of the Global Consortium of Higher Education and Research for Agriculture (GCHERA), held in France, and took the first steps towards bringing the conference to UWA in 2015.

This year's conference was hosted by the 'Institut Polytechnique LaSalle Beauvais' in Beauvais, near Paris, and attracted over 200 academics, researchers and administrators from more than 150 universities across the world who, over the course of three days, discussed and reflected on topics related to the teaching of agricultural sciences.

Topics focused on three themes: firstly on the role of Universities of Agriculture and Life Sciences in sustainable rural development, secondly on partnerships between such universities and (other) organisations which support sustainable rural development, and thirdly on the organisation and management of Universities of Agriculture and Life Sciences at local, regional and global levels.

"The plenary sessions were very challenging," said Associate Professor Blache. "Presenters were sharing both their successes and difficulties in local and international education in agriculture, which enables us to make better-informed decisions when setting directions and planning collaborations for the future."

Associate Professor Blache delivered an oral presentation of the educational and research projects based at the recently acquired UWA Future Farm (cf also page 4) and in addition, he was busy networking with academics from the LaSalle Beauvais (an Engineering School founded in 1854 with programmes in Agriculture, Food and Health Sciences and in Geology) and with representatives of the consortium.

"I was able to meet the president and committee members of GCHERA and discuss the possibilities for UWA to host the 9th GCHERA World conference in 2015," said Associate Professor Blache. "Discussions are continuing but I think winning the professional development award this year has put me in a better position to prepare the final bid which will be considered during the next GCHERA world conference in Moscow in 2013."

Associate Professor Blache is looking forward to initiate and lobby for the bid that might bring educators and researchers in Agriculture to Perth in four years' time: "Hosting the GCHERA conference in 2015 would further promote and expose the already internationally acclaimed teaching and research activities in agriculture, conducted within the Faculty of Natural and Agricultural Science and The UWA Institute of Agriculture."

UWA agricultural science students scoop scholarship awards at Royal Agricultural Show

continued from page 1

regional agricultural shows and also at the Perth Royal Show for many years. "For as long as I can remember, I have been out and on horseback on the farm, chasing cattle and mucking around. I just love farm-life and being in the country," she said.

Besides pursuing her studies and horse riding, Joanna also works part-time for a grain marketing company, Emerald Group in Subiaco. The company has taken an interest in her studies at UWA and, with their encouragement, Joanna plans to do her honours project next year, researching the viability of on-farm grain storage in Western Australia. "It is a hot topic and I look forward to this challenge, especially as it will allow me to use all the skills and knowledge which I have been gaining in my combined degree at UWA. I am getting an excellent grounding both in business skills and in agricultural knowledge, and can always count on support and advice from my lecturers who are doing an outstanding job well beyond the call of duty." Joanna plans to spend her scholarship money on a high-quality laptop, which will be a vital tool for her honours project. She expects to complete her honours year at the end of 2012 and plans to pursue a career as an agronomist which offers her a wide range of options.

Georgia Pugh, the third scholarship winner, was no stranger either at the Perth Royal Show, even before her scholarship award: "My family owns a cattle stud at Narrikup, 30km north of Albany, and I am an old hand helping out at the Perth Royal Show where we show our cattle." Georgia is in her second year of a combined degree at UWA, studying towards a Bachelor of Agricultural Science and a Bachelor of Commerce. "In this day and age, I think you need to be business-savvy in most jobs, and my course at UWA will develop my business knowledge and at the same time allow me to follow my passion in agriculture."

Georgia's dream job would be to work for a big agricultural company in South America – "they have lots of cattle there" – but for the moment she is content that her scholarship money will enable her to cut back on her part-time work during semester – Georgia coaches hockey at her former high school, St Hilda's. "Most of the money will probably go on textbooks – but that's cool," she said.

The importance of knowledge exchange and – sharing in agriculture across the world is also recognised by ACAS: In previous years recipients of the ACAS/Coca-Cola Scholarship fund have also been offered opportunities to travel overseas to attend the international conference of the Royal Agricultural Society of the Commonwealth to expand their agricultural knowledge and meet people from rural areas who are shaping the face of modern farming practices.

"One of the core aims of the Royal Agricultural Society (RAS) is education," says Mr Martin Molony, CEO of RAS, "and these scholarships help foster a passion for agriculture and encourage the next generation's ambitions and visions for agriculture – and this in turn will ensure that the industry will remain in capable hands. We are pleased that this year's scholarship winners are highly talented UWA students and committed to the industry."

Global soil project for schools

Winthrop Professor Lyn Abbott
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Pilot teachers working through activities from the Monitoring Soil Science Project.

A website has been established to support the exciting new global soil project for schools *Monitoring Soil Science Project* (see IOA newsletter #14, August 2011). It endeavours to bulid build student-scientist partnerships through ongoing soil-based research and to enable students to develop an understanding of soil science and receive training in scientific methodologies.

The website **http://soils.duit.uwa.edu.au/index.php** represents a key resource and will enable students to:

- participate in 'real', meaningful science activities
- follow scientific protocols to collect valid and reliable data
- distinguish between the physical, chemical and biological aspects of the soil ecosystem
- interpret patterns and trends in data, and compare their results with students at other schools who will develop their own soil science projects.

The website includes fact sheets, general instructions, podcasts about the methods for soil sampling and extraction of soil fauna, information about soil fauna, information for teachers and soil science mentors collaborating with science teachers.

"The *Monitoring Soil Science Project* has been designed to become an ongoing global soil science project for schools, with the same or different students participating from year to year," said Winthrop Professor Lyn Abbott. "With time, comparative information will become available and schools may communicate with each other about their findings. They could, for example, compare the biodiversity of soil fauna in different parts of the globe or in relation to climate, soil type and land use and in this process develop an understanding how their soils differ."

The website was developed with financial assistance from the International Union of Soil Sciences; the driving force in the project development was SPICE, a secondary teachers' enrichment program at UWA.

Spectacular UWA Science for the Future Festival in Singapore

Over 1000 students from Junior Colleges and Polytechnic Colleges in Singapore attended events at the 'Science for our Future Festival 2011', hosted by UWA in Singapore over three days in July.

The festival aimed to support schools to promote science and help students understand the role of science in shaping our societies and the future.

This year, the festival focused on the global need for scientifically literate graduates.

Some of UWA's academic leaders were there to show how this applied to their own area of expertise: Nobel Laureate, Winthrop Professor Barry Marshall stressed the need for graduates to become involved in the prevention, diagnosis and treatment of diseases; former WA Premier, Winthrop Professor Carmen Lawrence explained how science graduates could restore and maintain a balance within natural environments; the Director of UWA's Institute of Agriculture, Winthrop Professor Kadambot Siddique, pointed out that science held the key to ensuring the sustainability of the world's food supplies; and Professor Tim St Pierre, emphasised the need for graduates to discover new knowledge about the physical world and apply it in ways that serve humanity. Winthrop Professor Tony O'Donnell, Dean of the Faculties of Science, emphasised the interdisciplinary nature of modern science and science-related career opportunities.

The dazzling experiments conducted on stage, involving flames and hydrogen explosions, brought the scientific ideas to life in an exciting visual display, leaving many students in the audience – and some of their teachers – absolutely spellbound.

The event was supported by the Australian High Commission Singapore, Perth Education City (PEC), IDP Education and Taylors College, as well as many members of the UWA community.

UWA delegates with host organisation representatives at the Science for the Future Festival in Singapore.

Phenotyping rice for abiotic stress tolerance – a Crawford Fund Training Workshop

Professor Tim Colmer (tdcolmer@cyllene.uwa.edu.au)

Mr Anders Winkel and Adj/Assoc/Prof. Ole Pedersen setting up equipment prior to a submergence experiment/demonstration for workshop participants.

Professor Tim Colmer (School of Plant Biology, UWA), Adjunct Professor Ole Pedersen (University of Copenhagen) and their joint PhD student Anders Winkel (School of Plant Biology, UWA), in collaboration with IRRI (International Rice Research Institute) scientists, presented a module on submergence tolerance at a Crawford Fund Training Workshop held at the IRRI, Philippines, from 27 Oct – 11 Nov 2011.

The workshop was coordinated by Dr Abdelbagi Ismail (Crop and Environmental Sciences Division, IRRI) and contained three main modules: flooding/submergence, salinity, and drought. Topics included plant physiology, germplasm screening and environmental monitoring. 23 rice scientists, from diverse disciplines and production areas from 12 countries in Asia and Africa, participated. The lectures offered during the course were open and attended by many scientists from IRRI. Professors Colmer and Pedersen also each gave a seminar in the IRRI-wide series.

Dr Ismail summarised the workshop: "Effective phenotyping for abiotic stresses remains the bottleneck for progress both in breeding and in developing modern tools for germplasm improvement, including gene discovery and molecular breeding. This course provided an excellent opportunity to acquire in-depth hands-on skills in proper phenotyping for various abiotic stresses affecting rice. The majority of the participants were rice breeders and physiologists, and this training will help them to develop and use efficient screening methods and use them effectively to enhance their breeding programs and capacities."

Dr Ismail greatly appreciated the Crawford Fund support: "We have made great progress to improve stress tolerance in rice in recent years, but much work remains to be done. Clear opportunities for future yield improvements emerged in our discussions, but these will only be achieved by a well-trained scientific network of collaborators."

Professor Colmer commented: "The workshop was characterised by great enthusiasm from all involved. Participants particularly enjoyed the practical training in techniques of relevance to their future work on stress tolerance in rice. Discussions were vigorous and fun. I learned a lot about rice!"

Mr Winkel said "This was a terrific opportunity for me as a PhD student. It was a great experience to give a lecture and also to set up the field demonstrations with Professor Pedersen. The field data collected will also contribute to one of my PhD thesis chapters."

Professor Colmer also recounted the long-term benefits: "Dr Evangelina Ella, a participant in a Crawford Training Workshop organised 14 years ago in Thailand by Emeritus Professor Hank Greenway (UWA), has subsequently completed her PhD and continued her research work at IRRI. Dr Ella conducted several of the laboratory sessions during the present workshop. This provides a clear example of the long-term benefits of such workshops for capacity building in the region."

Dr Ismail concluded: "The workshop was timely in view of the increasing need to use marginal resources for food production, and the degradation of natural resources due to climate change. Participants expressed great enthusiasm and satisfaction for what they learned and for the network developed through this course. We greatly appreciate the support of The Crawford Fund in making this workshop possible, which generated enormous interest and requests to participate from research institutions in Asia and Africa. We hope to run this workshop again next year, especially as the demand for this workshop this year exceeded the number of available places."

Participants took away with them the training gained during the workshop, but also a valuable set of written experimental procedures for laboratory and field experiments, and a diverse new network of prospective future collaborators.

Combining the best of two worlds in Lupin improvement

Assistant Professor Jon Clements (jon.clements@uwa.edu.au)

From left: Assoc/Prof. Erkut Pekşen (University of Ondokuz Mayis, Turkey) and Assist/Prof. Jon Clements (CLIMA) discussing experimental work on 10 lupin species in the glasshouse at UWA.

Scientists at UWA are developing new varieties of Andean lupin, a species high in protein, oil and seed quality, to improve its drought resistance. If successful, Andean lupin – or its hybrids – could become a profitable grain legume in Western Australia to complement narrow-leaf lupin in crop rotations.

With research funding from GRDC, a team of scientists based at UWA's Centre for Legumes in Mediterranean Agriculture (CLIMA) are developing agronomically suitable, domesticated lines of Andean lupin and investigating the relationship between plant traits and water-use efficiency.

"Crop lupins in Western Australia must produce yields under water-limited conditions to provide profits to farmers," said Assistant Professor Jon Clements, who leads the research. "Narrow-leaf lupin fits the bill and is currently the prevalent lupin species grown in WA, as it originates form areas with similar conditions as in our grainbelt. But there are other lupin species – superior in protein and oil content and seed quality – such as *Lupinus mutabilis* (Andean or pearl lupin) which has its origins at high altitudes in the Andean mountains of South America."

Although preliminary research suggests that Andean lupin is more susceptible to drought than narrow-leafed lupin, CLIMA research, shows that Andean lupin can be hybridized with several related American species from regions such as California, Arizona, Mexico and other countries in South America: "We were interested in seeing whether some of these species might donate their harsher climate adaptation to Andean lupin," said Assistant Professor Jon Clements.

Through an Australian Endevour Research Fellowship Award, visiting scientist Associate Professor Erkut Pekşen, from the University of Ondokuz Mayis, Samsun, Turkey is currently comparing 10 lupin species for water use efficiency and drought resistance with the aim of identifying plant traits present among lupin species from both the 'Old World' and the 'New World'. Professor Pekşen in collaboration with Assistant Professor Clements, CLIMA Director Professor William Erskine, Dr Helen Bramley (UWA IOA) and Professor Neil Turner (UWA IOA/CLIMA), is undertaking a large experiment – with a very diverse set of lupin species. "We have breeding line hybrids between Andean lupin and *Lupinus mexicanus, L. arizonicus* and others which appear to be hardier than the Andean lupin phenotype and we hope to show that some species could be valuable in the crop improvement of this high seed quality lupin," explained Assistant Professor Jon Clements.

Associate Professor Pekşen presented a seminar at CLIMA on grain legume production and agronomy in Turkey where he has worked on a number of grain legumes such as Phaseolus bean, cowpea, faba bean, chickpea and field pea. Upon his return to Turkey later this year, he would also like to see how crop lupins grow under Turkish conditions (a country which already hosts natural populations of wild germplasm of lupin species such as *Lupinus pilosus, L. albus* and *L. angustifolius*).

Stress tolerant chickpea – UWA collaboration with ICRISAT and Panjab University

Professor Tim Colmer (tdcolmer@cyllene.uwa.edu.au)

UWA scientists have, over the past decade, forged a strong collaboration with the International Crops Research Institute for Semi-Arid Tropics (ICRISAT) on chickpea breeding, germplasm exchange, and physiology. This successful partnership has produced a new Ascochyta-resistant cultivar for southern Australia, to be released in 2012 by the COGGO/UWA/ICRISAT/DAFWA breeding team, as well as several papers in international scientific journals. In addition, a joint PhD student recently graduated from UWA. Ascochyta-resistant lines are now firmly established, so recent work has also focused on yield under abiotic stress conditions.

From left: W/Prof. Kadambot Siddique (UWA) and Prof. Tim Colmer with scientists from the International Crops Research Institute for Semi-Arid Tropics (ICRISAT) and Panjab University during their project team meeting at ICRISAT.

A new project funded by the Australia-India Strategic Research Fund (AISRF) commenced in July 2011. The project 'Securing chickpea productivity under contemporary abiotic stress: improvement of podding and seed-filling under heat, drought and salinity' builds on the impressive genetic diversity identified in large screenings at ICRISAT. Salinity tolerance has also been confirmed under Western Australian conditions in a joint COGGO/ARC-Linkage Project. The AISRF project aims to identify the most salt tolerant breeding lines in the Ascochyta-resistant progenies emerging from the breeding program. Further evaluations for drought and heat tolerance will also be conducted at ICRISAT, including the first assessments in chickpea of the interactive effects of stresses when occurring in combination. Drought and salinity tolerance are important constraints in both countries, with heat stress also being of importance.

The project team (Professors Tim Colmer, Kadambot Siddique, Neil Turner – all UWA; Dr Vincent Vadez, Dr Pooran Gaur, Dr Rajeev Varshney – all ICRISAT; Professor Harsh Nayyer – Panjab University) held a two day meeting at ICRISAT in September 2011, so that partners could provide updates on research findings and conduct planning of activities for the forthcoming chickpea seasons in India and Australia.

Diversity in tolerance of chickpea to abiotic stress was highlighted. This earlier work on individual stress responses, as well as techniques and expertise within the three partner organisations, provides an excellent platform for the present AISRF project. The AISRF project enables further elucidation of the physiological basis of tolerances, and will evaluate responses to important combinations of two each of these stresses combined, a condition which occurs in field situations – drought plus heat (India) and salinity plus drought (India and Australia). Advanced breeding lines will be tested in the field and glasshouse by UWA in the 2012 season in Western Australia.

Arrangements were put in place for the UWA team to visit ICRISAT and Panjab University during the coming chickpea season, and Indian partners will visit UWA during spring 2012 to view our field and glasshouse experiments. Potential projects for joint PhD students were also identified.

High yields and long-term sustainability in China's intensive agricultural systems

China's rapidly growing population has put its intensive agriculture under mounting pressure (to produce more per unit area), and for the past two decades high yields have come at a substantial environmental cost, largely due to fertiliser over-use and associated issues.

In a comprehensive public lecture, held at IOA in September, Professor Fu-Suo Zhang, Dean of the College of Resources and Environmental Sciences, China Agricultural University, put forth a convincing case in favour of a new holistic approach, 'Integrated Soil–Crop System Management' (ISSM), aimed at reducing environmental risk while increasing crop productivity through improved nutrient (and other resource) use efficiency.

In a two-step strategy, ISSM takes into consideration all known factors and measures which can be employed to improve agricultural productivity while reducing environmental risk: the first phase focuses on improving soil fertility and soil carbon content to produce a crop productivity increase of 15-20%, the second phase yields a 30-50% crop productivity increase.

A key measure used in ISSM to improve soil quality and health is the use of intercropping systems, as the interactions between diverse species enhance productivity – especially for what/maize and wheat/soybean.

Another key component of ISSM is Integrated Nutrient Management (INM) which seeks to optimise Nitrogen input, in two ways: firstly by taking all possible sources of nutrients into consideration, and secondly by matching soil supply to crop requirements, by applying Nitrogen in split doses with the largest amount applied during rapid growth stages. Comparing maize yields for 'normal' practices with maize yields using INM, the INM yields showed an increase of more than 30% and the yield produced per unit of Nitrogen applied doubled.

From left: Prof. Fu-Suo Zhang, Dean of the College of Resources and Environmental Sciences, China Agricultural University, China), with Assoc/Prof. Qin Yu (AHRI, UWA) and Asst/Prof. Ping Si (CLIMA, UWA).

However as many of the ISSM measures are labour-intensive, a large-scale adoption of ISSM depends heavily on government support in the form of policy changes and financial incentives to resource poor farmers.

Professor Zhang's presentation can be viewed at www.ioa.uwa.edu.au/publications/lectures/2011.

New research funded projects

TITLE	FUNDING PERIOD	FUNDING BODY	SUPERVISORS
Better fertiliser management to improve the health of coastal waterways	2011	Geographic Catchment Council	Prof. Neil Coles
Harvest weed seed management workshops and evaluation of the Harrington Seed Destructor	2011 – 12	Rural Industries Research and Development Corp. (RIRDC)	Dr Michael Walsh
Integrated assessment of prescribed burning	2011 – 12	Bushfire CRC	W/Prof. David Pannell
Abiotic stress in rice: plant physiology and environment monitoring (training course)	2011	Crawford Fund for International Agriculture	Prof. Timothy Colmer, Dr Abdelbgi Ismail (IRRI)
Understanding and management of resistance to Group M, Group L and Group I herbicides (national project)	2011 – 12	University of Adelaide ex GRDC	W/Prof. Stephen Powles
Tools for adoption of optimal weed management strategies in cropping systems	2011 – 12	CSIRO ex GRDC	Asst/Prof. Michael Renton, W/Prof. Stephen Powles
National integration of crop sequence strategies and tactics	2011 – 14	CSIRO ex GRDC	Asst/Prof. Michael Renton
Capacity building for statistics	2012 – 14	GRDC	Assoc/Prof. Katia Stefanova, W/Prof. Kadambot Siddique
OECD co-operative research programme – investigating environmental benefits and farmers' management responses arising from European Union's Nitrate directives	2011	Organisation for Economic Development and Cooperation	Asst/Prof. Colin MacGregor
Variability in methanogenic potential of the pasture legume *biserrula pelecinus*	2011	Meat and Livestock Australia ex Dept of Agriculture Fisheries and Forrestry	Prof. Philip Vercoe
Managing carbon in livestock systems – modeling options for net carbon balance	2011 – 12	Meat and Livestock Australia ex Dept of Agriculture Fisheries and Forrestry	Prof. Philip Vercoe
Management of micro-organisms to unlock the phosphorus bank in soil	2011 – 14	GRDC	Assoc/Prof. Daniel Murphy
Boneseed viability project		Perth Region NRM	Dr Rowena Long, Dr Shane Turner
Securing chickpea productivity under contemporary abiotic stresses – improvement of podding and seed filling under heat, drought and salinity	2011 – 14	DIIR AISRF Indo-Australian Science and Technology Fund	Prof. Tim Colmer, W/Prof. Kadambot Siddique, W/Prof. Neil Turner, Dr Vincent Valez, Dr Pooran Gaur, Dr Rajeev Varshney, Prof. Harsh Nayyar

New research students

PHD STUDENTS	TOPIC	SCHOOL	SUPERVISOR/S	FUNDING BODY
Mr Adam Jalaludin	To establish the biochemical and genetic basis of glufosinate resistance in Eleusine populations	Plant Biology and UWA IOA	W/Prof. Stephen Powles Assoc/Prof Qin Yu	UWA SIRF scholarship
Mr Yongjuan Guan	Cellular and molecular changes in the testis of rams on different levels of nutrition	Animal Biology and UWA IOA	W/Prof. Graeme Martin, Dr Irek Malecki	IPRS, UWA SIRF
Mr Max Bergmann	Drought tolerance in Canola	Plant Biology and UWA IOA	Dr Ken Flower, W/Prof. Kadambot Siddique	Australian Postgraduate Award
Mr Muhammed Munir Iqbal	The use of new genome sequence information for grain legume improvement	Plant Biology and CLIMA	Prof. Willie Erskine Assist/Prof. Matthew Nelson	UWA/Pakistan Flood Scholarship

Visitors to IOA

VISITOR	VISITORS' ORGANISATION, COUNTRY	HOST DETAILS/PURPOSE	DATES
Ms Edith Herbout	AgroParis Tech, France, visiting researcher	A/Prof. Zoey Durmic	July – Dec 2011
Ms Justine Aubril	Agrocampus-Ouest, Rennes, France	A/Prof. Zoey Durmic	July – Dec 2011
Mr Gregoire Destors	Institut Polytechnique LaSalle, Beauvais, France	W/Prof. Zed Rengel	July – Dec 2011
Dr Omar Ali	Bangladesh Agriculture Research Institute; pulse agronomist	Prof. William Erskine	12 July 2011
Dr Sven-Erik Jacobsen	Copenhagen	Asssistant Prof. Jon Clements	12 Aug
Dr Christian Nansen Dr David Weaver	Texas A&M University, USA Montana State University, USA	FNAS and IOA	1 – 2 Sept
Prof. S. Gosal	Biotechnologist and Director of Research, PAU, India	W/Prof. Kadambot Siddique	29 Sep
Mr B.R.L. Fernando and Kumar Peiris	Department of Commerce; Sri Lanka	W/Prof. Kadambot Siddique	Oct 4
Jahani Azizabadi Hossain	Ferdowsi University of MashhadIran, visting researcher	A/Prof. Zoey Durmic	Oct – Mar 2012
Mr Jorge A. Villarreal González	College of Veterinary Medicine, Universidad Autonoma de Puebla – BUAP ,Mexico	W/Prof. Graeme Martin	Oct – Dec 2012
Mr Shahid Hussain	University of Agriculture, Faisalabad, Pakistan	W/Prof. Zed Rengel	Oct – Mar 2012
Dr Saif Ullah	University of Agriculture, Faisalabad, Pakistan	W/Prof. Zed Rengel	Oct – Mar 2012
Dr Dennis Garrity	Director General, World Agroforestry Center, Kenya	W/Prof. Kadambot Siddique	1 Nov
Prof. Christine Foyer	University of Leeds, Centre for Plant Science	Assistant Prof. Mick Considine	28 Nov
Dr T.P. Sethumadavan	Kerala Veterinary and Animal Sciences University	W/Prof. Kadambot Siddique	3 – 10 Dec 2011
Dr Ji Jun	Chinese Academy of Science, Endavour Research Fellow	A/Prof. Guijun Yan	1 Dec – 1 May 2012
Dr Margita Joy	Agrifood Research and Technology Centre of Aragon (CITA), Spain	Dr Zoey Durmic	Jan – Dec 2012

Publications

(August – November 2011)

Refereed journals

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