



UWA Institute of Agriculture helps deliver AUSAID to Iraq

Iraqi trainees completed the Integrated Plant Disease Management course on October 3, 2008.

Drought, war and limited access to technological advances have had a significant negative impact on agriculture development and productivity in Iraq.

To help redress the 50 per cent decline in Iraqi major crop production in the past 20 years, 27 Iraqi agricultural scientists were trained in advanced integrated plant disease management (IPDM) at the Institute of Agriculture (IOA) at The University of Western Australia (UWA).

Iraqi agriculture face declining production, low crop yields, highly variable and low rainfall, poor research and extension services, lack of availability and increasing cost of inputs and low prices and marketing difficulties for outputs.

"The IOA was approached by AusAID early this year to develop a training program on IPDM," Professor Siddique (IOA Director) said.

"During the five week intensive course, trainees attended lectures and practical sessions on plant pathogens, which include bacteria, viruses, nematodes, fungi and mycoplasma.

"They learned to identify and manage pathogens and translating these skills into practice by visiting WA field research stations. Chemical and biological control of plant diseases and development of resistance to fungicides were covered," he said.

"Agriculture currently provides about eight per cent of Iraq's GDP and 20 per cent of its employment, supporting seven million people of a total population of 26 million," Prof Siddique said.

The Food and Agriculture Organisation (FAO) estimates that 11.5 million hectares of Iraq is arable, but less than half is cultivated annually. Professor Siddique explained that three drought years in Iraq (1999 to 2001) and subsequent drought in 2007/2008 had significantly reduced production.

"Rain-fed areas suffered severe reductions in rainfall and irrigated areas were seriously affected by reduced river flows.

"Despite water constraints, Iraqi crop production is poor by international standards, due to poor integrated crop management practices and a lack of widespread access to modern, improved plant varieties."

Professor Siddique said that the Iraqi Ministry of Agriculture and university scientists were isolated from many scientific and technological advances for almost two decades.

"They haven't travelled to conferences or participated in international masters or doctorate programs, and couldn't access the internet and the latest

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Director's Column



The year 2008 is racing towards an end. We look back on this year with the satisfaction that UWA Institute of Agriculture (IOA) has many highlights to celebrate.

The IOA reignited the Hector and Andrew Stewart Memorial Lecture in March 2008. Adjunct Professor Julian Cribb spoke about 'The Coming Famine'. He stressed the Australian experience in coping with droughts and the value of agriculture knowledge. This knowledge and experience will be useful for adapting to future climate change and Australia's role in global food security.

UWA recognised a prominent WA farmer for his leading role in the industry leadership and strategic direction of agricultural research, development and education. In March

this year Mt Barker farmer, Dr Terry Enright, became the first farmer to be awarded an Honorary Doctorate in Agriculture from UWA.

In June the "Frontiers in Agriculture" postgraduate showcase proved the high standard of education in agriculture at UWA. Eight students from the four schools within the Faculty of Natural and Agricultural Sciences (FNAS) presented their work at the showcase, displaying high quality research and communication skills.

Later that month, we drew upon more than 150 years of combined knowledge from farmers and industry experts at the Industry Forum, "2020 Vision: the face of WA broadacre farming". Speakers explored current and future trends in broad acre farming systems in WA. They predicted what future research and development strategies for integrated cropping and livestock systems might look like.

We took showcasing agriculture one step further: more than 75 people, including farmers, industry groups, students and scientists, attended the inaugural IOA Open Day at UWA's Shenton Park Field Station on August 8. They saw the latest research in aquaculture and native fish breeding, alternative oilseeds, salt tolerant wheats, new legumes, emus and game birds, turf, canola and super brassicas.

Staying in the forefront of research and technology is vital, especially where plant breeding is concerned. The International Centre for Plant Breeding Education and Research (ICPBER) was launched on August 29. The ICPBER will play a vital role in addressing the

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computer technology. Capacity building is now a major priority for the Iraqi Government."

"This gap can be closed with training, new equipment and study tours to countries like Australia, which face technical issues in agriculture similar to those in Iraq," he said.

Prof Krishnapillai Sivasithamparam, UWA School of Earth and Environment developed the course. It was delivered by eminent scientists from UWA and the Department of Agriculture and Food WA (DAFWA), through the School of Plant Biology within the Faculty of Natural and Agricultural Sciences (FNAS).

"The major outcome of courses such as this, helps Iraqi national agricultural agencies develop sufficient technical capacity to plan, implement and monitor R&D programs in agriculture," Professor Siddique said.

The IOA is also involved in a large project, "Development of conservation cropping in the drylands of northern Iraq", in partnership with ICARDA (Syria). This is supported by Australian Centre for International Agricultural Research (ACIAR) and AusAID.

Ten students from the Iraqi Ministry of Agriculture will join UWA early 2009 to undertake their Masters studies in various fields of agriculture with funding support from AusAID.

looming global shortage in plant breeding expertise. In this newsletter you can read more about the ICPBER's first international training workshop (page 8).

International engagement is a high priority for UWA. Twenty seven Iraqi agricultural scientists were trained in advanced integrated plant disease management (IPDM) at the IOA. See our involvement in redressing the 50 per cent decline in Iraqi major crop production in the past 20 years (page 1).

Plant scientists at UWA celebrated the launch of a new text book, *Plant Physiological Ecology* second edition (see page 5).

On page 4 we take the road to the newly acquired UWA Ridgefield Farm. UWA looks back on the great research done at the Allandale Farm, and envisages future outcomes from Ridgefield.

Over the past year we have had a good share of both domestic and overseas visitors. Read more about the research of three visitors from the University of Tokyo trying to discover which genes control root adaptations to water-logging (page 10). A number of our academics also visited key national and international institutions to establish collaborations.

During 2008 we have had excellent success in attracting a number of externally funded research projects, undergraduate and postgraduate students in agriculture and natural resource management areas. In 2008 we continued our efforts in publishing high quality scientific papers in reputable journals.

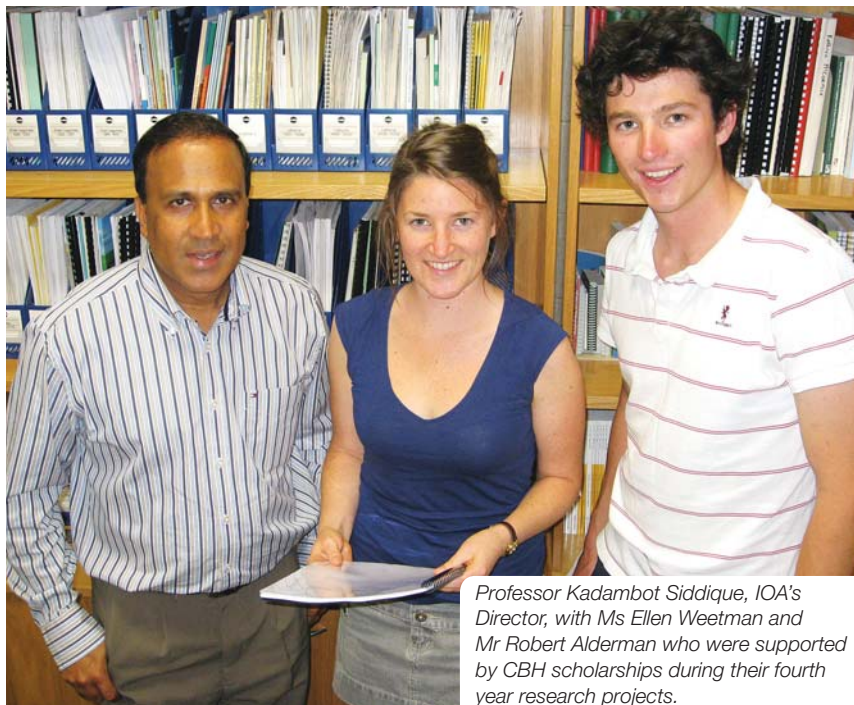
As this is the last newsletter of 2008, I would like to acknowledge the IOA External Advisory Board, Executive Team and the Program Team for their excellent support and advice. I acknowledge various funding bodies for their generous support for agricultural education and research at UWA. I would also like to acknowledge the contribution of Mrs Erika von Kaschke, our Communications Officer and Ms Hayley Newberry, my Personal Assistant, for their hard work and support. Finally I would like to thank Brendon Cant and Associates for their support on IOA press rereleases.

From the team at the IOA, I wish you a prosperous and peaceful Festive Season. I look forward to another challenging and productive year.

Professor Kadambot Siddique
(ksiddique@fnas.uwa.edu.au)

Sustaining productive agriculture for a growing world

CBH scholarships an honour for Weetman and Alderman



Professor Kadambot Siddique, IOA's Director, with Ms Ellen Weetman and Mr Robert Alderman who were supported by CBH scholarships during their fourth year research projects.

Novel weed management methods are the focus of two recently completed fourth year projects by students at the Institute of Agriculture (IOA), UWA.

Professor Kadambot Siddique, IOA's Director, says weeds competing with crops and pastures for sunlight, water and nutrients are a major constraint to agricultural production, costing farmers billions of dollars each year in lost production and management costs.

"With global population forecast to exceed nine billion by 2050, there will be a significant and increasing demand for food without increasing the land area used for agriculture.

"Agriculture already uses 70 per cent of the world's fresh water and more than half of its habitable land, so production increases must come from higher crop yields and more effective weed management is a vital part of that," Professor Siddique said.

Robert Alderman of Perth, supervised by Dr Jason Stevens, Kings Park and Botanic Gardens, Dr Michael-Saam Renton, UWA School of Plant Biology and Professor Stephen Powles, Director of the WAHRI, investigated use of karrikinolide, a germination stimulant isolated from smoke.

"The idea is to stimulate weed seed germination so more of the weed population is available for control and consequently there are less seeds remaining in the seed bank within the soil," Mr Alderman said.

"With the declining effectiveness of some herbicides, there is an increasing need for alternative weed control strategies.

"Understanding the dormancy release characteristics of weed species is essential for predicting when applying karrikinolide to cropping paddocks would be most beneficial, as it can't force deep dormant seeds to germinate," Mr Alderman said.

Wild radish, wild oat and wild turnip successfully germinated when seed was exposed to karrikinolide, but the challenge will be translating this to broad acre field conditions.

Like Mr Alderman, Ellen Weetman of Albany is well aware that effective weed management is a key agronomic practice determining agricultural success.

Ms Weetman's resource economics project assessed how tactical ungrazed pasture, or ley phases in intensive crop only farms, could address declining soil fertility and increasing levels of herbicide resistance in WA's grainbelt.

"Depressed livestock prices, ongoing rural labour scarcity and elevated cereal prices mean that intensive cereal production and crop only farming systems are becoming increasingly common features of WA's grainbelt," Ms Weetman said.

A complex simulation model assessed alternative integrated weed management strategies, using tactical ungrazed pasture phases and showed that tactical use of a single year, ungrazed pasture phase was more profitable than using break crops in intensive cereal production systems.

"And in contrast to previous analyses and general practice, alternating short periods of cropping and pasture is more profitable than extended crop and pasture phases," she said.

Ms Weetman indicated flexible land use sequences had a 10 per cent economic premium compared to fixed land rotations.

"And as the supply of effective selective herbicides becomes more limited, using ungrazed pasture fallows to opportunistically control weeds and improve soil fertility will become increasingly profitable," she said.

Drs Graeme Doole and Michael Renton of UWA and Dr Clinton Revell of DAFWA, supervised Ms Weetman's fourth year research project.

Ms Weetman plans a holiday before she seeks work next year and Mr Alderman intends working for a year in WA's grainbelt before beginning a PhD overseas.

Mr Alderman and Ms Weetman were supported by Cooperative Bulk Handling (CBH) scholarships during their fourth year research projects, with Mr Alderman also receiving a summer scholarship for his project from Kings Park and Botanic Gardens.

CBH and UWA have a memorandum of understanding to collaborate on under-graduate and postgraduate education and research in agriculture at UWA.

CBH has already supported six agricultural science graduates in their fourth year projects and two PhD top up scholarships at UWA.

Sustaining productive agriculture for a growing world

Paving the road to Ridgefield



Vice-Chancellor, Prof Alan Robson, researchers and industry leaders during a visit to UWA Ridgefield in October 2008.

UWA is making sure that the road to its newly acquired farm, Ridgefield, is paved with ethics and state-of-the-art facilities, whilst serving the local and international community.

Since the early 1960s, the University has owned a farm, *Allandale*, on Great Eastern Highway near Wundowie. Around 1980, the Animal Science discipline in the then Faculty of Agriculture took responsibility for the property and, mostly through volunteer labour by staff and students, developed it as a research resource.

Over the past 25 years, *Allandale* has played a major role in teaching and research. "Since 2000, it has been a key resource for about twenty postgraduate students and \$3-4 million in research projects, and it has welcomed visiting scientists from all corners of the world", Prof Graeme Martin, Head of the School of Animal Biology said.

Expanding research and development needs led to the acquisition of a 1588 ha (3923 acre) farming property at West Pingelly. UWA *Ridgefield* is located 25 km north-west of Pingelly, about 158km south-east of Perth, on the western edge of the Central Grainbelt. "It was selected for a number of reasons like soil types, location, topography, rainfall, total area and the overall excellent condition of the property", Prof Martin said. "It is ideal for development as a resource to facilitate state, national and international research with inputs from the local and WA farming community, re-affirming the long-term commitment of UWA to agricultural research and development."

"We want to take a multidisciplinary approach to the development of UWA *Ridgefield*, involving staff from across Schools and Faculties at UWA", said Prof Martin.

It will be run for non-profit purposes, but should be financially independent, with income streams from on-farm enterprises: crop production; animal production and the provision of resources for scientific research. "Management decisions about production, natural resources and infrastructure will be based on state-of-the-art principles and the infrastructure should incorporate the latest in designs and materials but within budget constraints." Prof Martin said.

The development of UWA *Ridgefield* includes building an animal laboratory, short-term accommodation for visiting

researchers, and a house for the farm manager. The UWA Faculty of Architecture and Fine Arts will play a leading role in this aspect of development. The design of the buildings will become exercises in practical classes where students survey the landscape, interview members of the local community, and discuss options with the end users.

Other developments include hydrology assessment, land resource assessment, and soil management. According to Prof Martin, "a complete survey and analysis of the soils of UWA *Ridgefield* is essential. This project will begin immediately and will involve field trips for students in soil science classes".

UWA also sees the need for an intelligent design for the management of water and for meeting electricity needs.

UWA *Ridgefield* should demonstrate the highest principles of ecosystem management to the community. This involves managing the impact of all commercial enterprises, but taking into account proper management of the natural environment in the surrounding areas. This means clear plans for the management of the natural water resources and the management of relationships with the nearby national park.

A large portion of the activities at UWA *Ridgefield* will be devoted to cropping enterprises. "The cropping enterprises will need to be future-focused, with a view to testing and demonstrating the benefits of alternative management systems. This project will be led by Dr Ken Flower of the School of Plant Biology and will also involve community input through WA No-Till Farm Association (WANTFA)", Prof Martin said. Animal Enterprises will include the sheep enterprise, grazing systems, forage management, and cashmere goats.

UWA *Ridgefield* will join an international farm network, The Food Animal Initiative (FAI). FAI was begun at the University of Oxford in the UK by Professor Marian Stamp Dawkins. It shares UWA's common interest in clean green and ethical (CGE) animal production. The FAI operates a farm adjacent to the banks of the River Thames at Wytham, Oxfordshire, and undertakes farm-scale research to improve animal welfare within a commercial farming system. FAI has now established links to similar projects in China and Brazil. UWA *Ridgefield* will join this network, adding the perspectives of extensive production systems, dryland agriculture, and Mediterranean climate.

Sustaining productive agriculture for a growing world

UWA celebrates plants book



L to R: Prof Alan Robson (Vice-Chancellor, UWA), Prof Hans Lambers (Head, School of Plant Biology) and Prof Tony O'Donnell (Dean, FNAS).

Colleagues and guests joined Prof Hans Lambers, Head of the School of Plant Biology, UWA, in celebrating the launch of his book, second edition of Plant Physiological Ecology, on October 16, 2008.

In his congratulatory speech, Prof Alan Robson, Vice-Chancellor UWA, said that books like this tell a real story

about how plants work, in both natural and managed systems. "The publication of the second edition of Plant Physiological Ecology is a great excuse to celebrate UWA's success in the plant sciences", he said.

Prof Robson said that a new edition of Plant Physiological Ecology is timely,

because plant sciences in general and plant physiological ecology are important disciplines that ensure that we deal with the impact of climate change on plant performance.

According to him it is equally important when it comes to making agricultural systems more productive, so one produces food, fibre and fuel for a growing human population in a sustainable manner.

Prof Lambers described this book as a true celebration for UWA. "This is an enormous achievement for a relatively small and isolated university. We could only achieve this because of excellent interactions amongst the plant scientists in two science faculties at UWA, and also excellent interactions with Department of Agriculture and Food Western Australia (DAFWA), Department of Environment and Conservation (DEC), Forest Products Commission (FPC) and Kings park and Botanic Gardens (KPBG) in particular", he said. "On top of that we greatly value our interactions with the industry, especially the mining industry".

UWA collaboration with University of Agriculture, Faisalabad, Pakistan

The University of Agriculture, Faisalabad (UAF) Pakistan and UWA has recently signed a MoU to initiate cooperative teaching and research in crop and animal improvement, grassland-livestock interaction, biotechnology, natural resource management and agricultural policy research.

UAF is one of the oldest and key agriculture universities of Pakistan. Over its history of 100 years, UAF has had great achievements in the field of agriculture, horticulture, animal science, and natural resource management teaching and research. UAF has made significant contributions to the regional and national economy, community, and environmental management. It is highly esteemed on both national and international levels.

Professor Kadambot Siddique (IOA Director) visited UAF in October to deliver a keynote address at an International Symposium entitled "Modern approaches and techniques in agriculture to ensure food security in Pakistan". The symposium was attended by over 1,000 delegates from Pakistan and overseas.

Professor Iqrar Ahmad Khan, Vice-Chancellor UAF, and Professor Kadambot Siddique initiated a proposal to train ten



Professor Iqrar Ahmad Khan (Vice-Chancellor, UAF) and Professor Kadambot Siddique (IOA Director) discussing various collaborative opportunities between UAF and UWA.

outstanding PhD students from UAF at UWA in various fields of agriculture, commerce, human nutrition, and social and cultural studies with joint funding from UAF and UWA. Professor Alan Robson, UWA Vice-Chancellor, welcomed the initiative and approved the proposal. UWA Postgraduate Research School and International Office is currently processing the applications for admission of the UAF candidates to commence their PhD studies in early 2009.

Sustaining productive agriculture for a growing world

Superior Chickpea varieties in the making

Adjunct Professor Tanveer Khan, DAFWA (tkhan@agric.wa.gov.au)

A field walk in association with the Moora-Miling Pasture Improvement Group (MMPIG) was held at Daniel Martin's property, Cardo, on Tuesday, the October 28, 2008 to inspect new *ascochyta* blight resistant chickpea lines.

agribusiness representatives, Pulse Australia, COGGO and researchers.

A/Prof Tanveer Khan (DAFWA/UWA) led the field day participants through the chickpea plots highlighting the characteristics of the new lines. He pointed out that the project has succeeded in developing over 1,000

with *ascochyta* blight resistance in the future.

Mr Alan Meldrum (Pulse Australia) talked about the agronomic management of chickpea and stressed that with resistant varieties available now, chickpea growing is a low risk and profitable option.



Participants inspect new ascochyta resistant chickpea lines during a field walk in association with the Moora-Miling Pasture Improvement Group (MMPIG) at Cardo farm.

These desi chickpeas have been developed by the WA focused project entitled "Accelerated Genetic Improvement of Desi Chickpea"; an international alliance between the Centre for Legumes in Mediterranean Agriculture (CLIMA) UWA, DAFWA, International Crops Research Institute for the Semiarid Tropics (ICRISAT), India and Council of Grain Grower Organisation Ltd (COGGO).

Mr Tony White, president of MMPIG, welcomed the assembled growers,

fixed breeding lines with many more to be added to this in 2009. *Ascochyta* blight resistance is the primary trait required in new chickpea varieties and 80% of the breeding lines have an acceptable level of *ascochyta* blight resistance, equal to or better than Genesis 836 (which has the minimum standard being rated as moderately resistant, MR). It is expected that the first of several varieties will be released within the next three years with good prospects of more improved varieties

Mr Geoff Smith (CEO, COGGO) mentioned about COGGO's investment in this venture, and their vision and support for the chickpea industry in WA.

The field day participants ranked the new chickpea lines for the agronomic traits that A/Prof Khan considered to be essential features. The growers rankings will be used in the decision making process for the release of new varieties from this project.

Role and impact of climate change policies



A/Prof Ross Kingwell spoke at the inaugural Science Week of ICARDA, Syria.

In October A/Prof Ross Kingwell (UWA and DAFWA) was one of three international speakers invited to address the inaugural Science Week of International Centre for Agricultural Research in the Dry Areas (ICARDA) at Aleppo, Syria.

He spoke about the impact of climate change on dryland farming systems and the role and impact of climate change policies.

According to A/Prof Kingwell, by comparison with many other countries in dryland regions, Australia is fortunate to have research funds and competent scientists dedicated to furthering our understanding of the nature and impacts of climate change.

"In Australia there are many policy analysts, scientists and economists skilled to facilitate sound responses to the threat of adverse climate change. Helping farmers adapt to climate change and participate in mitigation opportunities is one of the current and future roles of agricultural scientists", he said.

Sustaining productive agriculture for a growing world

Building capacity for training future plant breeders

Ms Sarah Mawson (smawson@fnas.uwa.edu.au)



Plant breeding educators discussing future strategies.

The inaugural Australian Plant Breeding Educators' Meeting, hosted by the ICPBER, was held from September 18 to 19 at UWA.

The meeting was sponsored by the GRDC, represented by Mrs Brondwen MacLean and Mr Neil Young. Participants included A/Prof Phil Salisbury (University of Melbourne),

Prof Richard Trethowan (University of Sydney), Prof Di Mathers (University of Adelaide), Dr Mark Dieters (University of Queensland), and A/Prof Wallace Cowling, Prof Willie Erskine and Prof Kadambot Siddique from UWA.

The purpose of the meeting was to find ways to build capacity in plant breeding education in Australia. Plant breeding educators in Australia are finding it

increasingly difficult to attract top quality domestic students and to train them to advanced levels in plant breeding.

According to Prof Willie Erskine, Director of ICPBER, national collaboration could be assisted by teaching and learning grants at the local and national level. "Advanced undergraduate courses could be based on national "case studies" in plant breeding which would be made available on-line", he said. Educators at the meeting came to the conclusion that teaching of intensive short courses for post-graduates and in-service trainees could be rotated around the major universities.

The GRDC and other industry support would be sought for high-value cadetships in plant breeding for the PhD degree, and for 'motivational' scholarships for young people to gain experience in plant breeding programmes. The next meeting will occur in September 2009 at the next Australasian Plant Breeding Conference in Cairns.

Caroline Stewart Young prize in agriculture



Ms Caroline Stewart Young's love for agriculture lives on through the Caroline Stewart Young Memorial prize, established by family, friends and colleagues.

The inaugural Caroline Stewart Young Memorial Prize in Agriculture will be awarded to a student this year.

Ms Young completed her undergraduate (honours) and Masters degrees in Science (Agriculture) at UWA. Her life came to an untimely end on May 2, 2006 at the age of 39. To commemorate her passion for farming and her love and devotion to family and community, the Caroline Stewart Young Memorial Fund has been established by family, friends and colleagues. The award is the annual income earned on this Fund.

The prize is awarded by the Dean of the Faculty of Natural and Agricultural Sciences (FNAS) to the student who has completed the requirements of the Bachelor of Science with one of the following programmes, Agricultural Sciences, Agricultural Economics, Animal Science, Genetics and Breeding, or Horticulture, and who has shown through their research project the most enthusiasm and promise in Agriculture as assessed by the Faculty's Heads of School in consultation. This prize cannot be awarded to the same person twice.

According to the Dean of FNAS, Prof Tony O'Donnell, establishing prizes that honour the memory of students like Caroline is important in stimulating the need for new knowledge and understanding of agricultural systems. Please also see <http://spe.publishing.uwa.edu.au/latest/prizes/nas> for the many other prizes available in FNAS.

"... establishing prizes that honour the memory of students like Caroline is important in stimulating the need for new knowledge and understanding of agricultural systems"

Sustaining productive agriculture for a growing world

Leading edge Australian biometrical research

A/Prof Wallace Cowling wcowling@cyllene.uwa.edu.au



Participants at the international workshop on analysis and design of plant breeding testing programmes taking a break at Matilda Bay.

The International Centre for Plant Breeding Education and Research (ICPBER) at UWA hosted an international workshop on analysis and design of plant breeding testing programmes, from November 3-5, 2008.

Dr Brian Cullis (NSW DPI) led the "Mixed Models and Design for Plant Improvement" workshop, together with David Butler (Qld DPI), Neil Coombes (NSW DPI) and Mr Simon Diffey.

More than 30 national and international participants (representing Australia, Canada, Germany, Philippines, Malaysia, Singapore and India) attended the workshop, covering crops as diverse as rice, medicinal poppy, canola, lupins, wheat, perennial pasture legumes and oil mallee eucalyptus.

The workshop focussed on improved designs for field and laboratory trials, and better genetic predictions from analysis of multi-environment trials across regions and countries. It demonstrated benefits from the integration of pedigree and molecular marker data into the analysis, to improve predicted breeding values of lines.

The workshop was made even more interesting and challenging through the use of sample data sets provided by the participants, allowing them to gain hands-on experience of running the analyses.

The value of the workshop was well recognized by the world's largest hybrid rice breeding program at Bayer Crop Science, whose leader Dr Ed Roumen was present. But there were also many

Australian plant breeders who came to improve the efficiency and output from their breeding programs.

The workshop had generous support from NSW DPI, Qld DPI, the Grains Research and Development Corporation (GRDC), and UWA. GRDC supports the National Statistics Project which develops improved procedures for crop breeding and variety testing.

ICPBER Director Professor Willie Erskine and Deputy Director Associate Professor Wallace Cowling are planning future workshops which will attract even more attention from international and national plant breeders. Next year the ICPBER will host the Australian Forestry Genetics Conference from 15-18 April 2009. Keep an eye on the ICPBER website for more information (www.icpber.plants.uwa.edu.au).

Herbicide resistance expertise spread to South Africa

Prof Stephen Powles, Director of WAHRI, spread his herbicide resistance expertise to South Africa during his visit to the ARC-Small Grain Institute (SGI) and the University of Stellenbosch (US) in September 2008.

Prof Powles, world renowned expert on herbicide resistance, is well known for his contribution to research of managing herbicide resistant weeds. The SGI invited him to bring new and relevant research and knowledge to their scientists.

Australia has the biggest herbicide resistance problem in the world. Prof Powles told South African researchers and scientists how one could overcome the increasing number of herbicide resistant weeds.

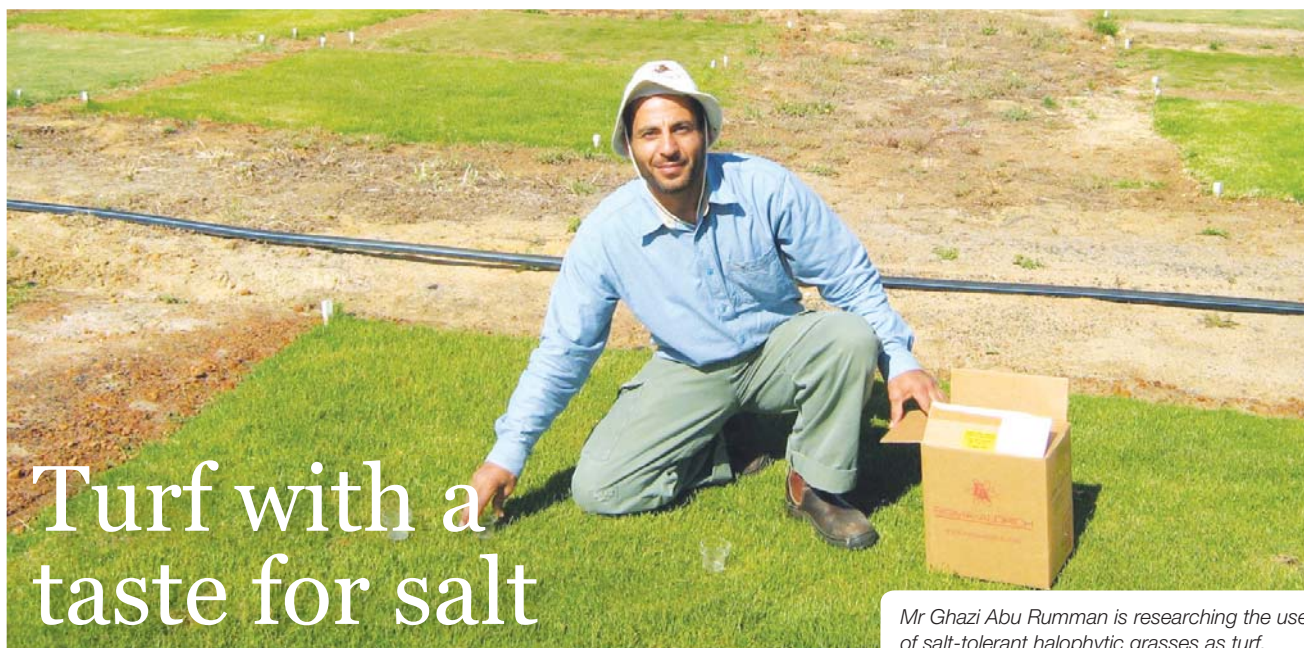
He presented four seminars during his visit, one at SGI in Bethlehem, one at the US and two at the HRAC meeting in Paarl.

Prof Powles also attended the Roodebloem farmers' day. He gave an informal talk and interacted with farmers. His visit was funded by the Winter Cereal Trust.



Prof Stephen Powles shares information on herbicide resistance with farmers during his visit to South Africa.

Sustaining productive agriculture for a growing world



Turf with a taste for salt

Mr Ghazi Abu Rumman is researching the use of salt-tolerant halophytic grasses as turf.

What could a Shire do if they have too little fresh water, too much saline ground water, and need to create a beautiful looking Shire with great lawns and the lot?

Like other towns in the WA grain belt, Wagin would like to reduce use of fresh water resources on public parks and gardens and instead use saline ground water. Within this town three bores are pumping and disposing up to 650 kilolitres per day to a nearby salt lake to de-water areas of the town threatened by rising groundwater.

This led to Mr Ghazi Abu Rumman's PhD study under the supervision of Associate Professor Tim Colmer (School of Plant Biology) on the use of salt-tolerant halophytic grasses as turf in the wheat belt. Halophyte literally means "salt-loving" plants. These plants grow naturally in salt-affected soils.

Results in Mr Abu Rumman's field based research found that salt-tolerant grasses can be irrigated with the saline groundwater which saves potable water. Four turfgrass species, *Distichlis spicata* (saltgrass), *Sporobolus virginicus*

(marine couch), *Paspalum vaginatum* (seashore paspalum) and *Pennisetum clandestinum* (kikuyu) were tested, the halophytic turfgrass species performed well under saline irrigation.

Marine couch was slow growing so it would be better suited to low-traffic applications such as landscaping. The traditional turf variety, kikuyu, and only non halophytic grass, did not cope well with saline irrigation. Kikuyu performed well under fresh water irrigation. According to Mr Abu Rumman, they recently conducted further glasshouse experiments to find out the salinity threshold of the four species. "We tested the performance of those species under five different salt levels, but it is still too early to report on the results at this stage", he said.

Mr Abu Rumman's work will be applied and tested within the Shire of Wagin. The Shire will use the new turf types in the development of one park because they will achieve much better results and be able to irrigate with the groundwater.

UWA works closely with the turf industry. To be on the list for the turf group, please email: tdcolmer@cyllene.uwa.edu.au.

UWA-Thailand connection renewed



During a brief visit to Thailand earlier this year, Professor Krishnapillai Sivasithamparam of the School of Earth and Environment caught up with six of his nine students who did their post-graduate studies in Plant Pathology at UWA. They came to UWA as part of the World Bank-AusAID funded Australian Collaboration with the National Agricultural Research Project (ACNARP) scheme in the 1980s. These alumni are currently working on a variety of projects related to agriculture and horticulture in Thailand.

L to R: Mr Wiroje Kaewruang, Ms Patchara Punjasamarnwong, Ms Matana Srihuttatam, Prof Krishnapillai Sivasithamparam, Dr Prasert Wongwathanarat and Ms Naline Charigkapakorn.

Sustaining productive agriculture for a growing world

Beyond average curves

Dr Atakelty Hailu (ahailu@cyllene.uwa.edu.au)

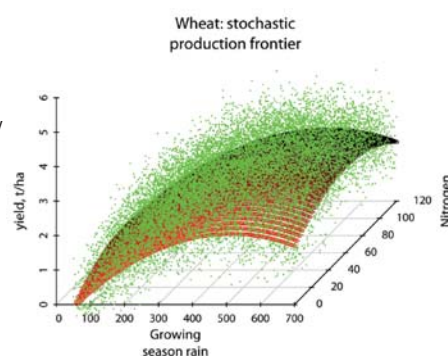
The bulk of economics focuses on the average player or, as economists put it, the 'representative' agent. Dr Atakelty Hailu, Senior Lecturer, School of Agricultural and Resource Economics, UWA, is interested in the behaviour of the individual player.

As part of his work on developing an integrated economic-hydrologic model for the Katanning catchment (supported by RIRDC and FFI CRC), he has been estimating crop yield curves, together with Mr Jeff Durkin, a research officer in the School. The aim of the modeling is to provide a platform for evaluating alternative policies for land use change aimed at salinity management. The platform would be used to evaluate straight per hectare type payment incentives and also to simulate incentives provided through auctions – auctions where farmers bid to provide services.

The approach used is a 'bottom up' approach where catchment level dynamics evolves from the actions of individual farms that respond to resource constraints as well as market and government induced incentives. The amount of work involved behind these models is tremendous, especially if you want to capture farm heterogeneity very well. One of the farm heterogeneity aspects the researchers are focusing on is the variation of crop yield functions (curves) in the catchment. Using 11 year data from the Great Southern region, they have estimated what economists refer to as stochastic frontier functions. These are production functions that allow for farm inefficiency besides random elements in explaining variation in yield among farms.

By relating yield to rainfall, nitrogen application, and a host of farm characteristics, they hope to improve the accuracy with which responses to land

use change incentives are predicted. Relating yield to rainfall rather than to just fertilizer rates would improve our ability to predict variation in responses across a catchment. The characteristic of the farm including soil resources, size of farm, and age of farmer and the financial situation of the farmer are important. Yields, for example, tend to decline with age and improve with the percentage equity of the farmer.



Collaboration with University of Tokyo on waterlogging tolerance

A/Prof Tim Colmer (tdcolmer@cyllene.uwa.edu.au)

The Future Farm Industries (FFI) CRC and School of Plant Biology at UWA, recently hosted three visitors from the University of Tokyo, Japan. The visitors also visited the UWA Institute of Agriculture and DAFWA.

Professor Mikio Nakazono, Dr. Katsuhiro Shiono and Mr. Hirokazu Takahashi are conducting research to discover which genes control root adaptations to waterlogging; especially the formation of *aerenchyma* and a barrier to radial oxygen loss in roots. These traits act together to provide plant roots with a snorkel, enabling roots to breathe in waterlogged soils.

The initial experiments have been conducted on rice. Rice is a good model as it is highly waterlogging tolerant and the genome has been sequenced. Seminars described the approaches taken, and the substantial progress made. Key to this progress has been selection of treatments and sampling times based on earlier physiological experiments, and expertise in use of laser micro-dissection to enable studies of tissue-specific gene transcripts.

The collaboration was recently boosted by inclusion of a sea barleygrass-wheat amphiploid, produced during the Salinity CRC, into the program. Sea barleygrass is a waterlogging tolerant wild relative of wheat, with root traits reminiscent of those in rice, and has been crossed with wheat by Dr Rafiq Islam (University of Adelaide). Dr. Imran Malik (UWA) was awarded a JSPS Postdoctoral Fellowship, and has joined Professor Nakazono's laboratory for two years. The



Visitors from Tokyo University joined some salty locals to discuss field work on a salt- (and waterlogging-) tolerant wheat. The salt-tolerant wheat was produced by wide hybridization with sea barleygrass, by Dr Rafiq Islam at University of Adelaide. Plots (L-to-R): the salt-tolerant amphiploid, barley, wheat parent. (L-to-R): Dr Imran Malik, Dr Katsuhiro Shiono, A/Prof. Tim Colmer, Mr Michael Lloyd, A/Prof Ed Barrett-Lennard, Professor Mikio Nakazono, Mr Hirokazu Takahashi.

collaboration is also facilitated via agreements between the FFI CRC and University of Tokyo, and travel funds from GRDC, via the FFI CRC.

A highlight of the visit to WA was a trip to inspect the first field trials of an amphiploid, being conducted near Pingaring by Adjunct A/Prof Ed Barrett-Lennard (UWA/DAFWA). The amphiploid has performed much better than the wheat parent on saline, waterlogging-prone, land. The visitors also looked at saltland pastures and had discussions on dryland salinity with the host farmer, Mr Michael Lloyd, and FFI CRC staff.

Sustaining productive agriculture for a growing world



Dr Michael Renton of UWA, pictured here, and Dr Sally Peltzer of DAFWA, Albany co-developed the Weed Seed Wizard to help growers manage the weed seed bank in the soil.

Weeds directly cost Australian farmers \$1.5 billion per year, with lost agricultural production estimated at over \$2 billion per year. But growers know that treating weeds above ground will only get you so far. A recently developed computer simulation tool, Weed Seed Wizard, was designed to help growers manage the weed seed bank in the soil. This work in progress was developed by co-project leaders, Dr Michael Renton of UWA and Dr Sally Peltzer of Department of Agriculture and Food WA (DAFWA), Albany.

The development of this prototype involved a team of thirteen from DAFWA, Queensland Department of Primary Industries, NSW Department of Primary Industries, UWA and The University of Adelaide. It is a long-term project funded by the Cooperative Research Centre for Australian Weed Management and supported by sponsors, including the GRDC.

The Weed Seed Wizard was developed because the weed seedbank is difficult to eradicate. Weed populations are influenced by numerous complex and long-term factors, including dormancy, seed burial depth, soil type, soil moisture, seed species, rainfall and season. The Weed Seed Wizard can build a “reasonable representation” of the way those factors interact. Growers could experiment with any number of future management strategies.

According to Dr Renton, they want this model to be the basis of a practical decision-aid tool to help farmers and consultants manage weed populations in real farming contexts and determine optimal control measures.

Simulations indicate that an integrated approach that killed weeds, reduced seed set and prevented seed from entering the seedbank could deplete the seedbank, but a small lapse in continuity of effort can have a significant effect in subsequent years.

Simulations are specific to individual site, season and weed species. The model simulates important aspects of the

interaction between weather, paddock management and seed biology. The Wizard shows how decisions such as crop choice, sowing date, seeding rate, tillage and grazing management, herbicide applications and harvest options, affect weed germination and density, crop yield and, most importantly, the long term sustainability of a farm. It can also predict the amount of weeds appearing each year and the hidden reserves in the seedbank, so growers can be warned early.

Dr Renton says the trial prototype of Wizard features a graphical user interface that runs as a stand alone application. “The user interface includes windows where growers can edit the initial conditions of simulated paddocks and amend management options, he said.”

Different weed management scenarios can be viewed and compared side-by-side, so the relative value of options is clear. The Wizard also incorporates documented knowledge about the different biology of each weed species and information on major weeds in each state.

Dr Renton aims to make the Wizard self-calibrating – adjusting its parameters in response to ongoing observation records.

The Weed Seed Wizard is currently programmed for six weed species common in farming systems in WA: barley grass, rye-grass, wild radish, wild oat, brome grass and silver grass. Emerging weed species and newly developed management options can be easily added to the model. It will be released in 2008.

“One of the options for the future will be to fine-tune the prototype with respect to on-screen appearance and increase user-friendliness”, he said. Weed Seed Wizard is available on the GRDC website at www.grdc.com.au/weedlinks.

For more information contact Dr Sally Peltzer (SPeltzer@agric.wa.gov.au) and Dr Michael Renton (mrenton@cyllene.uwa.edu.au).

Adapted from the GRDC Ground Cover (p 16) 01/10/2008

Plant health research symposium

Three top UWA students, Ms Harsh Garg, Ms Linda Maccarone and Mr Tiernan O'Rourke, presented their ground breaking plant disease research findings at the second APPS Plant Health Research Student Symposium 2008 on Friday, 24 October.

Among eight students from Universities in WA presenting a range of pathogens and pests in agricultural and native ecosystem settings, Ms Garg covered managing *Sclerotinia* disease in *Brassicas*.

Sclerotinia sclerotiorum is a very destructive pathogenic fungus which is hard to control. Ms Garg argued that selection of host resistance is the only economic and sustainable means of managing this disease. It works best when used in concert with cultural practices that discourage apothecia production and ascospore release.

Ms Maccarone's presentation focused on Big-Vein Disease of lettuce (LBVD) research. She compared the two viruses normally contained in lettuces with this disease; *Lettuce Big-Vein associated Virus* (LBVaV) and *Mirafiori Lettuce Big-Vein Virus* (MLBVV). Linda's work was the first time such a comparison of these viruses and the chytrid vector has been performed on lettuce isolates infected with LBVD.

Mr O'Rourke spoke about the severity of root rot in mature subterranean clover and associated fungal pathogens in the wheatbelt of WA. His survey showed, for the first time, that severe root rot is widespread in spring across the grainbelt of

WA. His study suggests that the productivity of subterranean clover based pastures is severely compromised by root rot diseases throughout the growing season in WA.

This symposium was sponsored by the Australasian Plant Pathology Society (APPS).



The eight students who presented their research findings at the APPS second Plant Health Research Symposium 2008 were Ms Harsh Garg (UWA), Ms Linda Maccarone (UWA), Ms Guiping Wang (Murdoch University), Mr Rod Armistead (Murdoch University), Mr Tendai Mapondera (Murdoch University), Tiernan O'Rourke (UWA), Mr Andrew Li (Murdoch University), and Mr Mark Castalanelli (Curtin University).

Life changing Nuffield Scholarships



Mr Peter Nixon, a farmer from Moora/New Norcia, and Mr John Foss, Managing Director of The Chia Company, spoke to agricultural science students at UWA about the benefits of the Nuffield Scholarship.

Each year Nuffield Australia awards scholarships to farmers in Australia. They aim to increase practical farming knowledge and management skills and techniques.

Aussies get the opportunity to study farming practices in New Zealand, Europe, Asia and the Americas and countries that suit them best. They also promote a closer understanding between farmers in the countries visited.

Two former Nuffield Australia Scholars, Mr Peter Nixon and Mr John Foss, shared their Nuffield experiences with

undergraduate agricultural science students at UWA in September.

Mr Peter Nixon, a farmer from Moora/New Norcia, explored the past, present and the future of agriculture. He investigated the importance of agriculture within a stable society, the current state of agriculture, and the challenge of feeding the world in the next 30 years. Mr Nixon was awarded a Nuffield Farming Scholarship in 1989. Currently, Mr Nixon is the International Chairman of the Nuffield Farming scholarship scheme, and immediate past Chairman of Nuffield Australia.

Mr John Foss looked at the key drivers of agriculture and food production e.g. water, energy, environmental factors, and consumer demands like health and wellbeing, in a case study of the Chia Company. Mr Foss showcased the production of a unique Omega 3 oilseed, Chia (*Salvia hispanica*) in the Ord River Irrigation Area of WA. He spoke of the success of its marketing efforts into the global food ingredients and health food markets. Mr John Foss is the principal of Marketing Edge, an agricultural marketing and project management company that advises farmers and agribusiness. He is also the Managing Director of The Chia Company.

Both speakers were living proof of the life changing effect of the Nuffield Scholarship. Once back in Australia, scholars should actively spread the knowledge and understanding they have gained among their fellow farmers and others. Applicants do not need academic qualifications, but they have to persuade the selectors that they have the qualities to make the best use of an opportunity that is only given to a few.

Sustaining productive agriculture for a growing world

UWA strengthen Chinese ties

Dr Guijun Yan (gyan@plants.uwa.edu.au)

A delegation from UWA and the GRDC Western Panel visited Zhejiang University (ZJU), and Huazhong Agricultural University (HAU) in May this year.

Professor Kadambot Siddique (Director, IOA), Mr Neil Young (GRDC West Panel Chair), and Dr Guijun Yan (IOA Pant Production Program Deputy Leader) met with Prof Jun Zhu (Vice president, ZJU), Prof Guoping Zhang (Executive Dean, College of Agriculture and Biotechnology, ZJU), Prof Jianxin Liu (Executive Dean, College of Animal Sciences, ZJU), Prof Ping Wu (Executive Dean, College of Life Sciences, ZJU), Prof Weijun Zhou of Zhejiang University (Deputy Director Institute of Crop Science, ZJU). The team also met Prof Conghua Xie (Vice President, HUA), Prof Tingdong Fu (Leader of Canola Breeding Centre, HUA), and Prof. Liyong Hu (Director of



Prof Kadambot Siddique (Director, IOA) is exchanging an MOU with Huazhong Agricultural University on behalf of Prof Alan Robson (Vice-Chancellor, UWA). Prof Zaiyun Li, A/Prof Chaozhi Ma, A/Prof Guozheng Yang, Mr Neil Young (GRDC West Panel Chair), Conghua Xie (Vice-President), Prof Tingdong Fu, Mr Youliang Yuan, Prof Yongming Zhou, Prof Jinling Meng and Prof Liyong Hu witnessed the ceremony.

Department of Agronomy, HAU) regarding current and future collaborations in agriculture and related areas.

The areas of collaboration identified includes: exchange of staff and

postgraduate students and joint research projects. Following the visit a MOU was signed between UWA and HAU. HAU has appointed Prof Kadambot Siddique as Honorary Professor for three years.

Young innovators and scientists award

Mr Andrew Williams, a PhD student in the School of Animal Biology, was awarded the 2008 Australian Agricultural Industries Young Innovators and Scientists.

He was among fourteen Australians aged between 18 and 35 working or studying in rural industries who received a grant of \$20 000. Mr Williams was the Australian Meat Processor Corporation Award Winner.

The Australian Agricultural Industries Young Innovators and Scientists Awards support young people to pursue their innovative scientific ideas. This will have long term benefits to Australia's rural industries. Funding can be used for a research project, an industry visit, or further study into a specific area or attending conferences.

Mr Williams grew up in Northam and has had an interest in animals from an early age. Coming from a family of sheep farmers, naturally he was interested in sheep, and developed

an interest in sheep parasites. Parasitic intestinal worms, for example, could cost the Australian sheep industry approximately \$500 million a year in lost profits.

According to Mr Williams, sheep with parasitic intestinal worms gain less weight and also suffer from a type of diarrhoea known as 'scouring'. Scouring not only makes wool less valuable, but animals are more prone to flystrike that costs a lot to manage.

These parasites are increasingly becoming resistant to current chemical treatments. Mr Williams believes that the long-term solution lies in breeding sheep that are naturally resistant.

Australia has developed a breed of sheep, known as the *Rylington merino*, which is highly resistant to parasites, but more prone to scouring. Andrew's project will investigate the reasons behind increased scouring among *Rylington merino*.

Mr Williams' research, funded by Australian Wool Innovations Limited (AWI), may lead to the development of genetic and biochemical markers that

could help select sheep that are resistant to worm infection but less susceptible to scouring. Mr Williams' research is supervised by Drs Ian Williams and Phil Vercoe.



*Mr Andrew Williams was awarded a \$20,000 grant as 2008 Australian Agricultural Industries Young Innovators and Scientists winner for his work on scouring in *Rylington merino*.*

Sustaining productive agriculture for a growing world

Alumni



Dr Wally Cox

Former Chairman of the Environmental Protection Authority (EPA)

Dr Wally Cox graduated with a BSc (Agric) in 1965 and he automatically joined the Department of Agriculture. He did his PhD in Soil Science at the

University of California Davis between 1968-1971 before rejoining the Department of Agriculture. He did research on fertilizers and developed a soil test for potassium among others. In 1983 he was appointed CEO of the new Department of Regional Development and the North West, became Managing Director of the Water Authority of Western Australia in 1989, followed by roles as Chief Executive Officer of the East Perth and Subiaco Redevelopment Authorities, Acting Director General of the Ministry of Culture and the Arts. He finished his career as a public servant as Executive Director of the Department of Conservation and Land Management in 2001.

After a brief retirement he became Executive Dean, Faculty of Business and Pro Vice-Chancellor at Edith Cowan University. In 2003 he became Chairman of the Environmental Protection Authority and retired from full time work in 2007.

At a national level he undertook a number of roles: President of the Northern Australia Development Council, President of the Water Services Association of Australia and Commissioner National Water Commission. He was awarded a Public Service medal in 2002 and an Australia Day medal in 2003.

Dr Cox is currently the chair or a member of a number of private and public Boards/Committees including Chairman Agricultural Research Western Australia (ARWA) and Chairman Western Australia Natural Resource Management Council.

He fondly recalls the highly competent staff of the Institute of Agriculture, particularly Prof. Jim Quirck, Prof. Alan Posner, and

Prof. Jack Lonergan. "The BSc (Agric) provided strong basic science education on which one could build a career in any number of fields".

Dr Cox believes the importance of agriculture to Western Australia will be re-emphasized with the current downturn in the mineral commodities boom. "All the more reason for farmers, researchers and funding bodies to focus on the key priority areas to continue to improve productivity and remain internationally competitive".



Professor Ted Lefroy

Centre for Environment, University of Tasmania

Prof Ted Lefroy completed his BSc (Agric) at UWA in 1973. His first job was extension officer with the Department of Primary Industries in Queensland on the

Darling Downs. Later he joined Australian Volunteers Abroad and spent two years in Papua New Guinea as an atolls agronomist. He also worked with a fisheries scientist and an economist to improve food self sufficiency on outlying coral atolls.

Prof Lefroy spent the four years after returning home working as a stockman on a live sheep carrier, builders' labourer and landscape gardener. A meeting with fellow UWA Ag Science graduate, Dr Chris Oldham, led to him joining the Martindale Research Project at the School of Animal Science in 1986. This multidisciplinary team, funded by Sir James McCusker of Town and Country Building Society, ran a five year whole-farm experiment to assess the value of the fodder shrub tagasaste for animal production.

In 1989, he moved to the WA Department of Agriculture's Resource Management Branch collecting and evaluating endemic and exotic forage shrubs for their potential to add a perennial component to dryland farming systems. 1995 saw him move to the CRC CLIMA (Centre for Legumes in Mediterranean Agriculture). Then he completed a PhD on the productivity, water balance and energy analysis of a tree-crop farming system. Five years later he became OIC of CSIRO Sustainable Ecosystems at Floreat.

In 2005 Prof Lefroy moved to the University of Tasmania to set up the Centre for Environment, a virtual Centre established to encourage interdisciplinary research between university academics, industry and government.

"A real strength of the Ag Science degree is its broad, multidisciplinary nature. At the time I recall how frustrating it was not have any teaching from specialists in the Ag Faculty for the first two years. In hind sight, the grounding we received in subjects as diverse as economics, statistics, geology and biochemistry provided an invaluable base for anyone interested in the environment. Environmental problem solving demands knowledge in so many different areas, from cause and effect relationships in biophysical systems to the values and often competing interests of the people involved to the practical aspects of managing land and water. Excellent training for the complex problems we face in environmental management."

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Sustaining productive agriculture for a growing world

**Dr W.M. (Bill) Porter***Project Manager, Soil Survey for the Emirate of Abu Dhabi*

After a slightly faltering start at UWA, Dr Bill Porter went on to complete his PhD, coordinate a change in how WA farmers manage their soils, move to

senior management in Department of Agriculture and Food Western Australia (DAFWA), and is now nearing the end of a project with an international consulting company in the Middle East.

Dr Porter started at UWA in 1971 with about 50 other first years, 12 of whom graduated four years later (Bill was not one of them: "It took me a year off then another go at fourth year before I graduated in 1976").

Dr Porter completed his PhD in 1982, two years after joining then WA Department of Agriculture where he had taken over the role of Soil Acidity Research Officer from Dr Wally Cox. The work of the research team built and led by him over the next twenty years established a sound scientific understanding of soil acidification and its amelioration which underpinned the broadening of lime use from a rarity in WA farming to a standard soil management practice. Dr Porter recognised the need to undertake research with an understanding of the systems in which the results are to be implemented. He worked most of his career in wheatbelt offices: at the Dryland Research Institute, Merredin and the Avon Districts Agriculture Centre, Northam, combining his research with a management role at the latter. He also engaged actively in the Australian Soil Acidity Program, acting as the National Coordinator in the mid 1990s.

Currently, Dr Porter is Project Manager of a soil survey for the 5.5M ha Emirate of Abu Dhabi. This is an AgWest International (DAFWA) project in partnership with GRM International. Now in its final stages, the project's size and complexity have meant that Dr Porter has needed to tap into all his education and experience to ensure its success.

"This project has highlighted to me the value of the education that we get in Australia, with UWA being one of the standard bearers. We often take for granted the foundation of sound scientific knowledge and scientific

method our education gives us, and more importantly the encouragement to be innovative. With increasing awareness of the need for reliable, high quality food supplies produced in profitable, environmentally sustainable systems, the role of UWA Institute of Agriculture is of growing importance." he said.

Dr Porter looks forward to returning from Abu Dhabi to new challenges in WA in the second half of 2009.

**Dr Mark Henryon***Chief Researcher, Danish Pig Production, Copenhagen, Denmark*

Dr Mark Henryon completed his Bachelor in 1989 and his PhD (Animal Science) in 1995. He then left Perth for a post-doctoral position

with the Faculty of Agricultural Sciences at Aarhus University (formerly the Danish Institute of Agricultural Sciences). The faculty is Denmark's largest research organisation within the agriculture and food sector, and an international leader within plant and animal research. Within six years of taking up the post-doctoral position, Dr Henryon had established himself as a Senior Scientist at the University.

Dr Henryon's main area of interest has been animal breeding and genetics with emphasis on improving the genetics of livestock and fish species used in commercial production. His research has included identifying genetic mechanisms underlying commercial traits, improving resistance to disease in pigs and fish, and developing novel methods to improve the genetics of livestock and fish. He has also established a national breeding program for rainbow trout in Denmark. The breeding program provides the aquaculture industry with genetically-improved fish.

After 12 years at Aarhus University, Dr Henryon moved into private industry and is currently Chief Researcher at Danish Pig Production in Copenhagen. Danish Pig Production represents the political, and research and development interests of the pig industry in Denmark. Here, he is putting his genetics knowledge gained at UWA into practice, developing and introducing new genetic methods that will make Danish pig production even more competitive on the international scene.

IOA Mission

"To advance research, education, training and communication in agriculture and resource management, for the benefit of mankind".

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Sustaining productive agriculture for a growing world

New Staff



Dr Chris Jones is a Research Associate at the School of Plant Biology. Chris recently obtained his PhD from The University of Western Australia. Hailing from Southern Queensland, he obtained his undergraduate degree in Chemistry from the University of New England, Armidale NSW in 2001. He will be working with A/Prof Julie Plummer of Plant Biology and A/Prof Emilio Ghisalberti of the School of Biomedical, Biomolecular and Chemical Sciences on

further elucidation of the factors involved in regulation of essential oil production in Sandalwood, *Santalum* spp. This is a Linkage project between UWA and the University of British Columbia, Canada, Forest Products Commission of WA and the Australian Research Council.

Email: jonescg@cyllene.uwa.edu.au



Dr Grzegorz Skrzypek was appointed as John de Laeter Research Fellow at the School of Plant Biology from April 1, 2008. His research on stable isotope geochemistry is funded by John de Laeter Centre of Mass Spectrometry. Dr Skrzypek, who comes from Poland obtained his PhD from the Institute of Geological Sciences, The University of Wroclaw, Poland. His scientific interests are focused on application of the stable isotope analyses (H, C

,N, O, and S) in few different geochemical areas related to environmental geochemistry and geology, including studies on: organic matter in sediments, peat, plant materials, fresh waters, wetlands, paleoclimate, low temperature hydrated silicates and carbonates. Dr Skrzypek spent 2005-2007 working in the Laboratory for Stable Isotope Geochemistry, Department of Earth and Environmental Science, The University of Texas at San Antonio, USA). Outside his work environment, Greg loves high mountain trekking and ice-climbing.

Email: buki@cyllene.uwa.edu.au Home page: <http://www.bukibuki.eu>



The Western Australian No-Tillage Farmers Association (WANTFA) has appointed **Mr Gavin Foord** as its new Executive Officer.

Mr Foord began his working life on the family farm at Mukinbudin, Western Australia. Since the late eighties he has worked on agricultural research and development projects around Western Australia and the Northern Territory. This included time at Kununurra and Carnarvon in WA and at Ti Tree and Katherine in the NT.

From 1998 he worked at DAFWA in Midland and South Perth, initially as the WA Citrus Industry Development Officer, then later adding the management of the Department's wine-grape project to his duties.

For the last two years Mr Foord has managed the WA Vegetable Growers environmental program, developing strategies that use a range of resources to help vegetable growers make Good Practice changes.

"I'm very pleased to be a part of WANTFA's effort to drive the adoption of sustainable and profitable broad-acre cropping systems" said Gavin "and being based at UWA provides the opportunity to further develop our ties with the UWA's Institute of Agriculture."

Email: gavin.foord@wantfa.com.au

Upcoming meetings and events

IOA Events

Hector and Andrew Stewart
Memorial Lecture 2009

The ongoing battle between humans and weeds: Who is winning?

Associate Professor Patrick J Tranel, University of Illinois, USA
www.ioa.uwa.edu.au

24 March 2009

Food and Agriculture Lecture Series

Science under Threat. Why? and what must be done

Dr Doug Edmeades, Managing Director, agKnowledge Ltd
www.ioa.uwa.edu.au

3 March 2009

National and International Events

Agribusiness Crop Updates

Burswood
Steve Penny, 9821 3333
spenny@agric.wa.gov.au
24- 25 February 2009

Greenhouse 2009: Climate change and resources

Burswood Convention Centre, Perth, WA
www.greenhouse2009.com
23-26 March 2009

WA Farmers Annual Conference

Email: chrismarris@wafarmers.org.au
25-27 March 2009, Perth, WA

Australian Forestry Genetics Conference

www.icpber.plants.uwa.edu.au
16-18 April 2009

2nd World Congress of Agroforestry (WCA2)

Nairobi (Kenya)
www.worldagroforestry.org
23-28 August 2009

New PhD students

NAME	TOPIC	SCHOOL	SUPERVISOR(S)	FUNDING BODY
Ms Ni Luh Arpiwi (arriving Jan 09)	Improving oil yield in <i>Milletia pinnata</i>	Plant Biology	A/Prof Julie Plummer Dr Liz Barbour (FPC)	Indonesian Department of Higher Education and Forest Products Commission
Mr Shahidul Islam	Proteomics of Wheat and Lupin	Plant Biology	Dr Guijun Yan, Dr Wujun Ma and Prof Rudi Appel (Murdoch Uni)	IPRS-DAFWA
Miss Xin Li (Linsinda)	Development of DNA markers used in marker- assisted selection of <i>Lupinus L.</i>	Plant Biology	Dr Guijun Yan and Dr Huaan Yang (DAFWA)	UWA-China-DAFWA China scholarship IRFSFC, China CSC scholarship
Ms Sanjutha Shanmugam	"Modelling and simulation in cluster roots of <i>Banksia</i> species"	Plant Biology	Dr Michael Renton, and Professor Hans Lambers	SIRF and UPAIS
Ms Honghua He	Plant-water relation in natural landforms in arid Australia	Plant Biology	Professor Hans Lambers, Dr Erik Veneklaas and Dr Tim Bleby	China scholarship IRFSFC, China CSC scholarship
Ms Xiangling Fang	Host pathogen interactions	Plant Biology	Associate Prof. Martin Barbetti, and Professor Krishnapillai Sivasithamparam	China scholarship IRFSFC, China CSC scholarship
Mrs Beena Anil Biswas	Grower groups- what brings them together and their future	Earth and Environment	Professor Matthew Tonts and Prof Kadambot Siddique	SIRF-IOA,SEE and FNAS
Mrs Noraini MD Jaafar	Organic inputs and biocharcoal for improved function of arbuscular mycorrhizal fungi in sandy soils	Earth and Environment	Prof Lyn Abbott, Dr Peta Clode and Dr Daniel Murphy	UPM Malaysia Scholarship
Ms Alene Tawang	Avian sperm cryopreservation and proteomic analysis	Animal Biology	Dr Irek Malecki and Prof Graeme Martin	Malaysian Government

Research and Industry Recognition

Prof Steve Powles

- Appointment as Science Fellow (2009-2011), Australian Pesticides & Veterinary Medicines Authority (APVMA)
- Appointed as Expert Advisor Gene Technology Regulator (2008-2010)

Mr Andrew Williams

2008 Australian Agricultural Industries Young Innovators and Scientists award

Dr Imran Malik

Awarded a Japan Society for the Promotion of Science (JSPS) Postdoctoral Fellowship

Sustaining productive agriculture for a growing world

New research projects

TITLE		FUNDING BODY	SUPERVISOR(S)
Does plant phosphorus economy determine ecological status in biodiverse Australian communities?	2009-2011	ARC Discovery Projects	Prof JT Lambers; Dr EJ Veneklaas; Dr KW Dixon
Spatio-temporal analysis of molecular changes during leaf senescence in arabidopsis and wheat and their response to the environment	2009-2011	ARC Discovery Projects	Prof AH Millar; Dr NL Taylor; Dr N O'Toole; Prof P Gardestrom
The connectivity of pore theory — does it influence microbial community composition and function?	2009-2011	ARC Discovery Projects	Dr DV Murphy; Prof RJ Gilkes; Prof AG O'Donnell; Dr E Brodie
Using modelling to optimise the structure and function of crop root systems for dryland agriculture	2009-2011	ARC Discovery Projects	Prof Z Rengel; Prof K Siddique; Dr AJ Diggle; Prof J Lynch
The regulation and role of dual targeted proteins in plant cells	2009-2011	ARC Discovery Projects	Prof JM Whelan
Presumed Guilty: An Economics Analysis of the Efficiency of Environmental Bonds for the WA Mining Sector.	2009-2010	ARC Discovery Projects	Dr B White; Prof DJ Pannell; Dr G Doole
Environmental risk assessment of acid sulfate soil formation and pollutant generation in Swan Coastal Plain	2009 - 2011	ARC Linkage Projects Collaborating/Partner Organisation(s): Water Corporation RPS ALS Laboratory Group	Prof Z Rengel; A/Prof CB Hinz; Dr AW Rate
Phytosphere: new facilities for controlled manipulation of effects of climate change & airborne pollutants on disease epidemiology & plant performance	2009	ARC Linkage, Infrastructure and Equipment Partner Organisations & Collaborating Organisations Murdoch University	Prof JT Lambers; Prof ID Small; Prof JM Whelan; Prof AH Millar; Prof SM Smith; A/Prof M Barbetti; Prof Z Rengel; Prof RP Oliver; Dr TD Colmer; Prof KHM Siddique; A/Prof GE Hardy; Dr EJ Veneklaas; Prof Dr K Sivasithamparam; Dr PM Finnegan; Dr SR Ellwood; A/Prof JA Plummer; Dr M Ryan; Dr G Yan; A/Prof M Tibbett; Dr PS Solomon
A Core Western Australian Cell Sorting Facility — Ultra-Small Objects and Rare Cell Populations	2009	ARC Linkage, Infrastructure and Equipment Partner Organisations & Collaborating Organisations: Murdoch University Edith Cowan University PathWest Laboratory Medicine WA	Prof DD Sampson; Dr JS Croser; A/Prof M Degli-Esposti; Prof SA Dunlop; Prof DJ Hampson; Prof AR Harvey; Dr KA Heel; Dr CM James; Dr C Kahler; Prof SP Klinken; Prof PJ Leedman; Prof BJ Marshall; Prof AH Millar; Dr AR Murch; Dr JK Phillips; Dr PJ Rigby; A/Prof UM Ryan; Prof GA Stewart; Dr PA Stumbles; Prof RC Thompson; A/Prof AM Waite; Prof JM Whelan; Prof GE Wilcox; Prof GC Yeoh; Dr M Ziman
Evaluation of the Harrington Seed Destructor	2009-2011	GRDC	Dr M Walsh; Prof S Powles
Soil surface monitoring for CO ₂ evolution	2008-2009	Chevron Australia Pty Ltd	A/Prof M Tibbett
Investigation of constraints to pasture growth on rehabilitated land	2008-2009	Worsley Alumina Pty Ltd	A/Prof M Tibbett, Dr MH Ryan, A/Prof C Hinz

Sustaining productive agriculture for a growing world

Visitors to Institute of Agriculture

NAME OF THE VISITOR	VISITORS' ORGANISATION AND COUNTRY	HOST DETAILS	DATES
A/Prof Jorg Bohlmann	University of British Columbia	A/Prof Julie Plummer	April 2009
Dr Doug Edmeades	agKnowledge Ltd	Prof Kadambot Siddique	3 March 2009
A/Prof Patrick Tranel	University of Illinois, USA	Prof Kadambot Siddique & Prof Stephen Powles	23-25 March 2009
Dr Chhaya Atri	Punjab Agricultural University	A/Prof Wallace Cowling	Aug 2008-Feb 2009
Dr Alghamdi & Dr S Alhussein	King Saud University (KSU), Saudi Arabia	Prof William Erskine & Professor Kadambot Siddique	8 September 2008
Dr Jos de Kock	Protein Research Trust, South Africa	A/Prof Wallace Cowling	8 September 2008
Dr Ken Street	ICARDA, Syria	Prof C Francis	9-10 September 2008
Dr Colin Hughes	University of Oxford, England	Dr Jon Clements	10-20 September 2008
Prof Ewa Sawicka-Sienkiewicz Dr Renata Galek	Wroclaw University of Environmental & Life Sciences, Poland	Dr Jon Clements	13-26 September 2008
Dr Maria Campos Andrada	National Agriculture Station, Lisbon, Portugal	Dr Jon Clements	14-19 September 2008
Dr Bunyamin Tar'an	Crop Development Centre, Uni. of Saskatchewan, Canada	Prof William Erskine	25 September 2008
Dr Livinder Kaur	Punjab Agric. University, India	Prof Kadambot Siddique	25 September 2008
Dr Dai Sutter	George Weston Technologies A Division of George Weston Foods Ltd., New South Wales	Dr Heather Clarke	29 September 2008
Dr Rudi Dolferus	CSIRO Plant Industry, Canberra	Dr Heather Clarke	6-10 October 2008
Dr Pooran Gaur Dr C.L.L. Gowda Dr Suresh Pande	ICRISAT, India	Prof Kadambot Siddique	17 October 2008
Dr Hasegawa	National Institute for Agro-Environmental Sciences, Japan	Prof Kadambot Siddique	21 October 2008
Dr Rale Gjurić Dr Volker Marwede Dr Janice Cuthbert Dr Olaf Sass	DL Seeds, Canada, and NPZ Lembke, Germany (canola breeding companies)	A/Prof Wallace Cowling	25 October-6 November 2008
Prof Xincal Mr Wei	College of Economics and Management, Lanzhou University	Prof Kadambot Siddique	27-30 October 2008
Mr Steve Waller	Director of the Office of Climate Change in the Western Australian Department of Environment and Conservation	Prof Kadambot Siddique	27 October 2008
Mr Enrique Ruiz Tapia	University of Puno, Peru	Dr Jon Clements	1 November to 15 December 2008
Prof. Mikio Nakazono Dr Katsuhiko Shiono Mr Hirokazu Takahashi	University of Tokyo, Japan	A/Prof Tim Colmer	2-7 November 2008
Prof Rens Voesenek	Utrecht University	A/Prof Tim Colmer	9-16 November 2008
A/Prof RL Ravikumar	University of Agricultural Sciences, Dharwad, India	Dr Heather Clarke	11-13 November 2008
Dr Brian Keating	Agricultural Sustainability Initiative, CSIRO	Prof Kadambot Siddique & Prof Alistar Robertson	18 November 2008
Prof Dyno Keatinge	Director General, AVRDC- The World Vegetable Centre, Taiwan	Prof Kadambot Siddique	11 December 2008

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(October – December 2008)

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Lambers H, Chaplin (III) F, Pons TL. (2008). *Plant Physiological Ecology* Second Edition. Springer Science and Business Media Publication.