

Institute of Agriculture Newsletter



photo: Paul Ricketts

Message from the Chairman, External Advisory Board, Institute of Agriculture



Mr Bruce Piper piperb@bigpond.com

When Professor Alan Robson, Vice Chancellor of UWA, invited me to join the External Advisory Board (EAB) of the IOA, and subsequently be the Chairman, I was delighted to accept the role, mainly because of UWA's regional, national and international relevance and reputation across a range of disciplines, particularly in agricultural and natural resource management education and research. During the past 70 years UWA has made a significant contribution to capacity building in agricultural science and technical knowledge, which has enormously helped the farming community and the industry at large.

Western Australian farmers and the agricultural industry face numerous challenges: weeds, pests, diseases, escalating input costs, decreasing terms of trade, rural social issues and the vagaries of climate change. Low and variable rainfall has made farming, particularly broadacre grain production, difficult in WA during the past few seasons.

A prosperous future in agriculture relies on developing innovative technologies (including bio-technology) and encouraging dedicated people with passion and a vision for the future. UWA's effort in re-establishing the IOA is a major step in revitalising and focusing on future education and research and development in agriculture and natural resource management.

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Lupin-enriched bread can satisfy your appetite.
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Director's column

Professor Kadambot Siddique

ksiddique@fnas.uwa.edu.au

The IOA was officially launched on 30th March 2007 jointly by Hon. Mr Kim Chance WA Minister for Agriculture and Food; Forestry, the Midwest and Wheatbelt and Dr Michael Chaney, AO CITWA, Chancellor, UWA. Professor Alan Robson, AM, Vice Chancellor in his address reinforced UWA's commitment to agriculture and natural resource management teaching and research and intent to maintain its premier position at the regional, national and international levels through IOA activities.

The IOA's External Advisory Board (EAB) under the Chairmanship of Mr Bruce Piper met on the morning of the launch and discussed the structure, programs, governance and operational plan of the Institute. The EAB provided some useful feedback and suggestions on the strategic plan of the Institute. The suggestions will be incorporated and the strategic plan revised by the next EAB meeting on 28th September 2007.

The IOA has moved into its new premises within the Faculty of Natural and Agricultural Sciences buildings. The WA Grower Group Network also operates from the IOA premises.

The IOA Program Team and Executive Group commenced their regular meetings to discuss operational and strategic issues of the Institute. The Animal Production



Systems Program under the leadership of Professor Graeme Martin and Dr Phil Vercoe met twice and discussed future activities. As a result, the IOA's first Industry forum, "Innovations in Animal Production to Meet Consumer Expectations", will be held at UWA on 2nd August involving some 60 representatives invited from industry, growers and the research community. The main objectives of the forum are: to update the latest developments in 'Clean, Green and Ethical' (CGE) systems for animal production; to explore current and future animal production systems: farmer and industry perspectives and to identify future directions in markets and consumer requirements for animal products. The industry forum will be officially opened by Professor Lyn Beazley, WA Chief Scientist.

The Plant Production Systems Program under the leadership of Professor Stephen Powles and Dr Guijun Yan commenced its activities in a workshop involving more than 50 academic staff and researchers (including adjunct and honorary appointees) on 2nd July.

The IOA has issued regular press releases on relevant topics and several stories have been taken up by radio (e.g. ABC county hour) and by the print media. I encourage you to visit our website for more information on the IOA's press releases and other activities. Our next public lecture will be

delivered by Professor Joachim von Braun, Director General of the International Food Policy Research Institute, Washington, USA. Professor von Braun will present a public lecture on "New forces in the world food equation: energy, climate, science and economics". I invite you all to attend this important public lecture.

Our staff have shown outstanding performance in attracting several externally funded research grants, developing international collaboration and producing scientific publications. Professor David Pannell's prestigious Federation Fellowship, "Integrating economics and science for land, water and biodiversity policy", will provide the much needed boost in teaching and research activities in this area at UWA. Recently a number of our staff and students received various awards and honorary positions. The IOA's activities will be further strengthened with the recent appointments of Dr Michael Renton and Mr Graeme Doole (both appointments jointly with CSIRO), and Dr Michael Considine (jointly with Department of Agriculture and Food Western Australia) at UWA. We are also in the process of appointing a new Director for the Centre for Legumes in Mediterranean Agriculture and a Lecturer position in Production Agronomy and Farming Systems (Jointly with the Grains Research and Development Corporation).

I would like to congratulate Professor Alistar Robertson, Dean FNAS on his new appointment as the Pro Vice-Chancellor (Research Initiatives) at UWA. Professor Robertson played a significant role in establishing the IOA and providing strategic directions.

I hope that you will find the articles in this newsletter of interest. The IOA welcomes feedback and contributions to future newsletters. We are particularly keen to hear from growers, industry and the alumni.

UWA Institute of Agriculture canola scientists in China

Rapeseed (canola) is a major industry in China and UWA researchers were there recently to promote collaboration with their Chinese associates in rapeseed breeding, pathology and agronomy. The visit was part of an international project funded by the Australian Centre for International Agricultural Research (ACIAR) and the Grains Research and Development Corporation (GRDC) entitled "Oilseed Brassica Improvement in China, India and Australia". More than 30 collaborators from Australia, China and India met at the leading Chinese rapeseed research laboratory at Huazhong Agricultural University, Wuhan, Hubei Province, in early April.

The UWA delegation to the ACIAR project meeting included Assoc Profs Wallace Cowling and Martin Barbetti, Senior Lecturer Dr Guijun Yan, Research Associate Dr Sheng Chen and Research Fellow Dr Ping Si, from the UWA School of Plant Biology and Centre for Legumes in Mediterranean Agriculture (CLIMA).

One major outcome of the ACIAR/GRDC project has been exchange of Brassica napus and Brassica juncea varieties between Australia, China and India. UWA's Dr Li, Prof Sivasithamparam and Assoc Prof Barbetti have been assessing Chinese rapeseed germplasm for resistance to Sclerotinia, white rust and blackleg diseases and Dr Chen and Assoc Prof Cowling have been assessing genetic distance and uniqueness

of rapeseed germplasm and hybrid vigour in crosses between Australian, Chinese and Indian lines.

It is not widely recognized that 50% of Australia's canola ancestry comes from Asian rapeseed varieties introduced in the late 1960s to Australia. There has already been a big influence of Asian varieties in Australia and this will continue. Chinese scientists have been developing hybrid canola varieties for more than two decades, and China grows more hybrid canola than the total Australian canola crop. Chinese scientists have developed Sclerotinia resistance over many years. We can greatly benefit from collaboration with leading Chinese rapeseed scientists.

Launch of the Institute of Agriculture

Nearly 70 years after it was originally established, the University's Institute of Agriculture (IOA) has been reinvigorated to ensure integration of agricultural and resource management education, training and research at UWA and strengthen collaboration and interaction with the rural community and industry.

More than 200 people from UWA, research institutions and other sectors of the agricultural industry, gathered to celebrate the official re-establishment of the new IOA on March 30, 2007. The day commenced with the inaugural meeting of the External Advisory Board and was followed by the official launch, including the unveiling of a commemorative plaque. The day concluded with a social event at the UWA University Club.

At the launch, UWA's number one agricultural scientist, the Vice-Chancellor, Professor Alan Robson, said the Institute would bring together many of the University's research strengths into one centre and provide a better vehicle for the coordination of University and industry collaborations.

Institute Director, Professor Kadambot Siddique, spoke of the future for agriculture at UWA, saying the Institute vision is to become an internationally recognised scientific research leader, focusing and enhancing the intellectual capacity needed to tackle industry issues in the agricultural sectors at regional, national and international level.

The Institute has been established in partnership with the Schools of Agricultural and Resource Economics, Animal Biology, Earth and Geographical Sciences, Plant



Dr Michael Chaney, Chancellor, UWA and the Hon. Mr Kim Chance, WA Minister for Agriculture, Forestry and Fisheries, unveil the commemorative plaque at the launch of the IOA.

Biology and relevant research centres within the Faculty of Natural and Agricultural Sciences and other Faculties at UWA.

Professor Siddique said strategic approaches for agricultural research and development should target improved technologies for increased and profitable production and sustainable conservation of natural resources.

A highly supportive environment for undergraduate and post-graduate programs, linked to the industry and cross-institutional supervision, was essential to appropriately train future generations of agricultural scientists in Australia. UWA had a major role to play in this regard.



IOA staff Ms Angela Fielder, Personal Assistant, Prof Kadambot Siddique, Director, and Ms Kerry Regan, Communications Officer at the launch.



ACIAR delegates from Australia, China and India at the world's largest dam, Three Gorges, on the Yangtze River.

CLIMA celebrates its past and maps its future

Dr Ping Si pingsi@cyllene.uwa.edu.au

A special forum was held on May 31, 2007 to celebrate past achievements and map future directions for the Centre for Legumes in Mediterranean Agriculture (CLIMA). From July 2007, CLIMA is a UWA Research Centre within the Faculty of Natural and Agricultural Sciences. CLIMA was established in 1992 as a Cooperative Research Centre (CRC) with Department of Agriculture Western Australia (DAFWA), Commonwealth Scientific and Industrial Research Organisation (CSIRO) and Murdoch University as research partners. It became a research alliance in 2001 and finally a UWA Centre in July 2007. The three phases are referred to as CLIMA 1, CLIMA 2 and CLIMA 3.

The celebratory event included a half day forum, release of the 2005-06 biennial research report, CLIMA Board meeting, Industry Advisory Group meeting and a dinner. The forum, titled 'CLIMA: Past, Present and Future', was the highlight. It was chaired by the Dean of the FNAS, Prof Alistar Robertson and opened by Prof Alan Robson, Vice Chancellor of UWA and founding Director of CLIMA, the forum. He recalled that CLIMA 1 was the first CRC at UWA. Prof Robson reiterated UWA's commitment to the business of CLIMA 3.

Researchers from partner organisations presented their CLIMA 2 achievements at the forum. An impressive array of new cultivars of pulses and annual pasture legumes for various environments have been released to the farming community. Future lupin varieties will incorporate the substantial improvement made in



CLIMA 2 achievements were presented at a celebratory forum.

photo: Julia Wilson

lupin germplasm from thin seed coat, better grain quality, greater protein concentrations and herbicide tolerance. A combination of molecular, tissue culture and field screening techniques have been used to improve germplasm, understand adaptation and utilise germplasm resources in lupin, chickpea and pasture species. Retiring CLIMA Director, Prof Neil Turner highlighted research activities that will be continued in CLIMA 3, including the new generation of molecular tools being explored for application in legume breeding. Forum presentations can be viewed and listened to at the CLIMA website (www.clima.uwa.edu.au).

This forum drew together people associated with CLIMA for the past 15 years, including

the five Directors, Prof Alan Robson, Dr John Hamblin, Assoc. Prof Mike Ewing, Prof Kadambot Siddique and Prof Neil Turner. There were about 80 people in attendance from UWA, DAFWA, CSIRO, Murdoch University, Curtin University, Chemistry Centre, Department of Fisheries WA, CLIMA Industry Advisory Group members, Pulse Australia, the Council of Grain Grower Organisation (COGGO) and Grains Research and Development Corporation (GRDC). GRDC Managing Director, Peter Reading, and GRDC Board Chairman, Terry Enright, also attended the forum and dinner. Attendees were impressed with CLIMA 2's achievements, organisation of the forum and the contribution of CLIMA staff for this special day.

Dean of FNAS to take on new position as Pro-Vice Chancellor at UWA



Professor Alistar Robertson has been appointed Pro Vice-Chancellor (Research Initiatives) at UWA. Currently Dean of the Faculty of Natural and Agricultural Sciences (FNAS), he starts his new role in January 2008.

Professor Robertson has been FNAS Dean since 2003 and his vision and leadership has contributed enormously to the Faculty successfully attracting substantial new research income and students (undergraduates and post-graduates), and enhancing its international reputation.

Announcing the appointment, UWA Vice Chancellor Professor Alan Robson, said "As Pro Vice-Chancellor (Research Initiatives), Prof Robertson will act as a focal point externally and internally to foster collaborative research relationships with partners in the private and public sector, particularly in the environment area. He will also work with the Deputy Vice-Chancellor (Research and Innovation) and the Pro Vice-Chancellor (Research and Research Training) to enhance the research performance of the University".

In particular, Prof Robertson will be responsible for early career mentoring, promoting more applications and grants within the ARC Linkage scheme and greater interaction with industry. He will also Chair the Associate Deans of Research Committee to deliver whole-of-University performance improvements.

The position provides great opportunities to build and strengthen the University's research partnerships and develop a whole-of-University approach to ensure research excellence throughout the University.

UWA researcher- a jolly good fellow



Professor David Pannell, School of Agricultural and Resource Economics, UWA, was recently awarded a Federation Fellowship by the Australian Research Council. The Fellowships, offered annually to 20 top researchers working to make advances in fields that will improve the lives of Australians, are considered across all research disciplines, making them very competitive to win and a real honour.

Prof Pannell will be establishing a Centre for Environmental Economics and Policy in the Faculty of Natural and Agricultural Sciences at UWA, which aims to improve environmental policy programs for land, water and biodiversity conservation. Using the resources of the Fellowship,

and other proposals in the pipeline, the Centre will tackle a range of issues that should contribute to this end.

The Centre will also bring other environmental economics research in the School of Agricultural and Resource Economics at UWA (e.g. experimental economics and non-market valuation) under its umbrella, linking strongly to policy processes and providing new opportunities for post-graduate students.

With this new Centre, together with the Risk and Sustainable Management Group at the University of Queensland and the newly announced Commonwealth Environment Research Facilities (CERF) "hub" in environmental economics at the Australian National University, environmental economics in Australian universities looks to be in robust good health.

PhD student from Denmark looks for answers to improve mink production

Dr Dominique Blache

dbla@animals.uwa.edu.au

Maria Fredberg, PhD student from the University of Copenhagen - Denmark, has been visiting the UWA School of Animal Biology for four months. Maria's PhD study is the genetic and hormonal background of the annual reproductive cycle of the mink. Maria's project addresses two problems faced by the mink production in Denmark; 1) mink production follows a fixed annual cycle which is not economically optimal and 2) a high feed cost because not all mink reach maximum liveweight at the same time. Both problems could be solved by shortening the growth period through selection for later time of birth and earlier moulting. To achieve those objectives, Maria came to UWA to measure hormones involved in the control of seasonality of reproduction and metabolism such as melatonin, prolactin, progesterone and leptin. Maria has validated four assays for mink samples and the results will be used towards completing her PhD. During her stay, Maria has also gained professional development experience. In Denmark, she is supervised by Professor Anne-Helene Tauson, recognised worldwide as an endocrinologist in the seasonal breeding and seasonal variation in metabolism. Prof Tauson has been collaborating with Dr Blache for the last five years and Maria is the latest of six students to come to the School of Animal Biology at UWA.



Maria Fredberg, University of Copenhagen, measuring metabolic hormones in the radioimmunoassay lab in the School of Animal Biology.

Clean, Green and Ethical Animal Production workshop in Thailand

Dr Phil Vercoe

pvercoe@cyllene.uwa.edu.au

A very successful international workshop on 'Clean, Green and Ethical (CGE) Animal Production in Thailand' was held on 4th and 5th July in Bangkok.

The workshop was a collaborative initiative led by Dr Dominique Blache (Animal Production Systems Program, UWA Institute of Agriculture (IOA)) and Dr Kobporn Vadhanabhuti (Animal Science, Rajamangala Institute of Technology Thanyaburi). It was funded by The Australia-Thailand Institute, The School of Animal Biology UWA, the IOA at UWA, Rajamangala University of Technology Thanyaburi, and Independent Laboratory Services WA. The aim was to develop the basis of a syllabus that incorporates the CGE concept into the teaching of existing and future animal-related courses in Thai Universities.

The scene was set on the first day with speakers defining the 'CGE' concept, providing case studies in ruminant and pig production in Australia, as well as goat production in Thailand. The Thai perspective was provided by local speakers from Thai universities, The Department of Livestock Development and commercial poultry producers. On the second



Speakers gather at the Clean, Green and Ethical Animal Production workshop in Thailand.

day, the presentations were focused more specifically on animal welfare and ethics and peoples' attitudes towards animals. With this background, the participants then identified the needs for a syllabus incorporating 'CGE' concepts in Animal and Veterinary Science courses in Thailand and workshopped how best to fill the gaps and develop the tools needed for a successful course.

We identified two tiers of needs for CGE in Thailand: the well developed, commercial companies; and the small-holder farmers who are trying to optimise the use of local

feed resources and retain traditional values. Introducing a syllabus to Thai universities that is based on sound 'CGE' principles will satisfy the educational needs for both tiers. It was also recognised that the current syllabus already addresses some 'Clean and Green' aspects but the 'Ethics' component was poorly represented and needed planning and development. A key recommendation from the workshop was that the development of the syllabus be facilitated through the exchange of personnel between institutions in both teaching and research.

Plant Production Systems for the future

Dr Guijan Yan gyan@plants.uwa.edu.au

The Plant Production System (PPS) Program of the Institute of Agriculture, UWA had its first workshop at the Bold Park Ecology Centre on 2nd July. The major aims of the workshop were to gain a better understanding of what we are doing at UWA in relation to PPS, the key issues in plant production in WA and nationally and development of a more coherent UWA plant production teaching, research and delivery to the community. The workshop was attended by more than 50 UWA staff, adjunct/honorary appointees and post-graduate students engaged in production system related research and teaching.

Professor Kadambot Siddique, the Director of the Institute opened the workshop by giving a concise overview of the Institute's objectives and Programs.

Mr Neil Young (Farmer, External Advisory Board Member- Institute of Agriculture and Grains Research and Development Corporation, WA Panel Chair) gave a brief presentation on "Farmers expectation of UWA". He expects UWA to provide sound information, engage with agricultural industry issues and needs and understand system consequences. Neil Young also highlighted that farmers are constrained by lack of funds to invest in future change. They want to maximise profit and wealth. Farmers are aware of the constraints imposed by biophysical environment on their business. He concluded that the challenge for UWA is to be part of the next generation technology development team in order to impact on future agriculture. Neil also advocated UWA to develop closer relationship with farmers and farmer groups.

Professor Stephen Powles, Leader of the



Workshop participants carefully listening to the talk given by Associate Professor Wallace Cowling

PPS Program gave an overview of the WA extensive/broad acre agriculture and Dr Guijun Yan, Deputy Leader of the PPS Program briefly introduced the WA intensive agriculture. The morning session was followed by the overviews of the Western Australian Herbicide Research Initiative by Professor Steve Powles, Future Farms Industries Cooperative Research Centre by Associate Professor Mike Ewing, Canola Breeders WA by Associate Professor Wallace Cowling and the Centre for Legumes in Mediterranean Agriculture by Dr. Jon Clements. The morning session concluded with guest lecture from Dr Richard Richards, Chief Research Scientist of Plant Industry, CSIRO on "Towards higher yielding, more water efficient crops – elements for success". Dr Richards presented a number of examples of excellent scientific research leading to industry outcomes (e.g. drought tolerant wheat varieties using carbon isotope discrimination technique). Dr Richards concluded that elements of success include: passion, focus, collaboration, reality

checks and serendipity.

The afternoon was a breakout session and the participants were divided into four groups. Each group discussed a specific topic on how we can integrate, focus and enhance PPS research, teaching and service to the industry at UWA. The participants highlighted a need for development of broader and longer funded industry focussed research projects, greater flow of information between researchers and the rural community, increased interaction with farmers, better training in communication and grant applications, and greater involvement of undergraduate and post-graduate students in PPS activities.

The workshop concluded with a summary by Professor Steve Powles and he stressed that the group will keep on working towards its theme: "contributing to the development of profitable and sustainable plant production systems for Western Australian agriculture and nationally".

Alumni Profiles

Mr Neil Lantzke

Project Manager, Rewards Group

I completed a Bachelor of Science in Agriculture (Hons) at UWA in 1984. My honours thesis examined the build up of organic matter in sandy soils and was supervised by Prof. Bob Gilkes.

After graduating, I worked as an Adviser with the Department of Agriculture and Food Western Australian (DAFWA) at Three Springs for 18 months. This experience led to a number of years focusing on soil and land capability mapping, firstly in the Margaret River region and then in the Avon Valley and central agricultural region. During this time, I also was involved with a soil and land capability study in Kuwait to identify areas suitable for agricultural production.

I eventually moved back to Perth and worked with horticulturists on



the Swan Coastal Plain to improve their irrigation and fertiliser use efficiency and in 2000 I became manager of the wine grape project at DAFWA. The major research areas included irrigation management and improving the runoff efficiency of roaded catchments on Great Southern vineyards.

Since 2005, I have been employed as a Project Manager for a Managed Investment Scheme company called Rewards Group. My major role is to establish a large mango and low chill stone fruit orchard at Dandaragan, a region not traditionally known for horticultural production. This has provided an excellent opportunity to put into practice much of the knowledge I have gained in research and extension.

I am glad I chose a career in agricultural science - there are good opportunities to travel and the variety of work and job satisfaction is generally high. The training I received at UWA during my undergraduate program has helped me to handle a number of challenges in my professional work environments.

'Seeds of Life' program: Improving food security in East Timor

Adj Professor Harry Nesbitt

h.nesbit@bigpond.net.au



Alex Dalley, Seed of Life-East Timor research advisor (rear right) and farm leader (in front of Alex Dalley) show Philip Young (technical advisor, left), Tony Fischer (ACIAR, right) and Seeds of Life technical personnel seed production of the newly released Nakroma rice.

The 'Seeds of Life' Program, which commenced in 2005, addresses food security issues in the rural areas of East Timor. The major aims are to improve the capacity for East Timor to release and distribute improved varieties of key food crops. Major crops currently being researched are maize, rice, cassava, sweet potato and peanut, although effort is also put into improved pigeon pea and cultivating ancillary crops such as velvet bean.

'Seeds of Life' is a Ministry of Agriculture Forestry and Fisheries (MAFF) program supported by Australia with funding from the Australian Agency for International Development and the Australian Centre for International Agricultural Research. The Australian funding is managed by UWA through the Centre for Legumes in

Mediterranean Agriculture. The current phase of 'Seeds of Life' consolidates the gains made by a previous three year ACIAR Project which ended in 2003.

During the previous phase, improved germplasm imported from crop centres belonging to the Consultative Group on International Agricultural Research (CGIAR) were evaluated on research stations. The best varieties are now being cultivated in farmers' fields with more than 1600 on-farm trials started in the past two seasons. CGIAR centres continue to provide their latest appropriate breeding material for evaluation under East Timor conditions in the search for a wide range of crop variety options.

Yield improvements over locally available crop varieties were impressive in research station trials. Maize yields of modern yellow

maize composites were double those of locals. A similar result was achieved with introduced sweet potatoes. Some modern cassava clone yields were approximately 50% higher than locally grown varieties and newer peanuts had larger seed size. Two years of on-farm trials illustrated that the yield advantage on research stations was also reflected in farmers' fields. Under farm conditions and farmer management practices, the new varieties continued to express their superior yield advantage. In fact the yield advantage of growing the newer varieties was up to 50% greater for rice at low altitudes and 48% greater for peanuts across 168 on-farm trials. Three sweet potato varieties had a yield advantage of 140% over local varieties in on-farm trials.

Farmer taste and acceptability evaluations conducted during field days and from an early adoption survey were quick to point out the advantages and disadvantages of the new crop varieties. Some farmers preferred the milling and storage characteristics of traditional white varieties compared with yellow maize and the newer sweet potatoes grew so large that the soil cracked allowing termites to enter the tubers if not harvested early. Acceptability is high, with most farmers re-planting the crops after harvesting their on-farm trial plots.

In March, 2007 the MAFF formed a Varietal Release Committee, which discussed the results of replicated trials and on-farm testing before releasing seven new varieties. These included two maize, one paddy rice, one peanut and three sweet potato varieties. The challenge now is multiplying sufficient seed and planting material to keep pace with the farmers' high demand.

Dr Simon McKirdy

CEO, CRC for National Plant Biosecurity

I completed a Bachelor of Science in Agriculture at UWA in 1987 and a PhD in 1997. My PhD thesis examined the role of alternative hosts in the survival of seed-borne viruses infecting pasture legumes and lupins and the spread of contact-transmitted viruses in south-west WA and was supervised by Prof. Sivasithamparan.

After graduating in 1987, I worked as a Technical Officer with the Department of Agriculture and Food Western Australian (DAFWA). In 1991 I began the first of several Research Officer roles with DAFWA investigating the impact and management of plant viruses on grain crops.

In June 1996 I became a Senior Research Officer with the Centre



for Legumes in Mediterranean Agriculture (CLIMA), UWA. In 1998 I rejoined DAFWA as a plant pathologist and broadened my skills by working on a range of plant pathogens and numerous horticultural crops, including a role as the Quarantine Plant Pathologist for WA. This role introduced me to the world of plant biosecurity and government policy, both state and national.

In 2002 I moved to Canberra to join Plant Health Australia in a policy/process role. The successful bid to create the CRC for National Plant Biosecurity gave me the opportunity in 2005 to return to research. This is a challenging role involving participants from all around Australia and strong links with international researchers in various countries. One of the strong points with any CRC and one I find satisfying is training the next generation of scientists. It is also positive that UWA is involved in this CRC.

My decision to explore a role in agricultural science has been very rewarding. The different roles have been enjoyable and provided real opportunities to benefit growers.

Role of capacity building, innovative technology development and adoption for the future of agriculture: A farmer's view

Mr Rob Hyde

markhyde@jameson.com.au

I believe a successful agricultural industry should have an all-embracing education and technology capable of leading it to future prosperity and that this starts with a healthy mind that is educated to also pursue the right political decisions.

At every level it is a matter of "training us all sufficiently" in the knowledge that we will not know it all and that we must continue to seek the very best people to assist us in the many areas of our business. Those few years students spend at university must also equip them with the right understanding and attitudes to continue to seek and achieve logical answers.

Unfortunately, farmers too often arrive at crossroads for all family members dependent on their farm because of inadequate planning at the family level. They can often end up in a situation where they must sell and a distribution of assets will not replace the business for even the parents. There is a tragic lack of commercial reality these days and Australian farmers can't continue like this.



Mr Rob Hyde, farmer, Wongan Hills, WA

It's interesting to study how machinery agents have risen from this situation over the last 50 years. They have been guided by the large manufacturers to ensure profitable returns, while faced with the same agriculture vagaries of the weather as the farmers. This is happening with all rural towns, particularly in the area of groceries and, in almost all cases, the size and turnover or specialisation is an obvious factor ensuring viability.

University graduates with excellent technical knowledge and good communication skills are required to demonstrate to growers that turnover and competition are important ingredients towards profitability. Sadly, we have recently received news that the wheat industry is still in total chaos about how to market the crop. Where to from here - who knows?

I believe the greatest opportunities will come from those people between 30 and 60 who are still in rural areas, are still in the industry, started with a University background and have the understanding that access to correct information is the most important of all ingredients, after energy and honesty towards themselves. Just how you get progressive policies into grower bodies controlled largely by people who should be enjoying freedom from management and making use of the workbench in the garage is a challenge for everyone involved in agriculture. UWA's Institute of Agriculture has a significant role in addressing some of the above issues.

Novel plants for livestock production

Dr Phil Vercoe

pvercoe@cyllene.uwa.edu.au

The International Atomic Energy Agency (IAEA) is referred to as the "Atoms for Peace" Agency and was established under the United Nations umbrella of organisations in 1957 to promote safe, secure and peaceful nuclear technologies.

One of the IAEA's six Departments, the Department of Nuclear Sciences and Applications, deals with the application of nuclear technologies in food and agriculture, human health, water resource management and environmental monitoring, research and protection. Within this Department there is a Division coordinating a joint programme with the Food and Agricultural Organisation (FAO) that deals with nuclear techniques in food and agriculture.

I spent last year in the Animal Production and Health Section within the Joint FAO/IAEA Division at Vienna, Austria where the main objective is to "enhance food security by supporting sustainable livestock production systems in developing countries through strategic and applied research, technology transfer and capacity building". They achieve this through a combination of Co-ordinated Research Projects (CRP), which bring together researchers in both

developing and industrialised countries to solve a problem of common interest, and Technical Co-operation Projects (TCP), where there is a transfer of proven technology (often developed in CRP) to Member States.

The main reason I approached the Agency to work at the Joint Division was to organize and coordinate a meeting of experts in the field of screening native plant resources for alternatives to chemicals in livestock production. Through the support and networks of the Animal Production and Health Section I coordinated a meeting titled 'Alternative feed resources: a key to livestock intensification in developing countries'. The meeting was held in cooperation with Writtle College (UK), which hosted the British Society of Animal Science meeting on ethnobotany/ethnoveterinary medicine.

Ten internationally recognised experts in this area attended the meeting where we reviewed the opportunities and challenges associated with in-vitro screening of plants for bioactive properties, using feeding behaviour for developing systems that integrate novel plants and extracts into feeding systems, identifying opportunities

for technical and research projects for increasing the scope of the plant screening activities and developing integrated feeding systems for livestock production that are profitable and environmentally safe.

We now have a global network of researchers interested in standardising screening procedures and taking the opportunity to collaborate on a global scale. The Joint FAO/IAEA remains the key link in this network but provides opportunities for the collaboration to continue.

There were many other positive aspects to my year at the IAEA, not least the exposure of UWA's links into global issues in agriculture, particularly those related to livestock production in developing countries. Many of the issues in livestock production in these developing countries reflect very closely the problems of seasonal fluctuations in the quantity and quality of feed resources we have in Australia and the need to find alternative feed resources and a way to utilise them effectively. For more information about the activities of the Animal Production and Health Section please visit their website:

<http://www-naweb.iaea.org/nafa/aph/topic-animal-health.html>

Kick start for A\$1.9 million Lanzhou University - UWA collaboration

Researchers from UWA's Institute of Agriculture (IOA) visited China's Lanzhou University in May 2007 to commence a newly funded A\$1.9 million collaborative project on "The sustainable development of agricultural systems in dry and cold eco-systems of Loess Plateau". The project's main objective is to train researchers and post-graduate students (capacity building) in the study of environmental characterisation of dry and cold eco-systems, development of improved crop and pasture production technologies and animal husbandry practices and long term strategies to adapt to climate change using west China as a model.

UWA participants in the project, Prof. Kadambot Siddique, Director of IOA, Prof. Neil Turner former Director of CLIMA and Dr Guijun Yan, Senior Lecturer and Deputy Leader of Crop Production Systems Program of IOA, gave eight seminars to more than 300 staff, postgraduates and undergraduates on several topics, including research and management of dryland agriculture and genetics and breeding of dryland crops and pastures. They also visited the Grassland Research Station of Lanzhou University and Yellow River water management system project of Gansu Province.



Dr Guijun Yan, Senior Lecturer and Deputy Leader of Crop Production Systems Program of IOA, Prof. Kadambot Siddique, Director of IOA, Prof. Hui Gan, Vice President of Lanzhou University, Prof. Neil Turner, former Dir. of CLIMA and Prof. Nan Zhibiao, Dean of the College of Pastoral Agricultural Science, when the three UWA staff were made Guest Professors at Lanzhou University.

Prof. Fengmin Li, Director of the National Key laboratory of Arid and Grassland Ecology will visit UWA in late September, 2007 and Prof. Ruijun Long of the same laboratory will have a three month sabbatical visit at UWA later this year. Ten current Masters students were introduced to the delegation and encouraged to apply for UWA International Postgraduate Research Scholarship (IPRS) or special scholarships offered to China's '985' university graduates. A Memorandum of

Understanding between UWA and Lanzhou University was recently signed to reinforce the mutual commitment. To expand and maintain this collaboration, Professors Siddique and Turner and Dr Yan were appointed Honorary Professors of Gansu Academy of Agricultural Sciences, Adjunct Professors of the National Key Laboratory of Arid and Grassland Ecology, and Guest Professors of Lanzhou University.

FNAS Professor appointed Chair of Federal Research Quality Funding Committee

Emeritus Professor David Lindsay, an honorary senior research fellow in the Faculty of Natural and Agricultural Sciences (FNAS), was recently appointed by the Hon. Minister of Education, Ms Julie Bishop, to one of 13 chairs of review panels for the Research Quality Funding exercise, which begins in earnest next year. He chairs the panel responsible for assessing the quality of research into agricultural, veterinary, environmental and food sciences in Australian universities. This, of course, includes a large part of what FNAS is about. However, very strict conflict-of-interest rules will mean that assessment of the FNAS submissions - assuming there are some - will be handled by someone else.

The program, which is being directed by the federal Department of Education, Science and Training (DEST) is in its early stages. The review panels, each comprising 12 eminent scientists, are still being selected from a huge number of nominees. Only the chairs have been announced and the balance will be known in September. While this is going on, DEST is conducting trials in some areas of selected universities to 'iron out' as many potential glitches in the process as possible. Guidelines, specific to individual panels, are being drawn up. Most universities, including UWA, have already begun collating data on publications and research outputs ready for the detailed submissions that will be called for towards the end of 2007, with a deadline of April 2008. The 13 panels will then begin the massive task of evaluating these submissions to assess the quality and impact of the research done in each of the research groups from the universities and will report in late 2008.

The Federal Government plans to use these assessments to apportion a significant proportion of its funding to universities during the following four years, so the RQF exercise is one to be taken seriously and FNAS needs to present its considerable achievements in the best possible light.



Emeritus Professor David Lindsay

Web-based answers for agricultural soil health

Ms Jessica Sheppard

Farmers can better understand their soil health through a new and interactive web-based tool developed through the Avon Catchment Council's Soil Quality monitoring program and being delivered by UWA and Department of Agriculture and Food Western Australia (DAFWA).

Launched in March 2007 by Dr Daniel Murphy, head of the soil biology group at UWA, the site is designed to raise awareness of the health of agricultural soil across the state. It will provide useful information to farmers to aid their management of on farm soil health issues.

The website provides the basis for a database of locally validated and quality assured benchmarks for soil health from approximately 900 paddocks across WA. Soil analysis results are available for 0 to 10cm or to a depth of 30cm depending on the soil parameter being investigated. Farmers can access information about chemical, physical and biological soil parameters in their own area and compare their own soil test results with averages in the region and across the state.

The site can relate soil properties such as soil organic carbon with biological indicators such as microbial biomass and provides a range of fact sheets on the soil quality parameters reported. It also provides tools to assess potential yield, based on rainfall and a calculator to assess potential benefits/ costs of a green manure phase.

Presentations from the WA Soil Health Forum,



Dr Daniel Murphy, UWA and Dr Andrew Wherret, DAFWA are shown the Soil Quality website by designer Jordan Brock.

held in March 2007, are also accessible from the site and cover many relevant topics, including results of long-term soil acidity monitoring, the role of organic matter in soil and inoculant use in Australia.

The Soil Quality website, www.soilquality.org.au, has been developed through a collaborative project delivered by UWA and DAFWA in conjunction with the

Avon Catchment Council, Land and Water Australia, Grains Research and Development Corporation and the South Coast Natural Resource Management Inc. It is a result of investment from the State and Australian Government through the National Action Plan for Salinity and Water Quality. For further information, contact Dr Daniel Murphy at dmurphy@cyllene.uwa.edu.au.

New Appointments at the Institute of Agriculture



Mr Graeme Doole began as a lecturer in the School of Agricultural and Resource Economics (SARE) in February 2007 after recently completing his doctoral thesis. He shifted from New Zealand in

mid-2003 to study for a doctorate at the School of Agricultural Resource Economics, UWA, given its reputation for rigorous applied economic analysis. His thesis investigated the combined value of lucerne pasture for herbicide resistance and water table management in WA dryland agriculture and involved developing and implementing a variety of innovative mathematical modelling

techniques. This analysis was co-supervised by Professor David Pannell and Dr Clinton Revell of the Department of Agriculture and Food (Western Australia) and jointly funded by the Cooperative Research Centre (CRC) for Plant-Based Management of Dryland Salinity and the CRC for Australian Weed Management. Graeme's lecturing position is a dual appointment with CSIRO Sustainable Ecosystems, which has opened up exciting opportunities for collaboration with some of Australia's leading scientists, particularly in the area of farming systems research. Graeme is also the Deputy Leader of the Rural Economy, Policy and Development Program within the Institute of Agriculture. In his spare time, Graeme enjoys watching New Zealand teams win rugby matches (and, hopefully, the World Cup), reading, and snorkelling.



Dr Michael Renton has been appointed to a lecturing position in Plant Biology in the area of Agro-ecology modelling. He will work closely with the WA Herbicide Resistance Institute (WAHRI) on herbicide resistance and weed

population dynamics modelling. For the last two years he has been working with the Department of Agriculture and Food Western Australia on a Weed Cooperative Research Centre project developing a simulation model of weed seedbank population dynamics called the "Weed Seed Wizard". He has also worked as a lecturer in mathematics at UWA and Murdoch in 2005 and completed a post-doctoral research project in constructing stochastic

Lupin-enriched bread can satisfy your appetite

Dr Jonathan Hodgson

jonathan.hodgson@uwa.edu.au

Obesity is now a major public health problem worldwide. Many strategies have been proposed to fight the obesity epidemic and associated health risks. One possible strategy involves understanding the role of dietary components in the control of food intake. Consuming foods that can increase satiety and reduce energy intake and body weight, when included in the diet longer-term, can prevent weight gain and facilitate weight loss.

Available data suggest that dietary protein and fibre are the most satiating nutrients. Foods enriched in protein and/or fibre, replacing energy from carbohydrate, can increase satiety and reduce energy intake. However, approaches to increasing both protein and fibre in the diet may be difficult. Popular low carbohydrate high protein diets tend to have quite low fibre intakes.

A practical approach to increasing protein and fibre content of processed foods is to incorporate high protein and fibre ingredients into high carbohydrate foods. Lupin (*Lupinus angustifolius L.*) grain is one potential source.

Lupin is the major grain legume grown in WA, with an average annual production of about 800,000 tonnes. The grain is mostly exported for animal feed, but applications in human foods are increasing. Flour from the grain (lupin kernel flour - LKF) contains 40 - 45% protein, 25

- 30% fibre, and negligible sugar and starch. It can be incorporated into food products, including bread, at up to 40% wheat flour replacement with little change in product acceptability. This results in increases in protein and fibre content of the food.

Studies were conducted to investigate the acute effects of LKF-enriched bread on satiety and energy intake. These trials, supported by the Department of Agriculture and Food Western Australia (DAFWA), arose from collaboration between researchers at the UWA School of Medicine and Pharmacology, School of Plant Biology and Centre for Legumes in Mediterranean Agriculture (CLIMA).

The study showed that LKF-enriched bread (with 40% wheat flour replacement), compared to white bread, significantly reduced within meal food intake by approximately 30%, food intake at a subsequent meal by approximately 15%, and self-reported hunger post meal. If consumption of LKF-enriched foods had similar effects on energy intake longer-term, such effects would translate into significant weight loss.

These results are exciting in terms of the magnitude of the potential effects on energy intake. However, before LKF-enriched foods can be promoted for weight management, studies are needed to determine if these acute effects translate into reduced energy intake and benefits on weight loss longer-term in overweight individuals. These studies are now underway within the School of Medicine and Pharmacology at UWA.



UWA School of Medicine and Pharmacology PhD student, Ms Ya Ping Lee, enjoying a slice of lupin bread.

simulations of the structural development of apple trees at French National Institute for Agricultural Research, Montpellier, France in 2004. He began his PhD with the Centre for Plant Architecture Informatics in the Advanced Computational Modelling Centre at the University of Queensland in 2000, developing modelling approaches to simulate the influence of environment on plant structural development and physiology. Like Graeme, Michael's lecturing position is a dual appointment with CSIRO Sustainable Ecosystems and offers excellent opportunities for collaborative research and progress in agro-ecological systems. When free from his computer, Michael enjoys watching the Dockers struggle on, teaching and practicing yoga and playing on the swings with his two-year-old daughter.



Dr Mick Considine

has been appointed to a lecturing position in Plant Biology, a position that is co-funded by the Department of Agriculture and Food Western Australia (DAFWA), where he has worked for the past four years. Prior to that, Mick completed an undergraduate in Horticulture and a PhD in Plant Molecular Biology, both at UWA. He continued his research on non-phosphorylating respiration during a post-doctoral stint at The University of Oxford, working on transgenic potatoes. Mick's current research interests centre on redox metabolism, particularly in fruit. Two important applications of his research are preventative healthcare and postharvest

longevity. Mick's current and pending grants include research on the regulation of classical antioxidants, particularly ascorbate and glutathione in table grape; screening novel apple selections from DAFWA's breeding program for high levels of dietary polyphenols and the verification of health benefits with human intervention trials; investigating the cause of an irregular skin-browning disorder in table grape, and; developing DNA fingerprinting for DAFWA's apple breeding program. With the opportunity of his new appointment, Mick intends to strengthen international collaboration with colleagues in the United Kingdom and the United States, as well as attracting WA students into the field of agricultural food research. His contacts at DAFWA should greatly facilitate the latter. Mick will also have a teaching component, initially in Plant Physiology.

Genetically modified crops: Food for thought

“A decade of genetically modified (GM) crops around the world: Future directions”, was the first IOA Food and Agriculture Lecture for 2007. Professor Stephen Powles, from the IOA, UWA and Director of the WA Herbicide Resistance Initiative, highlighted the progress and adoption of GM crops since the first commercial crop of GM soybean was grown in the US in 1996. By 2006, there were 100 million hectares of GM crops, an area five times greater than the total annual cropping area of Australia.

More than 80% of this area has been genetically modified to be resistant to the herbicide glyphosate (more commonly known as Roundup), which is the most widely-used herbicide in the world. The other major gene used in commercial GM crops is the Bt gene, which allows the crop to produce a toxin lethal to the caterpillar stage of insect pests.

The major GM crops include soybean (60 million ha), maize (26 million ha), cotton (15

million ha) and canola (7 million ha). Despite the commonly held belief that there are difficulties in exporting GM products, the major producers of GM crops are also major exporters.

Genetically modified cotton, blue carnations and canola are the only three plant species in Australia which have been approved for commercial production. Currently, 90% of the Australian cotton crop is GM, but there is no GM canola grown due to State moratoria.

Professor Powles emphasised the importance of GM technology in the future, not only for providing input traits to help producers lower production costs, reduce chemical inputs and increase yields, but also for human health benefits. Molecular “pharming” or plant-made pharmaceuticals, such as insulin produced by plants, would be very desirable. Other products such as high carotenoid tomatoes with health benefits, canola with improved nitrogen use efficiency, low caffeine coffee and high



Professor Powles presents highlights of the developments in GM crops to a captive audience. (photo: Brendon Cant and Assoc.).

omega-3 oil in canola and soybean are all possible through genetic modification in the short term.

The future of feeding the world while conserving natural ecosystems is a huge challenge and will need brains and a range of technologies, including GM.

Institute of Agriculture Food and Agriculture Lectures

NEW FORCES IN THE WORLD FOOD EQUATION: ENERGY, CLIMATE, SCIENCE AND ECONOMICS



Prof Joachim von Braun
Director General
International Food Policy Research Institute
Washington, DC, USA

Monday, August 20th, 2007
4.00 – 5.00 pm
General Purpose Building 2 Lecture Theatre (G.16)
Fairway, Entrance No.1, Car Park 18 and 20.

The world food equation is traditionally understood as the balance between supply and demand, i.e. food production, consumption, and changes in stocks. We are used to the fact that on the one hand, economics and innovation are shifting supply and on the other hand, economics and demographics are shifting demand. While these forces change more rapidly in a high growth and high science environment, new forces, such as globalization, climate change, and energy scarcity, including the response with biofuels, have new impacts on the world food equation, on farmers and consumers and, in particular, the poor. This presentation will address the issues of new forces in the world food equation, and outline implications for the research agenda and for appropriate policy with an emphasis on developing countries.

BEHAVIOUR-BASED GRAZING MANAGEMENT FOR ANIMAL HEALTH, ECOSYSTEM DIVERSITY, AND ENTERPRISE SUSTAINABILITY



Professor Fred Provenza
Wildland Resources
Utah State University, U.S.A

Friday, August 24th, 2007
10.00 – 11.30 am
Molecular & Chemical Sciences Lecture Theatre (G.33), UWA
(Fairway, Entrance No. 4, Car Park 14 and 21)

The physical and biological complexity inherent in natural systems increases productivity, species diversity and system stability. Increased diversity also enables individual animals to select diets that meet their needs, thereby enhancing production. While the benefits of choice and biodiversity are obvious for herbivore nutrition and health, much remains to be learned about how to reconstruct agro-ecosystems with plants that complement one another for the benefits of herbivores as well as the well-being of water, soils, plants, and people. The key to designing agro-ecosystems systems is understanding complementarities among different species of plants below and above ground. Plant diversity is important not only for enhancing ecosystem processes, it is also an animal welfare issue.

SUSTAINABLE AGRICULTURAL DEVELOPMENT IN DRY AREAS: ROLE OF THE INTERNATIONAL CENTRE FOR AGRICULTURE IN THE DRY AREAS



Dr Mahmoud Solh
Director General
International Centre for Agriculture in the
Dry Areas (ICARDA), Syria

Friday, August 24th, 2007
4.00 – 5.00 pm
Molecular & Chemical Sciences Lecture Theatre (G.33), UWA
(Fairway, Entrance No. 4, Car Park 14 and 21)

The dry areas occupy some three billion hectares and are home to one-third of the global population—over 1.7 billion people. Characterized by water scarcity, the dry areas are also challenged by high population growth, climatic unreliability, land degradation and desertification, frequent droughts, temperature extremes, and widespread poverty. ICARDA is actively engaged in addressing the problems of agriculture in dry areas. This presentation will address the issues of developing improved technologies that prevent land degradation, conserving water to help improve water-use efficiency on the farm, enhancing productivity of the crop/livestock systems, and crop diversification with horticultural crops.

Enquires: ioa@fnas.uwa.edu.au or 6488 4717

Recognition

Name	Award
Ms Clare Coffey (Animal Science, FNAS)	Winner of AIAST/DAFWA Young Professionals in Agriculture Forum.
Ms Marinda Williman (Animal Biology, FNAS)	Second overall in AIAST/DAFWA Young Professionals in Agriculture Forum .
Mr Trent Smoker (Agricultural and Resource Economics, FNAS)	Third overall and best presentation in AIAST/DAFWA Young Professionals in Agriculture Forum.
Dr Patrick Finnegan (Plant Biology, FNAS)	2006 Excellence in Teaching Award: Individual Teaching.
Dr Erik Veneklaas (Plant Biology, FNAS)	2006 Excellence in Teaching Award: High commendation for post-graduate supervision.
Dr Jo Pluske (Agricultural and Resource Economics, FNAS)	FNAS Teaching Award for Excellence in Supervision of Research Students (Hons or 4th year projects).
Mr Frank D'Emden (Agricultural and Resource Economics, FNAS)	2006 Australian Agriculture and Resource Economics Society masters thesis prize for a study on southern Australian grain growers' adoption of conservation tillage.
Ms Di Mayberry (Animal Biology, FNAS)	CRC Association award for communication of science.
Dr Tony Fischer (External Advisory Board, Institute of Agriculture)	Member (AM) in the General Division of the Order of Australia- For service to agricultural science in Australia and developing countries, particularly wheat research in the areas of grain yield and crop cultivation and management.
Professor Kadambot Siddique (Institute of Agriculture, UWA)	Guest Professor of Lanzhou University ,Honorary Professor of Gansu Academy of Agricultural Sciences , Adjunct Professor of Ministry of Education Key Laboratory of Arid and Grassland Ecology, Lanzhou University.
Professor Neil Turner (Centre for Legumes in Mediterranean Agriculture, FNAS)	Guest Professor of Lanzhou University , Honorary Professor of Gansu Academy of Agricultural Sciences, Adjunct Professor of Ministry of Education Key Laboratory of Arid and Grassland Ecology, Lanzhou University.
Dr Guijun Yan (Plant Biology, FNAS)	Guest Professor of Lanzhou University, Adjunct Professor of Ministry of Education Key Laboratory of Arid and Grassland Ecology, Lanzhou University.

Visitors to Institute of Agriculture

Name of the Visitor	Visitors' organisation and country	Host details	Dates	Host contact Email
Mr Seyyed Md Reza Ehteshami	Tarbiat Modrres University, Iran	Prof. Zed Rengel	Oct 2006 – Aug 2007	zrengel@fnas.uwa.edu.au
Professor Zhao Zhizhong	Hainan Normal University, PR of China	Dr Andrew Rate	Sept 2006 – Sept 2007	Andrew.rate@uwa.edu.au
Pascal Poindron	Laboratoire de Comportement UMR 6175 INRA-CNRS-Université de Tours-Haras Nationaux, Physiologie de la Reproduction et des Comportements, INRA, France	Dr Dominique Blache	Jun 2007 – May 2008	dbla@animals.uwa.edu.au
Dr Aris Junaidi	Faculty of Veterinary Medicine, Gadjah Mada University (Yogyakarta, Indonesia) clean, green and ethical production in small ruminants'. Endeavour Indonesia Research Fellowship.	Prof. Graeme Martin	Mar-Aug 2007	gmartin@fnas.uwa.edu.au
Dr Martin Aiub	University of Buenos Aires, Argentina - Endeavour Fellowship to undertake herbicide resistance research at WAHRI.	Prof. Steve Powles	Aug-Dec 2007	spowles@plants.uwa.edu.au

Visitors to Institute of Agriculture continued

Mr Raul Moreno	Technical Manager for herbicides, Syngenta, Argentina – WA cropping systems and herbicide resistance.	Prof. Steve Powles	15-30 Sept 2007	spowles@plants.uwa.edu.au
Professor Feng-Min Li	Director MOE Key Laboratory of Arid and Grassland Ecology School of Life Sciences Lanzhou University	Prof. Kadambot Siddique and Dr Guijun Yan	22-29 Sept 2007	ksiddique@fnas.uwa.edu.au
Prof. Ruijun Long	College of Pastoral Agriculture Science and Technology Lanzhou University,	Prof. Kadambot Siddique and Dr Phil Vercoe	22 Sept to 31 Dec 2007	ksiddique@fnas.uwa.edu.au
Dr Joachim von Braun	Director General, International Food Policy Research Institute (IFPRI) Washington, DC, USA	Prof. Kadambot Siddique	19-20 Aug 2007	ksiddique@fnas.uwa.edu.au
Dr Mahmoud Solh	Director General, International Centre for Agricultural Research in the Dry Areas (ICARDA) Aleppo, Syria	Prof. Kadambot Siddique	23-24 Aug 2007	ksiddique@fnas.uwa.edu.au

New Research Projects

Title	Funding Body	Supervisor(s)
Conservation and Utilization of Plant and Animal Genetic Resources in Oman (Collaborative project with Sultan Qabos University, Oman)	His Majesties Strategic Fund- Sultan of Oman	UWA component- Professor Kadambot Siddique, Dr Heather Clarke and Dr Fucheng Shan (now with DAFWA)
111 Project: The sustainable development of agricultural systems in dry and cold eco-systems of Loess Plateau (Collaborative project with Lanzhou University, China)	Chinese Ministry of Education (CME)	UWA component- Professor Kadambot Siddique, Professor Neil Turner and Dr Guijun Yan
Eco-geographical and physiological approaches to improve chilling tolerance in chickpea in Australia and India.	Australia-India Strategic Research Fund (AISRF-DEST)	Dr Jens Berger (CSIRO/CLIMA), Dr Heather Clarke (UWA/CLIMA), Dr Michael Robertson (CSIRO), Professor Kadambot Siddique (UWA), Dr Tanveer Khan (DAFWA/CLIMA), Dr Harsh Nayyar (Panjab University, India) and Dr J.S Sandhu (Punjab Agricultural University, India).
Physiological and molecular characterisation of salinity tolerance in chickpea.	ARC-Linkage (COGGO and ICRISAT, India)	Dr TD Colmer (UWA); Prof Dr TJ Flowers (Sussex Uni); Prof K Siddique (UWA); Dr V Vadez (ICRISAT); Dr R Varshney (ICRISAT); Dr PM Gaur (ICRISAT)
A novel method of broad-acre weed seedbank management using a naturally occurring germination stimulant.	ARC-Linkage (Botanic Gardens and Parks Authority)	Prof SB Powles (UWA); Dr KW Dixon (BGPA); Dr DJ Merritt (UWA, BGPA)
Western Australian Herbicide Resistance Initiative Stage III.	GRDC	Prof SB Powles (UWA)
Changing the Ownership-Management Paradigm in Broadacre Farming.	Land and Water Australia	Dr Ross Kingwell (UWA)
Collection, evaluation and selection of purslane as a potential vegetable crop.	RIRDC	Dr Guijun Yan (UWA), Dr Shaofang Wang (Chemistry Centre WA) and Mr Nader Danehlouei pour (UWA)
Fast tracking pea weevil resistance into field pea cultivars through interspecific hybridisation.	ARC-Linkage (DAFWA and Dardin Holdings (Australia) PTY. Ltd – a subsidiary of the Aztech Group Companies)	Dr Guijun Yan (UWA), Dr Tanveer Khan (DAFWA), Dr Darryl Hardie (DAFWA), Dr Oonagh Byrne (UWA)
Nutrient cycling in bauxite residue sand under rehabilitation.	ARC-Linkage (Alcoa World Alumina Australia)	Dr DV Murphy (UWA); Dr PA O'Brien; Dr PL Clode; Dr IR Phillips; Prof D Jones
Susceptibility to <i>Phytophthora cinnamomi</i> and sensitivity to phosphorus in native Australian plants: why are they linked?	ARC-Linkage (Department of Environment and Conservation, Alcoa World Alumina Australia, Worsley Alumina Pty Ltd, Dardin Agri-Holdings (Australia) Pty. Ltd. - a subsidiary of The Aztech Group Companies, Tiwest Pty Ltd, BHP Billiton Ravensthorpe Nickel, Chemistry Centre WA, Western Power)	Prof JT Lambers (UWA), A/Prof GE Hardy (Murdoch Uni), Dr PM Finnegan (UWA), Dr SJ Barker (UWA), A/Prof B Dell (Murdoch), Dr PA O'Brien, Dr M Tibbett (UWA), Dr G Yan (UWA), Dr S Barrett (CALM), Dr IJ Colquhoun (Alcoa), Dr BL Shearer (Murdoch Uni), Mr N Sibbel, Dr MA Smith, Mr Z Spadek

New PhD Students

Name	Topic	School	Supervisor(s)	Funding Body
Mr Samineni Srinivasan	Physiological, genetic and molecular studies on salinity tolerance in Chickpea (<i>Cicer arietinum</i> L).	Plant Biology and CLIMA	Associate Prof. Tim Colmer, Professor Kadambot Siddique, Professor Neil Turner and Dr Pooran Gaur (ICRISAT, India)	Endeavour Fellowship
Mr Jun Ma	Effects of hexaploid wheat chromatin in durum wheat backgrounds on crown rot resistance and other traits of agronomic importance.	Plant Biology	Dr Guijun Yan and Dr Chunji Liu (Plant Industry, CSIRO)	UWA International Post-graduate Research Scholarship

Publications 2007

Refereed journals

- Barbetti MJ (2007) The expression of resistance in subterranean clover (*Trifolium subterraneum*) to races 1 and 2 of *Kabatiella caulivora* is affected by inoculum pressure but not by combinations of the two races. *Australasian Plant Pathology* **36**, 318–324
- Basu PS, Turner NC, Berger JD, Ali M, Siddique KHM, Chaturvedi SK (2007) Osmotic adjustment of chickpea (*Cicer arietinum* L.) is not associated with changes in carbohydrate composition or leaf gas exchange under drought. *Annals of Applied Biology* **151**, 217–225.
- Blache D, Grandison MJ, Masters DG, Dynes R, Blackberry MA, Martin GB (2007) Relationships between metabolic endocrine systems and voluntary feed intake in Merino sheep fed a high salt diet. *Australian Journal of Experimental Agriculture* **47**, 544–550.
- Boersma JG, Buirchell BJ, Sivasithamparam K, Yang H (2007) Development of a sequence-specific PCR marker linked to the Ku gene which removes the vernalization requirement in narrow-leaved lupin. *Plant Breeding* **126**, 306–309.
- Coutts BA, Walsh JA, Jones RAC (2007) Evaluation of resistance to Turnip mosaic virus in Australian *Brassica napus* genotypes. *Australian Journal of Agricultural Research* **58**, 67–74.
- Danehlouei pour N, Yan G, Clarke HJ, Siddique KHM (2007) Diallel analyses reveal the genetic control of resistance to ascochyta blight in diverse chickpea and wild *Cicer* species, *Euphytica* **154**, 195–205.
- George N, Henry D, Yan G and Byrne M (2007) Variability in feed quality between populations of *Acacia saligna* (Labill.) H. Wendl. (Mimosoideae) – implications for domestication. *Animal Feed Science and Technology* **136**, 109–127.
- Kadokawa H, Aikawa K, Kimura K, Blache D, Williams IH, Martin GB (2007) Links between de novo fatty acid synthesis and leptin secretion in bovine adipocytes. *Journal of Veterinary Medical Science* **69**, 225–231.
- Kingwell R, John M (2007) The influence of farm landscape shape on the impact and management of dryland salinity. *Agricultural Water Management* **89**, 29–38.
- Li H, Kuo J, Barbetti MJ, Sivasithamparam K (2007) Differences in the responses of stem tissues of spring-type *Brassica napus* cultivars with polygenic resistance and single dominant gene-based resistance to inoculation with *Leptosphaeria maculans*. *Canadian Journal of Botany* **85**, 191–203.
- Li CX, Sivasithamparam K, Walton G, Salisbury P, Burton W, Banga SS, Banga S, Chattopadhyay C, Kumar A, Singh R, Singh D, Agnohotri A, Liu SY, Li YC, Fu TD, Wang YF, Barbetti MJ (2007) Expression and relationships of resistance to white rust (*Albugo candida*) at cotyledonary, seedling, and flowering stages in *Brassica juncea* germplasm from Australia, China, and India. *Australian Journal of Agricultural Research* **58**, 259–264.
- Llewellyn RS, Lindner RK, Pannell DJ, Powles SB (2007) Herbicide resistance and the adoption of integrated weed management by Western Australian grain growers. *Agricultural Economics* **36**, 123–130.
- O'Keefe DC, Berryman DI, Coutts BA, Jones RAC (2007) Lack of seed coat contamination with Cucumber mosaic virus in lupin permits reliable, large-scale detection of seed transmission in seed samples. *Plant Disease* **91**, 504–508.
- Pedersen BP, Neve P, Andreasen C, Powles SB (2007) Ecological fitness of a glyphosate-resistant *Lolium rigidum* population: Growth and seed production along a competition gradient. *Basic & Applied Ecology* **8**, 258–268.
- Pluske JR, Durmic Z, Payne HG, Mansfield J, Mullan BP, Hampson DJ, Vercoe PE (2007) Microbial diversity in the large intestine of pigs born and reared in different environments. *Livestock Science* **108**, 113–116.
- Reboud X, Majerus, N Gasquez, J Powles, SB (2007) *Chlamydomonas reinhardtii* as a model system for pro-active herbicide resistance evolution research. *Biological Journal of the Linnean Society*. **91**, 257–266.
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- Shu LZ, Shen JB, Rengel Z, Tang CX, Zhang FS, Cawthray GR (2007) Formation of cluster roots and citrate exudation by *Lupinus albus* in response to localized application of different phosphorus sources. *Plant Science*. **172**, 1017–1024.

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- Walsh MJ, Powles SB (2007) Management strategies for herbicide-resistant weed populations in Australian dryland crop-production systems. *Weed Technology*, **21**, 332–338.
- Williams MG, Magarey PA, Sivasithamparam K (2007) Effect of temperature and light intensity on early infection behaviour of a Western Australian isolate of *Plasmopara viticola*, the downy mildew pathogen of grapevine. *Australasian Plant Pathology* **36**, 325–331
- Yu Q, Cairns A, Powles SB (2007) Glyphosate, paraquat and ACCase multiple herbicide resistance in a *Lolium rigidum* biotype. *Planta* **225**, 499–513.
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Book chapters

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Meetings and Events

UWA EXPO, University of Western Australia

19 August, 2007 www.expo.uwa.edu.au/uwa_expo_2007

Food and Agriculture Public Lecture, University of Western Australia
New forces in the world food equation: Energy, climate, science, and economics. Prof Joachim Von Braun

20 August, 2007 Email: ioa@fnas.uwa.edu.au

Food and Agriculture Public Lecture, University of Western Australia
Behaviour-based grazing management for animal health, ecosystem diversity, and enterprise sustainability. Prof Fred Provenza

24 August, 2007 Email: ioa@fnas.uwa.edu.au

Food and Agriculture Public Lecture, University of Western Australia
Sustainable agricultural development in dry areas: Role of the International Centre for Agriculture in the Dry Areas.
Dr Mahmoud Solh

24 August, 2007 Email: ioa@fnas.uwa.edu.au

The 13th Australian Barley Technical Symposium, Esplanade Hotel, Fremantle, Western Australia

26-30 August, 2007 Email: michelle@promaco.com.au

Dowerin Field Day, Dowerin, Western Australia

29 - 30 August, 2007 www.dowerinfielddays.com.au

WANTFA Spring Field Day, Meckering, Western Australia

11 September www.wantfa.com.au

Frontiers in Agriculture: Post-Graduate Show-Case, UWA

12 September Email: ioa@fnas.uwa.edu.au

Fifteenth Biennial Australian Research Assembly on Brassicas (ARAB) Conference, Geraldton, Western Australia

10-14 September, 2007 msanders@agric.uwa.edu.au

21st Asian-Pacific Weed Science Society (APWSS), Colombo, Sri Lanka

2 - 6 October 2007 www.apwss21.lk

10th International Plant Virus Epidemiology Symposium, Hyderabad, India

15-19 October, 007 www.IPVE2007.net

Understanding, Describing and Classifying Soil, University of Western Australia

29-30 October, 2007 www.clr.uwa.edu.au

6th European Grain Legumes Conference, Lisbon, Portugal

12-16 November, 2007 www.eugrainlegumes.org

2nd International Salinity Forum, Adelaide, South Australia

31 March – 3 April, 2008 www.internationalsalinityforum.org

5th International Crop Science Congress 2008, Jeju, Korea

13-18 April, 2008 www.cropscience2008.com

12th International Lupin Conference, Fremantle, Western Australia

14-18 September, 2008 Email: conference@lupins.org

14th Australian Agronomy Conference, Adelaide Convention Centre, South Australia

20 - 24 September 2008 Email: esther@estherprice.com.au

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Editor:

Kerry Regan kregan@fnas.uwa.edu.au

Institute of Agriculture

The University of Western Australia
MDG M082
35 Stirling Highway
Crawley, WA, 6009
Australia

Tel: +61 (08) 6488 4717

Fax: +61 (08) 6488 7354

Email: ioa@fnas.uwa.edu.au

Web: www.ioa.uwa.edu.au



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