INDUSTRY ADVISORY GROUP VIEWS CLIMA ACTIVITIES AT UWA

CLIMA IAG members with Dr Ping Si demonstrating some of the legume research being done at UWA’s Shenton Park Field Station

by Dr Debbie Thackray

CLIMA’s Industry Advisory Group (IAG) met at the University of Western Australia’s Shenton Park Field Station on November 3rd, to review grain and pasture legume industry needs, and R&D planning.

Over the last few years, the biannual meetings have been held on a rotational basis at facilities run by each of the CLIMA alliance partners, it being the turn of UWA this time.

After the meeting, members saw presentations on two CLIMA projects being done at UWA and then took a tour of some of CLIMA’s research activities at the site, done on small plots or in shade houses.

Project work viewed included:

- Improved herbicide tolerance for pulses in the Western region.
- Alternative oilseeds for Australian Farmers and Industry.
- An international collaboration to develop interspecific hybrids between chickpea and its wild relatives.
- *Lupinus mutabilis* (pearl lupin) breeding and interspecific crossing among crop lupin species.
- Characterization and evaluation of the national lupin collection to accelerate lupin improvement.

CLIMA SEMINAR SERIES 2007

Please contact: Debbie Thackray
djthack@clima.uwa.edu.au
to suggest topics and speakers for 2007. In particular we value the earliest possible advice of seminars offered by visitors during 2007.
FROM THE DIRECTOR

Professor Neil Turner
ncturner@clima.uwa.edu.au

As announced in the last CLIMA Newsletter, I accepted the position of Director of CLIMA from 1 August when Professor Siddique took up the position of Director of the Institute of Agriculture at the University of Western Australia.

Personally, it has been a busy first four months as I had previously agreed to undertake a number of other tasks during this period, assuming that I would be retired! Nevertheless, it has been an enjoyable time as I have become more familiar with the day-to-day workings of CLIMA and the alliance partners, and we have continued to further our research agenda and to interact with industry.

One enjoyable experience was participation in my first CLIMA Industry Advisory Group meeting, held at UWA’s field station at Shenton Park. I was encouraged by the high level of support for CLIMA by the industry representatives and the advice that they were able to bring to the table. They were also very supportive of the research that they saw and heard about at the field station and were eager to take up new products in the pipeline.

CLIMA has had visits from a number of industry groups this spring, including farmer groups from South Australia and Western Australia and representatives of the Protein Research Foundation that provide research support for the development and utilization of oilseed and pulse crops in South Africa. It was interesting to learn that South African farmers use lupin cultivars developed in Western Australia and were looking to Australia for oilseed cultivars.

One of the projects managed by CLIMA for ACIAR and AusAid is the Seeds of Life project in East Timor that aims to re-establish and re-invigorate agriculture in East Timor. Two groups associated with the project visited CLIMA in September and this may lead to further training of staff in Perth.

Discussions continue within the CLIMA Board and amongst alliance partners on CLIMA’s future direction. While I am not involved in these, I did endorse a request from the Program Management Team to hold a forum for CLIMA staff and research associates to present their views on the strengths and weaknesses of the CLIMA alliance and its involvement in Agricultural Research Western Australia (ARWA), the alliance between the Department of Agriculture and Food, The University of Western Australia, Curtin University of Technology, Murdoch University and CSIRO. The forum was ably facilitated by Kevin Goss (CRC Salinity) and a range of views were expressed, but not debated, by participants from the partner organisations. These views have been passed on to the Board of CLIMA.

CLIMA’s Program Management Team has allocated nearly $90,000 core funds for grain and pasture legume research activities in 2006-07 that will benefit the legume industries. I would like to congratulate all successful applicants.

Recent newspaper reports suggest that the drought in Australia is possibly a one in a thousand year occurrence (how this is calculated is not clear!). It certainly is clear that crop production will be severely reduced. In early November, I was in western Victoria where cereal crops usually yield 4 t/ha or higher, but this year they were baling the crops for hay as the heads had failed to fully emerge, no rain was forecast and feed for livestock is at a premium. This will probably have an impact on funding over the next few years as GRDC and COGGO will have less money for research projects.

In October, I was in the United Kingdom which had its driest and warmest May to September since records began in 1629.

Congratualtions to Oonagh Byrne, Tanveer Khan, Darryl Hardie, Kadambot Siddique and Guijun Yan on their success in obtaining an ARC Linkage grant with DAFWA as a partner on “Fast tracking pea weevil resistance into field pea cultivars through interspecific hybridisation”. This follows on from Oonagh’s PhD research.

I am also grateful to Dr Jens Berger for organizing a meeting on ‘Agro-ecological Adaptation’ that brought together research by CLIMA and its partners on lupins, from germplasm enhancement, molecular characterization and ecophysiological adaptation to breeding. This was a good example of the strength of CLIMA in bridging disciplines and bringing together knowledge from a range of perspectives which I am sure will lead to new research opportunities.

Climate change and the need to reduce greenhouse gas emissions dominated the press. Water shortage in urban Australia has also ignited such discussions. As a member of the Advisory Board of an EU project to determine the carbon budget for the whole of Europe, in November I attended a conference on ‘The Greenhouse Gas Cycle in the Northern Hemisphere’. Greenhouse gas emissions have risen alarmingly since 2000, and the oceans appear to be saturating in their ability to absorb carbon dioxide. In addition, the 2003 drought in some parts of Europe converted the forests from sinks to sources of carbon.

This Newsletter comes with my best wishes for a happy, safe and relaxed holiday season. I hope to catch up with many readers of the Newsletter at the CLIMA Christmas Party.

Volume 7, No.3 December 2006
In June/July 2006, I travelled through Europe to visit a host of researchers from across the continent, involved in inter-specific hybridisation of Lupinus. My first stop was in London to meet Dr Viswambharan Sarasan, the director of the micro-propagation laboratory at the Royal Botanic Gardens, Kew. Their conservation programs include bryophytes, ferns, carnivorous plants, woody plants and orchids, as well as collaborative work with Kings Park Plant Sciences Division on the Millenium Seed Bank project, most of which is housed at Wakehurst, with some seeds stored at Kew.

On leaving London, I met up with Dr Jon Clements (CLIMA & DAFWA) and Dr Kedar Adhikari (DAFWA), in Lisbon, Portugal. They had been collecting wild lupins in northern and western Portugal and along the Spanish border, with Dr Eliseu Bettencourt, the germplasm curator from the National Agriculture Station in Oeiras. Over 200 accessions had been collected. We also met with the director Prof. Antonio Mexia, Dr Manuella Pelloso (Head of Agronomy) and Prof. Jual Neves-Martins (Professor of Plant Physiology at Lisbon University). The biggest surprise of all was meeting Dr Maria da Paz, yellow lupin breeder, whom we discovered had done her Ph.D. on doubled-haploidy of lupins. After an extensive chat about anther culture, microscope culture and medium components she gave me a copy of her thesis, which I carried all the way around Europe in my backpack!

Next, Dr Clements and I travelled to Rostock, Germany, near the Baltic sea. We met with Prof. Eicke Rudloff and Dr Karin Sontaag at the Institute of Agricultural Crops in Gross Lüsewitz, who have been working on lupin breeding for about 2 years, focussing on interspecific hybridisation and mutation breeding. Dr Sontaag produces somatic hybrids by protoplast fusion, via a callus phase, as well as wide hybrids via embryo rescue. Their controlled tissue culture laboratory, environment rooms, phytotrons, glasshouse facilities and field trials were impressive!

Our next stop was Poznan Polan, in Poland. We spent the day at the Institute of Plant Genetics in the Polish Academy of Science with Prof. Bogdan Wolko and Dr Barbara Naganoski. This group collaborates with many people in Western Australia, including Dr Martin Barbetti (UWA), Dr Matthew Nelson (UWA) and Dr Mike Jones (SABC). I met with the embryology and tissue culture group, who were very friendly and provided useful papers, in English, on haploid production in cereals (Triticale, wheat, rye & oats). We also visited two field stations outside Poznan.

In Wroclaw (Warsaw), Poland, we met with Prof. Ewa Sawicka-Sienkiewicz and Dr Renata Galek at the University of Wroclaw, in their brand new building. They have been working on developing the Andean lupin (Lupinus mutabilis) as a crop species and have been collaborating with Dr Clements for over three years. Some of their tissue culture research includes anther culture, immature microspore culture and interspecific hybridisation/embryo rescue with plants from first crosses in F9 and F10. They are also looking for primers for hybrid confirmation.

So after a two week tour of tissue culture laboratories and field stations hunting lupins, I returned to Australia full of ideas and enthusiasm to put towards our GRDC-funded interspecific hybridisation in lupin project!
GOING INTERNATIONAL WITH IPGRI AND GCP

In June 2005, I attended a workshop with 23 other successful applicants on “Writing Quality Project Proposals for International Funding Bodies” in Kuala Lumpur, Malaysia, with my travel funded through the Generation Challenge Program (GCP) and the International Plant Genetic Resources Institute (IPGRI). Attendence at the workshop and discussions linked CLIMA with an international network of elite researchers from developed and developing countries, with a focus on molecular marker technologies and genetic research in crops, and our involvement in IPGRI and GCP keeps us abreast of current research and industry trends in this area.

The workshop dealt with the basics for a successful proposal, participatory planning, key elements of any concept note, fund raising and international donors, and specific guidelines for the GCP proposals. Participants developed short concept notes and identified appropriate partnerships, whilst Intellectual Property issues were also thoroughly discussed. I took a draft proposal on “Using molecular markers to screen genetic diversity in subclover” to work on and also reported on our current work on the *Trifolium spumosum* L. core collection with Mr Richard Snowball (DAFWA).

Presentations and discussions included molecular markers, QTL mapping, and combined molecular and non-molecular methods. Especially fruitful were discussions with Professor Zhi-Kang Li, Chief Scientist from the National Key Facility for Crop Gene Resources and Genetic Improvement, Chinese Academy of Agricultural Sciences and Dr Carmen de Vicente, leader of subprogram 5 from the GCP.

Following this workshop, I was invited by the GCP to participate in another workshop/mini-symposium, “Molecular markers for allele mining”, as one of seven international observers evaluating progress reports of the GCP’s research projects. The others were: Dr Ajay Parida (Programme Director, MSSRF, India), Professor Andreas Graner (Curator, Genebank, Institute of Plant Genetics and Crop Plant Research, Gatersleben, Germany), Dr Francois Balfourier (INRA, France), Dr Campbell Davidson (Secretary of the Canada Committee on Crops), Mr Kyung-Ho Ma (Research Fellow, Genetic Resources Center, IRRI, the Philippines), and Dr Gael Pressoir (Post-doctorate Associate, Institute for Genomic Diversity, Cornell University).

Under discussion were the use of molecular markers in germplasm improvement, genetics and genomics in plant breeding, and data analysis and available software. Attendance brought increased familiarity with GCP goals, updates on individual activities, and understanding of the mutual coordination of activities between the GCP and national projects. Suggestions for future development of national R&D activities and identification of potential partners were also covered. I presented a talk in this workshop, which with other presented work has been published by IPGRI.

There is significant interest in the techniques and methodology used in our CLIMA core collection development project on *T. spumosum* (GRDC project: UWA00005) and as a result I have been asked to collaborate with IPGRI in a project entitled “A case study on developing core collections & allele mining sets using ‘PowerCore’ software for supporting germplasm activities of international institutes”. Anyone interested in sharing their data with IPGRI researchers in this project, is welcome. I have also been asked to review a learning module on plant genetic diversity, as a consultant to the GCP, before its translation and publication in several languages.

Dr de Vicente will visit Perth in 2007, following an invitation from Richard Snowball and myself, to discuss collaboration in the ARC project LP0669766 with the project team (Professor Rudi Appels, Drs Megan Ryan and Phil Nichols, Mr Richard Snowball, and Dr Kioumars Ghamkhar). During her visit, she will present a talk about the GCP’s structure and goals and one on one meetings may also be possible. Please contact me kioumars@cyllene.uwa.edu.au or Richard Snowball rsnowball@agric.wa.gov.au for further details.

5 CLIMA Directors snapped!

All five CLIMA directors, past and present, were snapped by Lindy Brophy (UWA) at the August celebration of Professor Kadambot Siddique’s new appointment as Chair of Agriculture and Director of the UWA Institute of Agriculture. The Minister for Agriculture and Food, Kim Chance, launched the revitalised Institute attended by the Vice-Chancellor, Professor Alan Robson and other researchers and members of the agriculture industry. From left: Associate Prof. Mike Ewing, Prof. Alan Robson, Adjunct Prof. John Hamblin, Prof. Kadambot Siddique, Prof. Neil Turner.
AN OPEN LETTER TO THE GRAINS INDUSTRY
FROM TERRY ENRIGHT, BOARD CHAIRMAN, GRDC

DROUGHT IMPLICATIONS FOR GRAINS R&D

Australia is experiencing one of the worst droughts in our recorded history. With the exception of small areas in central Queensland, northern New South Wales and southern Western Australia, the whole of the grain belt is affected.

The effects of this drought will be devastating on growers and their families, and on support industries along the supply and value chains. Many grain-growing regions are also feeling the cumulative effect of previous drought years.

It is a time that will test us all, but as we manage our way through the coming months we must do so with an eye to the future. This is a time when R&D is needed more than ever to ensure our industry emerges in as strong a recovery position as possible.

Consequently, the Grains Research and Development Corporation is undertaking a number of carefully measured steps to limit the drought’s impact on the research programs that remain vital to our future.

Because the drought is having such a significant impact on crop production, the GRDC’s levy income will decline sharply. Forecast higher prices will have only a limited positive impact.

Over the years the GRDC has prudently managed its financial reserves and this will help us buffer some, but not all, of the impact.

At a recent meeting of the GRDC Board, the following actions were agreed to:

- a change in the GRDC’s Reserves Policy from the current range of 50 to 75 per cent of the following year’s financial commitment to a lower range of between 40 and 70 per cent;
- implement reductions of $800,000 in the 2006-07 administration expenses; and
- target reductions in the 2006-07 approved R&D budget and 2007-08 planned R&D budget.

The Board has directed that where at all possible the effects on current R&D capacity and R&D programs be minimised. The GRDC will work closely with its stakeholders and research partners, and with growers through our regional panels, to discuss collaboratively areas where savings can be made and how they will be implemented.

The GRDC looks forward to working closely with the whole industry during this very difficult time, and we remain confident that through our combined efforts we will come out of this drought with an R&D capability that is strong, focused and equipped to continue the work of making our industry more resilient when faced with climate challenges such as the one we are all now experiencing.

Yours sincerely

Terry Enright
CHAIRMAN
DOUBLED HAPLOID TECHNOLOGY FOR FIELD PEA AND CHICKPEA

An ARC Linkage Project (LP0562111), with the Council of Grain Growers Organisation (COGGO) as the industry partner, aims to accelerate the genetic improvement of grain legumes for Australia by gaining a fundamental understanding of haploid embryogenesis in the grain legumes field pea and chickpea. The information will be used to develop in vitro protocols for the routine production of doubled haploid plants in these species, which can be passed on to the national breeding programs and used to markedly decrease the time involved in developing new pulse varieties for farmers.

Haploid plants are produced from the male or female gametes of the plant, most commonly the immature pollen or microspores, via either intact anther culture or isolated microspore culture. As they arise without fertilisation, these haploid plants have half the genetic complement of a diploid plant. After chemical doubling of their chromosome complement they become ‘doubled haploid’ (DH) and instantly homozygous. The development of homozygosity in a single generation using DH technology accelerates breeding by three to four years compared to conventional breeding methods. DH’s are produced in many of the major food crops (rice, barley, wheat, canola etc.) to accelerate breeding, however the grain legumes have proven recalcitrant to attempts to develop haploid plants.

To date, we have been successful in developing early stage haploid embryos from isolated microspores (immature pollen) across a range of chickpea genotypes and from one field pea genotype. The parameters to induce the in vitro switch from gametophytic to sporophytic development have been identified for these genotypes. These parameters include donor plant growing conditions, microspore developmental stage at harvest, stress pre-treatment, microspore isolation protocol, culture medium composition and culture conditions. We have also had success in the development of plantlets from the in vitro culture of chickpea anthers. The ploidy level of these plantlets has been identified as diploid or tetraploid and as yet no haploid plants have been returned.

Our future research will focus on ascertaining the timing of cessation of embryo development from the isolated microspore cultures, using high-end microscopy techniques. We will also adopt novel techniques, such as electroporation, to stimulate embryo development in vitro. We anticipate development of haploid plantlets from the target species within the next year. We will then focus on improving the number of plantlets returned and the range of genotypes from which haploid plants can be developed.

NEW FACES

CLIMA is pleased to welcome a new member of staff, Ms Kylie Edwards. Kylie has experience with a range of agricultural crops, predominantly wheat and canola. Since 2001, she has worked with Canola Breeders Western Australia (CBWA) where she was responsible for the doubled haploid canola program from chromosome doubling to ensuring pure seed production. She is currently finalising a Diploma of Environmental Science and Management.

Kylie is taking up a position as Research Technician within the legume doubled haploid research program. The legume doubled haploid research is funded by an ARC Linkage Project with COGGO and DAFWA as the Industry partners (LP0562111). Dr Kayley Usher is also working on the team for the moment.

Welcome Kylie and Kayley!
Passports, morphology, and molecular data – these have all been used in a multidisciplinary approach funded by GRDC to establish a protocol for screening the diversity of an annual pasture legume collection. *Trifolium spumosum* L. (bladder clover) was the species studied, with 80% of the existing 398 accessions of bladder clover having near complete passport data.

Plant germplasm collections are important reservoirs of diversity for plant breeders. Knowledge of genetic diversity among and within germplasm accessions helps the breeders to utilise them more efficiently, ultimately leading to better adapted varieties being delivered to farmers more quickly. The response time for developing varieties with resistance to new weed, pest or disease pressures could also be shortened.

To study diversity in bladder clover we developed a stepwise core collection getting the most out of the diversity present amongst a Mediterranean set of 320 accessions. The core collection was derived from ecogeographical data at the first step (figure 1) and molecular (AFLP) data at the second one (figure 2), and was shown to successfully capture the molecular as well as the morphological diversity. Eight AFLP primer pairs (using G5 dye set) and five individual plants from each accession were used for DNA fingerprinting.

The core will be provided for use and further detailed screening by breeders and the germplasm manager at the Australian Trifolium Genetic Resource Centre (ATGRC). It provides a key resource for genetic variation studies and their functional consequences in *Trifolium*.

More species can be studied using this approach in order to provide a coherent framework for carrying out diversity assessments, including microsatellite and single nucleotide polymorphism (SNP) studies and phenotyping, and allowing the utilisation of genetic variation for the study of important traits.

Building on this work, an ARC-Linkage project is investigating genetic diversity and linkages between molecular data and morphological traits in *Trifolium subterraneum* L. (subterranean clover), with support from DAFWA as the industry partner and Professor Rudi Appels (Murdoch University) and Dr Megan Ryan (UWA School of Plant Biology) as the Chief Investigators. Dr Phil Nichols and Mr Richard Snowball are the partner investigators from DAFWA and Dr Kioumars Ghamkhar (UWA) is the Research Fellow.
FROM COLLECTION TO CHARACTERIZATION AND BREEDING - FROM A LUPIN PERSPECTIVE

Dr Jens Berger

In August CLIMA held a meeting of the GL3 Sub-Program to look at Agro-ecological adaptation and discuss its application to lupin breeding. Thirty-four researchers from the CLIMA alliance institutes attended.

The aim of the gathering was to present Western Australian research on lupin as a model approach to studying agro-ecological adaptation for other species.

The meeting was open to anyone with an interest in agro-ecological adaptation, regardless of whether they work with crops, pastures or native plants, and used as a springboard to discuss future project opportunities.

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<td>1. Collection from the wild.</td>
<td>Jon Clements (UWA &amp; DAFWA) Kedar Adhikari (DAFWA)</td>
<td>Description of a recent lupin collection trip to Portugal</td>
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<td>2. Habitat characterization</td>
<td>Jens Berger (CSIRO)</td>
<td>How the lupin database was “ground-truthed” with GIS techniques and Google Earth, and climate data from a variety of sources extracted for each collection site, in order to characterize the habitat range represented in the collection.</td>
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<td>3. Molecular characterization</td>
<td>Fucheng Shan (UWA)</td>
<td>How the L. angustifolius collection was characterized using DART marker technology, and how this was used to define a new, unbiased core collection.</td>
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<td>4. Germplasm characterization</td>
<td>Jairo Palta (CSIRO)</td>
<td>Results from glasshouse evaluation of a core collection of lupin accessions and historical lupin cultivars, and the concept of targeting cultivar and environment evaluation using G*E.</td>
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<tr>
<td>5. Putting it all together-the breeding perspective</td>
<td>Kedar Adhikari (DAFWA) Bevan Buirchell (DAFWA)</td>
<td>How breeders exploit their knowledge of species’ biology, based on the approaches outlined above, to breed new, better-adapted varieties.</td>
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WANTFA MEETINGS 2007

by Ms Kim Lord, WANTFA

Monday 19th February
WANTFA Conference (Perth) “Smart farming: making the most of moisture.”

Saturday 24th February
WANTFA Conference (Esperance)

Tuesday 3rd July
WANTFA Post-seeding Field Walk (Meckering)

Tuesday 11th September
WANTFA Spring Field Day (Meckering)
For more information log on to www.wantfa.com.au or ‘phone 96223395.
INDUSTRY GROUPS TOUR CLIMA

During September and October, visits by five industry groups were hosted by CLIMA. The visitors were from the Pulse Association of the South East, the Lower Eyre Agricultural Development Association, the South African Protein Research Foundation, the East Timor Seeds of Life project, and the Ningham Farm Focus Group. Also, on the 15th September the Minister for Agriculture and Food, Hon Kim Chance visited UWA’s Shenton Park field station to view various agricultural research activities including CLIMA projects.

Prof. Neil Turner or Dr Debbie Thackray provided an overview of CLIMA – it’s structure, mission, research and development, and extension activities, followed by a tour of various field, laboratory and glasshouse research work, targeted to the particular interests of the visitors. Some of the itineraries we put together included visits to CSIRO, DAFWA and UWA Shenton Park.

Very many thanks to all the researchers who gave up their time to enthusiastically describe their projects and the relevance of the project outcomes to the groups listening. We fielded lots of questions and received many compliments!

The LEADA (Lower Eyre Agricultural Development Association) group spent a day at UWA including a tour of CLIMA work at Crawley and at Shenton Park. ICARDA visitors to CLIMA Dr Bassam Bayaa and Dr Mathew Abang joined in part of the tour.

Minister Kim Chance chats with CLIMA researchers Ms Margaret Campbell and Prof. Clive Francis during his visit to Shenton Park.

WHAT’S NEW ON CLIMA’S WEBSITE

- **CLIMA 2006 Industry Forum “Grow your Nitrogen don’t buy it?”**  
  – audio and visual recordings and an overview of the event  
  http://www.clima.uwa.edu.au/seminars/workshops_and_forums

- **New CLIMA/ DAFWA pasture varieties**  
  http://www.clima.uwa.edu.au/research/pastures/cultivars

- **CLIMA newsletter December 2006**  
  http://www.clima.uwa.edu.au/newsletter

- **Botrytis Grey Mould newsletter 2006 volume 5 Number 1**  

- **Press releases since the last newsletter**  
  “Change of Guard at CLIMA” (August)  
  “Genetic secrets begin to flower” (September)  

- **Updates to Grower Group Alliance events calendar**  
  www.clima.uwa.edu.au/links

- **Meetings Diary** – updated for December 2006  
  www.clima.uwa.edu.au/links

- **Seminar series**  
  http://www.clima.uwa.edu.au/seminars
UWA EXPO 2006

CLIMA staff put on a fine display at the University of Western Australia’s EXPO 2006. The University’s focus was on undergraduate recruitment, specifically courses and careers. The CLIMA stand was coordinated by Dr Jon Clements and formed part of the “Plants” display within the Faculty of Natural and Agricultural Science’s area. On display were a range of crop and pasture legume plants, seeds, disease and pest examples and literature to take away.

Dr Julia Wilson put together a ‘careers’ poster “Passionate pulse and pasture legume people” featuring a number of CLIMA alliance researchers and indicating their academic qualifications and current career title.

CLIMA researchers manned the stand to discuss career options with potential students and their families. And a “Guess the legume seed” competition put together by Mr John Quealy provided some entertainment and some embarrassment amongst some of the “experts” present!

Many thanks to all the CLIMA folk for their help.

RECENT CLIMA RESEARCH PUBLICATIONS

Since the August 2006 newsletter, we have been notified of the following publications by CLIMA researchers and associates. CLIMA publications lists for 2003, 2004, 2005 and 2006 are available on the website: www.clima.uwa.edu.au under “publications”.

We encourage all CLIMA staff and associates to forward 2 hard copies of your CLIMA-related publications to CLIMA’s Director. Journal papers, refereed conference papers and book chapters attract considerable research income to CLIMA.

Scientific Journals


Conference Publications

VISITORS AND TRAVEL NEWS

CHICKPEA BREEDING ALLIANCE MEETS

by Dr Tanveer Khan, Mr Alan Harris and Mr Stuart Morgan

Examining chickpea breeding plots, making selections and holding a project meeting were the results of an annual exchange of scientists between the International Centre for Research in the Semi Arid Tropics (ICRISAT) and CLIMA. Dr Pooran Gaur and Mr B.V. Rao, scientists from ICRISAT in India visited CLIMA from 23-29 October. They toured the disease nurseries at DAFWA’s Medina field station, field plots at Bolgart and examined various breeding related research projects.

A project meeting was held during their stay, where progress in breeding at ICRISAT and CLIMA/DAFWA was presented by a number of researchers to Mr Geoff Smith, CEO of the donor agency Council of Grain Growers Organisation (COGGO). The meeting was chaired by the project supervisor Professor Kadambot Siddique.

Exciting developments in chickpea breeding were reported, including fast tracking of some outstanding desi chickpeas with a high degree of resistance to ascochyta blight, with a view to release in 3-4 years.

The visitors left WA charged with renewed enthusiasm to participate in the germplasm development at ICRISAT focussed specifically on Western Australia.

CHICKPEAS AND SALINITY

by Prof. Neil Turner

Dr Vincent Vadez from ICRISAT visited CLIMA in October, Dr Vadez is the Chief Investigator on a project with Profs Neil Turner and Kadambot Siddique from CLIMA and Dr Pooran Gaur from ICRISAT, supported by COGGO (CGO4 – 2005) “Improvement of salinity and boron toxicity tolerance in chickpea.” Dr Vadez was in Perth to report on progress with the project and to assist with the development of an ARC Linkage proposal on salinity tolerance in chickpea.

THE FRENCH CONNECTION!

by Dr Heather Clarke

Student Mr Matthieu Pepin spent 6 weeks at CLIMA gaining hands-on experience with legume research as part of his degree in Plant Sciences from the University of Rennes, France.

Hosted initially by Dr Heather Clarke and Ms Helen Bowers, he helped them and other researchers with experiments for chickpea and lupin breeding, as well as accompanying staff on field trips, giving him the opportunity to get experience of laboratory, glasshouse and field-based work.

Matthieu is keen to return to CLIMA and UWA to do a PhD at the end of his degree!
Ted Knights Travels

Mr Ted Knights, chickpea breeder with Pulse Breeding Australia, recently travelled to India, France and Canada with the assistance of GRDC and Pulse Australia.

- In India, Ted met with many importers, traders and millers to obtain market feedback on the suitability of new breeding lines being considered for release.
- Fine tune definitions of preferred and acceptable seed type.
- Investigate the possibilities for niche markets.
- Obtain a better understanding of how chickpeas are marketed, processed and consumed in India.

All aspects of chickpeas in India are measured subjectively and Ted received sometimes contrasting feedback on the potential releases he displayed. Overall however, the feedback was positive and Ted will be able to recommend progressing at least three lines based on the Indian trade assessment.

In France, Ted attended and presented a paper entitled ‘Managing ascochyta in chickpeas in north-eastern Australia: matching fungicide tactics to varietal susceptibility’ to the 1st International Ascochyta Workshop on Grain Legumes. He was also able to access the latest information on ascochyta research in chickpeas and related legume species. In this, there seems to be a big gap in the knowledge of the epidemiology of ascochyta diseases across pulse species, as well as significant inconsistencies in the description and scoring of the disease. There was a strong desire by delegates for future collaborative research on ascochyta in chickpea, which will benefit production in Australia.

The Canadian leg of the trip focussed on the chickpea breeding program at the Crop Development Centre in Saskatoon, and investigating the potential for closer collaboration. Ascochyta blight has caused big losses in Canada and in an effort to address this they are introducing genetically diverse parents into the crossing program. A similar strategy in lentils has resulted in good control of the disease and a 50% increase in production over the original varieties.

For more information contact Ted Knights:
ted.knights@agric.nsw.gov.au
## CLIMA VISITORS August - December 2006

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<td>Ms Asia Gulnaz</td>
<td>March-September</td>
<td>Nuclear Institute for Agriculture and Biology, Faisalabad, Pakistan</td>
<td>International Atomic Energy Agency (IAEA) supported trainee on “Waterlogging and salinity tolerance in grain legumes”.</td>
<td>Prof. Kadambot Siddique and Dr Tim Colmer, UWA</td>
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<td>Dr Magdi Abdelhamid</td>
<td>May-November</td>
<td>National Research Centre, Cairo, Egypt</td>
<td>Endeavour Research Fellow: &quot;Effect of water stress on growth and N fixation in faba bean”.</td>
<td>Prof. Kadambot Siddique, Prof. Neil Turner, Prof. Craig Atkins, UWA &amp; Dr Jairo Palta CSIRO</td>
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<tr>
<td>Mr Matthieu Pepin</td>
<td>July - September</td>
<td>University of Rennes, France</td>
<td>Work experience in chickpea and lupin improvement, as part of his undergraduate studies towards a degree in Plant Science in France.</td>
<td>Dr Heather Clarke, UWA and Dr Jon Clements, UWA/DAFWA</td>
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<tr>
<td>Dr Maqbool Ahmad</td>
<td>1 August</td>
<td>SARDI, South Australia</td>
<td>National Pulse Breeding Programme board meeting Discussions with Drs Heather Clarke and Ping Si on chickpea germplasm development projects.</td>
<td>Dr Heather Clarke, UWA</td>
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<tr>
<td>Mr Adrian Russell</td>
<td>6 September</td>
<td>Plant Research (NZ) Lincoln, New Zealand</td>
<td>To see the pea work and consult with colleagues in pulse breeding area.</td>
<td>Dr Tanveer Khan, DAFWA</td>
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<tr>
<td>Mark Seymour</td>
<td>12 September</td>
<td>DAFWA and Pulse Association of the South East</td>
<td>To get an update and view CLIMA work on pulses at UWA.</td>
<td>Dr Debbie Thackray, UWA</td>
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<td>and PASE marketing</td>
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<td>Hon Kim Chance</td>
<td>15 September</td>
<td>Minister for Agriculture and Food</td>
<td>To view research activities at Shenton Park Field Station.</td>
<td>Prof. Kadambot Siddique, UWA</td>
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<tr>
<td>Dr Bassam Bayaa and Dr Mathew Abang</td>
<td>20-22 September</td>
<td>ICARDA</td>
<td>To discuss pulse research at DAFWA and UWA.</td>
<td>Mr Bill MacLeod, DAFWA</td>
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<td>Mr Kieran Wauchope and 9 LEADA colleagues</td>
<td>22 September</td>
<td>Lower Eyre Agricultural Development Association</td>
<td>To get an overview of CLIMA activities and view CLIMA and other UWA work at UWA Crawley and at Shenton Park.</td>
<td>Dr Debbie Thackray, UWA</td>
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<tr>
<td>Dr Jos de Kock, Andre Agenbag, Joe Diekmann</td>
<td>26 September</td>
<td>Protein Research Foundation</td>
<td>To view CLIMA work on pulses and oilseeds at CSIRO and UWA, including Shenton Park visit.</td>
<td>Dr Debbie Thackray, UWA</td>
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<tr>
<td>Dr Harry Nesbitt and 7 East Timorese agronomists</td>
<td>9 October</td>
<td>Seeds of Life project, East Timor</td>
<td>To view CLIMA work on pulses and oilseeds at UWA Crawley and at Shenton Park.</td>
<td>Dr Debbie Thackray, UWA</td>
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<tr>
<td>Dr Vincent Vadez</td>
<td>9-11 October</td>
<td>ICRISAT, Patancheru, India</td>
<td>To develop an ARC Linkage grant with Professor Siddique, Dr Tim Colmer and Professor Neil Turner; to visit field sites with Dr Tanveer Khan and to visit with CLIMA staff at UWA.</td>
<td>Prof. Neil Turner, UWA</td>
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<tr>
<td>Dr: Mingsheng Dong</td>
<td>13 October 2006 - 12 October 2007</td>
<td>China</td>
<td>Molecular marker development on albus lupin. Based at CLIMA.</td>
<td>Dr H. Yang, DAFWA</td>
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<td>Dr Pooran Gaur and Mr B.V. Rao</td>
<td>23-28 October</td>
<td>ICRISAT, India</td>
<td>In connection with the DAFWA/CLIMA/ICRISAT/COGGO project on chickpea breeding.</td>
<td>Dr Tanveer Khan, DAFWA</td>
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<tr>
<td>Dr Carlos Ovalle</td>
<td>23-27 October</td>
<td>INIA Chile</td>
<td>To update his knowledge on developments with Mediterranean pastures and pasture systems.</td>
<td>Assoc. Prof. Mike Ewing, CRC Salinity</td>
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