



# BEANSTALK

Centre for Legumes in Mediterranean Agriculture Newsletter



**DIRECTORS REPORT**

**COLLABORATION BRINGS REWARDS**

**TRAVEL**

**NEW APPOINTMENTS**

**VISITORS**

**CLIMA students gain PhDs**

**POSTCARD**

**BABY NEWS**

**Credits**

## ANNOUNCEMENT

1<sup>st</sup> Australian *Medicago truncatula* Workshop

A Model System for Studying Legume Biology

10 - 13 November 2002

Rottnest Island

Perth, Western Australia

For more information, have a look at the [workshop brochure](#) or go to the workshop website:

[www.cbcc.murdoch.edu.au/AMtW/](http://www.cbcc.murdoch.edu.au/AMtW/)

## ANNOUNCEMENT

Don't forget to tell your friends about the new look CLIMA website! <http://www.clima.uwa.edu.au/>

**An important date for your diary:**

**The CLIMA Christmas party will be on the 18th of December.**

**Further details to follow**

## FROM THE DIRECTOR

**Professor  
Kadambot Siddique**  
(ksiddiqu@agric.uwa.edu.au)



Time goes rushing by and in June I completed my first year as the Director of CLIMA. During the past year, major changes took place to the structure, management and industry consultation process of CLIMA. The Governing Board, Industry Advisory Group (IAG) and the Program Management Team (PMT) provided strong support and advice in determining the new direction of CLIMA. The Governing Board met three times and the IAG met twice during the past year, whilst monthly meetings were held by the PMT.

The Memorandum of Understanding (MOU) between CLIMA Research Alliance partners was finalised and signed by all parties. The CLIMA Strategic Plan was approved by the Board and the IAG. This document explains the origin and purpose of CLIMA and provides a strategic framework and set of objectives for the CLIMA Research Alliance. We have also produced a four-pages colour brochure providing a brief overview on CLIMA and its new directions. Both the documents are available on request.

At its recent meetings, the IAG and CLIMA Governing Board highlighted the Centre's need for a business plan and strategy for

commercialisation of its outputs. Dr Howard Carr and I have been developing a discussion paper on comprehensive commercialisation strategy and a business plan.

The Commonwealth has recently signed the CLIMA CRC phase Wind-up Agreement and this action confirms that all our outstanding requirements relating to the wind-up of the CRC phase are complete.

Our funding has reached new heights, with CLIMA recently landing a record \$5.9 million in new funding (20 new projects) for the next three to four year period. New research projects include genetically examining fungal disease resistance and quality in grain legumes, expanding WA's pasture germplasm bank and strengthening national and international linkages for strategic research. The \$1.7 million for new projects, which will begin this year, tops up an existing \$4 million budget and will continue for the following three to four years, supplemented by investment attracted from funding submissions in those years.

Although the Grains Research and Development Corporation (GRDC) remains CLIMA's primary supporter, new funding also comes from the Rural Industries Research and Development Corporation (RIRDC), the Australian Centre for International Agricultural Research (ACIAR), the Grains Research Committee (GRC) of WA and the increasingly active WA-based Council of Grain Grower Organisations (COGGO). Three Linkage projects are also currently being considered by the Australian Research Council (ARC).

The CLIMA PMT has recently developed clear strategies for further improving the standard and coordination of project development through the CLIMA Research Alliance.†† We have developed and circulated specific guidelines and a new template for Preliminary Research Proposals (PRP). Collaborative projects on grain and annual pasture legumes developed by two or more of the CLIMA partners (and associates) will be considered for submission through CLIMA.

Dr Nancy Longnecker, CLIMA's Communication Manager, resigned in June in order to take up a new position as Senior Lecturer with the Faculty of Life and Physical Sciences at UWA. Nancy has made significant contributions to CLIMA over many years and I am grateful for her support, especially during the past year. Nancy will continue her association with CLIMA through her research projects in the Pulse Quality subprogram. Dr Debbie Thackray has been appointed to the position of Communication Manager with CLIMA. Debbie brings a wealth of experience in research and communication with her. Whilst Debbie is on 3 month's maternity leave commencing in October, Dr Lieve Bultynck will be handling communication issues.

In recent months several people visited CLIMA and had active discussions with our researchers and the management. These include His Excellency Belay Ejigu, Vice Minister of Agriculture Ethiopia; Dr Geletu Beijiga, Director of Crops Research, Ethiopian Agricultural

### From The Director (continued)

Research Organisation; Dr Alec Holm, FAO Iraq 'Oil for Food Program', and a number of GRDC representatives.

Our fortnightly seminar series is going well, with a new list of speakers for the remaining part of this year. We have also held a successful workshop on 'CLIMA legume biotechnology research and its future directions'. The workshop was attended by 40 participants and was chaired by Dr T.J. Higgins, CSIRO Plant Industry, Canberra.

Several new Research Fellows (Dr Ping Si, Mr Fucheng Shan and Mr Bill MacLeod) have commenced research on new projects. It is expected that a number of Research and Technical positions will commence later this year on newly funded projects. Several of our scientists travelled interstate and overseas to participate in various international conferences and joint project activities. I believe that CLIMA's research can be further advanced by developing collaborative projects with interstate and overseas organisations. We look forward to receiving high quality Preliminary Research Proposals from CLIMA Research Alliance partners and associates.

### COLLABORATION BRINGS REWARDS

#### CLIMA leads International team to battle diseases of chickpea

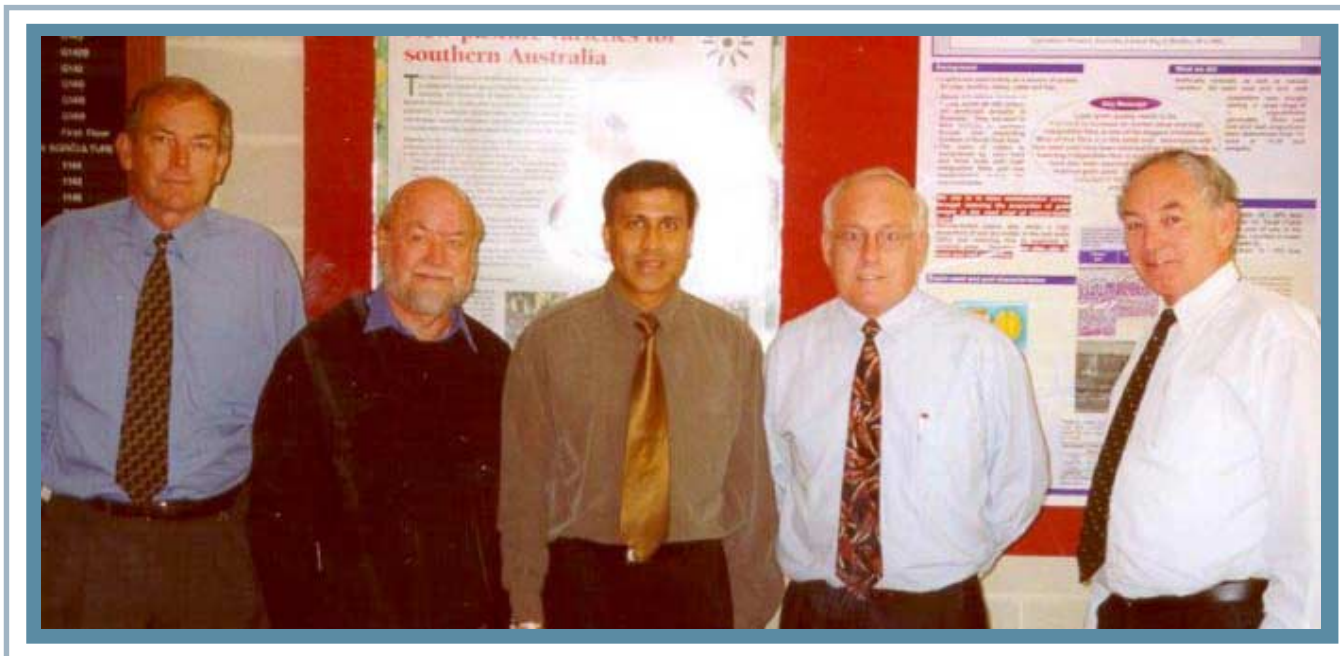
Professor Kadambot Siddique recently attended an Inception Workshop in Dhaka, Bangladesh, of a project on "Integrated management of Botrytis Grey Mould (BGM) of chickpea in Bangladesh and Australia". The project is funded by the Australian Centre for International Agricultural Research (ACIAR). The project has been formulated so as to gain synergies between researchers and extension personnel concerned with this problem in both countries, and internationally. It comprises a collaborative effort between:

##### In Australia

- Centre for Legumes in Mediterranean Agriculture (CLIMA), the lead centre
- Western Australia Department of Agriculture (DAWA)
- Victorian Institute of Dryland Agriculture (VIDA)
- The University of Melbourne (UM)
- New South Wales Agriculture (NSWAg), Tamworth

##### In Bangladesh

- Bangladesh Agricultural Research Institute (BARI)
- Department of Agricultural Extension (DAE)
- Private consultants



CLIMA Governing Board members at its recent meeting: (Left to right): Mr Mick Poole, CSIRO; Professor Bob Lindner, UWA; Professor Kadambot Siddique, CLIMA Director; Associate Professor Max Cake, Murdoch University; Dr Graeme Robertson, Department of Agriculture WA.

## Collaboration Brings Rewards (continued)

## Internationally

- International Crops Research Institute for the Semi-Arid Tropics (ICRISAT).

The aim is to address a major constraint, *Botrytis grey mould* (BGM) disease, to an important crop, chickpea (*Cicer arietinum* L.), in both Bangladesh and Australia. The overall directions of the project are to:

- Optimise the cultivation of chickpea in traditional chickpea-growing areas of Bangladesh where production has stopped due primarily to the constraints of BGM.
- Improve production in both Australia and Bangladesh through the implementation of integrated disease management strategies, which include the use of cultivars with good host resistance to BGM.

The specific objectives and expected outputs of the project are to:

- Assemble all sources of chickpea germplasm with lesser susceptibility to BGM; screen this germplasm under field conditions at the mist irrigation site at the BARI Pulses Research Centre (PRC), Ishurdi, Bangladesh and at hot-spot locations in Bangladesh (Jessore) and Nepal (Tarahara) where there is reliable disease pressure; confirm that this resistance is transferable by screening promising lines under Australian conditions.
- Establish the genetic diversity of Australian and Bangladeshi isolates of *Botrytis cinerea*.

- Produce and distribute seed of less BGM susceptible chickpea germplasm to farmers in Bangladesh through village-level seed production schemes and integrated disease management (IDM) demonstration plots.
- Fine-tune and demonstrate (on-farm) IDM packages in Bangladesh and Australia. This will be achieved via operational scale trials in farmers' fields and demonstration plots comparing IDM with control plots established in Bangladesh. Best option components will be demonstrated in IDM (*Ascochyta* blight and BGM) trials in Australia.
- Train Bangladeshi scientists in recently evolved on-farm research and development techniques, foliar disease resistance screening, breeding and extension.

The proceedings of the project inception workshop are currently being printed and further information on the project can be obtained from Professor Kadambot Siddique or Mr Bill MacLeod.



## Offshore evaluation of international field pea germplasm for resistance to black spot

Dr Tanveer Khan and Prof. Clive Francis

Black spot caused by *Mycosphaerella pinodes* is one of the most important factors limiting pea yield in southern Australia. Sources of resistance are limited and often in the primitive pea lines associated with undesirable characteristics. A GRDC funded project on offshore evaluation of pea germplasm from the Vavilov Institute, Russia, was undertaken in Ethiopia during 1998-2002. Over 3000 lines were evaluated over four seasons and as a result 350 lines showing black spot resistance or agronomic potential have been imported into Australia. More than half of these lines have also been evaluated for their resistance at Medina in WA and the remainder will undergo local evaluation over the next two years.

In most cases, reaction to black spot was similar in Ethiopia and WA, although under more severe epidemic conditions at Medina a number of lines were found to be susceptible. However, it was significant that black spot resistance was found to occur in germplasm that was not previously recognised, e.g. germplasm from South Eastern Europe and some states of the former Soviet Union. Chinese germplasm also appeared to be just as useful as the previously recognised germplasm from Ethiopia and

Afghanistan. The project highlighted a need to examine more germplasm of Afghanistan origin, which is being pursued.

The new sources of resistance are now being incorporated in the field pea breeding program to broaden the genetic base of the segregating populations to select for superior resistance. Considerable progress has been made to develop breeding lines that now show a combination of domesticated characteristics and improved degrees of resistance.



*Evaluation of germplasm imported through offshore evaluation at Medina, WA. Left to right, Dr Tanveer Khan, Dr Geletu Bejiga, Director of Crop Research, Ethiopian Agricultural Research Organisation, His Excellency Mr Belay Ejigu, Vice Minister of Agriculture, Ethiopia.*

### “Partnership brings large germplasm gains”

Professor Clive Francis

The partnership between CLIMA, the International Center for Agricultural Research in Dry Areas (ICARDA) and the famous Vavilov Institute in St Petersburg has this year seen perhaps the greatest ever single influx of crop plant germplasm into Australian collections. In 2002 alone, more than 5900 accessions were brought into Australia. The Australian Temperate Field Crops Collection (AFTCC) at the Victorian Institute of Dryland Agriculture (VIDA) in Horsham, Victoria, has received over 1000 lines of chickpeas and relatives, as well as almost 1000 lines of lentils, field peas and faba beans. The Australian Winter Cereals Collection at the Agricultural Research Centre, Tamworth, NSW will, after quarantine, lodge some 1300 barley lines and more than 2500 lines of wheat and relatives (including 1380 durum wheats) in the National Collection. All the lines were characterised and classified at ICARDA with the aid of specialist staff from the Vavilov Institute. The Grains Research and Development Corporation (GRDC) funded project facilitating this adds a new dimension to Australian breeding programs, because the accessions were mainly land races and were sourced from regions of the world such as the Central Asian Republic whose genetic base is little represented in Australian cultivars.

### TRAVEL

#### CLIMA Travel Top Up Awards 2002

Numerous applications were submitted in response to our call for CLIMA Travel Award requests, advertised in the last CLIMA Newsletter. Congratulations to the successful applicants, whose destinations and travel dates are indicated below:

Dr Bevan Buirchell	USA August 2002
Ms Margaret Campbell	UK, France and Finland June 2002
Dr Jon Clements	Iceland June 2002
Dr Diana Fedorenko	Tunis November 2002
Adj Prof Neil Turner	Spain July 2002
Dr Stephen Wylie Dr Roger Jones	New Zealand February 2003

Jon Clements and Margaret Campbell have shared their travel experiences in two articles below. These awards will be available again in 2003 and details will follow through email.

## A report on the 10<sup>th</sup> International Lupin Conference, June, 2002

Dr Jon Clements

The 10<sup>th</sup> International Lupin Conference, entitled “Wild and Cultivated Lupins from the Tropics to the Poles”, attracted approximately 110 lupin scientists, growers, consultants and representatives of government and trade from around the world. The conference was held in Laugarvatn, Iceland, which is about as far as you can travel around the globe from Perth. Why was it held in the ‘land of fire and ice’? Lupins are one of the first things you see as you touch down at Keflavík International Airport. Perennial lupin species have become naturalized in both Iceland and Norway. Nootka lupin (*Lupinus nootkatensis*) (see photograph) has been used in land reclamation in Iceland for the past 55 years. It has colonized areas that have been degraded by extensive removal of native birch (*Betula pubescens*) forest, which once covered about 70% of the land area but now covers less than 30%. This lupin is particularly tolerant of high wind-speeds, oceanic salt spray and nitrogen-poor soils, and can be grown on glacial outwash plains with soils composed of coarse gravel that contain only small amounts of organic matter. It can be used to help establish introduced species such as Sitka spruce and willow, as well as re-establishing native birch. However, whilst these species can be highly beneficial, they also need to be controlled as they can compete with and erode biological diversity, especially when the lupin develops into dense stands.



Photo: Lupins in the foreground growing among native birch forest in southern Iceland.

The conference was impeccably organized to the credit of the organizing committee, the International Lupin Association (ILA), and especially to our Icelandic colleagues, who were wonderful hosts. The conference program, whilst including aspects of land amelioration and perennial lupin species, also had a large component covering crop improvement of annual lupin species. Talks at the conference included the following topics: lupin animal and human nutrition, lupin nutraceuticals, anthracnose disease resistance, lupin nutrition, genomic analysis of proteoid root formation, genetic studies in *L. mutabilis*, lupin physiology and agronomy.

In the middle of the conference, we were taken on an enjoyable and informative field trip, during which we visited the Soil Conservation and Forestry services which are involved with lupin ecology, management and seed production. We also visited a farm where Danish researchers were conducting some preliminary lupin variety

trials. But it was not all work! We took in sights of waterfalls and geysers, and climbed a glacier, followed by a shot of local Angelica schnapps (which is known to have health benefits) to warm us up. We saw evidence of recent lava flows and the notorious Mt Hekla which has erupted 17 times in the last millennium and as recently as 1991, when it erupted for 2 months.

Several Australians presented papers or posters at the conference including Professor Craig Atkins (Botany, CLIMA, UWA) - physiological factors regulating pod set and seed development, lupin breeder Dr Kedar Adhikari (DAWA, CLIMA) - flowering time in lupin, and Dr Geoff Dean (Tasmanian Institute of Agricultural Research) - production of high value, large seeded bitter *L. albus* for human consumption in Middle Eastern and Mediterranean markets. I presented a paper entitled ‘Research on the proportion of seed hull and pod wall for lupin improvement’, (Clements and Dracup) and displayed a poster entitled ‘A high chlorophyll genotype in *Lupinus angustifolius* L.’ (Clements, Ma and Pate).

Meeting with researchers both at the conference and during the brief visits before and afterward was of value to lupin research at CLIMA and DAWA. In particular, was my interaction with Dr Bjarne Jørnsgård and Ms Hafðís Hauksdóttir from Denmark, whose research includes the effects of seed coat thickness on lupin quality and Dr Nicholi Kuptsov, a lupin breeder previously from Byellorussia. I also visited Prof. Ewa

Sawicka-Sienkiewicz in Wroclaw, Poland, who is conducting research with *Lupinus mutabilis* and interspecific crossing in lupins. Discussions raised the possibility of collaboration in these areas. In addition, valuable germplasm, including thin seed coat *L. opsianthus* and higher protein *L. angustifolius* and *L. luteus*, was brought to our attention.

It was proposed that the next International Lupin Conference be held in Mexico in 2005 and possibly Perth in 2008.

Funding was provided by a CLIMA travel top up award and GRDC project UWA295.

## Alternative Oilseeds Study Tour

Ms Margaret Campbell

Margaret Campbell recently returned from a trip to Europe, where she explored the potential international markets for alternative oilseeds. The study tour clarified the directions in which CLIMA's RIRDC project on the alternative oilseeds should proceed.

Four companies and one research organization were visited. The three English companies differed in their size and interests in the alternative oilseeds, whereas the French and Finish contacts were interested only in *Camelina sativa*. This species presently has a very limited market, although there is potential for a substantial increase in market size. Cold pressed, it is a pleasant tasting and healthy oil, which can be sold as food oil in the UK and Europe. There is a limited established market in the cosmetic industry.

Linseed seed and oil has a substantial market in UK and Europe. Golden seeded, organically grown varieties are of particular commercial interest as health food supplements. Also valued for this market is borage, sold in capsules as Starflower Oil and there is increasing interest in the seed oil of *Echium plantagineum* (well known in Australia as the weed Paterson's curse), because it contains stearidonic acid, a proven anti-inflammatory.

The UK, Europe and America also have a market for high erucic acid industrial oils. Currently, the crop species *Crambe* is grown widely to fulfil this niche. If breeders could produce *Crambe* seed with low glucosinolate concentrations it would be of particular interest, due to the possible use of the meal for stock feed. Lines of *Brassica campestris* and *B. carinata* are also being considered as alternative sources of high erucic acid oils.

Funding was provided by a CLIMA travel top up award and RIRDC.

## 1st Joint Conference of the International Working Groups on Legume and Vegetable Viruses

Dr Roger Jones has recently returned from attending the 1st Joint Conference of the International Working Groups on Legume and Vegetable Viruses held at Bonn, Germany from 2 to 11 August 2002. At the meeting he presented two oral and two poster presentations on legume and vegetable viruses, which were well received. Some of the legume related information from the conference relevant for Western Australia is listed below:

- Phil Berger (Idaho, USA) described a breakthrough in transforming field pea using a pollen-mediated transformation system that is far more efficient than *Agrobacterium*-mediated procedures. Pea pollen is electroporated with the gene of interest, and the transfected pollen used to pollinate emasculated flowers. Transformation efficiency with ungerminated pollen was 15% and transgenic seedlings were obtained within 9 weeks. No selectable marker and no tissue culture are required.
- Pathogen diagnostic techniques are in the process of being revolutionised by development of 'diagnostic micro-chips'. Dr Rick Mumford of the Central Science Laboratory (CSL, UK) spoke impressively about progress in a large EEC funded research project co-ordinated by CSL and reiterated their invitation to us to participate. The State Agricultural Biotechnology Centre (SABC) in Perth have all the equipment needed to develop such chips, and are keen to help. A collaborative research project proposal between Western Australia Department of Agriculture (DAWA), SABC, CLIMA and CSL is under preparation.
- Excellent progress in breeding for resistance to bean leaf roll virus in faba bean was described by Khaled Makkouk (International Centre for Agricultural Research in the Dry Areas, ICARDA). His resistant lines are currently being evaluated for resistance to beet western yellows virus by DAWA and are showing promise.

## NEW APPOINTMENTS

## “Fucheng Shan gets to know chickpea’s wild relatives “

Dr Heather Clarke

There’s a new ‘Fellow’ in CLIMA getting to know chickpea’s wild relatives. Fucheng Shan joined us in July this year to begin a three-year Post-Doctoral Fellowship funded by the Grains Research and Development Corporation (GRDC). The award, open to researchers in Australia and overseas, is a prestigious achievement for both Fucheng and CLIMA since only two fellowships are awarded each year. Fucheng brings skills in cytogenetics, molecular biology and phylogenetics to CLIMA, gained throughout 12 years of research in China and during his PhD studies in Plant Biology at the University of Western Australia (UWA). He now plans to use his experience to accelerate improvement of chickpea in Australia.

Chickpea (*Cicer arietinum* L.) has been bred and selected from a narrow genetic base since its domestication and is notorious for a lack of genetic variation. Although this species does not occur in the wild, chickpea has 42 known wild relatives within the genus *Cicer* which have never been domesticated. Nine species, including chickpea, are annual while the remainders are perennial. Wild annual *Cicer* species inhabit a range of habitats from NE Africa along the Eastern Mediterranean, through Israel, Syria, and Turkey to Iraq, Iran, Armenia, and Afghanistan in the East.

One solution to the low genetic variation in chickpea is to source desirable traits (such as resistance to pests and diseases, or tolerance to environmental stress) in its wild relatives and

introgress the desirable alleles. Fucheng plans to carry out the first step in this project by getting to know chickpea’s wild relatives better. Over the next three years he will characterise the *Cicer* germplasm held in collections in Australia and overseas. To do this, he will use the latest technology, based on DNA fingerprinting, to set up profiles of each species. This will allow Fucheng to assess genetic variation and understand the relationships between the species. The DNA polymorphism data will also be examined in relation to known quantitative traits, and ecological and climatic relationships derived from passport data. It is anticipated that Fucheng’s work, using a molecular approach to germplasm characterisation, will add further value to current germplasm collections and will help breeders to select key parental genotypes for interspecific hybridisation.



*Collaborators Fucheng Shan, Kadambot Siddique and Heather Clarke examine the wide range of variation between different species of wild Cicer in the UWA glasshouses.*

## Bill MacLeod leads ACIAR project on “Integrated Management of Botrytis of Chickpea”



Mr Bill MacLeod has taken up the position of Project Research Officer on the project ‘Integrated management of Botrytis Grey Mould (BGM) of chickpea in Bangladesh and Australia’, recently funded by the Australian Centre for International Agricultural Research (ACIAR). This is a cooperative project led by CLIMA, which will bring together the strengths of Bangladeshi and Indian institutions in field screening of germplasm with pulse disease and germplasm expertise from Australian institutions in WA, NSW and Victoria.

Bill has worked as a Plant Pathologist with the Western Australia Department of Agriculture (DAWA) since 1985, and will be undertaking this new role on a part-time secondment to CLIMA. He has a broad grounding in Plant Pathology, gained through his work on root and foliar diseases of cereals and legumes crops. For the past eight years he has concentrated on fungal diseases of pulses,

research which has produced integrated disease management packages for all pulses including comprehensive fungicide application protocols.

The new international project will allow the development of integrated management solutions for BGM, a disease that is as much a concern to chickpea growers in WA as *Ascochyta* blight. This project will complement germplasm enhancement work already being undertaken at DAWA and also epidemiological studies being undertaken as part of Grains Research and Development Corporation (GRDC) funded projects.

### Debbie Thackray promoting CLIMA communication

In July, after many years with CLIMA, Dr Nancy Longnecker stepped down as CLIMA Communications Manager to accept a new position as Senior Lecturer in Science Communication at the Centre for Learning Technology at UWA's Faculty of Life and Physical Sciences. Nancy will retain her ties with CLIMA through projects in the Grain Quality sub-program.

Dr Debbie Thackray has been appointed on a part-time basis to the position of Communications Manager with CLIMA. Debbie took up her first appointment with CLIMA back in its infancy in 1994. Her background is in Entomology and Extension, with an M.Sc. in Insect Pest Management, a Ph.D. in host-plant resistance to aphids, and several years as a private crop consultant in the UK. During her time at CLIMA, Debbie has worked on red-legged earth mite with James

Ridsdill-Smith's pasture program and on forecasting and control of aphids and viruses in broad acre crops with Roger Jones' plant virology group, based at the Department of Agriculture in South Perth. Most recently she has been developing and extending decision support systems for virus control for grain growers and advisers.

Debbie is currently working one day a week in her new role whilst continuing with her Plant Virology work at the Department of Agriculture. She will be away on maternity leave from October until late January 2003. During her absence Dr Lieve Bultynck, who completed her PhD with Prof. Hans Lambers (Plant Biology, UWA), will be handling communication work. Lieve has already been ably assisting Debbie in editing this newsletter and in other aspects of communication.



Debbie says she is very much enjoying her new role in promoting CLIMA's activities and she welcomes news and views from all those associated with CLIMA.

Debbie's contact details at CLIMA are:

- Phone: (08) 9380 7074
- Fax: (08) 9380 1140
- email: [dthackra@agric.uwa.edu.au](mailto:dthackra@agric.uwa.edu.au)

Lieve's contact details at CLIMA are:

- Phone: (08) 9380 7074
- Fax: (08) 9380 1140
- email: [lbultync@cyllene.uwa.edu.au](mailto:lbultync@cyllene.uwa.edu.au)

### CONGRATULATIONS OONAGH!

The prize for best oral presentation by a student at the 12th Australasian Plant Breeding Conference, held at the Hyatt Regency Hotel (15th-20th September 2002) was awarded to Oonagh Byrne, a GRDC funded PhD student at CLIMA.

The presentation by Ms Byrne was entitled "Searching for molecular markers for pea weevil resistance" and was one of 11 oral presentations and 26 poster presentations by students at the conference.

The prizes were announced by the conference convenor, Associate Professor Wallace Cowling, and presented by Professor Tim Reeves, Director General, CIMMYT, Mexico, and Patron of the Australasian Plant Breeding Association.

The student prizes were sponsored by Canola Breeders Western Australia Pty Ltd.

## VISITORS

## Visiting scientist from Taiwan to share knowledge in pasture genetic resources

Dr Jengbin (Andy) Lin has been funded by the National Science Council of Taiwan to visit CLIMA and DAWA to learn how we undertake plant improvement. Dr Lin majored in breeding of legumes at the University of Taiwan and now works in the Department of Forage Crops at the Taiwan Livestock Research Institute. In Taiwan there are four species of forage grasses in commercial use: Nilegrass, pangolagrass, napiergrass and sudagrass. Unfortunately, Taiwan does not have any high quality, high yielding legume forage species. High temperature, rainfall and humidity in summer are believed to be responsible for this.

Dr Lin will be spending most of his time working with Mr Richard Snowball, Curator of the Australian Trifolium Genetic Resource Centre at DAWA, with whom he will share ideas on germplasm development. He will also be visiting trials north of Perth with Mr Geoff Moore to learn more about local developments with subtropical pasture species. In September, he will spend one week in northern Queensland with Dr Mike Gilbert in the search for useful subtropical forage legumes. He will return via Adelaide where he will visit the South Australian Research and Development Institute to discuss the potential for exchange of lucerne germplasm and at the same time view the Medicago Genetic Resource Centre nursery plots.

In October, Andy will join Dr Digby Gowns of DAWA and others on the Great Victoria Desert Expedition run by the Kings Park Board. This will give Andy some very interesting hands-on experience in collecting Australian native germplasm, something many of us would envy.



Anyone wishing to make contact with Andy before he returns home on November 5, can do so through Richard Snowball on 9368 3517.

## Visitor to CLIMA pasture legume group

Ms Lina Al-Bitar has been visiting with the CLIMA pasture legume group, directly supervised by Dr Angelo Loi and Mr Graham Taylor, since the beginning of July this year and will be leaving near the end of September.

Lina is a PhD student in Environmental Sciences at the University of Viterbo, Italy. She has been studying the ecology of several annual pasture legumes, with particular emphasis on seed dormancy and seed bank dynamics. Her interest is in legumes as an indicator of sustainability of organic farming systems.

Lina, of Lebanese origin, is an Italian citizen working at the International Centre for Advanced Mediterranean Agronomic Studies – Mediterranean Agronomic Institute of Bari, Italy (CIHEAM – IAMB). The CIHEAM is an intergovernmental institution established in 1962 on the initiative of the Council of Europe and the former OEEC (currently OECD). The organisation has headquarters in Paris and acts in close cooperation with other international institutions, such as: the EU, the FAO, UNESCO, etc.

CIHEAM's task is to aid the agricultural development in the Mediterranean region through the training of senior personnel, scientific research and on-site partnership actions. To accomplish its institutional tasks, CIHEAM established 4 institutes, located in Bari, Italy (1962), Montpellier, France (1962), Saragossa, Spain (1969) and Chania, Greece (1983), each acting in a specific field.

The Bari Institute, where Lina currently works, is involved in the three main thematic areas: Land and Water Resource Management, Integrated Pest Management of Mediterranean fruit crops and Organic Agriculture. Lina's current role involves the coordination of the organic agriculture section, with main emphasis in the training sector. Her position is overseeing the management of the

### Visitor to CLIMA pasture legume group (continued)

Masters courses, with almost 25 postgraduate participants, coming from 13 different Mediterranean countries, all CIHEAM members. These countries include: Albania, Algeria, Egypt, France, Greece, Italy, Lebanon, Malta, Morocco, Spain, Tunisia and Turkey.



*Dr Angelo Loi and Mrs Lina Al-Bitar  
Boyup Brook, Western Australia*

### List of CLIMA Visitors (recent, current and near future)

Visitor Name	Visiting Period	Institution and Country	WA Contact Details & Host
Mr Shahal Abbo	20 Sept - 7 Oct	Hebrew University of Jerusalem Rehovot, Israel	Dr Neil Turner Dr Jens Berger
Mrs Lina Al-Bitar	July-Sept	International Centre for Advanced Mediterranean Agronomic Studies, Mediterranean Agronomic Institute Bari, Italy	Dr Angelo Loi
Dr Geletu Bejiga	July	EARO Addis Ababa, Ethiopia	Prof Clive Francis
Mr Michael Materne	18 Sept	DNRE, Agriculture Victoria, Horsham	Mr Bill MacLeod Prof Kadambot Siddique
Dr Steve Clement	Sept-Dec	USDA, USA	Dr James Ridsdill-Smith
Prof Nicolai Dzybenko	20-27 Oct	Vavilov Institute St Petersburg	Prof Clive Francis
Mr Belay Ejigu	July	Vice Minister for Agriculture Ethiopia	Prof Clive Francis
Mr Ted Knights	18 Sept	NSW Agriculture Tamworth Prof Kadambot Siddique	Mr Bill MacLeod
Dr Andy Lin	Sept-Oct	Taiwan Livestock Research Institute	Dr Richard Snowball
Md Alamgir Miah	14-27 Sept	Bangladesh Agricultural Research Institute Jessore, Bangladesh	Mr Bill MacLeod Prof Kadambot Siddique
Ms Kate O'Callaghan	26 Aug	Novogen Ltd	Prof Clive Francis Mr Kevin Foster

## List of CLIMA Visitors (recent, current and near future) (continued)

Visitor Name	Visiting Period	Institution and Country	WA Contact Details & Host
Dr Carlos Ovalle	16-28 Sept	INIACHile	Assoc Prof Mike Ewing Prof Kadambot Siddique
Dr Suresh Pande	14-27 Sept	ICRISATHyderabad, India	Prof Kadambot Siddique Mr Bill MacLeod
Dr Hari Sharma	Sept-Oct	ICRISATHyderabad, India	Dr James Ridsdill-Smith Dr Heather Clarke
Dr Ken Street	15-20 Sept	Genetic Resources Unit, ICARDA	Prof Clive Francis
Dr Paul Taylor	18 Sept	University of Melbourne	Mr Bill MacLeod Prof Kadambot Siddique
Dr N. K. Yadav	15-20 Sept	NARC, Nepal	Prof Clive Francis
Dr S. S. Yadav	14 – 29 Sept	Indian Agricultural Research Institute New Delhi, India	Adj. Prof. Neil Turner Dr Jens Berger

In February of this year, Vanessa started a GRDC funded post-doctoral position giving her the opportunity to expand on her Ph.D. work by investigating the below-ground competitiveness of grain-crop varieties as a weed control strategy. Vanessa is currently based at the Tasmanian Institute of Agricultural Research and during the project she will be working closely with Dr Gurjeet Gill of the University of Adelaide and the CRC for Australian Weed Management. Congratulations Vanessa!

## Dr Patrizia Gremigni

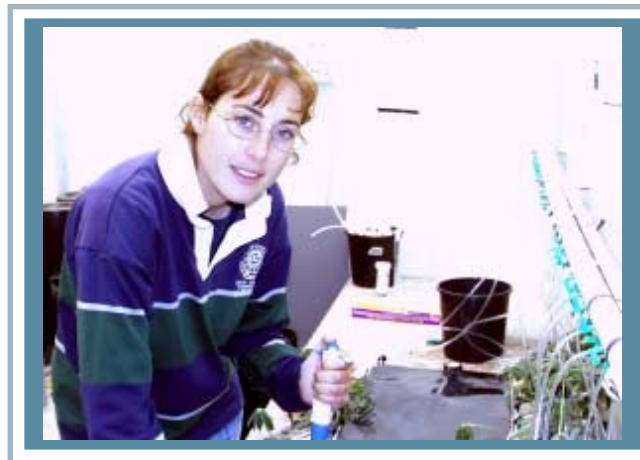
Also congratulations to Patrizia Gremigni! Patrizia's thesis on 'Control of seed alkaloid levels in narrow-leaved lupins (*Lupinus angustifolius* L.) through management of plant nutrition and agronomic practices', and supervised by Assoc. Prof. Wallace Cowling (Plant Biology, UWA), Adj. Prof. John Hamblin (Export Grains Centre) and Dr David Harris (Chemistry Centre WA), was passed on the 27<sup>th</sup> of August.

Patrizia is currently working as Research Officer in the School of Plant Biology, UWA, on the GRDC-funded project 'Development of molecular marker and mapping technology for lupin breeding: comparative mapping across lupin species and between legume genera'. In this project, she will be responsible for isolating DNA from *L. angustifolius* genotypes (parents and 100 F8 progenies), preparing probes and assessing RFLP patterns, summarizing bands and obtained polymorphisms.

## CLIMA STUDENTS GAIN PhDs

### Dr Vanessa Dunbabin

Vanessa Dunbabin has recently had her CLIMA based Ph.D. thesis passed with distinction. Vanessa's thesis, supervised by Art Diggle and Zed Rengel, is entitled 'The effect of root system form and function on nitrate uptake by lupins in a leaching environment' and deals with the possibility of selecting lupin varieties with improved nitrate uptake ability in order to reduce nitrate leaching and acidification under lupins.



## GREG GETS A HANDSHAKE, AND POLLOCK A PAT FROM THE PRIME MINISTER.

### Ms Sue Dodimead

Last month at a function held in Canberra, The University of Western Australia was presented with the Prime Minister's award for the National Employer of the year within the Higher Education category. This award is given to businesses and Education Institutions for employing people with disabilities.

Our receptionist Mr Greg Madson, representing both CLIMA and CRC for Plant-based Management of Dryland Salinity, attended the function together with myself, having been invited to join other UWA staff in this celebration.

The function was held in the Great Hall in Parliament Building with a gathering of approximately 500 people from all States in Australia. Dinner consisted of an entree of smoked salmon and salad with a main meal of delicious chicken and gourmet vegetables, finishing with apple cinnamon tart and cream, and of course ample red and white wine.

Throughout the evening awards were presented to State winners in the small business and large business category, and it was a very proud moment indeed, when UWA was announced by the Prime Minister as the National winner in the Higher Education category. A loud cheer went up from the UWA table and clapping as Mr Bob Farrelly, the Director of Human Resources and Malcolm Fialho from the Diversity Office, approached the

dais to receive the award from the PM. Pollock, Greg's 4-footed companion, even emerged from under the table to see what was going on. With all awards presented and formalities and speeches ended the PM mingled with everyone to chat and congratulate people on their efforts, and he gave a special thank you to Greg; now a chance to take a few photos.

The evening was a great success and very enjoyable and it certainly proved that many Australians within different communities and environments were trying to bridge that gap so everyone is given an equal chance within the employment and educational world. Problems will always present themselves, but there is a much greater insight now trying to resolve them.



It was also nice that Greg was able to meet with relatives in Canberra who had not seen him for twenty years. Finally, I have to say that the weather turned up trumps with cloudless blue skies, no wind and pleasant warmth in the sun. To put it plainly, a great weekend in many ways.

## POSTCARD

### Postcard from the Centre for Learning Technology

Hello CLIMA friends,

It is just sinking in that after 8 wonderful years, my primary focus at work is no longer CLIMA. I have moved a huge 500 or so metres to the Centre for Learning Technology where I started work in July with a creative and friendly group who are building up the Centre for Learning Technology. Our aim is 'sharing the excitement of science' with the wider community.

We are working on two new science communication undergraduate units for delivery next year: 'The Write Stuff' and 'Talk it Up!' We are also preparing professional development workshops and new research programs with one focus being assessment of communication activities. In particular, the staff at CLT have interest and expertise in digital technology such as multimedia CD ROMs and the internet as a tool for science communication.



One of my big objectives over the coming year(s) is to maintain the friendships and good working relationships which developed during my time at CLIMA. If you have ideas about projects we could do together (or would just like to have a cuppa!), I would love to hear from CLIMA colleagues.

Dr Nancy Longnecker

[Nancy.Longnecker@uwa.edu.au](mailto:Nancy.Longnecker@uwa.edu.au)

(08) 9380 2492

## BABY NEWS

Ms Jenny Hawkes (CLIMA) and partner Chris Poole became parents to Nicholas Quinlan Hawkes Poole on August 28. Nicholas weighed 9lb 3 1/2 oz and measured 54.5cm at birth. The consensus is that he strongly resembles his father!



In our last newsletter we announced the arrival of CLIMA employee Dr Penny Smith's baby girl Jemima. Now we have a photo of Jemima to show you.



## NEWSLETTER CREDITS

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The University of Western Australia  
35 Stirling Highway  
CRAWLEY WA 6009

Email: [clima@cyllene.uwa.edu.au](mailto:clima@cyllene.uwa.edu.au)

Website: <http://www.clima.uwa.edu.au/>

Vol.3 Number 2 October 2002

### Editors:

Dr Debbie Thackray and  
Dr Lieve Bultynck

### Contributing authors:

Mrs Lina Al-Bitar  
Ms Oonagh Byrne  
Ms Margaret Campbell  
Dr Heather Clarke  
Dr Jon Clements  
Dr Art Diggle  
Ms Sue Dodimead  
Dr Vanessa Dunbabin  
Prof Clive Francis  
Dr Patrizia Gremigni  
Dr Roger Jones  
Dr Tanveer Khan  
Mr Andy Lin  
Dr Angelo Loi  
Dr Nancy Longnecker  
Mr Bill MacLeod  
Prof Kadambot Siddique  
Dr Richard Snowball  
Dr Debbie Thackray

### Layout:

Emily Lockwood  
DUIT Multimedia

## FROM THE DIRECTOR



**Professor Kadambot Siddique**  
(ksiddiqu@agric.uwa.edu.au)

Time goes rushing by and in June I completed my first year as the Director of CLIMA. During the past year, major changes took place to the structure, management and industry consultation process of CLIMA. The Governing Board, Industry Advisory Group (IAG) and the Program Management Team (PMT) provided strong support and advice in determining the new direction of CLIMA. The Governing Board met three times and the IAG met twice during the past year, whilst monthly meetings were held by the PMT.

The Memorandum of Understanding (MOU) between CLIMA Research Alliance partners was finalised and signed by all parties. The CLIMA Strategic Plan was approved by the Board and the IAG. This document explains the origin and purpose of CLIMA and provides a strategic framework and set of objectives for the CLIMA Research Alliance. We have also produced a four-pages colour brochure providing a brief overview on CLIMA and its new directions. Both the documents are available on request.

At its recent meetings, the IAG and CLIMA Governing Board highlighted the Centre's need for a business plan and strategy for commercialisation of its outputs. Dr Howard Carr and I have been developing a discussion paper on comprehensive commercialisation strategy and a business plan.

The Commonwealth has recently signed the CLIMA CRC phase Wind-up Agreement and this action confirms that all our outstanding requirements relating to the wind-up of the CRC phase are complete.

Our funding has reached new heights, with CLIMA recently landing a record \$5.9 million in new funding (20 new projects) for the next three to four year period. New research projects include genetically examining fungal disease resistance and quality in grain legumes, expanding WA's pasture germplasm

bank and strengthening national and international linkages for strategic research. The \$1.7 million for new projects, which will begin this year, tops up an existing \$4 million budget and will continue for the following three to four years, supplemented by investment attracted from funding submissions in those years.

Although the Grains Research and Development Corporation (GRDC) remains CLIMA's primary supporter, new funding also comes from the Rural Industries Research and Development Corporation (RIRDC), the Australian Centre for International Agricultural Research (ACIAR), the Grains Research Committee (GRC) of WA and the increasingly active WA-based Council of Grain Grower Organisations (COGGO). Three Linkage projects are also currently being considered by the Australian Research Council (ARC).

The CLIMA PMT has recently developed clear strategies for further improving the standard and coordination of project development through the CLIMA Research Alliance.†† We have developed and circulated specific guidelines and a new template for Preliminary Research Proposals (PRP). Collaborative projects on grain and annual pasture legumes developed by two or more of the CLIMA partners (and associates) will be considered for submission through CLIMA.

Dr Nancy Longnecker, CLIMA's Communication Manager, resigned in June in order to take up a new position as Senior Lecturer with the Faculty of Life and Physical Sciences at UWA. Nancy has made significant contributions to CLIMA over many years and I am grateful for her support, especially during the past year. Nancy will continue her association with CLIMA through her research projects in the Pulse Quality subprogram. Dr Debbie

Thackray has been appointed to the position of Communication Manager with CLIMA. Debbie brings a wealth of experience in research and communication with her. Whilst Debbie is on 3 month's maternity leave commencing in October, Dr Lieve Bultynck will be handling communication issues.

In recent months several people visited CLIMA and had active discussions with our researchers and the management. These include His Excellency Belay Ejigu, Vice Minister of Agriculture Ethiopia; Dr Geletu Bejjiga, Director of Crops Research, Ethiopian Agricultural Research Organisation; Dr Alec Holm, FAO Iraq 'Oil for Food Program', and a number of GRDC representatives.

Our fortnightly seminar series is going well, with a new list of speakers for the remaining part of this year. We have also held a successful workshop on 'CLIMA legume biotechnology research and its future directions'. The workshop was attended by 40 participants and was chaired by Dr T.J. Higgins, CSIRO Plant Industry, Canberra.

Several new Research Fellows (Dr Ping Si, Mr Fucheng Shan and Mr Bill MacLeod) have commenced research on new projects. It is expected that a number of Research and Technical positions will commence later this year on newly funded projects. Several of our scientists travelled interstate and overseas to participate in various international conferences and joint project activities. I believe that CLIMA's research can be further advanced by developing collaborative projects with interstate and overseas organisations. We look forward to receiving high quality Preliminary Research Proposals from CLIMA Research Alliance partners and associates.



CLIMA Governing Board members at its recent meeting: (Left to right): Mr Mick Poole, CSIRO; Professor Bob Lindner, UWA; Professor Kadambot Siddique, CLIMA Director; Associate Professor Max Cate, Murdoch University; Dr Graeme Robertson, Department of Agriculture WA.

## COLLABORATION BRINGS REWARDS

### CLIMA leads International team to battle diseases of chickpea

Professor Kadambot Siddique recently attended an Inception Workshop in Dhaka, Bangladesh, of a project on “Integrated management of Botrytis Grey Mould (BGM) of chickpea in Bangladesh and Australia”. The project is funded by the Australian Centre for International Agricultural Research (ACIAR). The project has been formulated so as to gain synergies between researchers and extension personnel concerned with this problem in both countries, and internationally. It comprises a collaborative effort between:

#### In Australia

- Centre for Legumes in Mediterranean Agriculture (CLIMA), the lead centre
- Western Australia Department of Agriculture (DAWA)
- Victorian Institute of Dryland Agriculture (VIDA)
- The University of Melbourne (UM)
- New South Wales Agriculture (NSWAg), Tamworth

#### In Bangladesh

- Bangladesh Agricultural Research Institute (BARI)
- Department of Agricultural Extension (DAE)
- Private consultants

#### Internationally

- International Crops Research Institute for the Semi-Arid Tropics (ICRISAT).

The aim is to address a major constraint, Botrytis grey mould (BGM) disease, to an important crop, chickpea (*Cicer arietinum* L.), in both Bangladesh and Australia. The overall directions of the project are to:

- Optimise the cultivation of chickpea in traditional chickpea-growing areas of Bangladesh where production has stopped due primarily to the constraints of BGM.
- Improve production in both Australia and Bangladesh through the

implementation of integrated disease management strategies, which include the use of cultivars with good host resistance to BGM.

The specific objectives and expected outputs of the project are to:

- Assemble all sources of chickpea germplasm with lesser susceptibility to BGM; screen this germplasm under field conditions at the mist irrigation site at the BARI Pulses Research Centre (PRC), Ishurdi, Bangladesh and at hot-spot locations in Bangladesh (Jessore) and Nepal (Tarahara) where there is reliable disease pressure; confirm that this resistance is transferable by screening promising lines under Australian conditions.
- Establish the genetic diversity of Australian and Bangladeshi isolates of *Botrytis cinerea*.
- Produce and distribute seed of less BGM susceptible chickpea germplasm to farmers in Bangladesh through village-level seed production schemes and integrated disease management (IDM) demonstration plots.
- Fine-tune and demonstrate (on-farm) IDM packages in Bangladesh and Australia. This will be achieved via operational scale trials in farmers' fields and demonstration plots comparing IDM with control plots established in Bangladesh. Best option components will be demonstrated in IDM (*Ascochyta* blight and BGM) trials in Australia.
- Train Bangladeshi scientists in recently evolved on-farm research and development techniques, foliar disease resistance screening, breeding and extension.

The proceedings of the project inception workshop are currently being printed and further information on the project can be obtained from Professor Kadambot Siddique or Mr Bill MacLeod.



### Offshore evaluation of international field pea germplasm for resistance to black spot

Dr Tanveer Khan and Prof. Clive Francis

Black spot caused by *Mycosphaerella pinodes* is one of the most important factors limiting pea yield in southern Australia. Sources of resistance are limited and often in the primitive pea lines associated with undesirable characteristics. A GRDC funded project on offshore evaluation of pea germplasm from the Vavilov Institute, Russia, was undertaken in Ethiopia during 1998-2002. Over 3000 lines were evaluated over four seasons and as a result 350 lines showing black spot resistance or agronomic potential have been imported into Australia. More than half of these lines have also been evaluated for their resistance at Medina in WA and the remainder will undergo local evaluation over the next two years.

In most cases, reaction to black spot was similar in Ethiopia and WA, although under more severe epidemic conditions at Medina a number of lines were found to be susceptible. However, it was significant that black spot resistance was found to occur in germplasm that was not previously recognised, e.g. germplasm from South Eastern Europe and some states of the former Soviet Union. Chinese germplasm also appeared to be just as useful as the previously recognised germplasm from Ethiopia and Afghanistan. The project highlighted a need to examine more germplasm of Afghanistan origin, which is being pursued.

The new sources of resistance are now being incorporated in the field pea breeding program to broaden the genetic base of the segregating populations to select for superior resistance. Considerable progress has been made to develop breeding lines that now show a combination of domesticated characteristics and improved degrees of resistance.



Evaluation of germplasm imported through offshore evaluation at Medina, WA. Left to right, Dr Tanveer Khan, Dr Geletu Bejiga, Director of Crop Research, Ethiopian Agricultural Research Organisation, His Excellency Mr Belay Ejigu, Vice Minister of Agriculture, Ethiopia.

## “Partnership brings large germplasm gains”

Professor Clive Francis

The partnership between CLIMA, the International Center for Agricultural Research in Dry Areas (ICARDA) and the famous Vavilov Institute in St Petersburg has this year seen perhaps the greatest ever single influx of crop plant germplasm into Australian collections. In 2002 alone, more than 5900 accessions were brought into Australia. The Australian Temperate Field Crops Collection (AFTCC) at the Victorian Institute of Dryland Agriculture (VIDA) in Horsham, Victoria, has received over 1000 lines of chickpeas and relatives, as well as almost 1000 lines of lentils, field peas and faba beans. The Australian Winter Cereals Collection at the Agricultural Research Centre, Tamworth, NSW will, after quarantine, lodge some 1300 barley lines and more than 2500 lines of wheat and relatives (including 1380 durum wheats) in the National Collection. All the lines were characterised and classified at ICARDA with the aid of specialist staff from the Vavilov Institute. The Grains Research and Development Corporation (GRDC) funded project facilitating this adds a new dimension to Australian breeding programs, because the accessions were mainly land races and were sourced from regions of the world such as the Central Asian Republic whose genetic base is little represented in Australian cultivars.

## TRAVEL

### CLIMA Travel Top Up Awards 2002

Numerous applications were submitted in response to our call for CLIMA Travel Award requests, advertised in the last CLIMA Newsletter. Congratulations to the successful applicants, whose destinations and travel dates are indicated below:

Dr Bevan Buirchell	USA August 2002
Ms Margaret Campbell	UK, France and Finland June 2002
Dr Jon Clements	Iceland June 2002
Dr Diana Fedorenko	Tunis November 2002
Adj Prof Neil Turner	Spain July 2002
Dr Stephen Wylie Dr Roger Jones	New Zealand February 2003

Jon Clements and Margaret Campbell have shared their travel experiences in two articles below. These awards will be available again in 2003 and details will follow through email.

### A report on the 10<sup>th</sup> International Lupin Conference, June, 2002

Dr Jon Clements

The 10<sup>th</sup> International Lupin Conference, entitled “Wild and Cultivated Lupins from the Tropics to the Poles”, attracted approximately 110 lupin scientists, growers, consultants and representatives of government and trade from around the world. The conference was held in Laugarvatn, Iceland, which is about as far as you can travel around the globe from Perth. Why was it held in the ‘land of fire and ice’? Lupins are one of the first things you see as you touch down at Keflavik International Airport. Perennial lupin species have become naturalized in both

Iceland and Norway. Nootka lupin (*Lupinus nootkatensis*) (see photograph) has been used in land reclamation in Iceland for the past 55 years. It has colonized areas that have been degraded by extensive removal of native birch (*Betula pubescens*) forest, which once covered about 70% of the land area but now covers less than 30%. This lupin is particularly tolerant of high wind-speeds, oceanic salt spray and nitrogen-poor soils, and can be grown on glacial outwash plains with soils composed of coarse gravel that contain only small amounts of organic matter. It can be used to help establish introduced species such as Sitka spruce and willow, as well as re-establishing native birch. However, whilst these species can be highly beneficial, they also need to be controlled as they can compete with and erode biological diversity, especially when the lupin develops into dense stands.



Photo: Lupins in the foreground growing among native birch forest in southern Iceland.

The conference was impeccably organized to the credit of the organizing committee, the International Lupin Association (ILA), and especially to our Icelandic colleagues, who were wonderful hosts. The conference program, whilst including aspects of land amelioration and perennial lupin species, also had a large component covering crop improvement of annual lupin species. Talks at the conference included the following topics: lupin animal and human nutrition, lupin nutraceuticals, anthracnose disease resistance, lupin nutrition, genomic analysis of proteoid root formation, genetic studies in *L. mutabilis*, lupin physiology and agronomy.

In the middle of the conference, we were taken on an enjoyable and informative field trip, during which we visited the Soil Conservation and Forestry services which are involved with lupin ecology, management and seed production. We also visited a farm where Danish researchers were conducting some

preliminary lupin variety trials. But it was not all work! We took in sights of waterfalls and geysers, and climbed a glacier, followed by a shot of local Angelica schnapps (which is known to have health benefits) to warm us up. We saw evidence of recent lava flows and the notorious Mt Hekla which has erupted 17 times in the last millennium and as recently as 1991, when it erupted for 2 months.

Several Australians presented papers or posters at the conference including Professor Craig Atkins (Botany, CLIMA, UWA) - physiological factors regulating pod set and seed development, lupin breeder Dr Kedar Adhikari (DAWA, CLIMA) - flowering time in lupin, and Dr Geoff Dean (Tasmanian Institute of Agricultural Research) - production of high value, large seeded bitter *L. albus* for human consumption in Middle Eastern and Mediterranean markets. I presented a paper entitled 'Research on the proportion of seed hull and pod wall for lupin improvement', (Clements and Dracup) and displayed a poster entitled 'A high chlorophyll genotype in *Lupinus angustifolius* L.' (Clements, Ma and Pate).

Meeting with researchers both at the conference and during the brief visits before and afterward was of value to lupin research at CLIMA and DAWA. In particular, was my interaction with Dr Bjarne Jørgensen and Ms Hafdis Hauksdóttir from Denmark, whose research includes the effects of seed coat thickness on lupin quality and Dr Nicholi Kuptsov, a lupin breeder previously from Byelorussia. I also visited Prof. Ewa poster entitled 'A high chlorophyll genotype in *Lupinus angustifolius* L.' (Clements, Ma and Pate).

Meeting with researchers both at the conference and during the brief visits before and afterward was of value to lupin research at CLIMA and DAWA. In particular, was my interaction with Dr Bjarne Jørgensen and Ms Hafdis Hauksdóttir from Denmark, whose research includes the effects of seed coat thickness on lupin quality and Dr Nicholi Kuptsov, a lupin breeder previously from Byelorussia. I also visited Prof. Ewa Sawicka-Sienkiewicz in Wrocław, Poland, who is conducting research with *Lupinus mutabilis* and interspecific crossing in lupins. Discussions raised the possibility of collaboration in these areas. In addition, valuable germplasm, including thin seed coat

*L. opsianthus* and higher protein *L. angustifolius* and *L. luteus*, was brought to our attention.

It was proposed that the next International Lupin Conference be held in Mexico in 2005 and possibly Perth in 2008.

Funding was provided by a CLIMA travel top up award and GRDC project UWA295.

## Alternative Oilseeds Study Tour

Ms Margaret Campbell

Margaret Campbell recently returned from a trip to Europe, where she explored the potential international markets for alternative oilseeds. The study tour clarified the directions in which CLIMA's RIRDC project on the alternative oilseeds should proceed.

Four companies and one research organization were visited. The three English companies differed in their size and interests in the alternative oilseeds, whereas the French and Finish contacts were interested only in *Camelina sativa*. This species presently has a very limited market, although there is potential for a substantial increase in market size. Cold pressed, it is a pleasant tasting and healthy oil, which can be sold as food oil in the UK and Europe. There is a limited established market in the cosmetic industry.

Linseed seed and oil has a substantial market in UK and Europe. Golden seeded, organically grown varieties are of particular commercial interest as health food supplements. Also valued for this market is borage, sold in capsules as Starflower Oil and there is increasing interest in the seed oil of *Echium plantagineum* (well known in Australia as the weed Paterson's curse), because it contains stearidonic acid, a proven anti-inflammatory.

The UK, Europe and America also have a market for high erucic acid industrial oils. Currently, the crop species *Crambe* is grown widely to fulfil this niche. If breeders could produce *Crambe* seed with low glucosinolate concentrations it would be of particular interest, due to the possible use of the meal for stock feed. Lines of *Brassica campestris* and *B. carinata* are also being considered as alternative sources of high erucic acid oils.

Funding was provided by a CLIMA travel top up award and RIRDC.

## 1st Joint Conference of the International Working Groups on Legume and Vegetable Viruses

Dr Roger Jones has recently returned from attending the 1st Joint Conference of the International Working Groups on Legume and Vegetable Viruses held at Bonn, Germany from 2 to 11 August 2002. At the meeting he presented two oral and two poster presentations on legume and vegetable viruses, which were well received. Some of the legume related information from the conference relevant for Western Australia is listed below:

- Phil Berger (Idaho, USA) described a breakthrough in transforming field pea using a pollen-mediated transformation system that is far more efficient than *Agrobacterium*-mediated procedures. Pea pollen is electroporated with the gene of interest, and the transfected pollen used to pollinate emasculated flowers. Transformation efficiency with ungerminated pollen was 15% and transgenic seedlings were obtained within 9 weeks. No selectable marker and no tissue culture are required.
- Pathogen diagnostic techniques are in the process of being revolutionised by development of 'diagnostic micro-chips'. Dr Rick Mumford of the Central Science Laboratory (CSL, UK) spoke impressively about progress in a large EEC funded research project co-ordinated by CSL and reiterated their invitation to us to participate. The State Agricultural Biotechnology Centre (SABC) in Perth have all the equipment needed to develop such chips, and are keen to help. A collaborative research project proposal between Western Australia Department of Agriculture (DAWA), SABC, CLIMA and CSL is under preparation.
- Excellent progress in breeding for resistance to bean leaf roll virus in faba bean was described by Khaled Makkouk (International Centre for Agricultural Research in the Dry Areas, ICARDA). His resistant lines are currently being evaluated for resistance to beet western yellows virus by DAWA and are showing promise.

## NEW APPOINTMENTS

**“Fucheng Shan gets to know chickpea’s wild relatives “****Dr Heather Clarke**

There’s a new ‘Fellow’ in CLIMA getting to know chickpea’s wild relatives. Fucheng Shan joined us in July this year to begin a three-year Post-Doctoral Fellowship funded by the Grains Research and Development Corporation (GRDC). The award, open to researchers in Australia and overseas, is a prestigious achievement for both Fucheng and CLIMA since only two fellowships are awarded each year. Fucheng brings skills in cytogenetics, molecular biology and phylogenetics to CLIMA, gained throughout 12 years of research in China and during his PhD studies in Plant Biology at the University of Western Australia (UWA). He now plans to use his experience to accelerate improvement of chickpea in Australia.

Chickpea (*Cicer arietinum* L.) has been bred and selected from a narrow genetic base since its domestication and is notorious for a lack of genetic variation. Although this species does not occur in the wild, chickpea has 42 known wild relatives within the genus *Cicer* which have never been domesticated. Nine species, including chickpea, are annual while the remainders are perennial. Wild annual *Cicer* species inhabit a range of habitats from NE Africa along the Eastern Mediterranean, through Israel, Syria, and Turkey to Iraq, Iran, Armenia, and Afghanistan in the East.

One solution to the low genetic variation in chickpea is to source desirable traits (such as resistance to pests and diseases, or tolerance to environmental stress) in its wild relatives and introgress the desirable alleles. Fucheng plans to carry out the first step in this project by getting to know chickpea’s wild relatives better. Over the next three years he will characterise the *Cicer* germplasm held in collections in Australia and overseas. To do this, he will use the latest technology, based on DNA fingerprinting, to set up profiles of each species. This will allow Fucheng to assess genetic variation and understand the relationships between the species. The DNA polymorphism data will also be examined in relation to known quantitative traits, and ecological and climatic relationships derived from passport data. It is anticipated that Fucheng’s work, using a molecular approach to germplasm characterisation, will add

further value to current germplasm collections and will help breeders to select key parental genotypes for interspecific hybridisation.



*Collaborators Fucheng Shan, Kadambot Siddique and Heather Clarke examine the wide range of variation between different species of wild Cicer in the UWA glasshouses.*

**Bill MacLeod leads ACIAR project on “Integrated Management of Botrytis of Chickpea”**

Mr Bill MacLeod has taken up the position of Project Research Officer on the project ‘Integrated management of Botrytis Grey Mould (BGM) of chickpea in Bangladesh and Australia’, recently funded by the Australian Centre for International Agricultural Research (ACIAR). This is a cooperative project led by CLIMA, which will bring together the strengths of Bangladeshi and Indian institutions in field screening of germplasm with pulse disease and germplasm expertise from Australian institutions in WA, NSW and Victoria.

Bill has worked as a Plant Pathologist with the Western Australia Department of Agriculture (DAWA) since 1985, and will be undertaking this new role on a part-time secondment to CLIMA. He has a broad grounding in Plant Pathology, gained through his work on root and foliar diseases of cereals and legumes crops. For the past eight years he has concentrated on fungal diseases of pulses, research which has produced integrated disease management packages for all pulses including comprehensive fungicide application protocols.



The new international project will allow the development of integrated management solutions for BGM, a disease that is as much a concern to chickpea growers in WA as *Ascochyta* blight. This project will complement germplasm enhancement work already being undertaken at DAWA and also epidemiological studies being undertaken as part of Grains Research and Development Corporation (GRDC) funded projects.

**Debbie Thackray promoting CLIMA communication**

In July, after many years with CLIMA, Dr Nancy Longnecker stepped down as CLIMA Communications Manager to accept a new position as Senior Lecturer in Science Communication at the Centre for Learning Technology at UWA’s Faculty of Life and Physical Sciences. Nancy will retain her ties with CLIMA through projects in the Grain Quality sub-program.

Dr Debbie Thackray has been appointed on a part-time basis to the position of Communications Manager with CLIMA. Debbie took up her first appointment with CLIMA back in its infancy in 1994. Her background is in Entomology and Extension, with an M.Sc. in Insect Pest Management, a Ph.D. in host-plant resistance to aphids, and several years as a private crop consultant in the UK. During her time at CLIMA, Debbie has worked on red-legged earth mite with James Ridsdill-Smith’s pasture program and on forecasting and control of aphids and viruses in broad acre crops with Roger Jones’ plant virology group, based at the Department of Agriculture in South Perth. Most recently she has been developing and extending decision support systems for virus control for grain growers and advisers.

Debbie is currently working one day a week in her new role whilst continuing with her Plant Virology work at the Department of Agriculture. She will be away on maternity

leave from October until late January 2003. During her absence Dr Lieve Bultynck, who completed her PhD with Prof. Hans Lambers (Plant Biology, UWA), will be handling communication work. Lieve has already been ably assisting Debbie in editing this newsletter and in other aspects of communication.

Debbie says she is very much enjoying her new role in promoting CLIMA's activities and she welcomes news and views from all those associated with CLIMA.

Debbie's contact details at CLIMA are:

- Phone: (08) 9380 7074
- Fax: (08) 9380 1140
- email: dthackra@agric.uwa.edu.au

Lieve's contact details at CLIMA are:

- Phone: (08) 9380 7074
- Fax: (08) 9380 1140
- email: lbultync@cyllene.uwa.edu.au

### CONGRATULATIONS OONAGH!

The prize for best oral presentation by a student at the 12th Australasian Plant Breeding Conference, held at the Hyatt Regency Hotel (15th-20th September 2002) was awarded to Oonagh Byrne, a GRDC funded PhD student at CLIMA.

The presentation by Ms Byrne was entitled "Searching for molecular markers for pea weevil resistance" and was one of 11 oral presentations and 26 poster presentations by students at the conference.

The prizes were announced by the conference convenor, Associate Professor Wallace Cowling, and presented by Professor Tim Reeves, Director General, CIMMYT, Mexico, and Patron of the Australasian Plant Breeding Association.

The student prizes were sponsored by Canola Breeders Western Australia Pty Ltd.

### VISITORS

#### Visiting scientist from Taiwan to share knowledge in pasture genetic resources

Dr Jengbin (Andy) Lin has been funded by the National Science Council of Taiwan to visit CLIMA and DAWA to learn how we undertake plant improvement. Dr Lin majored in breeding of legumes at the University of Taiwan and now works in the Department of Forage Crops at the

Taiwan Livestock Research Institute. In Taiwan there are four species of forage grasses in commercial use: nilegrass, pangolagrass, napiergrass and sudagrass. Unfortunately, Taiwan does not have any high quality, high yielding legume forage species. High temperature, rainfall and humidity in summer are believed to be responsible for this.

Dr Lin will be spending most of his time working with Mr Richard Snowball, Curator of the Australian Trifolium Genetic Resource Centre at DAWA, with whom he will share ideas on germplasm development. He will also be visiting trials north of Perth with Mr Geoff Moore to learn more about local developments with subtropical pasture species. In September, he will spend one week in northern Queensland with Dr Mike Gilbert in the search for useful subtropical forage legumes. He will return via Adelaide where he will visit the South Australian Research and Development Institute to discuss the potential for exchange of lucerne germplasm and at the same time view the Medicago Genetic Resource Centre nursery plots.

In October, Andy will join Dr Digby Growsns of DAWA and others on the Great Victoria Desert Expedition run by the Kings Park Board. This will give Andy some very interesting hands-on experience in collecting Australian native germplasm, something many of us would envy.



Anyone wishing to make contact with Andy before he returns home on November 5, can do so through Richard Snowball on 9368 3517.

#### Visitor to CLIMA pasture legume group

Ms Lina Al-Bitar has been visiting with the CLIMA pasture legume group, directly supervised by Dr Angelo Loi and Mr Graham Taylor, since the beginning of July this year and will be leaving near the end of September.

Lina is a PhD student in Environmental Sciences at the University of Viterbo, Italy. She has been studying the ecology of several annual pasture legumes, with particular emphasis on seed dormancy and seed bank dynamics. Her interest is in legumes as an indicator of sustainability of organic farming systems.

Lina, of Lebanese origin, is an Italian citizen working at the International Centre for Advanced Mediterranean Agronomic Studies – Mediterranean Agronomic Institute of Bari, Italy (CIHEAM – IAMB). The CIHEAM is an intergovernmental institution established in 1962 on the initiative of the Council of Europe and the former OECE (currently OECD). The organisation has headquarters in Paris and acts in close cooperation with other international institutions, such as: the EU, the FAO, UNESCO, etc.

CIHEAM's task is to aid the agricultural development in the Mediterranean region through the training of senior personnel, scientific research and on-site partnership actions. To accomplish its institutional tasks, CIHEAM established 4 institutes, located in Bari, Italy (1962), Montpellier, France (1962), Saragossa, Spain (1969) and Chania, Greece (1983), each acting in a specific field.

The Bari Institute, where Lina currently works, is involved in the three main thematic areas: Land and Water Resource Management, Integrated Pest Management of Mediterranean fruit crops and Organic Agriculture. Lina's current role involves the coordination of the organic agriculture section, with main emphasis in the training sector. Her position is overseeing the management of the Masters courses, with almost 25 postgraduate participants, coming from 13 different Mediterranean countries, all CIHEAM members. These countries include: Albania, Algeria, Egypt, France, Greece, Italy, Lebanon, Malta, Morocco, Spain, Tunisia and Turkey.



Dr Angelo Loi and Mrs Lina Al-Bitar  
Boyup Brook, Western Australia

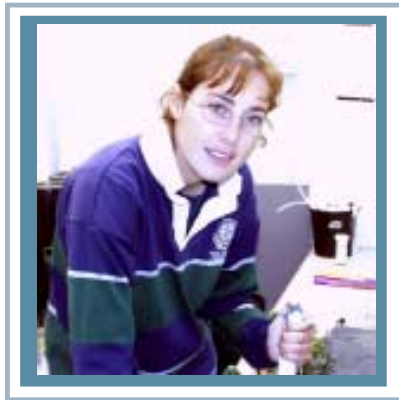
**List of CLIMA Visitors (recent, current and near future)**

<b>Visitor Name</b>	<b>Visiting Period</b>	<b>Institution and Country</b>	<b>WA Details &amp; Host</b>
Mr Shahal Abbo	20 Sept - 7 Oct	Hebrew University of Jerusalem Rehovot, Israel	Dr Neil Turner, Dr Jens Berger
Mrs Lina Al-Bitar	July-Sept	International Centre for Advanced Mediterranean Agronomic Studies, Mediterranean Agronomic Institute Bari, Italy	Dr Angelo Loi
Dr Geletu Bejiga	July	EARO Addis Ababa, Ethiopia	Prof Clive Francis
Dr Trevor Bretrag	18 Sept	DNRE, Agriculture Victoria, Horsham	Mr Bill MacLeod, Prof Kadambot Siddique
Dr Steve Clement	Sept-Dec	USDA, USA	Dr James Ridsdill-Smith
Prof Nicolai Dzybenko	20-27 Oct	Vavilov Institute St Petersburg	Prof Clive Francis
Mr Belay Ejigu	July	Vice Minister for Agriculture Ethiopia	Prof Clive Francis
Mr Ted Knights	18 Sept	NSW Agriculture Tamworth	Mr Bill MacLeod, Prof Kadambot Siddique
Dr Andy Lin	Sept-Oct	Taiwan Livestock Research Institute	Dr Richard Snowball
Md Alamgir Miah	14-27 Sept	Bangladesh Agricultural Research Institute Jessore, Bangladesh	Mr Bill MacLeod, Prof Kadambot Siddique
Ms Kate O'Callaghan	26 Aug	Novogen Ltd	Prof Clive Francis, Mr Kevin Foster
Dr Carlos Ovalle	16-28 Sept	INIACHile	Assoc Prof Mike Ewing, Prof Kadambot Siddique
Dr Suresh Pande	14-27 Sept	ICRISAT Hyderabad, India	Prof Kadambot Siddique, Mr Bill MacLeod
Dr Hari Sharma	Sept-Oct	ICRISAT Hyderabad, India	Dr James Ridsdill-Smith, Dr Heather Clarke
Dr Ken Street	15-20 Sept	Genetic Resources Unit, ICARDA	Prof Clive Francis
Dr Paul Taylor	18 Sept	University of Melbourne	Mr Bill MacLeod, Prof Kadambot Siddique
Dr N. K. Yadav	15-20 Sept	NARC, Nepal	Prof Clive Francis
Dr S. S. Yadav	14 – 29 Sept	Indian Agricultural Research Institute New Delhi, India	Dr Neil Turner, Dr Jens Berger

## CLIMA STUDENTS GAIN PhDs

### Dr Vanessa Dunbabin

Vanessa Dunbabin has recently had her CLIMA based Ph.D. thesis passed with distinction. Vanessa's thesis, supervised by Art Diggle and Zed Rengel, is entitled 'The effect of root system form and function on nitrate uptake by lupins in a leaching environment' and deals with the possibility of selecting lupin varieties with improved nitrate uptake ability in order to reduce nitrate leaching and acidification under lupins.



In February of this year, Vanessa started a GRDC funded post-doctoral position giving her the opportunity to expand on her Ph.D. work by investigating the below-ground competitiveness of grain-crop varieties as a weed control strategy. Vanessa is currently based at the Tasmanian Institute of Agricultural Research and during the project she will be working closely with Dr Gurjeet Gill of the University of Adelaide and the CRC for Australian Weed Management. Congratulations Vanessa!

### Dr Patrizia Gremigni

Also congratulations to Patrizia Gremigni! Patrizia's thesis on 'Control of seed alkaloid levels in narrow-leafed lupins (*Lupinus angustifolius* L.) through management of plant nutrition and agronomic practices', and supervised by Assoc. Prof. Wallace Cowling (Plant Biology, UWA), Adj. Prof. John Hamblin (Export Grains Centre) and Dr David Harris (Chemistry Centre WA), was passed on the 27<sup>th</sup> of August.

Patrizia is currently working as Research Officer in the School of Plant Biology, UWA, on the GRDC-funded project 'Development of molecular marker and mapping technology

for lupin breeding: comparative mapping across lupin species and between legume genera'. In this project, she will be responsible for isolating DNA from *L. angustifolius* genotypes (parents and 100 F8 progenies), preparing probes and assessing RFLP patterns, summarizing bands and obtained polymorphisms.

## GREG GETS A HANDSHAKE, AND POLLOCK A PAT FROM THE PRIME MINISTER.

### Ms Sue Dodimead

Last month at a function held in Canberra, The University of Western Australia was presented with the Prime Minister's award for the National Employer of the year within the Higher Education category. This award is given to businesses and Education Institutions for employing people with disabilities.

Our receptionist Mr Greg Madson, representing both CLIMA and CRC for Plant-based Management of Dryland Salinity, attended the function together with myself, having been invited to join other UWA staff in this celebration.

The function was held in the Great Hall in Parliament Building with a gathering of approximately 500 people from all States in Australia. Dinner consisted of an entree of smoked salmon and salad with a main meal of delicious chicken and gourmet vegetables, finishing with apple cinnamon tart and cream, and of course ample red and white wine.

Throughout the evening awards were presented to State winners in the small business and large business category, and it was a very proud moment indeed, when UWA was announced by the Prime Minister as the National winner in the Higher Education category. A loud cheer went up from the UWA table and clapping as Mr Bob Farrelly, the Director of Human Resources and Malcolm Fialho from the Diversity Office, approached the dais to receive the award from the PM. Pollock, Greg's 4-footed companion, even emerged from under the table to see what was going on. With all awards presented and formalities and speeches ended the PM mingled with everyone to chat and congratulate people on their efforts, and he gave a special thank you to Greg; now a chance to take a few photos.

The evening was a great success and very enjoyable and it certainly proved that many Australians within different communities and environments were trying to bridge that gap so everyone is given an equal chance within the employment and educational world. Problems will always present themselves, but there is a much greater insight now trying to resolve them.



It was also nice that Greg was able to meet with relatives in Canberra who had not seen him for twenty years. Finally, I have to say that the weather turned up trumps with cloudless blue skies, no wind and pleasant warmth in the sun. To put it plainly, a great weekend in many ways.

## POSTCARD

### Postcard from the Centre for Learning Technology



Hello CLIMA friends,

It is just sinking in that after 8 wonderful years, my primary focus at work is no longer CLIMA. I have moved a huge 500 or so metres to the Centre for Learning Technology where I started work in July with a creative and friendly group who are building up the Centre for Learning Technology. Our aim is 'sharing the excitement of science' with the wider community.

We are working on two new science communication undergraduate units for delivery next year: 'The Write Stuff' and 'Talk it Up!' We are also preparing professional development workshops and new research programs with one focus being assessment of communication activities. In particular, the staff

at CLT have interest and expertise in digital technology such as multimedia CD ROMs and the internet as a tool for science communication.

One of my big objectives over the coming year(s) is to maintain the friendships and good working relationships which developed during my time at CLIMA. If you have ideas about projects we could do together (or would just like to have a cuppa!), I would love to hear from CLIMA colleagues.

Dr Nancy Longnecker

[Nancy.Longnecker@uwa.edu.au](mailto:Nancy.Longnecker@uwa.edu.au)

(08) 9380 2492

## BABY NEWS

Ms Jenny Hawkes (CLIMA) and partner Chris Poole became parents to Nicholas Quinlan Hawkes Poole on August 28. Nicholas weighed 9lb 3 1/2 oz and measured 54.5cm at birth. The consensus is that he strongly resembles his father!



In our last newsletter we announced the arrival of CLIMA employee Dr Penny Smith's baby girl Jemima. Now we have a photo of Jemima to show you.



## NEWSLETTER CREDITS

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The University of Western Australia  
35 Stirling Highway  
CRAWLEY WA 6009

Email: [clima@cyllene.uwa.edu.au](mailto:clima@cyllene.uwa.edu.au)

Website: <http://www.clima.uwa.edu.au/>

Vol.3 Number 2 October 2002

### Editors:

Dr Debbie Thackray and  
Dr Lieve Bultynck

### Contributing authors:

Mrs Lina Al-Bitar  
Ms Oonagh Byrne  
Ms Margaret Campbell  
Dr Heather Clarke  
Dr Jon Clements  
Dr Art Diggle  
Ms Sue Dodimead  
Dr Vanessa Dunbabin  
Prof Clive Francis  
Dr Patrizia Gremigni  
Dr Roger Jones  
Dr Tanveer Khan  
Mr Andy Lin  
Dr Angelo Loi  
Dr Nancy Longnecker  
Mr Bill MacLeod  
Prof Kadambot Siddique  
Dr Richard Snowball  
Dr Debbie Thackray

### Layout:

Emily Lockwood  
DUIT Multimedia

## ANNOUNCEMENT

1<sup>st</sup> Australian *Medicago truncatula*  
Workshop

A Model System for Studying  
Legume Biology

10 - 13 November 2002

Rottneest Island

Perth, Western Australia

For more information, have a  
look at the workshop brochure  
or go to the workshop website:

[www.cbcc.murdoch.edu.au/  
AMtW/](http://www.cbcc.murdoch.edu.au/AMtW/)

**An important date for  
your diary:**

**The CLIMA Christmas  
party will be on the  
18th of December.**

**Further details to  
follow**

## ANNOUNCEMENT

Don't forget to tell your  
friends about the new look  
CLIMA website!

<http://www.clima.uwa.edu.au/>