



Rothamsted International

Sharing research excellence: international collaboration and capacity building for the benefit of agriculture in developing countries

Dr SOM DUTT

**Institute of Himalayan Bioresource
Technology, Palampur, India**

Dr Som Dutt recently completed a 12 month Fellowship in November 2004 with financial support from the World Resource Foundation. He worked with Prof. Christine Foyer and Dr Bhupinder Khambay at Rothamsted Research on a project entitled "Environmental triggers of secondary metabolism in *Picrorrhiza kurroa* and *Nepeta racemosa* plants".



Prof Christine Foyer with Dr Som Dutt

Picrorrhiza kurroa is a small perennial herb found in the Himalayan region growing at elevations of 3000 to 5000 metres. The rhizomes and roots of this plant are used to treat infections, allergies, auto-immune disorders and liver conditions in the complex Indian system of healing called Ayurveda, taken from the Sanskrit for 'knowledge of life'. Several plant compounds are found in the rhizomes and roots but two of the substances (picroside-I and picroside-II) are thought to be largely responsible for giving the plant its medicinal properties.

P. kurroa is listed in the Red Data Book of endangered Indian Plants. Identifying how its active compounds are made, will help to

assess how to cultivate *P. kurroa* as an alternative crop. This is important for its conservation, as numbers are being reduced due to indiscriminate collecting. Dr Dutt's work will also provide information to ensure product quality and consistency for medicinal use, and ultimately for pharmaceutical development.

The project carried out by Dr Som Dutt was to investigate how the picrosides were made within plants. Studies were also done with *N. racemosa*, as this plant uses similar pathways to produce for these types of substances. A range of chemicals were tested to study their effects on plant metabolism and synthetic pathways.

The work is being prepared for publication, and Dr Som Dutt will be returning for a follow up visit in 2005, funded by the Royal Society, so that more advanced work involving molecular studies can be completed.

For Rothamsted International, the successful Fellowship completed by Dr Dutt again demonstrates the benefits of research cooperation. Dr Dutt was able to improve his knowledge of techniques for studying plant physiology and biochemistry, using a medicinal plant which has been the focus of previous work done at Rothamsted.

The plant is also a priority for research at the Institute of Himalayan Bioresource Technology where Dr Dutt works, and the institute will greatly benefit from his increased expertise and knowledge.



In broader terms, this Fellowship exemplifies the blend of scientific international collaboration, capacity building, biodiversity conservation and use of alternative non-food crops, all of which are gaining increasing importance in UK and global science policy.

ROTHAMSTED INTERNATIONAL FELLOWS

Besides Dr Som Dutt, other recent Fellows have included:

Mingjie CHEN, Huazhong University of Science & Technology, China



Started in November 2003 for 12 months with Prof. Peter Shewry (Crop Performance and Improvement Division). Project titled "Wild relatives of wheat as sources of novel genes to manipulate grain texture".

Prof. Rongfeng JIANG, China Agricultural University

Started in August 2003 for 12 months with Prof. Steve McGrath and Dr Fangjie Zhao (Agriculture & the Environment Division). Project titled "Rhizosphere aspects of arsenic hyperaccumulation in *Pteris vittata* and its phytoremediation potential".

Dmitry KORNYYUKHIN, N.I. Vavilov Research Institute of Plant Industry, Russia

Started in October 2003 for 12 months with Dr Kim Hammond-Kosack (Plant-Pathogen Interactions Division). Project titled "Exploiting *Triticum monococcum* as a source of novel traits genes and variant alleles".

Prof. Mehmet Oktay GURKAN, University of Ankara, Turkey

Started in October 2003 for 12 months with Dr Graham Moores (Biological Chemistry Division). Project titled "Biochemical studies of resistance mechanisms in field populations of *Tetranychus urticae* and *Helicoverpa armigera* in Turkey".

DONATIONS TO ROTHAMSTED INTERNATIONAL

Rothamsted International is a not-for-profit charity organisation, dependant on donations to carry out its various activities for agricultural development.

One of our key responsibilities is awarding Fellowships to scientists from developing countries. The cost of funding individual Fellows is £18,500 (€26,500) for 12 months support, and we aim to appoint up to 10 Fellows each year

Bill Bell, an unpaid volunteer, has been helping in our fundraising efforts since February 2004 by contacting organisations who may be willing to provide donations.



Due to Bill's efforts, the Joffe Charitable Trust donated £10,000 (€13,900) in October. Earlier this year, we also obtained £3,000 (€4,170) from the Morgan Blake Charitable Trust and £600 (€834) from the Gwyneth and Peter Hodgkinson Trust. In addition, £2,000 (€2,780) was received from Rothamsted Alliance International (RAI) and the RAI Film Club.

If you would like to make a new or increased donation to Rothamsted International, then please get in touch!

NEW FUNDING DATABASE

The original database of donors is being updated. In order to improve communication between ourselves and all our donors, we would be grateful if you would confirm your details for our records.

Name.....
Address.....
Contact Tel.....
Contact Email.....

NEW FELLOWSHIP SCHEME
AFRICAN FELLOWS PROGRAMME
LAUNCHED JULY 2004



Building on the success of the original Rothamsted International Fellowship Scheme (RIFS), which was inaugurated in 1993, Rothamsted International has been asked to

manage an exciting new research and training programme with financial backing from an international charity.

The African Fellows Programme (AFP) is targeted specifically at African scientists who wish to access European expertise in order to address immediate problems in African agriculture. Scientists can be based at any university or institute throughout Europe.

The first call for pre-proposals was made in July 2004 through email and internet promotions. By the deadline in September, 69 pre-proposals were received and we asked 11 applicants (about 16%) to submit full proposals.

A selection panel will meet in Nairobi in January 2005 to consider these submissions and to appoint the first Fellows under this new scheme.

Countries which submitted the highest numbers of pre-proposals were: Kenya (30%), Nigeria (25%) and Uganda (13%).

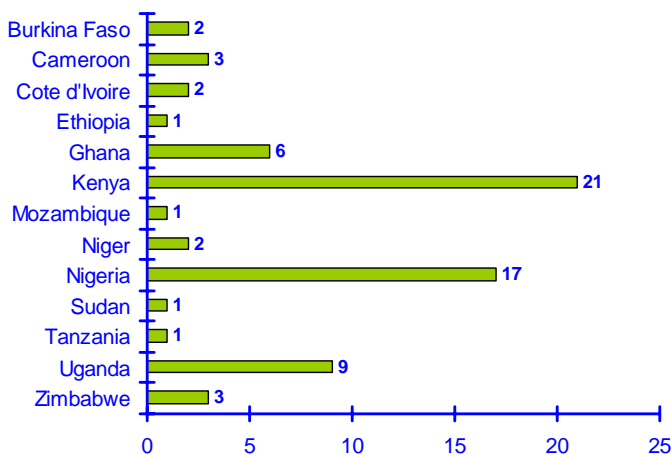
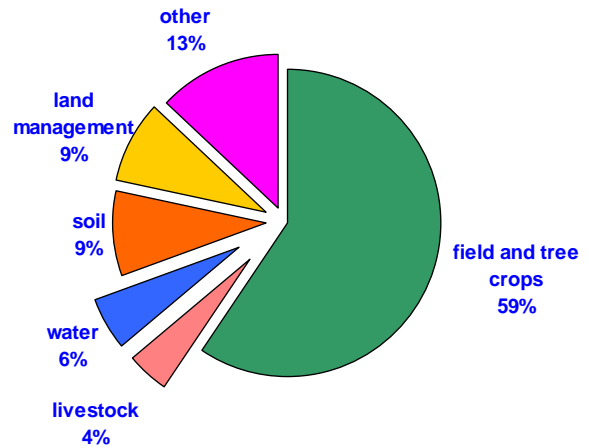


Chart showing pre-proposals by country

Approximately 28% of the pre-proposals, (15) were submitted by women scientists. The majority of project ideas focused on agronomy, cultivation and protection of field and tree crops.



Classification of all pre-proposals

The AFP will operate for three years from 2004 and we expect to make two calls for pre-proposals each year. The next call is expected in February 2005.

More information can be found at <http://www.rothamsted-international.org/>

International development in 2005

2005 will be an important year for developing country issues in the UK.

The UK government will take over presidency of both the European Union and the G8 group of industrialised countries. The Commission for Africa will be reporting on measures to tackle poverty and under-development in Africa, and the UN Secretary General, Kofi Annan, will review the progress that has been made thus far in achieving the Millennium Development Goals. Rothamsted International will be playing its part in contributing to these initiatives.

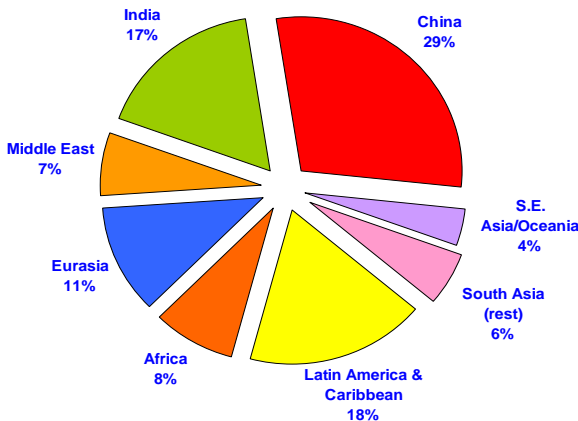
ROTHAMSTED INTERNATIONAL FELLOWSHIPS

Summary of recent monitoring

The Rothamsted International Fellowship Scheme was set up in 1993 to commemorate the 150th anniversary of Rothamsted Research Institute.

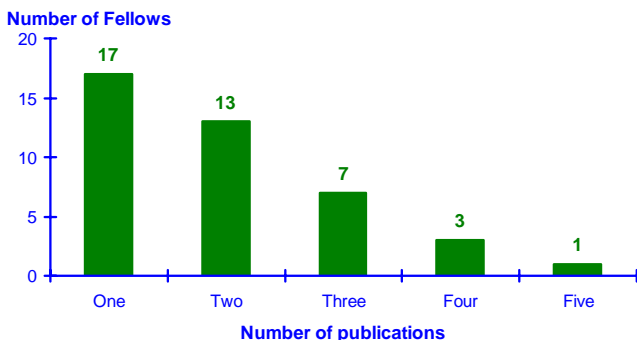
Since then, more than 100 scientists from developing countries have spent time here to carry out projects and increase their research skills. In many cases, contact has been maintained over the years so that further visits, publications and research projects could be developed.

As part of a recent monitoring exercise, we collected information on 106 Fellows appointed between 1993 and November 2004. Most Fellows came from China and India, with very few from the Middle East or Africa.



Refereed publications can be one indicator of scientific outputs under the Fellowship scheme, although there are several other measures of success.

Searches on the Web of Science (<http://www.mimas.co.uk>) showed that 81 peer-reviewed articles were published up to November 2004.



Scientific publications by Rothamsted International Fellows (1993-Nov 2004)

An overall publication ratio of 0.764 articles per Fellow was achieved during the past 11 years. The highest number of publications was produced by Dr Y.J. Du who worked with Prof. W. Powell in 1994/95.

The journal in which most publications appeared was *Annals of Applied Biology*, with 5 out of 81 articles, indicating that a large variety of scientific journals were used to successfully present findings made by Fellows and Rothamsted staff.

The average impact factor for published articles was 2.037, while the highest impact factor article was published in 1999 by W. Tezara *et al.* in the magazine *Nature* (Vol 401, pp 914-917). Dr. Tezara, from Venezuela, was at Rothamsted Research in 1996 working with Dr D. Lawlor.

Additional News

NEW RI WEB SITE

A new web site has been under development during 2004 and will hopefully be activated before Christmas! Further details in the next issue of the Newsletter.

UPDATE ON RI STAFF

From 2004 the staff involved are:

- Stephen James, Chief Executive
- Judy Mann, Deputy Chief Executive
- Marie Orford, Fellowships Coordinator
- Paresh Shah, International Liaison
- Bill Bell, Fundraising Coordinator
- Kathleen Howe, Alumni Coordinator



Left to Right: Marie, Paresh, Kathleen, Bill & Judy

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