

Rothamsted International

Sharing Research Excellence ...

... for the benefit of rural economies in developing countries world-wide

DONOR NEWSLETTER - JULY 2004

Rothamsted International (RI) is very grateful for the continuing support of its many Donors: Rothamsted staff, private individuals, businesses, and other organisations. This Newsletter is to keep you informed of the valuable work being carried out by Rothamsted International Fellows and the impact this has in their home countries. Thank-you for taking the time to read it.

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#### **Rothamsted's 100<sup>th</sup> Fellow:**

**DR JOHN AGBENIN**

In the course of the last 10 years Rothamsted Research has been pleased to welcome more than 100 International Fellows, from 27 developing countries; all eager to work at this world-famous Institute. In December 2003 we were delighted to introduce the 100<sup>th</sup> Post-Doctoral Fellow: **Dr John Agbenin**.

Dr Agbenin is a Nigerian, who is a lecturer in the Soil Science Department at the Ahmadu Bello University in Zaria, northern Nigeria. His home Institute is very large with some 30,000 students! It is almost the same size as the town of Harpenden.

He was thrilled to be appointed as an RI Fellow to work with Prof. Steve McGrath in Rothamsted's Agriculture and Environment (AEN) Division. He commented, "Rothamsted is the most famous agricultural institute in the world. It is a great opportunity and an honour to be here."

#### **THE PROJECT**

##### *'Solubility of Potentially Toxic Metals in Soils'*

In Nigeria there is growing concern about heavy metals in soils, water, food and vegetables, because of indiscriminate use of agrochemicals. Heavy metals from wastes and industrial or diffuse pollution accumulate in soils and threaten the sustainability of agriculture and land use.

Dr Agbenin's project looked at the solubility relationships in different soils treated in the field with sewage sludge more than 6 years ago. He also examined the lability of metals using radio-isotopic methods, comparing this new technology with the standard techniques used in Nigeria.

The project is expected to provide the framework for formulating sound environmental policy and sustainable agricultural development in Nigeria, taking soil and environmental health into consideration.

#### **SEMINARS**

During his 6 month stay at Rothamsted, John Agbenin also undertook some public speaking engagements, in order to promote the Fellowship Scheme and draw attention to its impact in developing countries.

His audiences included members of the Harpenden Society; followed by the Harpenden branch of the United Nations Association. He also produced an excellent PowerPoint Presentation for Rothamsted Alliance International, our local fund-raising group. He later met members of Rothamsted Association (for retired staff) at one of their tea-

parties at Rothamsted Manor. Finally, he gave a seminar for the AEN Division in the Fowden Hall. No small feat, but very well received!

Throughout his stay here his expertise and knowledge was appreciated by all who met him. He gave us an invaluable insight into his life and work in Africa and the benefits of his experiences as an RI Fellow.



**DR SUNDAY EKESI**

**RI Fellow from March-August 2003 with Dr Judith Pell**

**Background**

Dr Sunday Ekesi is a Nigerian Scientist working at the International Centre of Insect Physiology and Ecology in Nairobi, Kenya. His PhD thesis was on the possibilities for microbial control of thrips (insect pests) with fungi that infect insects in legumes. Since then, Sunday has continued to work on biological control of thrips in vegetables, funded by the Fresh Produce Exporters Association of Kenya (FPEAK) and the Kenya Flower Council (KFC). He has also been involved with the control of fruit flies within the African Fruit Fly Initiative (AFFI), funded by the International Fund for Agricultural Development (IFAD).



*Sunday with Judy Pell and Paresh Shah looking for aphids and natural enemies on stinging nettles.*

**Research work at Rothamsted**

During his Fellowship, Sunday learnt techniques for culturing and testing some of the more specialised fungal species which infect pest and non-pest insects. Sunday carried out a series of laboratory and semi-field studies on interactions between the fungus *Pandora neoaphidis*, pest and non-pest aphid species and predatory ladybirds, which resulted in a paper accepted by the journal *Agricultural and Forest Entomology*.

**Biological control of thrips pests**

In Kenya, Sunday's research on microbial control of thrips has now reached a stage where large-scale evaluations of the fungus *Metarhizium anisopliae* are being made by spraying spores against several species of thrips on a variety of vegetable and floricultural crops. Studies are being done in collaboration with scientists from the National Agricultural Research Systems (NARS) in Kenya, Uganda and Tanzania, as well as export vegetable and flower growers, the International Institute of Tropical Agriculture, Benin, and the University of Vermont, USA.

**Integrated control of fruit flies**

The AFFI project is aimed at promoting fruit growing in Africa with research on the biodiversity of tephritid fruit flies, and the exploitation of parasitoids and pathogens for fruit fly management. Grants have also been obtained from the International Atomic Energy Agency (IAEA) to evaluate female-targeted lures for *Ceratitis capitata* detection and suppression, and from the Food and Agricultural Organisation (FAO) for surveillance and management of a newly detected invasive Asian fruit fly species, *Bactrocera dorsalis*.

In these three projects, Sunday has been working on detection and development of suitable fungal pathogens for managing a range of fruit fly species, testing for compatibility between fungi and available lures, or attractants, and the development of delivery systems for field use. There is also a possibility to collaborate with scientists in the USA testing microscopic worms that infect insects. All of this research is being carried out in conjunction with scientists in Mexico, USA and Austria, as well as NARS representatives in Kenya, Uganda, Tanzania, Nigeria, Cote d'Ivoire and Burkina Faso.



*Sunday setting fruit fly traps in coffee crops in Kenya.*

**Outcomes of the RI Fellowship**

Sunday was able to broaden his knowledge of insect-pathogenic fungi and biological control strategies at Rothamsted. He has been applying his new experiences in surveys to identify and isolate fungi infecting aphids in vegetable crops. For example, high levels of infection by the fungus *Neozygites* sp. have been recorded from an important aphid pest, *Aphis gossypii*, in okra. Possible management techniques for conserving these fungal natural enemies in vegetables are being considered as these fungi cannot easily be mass produced and sprayed.

**DR IRINA BELYAEVA**

**RI Fellow from January-December 2004**

**Project Leaders: Drs Angela Karp and Sviatlana Trybush**

Dr Irina Belyaeva is from the Botanical Garden of the Russian Academy of Sciences in Yekaterinburg, in the Urals. During her stay at Rothamsted she will be studying the taxonomy of the willow trees from the UK National Willows collection at Rothamsted, and relating her work to collections held at the Botanical Garden in Yekaterinburg.



*Willows shaped to mimic the DNA double helix, planted close to Rothamsted Manor.*

**Background**

The Botanical Garden of the Ural Branch of the Russian Academy of Sciences, in Yekaterinburg, Russia, was founded in 1936 and carries out research on various aspects of plant biology, biodiversity, forestry and rational use of natural resources. The Botanical Garden has about 200 staff, with 60 in the department on the Ecology of Woody Plants, where Irina is based.

Irina completed a PhD on natural variability in populations of four willow species in the Urals. Her Father was a previous director of the Botanical Garden who worked on willow breeding.

**Research interests**

Irina has been working on problems of taxonomy in willows (*Salix* spp.) using classical (morphological) techniques, where features such as leaf shape and size or catkin colour and size are integrated to form decisions on whether a tree belongs to a particular species or is a certain type of hybrid formed from crossings between species. For these studies, plant material has to be collected in Spring, Summer, Autumn and Winter, which is then dried and prepared in herbaria for detailed examination.

Irina has made short research visits to other European countries including Germany and Switzerland, but her 12 months at Rothamsted will be her longest period away from home.

**Willow taxonomy**

The genus *Salix* has over 350 species which show extensive variation in many traits including size, growth rate and canopy architecture. Natural hybridisation between species occurs frequently, resulting in many forms with differing morphologies and characteristics.

**Importance of willows in the Urals**

Willows are used for traditional crafts, especially basket making, but are also planted for safeguarding landscape features, such as protection against wind erosion or river bank stabilisation. Another important use is in bioremediation, with willows being planted to remove toxic contaminants from degraded soils.



*Dr Irina Belyaeva (front) with Dr Sviatlana Trybush in their laboratory at Rothamsted.*

**The willow collection at Rothamsted**

The UK National Willows Collection was started in the 1920's at Long Ashton, near Bristol, and has recently been relocated to Rothamsted Research. There are approximately 1,000 cuttings, with about 120 true *Salix* species and 300 hybrids. Considerable expertise exists at Rothamsted on molecular techniques for the separation of willow species and hybrids.

**Outcomes of the RI Fellowship**

Irina will incorporate classical taxonomy with molecular approaches to distinguish specimens from the Rothamsted and Urals collections of willows. This experience will be of practical benefit during the formation of a molecular biology unit which she is planning to start on her return to the Botanical Garden.



... Spotlight on Donors ...

## ROTHAMSTED ALLIANCE INTERNATIONAL

Rothamsted Alliance International (RAI) is a group of local fund-raisers, who were formed at the inception of Rothamsted International in 1993.

The aims of RAI are: *'to strengthen the links between Rothamsted International and the local community, and to help raise money for visiting agricultural and environmental researchers from developing countries'*.

### EVENTS

There are various ways in which they try to achieve these aims. They have a membership group of individuals and families who pay an annual subscription to support the cause. This group is represented by a committee who organise regular events: some are fund-raising; others are to raise awareness; others give access to scientific information about Rothamsted. Regular Newsletters keep members informed about forthcoming activities.

Recent events have included:

- A guided tour of Rothamsted Manor Gardens
- A lecture by a Rothamsted International Fellow
- A wine tasting evening in the Fowden Hall
- A musical event at Rothamsted Manor
- A visit to a local organic farm (see photo below)



In 2003 the RAI celebrated its 10<sup>th</sup> Anniversary with an Open Evening in the Conference Centre, which was very well attended by existing members, and several Rothamsted International Fellows; this event also attracted new members.

During the course of their 10 year history the RAI have made regular donations to Rothamsted International. Their success can be measured by the fact that they have generated sufficient income to 'sponsor' their own RI Fellow: Dr Leo Hidalgo, from Cuba.

### FILM CLUB SUCCESS



Undoubtedly, the RAI's biggest success to date has been the launch of a monthly Film Club. Since there is no cinema in either Harpenden or nearby St Albans, this has proved very popular with many locals who do not wish to join late night crowds in Luton or Hemel. Members pay a subscription for a season of films; guests can also attend. If you want further details about the Film Club please contact Mrs Gill Tattersfield by email: [giltatt@aol.com](mailto:giltatt@aol.com)

If you are interested in joining the RAI group, or just want to know more about their events, please contact Mrs Shirley Greatrex, the Chairman, at: [p.greatrex@bcs.org.uk](mailto:p.greatrex@bcs.org.uk)

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Rothamsted International has registered with 'igive2'. If you check the website you will see that it allows you to nominate a named charity to receive a percentage of whatever you spend on-line, with many famous retailers. You can register for free with 'igive2' and if you nominate RI, this will then help with our fundraising efforts to bring new International Fellows to Rothamsted, at no cost to you!

For more information, or to make a donation, please contact us at:

**Rothamsted International,**  
**Harpenden, Herts, AL5 2JQ, UK**  
**Tel: +44 (0) 1582 763133**  
**Email: [rothamsted.international@bbsrc.ac.uk](mailto:rothamsted.international@bbsrc.ac.uk)**  
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