

# INTERNATIONAL NEWSLETTER ON PLANT PATHOLOGY

## ISPP Newsletter 46 (7) July 2016

News and announcements from all on any aspect of Plant Pathology are invited for the Newsletter. Contributions from the ISPP Executive, Council and Subject Matter Committees, Associated Societies and Supporting Organisations are requested.

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### 2015 impact factor for Food Security

The 2015 impact factor for Food Security is 1.557 (Thomson Reuters Journal Citation Reports 2016), which has increased from the 2014 impact factor of 1.495.

Congratulations to Richard Strange (Editor-in-Chief), the editorial board, reviewers and all those who contribute to the journal's ongoing development.

For the latest issue [click here](#).

(Greg Johnson)

### Scientist of the year award to Samir Droby

The Agricultural Research Organisation (ARO) proudly announces that Professor Samir Droby from the Institute of Postharvest and Food Sciences at the Volcani Center is awarded the Scientist of the year 2015 award for his unique and innovative scientific contribution in the field of postharvest pathology of fresh agricultural products.

The award was presented at a special ceremony held in the Volcani Center on 1st June 2016. As part of the Ceremony, Prof. Droby made a presentation on his work and achievements.

The Academic Committee at the Volcani Center explained that the title "Scientist of the Year" is awarded to Prof. Droby for his novel work that reflects scientific excellence and innovation in studying different aspects of postharvest diseases on fruits and vegetables; for his originality and vision in identifying the potential in utilising fruit microbiome research in developing microbial based biological control products for postharvest diseases control; for his ability to build an integrative research system to elucidate the mechanisms underlying host-pathogen interactions; for his achievements in integrating basic and applicative scientific research; and for all his achievements that brought him national and international recognition as a leading scientist in his field.

Samir is an experienced senior scientist with more than 30 years of service at the Department of Postharvest Science and has been teaching courses related to Postharvest pathology at the Faculty of Agriculture Food and Environment of the Hebrew University of Jerusalem. He has mentored many masters and PhD students, Postdoctoral fellows and visiting scientists from around the world. Samir is also Chair of the ISPP Committee on Postharvest Pathology.



Prof. Samir Droby receiving the award from Prof. Yoram Kapulnik, the head of the ARO, Volcani Center.

(Samir Droby)

### **Global threat to agriculture from invasive species**

A paper by D.R. Paine et al. titled "Global threat to agriculture from invasive species" was published online on 20 June 2016 by Proceedings of the National Academy of Sciences of the United States of America (early edition). The abstract is as follows:-

Invasive species present significant threats to global agriculture, although how the magnitude and distribution of the threats vary between countries and regions remains unclear. Here, we present an analysis of almost 1,300 known invasive insect pests and pathogens, calculating the total potential cost of these species invading each of 124 countries of the world, as well as determining which countries present the greatest threat to the rest of the world given their trading partners and incumbent pool of invasive species. We find that countries vary in terms of potential threat from invasive species and also their role as potential sources, with apparently similar countries sometimes varying markedly depending on specifics of agricultural commodities and trade patterns. Overall, the biggest agricultural producers (China and the United States) could experience the greatest absolute cost from further species invasions. However, developing countries, in particular, Sub-Saharan African countries, appear most vulnerable in relative terms. Furthermore, China and the United States represent the greatest potential sources of invasive species for the rest of the world. The analysis reveals considerable scope for ongoing redistribution of known invasive pests and highlights the need for international cooperation to slow their spread.

[Read paper.](#)

### **Genetically engineered crops: Experiences and prospects**

In May 2016, the US National Academies of Sciences, Engineering and Medicines released a review of 20 years of data regarding genetically engineered (GE) crops. This study is intended to provide an independent, objective examination of what has been learned since the introduction of GE crops, based on current evidence. The [review](#) can be downloaded for free.

View the "[Genetically engineered crops: Experiences and prospects release briefing](#)" presentation by Committee Chair Fred Gould, North Carolina State University.

### **Wheat-blast encourages rapid data sharing to combat disease**

With fields ablaze in Bangladesh, farmers are struggling to contain Asia's first outbreak of wheat-blast, a fungal disease caused by *Magnaporthe oryzae*, that periodically devastates crops in South America. Plant pathologists

warn that wheat blast could spread to other parts of south and southeast Asia, and are hurrying to trace its origins.

"It's important to know what the strain is," says Sophien Kamoun, a biologist at the Sainsbury Laboratory in Norwich, UK, who has created a website, Open Wheat Blast (<http://go.nature.com/bkczwf>), to encourage researchers to share data. Kamoun has uploaded the sequence data of a fungus sample from Bangladesh, and Nick Talbot, a plant pathologist at the University of Exeter UK, has deposited *M. oryzae* sequences from wheat in Brazil. Talbot hopes that widely accessible genome data could help to combat the outbreak. Researchers could use them to screen seeds for infection or identify wild grasses that can transmit the fungus to wheat fields.

Rapid data sharing is becoming more common in health emergencies, such as the outbreak of Zika virus in the Americas. Kamoun and Talbot say that the plant-pathology community has a responsibility to allow data to be used to combat diseases that are happening now.

Recently, Barbara Valent's team at Kansas State University in Manhattan, [reported](#) the first gene variant known to confer wheat-blast resistance, and field trials of crops that bear the resistance gene variant have begun in South America. But plant pathologists say that wheat strains must be bred with multiple genes for resistance, to stop *M. oryzae* quickly overcoming their defences.

[Read more.](#)

(Ewen Callaway, [Nature News](#), 27 April 2016)

### **African network strengthens biosecurity at workshop in Tanzania**

African plant biosecurity professionals from ten African countries attended a two week workshop from 23 May to 3 June 2016 in Tanzania. This workshop was part of the Australia - Africa Plant Biosecurity Partnership (AAPBP), a capacity development program drawing on Australian expertise to strengthen the skills of professionals within sub-Saharan African plant biosecurity agencies.

The two week program incorporated a variety of activities including interactive workshop sessions on key plant biosecurity topics; progress reports on Senior Fellows' action plans and market access simulation exercises.

The second week focused on discussions around two priority technical themes: management of fruit flies and measures needed to prevent the further spread of Panama disease TR4 from northern Mozambique into neighbouring countries. This workshop involved participation of Australian experts Dr Peter Crisp (South Australian Research and Development Institute) and Rebecca Sappupo (Queensland Department of Agriculture and Fisheries).



Participants from ten African countries at the recent biosecurity workshop held in Tanzania.

([The Leaflet](#), Plant Biosecurity Cooperative Research Centre (PBCRC), June 2016)

### **University of Nebraska-Lincoln gets \$20M grant to improve crop productivity**

Center for Root and Rhizobiome Innovation at the University of Nebraska-Lincoln (UNL) has received a \$20 million grant from the National Science Foundation for studying how plant root systems interact with the soil. The project is part of an effort to improve crop productivity. The five-year grant will enable researchers at the center to examine how microbes promote plant health and crop productivity in crops like soybeans and corn.

Plant Pathology Prof. James Alfano, who is also one of the Center's co-directors, said, "All plants release compounds into the soil. Microbes live near the roots because there are a lot of nutrients there, so the idea is that plants evolved to recruit microbes that are beneficial to them."

Finding the right group of microorganisms, will likely help producers plant more drought-resistant crops, which would stand up better to soil salinity and provide increased yields, all of which are crucial to feed the world's growing population.

[Read more.](#)

(Maine News Online, 19 June 2016)

### **First announcement of the 4th International Symposium on Postharvest Pathology**

The 4th International Symposium on Postharvest Pathology will be held at the Skukuza in the Kruger National Park, South Africa, from 28 May to 1 June 2017 and promises to be an unforgettable experience in the South African bushveld. The conference will be organised by the University of Pretoria, Department of Plant and Crop Sciences under the auspices of the International Society of Horticultural Science (ISHS) and International Society for Plant Pathology (ISPP).

Topics will include next generation postharvest solutions, focus on postharvest pathogen and host interactions, and integrating postharvest science and technology.

For more details see: [www.postharvest2017.co.za](http://www.postharvest2017.co.za)

### **Study clears way for new approaches to plant disease**

A Washington State University biologist, Michael Knoblauch, has found what he calls "very strong support" for an 86-year-old hypothesis about how nutrients move through plants. His two-decade analysis of the phenomenon has resulted in a suite of techniques that can ultimately be used to fight plant diseases and make crops more efficient.

"For example, take plant-insect interactions. Aphids feed on the system. If we don't understand how the system works in detail, we cannot find new strategies to kill aphids. Plant viruses also move through the system."

Knoblauch spent more than 20 years devising ways to look inside a living plant without disrupting the processes he was trying to measure and describe. He measured flow velocities with fluorescent dyes and radioactive isotopes. With his son, Jan, a second author on the paper and a WSU sophomore, he developed a "picogauge" that could measure extremely sensitive phloem pressures.

He looked at tomatoes, fava beans, kelp off the British Columbia coast and a red oak in the Harvard Forest in central Massachusetts. In addition to building the evidence for a long-held hypothesis, Knoblauch hopes his work will result in new ways to protect plants.

It might also lead to ways of making the energy in biofuels easier to concentrate and access: "If we can tell the phloem, 'OK, store it here, where we can easily harvest it,' it will be a big step forward," he said.

Read [eLife](#) paper.

(Washington State University News, 6 June 2016)

[https://vp.nyt.com/video/2014/08/03/29210\\_1\\_secret-life-of-trees\\_wg\\_360p.mp4](https://vp.nyt.com/video/2014/08/03/29210_1_secret-life-of-trees_wg_360p.mp4)

### **New 'Farmer's Guide' book series launched by American Phytopathological Society Press**

The inaugural books in this series published in 2016 are:

- A Farmer's Guide to Corn Diseases, edited by Kiersten Wise, Daren Mueller, Adam Sisson, Damon Smith, Carl Bradley, and Alison Robertson; and

- A Farmer's Guide to Soybean Diseases, edited by Daren Mueller, Kiersten Wise, Adam Sisson, Damon Smith, Edward Sikora, Carl Bradley, and Alison Robertson

Books in this new series are less technical than the American Phytopathological Society (APS) Compendium of Plant Disease series. The Farmers Guide series features easy-to-use keys and cross-referencing tools to help growers pinpoint diseases and disorders in the field. The management recommendations in the Farmer's Guide series are meant to be general, giving growers and crop specialists a starting point to discuss more localised treatment recommendations with extension or crop specialists in their specific state or province.

Each book in the series features:

- An overview of disease and disorder diagnosis in a field setting,
- Disease listings organised by part of the plant affected,
- Disease distribution maps,
- Instructions for using diagnostic and scouting tools, and
- A glossary of all terms used in the book.

The Farmer's Guide series primarily serves growers in the United States and Canada, but it also applies to other countries where corn and soybean are grown.

Both books are collaborative efforts of top Extension scientists. Dozens of expert contributors from universities, agencies, and companies packed their vast collective knowledge and expertise into this highly accessible book written with the grower in mind.

Visit [www.shopapspress.org](http://www.shopapspress.org) to learn more about these and other crop health titles from APS Press.

### **Rhizosphere - new journal**

The role of new technologies and methods has had a catalysing effect on the expansion of our knowledge of the rhizosphere. Rhizosphere is a multidisciplinary journal by Elsevier that publishes research on the interactions between plant roots, soil organisms, nutrients, and water.

Editor-in-Chief Prof. Sina Adl (University of Saskatchewan) and Associate editors Prof. Yakov Kuzyakov (Georg-August Universität Göttingen) and Dr. Xingliang Xu (Chinese Academy of Sciences) are looking forward to receive your paper submissions. More information on how to submit a paper can be found on the [Rhizosphere homepage](#).

### **The Sphagnum microbiome**

A paper by J.E. Kostka et al. titled "The *Sphagnum* microbiome: new insights from an ancient plant lineage" was published in July 2016 by New Phytologist (vol. 211 pp. 57-64). It is a free accessible paper. The abstract is as follows:-

Peat mosses of the genus *Sphagnum* play a major role in global carbon storage and dominate many northern peatland ecosystems, which are currently being subjected to some of the most rapid climate changes on Earth. A rapidly expanding database indicates that a diverse community of microorganisms is intimately associated with *Sphagnum*, inhabiting the tissues and surface of the plant. Here we summarize the current state of knowledge regarding the *Sphagnum* microbiome and provide a perspective for future research directions. Although the majority of the microbiome remains uncultivated and its metabolic capabilities uncharacterized, prokaryotes and fungi have the potential to act as mutualists, symbionts, or antagonists of *Sphagnum*. For example, methanotrophic and nitrogen-fixing bacteria may benefit the plant host by providing up to 20-30% of *Sphagnum* carbon and nitrogen, respectively. Next-generation sequencing approaches have enabled the detailed characterization of microbiome community composition in peat mosses. However, as with other ecologically or economically important plants, our knowledge of *Sphagnum*-microbiome associations is in its infancy. In order to attain a predictive understanding of the role of the microbiome in *Sphagnum* productivity and ecosystem function, the mechanisms of plant-microbiome interactions and the metabolic potential of constituent microbial populations must be revealed.

[Read paper.](#)

### **Vale Dr. Iftikhar Ahmad (1952 - 2016)**



With deep regret we advise the death of Dr Iftikhar Ahmad, eminent scientist and administrator, and International Society for Plant Pathology Councilor for the Pakistan Phytopathological Society.

Dr. Iftikhar Ahmad was born in Lahore on 1st April 1952. After schooling at the Pakistan Western Railway High School, Sukhar, Sindh, he commenced at the West Pakistan Agricultural University, Lyallpur (the present day University of Agriculture Faisalabad) in 1968, and was awarded his Masters degree in 1976.

Throughout his academic career, Dr Iftikhar was a high achiever. He secured the Gold Medal for his BSc (Hons.) degree and the Silver Medal for his MSc. His exemplary grades led to the awarding of the Sir William Roberts scholarship for his doctoral studies in plant pathology at the University of Wales. He earned his PhD in 1982, and undertook post-doctoral studies at the University of Cambridge.

Dr Iftikhar started his career as lecturer at the University of Agriculture Faisalabad in 1976, and joined the Pakistan Agricultural Research Council (PARC) in 1983.

Dr. Iftikhar Ahmad will be remembered for his valuable contributions to the international wheat community in the development of rust resistant cultivars through organizing Pakistan's national wheat research group and strengthening its links with international organizations involved in wheat research. CIMMYT and ICARDA were encouraged to establish offices at the National Agricultural Research Centre to provide them the opportunity to work closely with Pakistan's national wheat coordination system. In his era, CIMMYT conceived and implemented the Wheat Productivity Enhancement Program which has a long lasting impact on national wheat improvement and has strengthened the wheat coordination system. Under this program, the Crop Diseases Research Institute Murree, which is the only rust research lab in Pakistan, was revitalized and is now not only the main contributor towards the development and introduction of rust resistant wheat varieties in Pakistan, but has also gained the status of a reference regional rust lab. Dr. Iftikhar invited CIMMYT to establish the first Borlaug International Centre for South Asia (BISA) and allocated land for it at the National Agricultural Research Centre, Islamabad. As a result, Pakistan was able to acquire valuable wheat wild genetic stocks and to access to international wheat germplasm. He also made efforts to establish links with internationally renowned Pakistani scientists overseas, and invited them to work closely with national wheat scientists. His efforts underpinned Pakistan's transition from a wheat importing to wheat exporting country.

Dr Iftikhar Ahmad also undertook the challenging burden of implementing an IPM Project in Pakistan. It was at

a time when the government had liberalized the importation of pesticides, resulting in a mushrooming of pesticides companies. These companies used all means to sell their pesticides to knowledge deprived farmers. There were no studies available about the hazards caused by indiscriminate use of pesticides. Under the dynamic leadership of Dr Iftikhar, a team of scientists started working on this important issue and completed the first ever study about the direct and indirect damage caused by pesticides. Based on these results, a farmer education program was launched using the FAO Farmer Field School (FFS) approach. He was declared Focal Person for IPM in Pakistan. There were many challenges for this approach. The massive number of small growers appeared to be the one, but the real challenges came from the agriculture extension departments and from pesticide companies. However, with dedication and commitment Dr Iftikhar achieved a great deal. He used his passion and persuasive skills for convincing departments to work on FFS. Realizing the stagnant approach of agriculture extension departments, more focus was given for creation of Farmer Facilitators. It was his leadership that today there are more than 50 village based farmer organization, 30 district level organizations working under a National society - the Society of Facilitators & Trainers (SOFT). He has rightly been called Father of FFS in Pakistan in the last Workshop on FFS Institutionalization held at Bangkok from May 24-28, 2016.

In 2011 Dr. Ahmad was appointed Chairman of PARC having shown exceptional research, managerial and leadership skills to steer research groups in knowledge generation and transfer.

As part of team of a research initiative on performance based assessment systems with the International Service for National Agricultural Research (ISNAR), Dr. Iftikhar Ahmad introduced an Organizational Performance and Assessment System (OPAS) for evaluating the performance of research institutes through a participatory approach at the national level. In addition, Dr. Iftikhar showed a remarkable quality of bringing together the research and educational institutions through a program of post-graduate research at Pakistan's National Agricultural Research Center (NARC).

Recently Dr Iftikhar led a team for the formulation of Pakistan's National Food Security Policy, developing Vision 2025 and 2050, and completing agriculture policy development for Khyber Pakhtunkhwa (the former North West Frontier Province).

Dr Iftikhar held membership of eleven international and national scientific societies including the American Phytopathological Society, the British Society for Plant Pathology, the Institute of Biology, UK and the Cambridge Philosophical Society. He has represented Pakistan at the international level due his excellence in his area of expertise.

In recognition of his excellence in agricultural sciences Dr Iftikhar was conferred **Best Scientist of the Year Award in 1999** by PARC, and honored by the Pakistan Academy of Sciences with the award in 1999 of the **Pakistan Academy of Sciences Gold Medal** - for contributions in agricultural research. He also received the **Norman Borlaug Award in 2006** and the **PARC Silver Jubilee Award 2006** for his research contributions.

Dr Iftikhar had a passion for teaching. He supervised more than 42 PhD/MPhil students, and had more than 400 publications in refereed journals, proceedings, abstracts, technical extension articles, study reports and reviews..

Dr Iftikhar Ahmad served at the highest levels in PARC and NARC. These included Director General, NARC, Member (Plant Sciences) and subsequently Chairman, PARC until his retirement in March 2012. He then worked as Senior Advisor in the FAO Office of the United Nations in Pakistan until September 2012. Dr. Ahmad again served as Chairman, PARC from September 2012 until his retirement in September 2015.

In recognition of his expertise and experience, Dr Iftikhar had been a member of the Policy Advisory Council of the Australian Centre for International Agricultural Research (ACIAR) since 2014. He was working as Program Advisor in the FAO Office of the United Nations in Pakistan till his last breath.

He passed away in the early hours of June 3, 2016 and survived his wife, Dr Shazia Iftikhar, as well as two sons and one daughter.



Dr Iftikhar Ahmad and Dr Shazia Iftikhar

Obituary - by Munawar Kazmi, Dr Anjum Munir

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