

INTERNATIONAL NEWSLETTER ON PLANT PATHOLOGY

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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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The 100th Anniversary Meeting of the Phytopathological Society of Japan



The PSJ celebrated its 100th Anniversary Meeting, A Promising Future in the Next Century from 28-31 March 2015 with an Anniversary Ceremony and Symposium at Meiji University, where the society had been established in 1916, followed by 3 days of Conference. This followed a 2013-2014 initiative as part of the 100th Anniversary in which the PSJ had published a series of invited reviews of frontier phytopathological research in Japan in the Journal of General Plant Pathology (JGPP).

On 28 March, a morning of celebratory and congratulatory speeches was followed by an afternoon with four concurrent symposia on different aspects of plant pathology. Speakers in the Anniversary Ceremony included PSJ President, Professor Kenichi Tsuchiya, PSJ Vice President, Professor Tohru Teraoka, American Phytopathology Society President, Professor A Rick Bennett, Korean Society of Plant Pathology President, Professor Young Ryun Chung, and Japanese Agricultural and Scientific Societies President, Eitaro Miwa.



L to R ISPP President, Dr Greg Johnson, Korean Society of Plant Pathology President, Professor Young Ryun Chung, Sociedade Brasileira de Fitopatologia (SBF) President, Dr Luiz Gonzaga Chitarra, American Phytopathology Society President, Professor A Rick Bennett, and Phytopathological Society of Japan, Professor Kenichi Tsuchiya.



L to R. Emeritus Professor Seiji Ouchi, Kyoto University, Dr Beth Hazen, English Editor, Journal of General Plant Pathology and Professor Hitoshi Kunoh

In the evening, a Celebration Party for 600 delegates and guests from other scientific societies included

speeches from the ISPP President, Dr Greg Johnson, and the Sociedade Brasileira de Fitopatologia (SBF) President, Dr Luiz Gonzaga Chitarra. The PSJ president proposed the toast to mark the 100th Anniversary, with some lucky guests making the toast with Champagne sent by the French Society of Phytopathology (Société Française de Phytopathologie). In addition, several other Plant Pathology and Plant Protection Societies sent plaques and messages of congratulation.

And in a message sent to ISPP after the Celebration, Organising Committee Member, Dr Masashi Ugaki noted that the heartfelt messages from many societies in the ISPP have "made us to reaffirm the importance of international collaboration."

A century of achievement

People have always observed plant disease with surprise and terror. A long time was required to understand the nature of plant disease and that they were not attributable to God or unfavourable conditions. (Mitsutaro Akai, 1974)

When the Phytopathology Society of Japan (PSJ) was established, phytopathology was in its infancy. Three countries had similar societies - Netherlands (1891), United Kingdom (1896) and USA (1908). Now there are over 60 societies worldwide, with Japanese phytopathology contributing much, both before 1915, and since!

In the *History of Plant Pathology in Japan*, Akai (1974) noted achievements to the cellular level. Nowadays, it progresses at the molecular level. What might we anticipate from another century of bold endeavours - permanent solutions to diseases that decimate agriculture and environment, elimination of mycotoxin and phytoprotectant risks, and greater recognition and advance of our profession?

I am sure the PSJ will contribute greatly to achieving these goals.

Congratulations on a Century of Achievement!

Greg I Johnson
President, International Society for Plant Pathology
28 March 2015

Food Security Journal Widget

Several societies have added a *Food Security Journal* widget to their web sites. The widget is dynamically linked to the Food Security RSS feed on the Springer web site. The scrolling can be stopped by mouse over and will open the full abstract by clicking a title. Examples can be seen at www.isppweb.org, www.appsnet.org/Publications/ and www.isppweb.org/aaspp/. ISPP encourages all associated societies to do the same. The widget script is easily integrated into a web page and can be obtained by contacting the [ISPP business manager](#).

Individuals can also subscribe to the *Food Security Journal* RSS feed. The feed can be read using your email client or a desktop widget or any other feed reader.

(Peter Williamson)

Advancing Pest and Disease Modeling Workshop, 23-25 February 2015

The first 'Advancing Pest and Disease Modeling Workshop' was organised by AgMIP at the University of Florida, Gainesville, USA, from February 23 to 25, 2015. The workshop was sponsored by USDA, IFPRI, Harvest Choice, and the CGIAR Research Program on Policies, Institutions, and Markets.

The goal of the workshop was to:

'Advance insect and disease modeling for use in regional and global assessments of crop production, climate change and food security through initiation of model intercomparison and improvement teams',
With the following objectives:

1. Summarise recent progress on modeling pests and diseases and approaches for estimating their effects on crop yields and economic impacts,
2. Develop teams and strategies for intercomparing crop insect and disease models and approaches for their use in assessing production and economic impacts and adaptation at regional to global scales,
3. Identify opportunities for these teams to obtain support, and
4. Develop plans for publishing a special issue on modeling pests and diseases in a high-impact peer-reviewed journal and identify lead authors for this effort.

The workshop was articulated around fourteen invited talks, which provided the background to extensive

discussion sessions.

Four inter-linked Modeling Intercomparison Projects (MIPs) were created:

1. Potato pests and diseases,
2. Wheat pest and diseases,
3. Insect Pests, and
4. Crop Health.

For each MIP, target crops were identified, target pests and diseases were selected, and preliminary protocols were defined.

The three first projects are focused at addressing the impact of diseases and pests on specified crops. The Potato pests and diseases project focuses especially on potato late blight, the Wheat pest and diseases project addresses rusts and Fusarium head blight, and the Insect pests project generally addresses migratory insects.

By contrast, the target crops in the Crop Health Model Intercomparison Project (Crop Health MIP) are diverse: field legumes, sugarcane, maize, wheat, potato, rice, soybean (annual crops); and coffee, grapevine (perennial crops). The overall protocol of this project includes:

1. different patterns of comparisons (of different models, on the same pathosystems; and of pathosystems, with the same modeling approach),
2. soybean rust model intercomparison,
3. viral diseases comparisons, and
4. crop rust modeling multiple intercomparisons (wheat, soybean, coffee, grapevine, maize, and sugarcane rusts).

The co-leaders of the Crop Health MIP, Serge Savary (INRA, Toulouse) and Jawoo Koo (IFPRI, Washington) will co-ordinate future efforts, including a synthesis/vision article on the impacts of pests and diseases on the components of global food security, together with Dave Gustafson (ILSI), Daniel Mason-D'Croz (IFPRI), and Karen Garrett (University of Florida).



Attendees at the first 'Advancing Pest and Disease Modeling Workshop' held at the University of Florida, Gainesville, USA, in February 2015.

(Serge Savary)

Pathogen-sensing 'antenna' gene transferred to wheat

A team of scientists from the John Innes Centre (JIC), the National Institute of Agricultural Botany (NIAB) and

The Sainsbury Laboratory (TSL) have successfully transferred a receptor that recognises bacteria from the model plant *Arabidopsis thaliana* to wheat. They showed that the receptor can trigger a defensive response and confers increased resistance to bacterial disease. The research findings demonstrate that the signalling pathways or circuitry downstream of the receptor are conserved between evolutionary distant monocots and dicots.

Drs Henk-jan Schoonbeek and Christopher Ridout, the lead and corresponding authors of a paper titled '[Arabidopsis EF-Tu receptor enhances bacterial disease resistance in transgenic wheat](#)' published in The New Phytologist, first developed diagnostic tools which tests wheat for responses to pathogen-associated molecular patterns (PAMPs). These PAMPs are often essential parts of fungi or bacteria - they would find it difficult to mutate or lose them without affecting their fitness or survival. Pattern recognition receptors recognise and confer a response to such PAMPs and could contribute to durable resistance. The authors have demonstrated that wheat has the circuitry to respond to these pathogens but not all the antennae required to perceive pathogens most effectively.

The JIC scientists worked with TSL and the crop transformation team at NIAB to transfer a receptor gene, EFR, conferring recognition of the widespread bacterial protein EF-Tu, from *Arabidopsis* to wheat, and used their diagnostic tools to show that the receptor was functional. EFR works like a new antenna that activates defence elements already present and makes the wheat plants more resistant to bacteria. Since EF-Tu is essential, the authors predict this type of resistance should be durable. EFR was first identified by Professor Cyril Zipfel, Head of TSL, and co-author of the paper. Prof Zipfel pioneered inter-species transfer of PRRs, and recently reported a converse transfer of a monocot PRR to dicot plants, further illustrating the ancient evolutionary conservation of immune signalling between these plant classes.

Bacterial wheat diseases are widespread in Asia and Africa, and present in the USA. The diagnostic tool can be used immediately to help breeders screen seed varieties for PAMP recognition, and therefore resistance to multiple bacterial pathogens.

(EurekaAlert, 11 March 2015)

Discovering Phytophthoras in South Africa with citizen science and crowd funding

A current phytopathology project on [Experiment](#), an online platform that enables scientific discoveries through global crowd funding, is fundraising for the discovery of new species of *Phytophthora* that are native to the forests of South Africa. This project is additional to research planned by Joey Hulbert in his PhD at the Forestry and Agriculture Biotechnology Institute (FABI), University of Pretoria. Through citizen science, the project will determine the distribution and abundance of *Phytophthora* across space and time. Such initiatives have been used in many ecological applications and have provided unique opportunities for participants to learn about the scientific process. [Learn more about this crowd funding project on Experiment](#).

Abstracts from the 9th International Workshop on Grapevine Trunk Diseases

The printed abstracts from the 9th IWGTD held in Adelaide in November 2014 are available through [International Council on Grapevine Trunk Diseases](#) along with [photos from the workshop](#), or at www.fupress.com/pm.

John Michael Thresh, 1931-2015

John Michael Thresh, aged 84 years old, died on Thursday 12 February 2015 at the Pembury Hospital Tunbridge Wells in the UK following his battle with cancer. He leaves his wife, Peggy, four sons, four grandsons and four grand-daughters. Known as Mike Thresh to family and peers, the career of Professor Thresh spanned more than 60 years.

Mike came from a farming background in the north of England and spent much of his childhood on the family farm during World War II (1939-1945). This was before the days of full mechanisations and he can claim to have ploughed with horses and harvested cereals for threshing by steam power. His mother harboured ideas of having a "blood and guts" veterinarian in the family but a career in agricultural research was always the preferred option!

Mike took a first degree in botany at Imperial College, University of London, in 1952, in the days of Professors W. Brown and F. G. Gregory. In the university vacations, he worked as a student at the East Malling Research Station and walked in the Yorkshire Dales. He spent a year with plant virologists in the Plant Pathology Department at Rothamsted Experimental Station as a Colonial Research Scholar. During this period there was an opportunity for fieldwork in East Anglia on the control of sugar beet yellowing viruses, using one of the first organophosphate insecticides to be made available for use in agriculture.

His first assignment overseas was in Ghana and Nigeria (1953-1960) on the epidemiology and control of cocoa swollen shoot disease as one of the team of virologists at the West African Cocoa Research Institute. After



seven years in West Africa, he returned to England, bringing with him a wife and baby, and followed a similar career focussing on virus diseases of hop, blackcurrant, and other fruit crop species at East Malling Research Station. These studies and contributions on general epidemiological concepts led to a University of London PhD and DSc, as well as a Queen's Award for Technological Achievement to East Malling and the Department of Hop Research, Wye College. This was for the development and deployment of virus-free clones of improved hop varieties.

While Mike was a staff member at East Malling, a 3-month assignment to Ethiopia in 1971 for FAO was followed by other consultancies and advisory visits on behalf of FAO, the British Council, Overseas Development Administration (ODA), and several international agricultural research centres. These led to a renewed acquaintance on cocoa swollen shoot disease and the Cocoa Research Institute of Ghana through a project funded by ODA, and then to a UK-based appointment as plant virologist with the ODA Corps of Specialists. East Malling continued to be the base for many overseas forays into Africa and Asia until plant pathology was included in the remit of the Natural Resources Institute (NRI) and the transfer was then made to Chatham Maritime and the University of Greenwich. Quasi-retirement and an honorary position as Professorial Research Fellow at the University of Greenwich came in 1998 after a 5-year contract as senior virologist at NRI.

Mike was an active member of several scientific societies: he served on committees and councils of the Society for General Microbiology, the Biological Council, the Association of Applied Biologists (AAB), the Federation of British Plant Pathologists, the British Society for Plant Pathology (BSPP), and the International Society for Plant Pathology (ISPP). He edited/co-edited eleven books/conference proceedings and was Programme Secretary of the AAB (1973-1980), President of BSPP (1990), and Chairman of the International Committee on Plant Virus Epidemiology (ICPVE) of ISPP from its inception in 1979 until 1999. Mike was elected as Honorary Member of BSPP in 2005, and in 2012 became the second recipient of the Golden Cassava Award of the Global Cassava Partnership (GCP) for the 21st Century.

Mike's overseas experience spanned more than 40 countries, but he was especially knowledgeable on the virus problems of crops in Africa, where his experience was second to none. He published more than 200 papers, reviews, and book chapters. Many relate to his own research on the epidemiology and control of viruses of specific crops. These include cacao, hop, temperate fruits, cassava, and a wide range of other tropical crops. Mike had a special love for cassava and he was undoubtedly the best epidemiologist for cassava viruses. He had the chance to work with pioneer cassava virologists and cassava breeders in Africa, who played a key role for a better control of cassava viruses in Africa. Forty or so of his publications are concerned with general epidemiological principles, including several chapters in Annual Review of Plant Pathology and Advances in Virus Research. There have also been the series of special issues of the Elsevier journal Virus Research, which contain papers based on material presented at previous International Plant Virus Epidemiology (IPVE) Symposia and edited by Mike together with conference organizers. Mike was described as an 'editorial genius' for his ability to take drafts of papers and shorten them in half whilst adding invaluable additional points. Mike contributed much to our knowledge of plant virology, both within the UK and overseas, and was a tireless advocate, supporter, and promoter of plant pathology.

Mike stressed the importance of field work and a 'hands on' approach to research and he deplored the lack of it among so many scientists. He emphasized it was essential to see crops and plants in situ to get a holistic understanding of the epidemiology. However, he was pleased to be responsible for establishing the ISPP Plant Virus Epidemiology Committee at the Munich Congress in 1979 at a time when the more "biological" aspects of plant virology were in danger of being swamped by those with a more biochemical approach. This initiative led to the organization of 12 IPVE international conferences and the series continues with a 13th conference to be held in France in 2016.

Mike dedicated his life for helping the poor in developing countries. He worked tirelessly to bring about a deeper understanding and control of several plant virus diseases such as cocoa swollen shoot virus in West Africa, rice tungro and yellow mottle viruses in Asia and cassava mosaic disease pandemic in East Africa. His work in Uganda led to the understanding and control of cassava mosaic virus pandemic, which had devastated crops and induced widespread famine in Uganda in the 1980s-1990s. Ugandans remember him for his remarkable contribution in controlling the epidemic and restoring food security.



Figure Legend: Cassava plants infected by whitefly transmitted mosaic virus (left). Cassava plants grown from an infected stem cutting showing severe mosaic symptom and no root yield (centre), and Professor Mike Thresh discussing with a farmer the meagre production from a household planting totally affected by CMD (right).

Mike and his wife, Peggy, a physiotherapist, have over the years "accumulated" four sons, four grandsons and four grand-daughters. They had a wide range of outside interests including sport, the countryside, music and travel. Several of their trips have been linked with assignments or conferences abroad, including some in Ethiopia, Costa Rica, Malaysia, Ghana, Ivory Coast, the US, and North Yemen.

Mike has no special 'words of wisdom' to impart as the recipe for personal happiness and fulfilment. However, he did stress the value of having a supportive wife and family and the merits of a long and exciting career in research without the necessity of taking on the burdens and distractions of administration.

A memorial service was held on 18 March at St. Michael's Church in Maidstone for family, friends and colleagues to say a final goodbye to superstar plant virologist Mike, who worked tirelessly to increase the food security of African farmers.

(Updated from an original article published on the occasion of Honors to Professor Mike Thresh, on 29th Feb 2013, during the 12th IPVE Symposium in Arusha, Tanzania)

The microbial battleground between soil and roots

The soil around roots of plants, such as barley, is a battleground where only certain bacteria can survive, suggests evidence gathered by researchers from the University of Dundee, the Helmholtz Centre for Infection Research and the Max Planck Institute for Plant Breeding Research. Through metagenomics they identified the major groups of bacteria that flourish in and around the roots of barley plants. Their results suggest that the soil surrounding plant roots is a battleground where only certain bacteria can survive, including 'friendly' ones that help plants to extract nutrients from soil.

Interactions between soil, soil microbes and plants form a developing and vitally important area of research as the world looks to solve the problems of managing sustainable agricultural productivity to feed an ever growing global population. The results are published in a paper titled '[Structure and function of the bacterial root microbiota in wild and domesticated barley](#)' in *Cell Host and Microbe*.

(Farming UK, 2015)

International Association for the Plant Protection Sciences Feed the Future Innovation Lab

Virginia Tech has won a new \$18 million, five-year grant from the U.S. Agency for International Development (USAID) for a research program that will work to raise the standard of living of people around the world through environmentally sound agricultural practices as part of Feed the Future, the U.S. Government's global hunger and food security initiative.

The Feed the Future Innovation Lab (formerly Collaborative Research Support Program) for Integrated Pest Management will conduct research and extension activities with farmers, counterpart universities, and host-country government research institutes to implement ecologically sustainable pest and disease control strategies. The predecessor programs to this new award have been led by Virginia Tech University for the past 21 years. USAID recently announced that Virginia Tech would once again lead the program, a move that represents a vote of confidence in the work that has been ongoing since 1993. The new program will have a strong foundation in areas such as sustainable intensification, ecological service provision, ecological research, and empowerment of women farmers.

The competitively-awarded program will address new and emerging pest problems that plague farmers in the developing world, as well as model and manage the spread of invasive species. Program scientists will also be investigating ways to preserve biodiversity and offset the impacts of climate change on agricultural pests and diseases. The new Innovation Lab, managed by Virginia Tech's Office of International Research, Education, and Development, will commit its core resources to Ethiopia, Kenya, and Tanzania in Africa and to Vietnam, Cambodia, Burma, Nepal, and Bangladesh in Asia.

The Asian arm of the program will include two main sub-programs: one focused on rice in Burma and Cambodia, and a second on horticultural crops in Vietnam, Cambodia, Nepal, and Bangladesh. The Nepal program will additionally address integrated pest management for grains and climate change impacts.

The projects in eastern Africa will focus on innovative crop protection research for increased production and preservation of high-priority Feed the Future staple crops like maize, wheat, and chickpea in Ethiopia; rice and maize in Tanzania; and high-value vegetables in Kenya and Tanzania.

The program will also research and implement new strategies to control existing and emergent pest infestations in countries where farmers with limited resources are predicted to be heavily affected by climate variability.

More information regarding the IPM Innovation Lab: <http://www.oired.vt.edu/ipmcrsp/>

(Canadian Phytopathological Society News, March 2015)

Vacant Position

Senior Research Fellow (Field Crops Pathology), University of Southern Queensland, Australia. [more information](#)

Acknowledgements

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