

INTERNATIONAL NEWSLETTER ON PLANT PATHOLOGY

ISPP Newsletter 46 (1) January 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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ISPP President's Greetings for 2016



Christmas tree (*Nuytsia floribunda*) is a hemiparasitic tree mistletoe found in Western Australia that flowers in December-January. As a plant parasite, it seems an appropriate image to convey Season's Greetings and Happy New Year to the global plant pathology community! ([Photograph by](#)

[Gnangarra...commons.wikimedia.org](#))

For the International Society of Plant Pathology, 2015 has been a year of consolidation and progress.

International Congress of Plant Pathology 2018 (ICPP2018) planning

In early December 2015, I had a phone linkup with ICPP2018 organising team representatives. We discussed the practice of each ICPP building on the program and processes of the previous congress, and the planning milestones for 2016, especially in the development of the ICPP2018 scientific program. The next linkup is scheduled for February 2016.

ISPP Associated Societies

Towards the end of 2015, on behalf of ISPP I wrote to many member societies regarding back dues, with the suggestion to streamline the associated society membership fee calculation process, and provide an option of paying 3 years in advance. It has been pleasing to hear back from some societies already, indicating their willingness to move to the new system, and also to pay fees in a three year block.

Jakob Eriksson Prize

Through 2015, the ISPP Executive had been liaising with the Eriksson Prize Commission Chair to progress planning for the 2018 Prize. The nomination process will be initiated in 2016.

International Congress for Plant Pathology 2023 (ICPP2023) and ISPP Executive Committee (EC) 2018-2023

The call for bids to host ICPP2023 will occur in 2016. The election processes for the EC 2018-2023 will be initiated late in 2016.

Food Security

In 2015, the ISPP journal Food Security: The Science, Sociology and Economics of Food Production and Access to Food completed its [7th year of publication](#), with Richard Strange as Editor in Chief. 2015 saw an event held simultaneously in Canberra, Australia, and Copenhagen, Denmark, to launch a [special issue](#) of the journal: Feeding more than 9 billion by 2050: Challenges and Opportunities.

The journal continues to provide seminal insights to the multifaceted challenges of food security. These papers from the December 2015 issue are just a sample:

[A bio-economic 'war game' model to simulate plant disease incursions and test response strategies at the landscape scale](#)

[Action against pest spread-the case for retrospective analysis with a focus on timing](#)

[Linking science and policy to better protect Canada from plant pests](#)

ISPP Book Series with Springer

ISPP has progressed an agreement with Springer to expand the book series [Plant Pathology in the 21st Century](#) beyond special topics from the International Congress of Plant Pathology, and to publish books each year. ISPP Past President, Professor Maria Lodovica Gullino is the series Editor.

ISPP Newsletter

Under the capable Editorship of [Dr Daniel Huberli](#), the International Newsletter on Plant Pathology Newsletter continues to be accessed by more than 1200 readers per issue. The Newsletter features news from ISPP and Associated societies and items of interest to the plant pathology community. During 2015, the process of scanning and archiving most issues back to the first issue in 1980 was completed thanks to work by ISPP Past President, Dr Peter Scott. [More than 200 issues now accessible](#). This is your newsletter, so please consider sending news about your Society's conferences and workshops!

Taskforce on Global Food Security

With Professor Lise Korsten as chair, the Taskforce held several Skype meetings during 2015. In addition, Professor Korsten met with some Taskforce members and attended part of the ISPP Executive meeting after the APS meeting in Pasadena USA in August. Professor Korsten also presented a paper "Global food systems; equalising trade for sustainable production" at the 3rd World Forum on Local Economic Development ([LED](#)) held in Torino, Italy and linked to EXPO 2015 in Milan.

Society Milestones

I represented ISPP at the 100 years celebration of the Phytopathology Society of Japan in April 2015 (As reported in ISPP NL). In April 2016, I will speak on behalf of ISPP at 125th anniversary celebrations of the

Netherlands Society for Plant Pathology ([Koninklijke Nederlandse Plantenziektkundige Vereniging KNPV](#)).

ISPP EC meeting

In August 2016, after the APS meeting in Tampa, Florida, the ISPP Executive will meet in Boston USA, the venue of ICPP2018.

Good Wishes for 2016

Thanks to you, the plant pathologists of the global community, for your ongoing commitment to ISPP and the science and practice of plant pathology. I look forward to interacting with you in the future, and on behalf of ISPP wish you every success in 2016.

Greg Johnson

President
International Society for Plant Pathology

Pathogen's crossword

Here are some crosswords from the British Society for Plant Pathology to keep you entertained over the holiday period. [Go to crosswords](#).

Update on planning for ICPP 2018 in Boston, Massachusetts USA

Planning is well underway for the International Society for Plant Pathology's (ISPP) 11th International Congress of Plant Pathology (ICPP 2018), organised by the American Phytopathology Society (APS) in Boston, Massachusetts USA from July 29 to August 3 2018. During 2016, the ICPP2018 Committee and ISPP will be progressing the development of the scientific program as well as the organisational arrangements.

The theme for the 11th Congress is "Plant Health in a Global Economy." The Congress program will cover not only the utility of plants for food, feed, fibre, energy, and environmental quality, but also how plants contribute to the well-being of the human condition, which is fundamental to sustaining an increasingly populous and interdependent civilization. The Congress program will highlight the latest international perspectives on trade regulations, sustainable production, the global spread of pathogens, innovations in pathogen detection, environmental protection for a growing population, agriculture systems for the future, and the impact of plant industries on the world economy. A full range of research topics will be covered in presentations, from genomics to epidemiology, which affect plant health at a local and global scale. 2018 will also be the 50th anniversary of the establishment of ISPP and the first International Congress of Plant Pathology which was held in London UK.

If you are planning to attend (or just interested), and would like to receive updates and circulars please [click here](#).

(Greg Johnson)

Does the P value have a future in plant pathology?

A paper by L. V. Madden et al. titled "Does the P value have a future in plant pathology?" was published in November 2015 by *Phytopathology* (vol. 105 pp. 1400-1407). The abstract is as follows:-

The P value (significance level) is possibly the mostly widely used, and also misused, quantity in data analysis. P has been heavily criticized on philosophical and theoretical grounds, especially from a Bayesian perspective. In contrast, a properly interpreted P has been strongly defended as a measure of evidence against the null hypothesis, H₀. We discuss the meaning of P and null-hypothesis statistical testing, and present some key arguments concerning their use. P is the probability of observing data as extreme as, or more extreme than, the data actually observed, conditional on H₀ being true. However, P is often mistakenly equated with the posterior probability that H₀ is true conditional on the data, which can lead to exaggerated claims about the effect of a treatment, experimental factor or interaction. Fortunately, a lower bound for the posterior probability of H₀ can be approximated using P and the prior probability that H₀ is true. When one is completely uncertain about the truth of H₀ before an experiment (i.e., when the prior probability of H₀ is 0.5), the posterior probability of H₀ is much higher than P, which means that one needs P values lower than typically accepted for statistical significance (e.g., P = 0.05) for strong evidence against H₀. When properly interpreted, we support the continued use of P as one component of a data analysis that emphasizes data visualization and estimation of effect sizes (treatment effects).

See: <http://dx.doi.org/10.1094/PHYTO-07-15-0165-LE>

Soybean rust disease threatens production

According to a review paper by Harun Murithi, plant pathologist at the International Institute of Tropical Agriculture (IITA), soybean rust is known to cause massive yield losses of between 10 and 90 per cent. The paper "[Soybean production in eastern and southern Africa and threat of yield loss due to soybean rust caused by *Phakopsora pachyrhizi*](#)" was published recently in Plant Pathology.

Soybean rust reduces yields mainly by decreasing the photosynthetic activity of the infected leaves. The best method to control the disease is through the use of resistant soybean varieties. However, this has been difficult due to the presence of different populations of the fungus across the globe and at the country level. Nevertheless, a lot of research is ongoing in East and Southern Africa to understand the soybean pathogen. In Zimbabwe, resistant varieties have been developed and in other countries tolerant varieties have been identified and deployed.

"We are also evaluating the effectiveness of simple methods to monitor the spore spread such as small-scale monitoring plots (sentinel plots) and use of spore traps in Tanzania and Zambia. These methods will be optimized for adaptation to the conditions in the region to contribute to controlling soybean rust," says Mr Murithi.

In 2011, soybean imports were estimated at nearly 1.6 million tons, valued at US\$1.22 billion with South Africa, Nigeria and Kenya being the top importers. The production of soybean in the continent is low and is greatly threatened by several biotic and abiotic stresses such as declining soil fertility, diseases, insect pests and weeds. Among the diseases, Soybean rust disease, caused by the fungus *Phakopsora pachyrhizi*, is one of the major threats to soybean production in Africa due to its rapid spread. The disease was first confirmed in Uganda on experimental plots and thereafter on farmers' fields throughout the country in 1996 and the soybean grown in the country was found to be susceptible. In 1998, the disease was reported in the major soybean growing regions in Kenya, Rwanda, Zimbabwe and Zambia. Other countries where the disease has been detected includes Nigeria in 1999, Mozambique in 2000, South Africa and Cameroon in 2001, Ghana and the Democratic Republic of Congo (DRC), in Central African Republic (CAR), in 2007, and Tanzania and Malawi in 2014.

(Masembe Tambwe, Daily News, 28 November 2015)

Scientists Develop GM Citrus with Enhanced Resistance to Greening

Researchers from the University of Florida have developed genetically modified citrus trees with enhanced resistance to greening, and have the potential to resist canker and black spot. Citrus greening threatens to destroy Florida's \$10.7 billion citrus industry. The disease is caused by a bacterium which enters the tree via the Asian citrus psyllid. The disease starves the tree of nutrients, damages its roots and the tree produces fruits that are green and misshapen. Most infected trees eventually die and the disease has already affected millions of citrus trees in North America.

The team led by Jude Grosser, professor of plant cell genetics at UF's Institute of Food and Agricultural Sciences Citrus Research and Education Center used a gene isolated from Arabidopsis to create new trees. They used sweet orange cultivars Hamlin and Valencia and created plants that defend themselves against pathogens using a process called systemic acquired resistance (SAR). The trees from their experiment showed enhanced resistance to greening, reduced disease severity, and several trees remained disease-free 36 months after planting in a field with a high number of diseased trees.

Approximately 45 percent of the trees expressing the Arabidopsis gene tested negative for greening, and in three of the transgenic lines, the greening bacterium was not detected at all. Control trees tested positive for the presence of greening within six months and remained positive for the entire duration of the study.

For more details, read the news release from the [University of Florida](#).

(Grahame Jackson, PestNet, 5 December 2015)

28th Fungal Genetics Conference, March 2015

The [28th Fungal Genetics Conference](#) was held in March 17 to 22, 2015, at the Asilomar Conference Center in California, USA. The meeting reached its registration cap 2 days before the early bird deadline, with 910 participants from 35 countries. During the meeting, 20 plenary talks, 216 concurrent talks, and 662 posters were presented.

One striking feature of this year's meeting was the high level of Twitter participation. On the basis of analytics from the health care social media analytics company Symplur (<http://www.symplur.com/healthcare-hashtags>) the hashtag #Fungal15 racked up 3456 tweets from 349 participants, and tweets were seen by more than 3 million.

Read the full [meeting report](#) by Momany et al.

International Online and Onsite Workshop on the Oomycetes, 19 July 2015

The International Workshop on "Relevant Aspects in the Taxonomy and Evolution of the Oomycetes: Phytophthora, Pythium, and Phytophythium," was presented in Spanish in Mexico City on 19th July 2015 during the LV American Phytopathological Society - Caribbean Division (APS-CD), XVIII Latin American Phytopathological Association (ALF), XVII International Congress and XLII National Congress of the Mexican Society of Plant Pathology (SMF) joint meetings. The event was organised by Ronald D. French-Monar, Department of Plant Pathology and Microbiology Texas A & M Agrilife Extension Service, Texas, USA, APS-CD, ALF (On-site Organiser) and Z. Gloria Abad, USDA-APHIS-Center for Plant Health Science and Technology Beltsville Laboratory (CPHST-BL), Maryland, USA (International Organizer). Speakers presented online and on-site during the morning and included: Ronald French-Monar (USA) with the topic "Opening remarks and introduction;" Gloria Abad and John Bienapfl (USA) USDA-APHIS - CPHST-BL presented online "Revision of the Taxonomy and Phylogeny of Phytophthora" and "Diseases caused by species of Phytophthora, Pythium and Phytophythium;" André Levesque (Canada) Agriculture and Agri-Food Canada presented online "Phylogeny and Molecular Taxonomy of the Oomycetes;" Sylvia Fernández-Pavia (Mexico) from the Universidad Michoacana de San Nicolas de Hidalgo, México presented on-site "Status of the Identification of Phytophthora, Pythium and Phytophythium in Mexico;" and Hemilse Palmucci and Pablo Grijalba (Argentina) from the Universidad de Buenos Aires, Argentina, presented online "Status of the Identification of Phytophthora, Pythium and Phytophythium in Argentina." A training for "Morphological and Molecular Identification" and "Online Identification Tools to Phytophthora: Lucid Key, Tabular Key and Sequencing Analysis. A resource for the correct identification of species in the Genus" was presented online by Gloria Abad. Gloria Abad and John Bienapfl at the USDA-APHIS-CPHST BL are pioneering the work with international collaborators for the implementation of the resource based on the cultures of the ex-types and DNA obtained from these cultures in order to provide highly accurate information for correct species identification. Gloria Abad and Ronald French presented the "Pythium and Phytophythium Identification" training.

Thirty two scientists from Latin America participated at the workshop. The event was concluded with the presentation of a Lifetime Achievement Award in Plant Pathology extended to Dr. Z. Gloria Abad, Lead Scientist of the Oomycetes - Fungi Program at the USDA-APHIS-CPHST-BL and Adjunct Professor at Pennsylvania State University, USA. Dr. Abad was awarded for her "Outstanding Contributions to Latin American Phytopathology" and recognised for her "dedicated efforts in teaching, training, diagnostics and research in the Oomycetes with emphasis in Phytophthora." Dr. Abad is the chair and organiser of the International Workshops on Oomycetes: Phytophthora, Pythium, Phytophythium and related genera presented since the year 2004. The award was presented by Dr. Ronald French-Monar, Executive Secretary of Latin American Phytopathological Association (ALF), and Dr. Hilda Silva Rojas, President of the American Phytopathological Society - Caribbean Division (APS-CD).



Ronald French-Monar (on-site organizer, back row, center) with participants of the International Workshop on "Relevant Aspects in the Taxonomy and Evolution of the Oomycetes: Phytophthora, Pythium, and Phytophythium" presented in Mexico, DF. In screen Gloria Abad (USA) (International Organizer), Andre Levesque (Canada) and Pablo Grijalba (Argentina).



Gloria Abad and John Bienapfl (USA) USDA-APHIS - CPHST-BL presented the topic "Revision of the Taxonomy and Phylogeny of Phytophthora" via an online connection.

(Z. Gloria Abad)

21st International Congress on Modelling and Simulation, 2015

Computer modelling is proving to be a vital decision-making tool in combating increasing serious threats to food security, agricultural productivity and the natural environment.

At the 21st International Congress on Modelling and Simulation held during 29 November to 4 December, 2015, on the Gold Coast in Australia, Plant Biosecurity Cooperative Research Centre (CRC) scientists presented a range of new research covering Unmanned Aerial Systems (drones), dealing with pest invasions and even using Twitter as a tool to track biosecurity events.

Plant Biosecurity CRC papers presented included:

- [Quarantine and surveillance strategies for plant pathogen detection and control.](#)
- [Fine-tuning of unmanned aerial surveillance for ecological systems.](#)
- Evaluating the effectiveness of UAVs for pest management.
- [Assessment of crop insect damage using unmanned aerial systems: A machine learning approach.](#)
- Tracking biosecurity events on Twitter: Challenges and lessons learned.
- Epidemiological modelling and optimized early-detection surveillance for invading plant pathogens.
- [A general model to simulate how an invading organism's dispersal characteristics influence its spread, and the implications for surveillance strategies.](#)
- [A new model to investigate whether regional crop rotation strategies can protect crops from fungal pathogens](#)

The conference program is available at www.mssanz.org.au/modsim2015/

(The Leaflet, Plant Biosecurity CRC, December 2015)

First comprehensive collection of plant bacteria on *Arabidopsis thaliana*

Researchers at ETH Zurich and the Max Planck Institute for Plant Breeding Research in Cologne have collected a large number of bacterial strains that naturally occur on *Arabidopsis thaliana*. The collection marks the beginning of a promising new field of research. Scientists can now systematically perform targeted laboratory investigations into how bacteria promote the growth and health of plants. The results of this work have just been published in the journal [Nature](#).

They isolated almost 10,000 bacterial strains and selected 432 of these for further study. More than half of the species identified could also be cultivated in the laboratory. Until now, scientists have assumed that about one percent of naturally occurring micro-organisms are able to grow under laboratory conditions.

There were considerable similarities between the microbial communities living on the leaves and on the roots: of the at least one hundred different species of bacteria living on leaves and roots, almost half are the same. It is possible that the majority of the root and leaf bacteria originate from the exceptionally diverse community of soil bacteria, and that leaves of these annual plants are colonised by micro-organisms as the plant grows out of the ground. The differences between various locations in Switzerland and Germany where the researchers

collected wild plants are also small.

Plant microbiome research is still a relatively young discipline. The researchers have cultivated the bacteria on germ-free plants. In initial recolonisation experiments under controlled laboratory conditions, stable bacterial communities were formed, mimicking the population observed in nature. In the future, the researchers could use this method to analyse the role of individual bacteria in growth promotion and susceptibility of the host plant to pathogens, for example.

Scientists have already found indications that plants have better access to nutrients and grow more quickly if they are colonised by certain micro-organisms. There are also indications that pathogens have a harder time to establish themselves on a plant if certain bacteria are present on the plant. Understanding this natural plant protection is a question that has started to interest university researchers in recent years. But they are not alone in their endeavours: seed and pest-control companies are also conducting research in this field, with a view to supplying natural, microbial plant protection products in the future.

(Ag Professional, 3 December 2015)

Alaskan Inuit Food Security Conceptual Framework: How To Assess the Arctic from an Inuit Perspective

Drastic changes are occurring within the Arctic and Inuit are on the forefront of these changes. In recent years food security has increasingly become a topic of conversation and is gaining more attention. But what does food security mean to those that call the Arctic home? Through this Alaskan Inuit led project, the report illuminates the meaning of Alaskan Inuit food security and lays out an assessment process. The report is the product of 146 contributing Inuit authors, a 12-member advisory committee, ICC-AK and their membership organisations. The report is accessible on the [ICC-Alaska website](#).

(The Inuit Circumpolar Council, December 2015)

Finding a natural way to combat pests and diseases in maize

A quest to discover naturally occurring fungi in maize may provide a new way to help protect this crop from insect pests and diseases. Maize grown for silage or grain is an important crop in New Zealand. Over the last 20 years, the area planted for maize silage has more than doubled as farmers are using it as a supplementary feed for dairy cows during winter.

Research in the Next-Generation Biopesticides programme is exploring whether endophytes may help to protect maize from insect pests and disease and provide an alternative to fungicide treatments. For this study, Lincoln University Master's student Jenny Brookes is investigating which endophytes are present in maize, where they occur in the plant, and what impact they have on insect pests and diseases. Over the last two summers, she has sampled maize plants from across New Zealand, isolated more than 600 endophytes and identified 200 species using DNA analysis.

The team were surprised by the large number and diversity of endophytes collected. They now have the task of testing the specimens to see which ones may offer benefits to the plants and have potential as biopesticides. Jenny will infect maize plants with disease-causing agents, like the *Fusarium* fungus that causes ear rot, and establish whether any of these endophytes are protective.

Ultimately, the research team are looking for endophytes that can help combat some of the economically important diseases of maize in New Zealand such as northern leaf blight, eyespot, and stalk and ear rots and insect pests such as Argentine stem weevil, greasy cutworm, black beetle and grass grub.

([Bio Protection News](#), 1 December 2015)

Slime moulds of Tasmania

"Slime moulds release spores - they look like the finest dust you'll ever see - that take flight when disturbed by the lightest touch. When the spores settle somewhere, they form into amoeba, which roam around and eat as much as they can. If conditions aren't ideal, the amoeba form a dormant cyst, but otherwise they get about on their own for a while. Then something changes. The amoeba are drawn together, and multiple nuclear fissions occur without any cell divisions. You end up with this slimy mass that potentially has millions of nuclei within one boundary: a plasmodium. Plasmodia have the unfortunate distinction of looking a lot like snot - but they don't act like it. The amazing thing about plasmodia is that, unlike snot, they move. In fact, they hunt."

A [fascinating story](#) with some excellent photos.

(ABC Radio, 30 November 2015)

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