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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Voting by Councilors on bids for ICPP2023

Over the last few weeks ISPP Councillors have been voting to choose the successful Society bid to host the International Congress of Plant Pathology in 2023 (ICPP2023). Four Societies submitted bids - the French Society for Phytopathology, the Indian Phytopathological Society, the Netherlands Society for Plant Pathology and the Thai Phytopathology Society.

Voting in the first round was completed on 31 October and as no Society gained more than two thirds of votes, a second round of voting will occur during November - with ISPP Councillors asked to choose between the two Society bids that obtained the most first round votes. In the second round, a simple majority will determine the preferred bid.

Brenda Wingfield
Secretary General ISPP

ISPP Launches a Global Crop Loss Survey

Quantification of the importance of crop diseases and pests is a necessary first step towards better understanding of crop health and its management. However, the information pertaining to the losses caused by plant diseases and pests in agriculture is fragmented, heterogeneous, and is very incomplete. ISPP has been considering undertaking a survey on crop losses for a long time. Documenting the importance of crop diseases and pests is also one goal of several international research networks, such as AgMiP and MacSur. This project has first been discussed by the Crop Loss Subject Matter Committee of the International Society of Plant Pathology during its first meeting in August 2013 in Beijing.

With this article (and a message which should also be sent to you by ISPP), you are invited to contribute to this survey. If you would like to participate in this global effort, please use the link below:

https://globalcrophealth.org

This link will direct you to a survey questionnaire. The questionnaire has been devised to be simple and flexible, so that you would need as little of your time to provide inputs. If you have any queries about this survey, please email us at survey@globalcrophealth.org

About the survey

This survey is intended to help document crop losses in major world crops. The information sought on each crop disease or pest (location, frequency and loss) is very simplified, in order to both reduce the time required to answering the questionnaire, and to generate homogeneous information across multiple diseases and pests

of several crops.

At this stage, the survey focuses on five major crops worldwide: wheat, rice, potato, soybean, and maize. It might be expanded to other crops in the future. For each of these five crops, up to 10 pests and diseases have been listed. These are only suggestions, and the survey forms provide opportunity to submit information on other pests and diseases as well. Common names and scientific names of suggested pathogens and pests are tabulated below.

The survey asks contributors to provide their name, institute and e-mail address. Providing this information is optional. However, this will enable the recognition of contributions in future reports.

Hopefully, this survey will collect as many inputs from numerous contributors worldwide, on as many diseases and pests as possible. The survey will end on 31 Jan 2017. If the survey is successful in eliciting a sufficient number of responses, a report will be made public by 31 Apr 2017, where the detail of individual contributions will not be presented, but where contributions will be explicitly acknowledged.

Thanking everyone for your support in this effort,

S. Savary, INRA, Centre INRA de Toulouse, France ; Chair, Crop Loss Subject Matter Committee of the ISPP;
A. Nelson, ITC, University of Twente, The Netherlands;
L. Willocquet, INRA, Centre INRA de Toulouse, France ;
S. Pethybridge, Cornell University, USA;
A. Mila, North Carolina State University, USA;
P. Esker, University of Costa Rica.

Lists of pests and diseases considered in the global crop loss survey

Potato

Disease or pest: common name	**Scientific (Latin) name**
Late blight	*Phytophthora infestans*
Cyst nematode	*Globodera rostochiensis, G. pallida*
Early blight	*Alternaria solani*
Early dying/Verticillium wilt	*Verticillium albo-atrum, V. dahliae, Pratylenchus penetrans*
Colorado potato beetle	*Leptinotarsa decemlineata*
Potato leafhopper	*Empoasca fabae*
Potato spindle tuber viroid	
Common scab	*Streptomyces scabies*
Powdery scab	*Spongospora subterranea*
Other	

Maize

Disease or pest: common name	**Scientific (Latin) name**
Northern corn leaf blight	*Exserohilum turcicum, Setosphaeria turcica*
Southern rust	*Puccinia polysora*
Maize streak	*Maize streak virus*
African stem borer	*Busseola fusca, Sesamia calamistris*
European stem borer	*Ostrinia nubialis*
Diabrotica beetle and rootworm	*Diabrotica balteata, D. virgifera, D. longicornis, D. speciosa*
Diplodia ear and stem rot	*Diplodia frumenti*
Fusarium and Gibberella stalk rots	*Fusarium moniliforme, F. graminearum*
Fusarium and Gibberella ear rots	*Fusarium moniliforme, F. graminearum*
Other	

Soybean

Disease or pest: common name	**Scientific (Latin) name**
White mold	*Sclerotinia sclerotiorum*
Soybean rust	*Phakopsora pachyrhizi*
Cyst nematode	*Heterodera glycines*
Sudden death	*Fusarium virguliforme, F. tucumaniae, Heterodera glycines*
Armyworm	*Spodospora exigua, S. praefica*
Phytophthora root and stem rot	*Phytophthora sojae*
Rhizoctonia root rot, web blight	*Rhizoctonia solani*
Pythium damping-off	*Pythium spp.*
Soybean mosaic	Soybean mosaic virus
Other	

Wheat

Disease or pest: common name	Scientific (Latin) name
Septoria (Zymoseptoria) tritici blotch	*Zymoseptoria tritici*
Stagonospora nodorum blotch	*Stagonospora avenae f. sp. tritici, Parastagonospora (Phaeosphaeria) nodorum*
Leaf (brown) rust	*Puccinia triticina*
Stem (black) rust	*Puccinia graminis f. sp. tritici*
Stripe (yellow) rust	*Puccinia striiformis f. sp. tritici*
Fusarium head blight - Scab	*Fusarium spp., Microdochium spp.*
Tan spot	*Pyrenophora tritici-repentis*
Spot blotch	*Cochliobolus sativus*
Barley yellow dwarf (BYD)	BYD viruses
Aphids	*Sitobion avenae, Rhopalosiphum padi, Diuraphis noxia*
Other	

Rice

Disease or pest: common name	Scientific (Latin) name
Bacterial blight	*Xanthomonas oryzae pv. oryzae*
Leaf, neck, or panicle blast	*Pyricularia oryzae*
Sheath blight	*Rhizoctonia solani*
Rice tungro	RTB virus and RTS virus
Ragged stunt	RRS virus
Brown spot	*Cochliobolus miyabeanus*
Sheath rot	*Sarocladium oryzae*
Stem borers	*Scirpophaga incertulas, Chilo suppressalis, Sesamia inferens*
Brown plant hopper	*Nilaparvata lugens*
Other	

Reminder - The Jakob Eriksson Prize for Plant Pathology - Nominations closing November 30

The premier award for achievement in plant pathology, the Jakob Eriksson Prize, was established in 1923 to honor the memory of Jakob Eriksson, a prominent Swedish mycologist and plant pathologist who died in 1931. He was a dedicated internationalist who espoused the cause of international cooperation in plant pathology. The Prize will be awarded at the International Congress of Plant Pathology held in Boston Massachusetts USA from July 29 to August 3, 2018. The Royal Swedish Academy of Sciences administers the Jakob Eriksson Prize Fund which provides for a gold medal award at Congresses of the International Society for Plant Pathology.

Nominations are called for a candidate of distinction in recognition of research in mycology, in plant pathology, or in virus diseases, or of a particular publication dealing with such subjects, with the understanding that the work being recognised is of a distinct international value and merit. The following rules apply to those making nominations:

i. Nominators must provide a curriculum vitae and a short statement (500 words) justifying the selection of nominees,
ii. Names of all nominees must be strictly confidential,
iii. Individuals cannot nominate themselves and nominators should declare any professional affiliation with the nominee.
iv. No correspondence concerning unsuccessful nominations will be entered into.

All nominations are to be sent to the Chair of the Prize Commission, in an email headed "Jakob Eriksson Prize Nomination 2018" (ErikssonPrize@ISPPweb.org). The call for nominations will close on November 30, 2016.

Past recipients of the Prize have included:

- 1993. 7th Recipient - Prof Dr Ir Ariena H.C. van Bruggen, Professor Biological Farming Systems at Wageningen University, at the 6th International Congress of Plant Pathology.
- 1998. 8th Recipient - Dr Richard Frederiksen, Professor of Plant Pathology at Texas A&M University, at the 7th International Congress of Plant Pathology in Edinburgh.
- 2003. 9th Recipient - Dr. Jaccov Katan of the Hebrew University, Jerusalem, at the 8th International Congress of Plant Pathology in Christchurch, New Zealand.
- 2008. 10th Recipient - Dr. Laurence V. Madden, at the 9th International Congress of Plant Pathology in Torino, Italy.
- 2013. 11th Recipient - Professor Jeffrey B. Jones of the University of Florida, at the 10th International Congress of Plant Pathology in Beijing, China.

Information about the selection process are available here.

(Jakob Eriksson Prize Commission)

ICPP 2018 concurrent sessions (invited talks) reminder

Session submissions are still open for the 11th International Congress of Plant Pathology (ICPP) in Boston, USA. Scheduled to be held in Boston, a city rich in the historic roots of the founding of the United States, ICPP will be a celebration of the Congress' vision to promote an engaged world community of plant health scientists advancing knowledge for a safe, affordable, secure supply of food, feed, and fibre for a growing population. Submissions are now open through December 9, 2016 for the ICPP 2018 Concurrent Sessions (Invited Talks).

Who can submit? Subject matter committees and any other groups, committees or individuals interested in organizing and moderating a concurrent session are encouraged to complete the submission process. We encourage subject matter committees and individuals with similar areas of interest to work together globally in planning concurrent sessions in order to eliminate duplication and create better scientific content.

Concurrent Sessions have the following format:

- Four invited speakers (20 minutes each)
- Two contributed short talks (10 minutes each)
- Discussion to follow.

*** Please Note: Only the four invited speakers need to be identified for the concurrent session proposal.

The contributed short talks, workshops, field trips, etc. will be selected by the Scientific Program Committee from those submitted during the ICPP 2018 general call for abstracts that will open at a later date.

Submit a concurrent session proposal

(ICPP Organising Committee)

Climate change, agriculture and food security

Food and Agriculture Organization (FAO) of the United Nations produces an annual publication "The State of Food and Agriculture." The current issue focuses on climate change, agriculture and food security.

"The Paris Agreement, adopted in December 2015, represents a new beginning in the global effort to stabilise the climate before it is too late. It recognises the importance of food security in the international response to climate change, as reflected by many countries focusing prominently on the agriculture sector in their planned contributions to adaptation and mitigation. To help put those plans into action, this report identifies strategies, financing opportunities, and data and information needs. It also describes transformative policies and institutions that can overcome barriers to implementation."

The report can be downloaded from the FAO website.

Epigenetic regulation of development and pathogenesis in fungal plant pathogens

A paper by A. Dubey and J. Jeon titled "Epigenetic regulation of development and pathogenesis in fungal plant pathogens" was published online on 17 October 2016 by Molecular Plant Pathology. The abstract is as follows:-

Evidently, epigenetics is at forefront in explaining the mechanisms that underlie the success of human pathogens and identifying pathogen-induced modifications within the host plants. But, the lack of studies highlighting the role of epigenetics in modulating the growth and pathogenicity of fungal plant pathogens is gaping wide. In the first of its kind review, we attempt here to highlight and discuss the role of epigenetics in regulating the growth and pathogenicity of fungal phytopathogens using *Magnaporthe oryzae* (hereafter *M. oryzae*), a devastating fungal plant pathogen, as a model system. With the perspective of wide application in understanding the development, pathogenesis and control of other fungal pathogens, we attempt to provide a synthesized view of the epigenetic studies conducted on *M. oryzae* hitherto. Firstly, we discuss the mechanisms of epigenetic modifications in *M. oryzae* and its impact on the fungal development and pathogenicity. Next, we also point out at the unexplored epigenetic mechanisms and areas of research that should be considered in near future to construct a holistic view of epigenetic functioning in *M. oryzae* and other fungal plant pathogens. Importantly, developing a complete understanding of modulation of epigenetic regulation in fungal pathogens can help in identification of target-points to combat fungal pathogenesis.

Read paper.

Discovery of trees thought to be extinct found in UK

Two 30 metre Wentworth elms, *Ulmus wentworthii*, believed to be extinct in Britain have been discovered during a recent tree survey at Holyrood Palace, the Queen's residence in Edinburgh, Scotland. The Wentworth elm was most likely introduced to cultivation in the late 19th century, but it was thought to have been wiped out in the devastating Dutch elm disease epidemic, which destroyed up to 75m UK trees during the late 20th century. It is likely the only reason these two rare elms have survived is because Edinburgh city council has been surveying and removing diseased elms since the 1980s. Tree experts are now looking into ways of propagating the rare specimens.

Read more.

(The Guardian, 4 October 2016)

Asian citrus psyllid mounts immune response against citrus greening disease bacterium

The bacterium, Candidatus Liberibacter asiaticus Clas) that causes citrus greening disease is not only decimating citrus orchards in Florida, but causes cells in the midgut of the insect vector, Asian citrus psyllid, to self-destruct. These findings published recently in the Scientific Reports suggest that strategies to interfere with cell death in the midgut may prevent the psyllid from spreading the bacterium further.

"It is highly unusual for a plant pathogen to cause such a profound response in the insect vector and the insect's response may be an Achilles' heel that we can exploit to thwart the acquisition and transmission of the bacterium by the insect," according to Michelle Cilia, a Research Molecular Biologist at the USDA Agricultural Research Service and an assistant professor at the Boyce Thompson Institute (BTI) and the School of Integrative Plant Science at Cornell University.

Researchers at BTI, the USDA and a visiting scientist from the Volcani Center raised Asian citrus psyllids on CLas-infected citrus plants and then dissected out their guts and visualised them under a microscope. When compared to non-infected psyllids, the gut cells exposed to CLas had dead spots, abnormalities and broken nuclei. These changes were accompanied by biomarkers signifying programmed cell death and DNA degradation. All of these signs point to an immune response mounted by the psyllid against the bacterium.

In practical terms, the findings point to cell death in the psyllid midgut as a place where humans could intervene to block the bacterium's path through the insect. Scientists could introduce "interdiction" molecules that block proteins involved in cell death, or use genetic approaches to silence genes related to the process. Gut binding compounds have already been developed that stop aphids from taking up plant pathogens, and the researchers are working on similar compounds for psyllids. Deploying one of these strategies would likely take a year of laboratory experiments, followed by two to five years of field testing and another year for EPA and USDA approvals. While the delay will be painful for citrus growers, a targeted and precise approach is likely to be more successful at saving the citrus industry than current attempts to treat groves with pesticides or antibiotics.

Read more.

(Grahame Jackson, Pestnet, 5 October 2016)

New single test to detect plant viruses in imported plants

Researchers from Western Australia and New Zealand have developed a single test to detect multiple viruses simultaneously in imported plants, in a bid to improve Australia's biosecurity, quarantine efficiency and increase profitability. The scientists from Perth's Plant Biosecurity Cooperative Research Centre (PBCRC) and New Zealand's Plant and Food Research have spent three years working on the test, developing a comprehensive diagnostic toolkit.

Live plant material imported into Australia takes up to two-and-a-half years to be inspected, screened, treated and released from quarantine, according to Murdoch University senior research fellow and project leader Dr Roberto Barrero. The new test could speed up the current process by 12 months.

Their innovative approach uses cutting-edge genome sequencing technology to tap into plants' natural defence systems, which Dr Barrero says is a world first.

Viruses that suppress a plant's immune system cannot be detected by the new test. The Australian Government has approved and adopted the toolkit for ornamental grasses and extended the project for a year to get feedback from industry stakeholders and policy-makers.

Read more.

(Lisa Morrison, Science Network Western Australia, 10 October 2016)

Laboratory Protocols for *Phytophthora* Species - new online resource

Laboratory Protocols for *Phytophthora* Species. 2016. Kelly L. Ivors (Eds). APS Press, online resource.

Phytophthora Protocols is the first online-only resource from APS Press. Edited by Kelly Ivors, California Polytechnic State University, it offers step-by-step instructions and images to ensure The accuracy and consistency of *Phytophthora* research techniques.

This collection of more than 70 individual protocols can be used as a baseline for optimising lab research, developing custom research techniques, ensuring quality and consistency of your research design. Sections in the new *Phytophthora* Protocols include:

- *Phytophthora* Detection
- Identification and Isolation
- *Phytophthora* Inoculum Production and Inoculation
- Long-Term Storage of *Phytophthora*
- Mating Techniques
- Chemical Sensitivity Studies
- DNA Techniques
- Media
- Solutions for *Phytophthora* Studies

"This project came to APS PRESS as a book proposal, but with our new online platform for books (on the APS journals site), we thought it could be much more," explained Darin Eastburn, APS Press editor-in-chief. "We now envision this as a growing collection of protocols for the *Phytophthora* community of researchers, plant disease diagnosticians, and state/federal plant health regulators. Labs that use this resource are encouraged to offer new, custom variations or improvements to these current protocols," Eastburn added.

"Kelly Ivors is leading this effort on *Phytophthora*, and APS PRESS has been inviting members of other subject matter committees to propose protocol collections in other key areas," he said.

Visit www.shopapspress.org to learn more about these and other crop health titles from APS Press.

Pacific pests and pathogens App

The App, Pacific Pests and Pathogens version 4, is ready to be downloaded from Google Play and Apple stores. It is for smartphones and tablets and is free.

This version has 30 more pest fact sheets, bringing the total to 300. Many of the new fact sheets are from Papua New Guinea and include pests of vegetables in the relative cool conditions of the highlands.

The Pest Fact Sheets link from the Pestnet website has been updated so the fact sheets can be accessed from a computer. The website also contains 160 mini-fact sheets.

(Grahame Jackson, Pestnet)

Open access to Springer book chapters in plant sciences

Enjoy reading a selection of the most frequently downloaded, highly cited and socially discussed chapters from recently published plant sciences books. The open access chapters in this list are freely available on a permanent basis and all other chapters are offered for free trial access until December 31st.

- Induced Disease Resistance - highly downloaded chapter published in: Principles of Plant-Microbe Interactions
- Phylogenetics and Conservation Biology: Drawing a Path into the Diversity of Life - highly downloaded open access chapter published in: Biodiversity Conservation and Phylogenetic Systematics
- High Efficiency Wheat Transformation Mediated by *Agrobacterium tumefaciens* - highly downloaded open access chapter published in: Advances in Wheat Genetics: From Genome to Field
- SNP Genotyping Using KASPar Assays - highly downloaded chapter published in: Plant Genotyping
- The Dynamic Discipline of Species Delimitation: Progress Toward Effectively Recognizing Species Boundaries in Natural Populations - top cited chapter published in: Recent Advances in Lichenology
- Origin, Dispersal, and Current Global Distribution of Cacao Genetic Diversity - most frequently mentioned chapter published in: Cacao Diseases

(Springer, 14 October 2016)

Dothistroma needle blight Special Issue of Forest Pathology

The Dothistroma needle blight Special Issue of Forest Pathology was released at the end of October 2016. The special issue was a result of the DIAROD (Determining Invasiveness And Risk Of Dothistroma) COST Action. The issue showcases the international collaborative work of Dothistroma researchers on the pathogens, hosts and environmental effects on this disease. The growth of the Dothistroma community from its humble

beginnings ten years ago, to a consortium of scientists from 41 countries facilitated by a European Cooperation in Science and Technology Action, is outlined. Key achievements of the group and highlights of articles in this special issue are summarised.

Browse issue.

IV International Symposium on Postharvest Pathology: Announcement and abstract submission

The IVth International Symposium on Postharvest Pathology will be held in the Kruger National Park, South Africa from 28 May to 3 June 2017. Online abstract submission is active and abstract submission will close on 30 November 2016. Submit an abstract

Biocontrol of Fire Blight

Biocontrol of fire blight is regarded as a promising alternative to antibiotics. Dr. Kyekyoon Kim and Dr. Hyungsoo Choi from the University of Illinois have developed a biocontrol for the treatment of fire blight utilizing microencapsulated E325. They have demonstrated the effectiveness of Pantoea agglomerans strain E325 (E325) encapsulated in alginate microcapsules (AMCs) in suppressing the growth of Erwinia amylovora strain Ea153 (Ea153) at low relative humidity (RH). Furthermore, the survival of encapsulated E325 during freeze-drying and storage was investigated in the presence of lyoprotectants to improve preparation of starter cultures. The encapsulated E325 exhibited the following advantages: (1) maintenance of E325 population size in moisture- and nutrient-poor environments including hypanthium, the main infection site, (2) improved suppressive activity against Ea153 at low RH, and (3) improved survivability of freeze-dried E325 for long-term storage. This technology is a demonstration that the microcapsule-mediated delivery of biocontrol agents may serve as a viable strategy to manage fire blight of apple and pear.

Benefits:

- Allows for a sustained release
- Does not have to be directly applied to specific parts of the flower
- Works in a wide range of environmental conditions
- Prevents the development of antibiotic resistant strains of Erwinia amylovora
- Improved survivability of freeze-dried E25 for long-term storage

(Grahame Jackson, Pestnet, 30 October 2016)

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