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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In this issue:

The Jakob Eriksson Prize for Plant Pathology - Call for nominations

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)

ISPP Position Paper on genetic modification for disease resistance

The members of the ISPP Task Force on Global Food Security, Peter Scott, Jennifer Thomson, David Grzywacz, Serge Savary, Richard Strange, Jean B. Ristaino, and Lise Korsten, have published a Position Paper on genetic modification for disease resistance in Food Security available online since 29 June 2016. Summary of paper follows:

An objective approach is proposed to the assessment of the potential of genetic modification (GM) to reduce the impact of crop diseases. The addition of GM to the plant breeder's conventional toolbox facilitates gene-by-gene introduction into breeding programmes of well-defined characters, while also allowing access to genes from a greatly extended range of organisms. The current status of GM crops is outlined. GM could make an additional contribution to food security but its potential has been controversial, sometimes because of fixed views that GM is unnatural and risky. These have no factual basis: GM technology, where adopted, is widely regulated and no evidence has been reported of adverse consequences for human health. The potential benefits of GM could be particularly valuable for the developing world but there are numerous constraints. These include cost, inadequate seed supply systems, reluctance to adopt unfamiliar technology, concern about markets, inadequacy of local regulatory systems, mismatch between research and growers' needs, and limited technical resources. The lower cost of new gene-editing methods should open the practice of GM beyond multinational corporations. As yet there are few examples of utilization of GM-based resistance to plant diseases. Two cases, papaya ringspot virus and banana xanthomonas wilt, are outlined. In the developing world there are many more potential cases whose progress is prevented by the absence of adequate biosafety regulation. It is concluded that there is untapped potential for using GM to introduce disease resistance.

Read paper.

Updates to common names of plant diseases

"Diseases of Wheat" is the tenth list of plant diseases and pathogens recently updated as part of a comprehensive initiative led by APS member Tim Paulitz. Visit the Common Names of Plant Diseases webpage to utilise this valuable open-access reference tool.

Cocoa swollen shoot virus disease: A holistic control approach in West Africa

The Cacao Swollen Shoot Virus Disease (CSSVD) is one of the most destructive cocoa diseases. Since the disease was reported in Ghana in 1936, it has caused devastating losses, resulting in the cutting out of nearly 200 million cocoa trees. Despite ambitious eradication efforts, the disease has not been effectively contained. An estimated 15% of global cocoa production is wiped out annually by CSSVD (International Cocoa Organisation, 2009), posing a serious economic threat in the affected countries.

As part of its efforts to ensure cocoa sustainability in Africa, the cocoa industry launched a CSSV program in West Africa in 2015 through WCF and the CocoaAction strategy. Through its holistic approach, the CocoaAction CSSV program intends to make available by 2020 an integrated and cost-effective management strategy against CSSVD in West Africa.

Read more

The third symbiotic partner in many lichens

A paper by T. Spribille et al. titled "Basidiomycete yeasts in the cortex of ascomycete macrolichens" was published in July 2016 by Science. The abstract is as follows:-

For over 140 years, lichens have been regarded as a symbiosis between a single fungus, usually an ascomycete, and a photosynthesizing partner. Other fungi have long been known to occur as occasional parasites or endophytes, but the one lichen - one fungus paradigm has seldom been questioned. Here we show that many common lichens are composed of the known ascomycete, the photosynthesizing partner, and, unexpectedly, specific basidiomycete yeasts. These yeasts are embedded in the cortex, and their abundance correlates with previously unexplained variations in phenotype. Basidiomycete lineages maintain close associations with specific lichen species over large geographical distances and have been found on six continents. The structurally important lichen cortex, long treated as a zone of differentiated ascomycete cells, appears to consistently contain two unrelated fungi.

Read paper.

Citizen scientists help find fungi in Tasmania

So far more than 400 species of fungi have been found in the north-west of Tasmania, Australia. In the face of overwhelming quantities of data, fungi researchers are turning to citizen scientists to help them understand more about these diverse organisms.

Julie Fielder is a Tasmanian biologist who accompanied a group of enthusiastic field naturalists to an area known as Philosopher's Falls, rich with moss and lichen, damp and cool under the cover of a Nothofagus canopy. "There's not a huge amount of funding to study fungi in an official capacity, so a lot of the data that's being collected on ecology and distribution is largely being collected through citizen science," Ms Fielder said.

"We try and run these forays to increase the education of the community and increase the interest, in the hope that people will identify the target species and send their data in to contribute to the mapping."

Read more.

(Margot Kelly, ABC Rural News, 31 May 2016)

Recently on The Conversation

Two interesting opinion articles were recently published on The Conversation:
Botany may be dying... but somehow the plants survive, and The world health body you've never heard of - but should have.

(Eric Boa, The Conversation, 2016)

Mummy berry 3-D prints to increase grower awareness

Mummy berry is a fungal disease that turns plump blueberries into white, wrinkled berries that fall to the ground and serve as a winter home for the causal pathogen, *Monilina vaccinii-corymbosi*. In early spring, those mummy berries develop apothecia, which release spores that are dispersed by wind to infect healthy plants. It is one of the most significant diseases of highbush blueberries in the Northwest of USA, with commercial losses in Oregon ranging from 33-85 % and organic losses routinely reaching near 100% of the crop.

There are management options available for both conventional and organic growers, but they have been unable to consistently control the disease. Researchers are working to help blueberry growers forecast for and better recognise the signs and symptoms of mummy berry. Those efforts include a particularly novel idea that, if successful, could carry over to help growers recognise other pests and diseases.

Scouting for the apothecia that emerge under blueberry plants could provide growers time-sensitive information about how best to manage the fungus. However, the mushrooms are small and blend in easily with the ground, making them difficult to find. Jay Pscheidt, professor and Extension plant pathology specialist at Oregon State University, is working to develop an actual-size and colour model of the mushroom to help growers identify it in the field.

Pscheidt worked with OSU's Department of Archaeology to quickly scan into the computer real mushrooms from different positions before they began to dehydrate and lose colour. From those scans, a model of the mushroom was created on a 3-D printer. The first samples were handed to field representatives and county agents for evaluation. Though the colour washed out when it got wet and the printed material wasn't as strong as he would like, Pscheidt said the model shows promise. He's looking into a different service that could print them on stronger, more durable materials for long-term use. Ultimately, if the 3-D model proves successful, Pscheidt said he sees potential for the technology to be applied in other areas

Read more.

(Shannon Dininny, Good Fruit Grower, 22 July 2016)

Crop wild relatives 'critically under-represented' in gene banks

Wild plants closely related to crops contain genes that could be useful for developing resilient crop varieties and are, therefore, important for food security. This global study quantified their conservation status and availability for breeding. The researchers found major gaps in gene-bank stocks, with over 70% of crop wild relative species identified as 'high priority' for conservation action. The researchers say systematic efforts are needed to protect crop wild relatives for future plant breeding, including both protection in gene banks and local conservation.

Read article.

Read Nature Plants paper.

(Science for Environment Policy, News Alert Issue 464, 2016)

Can grain growers and agronomists identify common leaf diseases and biosecurity threats in grain crops?

A paper by D. Wright et al. titled "Can grain growers and agronomists identify common leaf diseases and biosecurity threats in grain crops? An Australian example" was published in July 2016 by Crop Protection (vol. 89 pp. 78-88). The abstract is as follows:-

The Australian grains industry relies upon growers and agronomists to be aware of pests and diseases in their crops and to notify their local State Department of Agriculture when they suspect an incursion of a high priority pest (HPP). This raises the question "Are growers and agronomists, within the Australian grains industry, able to meet this expectation?" A training needs analysis was undertaken to determine the capacity of growers and agronomists to identify three endemic diseases (powdery mildew in barley, stripe rust in wheat and blackleg in canola) in their crops. Their knowledge of the top four-biosecurity threats to the Australian grains industry (Karnal bunt, Khapra beetle, barley stripe rust and Russian wheat aphid) was also determined. Benchmarks for successfully identifying these diseases were set beforehand at 70% of growers and 80% of agronomists; participants' ability to identify these endemic diseases in crops met these benchmarks. However, their ability to recognise blackleg in canola was significantly lower than for the two cereal foliar diseases. There was a significant correlation of region with these capabilities, with a greater proportion of participants in Western Australia (WA) recognising powdery mildew in barley than in Eastern Australia (EA). In contrast, a greater proportion of participants in EA were able to identify stripe rust of wheat than in WA. The education levels of participants corresponded with their ability to identify blackleg in canola. Participants' knowledge and awareness of symptoms and signs associated with the top four biosecurity threats were well below expectations; fewer than half of the participants answered questions on these four HPPs. Gender, age and educational level did not correlate with the participants' knowledge and awareness of the four HPPs with the exception of Karnal bunt. Participants with a higher level of education had significantly more knowledge of symptoms associated with Karnal bunt than did participants with lower levels of education. The use of diagnostic services by the grains industry participants is a vital component of general surveillance. This survey showed that use of these services by growers was significantly lower than by agronomists. Awareness of the National Exotic Plant Pest Hotline and GrainGuard was significantly lower than other diagnostic services for both growers and agronomists. Diagnostic services need to be promoted further to increase awareness and use by growers and agronomists. Correct diagnosis of disease and pest symptoms is vital for the biosecurity of the grains industry.

Read paper.

Compendium of Sunflower Diseases and Pests - new book

Compendium of Sunflower Diseases and Pests. 2016. Robert M. Harveson, Samuel G. Markell, Charles C. Block, and Thomas J. Gulya (Eds). APS Press, 140p.

A new book titled, Compendium of Sunflower Diseases and Pests, is the latest tool to protect the yield and quality of this globally significant crop. It includes nearly 300 images and research-based management recommendations to help academics and professionals identify and manage a range of plant diseases and insect pests.

This book is divided into sections that include biotic diseases, insect pests, abiotic diseases and disorders, and emerging issues for sunflower production. It features:

- Colour photographs of disease symptoms, spores, insect pests, and disorders
- Worldwide plant pathogen distribution maps
- Diagrams and descriptions of insect life cycles
- Expert pest management recommendations from leading sunflower researchers
- An up-to-date glossary of common diseases and their scientific names
- A history of sunflower production, usage, and breeding

The Compendium is a globally focused publication that is authored by 37 scientists located across the globe, including Africa, Australia, Europe, North America, and South America.

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

Phytobiomes - new journal is now accepting submissions

The Phytobiomes is a new open access journal of the American Phytopathological Society (APS) that is now

accepting manuscripts. The journal transdisciplinary will publish original research on organisms and communities interacting with plants. The phytobiome includes the collection of organisms living in close association with plants as well as other components of the environment such as soil, water or the atmosphere on which plants depend. Members of the phytobiome engage in intimate and often highly-coevolved interactions with the plant and with one another, with significant consequences for crop yields in agriculture, for plant health and productivity in forest and grassland systems, and for large-scale ecosystem processes, including nutrient cycling and soil carbon sequestration. Phytobiomes features the latest advances in systems biology, network analysis, biogeochemistry, molecular and genomic population and community analyses, sensor and imaging technologies, and bioinformatics to advance our understanding of phytobiomes as integrated, focal units of plant, crop and ecosystem productivity. Translational research that applies knowledge of phytobiomes to specific plant health and productivity issues and production systems in a changing world are also featured.

More information on the journal and how to submit manuscripts can be found on the Phytobiomes webpage.

Mushrooms in space

A rocket launch on 18 July included 15 student experiments one of which was "the shape and growth of small mushrooms in space" prepared by grade 5 students as part of the Student Spaceflight Experiment Program.

(Vija Wilkinson, Penn State News, 18 July 2016)

New disease threat to U.S. potato production

A plant pathologist, Amy Charkowski from the University of Wisconsin, who also directs Wisconsin's seed potato certification program, has advised the potato industry to prioritise research and testing to combat a new threat to U.S. potato production - the bacterial pathogen *Dickeya dianthicola* (formerly in the *Pectobacterium* and *Erwinia* genera).

Charkowski said the pathogen has posed a major challenge to European potato production since the 1950s, but it did not surface in the U.S. until the fall of 2014, when a sample from the Northeast tested positive. It has since been confirmed in most of the major potato states in the U.S.

"If it gets too entrenched in the seed system, it could be a real problem," Charkowski said. "I'm really worried about seed testing right now. We don't have the capacity to test in our system."

Charkowski said the bacteria can survive in irrigation water and thrives in warm, humid environments and poorly ventilated potato cellars. She said *Dickeya* is easily confused with its close relative, *Pectobacterium*, which is common in states including Idaho and causes similar "black leg" symptoms, including curling and wilting leaves, low emergence and stem-base rot.

Dickeya symptoms may remain latent, and it takes fewer *Dickeya* bacteria to infect a plant. Both pathogens need an open wound to infect tissue.

No resistant commercial varieties have been developed. Fortunately, European researchers say the pathogen doesn't tend to survive longer than nine months in soil, and it can be effectively controlled by good sanitation practices.

Read more.

(John O'Connell, Capital Press, 22 July 2016)

Acknowledgements

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