INTERNATIONAL NEWSLETTER ON PLANT PATHOLOGY

ISPP Newsletter 47 (12) December 2017

News and announcements 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:

Seasonal greetings from Australia

Peter Williamson and I send our warm and sunny greetings for the holiday season to all ISPP members and their families and colleagues. As in previous years, the ISPP President, Greg Johnson, will be sending his special annual message and greetings to everyone in the January issue of the ISPP Newsletter. Best wishes for a happy and safe 2018!

Corymbia ficifolia – Collagraph with chine colle and watercolour (D. Hüberli, 2015)

Daniel Hüberli, ISPP Newsletter Editor

Submission deadline for ICPP2018 is approaching

Make your mark at the International Congress of Plant Pathology (ICPP) 2018: Plant Health in A Global Economy. The deadline for submission of short talks and poster presentations is 8 December 2017. Further information on submission instructions are here.

Lifetime Achievement Award for TS Thind

Dr TS Thind, Adjunct Professor and former Additional Director of Research, Punjab Agricultural University (PAU), has been honoured with the 'Lifetime Achievement Award' by the Himalayan Phytopathological Society for his contributions to the discipline of plant pathology. The award was given to Dr Thind during the national symposium on 'Biorational approaches in plant disease management' held at the Dr YS Parmar University of Horticulture and Forestry, Solan, on October 27-28.

Dr Thind is a long-time member of the ISPP Subject Matter Committee for Chemical Control and his research contributions in epidemiology of plant diseases and their management is widely acclaimed at the national and international level. He is considered a pioneer in the work on fungicide resistance in India. He has also developed efficient technologies for controlling several plant diseases and decision support systems for their timely management. These technologies have been widely adopted by farmers and have helped in getting economical yields.

Dr Thind has executed a good number of research projects with national and international collaborations and participated in conferences on plant pathology in several countries. He has published more than 200 research papers and six books. His research achievements have been widely recognised through several awards and honours.

(The Tribune, 3 November 2017)

World Soil Day: 5 December

The Global Soil Partnership is dedicating World Soil Day (WSD) 2017 to the theme "Caring for the Planet starts from the Ground". Soil is a finite natural resource. On a human time-scale it is non-renewable. However, despite the essential role that soil plays in human livelihoods, there is a worldwide increase in degradation of soil resources due to inappropriate management practices, population pressure driving unsustainable intensification, and inadequate governance over this essential resource.

WSD is held annually on 5 December as a means to focus attention on the importance of healthy soil and advocating for the sustainable management of soil resources. An international day to celebrate Soil was recommended by the International Union of Soil Sciences (IUSS) in 2002. Under the leadership of the Kingdom of Thailand and within the framework of the "Global Soil Partnership", the Food and Agriculture Organization of the United Nations (FAO) has supported the formal establishment of World Soil Day as a global awareness raising platform. The FAO Conference unanimously endorsed World Soil Day in June 2013 and requested its official adoption at the 68th UN General Assembly. In December 2013 the UN General Assembly responded by designating 5 December 2014 as the first official World Soil Day.

The date of 5 December for WSD was chosen because it corresponds with the official birthday of H.M. King Bhumibol Adulyadej, the late King of Thailand, who officially sanctioned the event.

For more information related to WSD and planned events refer to the WSD website.

12th Arab Congress of Plant Protection

The 12th Arab Congress of Plant Protection organised by the Arab Society of Plant Protection (ASPP) in collaboration with the Agriculture Research Center in Egypt represented by the Plant Protection Research Institute and Plant Pathology Research Institute was held during 5-9 November 2017 in Hurghada, Egypt. A total of 267 scientists and graduate students from Egypt, Sudan, Syria, Lebanon, Morocco, Algeria, Tunisia, Libya and Saudi Arabia participated in this event. In addition, experts from outside the region including USA, United Kingdom, Italy and Pakistan also participated in this congress. International organisations such as the Food and Agriculture Organisation of the United Nations (FAO), International Center for Wheat and Maize (CIMMYT), International Center for Agricultural Research in the Dry Areas (ICARDA) and the European Plant Protection Organisation (EPPO) were also represented in this meeting. The congress program included four symposia, 29 oral paper presentation sessions and two poster presentation sessions, where 298 scientific papers in all plant protection disciplines, such as economic entomology, fungal, viral and bacterial diseases, nematodes, plant extracts, pesticides, weeds, biological control, integrated pest management and beneficial insects, were presented and discussed.

(Khaled M. Makkouk)

International Conference on Global Crop Losses Caused by Diseases, Pests, and Weeds

An international conference on global crop losses was held in Paris over three days (October 16 - 18, 2017). The event was organised by INRA, through its Flagship Meta-Programs on Sustainable Management of Crop Health (SMaCH) and Transitions to Global Food Security (GloFoodS). The conference was organised in partnership with Cirad and the ISPP (International Society of Plant Pathology), and support from the international networks AGMiP and MacSur. Key questions addressed by the conference were:

- What are the effects of diseases, pests, and weeds, on crop performances?
- How can we understand, quantify, assess, and model these effects?
- How and what can modelling contribute in the assessment of the impacts of diseases, pests, and weeds, especially on food security?
- What could be the effects of climate and global changes on crop losses caused by plant diseases, pests, and weeds?

The conference involved some 80 participants from 20 countries. Eight keynotes were presented to address different aspects of crop loss quantification, modelling, and understanding:

- Impacts of disease and pest crop losses on crop yields and agrosystem performances (K. J. Boote, University of Florida, USA)
- Overview of approaches to quantify and model disease and pest losses (S. Savary, INRA, France)
- Economic implications of disease and pest losses – modelling and analytical approaches (J. Antle, Oregon State University, USA)
- Plant diseases in a changing climate, approaches to assess and estimate future crop risks (A. Von Tiedemann, University of Göttingen, Germany)
- Pests and diseases data in the context of yield gaps – the Global Yield Gap Atlas (M. van Ittersum, Wageningen University, The Netherlands)
- Linking crops with pests and diseases (K. C. Kersebaum, ZALF, Germany)
- Past and ongoing experiences in developing open source online scientific data bases (A. Nelson, University of Twente, The Netherlands and J. Koo, IFPRI, USA)
- Importance of disease and pest losses on key world crops – priorities (L. Willocquet, INRA, France)

These keynotes provided the background for three work groups, which addressed the themes of "Crop Loss Definition", "Models for Crop Losses", and "Data: Sources and Sharing". Work conducted in each of these work groups will lead to a series of reports, including a white paper on crop loss data ontology.

More details at: http://www.smach.inra.fr/en/Events/crop-losses

(Serge Savary)

IX International Symposium on Soil and Substrate Disinfestation, Greece

The Symposium will be held in Heraklion, Crete, Greece during 9-13 September 2018. It is organised by the Hellenic Society of Phytiatry and the Department of Plant Pathology, Agricultural University of Athens, Greece, under the aegis of the International Society for Horticultural Science (ISHS). The first circular and other information is on the meeting website https://www.sd2018crete.com/.

Viruses and aphids that help stressed crops?

A new research project aims to engineer viruses that activate desirable traits in mature corn plants, using insects to transmit the viruses. The team hopes to develop a means of rapidly responding to crop threats such as drought and disease, conferring protection within a single growing season.

The concept works like this: The researchers would engineer viruses that would then be introduced to corn plants by aphids. As the viruses infect the corn plants, they activate genes in the corn that would help the plants fight stress brought on by drought or a range of other problems. The researchers say such a process could be deployed much faster than the use of traditional plant breeding to develop stress resistance.

The grant funded by the Defense Advanced Research Projects Agency (DARPA) totals $US10.3 million over four years and includes personnel at the Boyce Thompson Institute, Iowa State University, the University of Minnesota and the University of California, Davis. The work is part of DARPA's Insect Allies program, which seeks to ensure food security by developing quickly deployable alternatives to traditional responses to crop stress to safeguard food production.

(Iowa State University News, 17 August 2017)

Fears around containment of Fusarium TR4 in Africa and Asia

Tropical Race 4 of Panama disease (TR4 of Fusarium wilt) is spreading to new localities in Asia and the Middle East. It is feared to be just a matter of time before it spreads from northern Mozambique, where it is currently present, into other African countries. The first global campaign to address the banana disease has just been launched by the United Nations' Food and Agriculture Organisation (FAO) and its partners. Previous campaigns aimed at the disease had a continent-specific focus.

The first incidences of Fusarium TR4 in Laos and Vietnam have just been reported after being confined to Indonesia, Malaysia, the Philippines, mainland China and Taiwan for more than thirty years. Prof Altus Viljoen of Stellenbosch University and colleagues recently wrote in the Plant Disease journal: "Cavendish production is now being expanded in Asia to Laos, Myanmar and Vietnam, where local varieties still dominate the market. This is due to an increase in Cavendish banana consumption and a decline in areas of production caused by Foc [*Fusarium oxysporum* f. sp. *cubense* (Foc)] TR4 in China. The expansion of Cavendish production in Southeast Asia, however, has increased the risk of Foc TR4 being introduced into new countries."

In Africa, Fusarium TR4 only occurs in Nampula Province in the north of Mozambique, a relatively dry area, but plant pathologists regard it as a significant threat to the livelihoods of millions of people in East and Central Africa. There is great concern that it could spread both within Mozambique and to neighbouring countries, like South Africa.

Read more.

(Carolize Jansen, Fresh Plaza, 31 October 2017)

Peanuts that keep aflatoxin at bay

Researchers from the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) have developed peanuts free from aflatoxins thanks to a double-defence line. By producing small proteins called defensins, these peanuts can stop the deadly fungus from propagating and infecting. At the same time, the peanut seeds also emit gene-silencing RNA molecules to help shut down the synthesis of aflatoxin by the fungus. When exposed to the aflatoxin-producing moulds *Aspergillus flavus* and *A. parasiticus* over three days, the double defence peanut seeds remain untouched, unlike the green and mouldy petri plates of other tested groundnut varieties.

The research has been recently published in Plant Biotechnology Journal. In the coming years, this could lead to significant reduction of aflatoxin contamination in farmers' fields. This revolutionary approach applies not only to peanuts but also for other important crops like maize, cotton seed, chilli, almond, and pistachio.

In a near future, ICRISAT researchers plan some extensive field tests with partners from Asian and African breeding programmes to cross these very promising aflatoxin-resistant lines and validate their agronomic performance according to biosafety regulations. Further study of these aflatoxin-free lines will also help better understand the molecular mechanisms involved, which could be transferred to other crops.

This will radically improve food safety and security especially in Africa and Asia, and avoid thousands of tons of fungi-affected crops being discarded every year or being consumed with unacceptable levels of the toxin.

(ICRISAT News, 2017)

The wheat microbiome under four management strategies

A paper by Kristi Gdanetz and Frances Trail titled "The wheat microbiome under four management strategies, and potential for endophytes in disease protection" was published in November 2017 by Plant Disease (vol. 101 pp. 1836-1842). The abstract is as follows:-

Manipulating plant-associated microbes to reduce disease or improve crop yields requires a thorough understanding of interactions within the phytobiome. Plants were sampled from a wheat/maize/soybean crop rotation site that implements four different crop management strategies. We analyzed the fungal and bacterial communities of leaves, stems, and roots of wheat throughout the growing season using 16S and fungal internal transcribed spacer 2 rRNA gene amplicon sequencing. The most prevalent operational taxonomic units (OTUs) were shared across all samples, although levels of the low-abundance OTUs varied. Endophytes were isolated from plants, and tested for antagonistic activity toward the wheat pathogen *Fusarium graminearum*. Antagonistic strains were assessed for plant protective activity in seedling assays. Our results suggest that microbial communities were strongly affected by plant organ and plant age, and may be influenced by management strategy.

Read paper.

Acknowledgements

Thanks to Grahame Jackson, Greg Johnson, Khaled M. Makkouk, Serge Savary, and Peter Williamson for contributions.