

ISPP Newsletter 48 (4) April 2018

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:

- [Call for nominations for ISPP Fellows: Closes on 31 May](#)
- [Advance registrations for ICPP2018 Boston USA closes on 12 April](#)
- [International Cereal Rusts and Powdery Mildews Conference: Oral presentation applications extended](#)
- [Reports on the 3rd International Conference on Global Food Security in Cape Town, South Africa, 4-6 December 2017](#)
- [World's first hands-free barley crop planted, grown and harvested in the UK](#)
- [Philippines hosts training on sugarcane detection and quarantine measures of pests and diseases for ASEAN member countries and China](#)
- [Closure of entire Waitakere Ranges forests due to kauri dieback](#)
- [Novel RNA viruses within plant parasitic cyst nematodes](#)
- [USDA allocates US\\$70M to protect industry from pests and diseases](#)
- [Ghana to launch funding scheme to protect cocoa industry from plant disease](#)
- [Plants share defensive proteins in evolutionary pick 'n' mix](#)
- [Epimutagenesis will improve crops](#)
- [ISPP Business Manager: Call for Expressions of Interest](#)
- [Acknowledgements](#)
- [Coming events](#)

Call for nominations for ISPP Fellows: Closes on 31 May

At the 2018 International Congress of Plant Pathology (ICPP) in Boston, USA, the International Society for Plant Pathology (ISPP) intends to recognise the outstanding contributions of individuals to plant pathology, the aims of the ISPP, or both, as Fellows of the ISPP.

A call for nominations is now open. Nominations will close on 31st May 2018.

Nominations should be sent with name and contact details of the nominee and the nominator. The nominator should state the rationale for the nomination by outlining in 500-700 words (Helvetica 9 point single-spaced text) how the individual nominated has made an outstanding contribution to plant pathology, the aims of ISPP, or both. A more detailed CV may also be sent with the nomination. Individuals cannot nominate themselves.

Nominations (and enquiries) should be sent to the ISPP President, Dr Greg Johnson, gregh4d@gmail.com with the subject heading "ISPP Fellow Nomination". Nominations and deliberations of the Fellow's Selection panel will remain confidential.

ISPP Fellows:

- Elected by Council on 20 August 1988 in Kyoto:- Arthur Kelman dec.; RKS Wood dec.
- Elected by Council on 14 August 1998 in Edinburgh:- Johannes Dekker dec.; Chiu Wei Fan dec.
- Elected by Council on 26 August 2008 in Torino:- Chuji Hiruki; Wenhua Tang; Peter Scott; Brian Deverall dec.; James Cook; Charles Delp.
- Elected by Council on 27 August 2013 in Beijing:- Richard Falloon; Richard Strange; Yaacov Katan.

(Greg Johnson, ISPP President)

Advance registrations for ICPP2018 Boston USA closes on 12 April

Save US\$100 in advance registrations to the ICPP2018 in Boston, USA which closes on 12 April. More information on registration is on the [ICPP2018](#) website.

International Cereal Rusts and Powdery Mildews Conference: Oral presentation applications extended

The 2018 International Cereal Rusts and Powdery Mildews Conference (ICRPMC) to be held in Skukuza, South Africa from 23 to 26 September 2018. Please note that the submission date for oral presentation applications has been extended to 30 April 2018. Visit the [ICRPMC](#) website for more information.

Reports on the 3rd International Conference on Global Food Security in Cape Town, South Africa, 4-6 December 2017

I was able to attend this meeting thanks to sponsorship from the ISPP. The conference brought together hundreds of delegates from around the world involved with multiple aspects of food security. Clearly this subject area is attracting tremendous interest and enthusiasm, which is certainly needed given the enormous challenges we face in maintaining food security for future generations.

Several pre-conference symposia were held on Sunday 3 December, followed by three days of conference. A range of keynote papers were presented to plenary sessions during the conference, but the bulk of the papers were given orally in parallel sessions and as posters. These presentations were organised in a series of very broad themes such as food creation, food safety and biosecurity, food losses and waste, food utilisation, and food in a changing society. Many distinguished presenters, which included recipients of the World Food Prize, gave keynote addresses.

Readers of the ISPP newsletter may be interested to know that the roles of plant pathology in helping to ensure food security received some emphasis at the meeting. Indeed the Conference Chair was Lise Korsten, who is also the Chair of the ISPP Task Force on Global Food Security. A plenary session on Plant Health for Food Security was held, which included presentations by Paul Teng, Clayton Hollier, Sarah Gurr, Pedro Crous and a later presentation by Serge Savary.

One challenge with these sorts of large trans-disciplinary conferences, is how best to organise and regulate them. Although good attempts were made to reflect the multi-faceted nature of food security, through sessions organised under numerous integrated topics, in reality too many of the papers presented were disciplinary focused, and sometimes their content was extremely peripheral to food security. This dilution meant that many of the most relevant and interesting papers were presented off and on in concurrent sessions in different rooms – some of the more diligent and athletic members of the audience were seen moving around a lot.

Nevertheless, I was especially pleased to see a wealth of empirical food security research studies presented in posters and orally, bringing together numerous aspects of agricultural production with welfare, nutrition and health outcomes. It seems there will be lots of good relevant research papers coming through for publication in journals such as Food Security (which of course is jointly owned by ISPP with Springer) in the next few years. Indeed, during my discussions with presenters about their research and publication interests, Food Security journal often came up as a place where researchers are interested to submit their work. Since the meeting, we have already received submissions from several authors.

The next International Conference on Global Food Security will be held in France in about two years' time.

(Stephen Waddington, Deputy Editor-in-Chief of Food Security journal, and Agricultural Consultant)

This conference took place during 4-6 December 2017 in Cape Town, South Africa and owed much of its pleasant ambience to the African sun and the sunny disposition and efforts of its chair and organiser, Professor Lise Korsten of the University of Pretoria. However, on Sunday 3 December there were 16 pre-conference symposia ranging from 'Drought risk' to 'Food security, conflicts and peace building'. What a pity that, in some of the poorest countries of the world, the protagonists are apparently oblivious of the suffering of the affected civilians and of the dictum of the late President J. F. Kennedy, "The war against hunger is truly mankind's war

of liberation."

The conference was based on five overarching topics: 'Food creation'; 'Food safety and biosecurity'; 'Food loss and waste'; 'Food in a changing society'; and 'Food utilisation'. Each of these was disaggregated into several core subjects and these further divided into subthemes. Also considered under each overarching topic were the cross-cutting issues Innovation, Societal Dynamics and Gender. The means of delivery of the conference's messages was the usual mixture of plenary sessions, parallel sessions and posters.

In the first plenary session and under the first overarching topic 'Food creation', Ken Giller gave a paper with the pertinent title 'The future of farming: who will produce our food?' Later in the day there was another plenary session in which there were five presentations given under the heading 'Plant health for food security'. These had the following titles: 'Plant health for food security'; 'A new paradigm to securitise food from plant health disruptions'; 'Historical and current plant disease epidemics and their impact on food security'; 'Global movement of pests and pathogens – threats and challenges to food security and ecosystem health'; and 'Unseen fungal pathogens threaten biosecurity and trade'. It was gratifying for plant pathologists in the audience to hear their subject given such exposure in a food security conference but this is no more than its due – plant pathogens are, without doubt, a current cause of enormous pre- and post-harvest losses of food and perhaps even more insidious is their ability to mutate to virulence and their ability to spread.

There was no plenary session for the second overarching topic 'Food safety and biosecurity' but there were 19 papers given in parallel sessions, which touched on such diverse topics as 'How safe is my food?' 'Delivering food security without increasing pressure on the environment', 'Mycotoxin contamination in maize: a threat to food security in rural communities of South Africa' and 'The potential, perceptions and policy issues of genetically modified crops'.

The third overarching topic, 'Food losses and waste', was examined in a group of five plenary papers on the morning of the second day of the conference. Titles of papers included 'Food losses and waste in the context of sustainable farm systems', 'Pre-harvest losses' and 'Food waste in South Africa'.

In the plenary session under the fourth overarching topic 'Food in a changing society' there were six papers covering such topics as 'What agriculture is needed for sustainable food systems', 'Urban food security', 'Gender mainstreaming' and 'Youth inclusion'. The last of these is perhaps particularly important as youngsters are tempted away from the quiet existence of a rural community to the bright lights of the city. To quote Ken Giller again, "Who will produce our food?"

On the last day and under the fifth overarching topic, 'Food utilisation', Lawrence Haddad addressed a plenary session on 'How to make food systems more nutrition sensitive', surely a topic of high importance in a world where around two billion people suffer from hidden hunger i.e. the lack of vitamins, trace elements or both. At the closing plenary session a panel of experts provided a distillation of their insights and the insights gained from the conference on the future of food. Among the topics discussed were whether governments are the elephant in the room (!), the need for scientists to get their message across, the gap between scientists and policy makers and the need to define who the policy makers are. My own view is that there is a knowledge problem among policymakers and politicians. What is needed is a trustworthy source of unbiased information on which policies can be based and erroneous concepts refuted (such as those directed at the genetic modification of crops).

Turning now to papers presented in the parallel sessions (other than those already mentioned in connection with food safety and biosecurity), these were so numerous and varied that it would be invidious to pick out any individual ones. However, in the session I chaired, 'Food in a changing society, resilience and food systems' the papers certainly held the audience's interest and included the following: 'Mapping forest biomass distribution in smallholder and non-small holder farms in the Brazilian Amazon'; 'The implication for agricultural policies of changing consumption patterns and trends in Zambia'; 'Rewilding food systems with uncultivated forest products'; and the question of resilience being a new paradigm for foreign aid policies. Unfortunately, a paper with the fascinating and highly relevant title to today's world was not delivered, 'Food security in war-torn Syria: could the agricultural sector be the saviour?' Despite possessing an appropriate visa the presenter was denied entry into South Africa at Cape Town's airport!

Meeting the World Food Prize laureate Per Pinstrup-Andersen at breakfast on the second day of the conference, I learnt that he was running a whole day workshop on food policy training under the auspices of FANRPAN (Food, Agriculture and Natural Resources Policy Analysis Network). There were about 30 delegates, who were mainly African, and the presentation and the session I attended generated some lively discussion. One question that popped up was, "Would you devote the limited aid money you have to feeding the starving or spending it on infrastructure which would benefit those who survived?" Some dilemma! Although I was only able to attend part of the workshop I did experience further lively discussion, although muffled, as it permeated the wall between the workshop and the session I was chairing!

To conclude, I return to the question posed by Ken Giller at the beginning of the conference, "Who will produce our food?" Who indeed? And will they have the knowledge to overcome the many hazards that conspire to deprive the human population of stable food production? Here surely is where extension comes in. According to a recent paper in Food Security, the provision of extension officers in Sub-Saharan Africa is meagre with only 1 per 476 households in Ethiopia and even worse ratios in Kenya and Malawi, where they are 1:1000 and 1:1603, respectively. What can and should be done about this gaping chasm in the infrastructure required for food production?

(Richard Strange, Editor in Chief of Food Security)

World's first hands-free barley crop planted, grown and harvested in the UK

Researchers in the UK have successfully grown the world's first crop of barley using nothing but robot tractors and drones. The project's aim was to have no operators in the driving seats of the machines or have any agronomists set foot into the 1-hectare paddock.

Researcher Martin Abell said there was a lot of farming already automated, such as GPS steering, but it was rare to grow an entire crop without anyone stepping into the paddock. Hence the name of the project — Hands Free Hectare. Mr Abell said the crop was seeded, sprayed, monitored and harvested autonomously, and it is something farmers could be doing soon.

Researchers used drone technology to automate small agricultural machines, such as tractors and chaser bins. They also used drones to monitor and bring samples for agronomists to check.

After a year of growing, monitoring and harvesting the crop of barley, the researchers were able to show the future of farming could be completely automated. But there is still plenty of work and testing to be done on a larger scale.

"We are currently getting our barley malted to produce a hands-free beer and it is in the process at the moment," he said. "So hopefully in a couple of months we will have a hands-free beer, which will be nice finish to the project, to celebrate drinking some of that." More information on 'Hands Free Hectare' project website.

https://www.youtube.com/watch?v=d81_qzxisgl

(Brooke Neindorf, [ABC Rural](#), 26 February 2018)

Philippines hosts training on sugarcane detection and quarantine measures of pests and diseases for ASEAN member countries and China



(Photo courtesy of IPB Extension Office)

Twenty technical staff of the National Plant Protection Organisation (NPPO) from Indonesia, Malaysia, Myanmar, Thailand, Cambodia, Laos, Vietnam, China and the Philippines participated in the "Training on Screening, Detection, Diagnosis and Treatment of Important Pests of Introduced Varieties of Sugarcane" held at the Plant Pathology Laboratory, Institute of Plant Breeding, University of the Philippines Los Banos (IPB-UPLB) in Laguna, Philippines during 4 – 17 February, 2018. The 2 week-training was aimed at 1) developing and harmonising pre- and post-entry disease indexing schemes, 2) training plant quarantine technical officers on pathogen detection, diagnosis, and treatment of sugarcane diseases and insect pests, and 3) developing schemes for safe movement and exchange of different planting materials.

The Philippines has been implementing pre- and post- entry quarantine protocol for sugarcane for more than 15 years and the scheme has been effective in preventing the introduction of major diseases and insect pests. More than 300 disease-free foreign varieties of sugarcane had been made available to breeders and growers since the policy was initiated in early 2000. The training utilised a combination of interactive lectures, laboratory sessions and a field visit to the sugarcane post-entry quarantine glasshouse in IPB-UPLB, as well as in the open-field quarantine area at Guimaras, Visayas.

The training was implemented by the Bureau of Plant Industry-National Plant Quarantine Services (Philippines) in collaboration with the Plant Pathology Laboratory of the IPB-UPLB. The training was made possible by the financial support of the ASEAN (Association of Southeast Asian Nations)-CHINA SPS COOPERATION FUND (ACCF).

(Mark Balendres and Fe Dela Cueva)

Closure of entire Waitakere Ranges forests due to kauri dieback

Auckland Council in New Zealand has voted to close all forested areas of the Waitākere Ranges Regional Park - the strongest move yet to stem the spread of kauri dieback in the region. The council will also close high-risk tracks in the Hunua Ranges Regional Park, on the southeast corner of Auckland, even though it is free of the disease. Officials told councillors that current measures were not working. Beaches and pasturelands will remain open in Waitakere, but the closure affects most of the park.

([New Zealand Herald](#), 20 February 2018)

Novel RNA viruses within plant parasitic cyst nematodes

A paper by Casey L. Ruark et al. titled "Novel RNA viruses within plant parasitic cyst nematodes" was published in March 2018 by PLoS ONE (13(3): e0193881). The abstract is as follows:-

The study of invertebrate—and particularly nematode—viruses is emerging with the advancement of transcriptome sequencing. Five single-stranded RNA viruses have now been confirmed within the economically important soybean cyst nematode (SCN; *Heterodera glycines*). From previous research, we know these viruses to be widespread in greenhouse and field populations of SCN. Several of the SCN viruses were also confirmed within clover (*H. trifolii*) and beet (*H. schachtii*) cyst nematodes. In the presented study, we sequenced the transcriptomes of several inbred SCN populations and identified two previously undiscovered viral-like genomes. Both of these proposed viruses are negative-sense RNA viruses and have been named SCN nyami-like virus (NLV) and SCN bunya-like virus (BLV). Finally, we analyzed publicly available transcriptome data of two potato cyst nematode (PCN) species, *Globodera pallida* and *G. rostochiensis*. From these data, a third potential virus was discovered and called PCN picorna-like virus (PLV). PCN PLV is a positive-sense RNA virus, and to the best of our knowledge, is the first virus described within PCN. The presence of these novel viruses was confirmed via qRT-PCR, endpoint PCR, and Sanger sequencing with the exception of PCN PLV due to quarantine restrictions on the nematode host. While much work needs to be done to understand the biological and evolutionary significance of these viruses, they offer insight into nematode ecology and the possibility of novel nematode management strategies.

[Read paper.](#)

USDA allocates US\$70M to protect industry from pests and diseases

The U.S. Department of Agriculture's (USDA) has announced it is allocating almost US\$70 million from Section 10007 of the 2014 Farm Bill to support 494 projects in 49 states, Guam and Puerto Rico. The organisation said these projects prevent the introduction or spread of invasive plant pests and diseases that threaten U.S. agriculture and the environment, while ensuring the availability of a healthy plant stock supply.

The USDA said it has funded 1,849 projects with approximately \$228 million in Section 10007 funding since the 2014 Farm Bill was enacted.

This year, funded projects include, among others:

- Asian Defoliating Moth Survey and Response: \$1,700,370 funding projects in 14 states;
- Coconut rhinoceros beetle: \$2,323,880 to respond to infestations in Hawaii and Guam;
- Invasive pest and weed control on Tribal lands: \$518,494 for five projects to support Tribal outreach and education initiatives and projects to mitigate and control invasive pests and noxious weeds on Tribal lands;
- Phytophthora ramorum and related species: \$1,772,429 in 16 states and nationally for survey, diagnostics, mitigation, probability modeling, genetic analysis, and outreach;
- Giant African snail: \$1,643,151 to support ongoing eradication efforts in Florida;
- Agriculture Detector Dog Teams: \$4,835,000 to programs in California and Florida to enhance package inspections;
- Grapes: \$851,184 to enhance surveys for grape commodity pests and diseases in 18 states and harmonise Grapevine Nursery Stock Certification Programs;
- Citrus: \$1,337,685 in support of citrus producing states to survey, develop diagnostic tools, and conduct rapid response for viruses related to Citrus Leprosis;
- Palm Commodity Survey: \$340,000 for work in 6 states;
- Forest pest outreach: \$729,615 in 17 states for forest pest outreach, education, and emergency preparedness;
- Plant Pest Rapid Response: \$14,238,558 will be used for potential invasive pest emergencies such as Asian Gypsy Moth, European Cherry Fruit Fly, Coconut Rhinoceros Beetle, Exotic Fruit Flies, Spotted Lanternfly, or the detection of any newly introduced, exotic pest that is of high economic consequence anywhere in the United States or U.S. Territories; and
- National Clean Plant Network: \$6,049,997 to support 28 projects in 18 states that focus on providing high quality propagated plant material for fruit trees, grapes, berries, citrus, hops, sweet potatoes,

and roses free of targeted plant pathogens and pests.

(FreshFruitPortal.com, 23 March 2018)

Ghana to launch funding scheme to protect cocoa industry from plant disease

The Ghana Cocoa Board (COCOBOD) has outlined plans to sell bills and notes to fund a nationwide cocoa-replanting programme, in an effort to boost yields following an outbreak of disease. Around 400,000 ha of cocoa crops are non-productive due to age or disease. Cocoa swollen shoot virus, an incurable disease that in its most severe form can kill plants within three to four years, has affected around one-fifth of trees, while another quarter are nearing the end of their 30-year production cycle.

COCOBOD estimates it will need \$200m-250m for the rehabilitation programme, which will consist of cutting down affected crops and replanting a hybrid variety that is not only pest resistant, but also better designed to deal with climate change.

On top of the proposal to sell bills and notes, the board has held talks with local and international banks for a \$750m loan, and is engaged in discussions with the African Development Bank over a potential \$600m facility.

Boosting crop yields is a priority for the industry, which in 2016 accounted for 23.1% of Ghana's foreign exchange earnings, according to official statistics. Following a record yield of 1m tonnes in the 2010/11 agricultural season, cocoa production declined to as low as 740,000 tonnes in 2014/15, before rebounding to 778,000 in 2016/17. Officials hope to reach a target of 850,000 tonnes in the current season.

[Read more.](#)

(Oxford Business Group, 2 March 2018)

Plants share defensive proteins in evolutionary pick 'n' mix

Research led by the Krasileva Group of Earlham Institute and The Sainsbury Laboratory, used phylogenetics to identify how these 'bait' genes are distributed throughout various wild and domestic grasses, including important crop plants such as wheat, barley, maize and rice. This fresh evidence could help scientists and breeders especially in arming crop plants against a swathe of emerging diseases.

By looking at the genetic history of these plants, the team found several interesting groups that gravitated towards forming novel fusions with plant receptors, which were most diverse in the wheat crop. These proteins are involved in plant stress responses in general, particularly in defense against pathogen attack.

"If we could understand better how these proteins with these additional 'integrated' domains were formed during recent evolution, then there is a good chance that we could engineer genes with specific domains to provide resistance to new types of pathogen attack," says Paul Bailey, lead author of the study who performed the phylogenetic analysis.

The research team are primarily interested in bread wheat due to the complexity and size of its genetic makeup, as well as eight other grass species' genomes. Advancements in such genome sequencing have enabled the scientists to make comparisons of gene similarity between closely related species -- wheat and barley, for example -- and more distantly related species such as wheat and maize.

[Read more.](#)

(Earlham Institute. "Plants share defensive proteins in evolutionary pick 'n' mix." ScienceDaily, 5 March 2018)

Epimutagenesis will improve crops

A team of University of Georgia researchers has developed a new way, known as epimutagenesis, to breed plants with better traits. By introducing a human protein into the model plant species *Arabidopsis thaliana*, researchers found that they could selectively activate silenced genes already present within the plant.

Using this method to increase diversity among plant populations could serve to create varieties that are able to withstand drought or disease in crops or other plant populations, and the researchers have already begun testing the technique on maize, soy and rice.

They published their findings in [Nature Communications](#).

[Read more.](#)

(University of Georgia. "New method to improve crops: Technique using plant's own DNA could produce crops that are more resistant to drought and disease." ScienceDaily, 6 March 2018.)

ISPP Business Manager: Call for Expressions of Interest

After an exemplary 12 years of service as the inaugural ISPP Business manager, Dr Peter Williamson is retiring. The ISPP seeks expressions of interest from colleagues in ISPP associated societies who may be interested in serving the ISPP as ISPP Business manager or ISPP Web manager. Duties to be developed depending on the expertise and experience of the individual(s). A modest remuneration will be provided to the successful appointee/appointees.

Contact Greg Johnson, ISPP President (gregh4d@gmail.com)

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