



# International Society for Plant Pathology

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## ISPP President, Jan Leach – Closing Ceremony at ICCP2018

Thanks very much, Greg Johnson, for your many years of service to the International Society of Plant Pathology (ISPP) and especially for your service as President of ISPP over the past 5 years.

On behalf of the ISPP, I offer our sincerest thanks to Rick Bennett, the Congress President, and Thomas Evans, ICCP2018 Organising Chair. We thank Mary Palm, American Phytopathological Society (APS) President, the APS, and their amazing staff for serving as our hosts at this meeting. I think you will all agree that the International Planning Committee put together a superb scientific program, and we thank them for that. We thank the many volunteers that made this meeting a success. Finally, we thank the Sponsors. Without you, the meeting would not have been possible.



The ISPP, which is celebrating its 50<sup>th</sup> anniversary this year, is an umbrella society for about 60 national and regional societies of Plant Pathology or Plant Protection. ISPP assembles every 5 years to discuss the common challenges faced by plant pathologists around the globe. These challenges include a future of unpredictable environmental and societal changes. The problems we face are complex, and their solutions will require collaborations across a wide array of disciplines, some well outside the traditional agriculture domain. We will need integrated, systems level thinking and diverse approaches.

We will need to expand our thinking beyond the plant or the pathogen, and consider the plant, the environmental factors affecting the plant, and all of the biota that are influenced by the plant or that influence the plant, in other words, the phytobiome. We need to better understand the diverse agroecosystems where our food, feed and fibre are produced. Equally important, we must incorporate knowledge of the relevant social and economic ecosystems at play.

During the meeting this week, we heard presentations and engaged in discussions on pathways to solve or remediate the challenges to agriculture, forestry and food security. The discussions and ideation do not stop here; as you return to your offices, classrooms and laboratories; please continue the energy and momentum you've built this week.

Please consider contributing your ideas and science in ISPP publications, such as our journal Food Security, as well as participating in our meetings, workshops, and task forces. Two current international opportunities are the Commission on Food Security and the Task force on Priorities for Plant Pathology. As an example of ways to participate, I encourage you to join the Task Force on

Priorities for Plant Pathology in advocacy for the United Nations General Assembly to declare 2020 as The International Year of Plant Health.

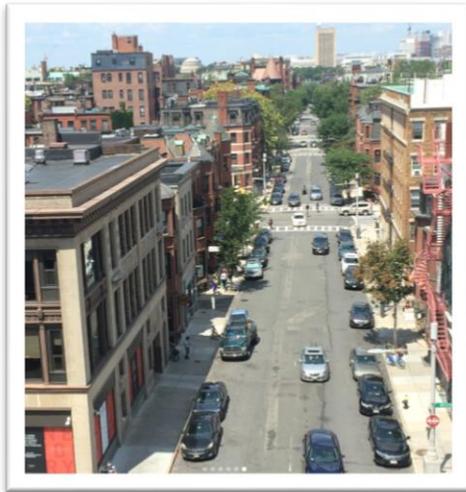
I look forward to working with you over the next five years. My commitment will be to foster the international alliances essential to ISPP, to advocate integration of plant pathology's best science to meet the global societal and environmental challenges, and to join you in ensuring that ISPP has a voice on the relevance of plant health in international policy and funding.

And, I look forward to seeing you at the next ICPP meeting in 2023.

Jan Leach, ISPP President

### #ICPP2018 on Instagram

A pictorial summary of the ICPP2018 in Boston, USA captured on Instagram from 28 July to 3 August. You can see more at [#ICPP2018](#).



July 28: **dhuberli** #Boston is putting on her best face - such a wonderful view from the #hynesconventioncenter for our #ICPP2018 #plantpathology #conference #usa - it all starts tomorrow



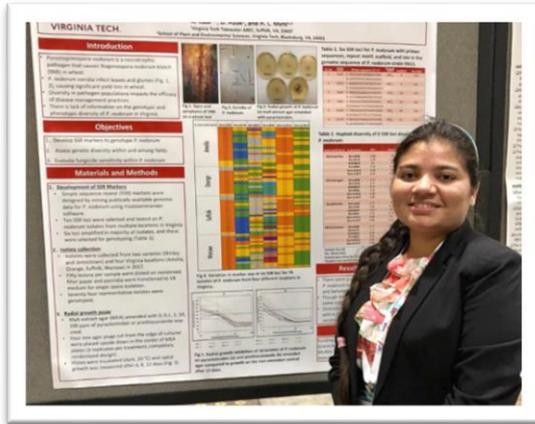
July 29: **plant\_diseases** ISPP Executive and Secretariat 2013-18 and 2018-2023 - Back Row, L to R - Andrea Masino, Serge Savary, Khaled Makkouk, M. Lodovica Gullino, Mathias Choquer, Richard Strange, Nathalie Poussereau. Front Row, L to R - Daniel Huberli, Brenda Wingfield, Thomas Evans, Greg Johnson, Jan Leach and Lise Korsten. Absent, Zamir Punja.



July 30: **plant\_diseases** ICPP Plenary Plant Health is the Earth's Wealth. Plenary speakers with session organisers/chair.



July 31: **plant\_diseases** Ideas Cafe, Postharvest and Food Safety #ICPP2018



August 1: **vtspes** Navjot Kaur of Dr. Mehl's lab presents her research on *Stagnospora nodora* blotch in wheat at #icpp2018



August 2: **brettsumm** Pleased to have co-organised a great session on the Taxonomy of Plant Pathogenic Fungi for the International Congress of Plant Pathology here in Boston - six speakers left to right: Reannon Smith, Ag Victoria and La Trobe University; Tom Harrington, Iowa State University; me; Jacky Edwards, Ag Victoria; Leslie Holland University California Davis and Lizel Mostert, Stellenbosch University.



August 2: **ldnissen** Can't wait to hear the band that's supposed to play #ICPP2018



August 3: **plant\_diseases** ISPP Fellows ceremony #ICPP2018

## Nematodes frozen for 42,000 years in Siberian permafrost wriggle to life

Did you ever wake up from a long nap feeling a little disorientated? Now imagine waking up after being asleep for 42,000 years! In Siberia, melting permafrost is releasing nematodes that have been suspended in a deep freeze since the Pleistocene. Despite being frozen for tens of thousands of years, two species of nematodes were successfully revived, scientists recently reported in a new study. Their finding, published in the May 2018 issue of *Daklady Biological Sciences*, represent the first evidence of multicellular organisms returning to life after long-term cryobiosis in permafrost deposits of the Arctic.

[Read more.](#)

(Mindy Weisberger, LiveScience, 27 July 2018)

## Obituary of Edward Ronald French, 1937-2018

With sadness, the ISPP reports the death of Ed French, former President and Executive Secretary of the Latin American Association of Phytopathology, ISPP Vice President and Councillor and member of the Jakob Eriksson Prize Commission.

Dr. Edward Ronald French passed away on 1 May 2018 at his home in Lima, Peru. Edward was devoted to his family and the discipline of plant pathology. Edward, the son of Daniel Argentino French and Romana Federica Tonizzo, was born on 28 April 1937, in Buenos Aires, Argentina. He spent his early years in Argentina before the family immigrated to the US and settled in North Kingstown, RI.

Ed obtained his B. S. in Agriculture from the University of Rhode Island, his M.S. in Plant Pathology and Botany from the University of Minnesota, and his PhD in Plant Pathology and Plant Breeding at North Carolina State University (NCSU).

In 1965, Ed arrived in Lima, Peru, as part of the NCSU/USAID Mission to Peru, serving as plant pathology advisor to the government of Peru and co-leader of the Potato Program (1970-71). In Lima, he met Delia Monar. They married on 9 March 1968, and had three children: Vivian, Ronald, and Sandra.

In 1972, Ed became a founding member and Head of the Plant Pathology and Nematology Department at the International Potato Center (CIP). Retiring in 1997, Edward was given the honour of being the first Scientist Emeritus at CIP.

Edward has received numerous awards, honors, and leadership roles, such as: President (1970–1974; 1985–1987) and Executive Secretary (1974–1980; 1992–2011) of the Asociación Latinoamericana de Fitopatología (ALF, Latin American Phytopathological Association), founding member (1966) and vice president (1967-1968) of the Asociación Peruana de Fitopatología (APF, Peruvian Plant Pathological Association), Vice-President (1983–1988) of the International Society for Plant Pathology (ISPP), Honorary Citizen of Huanuco, Peru (1985), Honorary Life Board Member of The American School of Lima-FDR (1991), Fellow of the American Phytopathological Society (1998), Recipient of the APS Frederik L. Wellman Award (2002), Honorary member of APF (1994) and ALF (1997), and Life Member of ALF (2013).

Edward has been a prolific scientist. His major publications include: “Prospects for the Potato in the Developing World” (Editor, 1972); “Metodos de Investigación Fitopatologica” (Methods of Phytopathological Research, co-author, 1980); “Integrated Management of Bacterial Wilt” (co-editor, 1995); and five book chapters, more than 200 scientific articles, manuals, and abstracts. After retirement, Edward also dwelled in the religious and philosophical studies which culminated in his book “Origins of Humans and Their Religions” (2013).

Edward and Delia, have been generous supporters of plant pathology. Through APS, they established the French-Monar Latin American Fund, which supports plant pathologists in Latin America to attend meetings or publish their research.



Edward is survived by his beloved wife Delia, his three children, four grandchildren, his sister Laura, and his nephew Brian. The funeral and mass took place at Jardines de la Paz, La Molina, Lima, Peru on 3 May 2018.

(Edited by Ron French and Greg Johnson from The Providence Journal, 3 June 2018)

## **Agricultural Microbiome Research Coordination Network launched during ICPP2018**

The international Agricultural Microbiome Research Coordination Network (Ag Microbiomes RCN) was launched on July 28 2018 during a first workshop, which was offered immediately preceding the International Conference of Plant Pathology (Boston, MA). The workshop brought together more than 100 scientists from around the world representing academic, government, and private sectors. Throughout the day, workshop participants had multiple opportunities to actively discuss the status of and primary needs in agricultural microbiome research, and engage with one another in envisioning the future of the RCN. As part of the program, Diane Okamuro (National Science Foundation) offered a motivating talk on best practices for building a trans-disciplinary and inclusive RCN. Scientific talks by Joanne Emerson (University of California-Davis), Noah Fierer (University of Colorado Boulder), Jenny Kao-Kniffin (Cornell University), Penny Hirsch (Rothamsted Research), and Barry Goldman (Indigo Ag) provided excellent overview and broad perspectives on the state of the art in microbiome science, and next steps for translation of microbiome knowledge into applications for agricultural production. Jim Tiedje (Michigan State University) provided an inspiring keynote presentation on the past, present, and future of agricultural microbiomes research, including his own predictions of what's next for agricultural microbiomes research in the next 10 years!



The workshop also featured a panel of experts including Susannah Tringe (Department of Energy-Joint Genome Institute), Lynn Schriml (Genomic Standards Consortium), Lee Stanish (National Ecological Observatory Network), and Fiona Brennan (Teagasc) highlighting important microbiome research platforms and resources currently available for the community. Breakout sessions offered the opportunity for participants to identify transformative questions and prioritise community needs for agricultural microbiomes research. The program concluded with four lightning talks featuring

early-career travel awardees (Bradley Lalande, Colorado State University; Esther Miller, Tufts University; Alejandro Rojas, Duke University; and Maggie Wagner, North Carolina State University).



We encourage all interested participants to get involved in the Ag Microbiomes RCN! To find out more about the RCN and opportunities for involvement through participation in future meetings, workshops, collaborative research, education and training, and cross-system data analyses, please visit

<https://agmicrobiomercn.umn.edu>, sign up for the AgMicrobiomeRCN Mailing List & Directory, and follow us on Twitter [@AgMicrobiomes](https://twitter.com/AgMicrobiomes).

(JP Dundore-Arias, Department of Plant Pathology, University of Minnesota)

### **Global impact of international seed movement: Regulatory implications of seed health testing**

Molecular tools can dramatically improve seed health testing. However, the presence of pathogen nucleic acids in seed samples does not directly indicate a threat of epidemic development. Hence, concomitant with emerging pathogen detection technology, research is needed to assess the threat posed by seed-borne inoculum. This is important to allow for international seed trade, while reducing the risk of global plant disease dissemination. Unfortunately, with new seed assays, regulatory agencies may set policies based on incomplete information. Hence, it is important to determine how to take advantage of new molecular seed health assays, without losing epidemiological relevance.



In response to this concern, a session at ICPP2018 organised by Theresa A. S. Aveling (University of Pretoria and Chair of ISPP Seed Pathology Subject Matter Committee) and Ronald R. Walcott (The University of Georgia) explored the implications of molecular detection tools for informing phytosanitary regulation development and enforcement. The session consisted of six talks by Quenton Kritzing (University of Pretoria) on "Seed health challenges in the smallholder informal seed system," Valerie M. Verdier (Université Montpellier) on "Critical aspects of biologically relevant seed health assays," Samantha Thomas (Monsanto USA) on "Harmonization of phytosanitary/regulatory policy and seed health testing for safe global seed movement," Monica Mezzalama (CIMMYT) on "Detection of threatening emerging pathogens in maize and wheat seed:

Phytopathological challenges, regulations and solutions," Adrian Fox (Fera Science Ltd) on "Viruses of *Ullucus tuberosus*: The opportunities and implications of using next generation sequencing in support of statutory diagnostics," and Tera Pitman (University of California) on "Cucumber green mottle mosaic virus: Research perspective working with a world travelling virus." The abstracts from this session are available [ISPP Seed Pathology Subject Matter Committee](#) webpage.

(Theresa Aveling, University of Pretoria)

## Wheat's genome sequence finally cracked in major DNA breakthrough

Scientists have cracked the DNA sequence code of wheat — a major breakthrough that could improve global food security and offer comfort for those allergic to the world's most common crop. The research effort involved 73 institutes in 20 countries and with five times the amount of DNA than that of humans, took 13 years to complete. It will allow faster breeding and production of new wheat varieties, including those that are drought and frost tolerant.

The breakthrough means that farmers will now be armed with better information about quality, yield, diseases and a crop's resistance to stress such as frost or drought. And with wheat being one of the world's major food sources, that could also mean improved outcomes for global food security.

The findings are published in [Science](#).

(Jess Davis, [ABC Rural](#), 17 August 2018)

## Summary of 12<sup>th</sup> International Epidemiology Workshop, Norway, June 2018

The 12<sup>th</sup> International Epidemiology Workshop was held in Lillehammer, Norway, from 10-14 June 2018. The objectives of the workshop were to:

- Provide a forum for review and critique of major findings related to epidemiology since the convening of IEW11 in Beijing in 2013.
- Provide a forum in which research on epidemiology can be discussed in relation to developments in other areas of plant pathology and plant biology, and an arena in which new and current ideas and concepts can be discussed in this context.
- Stimulate discussion and speculation as to where future research efforts may encounter the greatest potential gain.
- Produce a published volume that summarises progress in the field over the past five years, describes current thinking in the area, and leads toward future progress.
- Stimulate research in all aspects of epidemiology.

Sessions covered topics such as pathogen and disease models, decision support systems, multiple pest systems, population biology, fungicide resistance and management, relationships between disease and mycotoxins, and the uses of R in epidemiological research.

Social events included a cruise with the Skibladner, the world's oldest preserved paddle steamer still in regular service, and a guided tour of Maihaugen, an open-air museum near Lillehammer.



(Jonathan Yuen, Swedish University of Agricultural Sciences)

## 2<sup>nd</sup> International Conference for Food Safety and Security, South Africa, October 2018

With the vast majority of the world's hungry living in developing countries, local solutions are required to address all the sustainable development goals in order to transform our world and create "The Future We Want." Food security and food safety are critical issues internationally; this forum will allow world leaders in this field to engage in high level research conversations enabling South Africa to showcase innovation and indigenous knowledge in this field of research thereby strengthening international collaboration.



In 2016 the inaugural Food Safety and Security Conference was held in Johannesburg and was successful in bringing researchers together internationally as well as from Africa to South Africa. The second conference will be hosted by the University of Pretoria and co-hosted by the University of Johannesburg, the Agricultural Research Council and the Human Sciences Research Council. The conference is in addition supported by the Centre of Excellence in Food Security (UP and UWC as co-hosts) and Department of Science and Technology (DST).

The second biennial conference's main theme "Next Generation Food Safety Technologies to address the Sustainable Development Goals" will help researchers from various disciplines to collectively strengthen food safety research locally, within our continent as well as globally. Sub-

themes include food and health risk assessment, pesticide and chemical food safety, antimicrobial resistance in the agroecosystem, biosecurity and zoonoses as well as current and emerging microbial foodborne pathogens and indicator systems.

It will include a post-conference workshop on African Genome Trackr launch and Food Safety Genomics 4 Africa. Themes are listed below:

THEME 1: Current and emerging foodborne pathogen (including *Listeriosis*).

THEME 2: Zoonosis and biosecurity risks through transboundary movement of pathogens

THEME 3: Antimicrobial Resistance in the agroecosystem

THEME 4: Pesticides and mycotoxins: a food safety challenge

THEME 5: Risk assessment, -management and -communication.

THEME 6: Consumer and food safety and security assurance.

More information is available on the [conference website](#).

(Carla de Jager, Conference Organiser)

### **1<sup>st</sup> International Molecular Plant Protection Congress, Turkey, April 2019**

Many research projects related to entomology, plant pathology and weed sciences have been conducted using genomics, transcriptomics, proteomics, functional genomics, DNA-based diagnosis techniques, gene expression analyses and recombination studies. Significant progress has been achieved in the solution of pest, disease and weed problems in plant protection using molecular strategies. Consequently, molecular tools have gained significant attention in plant protection in Turkey as well as the world. There is an emerging need to have a platform for scientists working on molecular sciences related to entomology, plant pathology and weed science, to exchange ideas and provide support for one another. We are hoping we can contribute to the establishment of this platform by organising the “1st International Molecular Plant Protection Congress” which held at Çukurova University, Adana between 10-13 April 2019, under the coordination of Çukurova University, Ankara University and Turkish Ministry of Agriculture and Forestry.

The theme of the congress is “molecular approaches for better plant protection”. The purpose of the congress is to provide a platform where researchers can share their latest findings with each other and exchange the ideas. The official language of the congress will be English and the abstracts will be provided in the congress book. Full length article option will be available for authors. These articles will be peer-reviewed and be published electronically as proceedings under the web site of the congress. More details on the [conference website](#). We are hoping to see you in Adana!

On Behalf of the Executive and Congress Organisation Committees,  
Umut Toprak, Ankara University, Ankara, Turkey  
M. Bora Kaydan, Çukurova University, Adana, Turkey  
Sait Ertürk, Turkish Ministry of Agriculture and Forestry, Ankara, Turkey

## New Gene-Stacking Tool to prevent plant diseases

Scientists around the world have been trying to make wheat, the most common crop on the planet, able to survive fungal diseases by introducing disease-resistant genes, but in the past, it has been difficult to add more than two or three of these genes at a time. On 14 June, USDA's Agricultural Research Service (ARS) published a pilot study on an innovative technology called [GAANTRY](#) (Gene Assembly in Agrobacterium by Nucleic acid Transfer using Recombinase technology) that can insert a "stack" of multiple genes simultaneously into plants.

Roger Thilmony, a research molecular biologist at the ARS, says his team inserted 10 genes into *Arabidopsis* plants—and that's not the upper limit. The genes were transgenic, making the *Arabidopsis* seedlings glow fluorescent colours so the researchers would know at a glance if the genes had been successfully inserted. However, genes from the same or related species that have some benefit, such as disease resistance, can also be swapped in. This will be important if GAANTRY is used to improve crop plants, which Thilmony says is the ultimate goal of his work.

Why gene-stacking? Multiple genes for disease resistance give plant immune systems a wider array of self-defense tools. That means wheat, potatoes, and other crops can be genetically engineered to tolerate heat, drought, diseases, and pests; the agricultural "four horsemen" of climate change.

[Read more.](#)

(Anne N. Connor, The Scientist, 14 August 2018)

## Plant Parasitic Nematodes – The world's most important crop pathogen?

Plant parasitic nematodes – overlooked, neglected, little known and mostly out of sight; surprising then that they cause billions of dollars' worth of damage to global crop production annually. In the tropics and subtropics they persistently undermine production, result in massive waste of disfigured and unmarketable produce, and literally plague some crops.

One species alone, the tropical root knot nematode *Meloidogyne incognita*, has been referred to as the single most important crop pathogen worldwide. And as a group, root knot nematodes are viewed as the most serious biotic threat to tropical crop production. In the tropics, nematodes can occur as a bewildering combination of species that, for example on banana, wheat, groundnut, cotton, soybean, coffee, sugarcane and most vegetable crops worldwide, can create havoc for small to medium-sized families who often lack means and/or access to modern management tools.

[Read more on The CABI Blog.](#)

(Richard Sikora, Danny Coyne, Johannes Hallman and Patricia Timper, The CABI Blog, 24 July 2018)

## Current vacancies

There are two positions listed on the ISPP webpage including Assistant Professor Plant Virology at Clemson University and Assistant Professor of Plant Pathology at the University of California, Davis. For more details on these positions visit the [current vacancies](#) page.

## Acknowledgements

Thanks to JP Dundore-Arias, Theresa Aveling, Carla de Jager, Ron French, Grahame Jackson, Greg Johnson, Jan Leach, Andrea Masino, Peter Williamson, and Jonathan Yuen for contributions.

## Coming Events

8<sup>th</sup> ISTA Seed Health Symposium and 6<sup>th</sup> International Seed Health Conference

4 September - 7 September, 2018

Poznań, Poland

Website: [www.seedtest.org/en/event-detail--0--0--0--92.html](http://www.seedtest.org/en/event-detail--0--0--0--92.html)

10<sup>th</sup> Australasian Soilborne Diseases Symposium – Paddock to Plates

4 September - 7 September, 2018

Adelaide, South Australia

Website: [www.asds2018.com.au](http://www.asds2018.com.au)

XXIV Congress of the Italian Phytopathological Society (SIPaV)

5 September - 7 September, 2018

Ancona, Italy

Website: [www.d3a.univpm.it/en/SIPAV2018](http://www.d3a.univpm.it/en/SIPAV2018)

IX International Symposium on Soil and Substrate Disinfestation

9 September - 13 September, 2018

Heraklion, Crete, Greece

Website: [www.sd2018crete.com](http://www.sd2018crete.com)

European Society of Nematologists Conference 2018

9 September - 13 September, 2018

Ghent University, Ghent, Belgium

Website: [www.esn-online.org/conference](http://www.esn-online.org/conference)

State of the World's Fungi Symposium

13 September - 14 September, 2018

Royal Botanic Gardens, Kew, UK

Website: [www.kew.org/fungi-symposium](http://www.kew.org/fungi-symposium)

15<sup>th</sup> International Cereal Rusts and Powdery Mildews Conference

23 September - 26 September, 2018

Kruger National Park, South Africa

Website: [www.eiseverywhere.com/ehome/268483](http://www.eiseverywhere.com/ehome/268483)

1<sup>st</sup> International Conference on Tropical Fruit Pests and Diseases

25 September - 27 September, 2018

Sabah, Malaysia

Website: [itfnet.org/troped2018](http://itfnet.org/troped2018)

International Conference on Sentinel Plantings  
9 October - 12 October, 2018  
Sursee, Switzerland  
Website: [www.ibles.pl/en/web/cost/final-action-meeting](http://www.ibles.pl/en/web/cost/final-action-meeting)

2<sup>nd</sup> International Conference for Food Safety and Security  
15 October - 17 October, 2018  
Pretoria, South Africa  
Website: [www.fsas2018.co.za](http://www.fsas2018.co.za)

8<sup>th</sup> International Agriculture Congress 2018 and 6<sup>th</sup> International Symposium for Food & Agriculture  
2018 (IAC-ISFA 2018)  
13 November - 15 November, 2018  
Universiti Putra Malaysia  
Website: [conference.upm.edu.my/IAC18](http://conference.upm.edu.my/IAC18)

International Phytobiomes Conference  
4 December - 6 December, 2018  
Montpellier, France  
Website: [www.phytobiomesconference.org](http://www.phytobiomesconference.org)

1<sup>st</sup> International Molecular Plant Protection Congress  
10 April - 13 April, 2019  
Adana, Turkey  
Website: [www.imppc2019.org](http://www.imppc2019.org)

14<sup>th</sup> International Plant Virus Epidemiology Symposium  
14 May - 17 May, 2019  
Seoul, Korea  
Website: [www.ipve2019.com](http://www.ipve2019.com)

International Symposium on Cereal Leaf Blights 2019  
22 May - 24 May, 2019  
University College Dublin, Dublin, Ireland  
Website: [www.isclb2019.com](http://www.isclb2019.com)

Rhizosphere 5  
7 July - 11 July, 2019  
Saskatoon, Saskatchewan, Canada  
Website: [www.rhizo5.org](http://www.rhizo5.org)

4<sup>th</sup> International Symposium on Biological Control of Bacterial Plant Diseases (BIOCONTROL2019)  
9 July - 11 July, 2019  
Viterbo, Italy  
Website: [www.biocontrol2019.com](http://www.biocontrol2019.com)

XVIII International Society for Molecular Plant-Microbe Interactions Congress  
14 July - 18 July, 2019  
Glasgow, Scotland  
Website: [www.ismpmi.org/Congress/2019](http://www.ismpmi.org/Congress/2019)

1<sup>st</sup> International Wheat Congress  
21 July -26 July, 2019  
Saskatoon, Saskatchewan, Canada  
Website: [2019iwc.ca](http://2019iwc.ca)

22<sup>nd</sup> Biennial Conference of the Australasian Plant Pathology Society  
25 November - 28 November, 2019  
Melbourne, Australia  
Website: [www.apps2019.org](http://www.apps2019.org)

16<sup>th</sup> Congress of the Mediterranean Phytopathological Union  
23 March - 27 March, 2020  
Limassol, Cyprus  
Website: [cyprusconferences.org/mpu2020](http://cyprusconferences.org/mpu2020)

14<sup>th</sup> International Conference on Plant Pathogenic Bacteria  
7 June - 12 June, 2020  
Assisi, Italy  
Website: not yet available

12<sup>th</sup> International Congress of Plant Pathology (ICPP2023)  
20 August - 25 August, 2023  
Lyon, France  
Website: [www.icpp2023.org](http://www.icpp2023.org)