PROMOTING WORLD-WIDE PLANT HEALTH AND FOOD SECURITY

INTERNATIONAL SOCIETY FOR PLANT PATHOLOGY

ISPP NEWSLETTER

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Editor: Daniel Hüberli (**email**)

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The International Society for Plant Pathology promotes the world-wide development of plant pathology and the dissemination of knowledge about plant diseases and plant health management

IN THIS ISSUE:

VALÉRIE VERDIER IS IRDS NEW CHAIRMAN OF THE BOARD AND CEO

FRENCH NATIONAL RESEARCH INSTITUTE FOR SUSTAINABLE DEVELOPMENT (IRD-FRANCE) PRESS RELEASE, 12 FEBRUARY 2020

Valérie Verdier has just been appointed Chairman of the Board and Chief Executive Officer of the IRD-France. The appointment is in response to the nomination by Frédérique Vidal, Minister of Higher Education, Research and Innovation and by Jean-Yves Le Drian, Minister for Europe and Foreign Affairs, the government bodies which supervise the IRD. Valérie Verdier will chair the IRD Board of Directors and oversee management of the institute. She succeeds Jean-Paul Moatti, who has served as interim president of the IRD since his term ended in spring 2019.

At the time of her appointment, Valérie Verdier was working as Director of the Interactions Plants Micro-organisms Environment (IPME) joint research unit and headed up one of the five IRD scientific departments: Ecology, biodiversity and functioning of the inland ecosystems (ECOBIO). In this capacity, she contributed to the strategic positioning of the IRD's scientific policy in favour of sustainable development and fair partnerships with researchers and research institutions in the with the researchers and institutions in the Global South. She also served as the scientific adviser to the IRD delegation to Occitanie and monitors dialogues with government supervisory authorities and all the scientific and institutional partners of the IRD. She represents the IRD at the Foundation for Research on Biodiversity (FRB), MUSE I-SITE and the International Phytobiomes Alliance.

A phytopathologist by trade, Valérie Verdier holds a doctorate in plant science from Université Paris-Sud (1988) and an accreditation to direct research (HDR). She studies the interactions between phytopathogenic bacteria and tropical plants, an understanding of which is crucial to food safety. She has co-authored over 100 scientific publications and is world renowned for her fundamental contributions to understanding the mechanisms by which bacteria cause diseases, especially those afflicting cassava and rice and to the approaches developed to control them.

Valérie Verdier completed various short and extended international missions over the course of her career, including an assignment as the IRD representative in Colombia from 1998 to 2000. She has conducted research in Central Africa, West Africa, Latin America and the United States. In particular, she was an associate researcher at the International Center for Tropical Agriculture (CIAT) in Colombia from 1995 to 2001, associate researcher at Universidad de los Andes (Colombia) in 2007, guest researcher at the School of Global Environmental Sustainability from 2012 to 2013, and affiliate scientist at the International Livestock Research Institute (ILRI-BeCA) in Kenya in 2013. Valérie Verdier was an associate expert at ANSES (French agency for food, environmental and occupational health and safety) from 2015 to 2018, and has been an associate researcher at Colorado State University (United States) since 2012. She is mother to two children.

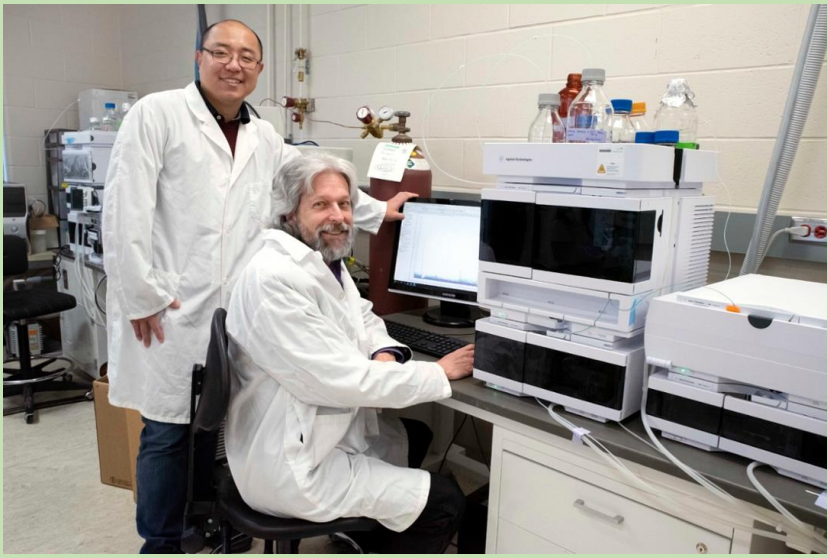
Valérie Verdier received the Marie Curie Fellowship from the European Commission in 2010 and the Excellence in International Service Award from the American Phytopathology Society (APS) in 2014. She was appointed to the rank of Knight of the French Legion of Honour in 2016.

Valérie Verdier worked as a coordinator of the JEAI programme to mentor young researchers. She is deeply committed to training young researchers in developing countries, especially women.

FAST TEST TO IDENTIFY MYCOTOXINS IN CEREAL CROPS

UNIVERSITY OF SASKATCHEWAN (USASK) RESEARCH PROFILE AND IMPACT, 24 FEBRUARY 2020

Fusarium head blight (FHB), a fungal disease affecting kernel development, causes millions of dollars in annual losses in cereal crops such as barley, wheat and oats worldwide. With warming weather patterns and more intensive farming practices, fusarium has been spreading across the Prairie provinces in Canada. The infected grain is often both lower in quality and kernel weight, and may be unsuitable for human and animal consumption.



Researchers Lipu Wang and Randy Kutcher use the Core Mass Spectrometry Facility Lab in the USask College of Pharmacy and Nutrition to test for toxins in cereal grains (Photo credit: Praveen Sapkota).

That's because the fusarium infection process produces mycotoxins such as deoxynivalenol (DON), which in severe cases can reduce the market value of a crop to zero. Animals consuming feed containing high levels of DON may have reduced growth, as well as reduced fertility and reduced immune response. In worst cases, the toxins can lead to death of the animal. There can also be long-term impacts on human health from consuming mycotoxins in food.

Breeding for low DON concentration in cereal crops is an important control measure for the disease, said CDC research officer Lipu Wang. "The problem has been that crop breeders and researchers have lacked a way to measure DON that is both quick and accurate," said Wang.

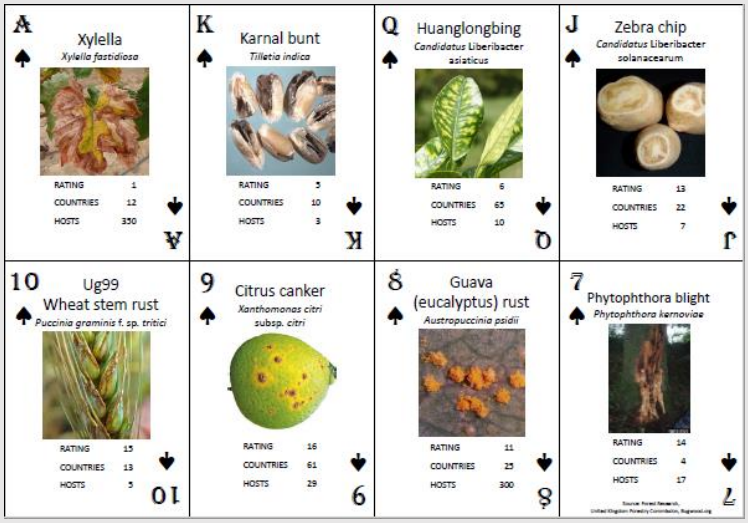
Wang and USask researcher Randy Kutcher of the CDC's cereal and flax pathology program have come up with a new way to test for DON that involves a one-step extraction of the mycotoxins using the chemical solvent acetonitrile, followed by direct injection of the toxins into a mass spectrometer to identify and quantify them. This method eliminates the lengthy process of separating the compounds and lowers the cost, while providing high sensitivity and accuracy compared to other methods. "Analysis that previously took 20 minutes per sample can now be done in less than two minutes, which is very important when testing thousands of samples," Wang said. "This new method offers breeders a much more efficient way to select wheat or barley lines that accumulate less DON."

The research team is now using the new mycotoxin test in their plant pathology program at the CDC, using the mass spectrometer in the College of Pharmacy and Nutrition. They are seeking to expand the diagnostic testing with research collaborators, interested breeders, and clients. The team has also developed a way to identify and quantify other toxins, providing a powerful tool to detect new types of mycotoxins in newly developed cereal grain varieties.

CARDS TO COACH KIDS ON PLANT PESTS AND DISEASES

PLANT HEALTH AUSTRALIA, 5 FEBRUARY 2020

A PLAYING CARD GAME BASED ON AUSTRALIA'S NATIONAL PRIORITY PLANT PESTS IS BEING LAUNCHED FOR THE INTERNATIONAL YEAR OF PLANT HEALTH 2020 TO PROVIDE SCHOOL STUDENTS WITH AN EDUCATIONAL TOOL TO LEARN ABOUT BIOSECURITY THREATS TO AUSTRALIA'S NATURAL ENVIRONMENT AND PLANT HEALTH.



The National Priority Plant Pests have been identified as Australia's most important pest threats capable of damaging our natural environment, destroying our food production, agriculture industries and to a certain extend our way of life.

The special cards have been developed by Assistant Director, Carol Quashie-Williams, an agricultural and environmental scientist and entomologist with the Department of Agriculture, Water and the Environment. Carol aims to promote and raise public awareness for the International Year of Plant Health 'Protecting plants, protecting life' among school students with the cards.

An increased awareness of the most important biosecurity pest threats can help us and future plant health heroes in our schools protect Australia. Essentially, the project will equip students with a few tricks up their sleeves to identify pest threats and protect plants.

Download the 2019 National Priority Plant Pest playing cards from the website.

A NEW FRONT IN THE CROP INFECTION BATTLE

UNIVERSITY OF TORONTO NEWS, 25 FEBRUARY 2020

A team of researchers at the University of Toronto has successfully tested a new strategy to identify genetic resources in the ongoing battle against plant pathogens such as bacteria, fungi and viruses, which infect and destroy food crops worldwide. By focusing on the near-limitless arsenal of disease-associated genes available to pathogens and the defences available to plants, the researchers not only uncovered new insights into the ways plants survive relentless attacks, they developed a blueprint that could one day be used to protect the health of any species grown for food production.

"We wanted to know how relatively long-lived plants defend themselves against very rapidly evolving disease-causing pathogens, why disease is so uncommon even while plants are under continual attack by these highly diverse pathogens and why domesticated crop species are so much more susceptible to pathogen attacks than wild species," said David Guttman, a professor in the department of cell and systems biology at the University of Toronto and co-author of the study recently published in the journal *Science*.

Guttman and Darrell Desveaux, a fellow cell and systems biology professor who co-led the study, addressed these questions by specifically asking how a single plant is able to fight off the attacks of a common, bacterial, crop pathogen. They did this by first characterising the global diversity of an important class of pathogen proteins, called effectors.

The team started by sequencing the genomes of approximately 500 strains of the bacteria *Pseudomonas syringae*, which causes disease on nearly every major crop species. "From these bacterial genomes we identified approximately 15,000 effectors from 70 distinct families," said Guttman. "We then reduced this complexity by identifying 530 effectors that represent their global diversity."

The researchers next had all of these representative effectors synthesised and put into a particularly harmful strain of *P. syringae* that causes disease when infecting the plant *Arabidopsis thaliana*. By doing infections with each individual effector they saw how many of the 530 effectors elicited an effector-triggered immune response that protected the plant.

"We found that over 11 per cent of the effectors elicited immune response and that almost 97 per cent of all *P. syringae* strains carry at least one immune-eliciting effector," said Desveaux. "We also identified new plant immune receptors that recognise these effectors and found that almost 95 per cent of all *P. syringae* strains can be blocked by just two *A. thaliana* immune receptors."

The results shed new light on how plants survive relentless pathogen attack. They also offer a new approach for identifying new plant immune receptors, which is a genetic resource in short supply in agricultural breeding. "While wild plant species have a diverse array of immune receptors, most domesticated crop species have lost much of this immunodiversity due to intensive artificial selection," said Guttman. "Our approach enables the rapid identification of new immune receptors in wild relatives of crops that can then be moved into elite agricultural lines by traditional breeding, ultimately creating new varieties with greater ability to resist agricultural pathogens."

SCREENING FOR RESISTANCE AGAINST BLUE MOLD IN GARLIC ACCESSIONS

EMANUELA FONTANA, FRESH PLAZA, 26 FEBRUARY 2020

Garlic blue mold disease, caused by *Penicillium allii*, is responsible for important economic losses every year in garlic field crops and in postharvest storage. The identification of genetic resistance materials may help in the management of this disease. Scientists at National Institute of Agricultural Technology (INTA) – E.E.A. (La Consulta, San Carlos, Mendoza, Argentina) have investigated *in vivo* and *in vitro* antifungal effects of a genetically-diverse garlic collection against *P. allii* in two growing seasons. Cloves of garlic accessions were inoculated with *P. allii* conidia, and lesion area and sporulation of the fungus in the clove were estimated as a means to characterise the accessions response to the infection.

"Significant and continuous variation was found among the accessions, suggesting a quantitative mode of resistance against P. allii in this garlic collection. Castaño and Peteco accessions resulted consistently the most resistant and susceptible genotypes, respectively" say the scientists.

The work has been recently published in the *European Journal of Plant Pathology*.

WEBINAR ON POWDERY SCAB - INTEGRATED DISEASE MANAGEMENT

WORLD POTATO CONGRESS, 24 FEBRUARY 2020

The World Potato Congress is offering its third webinar in 2020 featuring Dr. Leah Tsror. The presentation will discuss epidemiological aspects including the role of alternative hosts, wind-driven inoculum, latent seed infection, and environmental conditions. It will also discuss IPM approaches, preventive measures, e.g., using tolerant cultivars, soil and seed testing; cultural sustainable approaches, e.g., selecting the planting date, applying non-woven fabric on the foliage for increasing soil temperature; chemical control, e.g. soil fumigation, and pre-planting fungicide application. The integration of agro-techniques and control measures is likely to be an effective way for growers to reduce the impact of the disease.

When: March 18, 2020 at 09:00 a.m. Eastern Standard Time (USA and Canada)

Register in advance for this webinar: After registering, you will receive a confirmation email containing information about joining the webinar.

All webinars are recorded and can be viewed via the World Potato Congress website.

2021 Phytopathology focus issue on population genomics

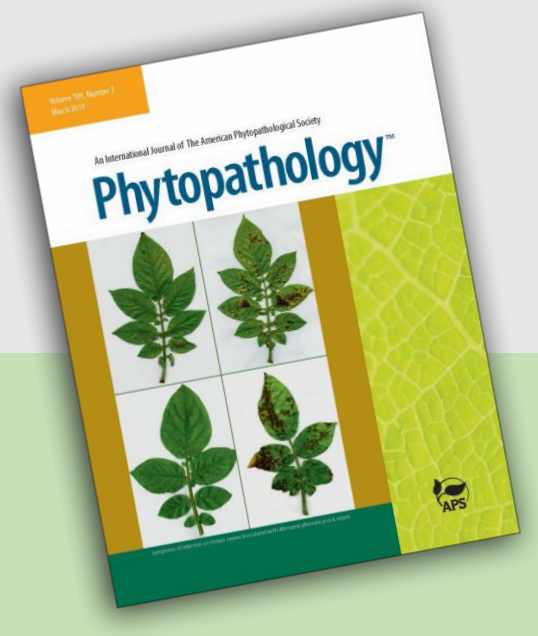
THE AMERICAN PHYTOPATHOLOGICAL SOCIETY, 15 FEBRUARY 2020

Given the growing importance and many opportunities in the field of population genomics in plant pathology, *Phytopathology* has chosen population genomics as the topic for its January 2021 Focus Issue. If you are working on related research, submit your manuscript to *Phytopathology* and indicate in that you would like your manuscript to be considered for the Focus Issue.

All submissions should address an original biological question that advances our conceptual knowledge of pathogen population biology. In addition, as much care should be given to the development and description of an appropriate pathogen sampling scheme as is given to the subsequent procurement and analysis of genomic data.

Submission deadline is 15 June 2020.

Read the full scope statement.



Symbiotic viruses help host insects override the plant's defenses

THE AMERICAN PHYTOPATHOLOGICAL SOCIETY, 3 FEBRUARY 2020

Aphids are virus carriers responsible for significant economic losses in many crops worldwide. Many aphids form symbiotic and mutualistic relationships with viruses, an aspect of plant disease that has not been well explored.

Scientists based in Beijing, China, studied how one symbiotic virus, *Acyrthosiphon pisum* virus (APV), actually helps its host aphid adapt to new plants. APV is primarily located in the aphid's salivary glands and gut. When the aphid feeds on the plant, APV is transferred through the spit.

Importantly, the survival rate of aphids on new plants increases if the aphid carries APV because the virus suppresses the plant's insect defense hormones.

"We were surprised to know symbiotic viruses can function outside hosts, which is quite different from symbiotic bacteria in the gut," said plant pathologist Feng Cui. "This research provides us with the possibility of interrupting aphid-host plant alterations or influencing the dispersal of aphids through the manipulation of these symbiotic viruses."

To learn more about this unique research into symbiotic viruses, read "A symbiotic virus facilitates aphid adaptation to host plants by suppressing jasmonic acid responses" in the January 2020 issue of *Molecular Plant-Microbe Interactions*.

CURRENT VACANCIES

No current vacancies.

ACKNOWLEDGEMENTS

Thanks to Grahame Jackson, Greg Johnson, and Jan Leach for contributions.

COMING EVENTS

45th Annual Conference of the Nigerian Society for Plant Protection
15 March - 19 March, 2020
University of Uyo, Main campus, Akwa Ibom, Nigeria
Website: nsppnigeria. org

6th International Symposium on Head Blight
23 March - 26 March, 2020
Banff, Alberta, Canada
Website: www. isfhb. com

16th Congress of the Mediterranean Phytopathological Union
23 March - 27 March, 2020
Limassol, Cyprus
Website: cyprusconferences. org/mpu2020

66th Annual Conference on Soilborne Plant Pathogens (formerly Soil Fungus Conference) and the 51st Annual Statewide California Nematology Workshop
25 March - 27 March, 2020
San Luis Obispo, California, USA
Website: soilfungus. wsu. edu

7th International Bacterial Wilt Symposium
29 March - 3 April, 2020
Montevideo, Uruguay
Website: 7ibws2020. fq. edu. uy

7th International Congress of Nematology
3 May - 8 May, 2020
Antibes Juan-les-Pins, France
Website: www. alphavisa. com/icn/2020/index. php

14th International Conference on Plant Pathogenic Bacteria
7 June - 12 June, 2020
Assisi, Italy
Website: www. icppb2020. com

Joint 18th International *Botrytis* Symposium & 17th International *Sclerotinia* Workshop
8 June - 12 June, 2020
Avignon, France
Website: colloque. inra. fr/botrytis-sclerotinia-2020

4th International Conference on Global Food Security
16 June - 19 June, 2020
Montpellier, France
Website: www. globalfoodsecurityconference. com

Plant Health 2020 – APS Annual Meeting
8 August - 12 August, 2020
Denver, Colorado, USA
Website: www. apsnet. org/meetings/annual/planthealth2020/Pages/default. aspx

International Seed Testing Association Seed Health Workshop: Seed health methods to detect fungi, bacteria and viruses
31 August - 4 September, 2020
Pretoria, South Africa
Website: https://www.seedtest.org/en/event-detail---0--0--0--111.html

Asian Conference on Plant Pathology: Importance and Impact of Global Plant Health
15 September - 18 September, 2020
Tsukuba International Congress Center, Ibaraki, Japan
Website: https://acpp2020. org/

International Plant Health Conference "Protecting Plant Health in a changing world
5 October - 8 October, 2020
Paasitorni Conference Centre, Helsinki, Finland
Website: https://www. ippc. int/en/iyph/chronology/international-conference-on-plant-health/

13th Arab Congress of Plant Protection
1 November - 6 November, 2020
Le Royal Hotel, Hammamat, Tunisia
Contact: Dr. Asma Jajar, Chairperson of Organising Committee info@acpp-aspp. com
Website: acpp-aspp. com

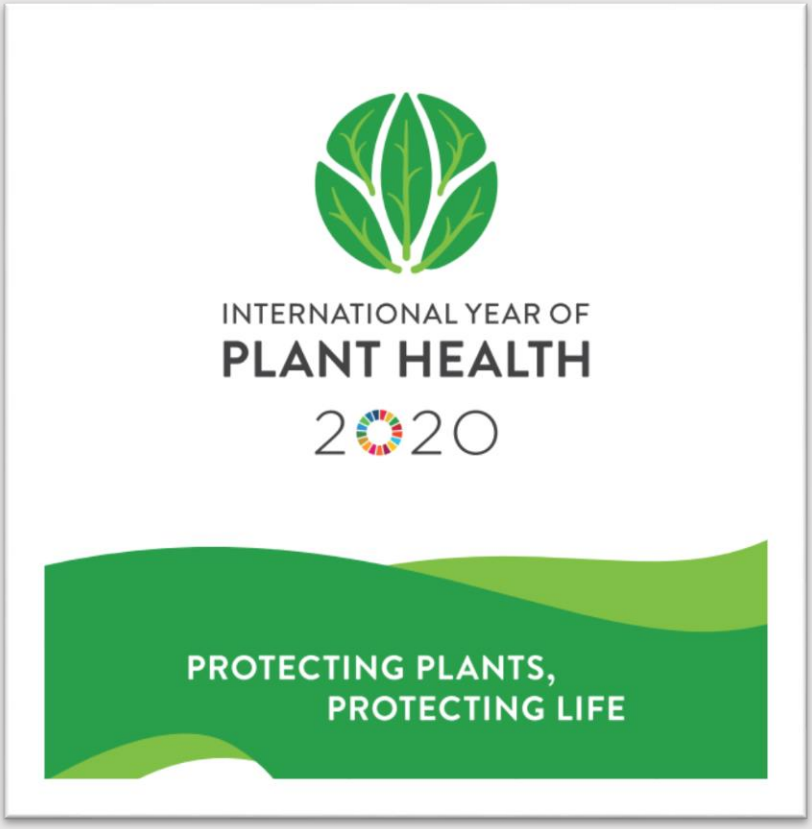
IX International Postharvest Symposium
9 November - 13 November, 2020
Rotorua, New Zealand
Website: scienceevents. co. nz/postharvest2020

11th Australasian Soilborne Diseases Symposium
24 November - 27 November, 2020
Cairns, Queensland, Australia
Website: asds2020. w. yrd. currinda. com

7th International Conference of Pakistan Phytopathological Society
29 November - 1 December, 2020
University of Agriculture Faisalabad and Ayub Agricultural Research Institute, Faisalabad, Pakistan
Website: pakps. com/web/7icpps

12th International Congress of Plant Pathology (ICPP2023)
20 August - 25 August, 2023
Lyon, France
Website: www. icpp2023. org

INTERNATIONAL SOCIETY FOR PLANT PATHOLOGY (ISPP)



WWW. ISPPWEB. ORG

The ISPP List is an e-mail list server which broadcasts messages and announcements to its subscribers. Its goal is to facilitate communication among members of the International Society for Plant Pathology and its Associated Societies. Advertised vacancies in plant pathology and ISPP Newsletter alerts are also sent to members of the ISPP List.

In accordance with the guidelines and recommendations established by the new EU General Data Protection Regulation 679/2016 (GDPR), the International Society for Plant Pathology has created a Privacy Information Notice containing all the information you need to know about how we collect, use and protect your personal data.

This policy explains when and why we collect personal information about our users, how we use it, the conditions under which we may disclose it to third parties, how we keep it safe and secure and your rights and choices in relation to your personal information.

Should you need further information please contact business. manager@issppweb. org

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