



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

PROMOTING WORLD-WIDE PLANT HEALTH AND FOOD SECURITY

INTERNATIONAL SOCIETY FOR PLANT PATHOLOGY

ISPP NEWSLETTER

ISSUE 49 (11) NOVEMBER 2019

Editor: Daniel Hüberli ([email](#))

Join the ISPP [mail list](#)

IN THIS ISSUE:

Meet Dr. Lindsey du Toit, President of the American Phytopathological Society

Women in Ag Science

IDphy: molecular and morphological identification of *Phytophthora* based on the types officially released

Tomatoes sent to space to study plant defense

Cotton disease research from Texas to Narrabri

Global study of seedborne pathogens

Ants suppressing plant pathogens

ISPP Executive Committee will meet in Melbourne

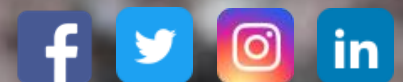
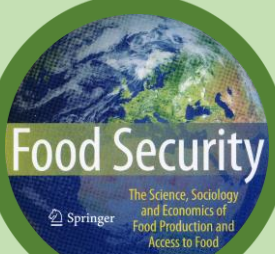
Science that makes a difference

Fungi could reduce reliance on fertilisers

Current Vacancies

Acknowledgements

Coming Events



INTERNATIONAL SOCIETY FOR PLANT PATHOLOGY (ISPP)

WWW.ISPPWEB.ORG

MEET DR. LINDSEY DU TOIT, PRESIDENT OF THE AMERICAN PHYTOPATHOLOGICAL SOCIETY

WOMEN IN AG SCIENCE, 27 AUGUST 2019

Dr. Lindsey du Toit is a plant pathology professor at Washington State University and the new president of the American Phytopathological Society (APS). She is a seed crop pathologist that works with farmers and stakeholders in developing management programs to produce good seed quality in different parts of the world. Some of the crops she works with are cabbage, carrot, spinach, red beet, Swiss chard, onion, and radish.

Seed production is a very high-risk area of agriculture since seeds take a longer time to develop than the vegetative crops and seeds may become affected by pathogens during that period. For instance, cabbage takes around 16 months for seed production, while it only takes about two to three months to harvest the cabbage as a vegetable. Therefore, it is critical for seed growers to have strict management for producing high-quality seeds free from pathogens to prevent transmitting seed-borne pathogens.

One of the main reasons Dr. du Toit got interested in her current job was because of the opportunity to do research and work with extension. In fact, she worked as a diagnostician while she was a Ph.D. student at the University of Illinois, where she further developed her interest and skills in working with farmers and stakeholders directly.

She also recognised the importance of teamwork with farmers and stakeholders to have successful outputs. Although her background is not in agriculture but biology and plant pathology, this experience helped her acknowledge that farmers' knowledge and inputs for research are highly valuable.

Plant pathology is a highly demanding field with various types of employers, including the



Photo: Women in Ag Science

government, private industries, academia, and others. Women In Ag Science asked Dr. du Toit why she chose to work in academia, and her answers were mainly the following factors: the research-extension synergy, and neutrality.

She expressed that it took some time to get immersed in the field, and she immediately started engaging with growers, asking them to show her around and explain their work. She compared this learning process as her being a sponge around the people she was supposed to be helping, basically having them teach her. This experience not only helped her learn about the fieldwork, but also demonstrated to them she respected their expertise and considered them partners.

[Read more.](#)

WOMEN IN AG SCIENCE

WOMEN IN AG SCIENCE, OCTOBER 2019

Women in Ag Science aims to highlight women that work in agricultural science fields. Although this is slowly changing, women are still a minority in the agricultural sciences. These women are often overlooked or not even acknowledged in this male-dominated field.

The website, was launched on March 2019, where there is access to interviews about women in different agricultural fields including Dr. Lindsey du Toit, President of the American Phytopathological Society, and original content that focuses on important topics ranging from professional development to personal stories and even, and lifestyle tips.

In order to increase visibility, break the stigma, and increase representation and diversity, a website is not the only way to do it. It is only a start. However, for this initiative to have an impact, all of us can have a role in supporting this cause whether it is following the website and social media accounts, sharing content or expressing interest in collaborating with the initiative.



IDPHY: MOLECULAR AND MORPHOLOGICAL IDENTIFICATION OF PHYTOPHTHORA BASED ON THE TYPES OFFICIALLY RELEASED

GLORIA ABAD, PH.D. CHAIR OF THE ISPP SMC OOMYCETES

On 30 September 2019, the United States Department of Agriculture (USDA), Plant Pathogen Quarantine (PPQ), Identification Technology Program (ITP) and the Beltsville Lab released IDphy: molecular and morphological identification of *Phytophthora* based on the types, ITP's first tool focused on pathogens. Some species of *Phytophthora* are devastating plant pathogens that have a significant impact on agriculture and natural ecosystems. *Phytophthora* are challenging organisms to identify, and it is not uncommon to find DNA sequences from misidentified specimens. IDphy was developed to facilitate accurate and efficient identification to species for the genus, using the type specimens from the original descriptions wherever possible. This website aims to offer scientists working with the genus the most complete, valid, and up-to-date resource for identifying the culturable species of *Phytophthora*. IDphy includes detailed SOPs for all steps involved in culturing, sequencing, and identifying suspect samples, covering both molecular and morphological methods. IDphy can be found at <https://idtools.org/id/phytophthora/>.



TOMATOES SENT TO SPACE TO STUDY PLANT DEFENSE

BRIAN WALLHEIMER, PURDUE UNIVERSITY NEWS, 16 OCTOBER 2019



Any trip to Mars, likely to take a year or longer, will require astronauts to grow at least some of their own food along the way since it can cost \$10,000 to send a pound of anything just as far as Earth's orbit. Before a journey to Mars happens, however, scientists need to answer fundamental questions about how life is affected by spaceflight and low- or no-gravity environments. Purdue University's Anjali Iyer-Pascuzzi aims to improve the odds of successful crops with a recently awarded National Aeronautics and Space Administration (NASA) grant to understand the effects of spaceflight and simulated microgravity on plant defense responses.

Iyer-Pascuzzi, a member of Purdue's Center for Plant Biology, has designed two experiments for astronauts to carry out on the International Space Station (ISS). The results will be compared with similar experiments conducted on Earth. The date for her experiments to be taken to the ISS is still being finalised.

On the ISS, astronauts will grow three sets of Moneymaker tomatoes in the Advanced Plant Habitat (APH), a chamber that has been used to study plant growth in space. One set of the tomatoes will be an immune-compromised mutant, another will be given a hormone that boosts plant defenses, and a third will be a control.

The APH will take regular photos that will allow Iyer-Pascuzzi to monitor growth. Astronauts will regularly clip and save leaves they will bring back to Iyer-Pascuzzi. In the lab, her team will analyse RNA extracted from those leaves to determine how genes were expressed at different times.

Those plants will be compared not just with each other, but against the same types of tomato plants grown here on Earth. Iyer-Pascuzzi's colleagues at the University of Delaware will grow pathogen-infected tomatoes in a clinostat, a device that mimics low- and no-gravity conditions, to test how low gravity alters a pathogen's ability to live in plant roots.

[Read more.](#)

COTTON DISEASE RESEARCH FROM TEXAS TO NARRABRI

DEPARTMENT OF PRIMARY INDUSTRIES MEDIA RELEASE, 14 OCTOBER 2019

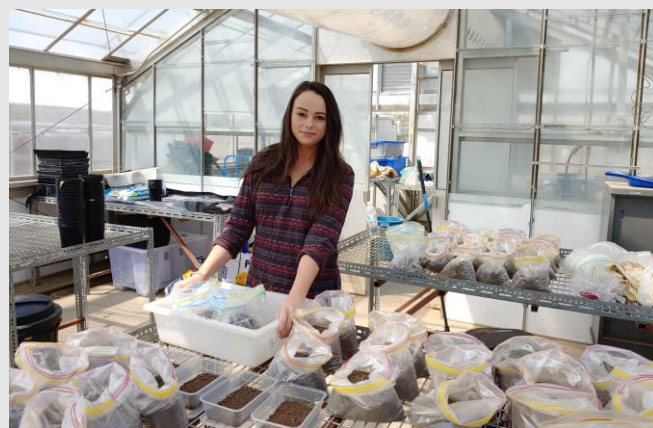
A love of plant and soil science brought Texas graduate student, Shelby Young to the Narrabri Australian Cotton Research Institute to study cotton diseases. Ms Young graduated with her Master's degree in plant and soil science through Texas Tech University's College of Agricultural Sciences and Natural Resources and is a recipient of a Fulbright Scholarship.

The Fulbright Program is the U.S. Government's flagship international educational exchange program and is designed to build lasting connections between the people of the United States and the people of other countries. Recipients of Fulbright awards are selected on the basis of academic and professional achievement, as well as their record of service and leadership potential in their respective fields.

New South Wales (NSW) Department of Primary Industries, Australia, Plant Pathologist Dr Karen Kirkby said Ms Young has a keen interest in cotton production and crop diseases, which has led to the opportunity to study and compare *Verticillium* wilt here in Australia. "*Verticillium dahliae* is a widespread soilborne fungal plant pathogen that causes wilt disease on many important crops and trees, including cotton," Dr Kirkby said. "Verticillium wilt is a high-priority disease in the cotton industry biosecurity plan, and when the right environmental conditions occur for the disease it can reduce yields by 30-40 percent. The key to combating this pathogen will be increasing the understanding of the genetic makeup and how diverse symptoms are in Australian cotton crops."

Ms Young said the High Plains of Texas is a highly productive cotton-producing region with conditions similar to those in the Namoi Valley, NSW and while both regions have *Verticillium* wilt they look and behave quite differently. "My Master's thesis involved the detection and quantification of *Verticillium dahliae* and in field soil," said Ms Young.

Ms Young will conduct research at the Australian Cotton Research Institute and Western Sydney University's Hawkesbury Institute for the environment as part of a cotton pathology project. She will examine the relationship between *Verticillium dahliae* inoculum detected in Australian cotton fields prior to planting and the incidence of *Verticillium* wilt later in the season. With NSW DPI, Ms Young's work will focus on collecting data to field-validate *Verticillium* wilt inoculum thresholds developed recently by Dr Kirkby.



Shelby Young preparing soil samples for isolating and quantifying *Verticillium dahliae* inoculum (Photo: NSW Department of Primary Industries).

GLOBAL STUDY OF SEEDBORNE PATHOGENS

PENN STATE NEWS, 26 OCTOBER 2019

A nearly \$4 million grant awarded to Penn State University, Pennsylvania, U.S., will support an interdisciplinary, multi-university team of researchers as they explore bacterial pathogens causing leaf spot diseases that are damaging valuable agricultural crops such as watermelon and pumpkin. The grant, from the U.S. Department of Agriculture's National Institute of Food and Agriculture, will be supplemented by nearly \$3 million in matching investments from seed companies and associated industries and over \$1 million from the universities involved, according to project director Carolee Bull, professor and head of the Department of Plant Pathology and Environmental Microbiology in the College of Agricultural Sciences. In addition to advancing the science the research will have real-world impacts, and members of the industry are equal partners in the research and support for the project.



Carolee Bull, professor and head of the Department of Plant Pathology and Environmental Microbiology, and graduate student Lindsay Boyd sample for biological control agents against seedborne pathogens in Batavia, New York (Photo: Julie Kikkert).

The seedborne bacterial leaf spot diseases are caused by a group of related bacteria in the species *P. syringae*, which contaminate or infect seeds or can infect plants via wounds or natural openings. Once the bacterium enters a plant, it multiplies and causes black lesions that reduce the plant's ability to photosynthesize and make its own nutrients to grow. These diseases have increased in frequency and are recognised as a major economic threat to agricultural production.

Professor Bull will serve as project director for a team of university, government and industry scientists, including postdoctoral scholars and graduate students, as they embark on a four-year study of the biology and epidemiology of the pathogens causing this disease in crops grown for seed and those grown for food. The researchers will study seed microbiomes and use diagnostic metagenomic and other approaches to detect the pathogens in and on the seed.

The group's goals include developing resistant plant lines for seed and crop production and evaluating whether the traits needed for seed-crop resistance are the same as those needed for food-crop resistance; improving integrated pest management strategies for seed and food crops using new technologies, including effective biological controls; and identifying biological and genetic data that will enable the development of accurate and sensitive pathogen detection and quantification methods. In addition, Claudia Schmidt, assistant professor of agricultural economics, will work with other team members to create a cost analysis for implementing practices developed and will share the findings with growers, seed companies, scientists, students and the public.

[Read more.](#)

ANTS SUPPRESSING PLANT PATHOGENS

A review by Joachim Offenberg and Christian Damgaard titled "Ants suppressing plant pathogens: a review" was published online in September 2019 by *Oikos* (early view). The abstract is as follows:-

Ant-plant mutualisms are usually regarded as driven by ants defending plants against herbivores in return for plant-produced food rewards and housing. However, ants may provide additional services. In a review of published studies on ant-pathogen-plant interactions, we investigated whether ants' extensive hygiene measures, including the use of ant-produced antibiotics, extend to their host plants and reduce plant pathogen loads. From 30 reported species combinations, we found that the presence of ants lead to reduced pathogen levels in 18 combinations and to increased levels in 6. On average, ants significantly reduced pathogen incidence with 59%. This effect size did not differ significantly from effect sizes reported from meta-analyses on herbivore protection. Thus, pathogen and herbivore protection could be of equal importance in ant-plant mutualisms. Considering the abundance of these interactions, ecological impacts are potentially high. Furthermore, awareness of this service may stimulate the development of new measures to control plant diseases in agriculture. It should be noted, though, that studies were biased toward tropical ant-plant symbioses and that the literature in the field is limited at present. Future research on plant pathogens is needed to enhance our understanding of ant-plant mutualisms and their evolution.

[Read review.](#)

ISPP EXECUTIVE COMMITTEE WILL MEET IN MELBOURNE

The ISPP Executive Committee will meet in November 2019 at the Australasian Plant Pathology Society (APPS) 50th anniversary conference in Melbourne, Australia.

SCIENCE THAT MAKES A DIFFERENCE

ANDREW WIGHT, FORBES SCIENCE, 24 OCTOBER 2019

Several students from municipality of La Paz, Arauca, Colombia, attended science workshops run by a non-government organisation (NGO) Lab Al Campo and the fifth regional edition of the Colombian “Clubes de Ciencia” – part of Science Clubs International an NGO which runs immersive science workshops. The workshops bring together keen kids with working scientists in a range of fields. This region still bears the scars of more than 50 years of armed conflict and there is still armed groups in the area despite the signing of a peace accord between Colombia’s government and the FARC guerrilla in 2016.

Valeria Jimenez was a co-instructor at the event in early October 2019, which was an alliance between the Universidad de los Andes, Colombia Science Clubs, Lab Al Campo and with the support of Seis Continentes Tourism and RVG IPS. She said STEAM (science, technology, engineering, arts and mathematics) allows people to solve problems in daily life and fulfill specific needs that communities have.

During the plant pathology workshop the students had a particular focus on cacao because it is one of the most important crops in Arauca. Jimenez said Arauca cacao is recognised as the best in the country, a very high quality crop, which has replaced illicit coca crops.

[Read more.](#)

FUNGI COULD REDUCE RELIANCE ON FERTILISERS

UNIVERSITY OF LEEDS SCIENCE NEWS, 24 OCTOBER 2019

Researchers at the University of Leeds have demonstrated a partnership between wheat and soil fungi that could be utilised to develop new food crops and farming systems which are less reliant on fertilisers, reducing their contribution to the escalating climate crisis. It is the first time the arbuscular mycorrhizas, which form partnerships with plant roots, have been shown to provide significant amounts of phosphorous and nitrogen to a cereal crop. The fungi continued to provide nutrients under higher levels of carbon dioxide (CO₂) predicted for 2100, which has important implications for future food security.

Lead researcher Professor Katie Field, from the University of Leeds' School of Biology and Global Food and Environment Institute, said: "These fungi are not a silver bullet for improving productivity of food crops, but they have the potential to help reduce our current overreliance on agricultural fertilisers."

Over the last 10,000 years, plants have been domesticated through intensive breeding, which has inadvertently stopped some varieties from having such close relationships with beneficial fungi. Whilst some varieties of the wheat grown by farmers form these partnerships with beneficial fungi, many do not. The Leeds researchers therefore suggest there is potential to develop new varieties of wheat that are less dependent on fertilisers.

Scientists allowed the fungi to colonise the roots of three different varieties of wheat in the laboratory and grew them in one of two chambers - either mimicking current climatic conditions or those projected for 2100, when CO₂ concentration in the atmosphere is predicted to be double that of today if emissions are not curbed. They wanted to know what benefits the different varieties could gain from their fungal partners and how the relationships would be affected by increasing atmospheric CO₂. By chemically tagging phosphorous and nitrogen in the soil and CO₂ in the air, the researchers were able to demonstrate that the different varieties of wheat absorbed the nutrients through their fungal partners, in both climate scenarios. As expected, the three varieties of wheat underwent different levels of exchange with the fungi, with some varieties gaining much more from the relationship than others for a similar carbohydrate 'cost'.

The researchers suggest it could be possible to breed new varieties of wheat which are more accommodating to a fungal partnership. This could allow farmers to use less fertilisers, as it may allow the wheat to get more of its required nutrients through the fungi.

The results have been published recently in the journal [Global Change Biology](#).



Arbuscular mycorrhizal spores germinating (Photo: Katie Field, University of Leeds).

CURRENT VACANCIES

No current vacancies.

ACKNOWLEDGEMENTS

Thanks to Gloria Abad, Grahame Jackson and Greg Johnson for contributions.

COMING EVENTS

22nd Biennial Conference of the Australasian Plant Pathology Society

25 November - 28 November, 2019

Melbourne, Australia

Website: www.apps2019.org

International Symposium on Microbe-Assisted Crop Production – Opportunities, Challenges and Needs

2 December - 5 December, 2019

Vienna, Austria

Website: micrope.org/

Indian Phytopathological Society 7th International Conference on “Phytopathology in Achieving UN Sustainable Development Goals”

16 January - 20 January, 2020

New Delhi, India

Website: ipsdis.org

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

16th Congress of the Mediterranean Phytopathological Union

23 March - 27 March, 2020

Limassol, Cyprus

Website: cyprusconferences.org/mpu2020

7th International Bacterial Wilt Symposium

29 March - 3 April, 2020

Montevideo, Uruguay

Website: 7ibws2020.fq.edu.uy

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

Asian Conference on Plant Pathology: Importance and Impact of Global Plant Health

15 September - 18 September, 2020

Tsukuba International Congress Center, Ibaraki, Japan

Website: iapps2010.me/2019/02/05/asian-conference-on-plant-pathology-2020/

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

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

**SUBSCRIBE
OUR NEWSLETTER**

