

PROMOTING WORLD-WIDE PLANT HEALTH AND FOOD SECURITY

INTERNATIONAL SOCIETY FOR PLANT PATHOLOGY

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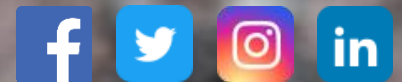
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The International Society for Plant Pathology promotes the world-wide development of plant pathology and the dissemination of knowledge about plant diseases and plant health management



INTERNATIONAL SOCIETY FOR PLANT PATHOLOGY (ISPP)

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BOOK REVIEW: *PLANT PATHOLOGY AND PLANT DISEASES*

REVIEWED BY SERGE SAVARY

Anne Marie Tronsmo, David B. Collinge, Annika Djurle, Lisa Munk, Jonathan Yuen, and Arne Tronsmo. 2020. CABI Nosworthy Way, Wallingford, Oxfordshire OX10 8DE, UK

We had been waiting for a general textbook on plant pathology for a very long time. This is one. *Plant Pathology and Plant Diseases* is intended primarily for students, but is also of interest for teachers, scientists, and anyone interested in plant diseases in general.

This is a true textbook. "*Plant Pathology and Plant Diseases*" is not meant to dwell in depth into any particular subject – but the book opens the necessary doors to access each of them. Plant pathology has become such a diverse, multidisciplinary area that writing a textbook would be a feat in itself. The Authors have achieved success in this.

This is a multi-authored book, but this does not show: the levels of organisation, of co-ordination among chapters, of standardisation of style, are so high, that the book becomes a very structured and cohesive text. The book includes five parts: general plant pathology, plant pathogens, plant-pathogen interactions, disease management, and perspectives. It also has very useful appendices: glossary, molecular methods, along with a taxonomic index, and a general index.

Aspects of molecular pathology, of disease management, of diagnostics, of taxonomy, of botanical epidemiology, along with the particular aspects of Nematology, Virology, Bacteriology, Fungal and Oomycete biology are addressed with a good balance. The graphics and figures are superb, while not being meant to just be beautiful: they are meant for the reader to understand. The photos are superb. The book does not display, as so often, a long list of references at the end of each chapter. Instead, Authors chose to only cite those references which they feel provide an essential starting point. For instance, Chapter 15: "Cultural Practices for Disease Management" cites only one reference: "Fry, W.E., 2012. *Principle of Disease Management*. Academic Press, London."; a good choice.

This book is the result of the hard, dedicated work of plant pathology Professors and Researchers. It reflects their experience not only with the science, but also with the teaching. Education, in our times of diffraction of science in so many directions and of necessity for landmarks, is essential.

Plant Pathology and Plant Diseases is one such landmark. The book will remain for many years to come. It constitutes a major achievement, and represents an important contribution to education in plant pathology worldwide. For teachers, students, and professionals in the field, this is a must-read and a must-have.

Plant Pathology and Plant Diseases is available from [CABI](https://www.cabi.org) as hardback, paperback, ePDF, and ePub. Use 20% discount code for the whole of February if purchasing the book: CCISPP20.



A HISTORY OF PLANT PANDEMICS: NEW CASE STUDIES FROM THE BRITISH SOCIETY FOR PLANT PATHOLOGY

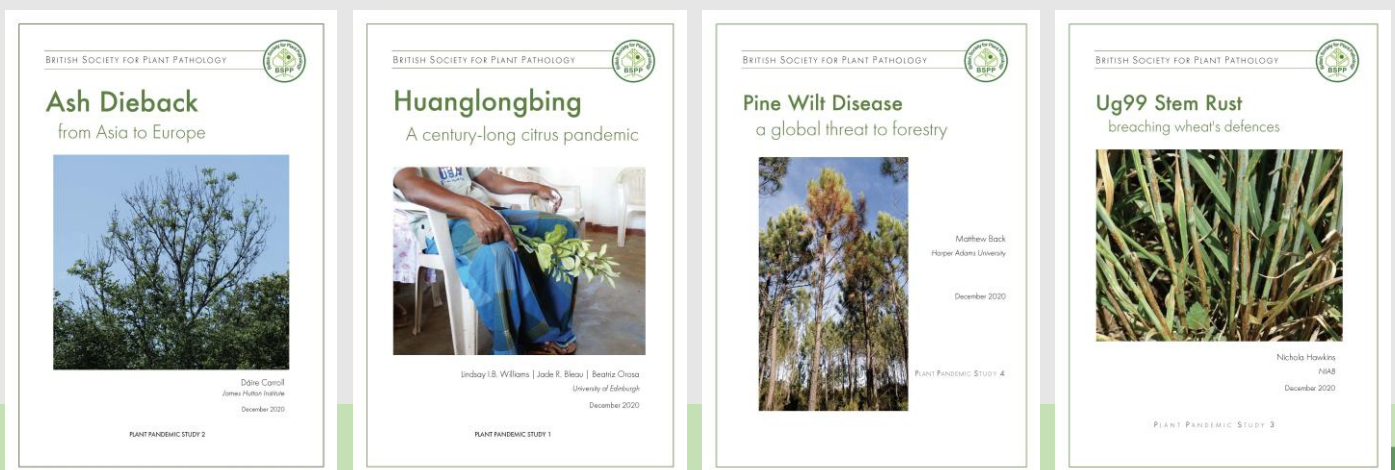
ERIC BOA

The British Society for Plant Pathology (BSPP) has recently sponsored a series of case studies looking at the spread and consequences of four damaging and feared diseases: Huanglongbing disease on citrus, Ash dieback, Pine wilt disease and Ug99 stem rust of wheat. The reports are available for anyone to read and download from the BSPP website <https://www.bspp.org.uk/category/Plant-Pandemic-Studies/>.

The scheme was created to enable scientists to go beyond the relatively well known details of scientific research on pathogens and host responses, and to shed light on fragmented information about the impact of major diseases on people and national economies. The studies look at efforts by governments and plant health authorities to limit spread, highlighting successes and failures. In an echo of current times, the need for swift and decisive actions to stem and limit the spread of plant diseases is paramount, yet official responses are often inadequate.

Plant pandemics have inevitably accompanied the spread and intensification of agriculture. The studies show how plant diseases (and their vectors) have piggy-backed the expanding trade in plants around the world and exposed weaknesses in phytosanitary strategies. Learn more about the stories behind plant pandemics and how the studies counterbalance a celebration of scientific progress with an assessment of what happened in real life.

Financial support for writing case studies are available to BSPP members. See the website for more details (<https://www.bspp.org.uk/funds/plant-pandemic-study-awards/>) and news about further opportunities to apply. Huanglongbing, ash dieback, pine wilt disease and Ug99 are only a few of the plant pandemics that have caused havoc in the past and pose major threats to the future of agriculture and beyond.



POSTHARVEST PATHOLOGY NEXT GENERATION SOLUTIONS TO REDUCING LOSSES AND ENHANCING SAFETY – NEW BOOK

DAVIDE SPADARO, SAMIR DROBY, AND MARIA LODOVICA GULLINO

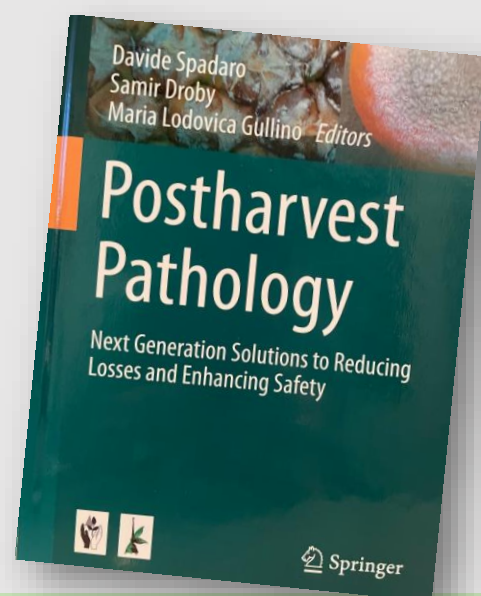
Davide Spadaro, Samir Droby, and Maria Lodovica Gullino (Eds). *Postharvest Pathology Next Generation Solutions to Reducing Losses and Enhancing Safety*, Springer, the Netherlands. 202 pp.

Postharvest pathology is at the crossroad between food security and food safety, and it represents an essential element of plant pathology. Postharvest losses caused by pests and diseases on fresh fruit, nut and grains along the supply chain can exceed 50%. The development of an integrated approach for decay management, preharvest, harvest, and postharvest practices should be considered as an essential component that influences the complex interaction between host, pathogen, and environmental conditions. The wide consumption of high-quality fresh fruits and vegetables and the increased concerns over the possible toxicity of fungicide residues has led to the development of new approaches for disease control alternative to fungicides. The implementation of these alternatives techniques often requires modifying the currently used postharvest practices and the development of new technologies or formulations for their applications.

The book “Postharvest Pathology” consists of a collection of 12 papers presented at the 11th edition of the International Congress of Plant Pathology (ICPP-11) was held in Boston, the US in 2018. Four hot topics, identified in the area of postharvest diseases management, represent the four sections of this book: i) Elucidation of the complex fruit-pathogen interactions; ii) Study of the role of the fruit microbiome on the development of postharvest diseases; iii) Interaction between postharvest losses and production of mycotoxins by postharvest pathogens; and iv) Development of sustainable strategies for the control of postharvest diseases.

The book is the 10th volume of the series “Plant Pathology in the 21st Century”, which was initiated after the 9th International Congress of Plant Pathology ICPP2008. ISPP has recently concluded an agreement with Springer to broaden the scope of the series, to promote the global advancement of plant pathology and the dissemination of essential information on plant diseases and plant health management.

Visit Springer to learn more about [Postharvest Pathology](#).



FIRST ISSUE OF PHYTOFRONTIERS IS HERE

The American Phytopathological Society (APS) launches the first issue of the new open access journal *PhytoFrontiers*TM. This first issue includes original research papers focusing on topics ranging from witchweed, nematodes, fungi, bacteria, insects, to biological control. The third open access journal published by APS, *PhytoFrontiers* offers a distinctly broad disciplinary range that provides a new niche for papers not typically considered by the core APS journals.

[Read the first issue](#) of the new broad-scope open access APS journal.

PREDICTING FUTURE GLOBAL IMPACTS OF THE GENUS PHYTOPHTHORA

A paper by Louise J. Barwell titled “Evolutionary trait-based approaches for predicting future global impacts of plant pathogens in the genus *Phytophthora*” was published on 14 December 2020 by the *Journal of Applied Ecology* (early view). The abstract is as follows:-

1. Plant pathogens are introduced to new geographical regions ever more frequently as global connectivity increases. Predicting the threat they pose to plant health can be difficult without in-depth knowledge of behaviour, distribution and spread. Here, we evaluate the potential for using biological traits and phylogeny to predict global threats from emerging pathogens.
2. We use a species-level trait database and phylogeny for 179 *Phytophthora* species: oomycete pathogens

International Society for Plant Pathology impacting natural, agricultural, horticultural and forestry settings. We compile host and distribution reports for *Phytophthora* species across 178 countries and evaluate the power of traits, phylogeny and time since description (reflecting species-level knowledge) to explain and predict their international transport, maximum latitude and host breadth using Bayesian phylogenetic generalised linear mixed models.

3. In the best-performing models, traits, phylogeny and time since description together explained up to 90%, 97% and 87% of variance in number of countries reached, latitudinal limits and host range, respectively. Traits and phylogeny together explained up to 26%, 41% and 34% of variance in the number of countries reached, maximum latitude and host plant families affected, respectively, but time since description had the strongest effect.
4. Root-attacking species were reported in more countries, and on more host plant families than foliar-attacking species. Host generalist pathogens had thicker-walled resting structures (stress-tolerant oospores) and faster growth rates at their optima. Cold-tolerant species are reported in more countries and at higher latitudes, though more accurate interspecific empirical data are needed to confirm this finding.
5. Policy implications. We evaluate the potential of an evolutionary trait-based framework to support horizon-scanning approaches for identifying pathogens with greater potential for global-scale impacts. Potential future threats from *Phytophthora* include *Phytophthora x heterohybrida*, *P. lactucae*, *P. glovera*, *P. x incrassata*, *P. amnicola* and *P. aquimorbida*, which are recently described, possibly under-reported species, with similar traits and/or phylogenetic proximity to other high-impact species. Priority traits to measure for emerging species may be thermal minima, oospore wall index and growth rate at optimum temperature. Trait-based horizon-scanning approaches would benefit from the development of international and cross-sectoral collaborations to deliver centralised databases incorporating pathogen distributions, traits and phylogeny.

[Read paper.](#)

CGIAR INTERNATIONAL YEAR OF PLANT HEALTH WEBINAR SERIES

The Consultative Group on International Agricultural Research (CGIAR) cordially invites you to join a 4-part webinar series advancing the global discussion on plant health, and how protecting plants can help end hunger, reduce poverty, protect the environment, and boost economic development. The UN has designated 2020 as the International Year of Plant Health (IYPH). CGIAR Centers have significant scientific knowledge, extensive experience on the ground, and thought leadership that they can lend to the global discussion to advance awareness, collaboration, and scaling of needed interventions.

CGIAR's webinar event, [Unleashing the Potential of Plant Health](#), is a series of four webinars of global scope that will take an in-depth look into current science in the area, identify areas for further research, and discuss opportunities to take current scientific innovations to scale. Each webinar will examine aspects of the crop supply chain—from genebanks and farmers' fields, to gender issues and consumers' plates—and identify ways of promoting the adoption of tools and practices designed to boost the long-term health of plants, increase farmer productivity, and safeguard the environment across low- and middle-income countries. With the acceleration of the effects of climate change on the incidence and intensity of pests and diseases, identification of the right crop varieties, mix of crops, and tools and practices will be key to ensuring the availability of food to feed the planet.

The first webinar “Climate Change and Plant Health: Impact, Implications and the Role of Research for Adaptation and Mitigation” was held on 28 January 2021, and can be viewed on [YouTube](#). The details of the remaining webinars are below.

Webinar 2 – Germplasm health in preventing transboundary spread of pests and pathogens, 17 February 2021

Webinar 2 will highlight the importance of germplasm (phytosanitary) health in the prevention of transboundary pest and disease spread, as well as the propagation of clean planting material to be used locally. Experts will discuss the implications of poor germplasm practices on agricultural and food system sustainability, farmer livelihoods, and food and nutrition security. They will also examine how opportunities for greater workplace diversity in germplasm health hubs and gender-responsive programming could drive more inclusive sustainable development.

Webinar 3 – Integrated pest and disease management, 10 March 2021

Webinar 3 examines integrated approaches for sustainable management of transboundary diseases and crop pests and their implications for agri-food system sustainability,

social inclusion and gender equity. Drawing on both successes and enduring challenges, experts will identify the potential benefits of more gender-responsive approaches to pest and disease control; more coordinated action by national, regional and global organizations; and lessons to be learned from successful animal health management.

Webinar 4 – A One Health approach, 31 March 2021

Webinar 4 brings together scientists working at the intersection of environmental, human, and animal health. In this session, the experts will examine plant health and agriculture from a “One Health” approach—a collaborative, multisectoral, and transdisciplinary perspective that recognizes the health of people, animals, plants, and their environments as all closely connected. In this approach, agricultural practices and plant health outcomes both are determined by, and contribute to, ecological, animal, and human health.

STUDY FINDS LARGE-SCALE EXPANSION OF STEM RUST RESISTANCE GENE IN BARLEY AND OAT

JOHN INNES CENTRE, 10 DECEMBER 2020

Stem rust is one of the most devastating fungal diseases of wheat and historically has caused dramatic crop failures resulting in significant yield losses worldwide. The disease has re-emerged in major wheat growing areas and an epidemic could cause a major threat to global food security.

Scientists have identified a resistance gene, Sr22, as one of the few characterised genes that protects against many stem rust races. Sr22 was recently incorporated into a multi-Sr transgene stack and found to achieve complete field-immunity to stem rust. As a result of this success, scientists are looking for ways to deploy the gene in the field.

A new study in the journal [Molecular Plant-Microbe Interactions](#) describes the functional and evolutionary characterisation of Sr22, based on a comprehensive search of the genomes and transcriptomes of 80 plant species. The study found that the gene is conserved among grasses in the Triticeae and Poaceae lineages.

“We originally set out to mine Sr22 alleles and their function then expanded the work to include a large-scale comparison of the Sr22 locus across monocot species,” explained Dr Guru Radhakrishnan of the John Innes Centre. “This is when we discovered the surprising large-scale expansion of the Sr22 locus in the barley and oat lineages.”

This study also describes the sequence variation between different Sr22 alleles, which may be due to intra-allelic recombination. Three of the alleles were functionally characterised in transgenic wheat and

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two of these were found to confer resistance to the notorious Ug99 isolate of the wheat stem rust pathogen.

“To our knowledge, this is the first study to comprehensively explore the evolution of a resistance gene across a broad range of monocot lineages in addition to exploring allelic variation between accessions of monocot species,” added first author Dr M. Asyraf Md. Hatta. “With more high-quality monocot genome and transcriptome assemblies becoming available, such studies are



Asyraf Hatta (top left) and corresponding authors - Guru Radhakrishnan (top right), Sambasivam Periyannan (bottom right) and Brande Wulff (bottom left) (Photo credit: John Innes Centre).

expected to provide valuable insights on the evolution of resistance genes in this agriculturally important group of plants.”

The study contributes valuable knowledge on plant disease resistance gene function and evolution, which can facilitate the improvement of crops against agriculturally important diseases, such as stem rust.

[Register for free.](#)

2021 AUSTRALASIAN PLANT PATHOLOGY SOCIETY CONFERENCE

REFORESTATION FOR BIODIVERSITY, CARBON CAPTURE AND LIVELIHOODS

Tree planting dominates political and popular agendas, often portrayed as an easy answer to the climate crisis and effective mitigation for corporate carbon emissions. But it is not a simple solution and planting the wrong trees in the wrong place can cause considerably more damage than benefits, failing to benefit either people or nature.

The Royal Botanic Gardens, Kew and [Botanic Gardens Conservation International](#) (BGCI) will jointly convene three days of online discussion and debate on best practice and policy, underpinned by scientific evidence, to go beyond the headlines and find ways of raising the standard of global reforestation. The conference will create a global hub of expertise and innovative thinking to ensure that reforestation delivers benefits, not just for carbon capture but also for biodiversity and human wellbeing.

We will focus on finding workable, evidence-based solutions for reforestation to benefit biodiversity, carbon capture and livelihoods – questioning assumptions, showcasing success stories, identifying challenges and encouraging new, integrative approaches.

Ahead of this conference, Kew, BGCI and international partners have highlighted the environmental risks of large-scale tree planting schemes, in a review published in the journal [Global Change Biology](#). Within the review we propose “ten golden rules” for reforestation, based on the latest scientific evidence, to maximise benefits for people and the planet.

The APPS conference themed “Staying Connected for Plant Health” will be fully online during the week of 22 November 2021.

Abstract submissions will open mid March 2021. For more information on the conference visit appsnet.org/conference.html.



CURRENT VACANCIES

No current vacancies.

ACKNOWLEDGEMENTS

Thanks to Eric Boa, Samir Droby, Maria Lodovica Gullino, Grahame Jackson, Greg Johnson, Jan Leach, Andrea Masino, Serge Savary, and Davide Spadaro for contributions.

COMING EVENTS

7th International Conference of Pakistan Phytopathological Society

Postponed – date to be announced
University of Agriculture Faisalabad and Ayub
Agricultural Research Institute, Faisalabad, Pakistan
Website: pakps.com/web/7icpps

Reforestation for Biodiversity, Carbon Capture and Livelihoods Online Conference

24 February - 26 February, 2021
Free online conference
Website: www.kew.org/science/engage/get-involved/conferences/reforestation-biodiversity-carbon-capture-livelihoods

Meeting of the 66th Annual Conference on Soilborne Plant Pathogens and the 51st Annual Statewide California Nematology Workshop

23 March - 24 March, 2021
To be held virtually on Zoom
Website: soilfungus.wsu.edu

16th Congress of the Mediterranean Phytopathological Union

20 April - 22 April, 2021
Limassol, Cyprus
Website: cyprusconferences.org/mpu2020

International Plant & Animal Genome XXIX

15 May - 19 May, 2021
San Diego, California, USA
Website: www.intlpag.org/2021/

International Symposium on Cereal Leaf Blights

19 May - 21 May, 2021
Hammamet, Tunisia
Website: www.isclb2021.com

BotrySclero Webinar

8 June - 10 June, 2021
Avignon, France
Website: colloque.inra.fr/botrytis-sclerotinia-2020

International Plant Health Conference “Protecting Plant Health in a changing world”

28 June - 1 July, 2021
Paasitorni Conference Centre, Helsinki, Finland
Website: www.fao.org/plant-health-2020/events/events-detail/en/c/1250609/

International Phytobiomes Conference 2021

14 September - 17 September, 2021
Denver, Colorado, USA
Website: phytobiomesconference.org/

13th Arab Congress of Plant Protection

31 October - 5 November, 2021
Le Royal Hotel, Hammamet, Tunisia
Contact: Dr. Asma Jajar, Chairperson of Organising
Committee info@acpp-aspp.com
Website: acpp-aspp.com

Australasian Plant Pathology Society Conference – Staying Connected for Plant Health

Week of 22 November, 2021
Online conference
Website: appsnet.org/conference.html

10th International IPM Symposium

28 February - 3 March, 2022
Denver, Colorado, USA
Website: ipmsymposium.org/2021

7th International Congress of Nematology

1 May - 6 May, 2022
Antibes Juan-les-Pins, France
Website: www.alphavisa.com/icn/2020/index.php

4th International *Erwinia* Workshop

2 July - 3 July, 2022
Assisi, Italy
Website: www.icppb2020.com

14th International Conference on Plant Pathogenic Bacteria

3 July - 8 July, 2022

Assisi, Italy

Website: www.icppb2020.com

11th Australasian Soilborne Diseases Symposium

Mid-late 2022

Cairns, Queensland, Australia

Website: asds2020.w.yrd.currinda.com

XX International Plant Protection Congress

10 June - 15 June, 2023

Athens, Greece

Website: www.ippcathens2023.gr

12th International Congress of Plant Pathology (ICPP2023)

20 August - 25 August, 2023

Lyon, France

Website: www.icpp2023.org

9th ISHS International Postharvest Symposium

11 November – 15 November, 2024

Rotorua, New Zealand

Website: scienceevents.co.nz/postharvest2024



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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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