ICPP BOSTON 2018

Plant Health in a Global Economy

11th International Congress of Plant Pathology

July 29–August 3
Boston, Massachusetts, U.S.A.

ISPP

Sponsored by International Society for Plant Pathology

APS

Organized by The American Phytopathological Society

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The International Society for Plant Pathology (ISPP)

The purpose of the International Society for Plant Pathology (ISPP, founded in 1968) is to promote the worldwide development of plant pathology and the dissemination of knowledge about plant diseases and plant health management. ISPP sponsors the International Congress of Plant Pathology (ICPP) at regular intervals, as well as other international meetings on plant pathology and closely related subjects. The society establishes committees to consider and report on special fields or problems in plant pathology. It also organizes other activities, including the publication of journals, newsletters, and websites, as approved by the Executive Committee.

CELEBRATING 50 YEARS ISPP

ICPP BOSTON

JULY 29 - AUGUST 3 2018

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Go to icpp2018.org/mobileapp to find links to your mobile app store, or search for **ICPP2018** in your app store.





Thank you to the ICPP2018 meeting sponsors. The following list is as of June 27, 2018.

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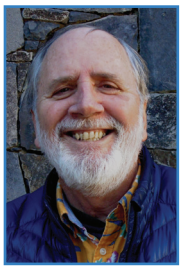
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A Message from the President of the International Society for Plant Pathology (ISPP)

Turning 50: ISPP 1968–2018

1968 was a year of turmoil and disquiet: Vietnam, civil rights, assassinations, and Paul Ehrlich's The Population Bomb. But it was also a year of future hope, including Apollo 8, with three U.S. astronauts being the first humans to see the far side of the moon and Earth as a whole.

In 1968, I decided to study agriculture at the University of Queensland, where an inscription above the main entrance quotes Benjamin Disraeli (1873): "A Place of Light, Liberty and Learning." Disraeli went on to say that university was "a place for the cultivation of the intellect, for invention, for research"—all key elements of our profession. And so it's fitting that 50 years later, we're here in Boston, a world leader in innovation and entrepreneurship, and in the "Land of the Free."



Greg Johnson,
ISPP President

ICPP1968 included first reports of in vitro culture of a rust (Scott), the first really systemic fungicide (Delp and Klopping), and a mycoplasma as a plant pathogen (Asayama). These days, "scientific firsts" at a congress are rare, but I'm sure ICPP2018 will yield new insights and inspirations for each of us!

Finally, I pay tribute to our forebears in plant pathology, to the pioneers of the Massachusetts Bay Colony, and to the elders past and present of the First Nations who lived and live in what is now the Commonwealth of Massachusetts, including present-day Boston.

Welcome from the Organizing Committee for ICPP2018

On behalf of the ICPP2018 Organizing Committee, we are pleased to welcome you to the 11th International Congress of Plant Pathology (ICPP2018)!

Plant pathologists and plant health researchers from leading academic institutions, governments, and private industries from across the world will meet in Boston to share the latest scientific knowledge, innovations, and advances on the spread and management of plant diseases that affect the world's most important food, feed, and fiber crops. Our vision for the congress, "An engaged world community of plant health scientists advancing knowledge for a safe, affordable, secure supply of food, feed, and fiber for a growing population," reflects the broad and unique position that plant pathology holds within the international community of scientists.

The wide variety of scientific programming offers a dynamic look into the future of plant pathology. You will have opportunities to learn, share, and network to renew old friendships, establish new relationships, and gather in a variety of social events. ICPP2018 will bring together delegates from all parts of the world and will reflect the great diversity in our plant pathology community.

Finally, don't miss the Thursday night closing event at the House of Blues, near Fenway Park. This venue will give you a taste of true Americana and the best that Boston has to offer, including musical stylings from the World Premier Band, whose repertoire spans decades and genres. If you haven't purchased your ticket for this don't-miss celebration, stop by the registration desk to pick one up!

We welcome you to the 50th anniversary meeting of the International Society for Plant Pathology (ISPP), and we are sure you will have a fun and rewarding time at ICPP2018!



A. Rick Bennett,
President of
ICPP2018



Thomas A. Evans,
ICPP2018
Organizing Chair

Welcome from the Host Society for ICPP2018

A warm welcome from The American Phytopathological Society (APS) to the International Congress of Plant Pathology 2018 (ICPP2018) meeting. APS is honored to host this historical meeting. It's historical because 2018 marks the 50th anniversary of the founding of ISPP and the first time in 45 years that ICPP will be held in the United States. APS was founded more than a century ago and today has nearly 4,500 members in almost 100 countries, representing a broad section of the scientific community. APS strives to discover and disseminate new knowledge of plant systems worldwide to meet humanity's need for safe and nutritious food, affordable fiber, sustainable forests, and verdant landscapes and to promote the development and adoption of economically and environmentally sustainable practices to ensure plant health. ICPP2018 brings together scientists whose wide-ranging work contributes to APS efforts to meet that mission.



Mary Palm,
President of APS

After years of planning, we are excited to be together finally at ICPP2018 in Boston. Much like our science and scientists, Boston is a historical city known for innovation and entrepreneurship and as an international center of higher education. Please accept my warm welcome to what will be an exciting and historical meeting!

Morning

Sunday, July 29

ICPP Central—Registration Open
07:30–20:00

Monday, July 30

ICPP Central Registration Open
07:30–18:30

Monday Plenary Session: Plant Health Is Earth's Wealth
08:30–10:00

Coffee Break
10:00–10:30

Concurrent Sessions
10:30–12:30

- PANEL DISCUSSION: A Global Classroom: Technology and Teaching Come Together for Better Education on Plant Health
- Interactions Between Endophytes and Pathogens
- Microbial Interactions and Resilience for Plant Health
- The History of Plant Pathology—Celebrating the 50th Anniversary of the International Society for Plant Pathology
- The Vulnerability of Banana to Globally Developing Disease Threats
- Understanding Mechanisms of Resistance and Resistance Costs to Improve Plant Yield
- Variability: Friend or Foe of Emergent Forest Diseases?

Afternoon

Sunday, July 29

Opening Plenary Session: ICPP Welcome and Jakob Eriksson Prize Presentation
17:00–18:15

Welcome Reception
18:30–20:30

Monday, July 30

Lunch Break
12:30–14:00

Concurrent Sessions
14:00–16:00

- Mango and Banana Diseases
- Molecular Virus—Plant Interactions
- HOT TOPIC: Chocolate Under Threat from Old and New Cacao Diseases
- Improving Disease Control Through Decision Support with Remote Sensing
- New Insights into Rice–Pathogens Interactions
- Plant Health in a Global Economy: Mobilizing Global Support for a Healthy Planet
- Potato Late Blight—Global Research and Networking
- Precision Turf and Ornamental Disease Management in the 21st Century
- Virus Biology

Exhibits Open (Refreshments Provided)
16:00–17:30

Poster Viewing with Authors Present (Group 1, Odds)
16:00–17:30

Exhibit Hall Program
16:30–17:30

- IDEA CAFÉ: Advances in Understanding Gummy Stem Blight Pathogens and Epidemics
- IDEA CAFÉ: Harmonization of Validation Standards for Plant Diagnostic Assays
- IDEA CAFÉ: Integrated Management of Clubroot—Crucial for a Sustainable Oilseed Rape Production
- IDEA CAFÉ: Yield Loss Due to False Smut of Rice
- POD TALKS: Conversations with Phytopathologists of Distinction: Jimmy Botella and Francisco Reifschneider
- One to One Conversations with an Expert

Morning

Tuesday, July 31

ICPP Central—Registration Open
07:30–18:30

Concurrent Sessions
08:30–10:30

- Aflatoxins
- Microbiomes and Disease Management
- Emerging Issues and Pathogens Causing Blackleg and Soft Rot of Potatoes World-Wide
- Multi-Scale Influence of Weather on Pathogens and Disease Development
- Resistance Breaking Isolates of Plant Viruses: What Are We Going to Do Now?
- This First Line of Defense Against Plant Disease in the Developing World: Mineral Nutrition
- Where the Wild Barberry Are: Alternate Hosts, New Virulence and Rust Pandemics That Never Quit
- Biocontrol

Coffee Break
10:30–11:00

Keynote Session I: Emerging Plant Diseases and Global Food Security
11:00–12:45

Afternoon

Lunch Break
12:45–14:00

Concurrent Sessions
14:00–16:00

- Detection and Diagnostics
- PANEL DISCUSSION: Risk and Horizon Scanning Plant Disease Threats in a Global Economy
- Innovative Pest Control Technologies for Smallholder Farmers: Cases from the Field
- The Most Wanted Global Tree Pathogens: Big Data Approach to Protect Our Forests
- Unlocking the Secrets of Suppressive Soils: Insights from the Microbiome
- Vector Biology and Virus Epidemiology—New Advances That Will Propel Science for the Next Decade
- Xylella fastidiosa: Re-Emerging Epidemics of a Global Pathogen and New Challenges for Its Control
- Impact of Global Climate Change on Plant Disease

Exhibits Open (Refreshments Provided)
16:00–18:30

Poster Viewing with Authors Present (Group 1, Evens)
16:00–17:30

Exhibit Hall Program
16:30–17:30

- IDEA CAFÉ: Blackleg of Canola/Rapeseed—Genetic Resistance and Beyond
- IDEA CAFÉ: Clavicipitaceae
- IDEA CAFÉ: Innovative Approaches for Biocontrol of Insect Pests, Plant, and Foodborne Pathogens on Produce
- IDEA CAFÉ: Potential of Smart Biofumigation for Plant Health and Food Safety
- POD TALKS: Conversations with Phytopathologists of Distinction: Shazia Iram and Youliang Peng
- One to One Conversations with an Expert

Morning

Wednesday, August 1

ICPP Central—Registration Open
07:30–13:00

Concurrent Sessions
08:00–10:00

- Molecular Mechanisms of Biocontrol
- PHYTO VIEW: Feeding the Future: Partners in Plant Health
- Accessory Genomes, Genome Islands, and Dispensable Chromosomes Fuel Rapid Adaptations in Plant Pathogens
- Global Impacts of Plant Disease Epidemics
- Progress in Chemical Disease Control
- Sequence Based Taxonomies for Plant Pathogens
- Why Light Matters: New Concepts, Tools, and Practices to Suppress Plant Pathogens and Enhance Plant Health

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Coffee Break
10:00–11:30

Exhibits Open (Refreshments Provided)
10:00–11:30

Poster Viewing with Authors Present (Group 2, Odds)
10:00–11:30

Exhibit Hall Program
10:15–11:30

- IDEA CAFÉ: Current Issues in Food Safety and Post-Harvest Pathology of Fruit and Vegetable Crops
- IDEA CAFÉ: Recent Advances in Development and Validation of Plant Pathogen Detection and Diagnostic Methods
- IDEA CAFÉ: The Understanding and Management of Wheat Diseases

10:30–11:30

- One to One Conversations with an Expert

Afternoon

Keynote Session II: Novel Approaches to Controlling Insect-Vectored Plant Diseases
11:30–13:00

Free Afternoon for Sightseeing and Tours
13:00–18:00

Morning

Thursday, August 2

ICPP Central—Registration Open
07:30–18:00

Concurrent Sessions
08:30–10:30

- Biology of Nematodes
- PHYTO VIEW: Life Beyond the Crop: Exploring the Roles of Non-Agricultural Habits in Epidemiology and Plant Health
- Challenges and Successes of Agricultural Technology Transfer Globally
- Global Impact of International Seed Movement: Regulatory Implications of Seed Health Testing
- Modern Approaches in Weed Biological Control
- Pathogenicity and Resistance in Post-Harvest Diseases—Part I
- Taxonomy of Plant Pathogenic Fungi

Coffee Break
10:30–11:00

Keynote Session III: The Role of Plant Pathology in Food Safety
11:00–12:30

Afternoon

Lunch Break
12:30–14:00

Concurrent Sessions
14:00–16:00

- Nematode Control (IPM)
- PANEL DISCUSSION: Assessing the Real Impact of Plant Pathology: The Many Hidden Losses Due to Plant Diseases
- Global Challenges in Plant Diagnostics
- Novel and Integrated Approaches to Control Post-Harvest Diseases—Part II
- Population Dynamics of Fungicide Resistance
- Real-Time and Spatial Disease Risk Monitoring
- The Two-for-One Deal: Mechanisms of Plant Cross-Tolerance to Biotic and Abiotic Stresses
- Farmers and Technology as Partners in Disease Management

Poster Viewing with Authors Present (Group 2, Evens)
16:00–17:30

Exhibits Open (Refreshments Provided)
16:00–18:00

Exhibit Hall Program
16:30–18:00

- IDEA CAFÉ: Protecting the Boxwood Heritage in a Global Economy
- IDEA CAFÉ: Rust Fungi: Taxonomy, Phylogeny, Mycogeography, and Biological Invasion
- IDEA CAFÉ: Soil Health and Soil-Borne Diseases
- IDEA CAFÉ: Traditional Plant Health Management Strategies Under Organic Farming System in Developing Countries
- POD TALKS: Conversations with Phytopathologists of Distinction: Rashmi Aggarwal and Jan Leach

16:30–17:30

- One to One Conversations with an Expert

17:30–18:00

- POD TALK: A Conversation with a Phytopathologist of Distinction: Sylvester Aigbe

Congress Closing Event
19:00–23:00

Morning

Friday, August 3

ICPP Central—Registration Open
08:00–15:00

Concurrent Sessions
08:30–10:30

- Fungal Effectors
- Advances in Modeling the Fluid Dynamics of Pathogen Transmission and Dispersal
- Advancing Disease Resistance Traits from Lab to Field
- COST Action DIVAS: Impacts of Next Generation Sequencing Era in Plant Virology
- Development of Innovative Management Strategies for Economically Important Bacterial Diseases
- Regulatory Issues Surrounding the Global Movement of Cultures and Collections
- Molecular Fungi–Plant Interactions

Coffee Break
10:30–11:00

Concurrent Sessions
11:00–13:00

- Resistance to Nematodes
- CRISPR/Cas9 Genome Editing for Plant Pathology and Disease Management
- Frontline of Fungal Secondary Metabolite and Mycotoxin Research to Mitigate Threats to Food Security
- How Apoplastic Events Mediate Host–Pathogen Interactions
- Surveillance for Emerging Plant Diseases
- The EMPHASIS Project and Networks for Pest and Disease Management: Practical Solutions for Effective Integrated Management of Pests and Harmful Alien Species
- Advances in Oomycete Detection and Screening

Afternoon

Lunch Break
13:00–14:30

Concurrent Sessions
14:30–16:30

- Bacterial Effectors
- Fungicide Resistance Management
- Fungal Canker and Vascular Diseases: A Global Threat to Woody Plant Health and Introduction of the Sentinel Concept
- Innovative Technologies for Monitoring Emerging Diseases
- Vector–Pathogen Complexes Around the World: What Could Be the Next Big Threat to Food Security?
- Wheat Blast—Developing Strategies for Assessing and Managing a Global Threat on the Move
- Disease Control and Fungicide Resistance
- Oomycetes in Global Agriculture

Closing Plenary Session: Global Food and Nutrition Security—From Challenges to Solutions
17:00–18:15

All events take place in the John B. Hynes Veterans Memorial Convention Center unless otherwise noted. Some small select meetings take place at the Sheraton Boston Hotel (SBH) and are noted as such.

All field trips depart from the John B. Hynes Veterans Memorial Convention Center Bolyston Street Bus Lane, Level 1.

SATURDAY, JULY 28

07:00–18:00	**Field Trip:** New England Forest Health Issues: Drought, Forest Insects, and Diseases • *Offsite*
08:00–12:00	**Workshop:** Introduction to R for Plant Pathologists • *Room 202*
08:00–17:00	**Field Trip:** Cranberry Production and Disease Tour • *Offsite*
08:00–17:00	**Satellite Meeting:** Impact of Viroid Research on Seed Health, Plant Certification, and World Trade • *Room 208*
08:00–17:00	ISPP Executive Committee Meeting • *Executive Boardroom 300*
08:00–17:30	**Field Trip:** Ornamental Field Trip • *Offsite*
08:00–18:00	**Satellite Meeting:** 6th International Oomycetes Workshop: Phytophthora, Pythium, Downy Mildews, and Related Genera • *Room 206*
08:30–12:00	**Workshop:** Effector-Detector Plants: Teaching and Researching Tools for Monitoring Pathogen Virulence Live • *Room 201*
08:30–16:00	**Field Trip:** A New England Fungal and Plant Pathology Foray • *Offsite*
08:30–17:30	**Satellite Meeting:** Fusarium Wilt Disease of Banana: Recurrence of a Global Menace, Sponsored by Chiquita • *Room 203*
08:30–21:00	**Satellite Meeting:** The International Agricultural Microbiome Research Coordination Network: Scope, Synergies, and Scale • *Room 210*
09:00–17:00	**Satellite Meeting:** Biology of Rust–Host Interactions and the Future of Durable Disease Resistance • *Room 207*
13:00–17:00	**Workshop:** Introduction to Multivariate Statistics Using R • *Room 202*
13:00–17:00	**Workshop:** Population Genomics in R • *Room 201*
18:00–22:00	**Workshop:** Rhizoctonia at a Crossroads: Research Advances and Challenges • *Room 204*

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All field trips depart from the John B. Hynes Veterans Memorial Convention Center Bolyston Street Bus Lane, Level 1.

SUNDAY, JULY 29

07:30–20:00	ICPP Central—Registration Open • *Hall C Foyer*
08:00–12:00	ISPP Executive Committee Meeting • *Executive Boardroom 300*
08:00–12:00	**Workshop:** Applications of Information Theory in Plant Disease Management: Theory and Practice • *Room 203*
08:00–15:00	**Workshop:** Using Microscopy for Nematode Diagnostics • *Room 201*
09:00–12:00	**Workshop:** Hands-On Analysis of Amplicon Sequence (AmpSeq) Data for Targeted Multiplexed Genotyping • *Room 202*
09:00–14:00	**Field Trip:** Field Trip to the Arnold Arboretum at Harvard University • *Offsite*
13:00–17:00	**Workshop:** Analysis of Microbiome Community Data in R • *Room 207*
13:00–17:00	**Workshop:** Fungicide Resistance—Detection, Characterization, and Management • *Room 208*
13:00–17:00	**Workshop:** How to Write Winning Grant Proposals • *Room 204*
13:00–17:00	**Workshop:** Network Analysis in Plant Pathology • *Room 203*
15:30–16:30	ICPP Science Ambassadors and Awardees Orientation, *by invitation* • *Room 210*
17:00–18:15	**Opening Plenary Session** • *Ballroom A/B/C*
18:30–20:30	Welcome Reception • *Hall D*

Stop By the Welcome Reception!

Immediately following the Opening Plenary Session, join us in Hall D for the Welcome Reception to experience all the local flavors of Boston. Stroll through different food stations that represent the various neighborhoods of Boston—the North End, Seaport District, Chinatown, Southie, and Fenway – to sample the ethnic flavors and culinary delights of each part of this historic city as you reconnect with colleagues and make new acquaintances.



OPENING PLENARY SESSION

17:00–18:15; *Ballroom A/B/C*
Chaired by: ISPP President Greg Johnson and ICPP2018 President Rick Bennett

Introduction and Presentation of the 12th Jakob Eriksson Prize 2018 for Plant Pathology
Mauritz Ramstedt, *Bioremed AB, Österbybruk, SWEDEN;* **Greg I. Johnson,** *C/- Horticulture for Development, Jamison Centre, AUSTRALIA*

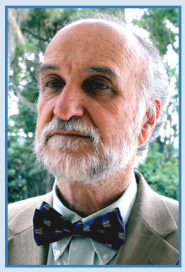
The Jakob Eriksson Prize 2018 is awarded to Emeritus Professor Pierre J. G. M. de Wit of the Laboratory of Phytopathology, Wageningen University, the Netherlands. Emeritus Professor de Wit is being recognized for his pioneering research in molecular plant pathology and plant-microbe interactions.

Jakob Eriksson Prize Oration: From Elicitors to Effector-Assisted Disease Resistance Breeding
Pierre J. G. M. de Wit, *Wageningen University, Rhenen, NETHERLANDS*



Fungi can cause serious diseases on natural vegetation and crops. The majority of plants, however, are not infected by fungal pathogens, as they recognize pathogen-associated molecular patterns (PAMPs) like chitin, glucans, and (glycol) peptides (called "elicitors" in the past) through pattern recognition receptors that mediate PAMP-triggered immunity (PTI), a basal defense response effective against potential fungal pathogens. Successful fungal plant pathogens secrete effectors to suppress PTI and alter host physiology, enabling them to infect plants. In turn, plants have evolved immune receptors that recognize effectors, resulting in effector-triggered immunity (ETI), including the hypersensitive response, effective against biotrophic fungal plant pathogens that require living cells to feed on. Coevolution between fungal pathogens and their hosts has led to the development of numerous effectors in fungal plant pathogens and corresponding resistance proteins in host plants, which has generated an "arms race" genetically described by the gene-for-gene concept. Resistance genes encoding resistance proteins have been cloned and can be successfully transferred to crop plants by classical breeding or as transgenes stapled into one plant cultivar. In my talk, I will give a short historic overview of how paradigms have changed in molecular plant–microbe interaction research.

A Healthy Future for Plant Health
Francisco J. Reifschneider, *EMBRAPA, Brasilia, BRAZIL*



A more globalized world and advances in science and technology have opened up amazing opportunities for agricultural innovation, development, and growth but not without significant and striking social, economic, and environmental challenges to all in this highly asymmetrical world. Pursuing the unknowable and responding to old and emerging plant health challenges in an environment with a new, different, fluid, and evolving architecture need to go hand in hand. Scientific and technological breakthroughs in different areas, from artificial intelligence to robotics to UAVs, help shape modern plant health and its experts, with new and exciting opportunities in both private and public sectors. There are and there will continue to be many challenges, but perhaps the speed of change itself, and its implication on just about everything, is the greatest challenge we all face in this no-time-to-stop-and-think, disruptive era. Can we, as experts, and plant health, as an integrative, transdisciplinary science, benefit from all of these changes and continue to contribute to the well-being of individuals at local and global scales? Several examples suggest that we will continue to see positive impacts but that we will need to be able, eager, and prepared to handle these fast-moving changes in plant health's future winding road.

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MONDAY, JULY 30

07:00–08:00	**APS Committee Meetings** *(Open to any meeting attendee)* Bacteriology Committee • *Beacon A, SBH* Biotechnology Committee • *Beacon F, SBH* Chemical Control Committee • *Fairfax A, SBH* CSPP Working Group • *Dalton, SBH* Diseases of Ornamental Plants Committee • *Beacon B, SBH* Forest Pathology Committee • *Kent, SBH* Molecular and Cellular Phytopathology Committee • *Clarendon, SBH* Mycology Committee • *Fairfax B, SBH* Nematology Committee • *Exeter, SBH* Plant Pathogen and Disease Detection Committee • *Gardner, SBH*
07:30–18:30	ICPP Central—Registration Open • *Hall C Foyer*
08:30–15:00	Exhibit Set-Up • *Veterans Memorial Auditorium/Exhibit Hall C*
08:30–10:00	**Monday Plenary Session—Plant Health Is Earth's Wealth** • *Ballroom A/B/C*
10:00–10:30	Coffee Break • *Boylston Hallway, Levels 2 and 3*
10:30–11:30	Introduction to Boston for Guests • *Room 306*
10:30–12:30	**Concurrent Sessions** • *Various locations (see concurrent session schedule on page 16)*
12:30–14:00	Lunch Break
12:30–14:00	ISPP Food Security Task Force • *Room 204*
12:30–14:00	APS Office of International Programs (OIP) Board Meeting, *by invitation* • *Executive Boardroom 300*
13:00–14:00	Poster Set-Up, Group 1 • *Veterans Memorial Auditorium/Exhibit Hall C*
14:00–16:00	**Concurrent Sessions** • *Various locations (see concurrent session schedule on page 19)*
16:00–17:30	**Poster Viewing with Authors Present (Group 1, Odds)** • *Veterans Memorial Auditorium/Exhibit Hall C*
16:00–17:30	**Exhibits Open (Refreshments Provided)** • *Veterans Memorial Auditorium/Exhibit Hall C*
16:30–17:30	POD Talks • *Veterans Memorial Auditorium/Exhibit Hall*
16:30–17:30	Idea Cafés • *Veterans Memorial Auditorium/Exhibit Hall C*
16:30–17:30	One to One Conversations with an Expert • *Veterans Memorial Auditorium/Exhibit Hall C*
17:30–18:30	APS Awards Ceremony • *Ballroom A/B/C*
18:30–20:00	**ISPP Subject Matter Committee Meetings** Crop Loss (formerly Biotic Constraints) • *Dalton, SBH* Grapevine Trunk Diseases • *Clarendon, SBH* Plant Pathogenic Bacteria • *Exeter, SBH* Plant Virus Epidemiology • *Kent, SBH* Seed Pathology • *Beacon A, SBH* Taxonomy of Plant Pathogenic Bacteria • *Beacon F, SBH* Teaching • *Beacon B, SBH*
18:30–20:30	Current Issues in Food Safety and Post-Harvest Pathology Session • *Room 207*
20:15–21:45	**ISPP Subject Matter Committee Meetings** Chemical Control • *Kent, SBH* Epidemiology • *Gardner, SBH* Oomycetes/Phytophthora • *Beacon B, SBH* Rhizoctonia • *Fairfax A, SBH*

MONDAY PLENARY SESSION

Plant Health Is Earth's Wealth
08:30–10:00; *Ballroom A/B/C*
Organizers: Greg I. Johnson, C/- Horticulture for Development, Jamison Centre, AUSTRALIA; Mary E. Palm, The American Phytopathological Society, St. Paul, MN, U.S.A.
Sponsored by: Mars



The Edge of Tomorrow—Plant Health in the 21st Century
Sophien Kamoun, *The Sainsbury Laboratory, Norwich, United Kingdom*

There are many opportunities for improving plant health in the 21st century. This presentation will review new knowledge and approaches that we simply didn't have just a few years ago. These opportunities impact areas of plant health beyond food security and truly cement plant pathology as a modern and exciting branch of biology.



Taxing Times—Plant Pathogens in a Global Economy
Carolee T. Bull, *The Pennsylvania State University, University Park, PA, U.S.A.*

The answer to the question "What organism is killing my broccoli" depends on who is asking the question and why. Not only do the answers differ for producers and researchers, taxonomic solutions may differ if asked in the developed versus the developing countries. Various aspects of the application of systematics knowledge to solving plant health problems will be explored.





The Answer Is Chocolate: People-Focused Plant Disease Management—Underpinned by Context, Community, and Collaboration
David I. Guest, *University of Sydney, Eveleigh, Australia,* and **Josie Saul-Maora,** *Papua New Guinea Cocoa Board, Kokopo, Papua New Guinea*

Closing the session, this talk will explore the opportunities for plant disease management to improve the livelihoods of smallholder farming communities in the context of developing country production systems, politics, and former conflict zones. An integrated, one-health approach to improving plant, animal, human, and environmental health will be described.

MONDAY CONCURRENT PROGRAMMING

Session content listed in the program is as submitted by the author/presenter and has NOT been edited.

CS Concurrent Sessions
These scientific sessions held at ICPP2018 consist of a combination of invited speakers and submitted oral presentations on the most important topics in phytopathology.

PV PhytoViews
Are there two sides to every situation? There are at PhytoView sessions, where experts explore various points of view on topics of interest through facilitated conversations.

HT Hot Topics
Catch the latest science on topics that are "hot" in plant pathology.

PD Panel Discussions
Listen to invited panelists give short introductory talks, and then join in an engaging hour-long discussion.

PD PANEL DISCUSSION: A Global Classroom: Technology and Teaching Come Together for Better Education on Plant Health

10:30–12:00; *Room 210*

Organizers: Darin M. Eastburn, University of Illinois, Urbana, IL, U.S.A.; Maya Hayslett, Iowa State University, Ames, IA, U.S.A.
Moderators: Monica M. Lewandowski, The Ohio State University, Department of Plant Pathology, Columbus, OH, U.S.A.
Subject Matter Committee Chairperson: Darin M. Eastburn, University of Illinois, Urbana, IL, U.S.A.

10:30
Distance learning modules in plant pathology and plant breeding
J. K. GOUD, Wageningen University, Wageningen, NETHERLANDS

10:40
National Plant Diagnostic Network online training modules
R. MCCARTHY, Cornell University, Ithaca, NY, U.S.A.

10:50
Distance learning to continue teaching in a time of crisis
L. MOLELEKI, Department of Microbiology and Plant Pathology, University of Pretoria, Pretoria, SOUTH AFRICA

11:00
Master in Plant Health Management online program
M. M. LEWANDOWSKI, The Ohio State University, Department of Plant Pathology, Columbus, OH, U.S.A.

11:10
Discussion

CS Interactions Between Endophytes and Pathogens

10:30–12:30; *Room 311*

Organizers: Matthew G. Bakker, USDA-ARS, Peoria, IL, U.S.A.
Subject Matter Committee Chairperson: Anthony Oyegoke Adesemoye, University of Nebraska–Lincoln, North Platte, NE, U.S.A.

10:30
Structure and function of seed microbiomes from 98 plant species
P. E. BUSBY (1), M. Ridout (2), E. Barge (1), A. Harding (2), G. Newcombe (2), (1) Oregon State University, Corvallis, OR, U.S.A.; (2) University of Idaho, Moscow, ID, U.S.A.

10:50
Beneficial fungal endophytes in cotton
G. SWORD (1), M. V. Kolomiets (1), E. J. Borrego (1), C. Suh (2), C. Gale (1), (1) Texas A&M University, College Station, TX, U.S.A.; (2) USDA-ARS, College Station, TX, U.S.A.

11:10
Characterization of endophytic bacteria with plant growth promotion and biological control potential isolated from *Jatropha curcas* L., a biofuel plant
P. C. Machado, P. H. M. Andrade, C. P. Sousa, P. LACAVA, Federal University of São Carlos, São Carlos, BRAZIL

11:30
Bacterial endophyte traits *in vitro* do not predict protection from a fungal pathogen *in planta*
B. Whitaker (1), M. G. BAKKER (2), (1) Indiana University, Bloomington, IN, U.S.A.; (2) USDA-ARS, Peoria, IL, U.S.A.

11:50
To be host or not to be: the role of asymptomatic hosts in the management of Verticillium wilt of potato
L. BAUTISTA-JALON (1), M. G. Milgroom (2), B. K. Gugino (1), O. Frenkel (3), L. L. Tsror (4), M. D. M. Jimenez-Gasco (1), (1) The Pennsylvania State University, University Park, PA, U.S.A.; (2) Cornell University, Ithaca, NY, U.S.A.; (3) Volcani Center, ARO, Rishon Lezion, ISRAEL; (4) Volcani Center, ARO, MP Negev, ISRAEL

12:00
Associations of Armillaria root rot, *Trichoderma* endophytes and host plants in UK gardens
J. DRAKULIC (1), N. Bashir (2), M. Cromey (1), G. Clover (3), L. Beal (1), (1) Royal Horticultural Society, Woking, UNITED KINGDOM; (2) University of Nottingham, Nottingham, UNITED KINGDOM; (3) Royal Horticultural Society, London, UNITED KINGDOM

CS **Microbial Interactions and Resilience for Plant Health**
10:30–12:30; *Room 304*
Organizers: Gupta Vadakattu, CSIRO, Glen Osmond, AUSTRALIA; Stephen Michael Neate, University of Southern Queensland, Toowoomba, AUSTRALIA
Subject Matter Committee Chairperson: Gupta Vadakattu, CSIRO, Glen Osmond, AUSTRALIA

10:30
Microbial species interactions and disease suppression in the phytobiome
L. L. KINKEL, Department of Plant Pathology, University of Minnesota, St. Paul, MN, U.S.A.

10:50
Diversity and invasion resistance relationships in rhizosphere microbial communities with consequences to soilborne disease suppression
G. VADAKATTU (1), S. M. Neate (2), (1) CSIRO, Glen Osmond, AUSTRALIA; (2) University of Southern Queensland, Toowoomba, AUSTRALIA

11:10
Management of soil suppressiveness against soil-borne diseases
L. TAMM (1), B. Thuerig (1), G. Bongiorno (1,2), J. Postma (2), J. G. Fuchs (1), T. Oberhänsli (1), (1) Research Institute of Organic Agriculture FiBL, Frick, SWITZERLAND; (2) Wageningen Plant Research, Wageningen, NETHERLANDS

11:30
Approaches to identifying and recovering plant microbiome components contributing to plant disease suppression
B. B. MCSPADDEN GARDENER, Sustâne Natural Fertilizer, Inc., Cannon Falls, MN, U.S.A.

11:50
Manipulation of the soil microbial community to suppress soil-borne diseases of banana through soil management
T. PATTISON (1), A. McBeath (2), D. East (2), H. Birt (3), P. Dennis (3), (1) Department of Agriculture & Fisheries, South Johnstone, AUSTRALIA; (2) Department of Agriculture & Fisheries, South Johnstone, AUSTRALIA; (3) The University of Queensland, St. Lucia, AUSTRALIA

12:00
Resource competition and antagonism in natural soil suppressive to Bayoud disease on date palm (*Phoenix dactylifera*) in Morocco
A. ESSARIOUI (1), N. LeBlanc (2), D. C. Schlatter (3), J. Anderson (4), L. K. Otto-Hanson (5), H. C. Kistler (5), L. L. Kinkel (6), (1) INRA, Errachidia, MOROCCO; (2) USDA-ARS, Beltsville, MD, U.S.A.; (3) USDA-ARS, Pullman, WA, U.S.A.; (4) Department of Plant Pathology, University of Minnesota, St. Paul, MN, U.S.A.; (5) Department of Plant Pathology, University of Minnesota, St. Paul, MN, U.S.A.; (6) Department of Plant Pathology, University of Minnesota, St. Paul, MN, U.S.A.

CS **The History of Plant Pathology—Celebrating the 50th Anniversary of the International Society for Plant Pathology**
10:30–12:30; *Room 312*
Organizers: Greg I. Johnson, C/- Horticulture for Development, Jamison Centre, AUSTRALIA; Charles J. Delp, Retired, Tampa, FL, U.S.A.
Subject Matter Committee Chairperson: Greg I. Johnson, C/- Horticulture for Development, Jamison Centre, AUSTRALIA

10:30
50 Years with the International Society for Plant Pathology—A magical mystery tour
C. J. DELP (1), G. I. Johnson (2), (1) Retired, Tampa, FL, U.S.A.; (2) C/- Horticulture for Development, Jamison Centre, AUSTRALIA

10:50
Women in Plant Pathology
M. L. GULLINO (1), M. Mezzalama (2), (1) Agroinnova–University of Torino, Grugliasco, Torino, ITALY; (2) CIMMYT, Texcoco, MEXICO

11:10
Overcoming barriers: Dikes, policy, tulips, religion and the Dutch success in agriculture production and trade
P. BOONEKAMP (1), J. Horsten (2), (1) Royal Netherlands Society of Plant Pathology, Wageningen, NETHERLANDS; (2) Royal Netherlands Society of Plant Pathology, Wageningen, NETHERLANDS

11:30
Plant pathology in China enters into a new era
Y. L. PENG (1), C. Han (1), W. Sun (2), (1) China Agricultural University, Beijing, CHINA; (2) Department of Plant Pathology, China Agricultural University, Beijing, CHINA

11:50
History of plant pathology in Italy
L. MUGNAI, A. Scala, G. Surico, DISPAA, University of Florence, Firenze, ITALY

12:00
The American Phytopathological Society: A century plus ten years young
R. J. COOK, Washington State University, Bothell, WA, U.S.A.

CS **The Vulnerability of Banana to Globally Developing Disease Threats**
10:30–12:30; *Room 302*
Organizers: Andre Drenth, The University of Queensland, Brisbane, AUSTRALIA; Gerrit H. J. Kema, Wageningen University and Research, Wageningen, NETHERLANDS

10:30
Genotyping by sequencing to identify diagnostic regions in *Fusarium oxysporum* f. sp. *cubense* Tropical Race 4 and applications in disease epidemiology
M. SALACINAS (1), N. Ordonez (1), O. Mendes (2), C. D. Schoen (2), M. Seidl (1), H. Meijer (2), G. H. J. Kema (1,2), (1) Wageningen University and Research, Wageningen, NETHERLANDS; (2) Wageningen Plant Research, Wageningen, NETHERLANDS

10:50
New developments in the control of black Sigatoka and Fusarium wilt in banana
H. Sierotzki (1), S. TORRIANI (1), M. Guzman (2), A. Dutton (3), M. Oostendorp (4), (1) Syngenta Crop Protection, Stein, SWITZERLAND; (2) Syngenta LAN, S. A., Guatemala City, GUATEMALA; (3) Syngenta Crop Protection, Basel, SWITZERLAND; (4) Syngenta Crop Protection AG, Basel, SWITZERLAND

11:10
Fusarium tropical race 4 a disease threating a global smallholder and industrial crop
M. A. DITA RODRIGUEZ (1), C. Staver (2), (1) Embrapa, Jaguariúna, SP, BRAZIL; (2) Bioversity International, Montpellier, FRANCE

11:30
Genetic engineering for resistance to Panama disease and Banana Bunchy Top
J. DALE, Queensland University of Technology, Brisbane, AUSTRALIA

11:50
Dispersal of banana blood disease in Southeast Asia
J. RAY (1), V. Rincon-Florez (1), I. W. Mudita (2), J. Markus (2), S. Subandiyah (3), C. O'Dwyer (1), A. Drenth (1), (1) The University of Queensland, Brisbane, AUSTRALIA; (2) Nusa Cendana University, Kupang, INDONESIA; (3) Gadjah Mada University, Yogyakarta, INDONESIA

12:00
Banana Elephantiasis Disease: An emerging disease for Latin America
F. ALIAGA, University of Buenos Aires, Cuidad Autonoma de Buenos Aires, ARGENTINA

CS **Understanding Mechanisms of Resistance and Resistance Costs to Improve Plant Yield**
10:30–12:30; *Room 208*
Organizers: Cristiana Argueso, Colorado State University, Fort Collins, CO, U.S.A.

10:30
Cytokinin-regulated transcriptional networks regulating plant development and defense
C. ARGUESO, Colorado State University, Fort Collins, CO, U.S.A.

10:50
A 'cool' mechanism of salicylic acid-mediated defense and growth tradeoff
C. J. TSAI, University of Georgia, Athens, GA, U.S.A.

11:10
Integration of light and jasmonate perception in the control of growth and defense
C. BALLARE, IFEVA, University of Buenos Aires-CONICET, Buenos Aires, ARGENTINA

11:30
JA and SA signaling components are required for shade avoidance
K. Nozue (1), U. Devisetty (2), A. Bak (1), C. Casteel (1), J. MALOOF (1), (1) University of California, Davis, CA, U.S.A.; (2) University of Arizona, Tucson, AZ, U.S.A.

11:50
An endolysosomal pathway controls cytoplasmic accumulation of helper immune receptors in an NLR network
C. DUGGAN (1), C. H. Wu (2), C. Peillex (3), L. Derevnina (2), S. Kamoun (2), T. Bozkurt (1), (1) Imperial College London, London, UNITED KINGDOM; (2) The Sainsbury Laboratory, Norwich, UNITED KINGDOM; (3) ENS Lyon, Lyon, FRANCE

12:00
Canola resistance breeding to fight against blackleg caused by *Leptosphaeria maculans*
Y. CHEN, Cargill. Inc., Aberdeen, SK, CANADA

CS Variability: Friend or Foe of Emergent Forest Diseases?
10:30–12:30; *Room 207*
Organizers: Lori G. Eckhardt, School of Forestry and Wildlife Sciences, Auburn University, Auburn, AL, U.S.A.; Matteo M. Garbelotto, UC Berkeley, Berkeley, CA, U.S.A.
Subject Matter Committee Chairperson: Matteo M. Garbelotto, UC Berkeley, Berkeley, CA, U.S.A.

10:30
A fungal invasion is enhanced by hybridization and gene introgression: ecological and evolutionary implications of genomic admixing
P. GONTHIER (1), F. Sillo (1), L. Giordano (1,2), M. M. Garbelotto (3), (1) University of Torino/DISAFA, Grugliasco, ITALY; (2) University of Torino/AGROINNOVA, Grugliasco, ITALY; (3) UC Berkeley, Berkeley, CA, U.S.A.

10:50
Modelling the evolution of pathogen virulence in forest pathosystems
C. ROBIN, J. P. Soularue, M. L. Desprez-Loustau, C. Dutech, BIOGECO, INRA, University of Bordeaux, Cestas, FRANCE

11:10
Spatial and ecological heterogeneity affects disease development in forests: Disease disturbance interactions
R. COBB (1), M. Metz (2), (1) Cal Poly State University, San Luis Obispo, CA, U.S.A.; (2) Lewis and Clark College, Portland, OR, U.S.A.

11:30
The 'worldwide web' of forest pathogens
B. SLIPPERS, I. Barnes, E. Steenkamp, M. J. Wingfield, Forestry and Agricultural Biotechnology Institute (FABI), University of Pretoria, Pretoria, SOUTH AFRICA

11:50
Diversity and distribution of *Phytophthora* species in Protected Natural Areas of Sicily, southern Italy
F. LA SPADA (1), F. Aloi (1,2), A. Pane (1), S. O. Cacciola (1), (1) Department of Agriculture, Food and Environment, University of Catania, Catania, ITALY; (2) Department of Agriculture and Forestry Sciences, University of Palermo, Palermo, ITALY

12:00
Changes in soil microbial communities associated with Armillaria root disease of western white pine (*Pinus monticola*)
B. M. LALANDE (1), N. B. Klopfenstein (2), M. S. Kim (3), Z. Abdo (1), J. Stewart (4), (1) Colorado State University, Fort Collins, CO, U.S.A.; (2) Rocky Mountain Research Station, USDA Forest Service, Moscow, ID, U.S.A.; (3) Department of Forestry, Environment and Systems, Kookmin University, Seoul, SOUTH KOREA; (4) Department of Bioagricultural Sciences and Pest Management, Colorado State University, Fort Collins, CO, U.S.A.

CS Mango and Banana Diseases
14:00–14:50; *Room 208*
Moderators: Shazia Iram, Fatima Jinnah Women University, Rawalpindi, Rawalpindi, PAKISTAN; Fe Delacueva, University of the Philippines Los Banos, Laguna, PHILIPPINES

14:00
Molecular Characterization of *Fusarium mangiferae* associated with malformation of mango in Pakistan
S. IRAM, Fatima Jinnah Women University, Rawalpindi, Rawalpindi, PAKISTAN

14:10
Fusarium wilt of banana in the Philippines: Incidence, distribution and cultivar response
F. DELACUEVA (1), F. F. M. Silva (1), A. P. Pozon (1), A. De Castro (1), V. G. Sinohin (2), T. U. Dalisay (1), D. Mostert (3), A. Viljoen (3), A. B. Molina (2), (1) University of the Philippines Los Banos, Laguna, PHILIPPINES; (2) Bioversity International, Laguna, PHILIPPINES; (3) Stellenbosch University, Stellenbosch, SOUTH AFRICA

14:20
Current status of mango malformation disease and its causal agents in Malaysia
H. Rodzali, L. Zakaria, H. Nagao, N. M. I. MOHAMED NOR, Universiti Sains Malaysia, Minden, MALAYSIA

14:30
GC-MS metabolic pathways associated to the different stages of banana black sigatoka disease (BSD)
M. G. MARIDUENA-ZAVALA (1), L. De Weerdt (2), M. J. Molina (3), A. Quevedo (3), D. Ochoa (1), J. Cevallos-Cevallos (1), (1) Escuela Superior Politecnica del Litoral, ESPOL, Guayaquil, ECUADOR; (2) Ghent University, Brussels, BELGIUM; (3) Escuela Superior Politecnica del Litoral, Guayaquil, ECUADOR

14:40
Banana *Xanthomonas* wilt is primarily spread by lance flies in the genus *Silba* through banana inflorescence in Ethiopia
B. GETAHUN, D. Zeleke, Wolaita Sodo University, Sodo, ETHIOPIA

CS **Molecular Virus–Plant Interactions**
14:00–14:50; *Room 207*
Moderators: Jenyfer Jiménez Polo, International Center for Tropical Agriculture (CIAT), Palmira, COLOMBIA; Eugénie Hébrard, IRD, CIRAD, University of Montpellier, IPME, Montpellier, FRANCE

14:00
Identification of a torradovirus-encoded protein that complements the systemic movement of a potexvirus lacking the *TGB3* gene
J. JIMÉNEZ POLO, International Center for Tropical Agriculture (CIAT), Palmira, COLOMBIA

14:10
Identification of a hypervirulent pathotype of *Rice yellow mottle virus*: A threat to genetic resistance deployment in West-Central Africa
E. HÉBRARD (1), A. Pinel-Galzi (1), A. Oludare (2), N. Poulicard (1), J. Aribi (1), S. Fabre (1), S. Issaka (3), C. Mariac (4), A. Dereeper (1), L. Albar (4), D. Silue (2), D. J. Fargette (1), (1) IRD, CIRAD, University of Montpellier, IPME, Montpellier, FRANCE; (2) AfricaRice, Bouaké, IVORY COAST; (3) FSAE, Université de Tillabéri, Tillabéri, NIGER; (4) IRD, University of Montpellier, DIADE, Montpellier, FRANCE

14:20
Co- and super-infection exclusion of Beet necrotic yellow vein virus and Beet soil-borne mosaic virus
S. Liebe (1), J. F. Gil (2), E. Savenkov (2), E. Maiss (3), M. VARRELMANN (4), (1) Institute of Sugar Beet Research, Göttingen, GERMANY; (2) Swedish University of Agricultural Sciences, Department of Plant Biology, Uppsala, SWEDEN; (3) Leibniz University Hannover, Hannover, GERMANY; (4) Institute of Sugar Beet Research, Göttingen, GERMANY

14:30
Within-plant distribution of PVY strain mixture differs spatio-temporally in potato cultivars
S. MONDAL (1), S. Gray (2), (1) Cornell University, Ithaca, NY, U.S.A.; (2) Cornell University/USDA-ARS, Ithaca, NY, U.S.A.

14:40
Characterization of two biologically distinct variants of *Tomato spotted wilt virus*
R. O. ADEGBOLA (1), S. Jarugula (1), S. Marshall (1), S. Adkins (2), R. Naidu (3), (1) Washington State University, Prosser, WA, U.S.A.; (2) USDA-ARS, U.S. Horticultural Research Laboratory, Fort Pierce, FL, U.S.A.; (3) Washington State University–IAREC, Prosser, WA, U.S.A.

HT **HOT TOPIC: Chocolate Under Threat from Old and New Cacao Diseases**
14:00–16:00; *Room 306*
Sponsored by: Mars
Organizers: Jean-Philippe Marelli, Mars Wrigley Confectionery, Miami, FL, U.S.A.; David I. Guest, University of Sydney, Eveleigh, AUSTRALIA

14:00
Introduction to cacao diseases
J. P. MARELLI, Mars Wrigley Confectionery, Miami, FL, U.S.A.

14:10
South American cacao pathogens: What we know and don't know after 100 years of study
H. C. EVANS, CABI, Egham, Surrey, UNITED KINGDOM

14:25
New insights into cacao plant pathogen interactions.
B. A. BAILEY, Sustainable Perennial Crops Lab/ARS-USDA, Beltsville, MD, U.S.A.

14:40
Cacao Swollen Shoot Virus Disease: What we know and don't know after 100 years of study
J. K. BROWN, School of Plant Sciences, University of Arizona, Tucson, AZ, U.S.A.

14:55
Vascular-Streak Dieback—A new encounter disease of cacao in Southeast Asia and the Pacific
D. I. GUEST, University of Sydney, Eveleigh, AUSTRALIA

15:10
Discussion

CS **Improving Disease Control Through Decision Support with Remote Sensing**
14:00–16:00; *Room 302*
Organizers: Ian M. Small, University of Florida, Quincy, FL, U.S.A.; Sarah J. Pethybridge, Cornell University, Geneva, NY, U.S.A.
Subject Matter Committee Chairperson: Daniel J. Anco, Clemson University, Blackville, SC, U.S.A.

14:00
The future is now—A new technology for high-resolution aerial imagery
G. SHARABANI, Taranis, Tel Aviv, ISRAEL

14:20
Transforming disease management through the use of unmanned aerial systems
J. VAN AARDT (1), E. Hughes (1), S. J. Pethybridge (2), J. Kikkert (3), C. Salvaggio (1), (1) Rochester

Institute of Technology, Chester F. Carlson Center for Imaging Science, Rochester, NY, U.S.A.; (2) Cornell University, Plant Pathology and Plant–Microbe Biology Section, Geneva, NY, U.S.A.; (3) Cornell Cooperative Extension, Canandaigua, NY, U.S.A.

14:40
Plant disease detection utilizing artificial intelligence and remote sensing
Y. Ampatzidis (1), A. CRUZ (2), (1) University of Florida, SWFREC, Immokalee, FL, U.S.A.; (2) California State University, Bakersfield, Bakersfield, CA, U.S.A.

15:00
Remote sensing technology for early detection of root decline in putting green turfgrass
M. TUCKER (1), A. Fox (1), A. Badial (1), J. King (1), T. N. Spurlock (2), M. Tomaso-Peterson (1), (1) Mississippi State University, Mississippi State, MS, U.S.A.; (2) University of Arkansas, Monticello, AR, U.S.A.

15:10
Digital aerial assessment of turfgrass pests for precision management and monitoring epidemics
D. S. MCCALL (1), J. Booth (2), D. Sullivan (3), (1) Virginia Tech, Blacksburg, VA, U.S.A.; (2) Virginia Tech, Moseley, VA, U.S.A.; (3) TurfScout, Greensboro, NC, U.S.A.

CS **New Insights into Rice–Pathogens Interactions**
14:00–16:00; *Room 304*
Organizers: Xueping Zhou, Institute of Plant Protection, Chinese Academy of Agricultural Sciences, Beijing, CHINA; Guo-Liang Wang, The Ohio State University, Columbus, OH, U.S.A.

14:00
Rice stripe virus interferes with S-acylation of remorin and induces its autophagic degradation to facilitate virus infection
X. ZHOU, Institute of Plant Protection, CAAS, China, Beijing, CHINA

14:20
Quantitative resistance to bacterial pathogens of rice
J. E. LEACH (1), A. M. Bossa-Castro (1), A. I. Huerta (1), E. Delorean (1), C. Raghavan (2), C. Tekete (3), A. Dereeper (4), B. W. Tonnessen (1), O. Koita (3), G. M. Mosquera (5), H. Leung (2), V. M. Verdier (4), (1) Colorado State University, Fort Collins, CO, U.S.A.; (2) International Rice Research Institute (IRRI), Los Baños, PHILIPPINES; (3) University of Sciences, Techniques and Technologies of Bamako (USTTB), LBMA, Bamako, MALI; (4) IRD, CIRAD, University of Montpellier, IPME, Montpellier, FRANCE; (5) International Center for Tropical Agriculture (CIAT), Palmira, COLOMBIA

14:40
Merging foundational and field research: Lessons from the ancient and emerging blast diseases on rice and wheat
B. VALENT (1), E. Oliveira Garcia (1), M. Dalby (1), M. Navia-Urrutia (1), C. D. Cruz (2), G. Cruppe (1), S. Liu (1), H. N. Trick (1), M. L. Farman (3), (1) Kansas State University, Manhattan, KS, U.S.A.; (2) Purdue University, West Lafayette, IN, U.S.A.; (3) University of Kentucky, Lexington, KY, U.S.A.

15:00
Investigating the biology of plant tissue invasion by the rice blast fungus *Magnaporthe oryzae*
N. TALBOT, University of Exeter, Exeter, UNITED KINGDOM

15:20
Exploiting bacterial genomics to develop tools for effective pathogen monitoring in rice
R. OLIVA (1), C. M. Vera Cruz (2), (1) International Rice Research Institute, Los Baños, Laguna, PHILIPPINES; (2) International Rice Research Institute, Los Baños, Laguna, PHILIPPINES

15:30
Crystals to crops: Using host targets of a rice blast pathogen effector protein to engineer a plant immune receptor with novel recognition specificity
J. MAIDMENT (1), M. Franceschetti (1), C. Jantasuriyarat (2), H. Saitoh (3), A. Maqbool (4), R. Terauchi (5), S. Kamoun (4), M. Banfield (1), (1) John Innes Centre, Norwich, UNITED KINGDOM; (2) Kasetsart University, Bangkok, THAILAND; (3) Tokyo University of Agriculture, Tokyo, JAPAN; (4) The Sainsbury Laboratory, Norwich, UNITED KINGDOM; (5) Iwate Biotechnology Research Center, Iwate, JAPAN

CS **Plant Health in a Global Economy: Mobilizing Global Support for a Healthy Planet**
14:00–16:00; *Room 210*
Organizers: Mary E. Palm, The American Phytopathological Society, St. Paul, MN, U.S.A.; Stephanie Bloem, North American Plant Protection Organization, Raleigh, NC, U.S.A.

14:00
The International Plant Protection Convention (IPPC): Six decades of international cooperation for the protection of the world's plant resources
R. L. GRIFFIN, USDA-APHIS-Plant Protection and Quarantine, Raleigh, NC, U.S.A.

14:20
The role of the Regional Plant Protection Organizations (RPPOs) in achieving the objectives of the International Plant Protection Convention (IPPC)
S. BLOEM, North American Plant Protection Organization (NAPPO), Raleigh, NC, U.S.A.

14:40
The International Plant Protection Convention and its common ground with plant pathologists to contribute to plant health and wildlife, in the world
J. Trujillo (1), C. GARCÍA-AVILA (2), (1) NPPO of Mexico (SAGARPA-SENASICA), Coyoacán, MEXICO; (2) SENASICA-DGSV, Estado de México, MEXICO

15:00
The proposal for an International Year of Plant Health in 2020
R. LOPIAN, Ministry of Agriculture and Forestry–Animal and Plant Health Unit–Food Department, Helsinki, FINLAND

15:20
The rough end of the pineapple: the sometimes prickly relationship between science and policy
A. YOUNG, The University of Queensland, Gatton, AUSTRALIA

15:30
Role of quarantine in exclusion of transboundary plant viruses: A developing country's perspective
C. C. VASIMALLA, D. R. B. Parakh, P. Kumari, A. K. Maurya, S. C. Dubey, ICAR–National Bureau of Plant Genetic Resources, New Delhi, INDIA

CS Potato Late Blight—Global Research and Networking

14:00–16:00; *Room 311*

Organizers: Ivette Acuna, Agricultural Research Institute (INIA), Chile, Osorno, CHILE; Alison Lees, The James Hutton Institute, Dundee, SCOTLAND
Subject Matter Committee Chairperson: Alison Lees, The James Hutton Institute, Dundee, SCOTLAND

14:00
International Late Blight Networks—A successful collaborative initiative
H. SCHEPERS (1), J. Grønbech Hansen (2), A. Lees (3,4), (1) Wageningen University and Research, Luttelgeest, NETHERLANDS; (2) Aarhus University, Tjele, DENMARK; (3) The James Hutton Institute, Dundee, SCOTLAND; (4) The James Hutton Institute, Dundee, SCOTLAND

14:20
Decision support systems for late blight control and early warning
F. LUCCA (1), G. Kessel (2), W. E. Fry (3), I. Acuna (4), R. Bravo (4), W. Perez (5), J. L. Andrade-Piedra (6), J. Grønbech Hansen (7,8), P. Kromann (9), M. Guo (10), (1) Instituto Nacional de Tecnología Agropecuaria (INTA) (+Tizón Latino Network), Balcarce, ARGENTINA; (2) Wageningen Plant Research, Wageningen, NETHERLANDS; (3) Cornell University, Ithaca, NY, U.S.A.; (4) Agricultural Research Institute (INIA), Chile, Osorno, CHILE; (5) International Potato Center, Lima, PERU; (6) International Potato Center (CIP), Lima, PERU; (7) Aarhus University, Tjele, DENMARK; (8) Aarhus University, Aarhus, DENMARK; (9) International Potato Center, Quito, ECUADOR; (10) Heilongjiang Academy of Agricultural Sciences, Harbin, CHINA

14:40
Challenges for late blight control in developing countries
A. NJOROGE, International Potato Center, Nairobi, KENYA; Swedish University of Agricultural Sciences (SLU), Uppsala, SWEDEN

15:00
Understanding *Phytophthora infestans* populations at local and global scales
D. COOKE (1), A. Lees (1), G. Kessel (2), D. Andrivon (3), P. Lassen (4), J. Grønbech Hansen (4), (1) The James Hutton Institute, Dundee, SCOTLAND; (2) Wageningen Plant Research, Wageningen, NETHERLANDS; (3) National Institute for Agronomic Research, Le Rheu, FRANCE; (4) Aarhus University, Tjele, DENMARK

15:20
Searching for the mechanism that mediates the mefenoxam-acquired resistance phenomenon in *Phytophthora infestans* and how it is regulated
J. GONZALEZ TOBON (1), R. Childers (2), M. Regnier (1), A. Rodriguez (1), W. E. Fry (3), S. Restrepo (1), G. Danies (1), (1) Universidad de los Andes, Bogota, COLOMBIA; (2) Harvard University, Cambridge, MA, U.S.A.; (3) Cornell University, Ithaca, NY, U.S.A.

15:30
Novel characteristics of *Phytophthora infestans* causing late blight on potato in Ethiopia
D. ZELEKE (1), B. Getahun (1), T. Hussien (2), C. Fininsa (2), J. Yuen (3), G. A. Forbes (4), (1) Wolaita Sodo University, Sodo, ETHIOPIA; (2) Haramaya University, Dire Dawa, ETHIOPIA; (3) Swedish University of Agricultural Sciences, Uppsala, SWEDEN; (4) International Potato Center, Servas, FRANCE

CS Precision Turf and Ornamental Disease Management in the 21st Century

14:00–16:00; *Room 312*

Organizers: Lisa A. Beirn, Syngenta, Washington, NJ, U.S.A.; Fulya Baysal-Gurel, Tennessee State University, McMinnville, TN, U.S.A.

With financial support from: Syngenta; BASF–Global Professional & Specialty Solutions–Turf and Ornamentals; BioWorks

Subject Matter Committee Chairperson: Lisa A. Beirn, Syngenta, Washington, NJ, U.S.A.

14:00
Advanced precision spray application technology for effective control of ornamental diseases
H. ZHU (1), A. Fulcher (2), R. L. Rosetta (3), M. W. Wallhead (1), (1) USDA-ARS, Wooster, OH, U.S.A.; (2) University of Tennessee, Knoxville, TN, U.S.A.; (3) Oregon State University, Aurora, OR, U.S.A.

14:20
Insights from abroad: Managing turfgrass diseases in Asia with minimal input
M. WOODS, Asian Turfgrass Center, Wanchai, HONG KONG

14:40
Producing high quality ornamental crops with limited chemical options: A Canadian perspective
A. M. POLEATEWICH (1), S. Jandricic (2), (1) University of New Hampshire, Durham, NH, U.S.A.; (2) Ontario Ministry of Food, Agriculture and Rural Affairs, Vineland Station, ON, CANADA

15:00
Challenges associated with biocontrol in turfgrass
J. P. KERNS, North Carolina State University, Raleigh, NC, U.S.A.

15:20
Development of nursery plant protection strategies based on natural products
M. ABUGRAIN (1), M. Putnam (2), J. Chang (2), T. Mahmud (3), (1) Oregon State University, Corvallis, OR, U.S.A.; (2) Oregon State University, Botany and Plant Pathology, Corvallis, OR, U.S.A.; (3) College of Pharmacy, Oregon State University, Corvallis, OR, U.S.A.

15:30
Evaluation of organic amendments to enhance dollar spot (*Sclerotinia homoeocarpa*) suppression on creeping bentgrass fairways
C. BECKLEY, J. A. Roberts, University of Maryland, College Park, MD, U.S.A.

CS Virus Biology

15:00–15:50; *Room 207*

Moderators: Chun-Yi Lin, National Taiwan University, Taipei, TAIWAN; Pauline Bernardo, The Ohio State University, Wooster, OH, U.S.A.

15:00
Biological and molecular characterization of citrus tatter leaf virus in Taiwan
C. Y. LIN (1), L. Chang (2), Y. H. Lin (1), M. L. Wu (3), T. H. Hung (1), (1) National Taiwan University, Taipei, TAIWAN; (2) Agricultural Biotechnology Research Center, Taipei, TAIWAN; (3) Taiwan Forestry Research Institute, Taipei, TAIWAN

15:10
Understanding *Maize chlorotic mottle virus* transmission through seed: Localization and infectivity
P. BERNARDO (1), M. G. Redinbaugh (1,2), K. Barriball (2), (1) The Ohio State University, Wooster, OH, U.S.A.; (2) USDA, Wooster, OH, U.S.A.

15:20
Transcriptome sequencing reveals novel *Citrus bark cracking viroid* (CBCVd) variants from citrus and their molecular characterization
Y. WANG (1), C. Zhou (2), M. Cao (2), (1) Citrus Research Institute, Southwest University, Chongqing, CHINA; (2) Southwest University, Chongqing, CHINA

15:30
Genetic diversity and development of improved diagnostics for *Banana bunchy top virus* (*Nanoviridae: Babuvirus*) in West and Central Africa
A. ADEDIJI (1,2), R. Hanna (3), G. Atiri (2), P. L. Kumar (1), (1) International Institute of Tropical Agriculture, Ibadan, NIGERIA; (2) University of Ibadan, Ibadan, NIGERIA; (3) International Institute of Tropical Agriculture, Yaoundé, CAMEROON

15:40
Monitoring the spread of *Maize chlorotic mottle virus* and *Sugarcane mosaic virus* under high disease pressure in Ecuador
E. Cañarte-Bermudez (1), J. Navarrete (1), R. Solorzano (1), A. Mendoza (1), J. F. Cornejo (2), R. A. Alvarez-Quinto (3), B. E. Lockhart (4), D. QUITO-AVILA (5), (1) Instituto Nacional de Investigaciones Agropecuarias, Estación Portoviejo (INIAP), Portoviejo, ECUADOR; (2) Escuela Superior Politecnica del Litoral, Guayaquil, ECUADOR; (3) Centro de Investigaciones Biotecnologicas del Ecuador, Guayaquil, ECUADOR; (4) Department of Plant Pathology, University of Minnesota, St. Paul, MN, U.S.A.; (5) Escuela Superior Politecnica del Litoral, Facultad Ciencias de la Vida, Guayaquil, ECUADOR

MONDAY EXHIBIT HALL PROGRAMMING

IC **Idea Cafés**
Seeking solutions to an existing problem, a conversation on a specific issue or concern, or innovative ideas in your area of research or outreach? Check out Idea Cafés, where great minds in plant pathology gather in an informal round table conversation on an area of interest to you!

PT **POD Talks**
Connect with selected APS Fellows in an informal setting as they discuss their career journeys and share their stories, insights, and life experiences in the world of plant pathology.

1:1 **One to One**
Gain access to a selection of our most knowledgeable experts in plant pathology through informal, 15-minute meetings. *Pre-session sign-up is required; sign-up board is located near the registration desk*

IC **IDEA CAFÉ: Advances in Understanding Gummy Stem Blight Pathogens and Epidemics**
16:30–17:30; *Veterans Memorial Auditorium/Exhibit Hall C*
Organizers: Katherine L. Stevenson, University of Georgia, Tifton, GA, U.S.A.; Anthony P. Keinath, Coastal Research and Education Center, Clemson University, Charleston, SC, U.S.A.
Moderator: Anthony P. Keinath, Coastal Research and Education Center, Clemson University, Charleston, SC, U.S.A.

IC **IDEA CAFÉ: Harmonization of Validation Standards for Plant Diagnostic Assays**
16:30–17:30; *Veterans Memorial Auditorium/Exhibit Hall C*
Organizers: James P. Stack, Kansas State University, Manhattan, KS, U.S.A.

IC **IDEA CAFÉ: Integrated Management of Clubroot—Crucial for a Sustainable Oilseed Rape Production**
16:30–17:30; *Veterans Memorial Auditorium/Exhibit Hall C*
Organizers: Ann-Charlotte Wallenhammar, Rural Economy and Agricultural Society (REAS), Örebro, SWEDEN
Subject Matter Committee Chairperson: Ann-Charlotte Wallenhammar, Rural Economy and Agricultural Society (REAS), Örebro, SWEDEN

IC **IDEA CAFÉ: Yield Loss Due to False Smut of Rice**
16:30–17:30; *Veterans Memorial Auditorium/Exhibit Hall C*
Organizers: Kedar Nath Kushwaha, Navsari Agricultural University, Vyara, INDIA
Subject Matter Committee Chairperson: Oladiji Aiyedun, Navsari Agricultural University, Vyara, INDIA

PT **POD TALKS: A Conversation with Phytopathologists of Distinction: Jimmy Botella and Francisco Reifschneider**
16:30–17:30; *Veterans Memorial Auditorium/Exhibit Hall C*
Organizers: Sally A. Miller, Department of Plant Pathology, The Ohio State University, Wooster, OH, U.S.A.; Greg I. Johnson, C/- Horticulture for Development, Jamison Centre, AUSTRALIA

16:30
From quantum theory to plant pathogens: You never know where you're gonna end up!
JIMMY BOTELLA, School of Agriculture and Food Sciences, University of Queensland, Brisbane, AUSTRALIA

16:50
Discussion

17:00
A balancing act—A researcher doing international development
FRANCISCO J. REIFSCHNEIDER, EMBRAPA, Brasilia, BRAZIL

17:20
Discussion

1:1 **One to One Conversations with an Expert**
16:30–17:30; *Veterans Memorial Auditorium/Exhibit Hall C*
Organizer: Jose Pablo Dundore-Arias, Department of Plant Pathology, University of Minnesota, St. Paul, MN, U.S.A.

- RODRIGO P. P. ALMEIDA, University of California, Berkeley, Berkeley, CA, U.S.A.
- STEPHANIE BLANC, INRA, Montpellier, FRANCE
- CAROLEE T. BULL, The Pennsylvania State University, University Park, PA, U.S.A.
- REBECCA NELSON, Cornell University, Ithaca, NY, U.S.A.
- LEENA TRIPATHI, International Institute for Tropical Agriculture, Nairobi, KENYA
- RONALD R. WALCOTT, The University of Georgia, Athens, GA, U.S.A.

All events take place in the John B. Hynes Veterans Memorial Convention Center unless otherwise noted. Some small select meetings take place at the Sheraton Boston Hotel (SBH) and are noted as such.

TUESDAY, JULY 31

07:00–08:00	**APS Committee Meetings** *(Open to any meeting attendee)* Committee for Diversity and Equality • *Clarendon, SBH* Crop Loss Assessment and Risk Evaluation (CLARE) Committee • *Fairfax B, SBH* Diagnostics Committee • *Fairfax A, SBH* Emerging Diseases and Pathogens Committee • *Gardner, SBH* Graduate Student Committee • *Exeter, SBH* India Working Group • *Kent, SBH* Integrated Plant Disease Management Committee • *Jefferson, SBH* Mycotoxicology Committee • *Beacon A, SBH* Postharvest Pathology Committee • *Beacon B, SBH* Tropical Plant Pathology Committee • *Dalton, SBH* Vector–Pathogen Complexes Committee • *Beacon F, SBH*
07:30–18:30	ICPP Central—Registration Open • *Hall C Foyer*
08:00–11:00	Academic Unit Leaders' Forum Meeting * • *Room 200*
08:00–17:30	Poster Viewing • *Veterans Memorial Auditorium/Exhibit Hall C*
08:30–10:30	**Concurrent Sessions** • *Various locations (see concurrent session schedule on page 28)*
10:30–11:00	Coffee Break • *Boylston Hallway, Levels 2 and 3*
11:00–12:45	**Keynote Session I:** Emerging Plant Diseases and Global Food Security • *Ballroom A/B/C*
12:45–14:00	Lunch Break
13:00–14:00	Student–Industry Lunch * • *Room 306*
14:00–16:00	**Concurrent Sessions** • *Various locations (see concurrent session schedule on page 32)*
16:00–17:30	**Poster Viewing with Authors Present (Group 1, Evens)** • *Veterans Memorial Auditorium/Exhibit Hall C*
16:00–18:30	**Exhibits Open (Refreshments Provided)** • *Veterans Memorial Auditorium/Exhibit Hall C*
16:30–17:30	POD Talks • *Veterans Memorial Auditorium/Exhibit Hall C*
16:30–17:30	Idea Cafés • *Veterans Memorial Auditorium/Exhibit Hall C*
16:30–17:30	One to One Conversations with an Expert • *Veterans Memorial Auditorium/Exhibit Hall C*
18:00–18:30	Poster Take-Down (Group 1) • *Veterans Memorial Auditorium/Exhibit Hall C*
18:00–20:15	Public Meeting at Harvard Museum of Science—Crop Diseases Threaten Global Food Security and your Breakfast • *Harvard Museum of Science (offsite)*
17:30–19:00	Graduate Student Social * • *Room 200*
17:30–19:00	Early Career Professional Social * • *Room 309*
19:00–22:00	ICPP Night at Fenway Park * • *Fenway Park (offsite)*
19:30–21:30	ISPP Councilors Meeting, *by invitation* • *Executive Boardroom 300*

** Ticketed Event*

KEYNOTE SESSION I

Emerging Plant Diseases and Global Food Security
11:00–12:45; Ballroom A/B/C
Moderators: Jean Ristaino, North Carolina State University, Raleigh, NC, U.S.A.; Lise Korsten, University of Pretoria, Pretoria, SOUTH AFRICA
Subject Matter Committee Chairperson: Lise Korsten, University of Pretoria, Pretoria, SOUTH AFRICA




Plant Diseases, Global Food Security, and the Role of Glenn Anderson
Sanjaya Rajaram, *Resource Seeds International, Houston, TX, U.S.A.,* and **H. Jesse Dubin,** *Borlaug Training Foundation, Frederick, MD, U.S.A.*

The Glenn Anderson Lecture, sponsored by the Canadian Phytopathological Society
R. Glenn Anderson was Norman Borlaug's "green-fingered agricultural scientist" humanitarian who captained the wheat revolution in India during the 1960s. Afterward, he directed the CIMMYT Wheat Program, where he was instrumental in establishing increased wheat disease surveys, broadening of the wheat genetic diversity, adaptation, and disease resistance (e.g., slow rusting). He institutionalized multilocation yield and disease testing/analysis, regional breeding programs, and strengthening the training of young scientists. Aspects of his work and other issues will be discussed in relation to present-day global food security.



Metadata: Monitoring the Threat of Plant Disease
Sarah Jane Gurr, *University of Exeter, Oxford, UNITED KINGDOM,* and Fen Douglas Beed**,** *AVRDC—The World Vegetable Center, Bangkok, CHINA*

Fungal diseases have been increasing in severity and scale since the midtwentieth century and now pose a serious threat to global food security and ecosystem health. We face a future blighted by known adversaries, by new variants of old foes, and by new diseases. Modern agricultural intensification practices have heightened the challenge and climate change compounds the problem: Pathogens are on the move pole-ward in a warming world. We will highlight some current notable and persistent fungal diseases and consider the evolutionary drivers underpinning emergence of new diseases; reveal some recent disease modeling work concerning the global distributions of crop pathogens and their predicted movement; and discuss the concept of crop disease saturation. We will conclude with some thoughts on future threats and challenges on fungal disease mitigation and ways of enhancing global food security.




Plant Diseases, Climate Change, and Food Security
Karen A. Garrett, *Plant Pathology Department, University of Florida, Gainesville, FL, U.S.A.,* and **Adrian C. Newton,** *The James Hutton Institute, Dundee, UNITED KINGDOM*

Global change drives changes in disease management systems, for better or for worse. At the same time, the science of disease management sustainability and the science of phytobiomes are still in the early stages of development. A fuller understanding of what makes cropping systems resilient and how to achieve deployment of improved systems is a grand challenge for agriculture in the twenty-first century.

KEYNOTE SESSION I, CONT.

Emerging Plant Diseases and Global Food Security
11:00–12:45; Ballroom A/B/C
Moderators: Jean Ristaino, North Carolina State University, Raleigh, NC, U.S.A.; Lise Korsten, University of Pretoria, Pretoria, SOUTH AFRICA
Subject Matter Committee Chairperson: Lise Korsten, University of Pretoria, Pretoria, SOUTH AFRICA




Modeling Epidemics to Optimize Disease Management at the Landscape Level
Nik J. Cunniffe, *University of Cambridge, Cambridge, UNITED KINGDOM,* and **Frédéric Fabre,** *INRA ENSAR, Le Rheu, FRANCE*

Pathogens routinely spread over very long distances, and landscape-scale spread is gaining ever-increasing amounts of attention from theoretical epidemiologists, as well as from agricultural managers and policy makers. At such large spatial scales, modeling is very important, particularly since experimentation is difficult or even impossible. We will illustrate how modeling approaches can be used to improve decision making concerning when, where, and how to detect and control plant diseases, drawing on a range of examples including durability of resistance genes to viruses of annual crops, quarantine approaches in orchards, and spatially explicit control and detection strategies for citrus diseases.




The Orange-Fleshed Sweet Potato: Disease Threats and Usefulness for Feeding Africa
Wilmer Cuellar, *International Center for Tropical Agriculture (CIAT), Cali, Valle del Cauca, COLOMBIA,* and **Jan Low,** *CIP, Nairobi, KENYA*

Sweet potato is known as the classic food security crop. In Africa, it is the crop that is there when the maize fails, but it also helped Americans survive the 1930s Depression, the Chinese survive famine in the 1960s, and the Rwandans recover from genocide in the 1990s. Orange-fleshed types are a rich source of pro-vitamin A, being used in integrated agriculture nutrition efforts to combat vitamin A deficiency in developing countries. There are over 30 known viruses of sweet potato, many of which are symptomless and most synergized when combined with *Sweet potato chlorotic stunt virus* (SPCSV), which is the mediator of severe, yield-declining virus disease. Advances in detection of specific viruses, in conventional breeding for virus resistance, and in managing viruses through improved seed systems have been significant during the past decade. Under climate change, these efforts need to intensify, and greater attention must be paid to understanding the behavior of white flies and aphids, the key virus vectors, and determining the economic relevance of emerging and understudied viruses.

TUESDAY CONCURRENT PROGRAMMING

Session content listed in the program is as submitted by the author/presenter and has NOT been edited.

CS **Concurrent Sessions**
Like the Technical and Special Sessions, the Scientific Sessions held at ICPP2018 consist of a combination of invited speakers and submitted oral presentations on the most important topics in phytopathology.

PV **PhytoViews**
Are there two sides to every situation? There are at PhytoView sessions, where experts explore various points of view on topics of interest through facilitated conversations.

HT **Hot Topics**
Catch the latest science on topics that are "hot" in plant pathology.

PD **Panel Discussions**
Listen to invited panelists give short introductory talks, and then join in an engaging hour-long discussion.

CS Aflatoxins

08:30–09:20; *Room 207*

Moderators: Lourena R L Arone, University of Arizona, Tucson, AZ, U.S.A.; Joseph Opoku, Virginia Tech TAREC, Suffolk, VA, U.S.A.

08:30
Evaluation of biological control agents for reduction of aflatoxin contamination in corn using biodegradable corn starch-based bioplastic formulations
H. K. ABBAS (1), C. Accinelli (2), W. T. Shier (3), (1) USDA-ARS BCPRU, Stoneville, MS, U.S.A.; (2) University of Bologna, Bologna, ITALY; (3) University of Minnesota, College of Pharmacy, Minneapolis, MN, U.S.A.

08:40
Aflatoxin producers in Mozambique include a distinct S morphology taxon with high capacity to produce aflatoxins in Maize and Groundnut
L. R. L. ARONE (1), J. Augusto (2), R. Bandyopadhyay (3), P. J. Cotty (4), (1) University of Arizona, Tucson, AZ, U.S.A.; (2) International Institute of Tropical Agriculture, Nampula, MOZAMBIQUE; (3) International Institute of Tropical Agriculture, Ibadan, NIGERIA; (4) USDA-ARS, University of Arizona, Tucson, AZ, U.S.A.

08:50
Diversity among S morphology fungi in *Aspergillus* section *Flavi* from North America
P. SINGH (1), P. J. Cotty (2), (1) University of Arizona, Tucson, AZ, U.S.A.; (2) USDA-ARS, University of Arizona, Tucson, AZ, U.S.A.

09:00
Soil fauna effects on degradation of *Fusarium graminearum* mycotoxins in contaminated plant residues at different temperature regimes
F. MEYER-WOLFARTH (1), S. Schrader (1), E. Oldenburg (2), K. Munoz (3), T. Meiners (4), (1) Johann Heinrich von Thünen–Institute of Biodiversity, Braunschweig, GERMANY; (2) Julius Kühn–Institute of Plant Protection in Field Crops and Grassland, Braunschweig, GERMANY; (3) University of Koblenz-Landau, Landau, GERMANY; (4) Julius Kühn–Institute of Ecological Chemistry, Plant Analysis and Stored Product Protection, Berlin, GERMANY

09:10
Mycotoxigenic *Fusarium* spp. associated with stink bugs collected from corn fields in the mid-Atlantic U.S.
J. OPOKU (1), N. M. Kleczewski (2), K. Hamby (3), A. Coomber (4), D. Haak (5), H. L. Mehl (6), (1) Virginia Tech TAREC, Suffolk, VA, U.S.A.; (2) University of Illinois, Urbana, IL, U.S.A.; (3) Department of Entomology, University of Maryland, College Park, MD, U.S.A.; (4) Cornell University, Ithaca, NY, U.S.A.; (5) Virginia Tech, Blacksburg, VA, U.S.A.; (6) Virginia Tech Tidewater AREC, Suffolk, VA, U.S.A.

CS Microbiomes and Disease Management

08:30–09:20; *Room 208*

Moderators: Michael Jochum, Texas A&M University, College Station, TX, U.S.A.; Elizabeth Deyett, University of California, Riverside, Riverside, CA, U.S.A.

08:30
Host mediated microbiome engineering for drought resistance in grasses
M. JOCHUM, K. McWilliams, Y. K. Jo, Texas A&M University, College Station, TX, U.S.A.

08:40
Manipulating the grapevine microbiome for novel control strategies of Pierce's disease
E. DEYETT, P. E. Rolshausen, University of California, Riverside, Riverside, CA, U.S.A.

08:50
Dynamics of microbial communities associated with broccoli residue and chitin amendments on suppression of Verticillium wilt in three soil types
K. D. PURI (1), D. P. G. Short (1), P. Inderbitzin (2), D. O. Chellemi (3), K. V. Subbarao (4), (1) University of California, Davis, Salinas, CA, U.S.A.; (2) University of California, Davis, Department of Plant Pathology, Davis, CA, U.S.A.; (3) Agricultural Solutions, Fernandina Beach, FL, U.S.A.; (4) University of California, Davis, U.S. Agricultural Research Station, Salinas, CA, U.S.A.

09:00
The flower and berry microbiomes of wild and cultivated cranberries in southeastern Massachusetts
S. SOBY (1), G. Ebadzadsahrai (1), A. Harrison (1), M. Mohabbatizadeh (2), (1) Midwestern University, Glendale, AZ, U.S.A.; (2) Mason General Hospital, Shelton, WA, U.S.A.

CS Emerging Issues and Pathogens Causing Blackleg and Soft Rot of Potatoes World-Wide
08:30–10:30; *Room 210*
Organizers: Teresa Coutinho, University of Pretoria, Pretoria, SOUTH AFRICA; Gerry S. Saddler, Science and Advice for Scottish Agriculture (SASA), Edinburgh, UNITED KINGDOM
Subject Matter Committee Chairperson: Carolee T. Bull, The Pennsylvania State University, University Park, PA, U.S.A.

08:30
Population studies of *Pectobacterium atrosepticum:* How it's shaping our view of seed-borne vs. environmental sources of infection
I. K. TOTH (1), E. Campbell (1), G. Cahill (2), J. Elphinstone (3), S. Humphris (1), G. S. Saddler (2), S. Wale (4), L. Watts (1), L. Pritchard (1), G. Harper (5), (1) The James Hutton Institute, Dundee, UNITED KINGDOM; (2) Science and Advice for Scottish Agriculture (SASA), Edinburgh, UNITED KINGDOM; (3) Fera Science, Ltd., York, UNITED KINGDOM; (4) Scotland's Rural College (SRUC), Aberdeen, UNITED KINGDOM; (5) Sutton Bridge Crop Storage Research (SBCSR), Spalding, UNITED KINGDOM

08:50
An overview of challenges and changes in potato production and potato diseases in the United States and Canada
A. O. CHARKOWSKI, Colorado State University, Fort Collins, CO, U.S.A.

09:10
Blackleg in South African potato production: Pathogens and impact
J. VAN DER WAALS, University of Pretoria, Pretoria, SOUTH AFRICA

09:30
Shifting populations of blackleg causing organisms: Significance and possible control strategies
J. VAN DER WOLF, Wageningen University and Research, Wageningen, NETHERLANDS

09:50
The *Pectobacterium* complex: Diversity and phylogeny
K. Chawki (1), A. Quêtu-Laurent (1), G. Taghouti (2), E. Caullireau (2), M. Fischer-Le Saux (2), Y. Le Hingrat (3), D. Andrivon (4), P. Portier (2), V. HÉLIAS (1), (1) French Federation of Seed Potato Growers, Le Rheu, FRANCE; (2) National Institute for Agronomic Research, Beaucouzé, FRANCE; (3) French Federation of Seed Potato Growers, Paris, FRANCE; (4) National Institute for Agronomic Research, Le Rheu, FRANCE

10:00
Dickeya fangzhongdai causing soft rot of *Phalaenopsis* orchids and bacteriophage biocontrol options
Š. ALIČ (1,2), T. Naglič (1,3), F. Van Gijsegem (4), J. Pédron (4), M. Tušek Žnidarič (1), M. Peterka (3), M. Ravnikar (1), T. Dreo (1), (1) National Institute of Biology, Ljubljana, SLOVENIA; (2) Jožef Stefan International Postgraduate School, Ljubljana, SLOVENIA; (3) COBIK, Ajdovscina, SLOVENIA; (4) iEES Paris, Paris, FRANCE

CS Multi-Scale Influence of Weather on Pathogens and Disease Development
08:30–10:30; *Room 312*
Organizers: Odile Carisse, Agriculture & Agri-Food Canada, Saint-Jean-sur-Richelieu, QC, CANADA; Ian M. Small, University of Florida, Quincy, FL, U.S.A.
Subject Matter Committee Chairperson: Daniel J. Anco, Clemson University, Blackville, SC, U.S.A.

08:30
The value of information across scales for weather-based management decisions
K. A. GARRETT, Plant Pathology Department, University of Florida, Gainesville, FL, U.S.A.; Emerging Pathogens Institute, Gainesville, FL, U.S.A.; Institute for Sustainable Food Systems, Gainesville, FL, U.S.A.

08:50
Can rainfall be a useful predictor of epidemic risk across temporal and spatial scales?
E. M. DEL PONTE (1), A. H. Sparks (2), N. J. Cunniffe (3), L. V. Madden (4), (1) Universidade Federal de Vicosa, Vicosa, BRAZIL; (2) University of Southern Queensland, Toowoomba, AUSTRALIA; (3) University of Cambridge, Cambridge, UNITED KINGDOM; (4) The Ohio State University, Wooster, OH, U.S.A.

09:10
Upscaling models, downscaling data or the right model for the right scale of application?
A. H. SPARKS (1), K. A. Garrett (2), C. A. Gilligan (3), A. Nelson (4), K. Pembleton (1), (1) University of Southern Queensland, Toowoomba, AUSTRALIA;

(2) Plant Pathology Department, University of Florida, Gainesville, FL, U.S.A.; (3) University of Cambridge, Cambridge, UNITED KINGDOM; (4) University of Twente, Enschede, NETHERLANDS

09:30
Stability of the spread parameter of the power law model for dispersal gradients of disease epidemics
P. S. OJIAMBO (1), G. David (2), L. Mehra (3), D. Christie (1), R. D. Magarey (1), (1) North Carolina State University, Raleigh, NC, U.S.A.; (2) USDA-ARS, Corvallis, OR, U.S.A.; (3) U.S. Horticultural Research Lab, Fort Pierce, FL, U.S.A.

09:50
Using predictions from a Fusarium head blight risk assessment tool as predictors of the risk of deoxynivalenol contamination of wheat grain
W. BUCKER MORAES (1), E. D. De Wolf (2), D. A. Shah (2), J. D. Salgado (1), L. V. Madden (1), P. A. Paul (1), (1) The Ohio State University, Wooster, OH, U.S.A.; (2) Kansas State University, Manhattan, KS, U.S.A.

10:00
Evaluation of weather-based foliar fungicide applications for soybean in the mid-Atlantic U.S.
T. ZHOU (1), D. L. Holshouser (1), H. L. Mehl (2), (1) Virginia Tech, Suffolk, VA, U.S.A.; (2) Virginia Tech Tidewater AREC, Suffolk, VA, U.S.A.

CS Resistance Breaking Isolates of Plant Viruses: What Are We Going to Do Now?
08:30–10:30; *Room 302*
Organizers: Ozgur Batuman, University of Florida IFAS, Immokalee, FL, U.S.A.; Robert L. Gilbertson, Department of Plant Pathology, University of California, Davis, CA, U.S.A.; Alexander V. Karasev, University of Idaho, Moscow, ID, U.S.A.; Charles Hagen, Monsanto Vegetable Seeds, Woodland, CA, U.S.A.
With financial support from: Lipman R&D; APS/APHIS Widely Prevalent Virus Committee; Monsanto
Subject Matter Committee Chairperson: Ozgur Batuman, University of Florida IFAS, Immokalee, FL, U.S.A.

08:30
Resistance breaking tospoviruses in Europe: What is the current situation?
M. TURINA (1), M. Ciuffo (2), (1) Institute for Sustainable Plant Protection, National Research Council, Italy, Turin, ITALY; (2) Institute for Sustainable Plant Protection CNR, Torino, ITALY

08:50
Ending the game of cat-and-mouse between tobamoviruses and their resistance genes
S. TSUDA, K. Kubota, Central Region Agricultural Research Center, NARO, Tsukuba, Ibaraki, JAPAN

09:10
Resistance and resistance breaking mechanisms in the melon/Melon necrotic spot virus interaction
V. Truniger, M. Miras, M. A. ARANDA, CEBAS-CSIC, Murcia, SPAIN

09:30
Potato virus Y evolves to overcome strain-specific resistance in potato: Rapid shift to recombinant virus strains in the U.S. potato
A. V. KARASEV, University of Idaho, Moscow, ID, U.S.A.

09:50
Temperature-sensitive resistance breaking mechanism of *Wsm1* and *Wsm2* genes against *Wheat streak mosaic virus* and *Triticum mosaic virus* in wheat
S. TATINENI, USDA-ARS, Lincoln, NE, U.S.A.; USDA-ARS, University of Nebraska, Lincoln, NE, U.S.A.

10:00
Emergence of a resistance breaking TSWV strain in tomato in California
O. BATUMAN (1), M. Rojas (2), M. Macedo (2), S. Adkins (3), R. L. Gilbertson (4), (1) University of Florida IFAS, Immokalee, FL, U.S.A.; (2) University of California, Davis, Davis, CA, U.S.A.; (3) USDA-ARS, U.S. Horticultural Research Laboratory, Fort Pierce, FL, U.S.A.; (4) Department of Plant Pathology, University of California, Davis, Davis, CA, U.S.A.

CS The First Line of Defense Against Plant Disease in the Developing World: Mineral Nutrition
08:30–10:30; *Room 311*
Organizers: Jason E. Woodward, Texas A&M AgriLife Extension Service, Lubbock, TX, U.S.A.; Greta L. Schuster, Texas A&M University–Kingsville, Kingsville, TX, U.S.A.; Lawrence E. Datnoff, Louisiana State University, Baton Rouge, LA, U.S.A.
With financial support from: Brandt, Inc.; Levy Co., Inc.; Compass Minerals; Harsco Metals and Minerals; Vanderbilt Minerals
Subject Matter Committee Chairperson: Greta L. Schuster, Texas A&M University–Kingsville, Kingsville, TX, U.S.A.

08:30
Crop-specific sulfur management for optimizing productivity, quality and plant health
S. HANEKLAUS, Julius Kühn–Institut, Institute for Crop and Soil Science, Braunschweig, GERMANY

08:50
Iron tissue content suppresses Cercospora leaf blight

development in soybean
E. SILVA (1,2,3), A. K. Chanda (4), T. G. Garcia (5), C. L. Robertson (3), E. Tubana (6), R. W. Schneider (5), (1) Louisiana State University, Baton Rouge, LA, U.S.A.; (2) Valent U.S.A. LLC, Seymour, IL, U.S.A.; (3) Louisiana State University Agricultural Center, Baton Rouge, LA, U.S.A.; (4) Department of Plant Pathology, University of Minnesota, Crookston, MN, U.S.A.; (5) Louisiana State University, Baton Rouge, LA, U.S.A.; (6) Louisiana State University Agricultural Center, Plant Pathology Department, Baton Rouge, LA, U.S.A.

09:10
Silicon enhances tolerance to abiotic and biotic stress
W. L. ZELLNER, University of Toledo, Toledo, OH, U.S.A.

09:30
Role of cation concentration in pepper tissue in suppressing bacterial leaf spot severity
B. DUTTA (1), R. D. Gitaitis (1), D. B. Langston Jr. (2), J. Kichler (3), S. Carlson (1), (1) University of Georgia, Tifton, GA, U.S.A.; (2) Virginia Tech, Suffolk, VA, U.S.A.; (3) University of Georgia, Moultrie, GA, U.S.A.

09:50
Can nanoparticles enhance disease resistance through mineral nutrition
N. ZUVERZA-MENA (1), W. H. Elmer (1), R. De La Torre-Roche (1), L. Pagano (2), S. Majumdar (1), C. Dimkpa (3), J. Gardea-Torresdey (4), J. C. White (1), (1) Connecticut Agricultural Experiment Station, New Haven, CT, U.S.A.; (2) University of Parma, Parma, ITALY; (3) International Fertilizer Development Center (IFDC), Muscle Shoals, AL, U.S.A.; (4) The University of Texas at El Paso, El Paso, TX, U.S.A.

CS Where the Wild Barberry Are: Alternate Hosts, New Virulence, and Rust Pandemics That Never Quit

08:30–10:30; *Room 304*

Organizers: Matthew Rouse, USDA-ARS Cereal Disease Laboratory, St. Paul, MN, U.S.A.; Maricelis Acevedo, Cornell University, Ithaca, NY, U.S.A.
Subject Matter Committee Chairpersons: James P. Stack, Kansas State University, Manhattan, KS, U.S.A.; Gretchen Kuldau, The Pennsylvania State University, University Park, PA, U.S.A.

08:30
Sexual propagation on barberry and its role in stem rust pathogen virulence and diversity
Y. JIN, USDA-ARS Cereal Disease Laboratory, St. Paul, MN, U.S.A.

08:50
Alternate hosts for the yellow rust pathogen and their role in generating new virulence
Z. KANG, J. Zhao, Y. Tian, L. Wang, Northwest A&F University, Yangling, Shaanxi, CHINA

09:10
Rust epidemics: Are the alternate hosts the culprit?
A. BERLIN (1), B. Andersson (1), J. Yuen (1), B. Samils (1), J. Oliva (2), (1) Swedish University of Agricultural Sciences, Uppsala, SWEDEN; (2) Department of Forest Pathology, Lleida, SPAIN

09:30
Wheat stripe rust: Are recent pandemic races associated with the sexual cycle of the pathogen?
M. S. Hovmøller (1), J. RODRIGUEZ ALGABA (1), T. Thach (1), S. Ali (2), A. F. Justesen (3), (1) Aarhus University, Slagelse, DENMARK; (2) University of Agriculture, Peshawar, Peshawar, PAKISTAN; (3) Danish Institute of Agricultural Sciences, Slagelse, DENMARK

09:50
An interspecific barberry hybrid enables genetic dissection of non-host resistance to the wheat stem rust pathogen
R. BARTAULA (1), A. Melo (1), S. Kingan (2), I. L. Hale (1), (1) University of New Hampshire, Durham, NH, U.S.A.; (2) Pacific Biosciences, Menlo Park, CA, U.S.A.

10:00
In planta comparative transcriptomics and Y2H to identify putative elicitors/suppressors of barley *rpg4/Rpg5*-mediated stem rust resistance
R. SHARMA POUDEL, S. Solanki, S. Shrestha, J. Richards, R. S. Brueggeman, Department of Plant Pathology, North Dakota State University, Fargo, ND, U.S.A.

CS Biocontrol

09:30–10:20; *Room 208*

Moderators: Duraisamy Saravanakumar, University of the West Indies, St. Augustine, Trinidad, TRINIDAD AND TOBAGO; Rachel K. Brooks, Virginia Tech, Blacksburg, VA, U.S.A.

09:30
Bacillus amyloliquefaciens strains in the management of Cercospora leafspot of lettuce in Trinidad
A. Thomas (1), D. SARAVANAKUMAR (2), (1) University of the West Indies, Port of Spain, TRINIDAD AND TOBAGO; (2) University of the West Indies, St. Augustine, Trinidad, TRINIDAD AND TOBAGO

Potential biological control of the invasive *Ailanthus altissima* (tree-of-heaven) in Virginia using naturally occurring Verticillium wilt fungi
R. K. BROOKS, A. Baudoin, S. Salom, Virginia Tech, Blacksburg, VA, U.S.A.

09:50
Introduction of biocontrol bacteria in potato rhizosphere to prevent latent contamination by pectinolytic bacteria and blackleg symptoms development
E. Munier (1), P. Dewaegeneire (1), J. Cigna (1), V. Helias (2), D. Faure (3), A. BEURY (1), (1) FN3PT/RD3PT, Achicourt, FRANCE; (2) FN3PT/RD3PT, Le Rheu, FRANCE; (3) CNRS, Gif-sur-Yvette, FRANCE

10:00
Endophytic microorganisms for silverleaf disease (*Chondrostereum purpureum*) control in apple
D. GRINBERGS (1,2), N. Padilla (1), Y. Robles (1), E. A. Moya-Elizondo (2), A. France (3), (1) Instituto de Investigaciones Agropecuarias, Chillán, CHILE; (2) Universidad de Concepción, Chillán, CHILE; (3) INIA Quilamapu, Chillán, CHILE

10:10
Bioformulation of *Trichoderma harzianum* for the management of soil borne plant diseases
P. DUTTA, Assam Agricultural University, Jorhat, INDIA

CS **Detection and Diagnostics**
14:00–14:50; *Room 207*
Moderators: Astri C. Wayadande, Oklahoma State University, Stillwater, OK, U.S.A.

14:00
EDNA-Wheat, a massive parallel sequencing based tool for detection of wheat viruses
P. Rydzak, F. Ochoa Corona, A. C. WAYADANDE, Oklahoma State University, Stillwater, OK, U.S.A.

14:10
E-probes development for rapid, sensitive and specific pathogen detection in blueberries
A. M. BOCSANCZY (1), A. Espindola (2), D. J. Norman (2), K. F. Cardwell (2), (1) University of Florida MREC, Apopka, FL, U.S.A.; (2) Oklahoma State University, Stillwater, OK, U.S.A.

14:30
Development of a rapid and sensitive ddPCR method for detection of *Cytospora leucostoma* in peach orchards
J. R. IBARRA CABALLERO (1), L. Tembrock (1), F. Zink (1), T. Gilligan (2), J. Stewart (1), (1) Department of Bioagricultural Sciences and Pest Management, Colorado State University, Fort Collins, CO, U.S.A.; (2) Animal and Plant Health Inspection Service, USDA, Fort Collins, CO, U.S.A.

PD **PANEL DISCUSSION: Risk and Horizon Scanning Plant Disease Threats in a Global Economy**
14:00–15:30; *Room 210*
Organizers: Murray Grant, University of Warwick, Coventry, UNITED KINGDOM; Nicola Spence, Defra, York, UNITED KINGDOM

14:00
The global spread of crop pathogens
E. BOA, University of Aberdeen, Aberdeen, UNITED KINGDOM

14:10
Risk and horizon scanning plant disease threats in a global economy—An EPPO perspective
F. PETTER, EPPO, Paris, FRANCE

14:20
Risk and horizon scanning plant disease threats in a global economy—A focus on wheat disease and fungicide resistance
R. P. OLIVER, Curtin University, Perth, AUSTRALIA

14:30
Risk and horizon scanning plant disease threats in a global economy—An Africa perspective
E. KIMANI, KEPHIS—Kenya Plant Health Inspectorate Service, Nairobi, KENYA

14:40
Discussion

CS **Innovative Pest Control Technologies for Smallholder Farmers: Cases from the Field**
14:00–16:00; *Room 311*
Organizers: Cindy Morris, INRA, Montfavet, FRANCE; Amer C. Fayad, Virginia Polytechnic Institute and State University, Blacksburg, VA, U.S.A.

14:00
In vitro and *in vivo* evaluation of microbial agents for management of rice blast disease in Tanzania
I. HASHIM (1), D. Mamiro (1), R. Mabagala (1), T. Tefera (2), (1) Sokoine University of Agriculture, Morogoro, TANZANIA; (2) International Center of Insect Physiology and Ecology (icipe), Addis Ababa, ETHIOPIA

14:20
IPM packages for high value vegetable crops in Cambodia
K. H. SENG, International Development Enterprises iDE–Cambodia, Phnom Penh, CAMBODIA

14:40
Biological control of Striga witch weed in Kenya: From a toothpick to home-grown biocontrol inoculum
D. SANDS (1), H. S. Nzioki (2), F. Oyosi (3), C. Baker (4), (1) Montana State University, Bozeman, MT, U.S.A.; (2) Kenya Agricultural Research Institute, Machakos, KENYA; (3) Liberty Initiator Network, Maseno, KENYA; (4) Biotech Investments, Bozeman, MT, U.S.A.

15:00
Agroecological engineering for biocontrol of soil pests—Examples from the French Caribbean
M. CHAVE, V. Angeon, INRA, Petit-Bourg, GUADELOUPE

15:20
Development of disease management options for Pseudocercospora fruit and leaf spot in Teso region of Uganda
J. ADRIKO, National Agricultural Research Laboratories (NARL), Kampala, UGANDA

CS The Most Wanted Global Tree Pathogens: Big Data Approach to Protect Our Forests
14:00–16:00; *Room 208*
Organizers: Caterina Villari, D. B. Warnell School of Forestry and Natural Resources, University of Georgia, Athens, GA, U.S.A.; Denita Hadziabdic, University of Tennessee, Knoxville, TN, U.S.A.; John W. Mansfield, Imperial College London, London, UNITED KINGDOM
Subject Matter Committee Chairperson: Denita Hadziabdic, University of Tennessee, Knoxville, TN, U.S.A.

14:00
The making of tree pathogens: Big data approach
R. HAMELIN, University of British Columbia, Vancouver, BC, CANADA; Université Laval, Quebec, QC, CANADA

14:20
Planted forest health: The need for a global strategy
M. WINGFIELD, B. D. Wingfield, B. Slippers, Forestry and Agricultural Biotechnology Institute (FABI), University of Pretoria, Pretoria, SOUTH AFRICA

14:40
Cherry canker genetics—Applying genomics to the control of perennial disease problems in fruit trees
M. HULIN (1), A. D. Armitage (1), K. Housley (1), J. W. Mansfield (2), R. W. Jackson (3), R. Harrison (1), (1) NIAB EMR, East Malling, UNITED KINGDOM; (2) Imperial College London, London, UNITED KINGDOM; (3) University of Reading, Reading, UNITED KINGDOM

15:00
Development of a next-generation sequencing screening method for exotic forest pathogens from fungal spores in air and occurring on insect vectors
E. D. TREMBLAY (1,2), J. Berube (3), T. Kimoto (4), C. Lemieux (5), L. Bernier (6,7), G. J. Bilodeau (1), (1) Canadian Food Inspection Agency, Ottawa, ON, CANADA; (2) Université Laval, Québec, QC, CANADA; (3) Canadian Forest Service, Sainte-Foy, QC, CANADA; (4) Canadian Food Inspection Agency, Burnaby, BC, CANADA; (5) Université Laval Institut de Biologie Intégrative et des Systèmes, Quebec, QC, CANADA; (6) Institut de Biologie Intégrative des Systèmes (IBIS), Université Laval, Québec, QC, CANADA; (7) Université Laval, Centre d'Étude de la Forêt (CEF), Quebec, QC, CANADA

15:10
Two new *Ceratocystis* species cause the serious and devastating rapid `ōhi`a death (ROD) on native *Metrosideros polymorpha* in Hawai`i
I. BARNES (1), M. J. Wingfield (1), T. Harrington (2), L. M. Keith (3), (1) Forestry and Agricultural Biotechnology Institute (FABI), University of Pretoria, Pretoria, SOUTH AFRICA; (2) Iowa State University, Ames, IA, U.S.A.; (3) USDA-ARS, Hilo, HI, U.S.A.

CS Unlocking the Secrets of Suppressive Soils: Insights from the Microbiome
14:00–16:00; *Room 304*
Organizers: Timothy C. Paulitz, USDA-ARS, Pullman, WA, U.S.A.
Subject Matter Committee Chairperson: Ghazal Ebadzadsahrai, Midwestern University, Glendale, AZ, U.S.A.

14:00
Suppressive soils: New paradigms for an old story?
L. S. THOMASHOW (1), D. Mavrodi (2), O. V. Mavrodi (2), L. Elbourne (3), S. Tetu (3), M. LeTourneau (4), R. Bonsall (5), J. Parejko (6), M. Yang (7), I. T. Paulsen (3), D. M. Weller (8), (1) USDA-ARS, Pullman, WA, U.S.A.; (2) University of Southern Mississippi, Hattiesburg, MS, U.S.A.; (3) Department of Chemistry and Biomolecular Sciences, Sydney, NSW, AUSTRALIA; (4) Washington State University, Pullman, WA, U.S.A.; (5) Department of Plant Pathology, Washington State University, Pullman, WA, U.S.A.; (6) Department of Chemistry and Molecular Biology, Gustavus Adolphus College, St. Peter, MN, U.S.A.; (7) Northwest A&F University, Yangling, CHINA; (8) USDA-ARS Wheat Health, Genetics and Quality Research Unit, Pullman, WA, U.S.A.

14:20
Unraveling the soil immune response
V. CARRION, J. Raaijmakers, Netherlands Institute of Ecology, Wageningen, NETHERLANDS

14:40
Targeted microbiome design for plant health
G. BERG, TU Graz, Environmental Biotechnology, Graz, AUSTRIA

15:00
Molecular mechanism of strawberry Fusarium wilt suppressive soil
D. R. Kim, Y. S. KWAK, Gyeongsang National University, Jinju, KOREA

15:20
Culturable microbiota and metagenome data show distinct microbial assemblage between bacterial wilt disease-suppressive and conducive soils
R. GICANA (1), W. L. Deng (2), (1) National Chung Hsing University, Taichung, TAIWAN; (2) Department of Plant Pathology, National Chung Hsing University, Taichung, TAIWAN

15:30
Identification of disease suppressive banana plant and soil microbiomes
P. DENNIS (1), H. Birt (1), A. Raghavendra (2), G. Waugh (2), H. Wang (2), E. Aitken (3), T. Gervacio (2), R. Orr (4), P. Nelson (4), J. Daniells (5), T. Pattison (5), (1) The University of Queensland, St. Lucia, AUSTRALIA; (2) The University of Queensland, Brisbane, AUSTRALIA; (3) School of Agriculture and Food Sciences, The University of Queensland, Brisbane, AUSTRALIA; (4) James Cook University, Cairns, AUSTRALIA; (5) Department of Agriculture and Fisheries, South Johnstone, AUSTRALIA

CS **Vector Biology and Virus Epidemiology—New Advances That Will Propel Science for the Next Decade**
14:00–16:00; *Room 302*
Organizers: Alberto Fereres, CSIC, Madrid, SPAIN; Stewart Gray, USDA-ARS, Ithaca, NY, U.S.A.
Subject Matter Committee Chairperson: Alberto Fereres, CSIC, Madrid, SPAIN

14:00
Advances in microscopy techniques that contributed to our understanding of plant–pathogen–vector interactions
E. D. A. AMMAR, USDA-ARS, Fort Pierce, FL, U.S.A.

14:20
Elucidating complex interactions between viruses and vectors: Virus impacts on biology and behavior
K. E. MAUCK (1), N. A. Bosque-Perez (2), (1) University of California, Riverside, Riverside, CA, U.S.A.; (2) University of Idaho, Moscow, ID, U.S.A.

14:40
On the mechanisms of circulative non-propagative transmission of nanoviruses
S. BLANC, INRA, Montpellier, FRANCE

15:00
Multiscale aspects of vector transmission of plant viruses: From landscapes to coinfections
A. POWER, Cornell University, Ithaca, NY, U.S.A.

15:20
Molecular evidence of insect vector manipulation by a plant virus
J. WILSON (1), P. Pinheiro (2), Y. Xu (1), Y. Zheng (3), A. R. Rebelo (3), S. Fattahalhosseini (3), A. Kruse (1), R. Santos Dos Silva (3), Y. Xu (3), J. Giovannoni (3,4,5), Z. Fei (1,3), S. Gray (1,6), M. Heck (1,3,6), (1) Section of Plant Pathology and Plant–Microbe Biology, Cornell University, Ithaca, NY, U.S.A.; (2) Embrapa Rice and Beans, Santo Antonio de Goias, BRAZIL; (3) Boyce Thompson Institute, Ithaca, NY, U.S.A.; (4) Plant, Soil and Nutrition Research Unit, USDA-ARS, Ithaca, NY, U.S.A.; (5) Section of Plant Biology, Cornell University, Ithaca, NY, U.S.A.; (6) Emerging Pests and Pathogens Research Unit, USDA-ARS, Ithaca, NY, U.S.A.

15:30
MicroRNA profiling of the whitefly *Bemisia tabaci* in response to feeding on tomato infected with *Tomato yellow leaf curl virus*
D. K. HASEGAWA (1), M. Shamimuzzaman (1), W. Chen (2), A. Simmons (1), Z. Fei (3), K. S. Ling (1), (1) USDA-ARS, Charleston, SC, U.S.A.; (2) Boyce Thompson Institute, Ithaca, NY, U.S.A.; (3) USDA-ARS Robert W. Holley Center for Agriculture and Health, Ithaca, NY, U.S.A.

CS ***Xylella fastidiosa:* Re-Emerging Epidemics of a Global Pathogen and New Challenges for Its Control**
14:00–16:00; *Room 312*
Organizers: Giuseppe Stancanelli, European Food Safety Authority, Parma, ITALY; Rodrigo P. P. Almeida, University of California, Berkeley, Berkeley, CA, U.S.A.

14:00
Emerge of *Xylella fastidiosa* in Europe
M. SAPONARI (1), D. Boscia (1), B. B. Landa Del Castillo (2), M. A. Jacques (3), E. Marco (4), F. Poliakoff (5), (1) CNR–Institute for Sustainable Plant Protection, Bari, ITALY; (2) Instituto de Agricultura Sostenible–SCR, Cordoba, SPAIN; (3) INRA, UMR IRHS, Beaucouzé, FRANCE; (4) IVIA, Valencia, SPAIN; (5) ANSES, Angers, FRANCE

14:20
Xylella fastidiosa evolution, determinants of host plant specificity, and pathogen adaptation to novel hosts
R. P. P. ALMEIDA, University of California, Berkeley, Berkeley, CA, U.S.A.

14:40
Xylella fastidiosa–Insect vector interactions: Current and potential future research directions
J. LOPES, Departamento Entomologia e Acarologia, Universidade de São Paulo, Piracicaba, BRAZIL

15:00
Anticipating and understanding new *Xylella fastidiosa* epidemics across European landscapes; insights from remote sensing and network analysis
P. S. A. BECK (1), C. Camino González (2), R. Calderón Madrid (2), A. Hornero Luque (2), R. Hernández-Clemente (3), T. Kattenborn (4), M. Montes Borrego (2), D. Susca (5), M. Morelli (6), V. González (2), P. North (3), C. J. Carstens (7), B. B. Landa (2), D. Boscia (6), M. Saponari (6), G. Strona (1), J. A. Navas-Cortes (2), P. J. Zarco-Tejada (1), (1) European Commission–Joint Research Centre, Ispra, ITALY; (2) Instituto de Agricultura Sostenible, Consejo Superior de Investigaciones Científicas, Cordoba, SPAIN; (3) Swansea University, Swansea, UNITED KINGDOM; (4) Karlsruher Institut für Technologie (KIT), Karlsruhe, GERMANY; (5) Università di Bari Aldo Moro, Bari, ITALY; (6) CNR–Institute for Sustainable Plant Protection, Bari, ITALY; (7) School of Mathematical and Geospatial Sciences, RMIT University, Melbourne, AUSTRALIA

15:20
Advances and innovative concepts to control *Xylella fastidiosa* colonization in citrus plants
A. A. DE SOUZA (1), M. Takita (2), M. Machado (2), R. Caserta (3), L. Mitre (2,4), L. Gómez-Krapp (2), C. Nascimento (2), D. Rebelatto (2), N. Safady (2,5), S. Picchi (2), H. Coletta-Filho (2), (1) Centro de Citricultura Sylvio Moreira–Agronomic Institute (IAC), Cordeirópolis, BRAZIL; (2) Centro de Citricultura Sylvio Moreira–Agronomic Institute (IAC), Cordeirópolis, BRAZIL; (3) Centro de Citricultura Sylvio Moreira, Cordeirópolis, BRAZIL; (4) University of Campinas–UNICAMP, Campinas, BRAZIL; (5) Universidade Federal de São Carlos, Araras, BRAZIL

CS **Impact of Global Climate Change on Plant Disease**
15:00–15:50; *Room 207*
Moderators: Luis Villarreal Ruiz, Colegio de Postgraduados, PREGEP–Genetics Department, LARGEMBIO, Texcoco, MEXICO; Gloria Mosquera Cifuentes, CIAT, Palmira, COLOMBIA

15:00
Climate as a predictor of microbiome diversity in neotropical forests of Mexico in the Anthropocene
L. VILLARREAL RUIZ (1), C. Neri Luna (2), (1) Colegio de Postgraduados, PREGEP–Genetics Department, LARGEMBIO, Texcoco, MEXICO; (2) Universidad de Guadalajara, CUCBA, Ecology Department, Plant Ecophysiology Lab, Nextipac, MEXICO

15:10
Exploring genebank for identification of biotic–abiotic combined tolerance in wild *Phaseolus*
G. MOSQUERA CIFUENTES (1), C. Cotes (1), V. Arredondo (1), S. Beebe (1), S. Barrera (2), (1) CIAT, Palmira, COLOMBIA; (2) International Center for Tropical Agriculture (CIAT), Cali, COLOMBIA

15:20
Impact of climate change on fungal disease of crops commonly grown in Bangladesh
M. M. ISLAM (1), L. Rahman (2), B. Meah (3), B. Goswami (2), (1) Bangladesh Agricultural Research Institute, Joydebpur, BANGLADESH; (2) Bangladesh Agricultural Research Institute, Gazipur, BANGLADESH; (3) Bangladesh Agricultural University, Mymensingh, BANGLADESH

15:30
Climate change and disease epidemiology of twig and stem blight of cotton: Punjab, Pakistan
S. NAZ, M. Iqbal, S. Mehboob, M. Ehetisham-Ul-Haq, M. Idrees, Plant Pathology Research Institute, AYUB Agricultural Research Institute, Faisalabad, Faisalabad, PAKISTAN

15:40
Role of *hsp70* and calreticulin gene on temperature adaptation of *Blumeria graminis* f. sp. *tritici*
Z. Wang, M. Zhang, J. FAN, Y. Zhou, Institute of Plant Protection, CAAS, Beijing, CHINA

TUESDAY EXHIBIT HALL PROGRAMMING

IC **Idea Cafés**
Seeking solutions to an existing problem, a conversation on a specific issue or concern, or innovative ideas in your area of research or outreach? Check out Idea Cafés, where great minds in plant pathology gather in an informal round table conversation on an area of interest to you!

PT **POD Talks**
Connect with selected APS Fellows in an informal setting as they discuss their career journeys and share their stories, insights, and life experiences in the world of plant pathology.

1:1 **One to One**
Gain access to a selection of our most knowledgeable experts in plant pathology through informal, 15-minute meetings. *Pre-session sign-up is required; sign-up board is located near the registration desk*

IC **IDEA CAFÉ: Blackleg of Canola/Rapeseed—Genetic Resistance and Beyond**
16:30–17:30; *Veterans Memorial Auditorium/Exhibit Hall C*
Organizers: Gary Peng, Agriculture & Agri-Food Canada, Saskatoon, SK, CANADA; Dilantha G. Fernando, University of Manitoba, Winnipeg, MB, CANADA
Moderator: Gary Peng, Agriculture & Agri-Food Canada, Saskatoon, SK, CANADA

IC **IDEA CAFÉ: Clavicipitaceae**
16:30–17:30; *Veterans Memorial Auditorium/Exhibit Hall C*
Organizers: Anna Gordon, NIAB, Cambridge, UNITED KINGDOM; James G. Menzies, Agriculture & Agri-Food Canada, Morden, MB, CANADA
Subject Matter Committee Chairpersons: Anna Gordon, NIAB, Cambridge, UNITED KINGDOM; James G. Menzies, Agriculture & Agri-Food Canada, Morden, MB, CANADA

IC **IDEA CAFÉ: Innovative Approaches for Biocontrol of Insect Pests, Plant, and Foodborne Pathogens on Produce**
16:30–17:30; *Veterans Memorial Auditorium/Exhibit Hall C*
Organizers: Ocen Modesto Olanya, USDA-ARS ERRC, Wyndmoor, PA, U.S.A.; Dilip Lakshman, USDA-ARS, Beltsville, MD, U.S.A.
Moderator: Ocen Modesto Olanya, USDA-ARS ERRC, Wyndmoor, PA, U.S.A.

IC **IDEA CAFÉ: Potential of Smart Biofumigation for Plant Health and Food Safety**
16:30–17:30; *Veterans Memorial Auditorium/Exhibit Hall C*
Organizers: Mohamed Fathy, Genetic Engineering and Biotechnology Research Institute, University of Sadat City, Egypt, Sadat City, EGYPT
Subject Matter Committee Chairperson: Mohamed Fathy, Genetic Engineering and Biotechnology Research Institute, University of Sadat City, Egypt, Sadat City, EGYPT

PT **POD TALKS: A Conversation with Phytopathologists of Distinction: Shazia Iram and Youliang Peng**
16:30–17:30; *Veterans Memorial Auditorium/Exhibit Hall C*
Organizers: Sally A. Miller, Department of Plant Pathology, The Ohio State University, Wooster, OH, U.S.A.; Greg I. Johnson, C/- Horticulture for Development, Jamison Centre, AUSTRALIA

16:30
A journey for a professional life
SHAZIA IRAM, Fatima Jinnah Women University, Rawalpindi, Rawalpindi, PAKISTAN

16:50
Discussion

17:00
Environment-friendly management of the rice blast, the goal of my career
YOULIANG L. PENG, China Agricultural University, Beijing, CHINA

17:20
Discussion

1:1 **One to One Conversations with an Expert**
16:30-17:30; *Veterans Memorial Auditorium/Exhibit Hall C*
Organizer: Jose Pablo Dundore-Arias, Department of Plant Pathology, University of Minnesota, St. Paul, MN, U.S.A.

- GEORGE W. BIRD, Michigan State University, East Lansing, MI, U.S.A.
- SASKIA HOGENHOUT, John Innes Centre, Norwich, UNITED KINGDOM
- LUCY MOLELEKI, Department of Microbiology and Plant Pathology, University of Pretoria, Pretoria, SOUTH AFRICA
- NATALIA PERES, University of Florida, Wimauma, FL, U.S.A.
- ADAM H. SPARKS, University of Southern Queensland, Toowoomba, AUSTRALIA
- SUE A. TOLIN, Virginia Tech, Blacksburg, VA, U.S.A.

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WEDNESDAY, AUGUST 1

07:00–08:00	**APS Committee Meetings** *(Open to any meeting attendee)* Biological Control Committee • *Clarendon, SBH* Epidemiology Committee • *Beacon F, SBH* Extension Committee • *Gardner, SBH* Host Resistance Committee • *Exeter, SBH* Industry Committee • *Jefferson, SBH* Pathogen Resistance Committee • *Fairfax A, SBH* Regulatory Plant Pathology Committee • *Fairfax B, SBH* SBF Working Group • *Beacon B, SBH* Seed Pathology Committee • *Kent, SBH* Turfgrass Pathology Committee • *Dalton, SBH* Virology Committee • *Beacon A, SBH*
07:00–08:00	Poster Set-Up, Group 2 • *Veterans Memorial Auditorium/Exhibit Hall C*
07:30–13:00	ICPP Central—Registration Open • *Hall C Foyer*
08:00–10:00	**Concurrent Sessions** • *Various locations (see concurrent session schedule on page 39)*
10:00–11:30	Coffee Break • *Veterans Memorial Auditorium/Exhibit Hall C*
10:00–11:30	**Poster Viewing with Authors Present (Group 2, Odds)** • *Veterans Memorial Auditorium/Exhibit Hall C*
10:00–11:30	**Exhibits Open (Refreshments Provided)** • *Veterans Memorial Auditorium/Exhibit Hall C*
10:15–11:15	Idea Cafés • *Veterans Memorial Auditorium/Exhibit Hall C*
10:30–11:30	One to One Conversations with an Expert • *Veterans Memorial Auditorium/Exhibit Hall C*
11:30–13:00	**Keynote Session II:** Novel Approaches to Controlling Insect-Vectored Plant Diseases • *Ballroom A/B/C*
13:00–18:00	Free Afternoon for Sightseeing and Tours
17:00–19:00	LGBTQA Social and Networking Happy Hour • *Back Bay Social Club (offsite)*

KEYNOTE SESSION II

Novel Approaches to Controlling Insect-Vectored Plant Diseases
11:30–13:00; Ballroom A/B/C
Organizer: Saskia Hogenhout, John Innes Centre, Norwich, UNITED KINGDOM
Subject Matter Committee Chairperson: Saskia Hogenhout, John Innes Centre, Norwich, UNITED KINGDOM



Utilize Effector Targets to Generate Plant Resistance to Both Phytoplasma and Insect Vectors
Saskia Hogenhout, *John Innes Centre, Norwich, UNITED KINGDOM*

Phytoplasmas are insect-transmitted bacterial parasites that inhabit the vascular tissues of plants and induce dramatic changes in plant development, including proliferation of stems (witches'-brooms) and the reversion of flowers into leaflike structures (phyllody), and convert plants into more attractive hosts for feeding and egg laying by phytoplasma insect vectors. Phytoplasmas generate these disease symptoms via the production of an arsenal of virulence proteins, named "SAPs," which interact with and promote the degradation of a diverse range of plant transcription factors, including homeodomain proteins. Knowledge of the mechanisms of SAP interactions with plant targets has revealed avenues for phytoplasma disease control.



The Many Cell Density-Dependent Behaviors of ***Xylella fastidiosa:*** **Achieving Disease Control via Pathogen Confusion**
Steven Lindow, *University of California Berkeley, Berkeley, CA, U.S.A.*

The xylem-limited plant pathogenic bacterium *Xylella fastidiosa* has a complex life cycle that involves traits required for movement between and growth within plant xylem vessels that are incompatible with its ability to colonize the mouthparts of the sharpshooter vectors needed to transmit it to other plants. The expression of these traits is coordinated in a cell density-dependent manner involving the secretion and perception of unsaturated fatty acid quorum-sensing signal molecules. Disease control can be achieved by elevating the abundance of the fatty acid signal molecule in the absence of large pathogen populations in transgenic plants and by other means to inhibit the expression of appropriate plant colonization traits in a process aimed at conferring "pathogen confusion."



Citrus Huanglongbing: What Can We Learn from Pathogen Effectors?
Wenbo Ma, *University of California, Riverside, Riverside, CA, U.S.A.*

The citrus industry is facing an unprecedented challenge from huanglongbing (HLB). Vectored by phloem-feeding insects, the HLB-associated bacterium '*Candidatus* Liberibacter asiaticus' (CLas) colonizes the phloem tissue and eventually leads to tree decline and death. CLas possesses the Sec secretion system, which delivers virulence proteins into the phloem of infected trees and promotes disease development. These Sec-delivered effectors can be used as molecular probes to uncover important mechanisms of a host–pathogen "arms race" and set the foundation for the development of urgently needed management strategies for HLB.

WEDNESDAY CONCURRENT PROGRAMMING

Session content listed in the program is as submitted by the author/presenter and has NOT been edited.

CS Concurrent Sessions
Like the Technical and Special Sessions, the Scientific Sessions held at ICPP2018 consist of a combination of invited speakers and submitted oral presentations on the most important topics in phytopathology.

PV PhytoViews
Are there two sides to every situation? There are at PhytoView sessions, where experts explore various points of view on topics of interest through facilitated conversations.

HT Hot Topics
Catch the latest science on topics that are "hot" in plant pathology.

PD Panel Discussions
Listen to invited panelists give short introductory talks, and then join in an engaging hour-long discussion.

CS Molecular Mechanisms of Biocontrol

08:00–08:50; *Room 208*

Moderators: Carole Balthazar, Université de Moncton, Moncton, NB, CANADA; Magnus Karlsson, Department of Forest Mycology and Plant Pathology, Swedish University of Agricultural Sciences, Uppsala, SWEDEN

08:00
Once upon a time: A ten-year history of biocontrol against Fusarium head blight
S. SARROCCO (1), A. Zapparata (2), R. Baroncelli (1), G. Vannacci (1), (1) University of Pisa, DISAAA-a, Pisa, ITALY; (2) University of Pisa, Pisa, ITALY

08:10
Diversity of biocontrol-related traits revealed by whole-genome analysis of worldwide-isolated phenazine-producing *Pseudomonas* spp.
A. BIESSY, A. Novinscak, G. Léger, M. Filion, Université de Moncton, Moncton, NB, CANADA

08:20
Biocontrol of fungal pathogens infecting *Cannabis sativa*
C. BALTHAZAR, A. Novinscak, D. L. Joly, M. Filion, Université de Moncton, Moncton, NB, CANADA

08:30
Transcriptome and genome analyses of the biocontrol fungus *Clonostachys rosea* highlights toxin tolerance as a key biocontrol trait
K. Nygren (1), M. Dubey (1), A. Zapparata (2), M. Iqbal (1), G. Tzelepis (3), M. Brandström Durling (1), D. F. Jensen (1), M. KARLSSON (1), (1) Department of Forest Mycology and Plant Pathology, Swedish University of Agricultural Sciences, Uppsala, SWEDEN; (2) University of Pisa, Pisa, ITALY; (3) Department of Plant Biology, Swedish University of Agricultural Sciences, Uppsala, SWEDEN

08:40
Functional characterization of polyketide synthase genes in the biocontrol fungus *Clonostachys rosea*
U. Fatema (1), A. Broberg (2), D. F. Jensen (1), M. Karlsson (1), M. DUBEY (1), (1) Department of Forest Mycology and Plant Pathology, Swedish University of Agricultural Sciences, Uppsala, SWEDEN; (2) Department of Molecular Sciences, Swedish University of Agricultural Sciences, Uppsala, SWEDEN

PV PHYTO VIEW: Feeding the Future: Partners in Plant Health

08:00–09:30; *Room 210*

Organizers: Washington Otieno, CABI, Nairobi, KENYA
Panelists: Kirk Shirley, USDA Foreign Agriculture Service (FAS), Washington, DC, U.S.A.; Washington Otieno, CABI, Nairobi, KENYA; Bill Hendrix, Dow AgroSciences, Hunger Solutions Network, Indianapolis, IN, U.S.A.

CS Accessory Genomes, Genome Islands, and Dispensable Chromosomes Fuel Rapid Adaptations in Plant Pathogens

08:00–10:00; *Room 312*

Organizers: Steve Klosterman, USDA-ARS, Crop Improvement and Protection Research, Salinas, CA, U.S.A.; Li-Jun Ma, Plant Biology Graduate Program, University of Massachusetts, Amherst, Amherst, MA, U.S.A.
Subject Matter Committee Chairperson: Steve Klosterman, USDA-ARS, Crop Improvement and Protection Research, Salinas, CA, U.S.A.

08:00
HGT drives evolutionary transitions in *Rhodococcus* and establishes new pathogenic lineages
J. CHANG, Oregon State University, Botany and Plant Pathology, Corvallis, OR, U.S.A.

08:20
Zymoseptoria tritici histone modifications distinguish core and accessory chromosomes and play an important role in genome stability
M. MOELLER (1,2), K. Schotanus (3), J. L. Soyer (2,4), M. Freitag (5), E. H. Stukenbrock (1,2), (1) Christian-Albrechts University of Kiel, Environmental Genomics, Kiel, GERMANY; (2) Max Planck Institute

for Evolutionary Biology, Plön, GERMANY; (3) Duke University Medical Center, Department of Molecular Genetics and Microbiology, Durham, NC, U.S.A.; (4) UMR BIOGER, INRA, AgroParisTech, Université Paris-Saclay, Thiverval-Grignon, FRANCE; (5) Oregon State University, Department of Biochemistry and Biophysics, Corvallis, OR, U.S.A.

08:40
Diversity of the rice pathogenic bacterium *Burkholderia glumae* in virulence, regulatory system, and genome structure associated with genomic islands
J. H. HAM (1), T. De Paula Lelis (1), H. H. Lee (2), Y. S. Seo (2), (1) Louisiana State University, Baton Rouge, LA, U.S.A.; (2) Pusan National University, Busan, KOREA

09:00
Accessory chromosomes and host-specific pathogenicity in *Fusarium oxysporum*
M. REP, University of Amsterdam, Amsterdam, NETHERLANDS

09:20
Third generation sequencing refines comparative genome organization in members of a species complex to highlight determinants of pathogenic lifestyles
E. Gay (1), F. Dutreux (1,2), M. H. Balesdent (1), N. Lapalu (1), C. Cruaud (2), T. ROUXEL (1), (1) INRA Bioger, Thiverval-Grignon, FRANCE; (2) CEA CNRS, Évry, FRANCE

CS Global Impacts of Plant Disease Epidemics

08:00–10:00; *Room 304*

Organizers: Serge S. Savary, INRA, Castanet-Tolosan, FRANCE
Subject Matter Committee Chairperson: Serge S. Savary, INRA, Castanet-Tolosan, FRANCE

08:00
Global impacts of potential plant disease epidemics: Wheat and rice
S. S. SAVARY, INRA, Castanet-Tolosan, FRANCE

08:20
Assessment of crop health and losses to plant diseases in world agricultural foci
A. NELSON (1), S. S. Savary (2), L. Willocquet (2), P. Esker (3), S. J. Pethybridge (4), N. McRoberts (5), (1) University of Twente, Enschede, NETHERLANDS; (2) INRA, Castanet-Tolosan, FRANCE; (3) The Pennsylvania State University, University Park, PA, U.S.A.; (4) Cornell University, Plant Pathology and Plant–Microbe Biology Section, Geneva, NY, U.S.A.; (5) University of California, Davis, Davis, CA, U.S.A.

08:40
Impacts of rice diseases in tropical Asia
N. P. CASTILLA (1), J. B. Macasero (1), J. Villa (1), A. H. Sparks (2), L. Willocquet (3), S. Savary (3), (1) International Rice Research Institute, Metro Manila, PHILIPPINES; (2) University of Southern Queensland, Toowoomba, AUSTRALIA; (3) INRA, Castanet-Tolosan, FRANCE

09:00
Consequences of plant disease introductions: From crop loss mitigation to environmental impact
M. J. JEGER, Imperial College London, Ascot, UNITED KINGDOM

09:20
Reverse modeling enables estimating yield losses caused by individual and multiple disease injuries
L. WILLOCQUET (1), I. Félix (2), C. De Vallavieille-Pope (3), S. S. Savary (1), (1) INRA, Castanet-Tolosan, FRANCE; (2) Arvalis, Le Subdray, FRANCE; (3) UMR BIOGER AgroParisTech, INRA, Université Paris–Saclay, Thiverval-Grignon, FRANCE

09:30
Yield loss to *Fusarium pseudograminearum* of commercially grown barley and wheat varieties in Western Australia
D. HUBERLI, M. Connor, K. Gajda, Department of Primary Industries and Regional Development, South Perth, AUSTRALIA

CS Progress in Chemical Disease Control

08:00–10:00; *Room 302*

Organizers: Tarlochan Thind, Department of Plant Pathology, Punjab Agricultural University, Ludhiana, INDIA; Guido Schnabel, Clemson University, Clemson, SC, U.S.A.
Subject Matter Committee Chairperson: Klaus Stenzel, Bayer AG, Monheim, GERMANY

08:00
Progress in understanding of plant defense modulation by fungicides
J. KLEEMANN, K. Tietjen, Bayer AG, Monheim, GERMANY

08:20
Progress on chemical management of postharvest diseases of subtropical fruits
J. ADASKAVEG (1), H. Forster (2), D. Chen (1), (1) Department of Plant Pathology and Microbiology, University of California, Riverside, Riverside, CA, U.S.A.; (2) Department of Microbiology and Plant Pathology, University of California, Riverside, Riverside, CA, U.S.A.

08:40
Inatreq™ active: A novel natural product based fungicide for control of major diseases in cereal crops
A. LEADER (1), G. M. Kemmitt (2), J. P. Steckler (3), (1) DowDuPont Agriculture Division, Cambridge, UNITED KINGDOM; (2) DowDuPont Agriculture Division, Abingdon, UNITED KINGDOM; (3) DowDuPont Agriculture Division Switzerland SA, Horgen, SWITZERLAND

09:00
Polymer nanoparticles as potent fungicides against *Verticillium dahliae*: Insights from a metabolomics perspective
M. LYKOGIANNI (1), Z. Sideratou (2), D. Tsiourvas (2), K. Aliferis (1,3), (1) Laboratory of Pesticide Science, Agricultural University of Athens, Athens, GREECE; (2) Institute of Nanoscience and Nanotechnology, NCSR Demokritos, Athens, GREECE; (3) McGill University, Montréal, QC, CANADA

09:10
Genomic signatures of sub-lethal fungicide stress in *Sclerotinia sclerotiorum*
N. GAMBHIR, Z. N. Kamvar, S. E. Everhart, University of Nebraska, Lincoln, Lincoln, NE, U.S.A.

CS **Sequence-Based Taxonomies for Plant Pathogens**
08:00–10:00; *Room 207*
Organizers: Carolee T. Bull, The Pennsylvania State University, University Park, PA, U.S.A.; Boris A. Vinatzer, Virginia Tech, Blacksburg, VA, U.S.A.
Subject Matter Committee Chairperson: Carolee T. Bull, The Pennsylvania State University, University Park, PA, U.S.A.

08:00
Classification and characterization of plant viruses identified by metagenomics approaches
J. K. BROWN, School of Plant Sciences, University of Arizona, Tucson, AZ, U.S.A.

08:20
Linking molecules with morphology in the -Omics age: Computational taxonomy pipelines for nematodes and other microbial metazoa
H. BIK, University of California, Riverside, Riverside, CA, U.S.A.

08:40
Moving forward with the identification of fungi using sequence based techniques
A. PORRAS-ALFARO, Western Illinois University, Macomb, IL, U.S.A.

09:00
Genome-based classification and identification of bacteria
L. Tian (1), Y. Vasebi (2), V. Eastman (2), K. Hirani (2), G. Hughes (2), L. Heath (3), B. A. VINATZER (2), (1) Department of Plant Pathology, Physiology, and Weed Science, Virginia Tech, Blacksburg, VA, U.S.A.; (2) Virginia Tech, Blacksburg, VA, U.S.A.; (3) Department of Computer Science, Virginia Tech, Blacksburg, VA, U.S.A.

09:20
Research on *Dickeya* and *Pectobacterium*
X. LI (1), B. Hu (2), J. van der Wolf (3), (1) Canadian Food Inspection Agency, Charlottetown, PE, CANADA; (2) College of Plant Protection, Nanjing Agricultural University, Nanjing, CHINA; (3) Wageningen University and Research, Wageningen, NETHERLANDS

09:30
Detection and classification of *Candidatus* Phytoplasma associated with cassava witches' broom disease in Thailand
P. MOONJUNTHA (1,2), P. Maneechoat (3), N. Kositcharoenkul (3), P. Wongtiem (2), K. T. Natsuaki (1), (1) Tokyo University of Agriculture, Tokyo, JAPAN; (2) Rayong Field Crops Research Center, Department of Agriculture, Rayong, THAILAND; (3) Plant Pathology Research Group, Department of Agriculture, Bangkok, THAILAND

CS **Why Light Matters: New Concepts, Tools, and Practices to Suppress Plant Pathogens and Enhance Plant Health**
08:00–10:00; *Room 311*
Organizers: David M. Gadoury, Cornell University, Geneva, NY, U.S.A.; Lance E. Cadle-Davidson, USDA Grape Genetics Research Unit, Geneva, NY, U.S.A.
Subject Matter Committee Chairperson: Jonathan Yuen, Swedish University of Agricultural Sciences, Uppsala, SWEDEN

08:00
Dream big: Solid state/LED lighting will allow you to affect pathogen biology in ways that you never could before
M. REA (1), D. M. Gadoury (2), (1) Lighting Research Center, Rensselaer Polytechnic Institute, Troy, NY, U.S.A.; (2) Cornell University, Geneva, NY, U.S.A.

08:20
Seeing the light: The roles of red and blue light sensing in bacterial plant pathogens
G. A. BEATTIE, Iowa State University, Ames, IA, U.S.A.

08:40
Exploiting our knowledge of how fungal plant pathogens use visible and UV light
A. STENSVAND, Norwegian Institute of Bioeconomy Research (NIBIO), Ås, NORWAY

09:00
Genetic tools for the study of light and circadian processes in microbial plant pathogens
L. E. CADLE-DAVIDSON, USDA Grape Genetics Research Unit, Geneva, NY, U.S.A.

09:20
Calculation of dose and projected efficacy when using visible or UV light to suppress plant pathogens and arthropod pests.
T. MCCANN (1), D. M. Gadoury (1), A. Stensvand (2), A. Bierman (3), M. Rea (3), (1) Cornell University, Geneva, NY, U.S.A.; (2) Norwegian University of Life Sciences, Ås, NORWAY; (3) Lighting Research Center, Rensselaer Polytechnic Institute, Troy, NY, U.S.A.

09:30
Timing is everything: Stomatal manipulation facilitates *Puccinia graminis* entry in dark, resulting in counter evolution of barley Rpg5 immune receptor
S. SOLANKI (1), G. Ameen (1), R. Sharma Poudel (3), P. Borowicz (4), R. S. Brueggeman (2), (1) Department of Plant Pathology, North Dakota State University, Fargo, ND, U.S.A.; (3) North Dakota State University, Fargo, ND, U.S.A.; (4) Animal Sciences, North Dakota State University, Fargo, ND, U.S.A.

WEDNESDAY EXHIBIT HALL PROGRAMMING

IC **Idea Cafés**
Seeking solutions to an existing problem, a conversation on a specific issue or concern, or innovative ideas in your area of research or outreach? Check out Idea Cafés, where great minds in plant pathology gather in an informal round table ~~conversation on an area of interest to you~~!

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Connect with selected APS Fellows in an informal setting as they discuss their career journeys and share their stories, insights, and life experiences in the world of plant pathology.

1:1 **One to One**
Gain access to a selection of our most knowledgeable experts in plant pathology through informal, 15-minute meetings. *Pre-session sign-up is required; sign-up board is located near the registration desk*

IC **IDEA CAFÉ: Current Issues in Food Safety and Post-Harvest Pathology of Fruit and Vegetable Crops**
10:15–11:15; *Veterans Memorial Auditorium/Exhibit Hall C*
Organizers: James E. Adaskaveg, Department of Microbiology and Plant Pathology, University of California, Riverside, Riverside, CA, U.S.A.; Wojciech J. Janisiewicz, USDA-ARS AFRS, Kearneysville, WV, U.S.A.

IC **IDEA CAFÉ: Recent Advances in Development and Validation of Plant Pathogen Detection and Diagnostic Methods**
10:15–11:15; *Veterans Memorial Auditorium/Exhibit Hall C*
Organizers: Padma Sudarshana, CSP Labs, Pleasant Grove, CA, U.S.A.
Subject Matter Committee Chairperson: Padma Sudarshana, CSP Labs, Pleasant Grove, CA, U.S.A.

IC **IDEA CAFÉ: The Understanding and Management of Wheat Diseases**
10:15–11:15; *Veterans Memorial Auditorium/Exhibit Hall C*
Organizers: Peter Solomon, The Australian National University, Canberra, AUSTRALIA; Stephen B. Goodwin, USDA-ARS, West Lafayette, IN, U.S.A.

1:1 **One to One Conversations with an Expert**
10:30–11:30; *Veterans Memorial Auditorium/Exhibit Hall C*
Organizer: Jose Pablo Dundore-Arias, Department of Plant Pathology, University of Minnesota, St. Paul, MN, U.S.A.

- EMERSON M. DEL PONTE, Universidade Federal de Vicosa, Vicosa, BRAZIL
- MARIA LODOVICA GULLINO, Agroinnova–University of Torino, Grugliasco, Torino, ITALY
- LINDA L. KINKEL, Department of Plant Pathology, University of Minnesota, St. Paul, MN, U.S.A.
- SALLY A. MILLER, Department of Plant Pathology, The Ohio State University, Wooster, OH, U.S.A.
- SILVIA RESTREPO, Universidad de los Andes, Bogota, COLOMBIA
- VALERIE M. VERDIER, IRD, CIRAD, University of Montpellier, IPME, Montpellier, FRANCE

All events take place in the John B. Hynes Veterans Memorial Convention Center unless otherwise noted. Some small select meetings take place at the Sheraton Boston Hotel (SBH) and are noted as such.

THURSDAY, AUGUST 2

07:00–08:00	**APS Committee Meetings** *(Open to any meeting attendee)* Collections and Germplasm Committee • *Fairfax B, SBH* Early Career Professionals Committee • *Dalton, SBH* Evolutionary Genetics and Genomics Committee • *Exeter, SBH* Phyllosphere Microbiology Committee • *Fairfax A, SBH* Soil Microbiology and Root Diseases Committee • *Clarendon, SBH* Teaching Committee • *Gardner, SBH*
07:00–08:30	2019 APS Annual Meeting Board Meeting, *by invitation* • *Room 200*
07:00–10:00	Breakfast Meeting for Incoming ISPP Executive Committee, *by invitation* • *Executive Boardroom 300*
07:30–18:00	ICPP Central—Registration Open • *Hall C Foyer*
08:00–17:30	Poster Viewing • *Veterans Memorial Auditorium/Exhibit Hall C*
08:30–10:30	**Concurrent Sessions** • *Various locations (see concurrent session schedule on page 45)*
10:30–11:00	Coffee Break • *Boylston Hallway, levels 2 and 3*
11:00–12:30	**Keynote Session III:** The Role of Plant Pathology in Food Safety • *Ballroom A/B/C*
12:30–14:00	Lunch Break
14:00–16:00	**Concurrent Sessions** • *Various locations (see concurrent session schedule on page 48)*
16:00–17:30	**Poster Viewing with Authors Present (Group 2, Evens)** • *Veterans Memorial Auditorium/Exhibit Hall C*
16:00–18:00	**Exhibits Open (Refreshments Provided)** • *Veterans Memorial Auditorium/Exhibit Hall C*
16:30–17:30	Idea Cafés • *Veterans Memorial Auditorium/Exhibit Hall C*
16:30–17:30	POD Talks • *Veterans Memorial Auditorium/Exhibit Hall C*
16:30–17:30	One to One Conversations with an Expert • *Veterans Memorial Auditorium/Exhibit Hall C*
17:30–18:00	POD Talk • *Veterans Memorial Auditorium/Exhibit Hall C*
18:00–18:30	Poster Take-Down (Group 2) • *Veterans Memorial Auditorium/Exhibit Hall C*
18:00–20:00	Exhibit Take-Down • *Veterans Memorial Auditorium/Exhibit Hall C*
19:00–23:00	**Congress Closing Event** • *House of Blues, Boston (offsite)*



Don't Miss the Congress Closing Event!

What is more American than rock n' roll? Come experience the ultimate Boston night out at the iconic House of Blues—where music and food will feed your soul. Don't miss out on a night of celebration, networking, great food, and live music all on the final night of ICPP2018. Steps away from Fenway Park, the House of Blues will give you a taste of true Americana and the best that Boston has to offer, including music stylings from the World Premier Band, whose repertoire spans decades and genres. Join your colleagues for a final night celebration you are sure to remember for years to come. *This is a ticketed event—all attendees must purchase and present ticket to attend.*

KEYNOTE SESSION III

The Role of Plant Pathology in Food Safety
11:00–12:30; Ballroom A/B/C
Organizers: Maria Lodovica Gullino, Agroinnova–University of Torino, Torino, ITALY; Jacqueline Fletcher, Oklahoma State University, Stillwater, OK, U.S.A.



A Multipronged Approach for Aflatoxin Mitigation in Africa Centered on Biological Control
Ranajit Bandyopadhyay, *International Institute of Tropical Agriculture, Ibadan, NIGERIA*

Aflatoxin has serious negative impacts on health, trade, income, and food security, affecting more than 4.5 billion people globally. This talk will analyze key challenges in implementing various recommendations for reducing aflatoxin and propose elements of technological, institutional, and policy options that can be combined into aflatoxin management systems for agriculture in developing countries.



Pesticide Residues in Food: A Never-Ending Challenge
Carmen Tiu, *Dow AgroSciences, Indianapolis, IN, U.S.A.*

How safe is our food within the context of a world with exponential growth of population and food needs, which require a large variety of top-notch technologies? This presentation will review main achievements so far, as well as future tasks and challenges.



The Molecular Basis to Colonization of Plants by Human Pathogens: Implications and Risks
Nicola Holden, *The James Hutton Institute, Dundee, SCOTLAND*

It has been well established that edible plant produce can act as a transmission vehicle for foodborne pathogens. Bacterial pathogens are able to interact with plants and use them as secondary hosts. Here, I will discuss the molecular mechanisms that underpin those interactions and how this information can guide us in risk management.

THURSDAY CONCURRENT PROGRAMMING

Session content listed in the program is as submitted by the author/presenter and has NOT been edited.

CS Concurrent Sessions
Like the Technical and Special Sessions, the Scientific Sessions held at ICPP2018 consist of a combination of invited speakers and submitted oral presentations on the most important topics in phytopathology.

PV PhytoViews
Are there two sides to every situation? There are at PhytoView sessions, where experts explore various points of view on topics of interest through facilitated conversations.

HT Hot Topics
Catch the latest science on topics that are "hot" in plant pathology.

PD Panel Discussions
Listen to invited panelists give short introductory talks, and then join in an engaging hour-long discussion.

CS Biology of Nematodes

08:30–09:20; *Room 304*

Moderators: Abasola C. M. Simon, The Ohio State University, Columbus, OH, U.S.A.; Katherine East, Washington State University, Prosser, WA, U.S.A.

08:30
Quantifying the spatial and temporal variations of plant-parasitic nematodes associated with corn in Ohio
A. C. M. SIMON (1), R. Lewandowski (2), E. Richer (3), T. L. Niblack (1), P. A. Paul (4), (1) The Ohio State University, Columbus, OH, U.S.A.; (2) The Ohio Sate University Extension, Athens, OH, U.S.A.; (3) The Ohio State University, Wauseon, OH, U.S.A.; (4) The Ohio State University, Wooster, OH, U.S.A.

08:40
Developmental dynamics of the northern root-knot nematode (*Meloidogyne hapla)* in Washington State vineyards
K. EAST (1), I. A. Zasada (2), R. P. Schreiner (2), M. M. Moyer (1), (1) Washington State University, Prosser, WA, U.S.A.; (2) USDA-ARS, Corvallis, OR, U.S.A.

08:50
Population dynamics of ectoparasitic and endoparasitic nematodes in North Carolina
G. GALLE, C. H. Opperman, J. P. Kerns, Department of Entomology and Plant Pathology, North Carolina State University, Raleigh, NC, U.S.A.

09:00
Survey and identification of *Meloidogyne* species associated with potato in North Sumatra, Indonesia
L. LISNAWITA (1), F. Kurniawati (2), A. R. Tantawi (3), H. Yusuf (1), E. A. Nainggolan (1), (1) Universitas Sumatera Utara, Medan, INDONESIA; (2) Bogor Agricultural University, Bogor, INDONESIA; (3) University of Medan Area, Medan Estate, INDONESIA

09:10
Synaptic guidepost protein (syg-2) gene-specific primers for detecting *Bursaphelenchus xylophilus*
X. WANG, L. Wang, Research Institute of Forest Ecology, Environment and Protection, CAF, Beijing, CHINA

PV PHYTO VIEW: Life Beyond the Crop: Exploring the Roles of Non-Agricultural Habits in Epidemiology and Plant Health

08:30–10:00; *Room 312*

Organizers: Cindy Morris, INRA, Montfavet, FRANCE; Linda L. Kinkel, University of Minnesota, St. Paul, MN, U.S.A.
Moderators: Caitilyn Allen, University of Wisconsin–Madison, Madison, WI, U.S.A.
Panelists: Cindy Morris, INRA, Montfavet, FRANCE; Linda L. Kinkel, University of Minnesota, St. Paul, MN, U.S.A.

CS Challenges and Successes of Agricultural Technology Transfer Globally

08:30–10:30; *Room 311*

Organizers: Susan Cohen, Center for Regulatory Research, LLC, White Bear Lake, MN, U.S.A.; Carla D. Garzon, Oklahoma State University, Stillwater, OK, U.S.A.; Steve Johnson, University of Maine Cooperative Extension, Presque Isle, ME, U.S.A.
Subject Matter Committee Chairpersons: Marcial Paster-Corrales, USDA-ARS, Beltsville, MD, U.S.A.; Steve Johnson, University of Maine Cooperative Extension, Presque Isle, ME, U.S.A.

08:30
Overview of barriers and successes to transfer of agricultural technology
A. C. FAYAD, Virginia Tech, Blacksburg, VA, U.S.A.

08:50
A multi-faceted approach to promoting the use of bio-pesticides in Nepal: Experiences from Integrated Pest Management Innovation Lab
S. PAUDEL, The Pennsylvania State University, University Park, PA, U.S.A.

09:10
Plant disease extension in Mexico
H. LOZOYA-SALDANA, Universidad Autónoma de Chapingo, Chapingo, MEXICO

09:30
Impacts of antibody and molecular disease diagnostics kits on disease identification and management in Africa
S. A. MILLER, Department of Plant Pathology, The Ohio State University, Wooster, OH, U.S.A.

09:50
Future directions in agricultural technology transfer for plant disease management
A. R. RECORDS, USAID, Washington, DC, U.S.A.

CS Global Impact of International Seed Movement: Regulatory Implications of Seed Health Testing
08:30–10:30; *Room 302*
Organizers: Theresa A. S. Aveling, Department of Plant and Soil Sciences, FABI, University of Pretoria, Pretoria, Gauteng, SOUTH AFRICA; Ronald R. Walcott, The University of Georgia, Athens, GA, U.S.A.
Subject Matter Committee Chairperson: Theresa A. S Aveling, Department of Plant and Soil Sciences, FABI, University of Pretoria, Pretoria, Gauteng, SOUTH AFRICA

08:30
Seed health challenges in the smallholder informal seed system
Q. KRITZINGER (1), T. A. S. Aveling (2), (1) Department of Plant and Soil Sciences, University of Pretoria, Pretoria, Gauteng, SOUTH AFRICA; (2) Department of Plant and Soil Sciences, FABI, University of Pretoria, Pretoria, Gauteng, SOUTH AFRICA

08:50
Critical aspects of biologically relevant seed health assays
C. M. Vera Cruz (1,2), M. H. R. Nguyen (1), J. M. Lang (3), B. Cottyn (4), V. M. Verdier (5), D. Mishra (6), Y. Raj (6), J. E. LEACH (3), (1) International Rice Research Institute, Los Baños, Laguna, PHILIPPINES; (2) Los Baños, Laguna, PHILIPPINES; (3) Colorado State University, Fort Collins, CO, U.S.A.; (4) ILVO, Merelbeke, BELGIUM; (5) IRD, CIRAD, University of Montpellier, IPME, Montpellier, FRANCE; (6) Bayer CropScience, Hyderabad, Andhra Pradesh, INDIA

09:10
Harmonization of phytosanitary/regulatory policy and seed health testing for safe global seed movement
S. THOMAS, Monsanto, Creve Coeur, MO, U.S.A.

09:30
Detection of threatening emerging pathogens in maize and wheat seed: Phytosanitary challenges, regulations and solutions
M. MEZZALAMA (1), P. L. Kumar (2), (1) CIMMYT, Texcoco, MEXICO; (2) International Institute of Tropical Agriculture (IITA), Ibadan, NIGERIA

09:40
Viruses of *Ullucus tuberosus*: The opportunities and implications of using next generation sequencing in support of statutory diagnostics
A. FOX, A. Fowkes, A. Skelton, V. A. Harju, I. Adams, Fera Science Ltd., York, UNITED KINGDOM

09:50
Cucumber green mottle mosaic virus: Research perspective working with a world traveling virus
T. PITMAN (1), T. Tian (2), B. J. Aegerter (3), K. Posis (2), B. W. Falk (1), (1) University of California, Davis, Davis, CA, U.S.A.; (2) California Department of Food and Agriculture, Sacramento, CA, U.S.A.; (3) University of California Cooperative Extension, Stockton, CA, U.S.A.

CS Modern Approaches in Weed Biological Control
08:30–10:30; *Room 208*
Organizers: Louise Morin, CSIRO Health and Biosecurity, Canberra, AUSTRALIA
Subject Matter Committee Chairperson: William L. Bruckart, USDA-ARS Foreign Disease–Weed Science Research Unit (FDWSRU), Fort Detrick, MD, U.S.A.

08:30
Marrying classical with inundative weed biological control
M. SEIER, D. Kurose, H. C. Evans, CABI, Egham, Surrey, UNITED KINGDOM

08:50
The first commercial bioherbicide based on a virus
R. CHARUDATTAN, University of Florida, Gainesville, FL, U.S.A.

09:10
How molecular biology is streamlining weed biological control research
L. MORIN, CSIRO Health and Biosecurity, Canberra, AUSTRALIA

09:30
Investigation of leaf blotch and blight disease pathogens of *Microstegium vimineum* and screening for its potential biological control agents
S. QIANG (1), R. Ding (1), Q. Huang (1), L. Zhang (1), Y. Wu (2), R. C. Reardon (3), (1) Weed Research Laboratory, Nanjing Agricultural University, Nanjing, CHINA; (2) USDA Forest Service, Morgantown, WV, U.S.A.; (3) USDA Forest Service–Forest Health Assessment and Applied Science Team, Morgantown, WV, U.S.A.

CS Pathogenicity and Resistance in Post-Harvest Diseases—Part I

08:30–10:30; *Room 207*

Organizers: Samir Droby, Agricultural Research Organization, The Volcani Center, Rishon LeZion, ISRAEL; Davide Spadaro, DISAFA and AGROINNOVA, University of Torino, Torino, ITALY; Michael Wisniewski, USDA-ARS, Kearneysville, WV, U.S.A.

Subject Matter Committee Chairperson: Samir Droby, Agricultural Research Organization, The Volcani Center, Rishon LeZion, ISRAEL

08:30
Role of effector proteins in pathogenicity of postharvest pathogens
S. DROBY, Agricultural Research Organization, The Volcani Center, Rishon LeZion, ISRAEL

08:50
Cross-kingdom small RNA trafficking and environmental RNAi for plant protection against fungal pathogens
H. JIN, Department of Microbiology and Plant Pathology, University of California, Riverside, Riverside, CA, U.S.A.

09:10
Insights into fruit defense mechanisms against the main post-harvest pathogens of apples and oranges
R. TORRES, L. Vilanova, J. Giné-Bordonaba, N. Teixidó, N. Vall-Llaura, C. Larrigaudière, J. Usall, IRTA, XaRTA–Postharvest, Edifici Fruitcentre, Lleida, Catalonia, SPAIN

09:30
Molecular mechanism of reactive oxygen species in regulating the development and pathogenicity of *Botrytis cinerea*
S. TIAN, Z. Zhang, B. Li, G. Qin, T. Chen, Institute of Botany, Chinese Academy of Sciences, Beijing, CHINA

10:00
Transcriptome analysis of cultivated and wild sweetpotato reveals differences in NB-LRR resistance gene repertoire
C. H. PARADA ROJAS, L. M. Quesada, North Carolina State University, Raleigh, NC, U.S.A.

CS Taxonomy of Plant Pathogenic Fungi

08:30–10:30; *Room 210*

Organizers: Brett A. Summerell, Royal Botanic Gardens and Domain Trust, Sydney, AUSTRALIA; Pedro W. Crous, Westerdijk Fungal Biodiversity Institute, Utrecht, NETHERLANDS

08:30
Re-inventory of Australia's plant pathogen reference collections: Australian *Colletotrichum* species revisited
J. EDWARDS (1,2), R. Shivas (3), Y. P. Tan (4), S. Q. Dinh (5), B. Weir (6), (1) AgriBio, Bundoora, AUSTRALIA; (2) LaTrobe University, Bundoora, AUSTRALIA; (3) Centre for Crop Health, University of Southern Queensland, Toowoomba, AUSTRALIA; (4) Department of Agriculture and Fisheries, Brisbane, AUSTRALIA; (5) Agriculture Victoria, Knoxfield, AUSTRALIA; (6) Manaaki Whenua Landcare Research, Auckland, NEW ZEALAND

08:50
Plant pathogenic and toxigenic *Fusarium* species—Their taxonomy, systematics and nomenclature in the molecular age
B. A. SUMMERELL, Royal Botanic Gardens and Domain Trust, Sydney, AUSTRALIA

09:10
What's in a name? Emergent strains, admixtures and fuzzy species in *Ceratocystis*
T. HARRINGTON, Iowa State University, Ames, IA, U.S.A.

09:30
Diversity of decline-associated *Phaeoacremonium* species on woody hosts in South Africa
C. Spies (1), P. Moyo (2), F. Halleen (2), L. MOSTERT (2), (1) Agricultural Research Council, Stellenbosch, SOUTH AFRICA; (2) Stellenbosch University, Stellenbosch, SOUTH AFRICA

09:50
Powdery mildews (Erysiphales) in Victorian horticulture: DNA isolation to rediscover an old foe hidden in herbaria
R. SMITH (1), T. Sawbridge (2), R. Mann (3), J. Kaur (3), T. May (4), J. Edwards (3), (1) DEDJTR, Agriculture Victoria, Bundoora, AUSTRALIA; (2) LaTrobe University, Bundoora, AUSTRALIA; (3) AgriBio, Bundoora, AUSTRALIA; (4) Royal Botanic Gardens, Melbourne, South Yarra, AUSTRALIA

10:00
A taxonomic re-examination of *Ceratocystis fimbriata*, the causal agent of Ceratocystis canker of almond in California
L. A. HOLLAND (1), D. P. Lawrence (2), R. Travadon (2), T. Harrington (3), M. Nouri (4), F. Trouillas (5), (1) Department of Plant Pathology, University of California, Davis, Davis, CA, U.S.A.; (2) University of California, Davis, Davis, CA, U.S.A.; (3) Iowa State University, Ames, IA, U.S.A.; (4) Department of Plant Pathology, University of California, Kearney, Agricultural Research and Extension Center, Parlier, CA, U.S.A.; (5) Department of Plant Pathology, University of California, Davis, Parlier, CA, U.S.A.

CS Nematode Control (IPM)

14:00–14:50; *Room 208*

Moderators: Anna L. Testen, The Ohio State University, Wooster, OH, U.S.A.; Kirsty Owen, Leslie Research Centre, Toowoomba, AUSTRALIA

14:00
Anaerobic soil disinfestation for management of soilborne diseases in muck soil vegetable production systems
A. L. TESTEN (1), S. A. Miller (2), (1) The Ohio State University, Wooster, OH, U.S.A.; (2) Department of Plant Pathology, The Ohio State University, Wooster, OH, U.S.A.

14:10
Suppression of *Pratylenchus thornei* after sequences of resistant summer grain crops maximised production of an intolerant wheat cultivar
K. OWEN (1), T. Clewett (1), K. Bell (2), J. Thompson (1), (1) University of Southern Queensland, Centre for Crop Health, Toowoomba, AUSTRALIA; (2) Department of Agriculture and Fisheries Queensland, Toowoomba, AUSTRALIA

14:20
Insights into biological and molecular underpinnings of how post-plant nematicides suppress *Meloidogyne incognita*
C. WRAM (1,2), A. Peetz (2), I. A. Zasada (3), (1) Oregon State University, Corvallis, OR, U.S.A.; (2) USDA-ARS-HCRU, Corvallis, OR, U.S.A.; (3) USDA-ARS, Corvallis, OR, U.S.A.

14:30
Relationship between soil health indicators and potato early-die in Michigan
G. W. BIRD, Michigan State University, East Lansing, MI, U.S.A.

14:40
Root knot nematode: A global pathogen, threat for sustainable agriculture production
M. Soomro (1), S. FAYYAZ (2), (1) Economic Cooperation Organization Science Foundation, Islamabad, PAKISTAN; (2) National Nematological Research Centre, University of Karachi, Karachi, PAKISTAN

PD PANEL DISCUSSION: Assessing the Real Impact of Plant Pathology: The Many Hidden Losses Due to Plant Diseases

14:00–15:30; *Room 210*

Organizers: Andrea Ficke, NIBIO, Ås, NORWAY; Felipe Dalla Lana, The Ohio State University, Columbus, OH, U.S.A.
Subject Matter Committee Chairperson: Robin Choudhury, University of Florida, Gainesville, FL, U.S.A.

14:00
The impact of plant diseases on high value products (the effect of grape diseases on the wine industry)
J. KAPLAN, Sacramento State University, Sacramento, CA, U.S.A.

14:10
Direct yield losses versus indirect yield losses—Assessment methods and impact
L. WILLOCQUET, INRA, Castanet-Tolosan, FRANCE

14:20
The economic impact of cosmetic diseases
S. M. VILLANI, North Carolina State University, Mills River, NC, U.S.A.

14:30
Food safety on a regional basis (Mycotoxin contamination in maize)
R. NELSON, Cornell University, Ithaca, NY, U.S.A.

14:40
Discussion

CS Global Challenges in Plant Diagnostics

14:00–16:00; *Room 312*

Organizers: Julie W. Beale, University of Kentucky, Lexington, KY, U.S.A.; Clarissa J. Balbalian, Mississippi State University, Mississippi State, MS, U.S.A.
Subject Matter Committee Chairperson: Clarissa J. Balbalian, Mississippi State University, Mississippi State, MS, U.S.A.

14:00
Quads experience towards international harmonisation of methods development and validation procedures for regulatory purposes
B. RODONI (1), L. Levy (2), P. J. Shiel (3), M. K. Nakhla (4), (1) Plant Biosecurity Cooperative Research Centre, Bruce, AUSTRALIA; (2) USDA APHIS PPQ CPHST, Riverdale, MD, U.S.A.; (3) USDA APHIS PPQ S&T CPHST, Raleigh, NC, U.S.A.; (4) USDA APHIS PPQ S&T CPHST, Beltsville, MD, U.S.A.

14:20
Reinventing the wheel or driving the science? International diagnostics: Capacity and coordination
M. AREVALO (1), C. Lapaire Harmon (2), (1) AGROEXPERTOS, Guatemala City, GUATEMALA; (2) University of Florida, Gainesville, FL, U.S.A.

14:40
Innovative detection methods to support plant health diagnostics
P. J. M. BONANTS (1), I. Houwers (1), A. Dullemans (1), Y. Griekspoor (1), O. Mendes (2), M. van Gent (1), R. A. Van Der Vlugt (1), J. Bergervoet

(1), C. D. Schoen (1), J. van der Wolf (1), T. van der Lee (1), (1) Wageningen Plant Research, Wageningen, NETHERLANDS; (2) Wageningen University and Research, Wageningen, NETHERLANDS

15:00
Quality assurance, validation of tests, and collections in plant pest diagnostics: Approaches and experience in the EPPO region
F. PETTER, M. McMullen, B. Giovani, European and Mediterranean Plant Protection Organization, Paris, FRANCE

15:20
Application of spectral reflectance to differentiate between leaf diseases and abiotic stresses in wheat
A. FICKE (1), K. Kusnierek (2), (1) NIBIO, Ås, NORWAY; (2) NIBIO, Kapp, NORWAY

15:30
Survey for cassava brown streak disease revealed for the first time the presence of a molecular variant of *Uganda cassava brown streak virus* in Zambia
R. M. MULENGA (1), L. Boykin (2), O. Alabi (3), (1) Zambia Agriculture Research Institute, Lusaka, ZAMBIA; (2) The University of Western Australia, Perth, AUSTRALIA; (3) Texas AgriLife Research and Extension Center, Weslaco, TX, U.S.A.

CS Novel and Integrated Approaches to Control Post-Harvest Diseases—Part II

14:00–16:00; *Room 207*

Organizers: Samir Droby, Agricultural Research Organization, The Volcani Center, Rishon LeZion, ISRAEL; Michael Wisniewski, Appalachian Fruit Research Station, USDA-ARS, Kearneysville, WV, U.S.A.; Davide Spadaro, DISAFA and AGROINNOVA, University of Torino, Torino, ITALY
Subject Matter Committee Chairperson: Samir Droby, Agricultural Research Organization, The Volcani Center, Rishon LeZion, ISRAEL

14:00
Electrolized water for the control of postharvest decay of fruits and vegetables
A. IPPOLITO, S. M. Sanzani, Department of Soil, Plant, and Food Sciences, University of Bari Aldo Moro, Bari, ITALY

14:20
Integration of postharvest fungicides and fruit sanitation treatments to optimize decay control and address food safety concerns
J. E. ADASKAVEG, Department of Microbiology and Plant Pathology, University of California, Riverside, Riverside, CA, U.S.A.

14:40
Spatial and compositional diversity in the microbiota of harvested fruits: What can it tell us about biological control of postharvest diseases
M. WISNIEWSKI (1), S. Droby (2), J. Norelli (3), S. Freilich (4), (1) Appalachian Fruit Research Station, USDA-ARS, Kearneysville, WV, U.S.A.; (2) Agricultural Research Organization, The Volcani Center, Rishon LeZion, ISRAEL; (3) USDA-ARS, Kearneysville, WV, U.S.A.; (4) ARO, Rishon LeZion, ISRAEL

15:00
Innovative management strategies for *Aspergillus* spp. and *Penicillium* spp. on nuts
D. SPADARO, DISAFA and AGROINNOVA, University of Torino, Torino, ITALY

15:20
Effects of UV photocatalytic ethylene removal on interactions between *Colletotrichum gloeosporioides* and *Solanum lycopersicum* (tomato) fruit
A. FLETCHER, M. J. Dickinson, University of Nottingham, Loughborough, UNITED KINGDOM

15:30
Aureobasidium pullulans suppression of green mould (*Penicillium digitatum*) development in mandarin var. 'Kinnow' through multiple modes of action
N. ADIKARAM (1), D. Singh (2), L. Jayasinghe (1), (1) National Institute of Fundamental Studies, Kandy, SRI LANKA; (2) ICAR–Indian Agricultural Research Institute, New Delhi, INDIA

CS Population Dynamics of Fungicide Resistance

14:00–16:00; *Room 302*

Organizers: Jeffrey R. Standish, University of Georgia, Tifton, GA, U.S.A.; Jeffrey Stein, Monsanto, Chesterfield, MO, U.S.A.
With financial support from: Monsanto
Subject Matter Committee Chairperson: Jeffrey Stein, Monsanto, Chesterfield, MO, U.S.A.

14:00
When pathogen populations diverge: Why understanding species boundaries is critical for managing fungicide resistance
M. T. BREWER, H. Li, University of Georgia, Athens, GA, U.S.A.

14:20
Asexual evolution and population sensitivity changes over time in *Sclerotinia homoeocarpa* in the absence of fungicide pressure
G. JUNG, University of Massachusetts, Amherst, Amherst, MA, U.S.A.

14:40
Azole fungicide resistance: Evolution on a rugged fitness landscape
N. HAWKINS (1), B. B. Fraaije (2), (1) Rothamsted Research, Harpenden, UNITED KINGDOM; (2) Rothamsted Research, Hertfordshire, UNITED KINGDOM

15:00
Managing fungicide resistance using the principles of population biology: Insights from mathematical modeling and field experiments
A. MIKABERIDZE, Epidemiology of Plant Diseases, ETH Zurich, Zurich, SWITZERLAND

15:20
Molecular mechanism of resistance to CAA and OSBPI fungicides in *Phytophthora capsici* and *P. sojae*
X. LIU, M. Cai, J. Miao, C. Zhang, China Agricultural University, Beijing, CHINA

CS Real-Time and Spatial Disease Risk Monitoring
14:00–16:00; *Room 311*
Organizers: Rohan Kimber, SARDI, Adelaide, AUSTRALIA; Jon West, Rothamsted Research, Harpenden, UNITED KINGDOM
Subject Matter Committee Chairperson: Jon West, Rothamsted Research, Harpenden, UNITED KINGDOM

14:00
Catch my drift? Inoculum detection as a decision aid for agricultural systems
L. D. THIESSEN, North Carolina State University, Raleigh, NC, U.S.A.

14:20
Monitoring wheat powdery mildew using Burkard volumetric spore sampler and unmanned aerial photography
W. Liu (1), X. Cao (2), X. Xu (3), J. Fan (1), Z. Wang (1), Z. Yan (1), Y. Luo (4), J. West (5), Y. ZHOU PHD (1), (1) Institute of Plant Protection, CAAS, Beijing, CHINA; (2) Environment and Plant Protection Institute, CATAS, Haikou, CHINA; (3) NIAB East Malling Research, Kent, UNITED KINGDOM; (4) University of California, Davis, Parlier, CA, U.S.A.; (5) Rothamsted Research, Hertfordshire, UNITED KINGDOM

14:40
Advantages of mobile and smart spore traps in disease surveillance
R. Kimber (1), L. Zeller (2), S. Wili (3), J. WEST (4), (1) South Australian Research and Development Institute, Adelaide, AUSTRALIA; (2) University of Southern Queensland, Toowoomba, AUSTRALIA; (3) Burkard Manufacturing Co. Ltd., Rickmansworth, UNITED KINGDOM; (4) Rothamsted Research, Harpenden, UNITED KINGDOM

15:00
Integration of DNA-based diagnostics with air samplers in a country-wide sampling network for plant disease forecasting
M. JEDRYCZKA, J. Kaczmarek, W. Irzykowski, P. Serbiak, Institute of Plant Genetics, Polish Academy of Sciences, Poznan, POLAND

15:20
Multiscale remote sensing of plant pathogens: Detecting and monitoring myrtle rust
R. HEIM (1,2), I. J. Wright (1), H. C. Chang (1), A. Carnegie (3), J. Oldeland (2), (1) Macquarie University, Sydney, AUSTRALIA; (2) Hamburg University, Hamburg, GERMANY; (3) NSW Department of Primary Industries, Parramatta, AUSTRALIA

15:30
Spectral characterization of bacterial leaf blight of rice through spectroscopy and remotely sensed multi-spectral imagery
R. T. ALBERTO, Central Luzon State University, Science City of Munoz, Nueva Ecija, PHILIPPINES

CS The Two-for-One Deal: Mechanisms of Plant Cross-Tolerance to Biotic and Abiotic Stresses
14:00–16:00; *Room 304*
Organizers: Alejandra I. Huerta, Colorado State University, Fort Collins, CO, U.S.A.; Ana Cristina Fulladolsa, Colorado State University, Fort Collins, CO, U.S.A.

14:00
Transcriptomic analysis of *Ambrosia trifida* response to glyphosate: Overlap of cell death pathways between herbicide resistance and pathogen defense?
C. VAN HORN (1), T. Gaines (2), K. Ravet (2), E. Patterson (2), R. Beffa (3), S. Gille (3), P. Westra (2), (1) USDA-ARS-PWA, Parlier, CA, U.S.A.; (2) Colorado State University–BSPM, Fort Collins, CO, U.S.A.; (3) Bayer CropScience, Höchst, GERMANY

14:20
Rice hormone response is involved in the temperature-dependent function of *Xa7*-mediated bacterial blight resistance
S. COHEN (1,2), H. Liu (1,3), V. M. Verdier (1,4), J. E. Leach (5), (1) Department of Bioagricultural Sciences and Pest Management, Colorado State University, Fort Collins, CO, U.S.A.; (2) Cell and Molecular Biology Graduate Program, Colorado State University, Fort Collins, CO, U.S.A.; (3) Institute of Crop Sciences, Chinese Academy of Agricultural Sciences, Beijing, CHINA; (4) IRD, CIRAD, University of Montpellier, IPME, Montpellier, FRANCE; (5) Colorado State University, Fort Collins, CO, U.S.A.

14:40
Effect of irrigation on the severity of charcoal rot and yield on selected drought tolerant soybean genotypes
A. MENGISTU (1), J. Ray (2), J. R. Smith (2), P. Arelli (1), N. Bellaloui (2), P. Chen (3), S. J. Grover (3), D. Boykin (2), (1) USDA-ARS, Jackson, TN, U.S.A.; (2) USDA-ARS, Stoneville, MS, U.S.A.; (3) University of Missouri, Portageville, MO, U.S.A.

15:00
Potato mop-top virus TGB1 co-opts HIPP26 to activate abiotic stress signaling for long distance virus movement
L. TORRANCE, James Hutton Inst, Invergowrie, UNITED KINGDOM

15:20
Cytokinin-mediated processes promote heat-induced disease susceptibility of Arabidopsis to *Pseudomonas syringae* pv. *tomato*
A. M. SHIGENAGA, S. Johns, D. Bush, C. Argueso, Colorado State University, Fort Collins, CO, U.S.A.

CS **Farmers and Technology as Partners in Disease Management**
15:00–15:50; *Room 208*
Moderators: Willmer Perez, International Potato Center, Lima, PERU; Srikanth Rupavatharam, International Crop Research Institute for Semi-Arid Tropics, Hyderabad, INDIA

15:00
Farmers' knowledge and management of potato late blight in Peruvian highlands: Implications for an integrated disease management program
W. PEREZ (1), R. Arias (2), M. Barreto (2), K. Sanabria (1), J. L. Andrade-Piedra (3), (1) International Potato Center, Lima, PERU; (2) Private, Paucartambo, Pasco, PERU; (3) International Potato Center (CIP), Lima, PERU

15:10
Automated plant disease diagnosis using innovative android App (Plantix) for farmers in Indian state of Andhra Pradesh
S. RUPAVATHARAM (1), A. Kennepohl (2), B. Kummer (2), V. Parimi (1), (1) International Crop Research Institute for Semi-Arid Tropics, Hyderabad, INDIA; (2) PEAT GmbH, Berlin, GERMANY

15:20
Integrated pest management (IPM) still not sufficiently used in practice
Z. Sawinska (1), J. Strzelińska (1), S. SWITEK (2), R. Głowicka-Wołoszyn (3), (1) Department of Agronomy, Poznan University of Life Sciences, Poznan, POLAND; (2) Institute of Zoology, Poznan University of Life Sciences, Poznan, POLAND; (3) Department of Finance and Accounting, Poznan University of Life Sciences, Poznan, POLAND

15:30
Utilizing freeware app to overcome challenges in diagnosing and managing plant diseases for rural farmers in Cambodia
K. FIEDLER (1), M. Thompson (2), (1) Project Alba, Phnom Penh, CAMBODIA; (2) Checkpoint, Queensland, AUSTRALIA

15:40
Disease diagnostic labs and IPM centers for improving livelihoods of vegetable farmers in Benin and Togo in West Africa
A. BANITO, Université de Lomé, Lomé, TOGO

THURSDAY EXHIBIT HALL PROGRAMMING

IC **Idea Cafés**
Seeking solutions to an existing problem, a conversation on a specific issue or concern, or innovative ideas in your area of research or outreach? Check out Idea Cafés, where great minds in plant pathology gather in an informal round table conversation on an area of interest to you!

PT **POD Talks**
Connect with selected APS fellows in an informal setting as they discuss their career journeys and share their stories, insights, and life experiences in the world of plant pathology.

1:1 **One to One**
Gain access to a selection of our most knowledgeable experts in plant pathology through informal, 15-minute meetings. *Pre-session sign-up is required; sign-up board is located near the registration desk*

IC **IDEA CAFÉ: Protecting the Boxwood Heritage in a Global Economy**
16:30–17:30; *Veterans Memorial Auditorium/Exhibit Hall C*
Organizers: Chuanxue Hong, Virginia Tech University, Virginia Beach, VA, U.S.A.; Gregory Parra, USDA APHIS PPQ Science and Technology–Center for Plant Health Science and Technology, Raleigh, NC, U.S.A.
Moderators: Gregory Parra, USDA APHIS PPQ Science and Technology–Center for Plant Health Science and Technology, Raleigh, NC, U.S.A.
Subject Matter Committee Chairperson: Fulya Baysal-Gurel, Tennessee State University, McMinnville, TN, U.S.A.

IC **IDEA CAFÉ: Rust Fungi: Taxonomy, Phylogeny, Mycogeography, and Biological Invasion**
16:30–17:30; *Veterans Memorial Auditorium/Exhibit Hall C*
Organizer: Jose C. Dianese, Universidade de Brasília, Brasília, BRAZIL

IC **IDEA CAFÉ: Soil Health and Soil-Borne Diseases**
16:30–17:30; *Veterans Memorial Auditorium/Exhibit Hall C*
Organizer: George W. Bird, Michigan State University, East Lansing, MI, U.S.A.
Moderator: George W. Bird, Michigan State University, East Lansing, MI, U.S.A.

IC **IDEA CAFÉ: Traditional Plant Health Management Strategies Under Organic Farming System in Developing Countries**
16:30–17:30; *Veterans Memorial Auditorium/Exhibit Hall C*
Organizer: Gopal Kumar Niroula Chhetry, Manipur University, Imphal, INDIA
Moderator: Anil Kotastjane, College of Agriculture, Chhattisgarh, INDIA

PT **POD TALKS: Conversations with Phytopathologists of Distinction: Rashmi Aggarwal and Jan Leach**
16:30–17:30; *Veterans Memorial Auditorium/Exhibit Hall C*
Organizers: Sally A. Miller, Department of Plant Pathology, The Ohio State University, Wooster, OH, U.S.A.; Greg I. Johnson, C/- Horticulture for Development, Jamison Centre, AUSTRALIA

16:30
Soully a plant pathologist—From the conventional to the molecular world
RASHMI AGGARWAL, ICAR–Indian Agricultural Research Institute, New Delhi, INDIA

16:50
Discussion

17:00
Wading through the murky paddies and finding scientific bliss
JAN E. LEACH, Colorado State University, Fort Collins, CO, U.S.A.

17:20
Discussion

1:1 **One to One Conversations with an Expert**
16:30-17:30; *Veterans Memorial Auditorium/Exhibit Hall C*
Organizers: Jose Pablo Dundore-Arias, Department of Plant Pathology, University of Minnesota, St. Paul, MN, U.S.A.

- GABRIELE BERG, TU Graz, Environmental Biotechnology, Graz, AUSTRIA
- PETER J. M. BONANTS, Wageningen Plant Research, Wageningen, NETHERLANDS
- EMILIO S. OYARZABAL, Monsanto Co., St. Louis, MO, U.S.A.
- KRISHNA V. SUBBARAO, University of California, Davis, U.S. Agricultural Research Station, Salinas, CA, U.S.A.
- BARBARA VALENT, Kansas State University, Manhattan, KS, U.S.A.
- SEK-MAN WONG, National University of Singapore, Singapore, SINGAPORE

PT **POD TALK: A Conversation with a Phytopathologist of Distinction: Sylvester Aigbe**
17:30–18:00; *Veterans Memorial Auditorium/Exhibit Hall C*
Organizers: Sally A. Miller, Department of Plant Pathology, The Ohio State University, Wooster, OH, U.S.A.; Greg I. Johnson, C/- Horticulture for Development, Jamison Centre, AUSTRALIA

17:30
The Phytopathological Society of Nigeria: A story of awesome combination of passion, sacrifice, faith and the power of the net
SYLVESTER O. AIGBE, Ambrose Alli University, Ekpoma, NIGERIA

17:50
Discussion

All events take place in the John B. Hynes Veterans Memorial Convention Center unless otherwise noted. Some small select meetings take place at the Sheraton Boston Hotel (SBH) and are noted as such.

FRIDAY, AUGUST 3

08:00–15:00	ICPP Central—Registration Open • *Hall C Foyer*
08:30–10:30	**Concurrent Sessions** • *Various locations (see concurrent session schedule on page 54)*
10:30–11:00	Coffee Break • *Boylston Hallway, Levels 2 and 3*
11:00–13:00	**Concurrent Sessions** • *Various locations (see concurrent session schedule on page 57)*
13:00–14:30	Lunch Break
14:30–16:30	**Concurrent Sessions** • *Various locations (see concurrent session schedule on page 61)*
17:00–18:15	**Closing Plenary Session** • *Ballroom A/B/C*

CLOSING PLENARY SESSION

17:00–18:15; Ballroom A/B/C



Global Food and Nutrition Security—From Challenges to Solutions
Helene R. Dillard, *University of California Davis, Davis, CA, U.S.A.*

It is estimated that 795 million people, roughly 11% of the earth's population, were unable to meet their dietary energy requirements between 2014 and 2016. The global population is expected to grow to 10 billion people by 2050. The global challenge is to feed everyone nutritiously using essentially the same amount of agricultural land we use now, while the availability of fresh water is decreasing. Our research must focus on sustainable food production, increasing food nutrition, increasing food security, ensuring food safety, ensuring a stable accessible food supply, and decreasing food waste. Nearly one-third of all food produced worldwide is wasted through food production and distribution systems pre- and postharvest. Yields need to increase while environmental sustainability needs to be maintained, and plant- and animal-based foods that can adapt to changing environments must be developed. Healthy soils are not only critical to our food production efforts but can also provide major ecosystem services by sequestering carbon, neutralizing pollutants, and deterring erosion. As land-grant universities, it is our mission to meet the needs of the public, teach students in a manner that prepares them to be leaders, advance knowledge through innovative transdisciplinary research, and apply that knowledge to address the needs of society. As scientists and leaders, we have an obligation and responsibility to recognize the urgency of this situation, seek solutions, and identify clear, precise policies and actions that can be taken to address the global problems of food now—as the effects of climate change are already altering our agroecosystems and challenging our collective ability to feed the world.

ISPP

ISPP General Assembly and Workplan

FRIDAY CONCURRENT SESSIONS

Session content listed in the program is as submitted by the author/presenter and has NOT been edited.

CS Concurrent Sessions
Like the Technical and Special Sessions, the Scientific Sessions held at ICPP2018 consist of a combination of invited speakers and submitted oral presentations on the most important topics in phytopathology.

PV PhytoViews
Are there two sides to every situation? There are at PhytoView sessions, where experts explore various points of view on topics of interest through facilitated conversations.

HT Hot Topics
Catch the latest science on topics that are "hot" in plant pathology.

PD Panel Discussions
Listen to invited panelists give short introductory talks, and then join in an engaging hour-long discussion.

CS Fungal Effectors

08:30–09:20; *Room 208*

Moderators: Ana Priscilla Montenegro Alonso, University of British Columbia, Vancouver, BC, CANADA; Ely Oliveira Garcia, Kansas State University, Manhattan, KS, U.S.A.

08:30
Investigation into the secretion and localization of *Ustilago hordei* avirulence effector UhAVR1
A. P. MONTENEGRO ALONSO (1), G. Bakkeren (2), (1) University of British Columbia, Vancouver, BC, CANADA; (2) Agriculture & Agri-Food Canada, Summerland, BC, CANADA

08:40
Uncovering molecular mechanisms of pathogenicity in the banana pathogen *Fusarium oxysporum* f. sp. *cubense*
E. CZISLOWSKI, I. Zeil-Rolfe, S. Fraser-Smith, J. Dalton-Morgan, E. Aitken, School of Agriculture and Food Sciences, The University of Queensland, Brisbane, AUSTRALIA

08:50
Structure-guided protein engineering extends immune receptor recognition of effectors from the rice blast fungus
J. C. DE LA CONCEPCION (1), M. Franceschetti (1), H. Saitoh (2), R. Terauchi (3,4), S. Kamoun (5), M. Banfield (1), (1) John Innes Centre, Norwich, UNITED KINGDOM; (2) Tokyo University of Agriculture, Tokyo, JAPAN; (3) Kyoto University, Kyoto, JAPAN; (4) Iwate Biotechnology Research Center, Iwate, JAPAN; (5) The Sainsbury Laboratory, Norwich, UNITED KINGDOM

09:00
On the mechanism of translocation of *Magnaporthe oryzae* effectors into rice cells
E. OLIVEIRA GARCIA (1), M. Martin-Urdiroz (2), C. Rodriguez Herrero (2), N. Talbot (2), B. Valent (1), (1) Kansas State University, Manhattan, KS, U.S.A.; (2) University of Exeter, Exeter, UNITED KINGDOM

09:10
Suppression of PAMP-triggered immunity by coffee rust effectors may be attributed to their localization in the plant cell nucleus
T. Maia, G. Marin-Ramirez, S. BROMMONSCHENKEL, Universidade Federal de Viçosa, Departamento de Fitopatología, Viçosa, BRAZIL

CS Advances in Modeling the Fluid Dynamics of Pathogen Transmission and Dispersal

08:30–10:30; *Room 311*

Organizers: Donald E. Aylor, The Connecticut Agricultural Experiment Station, New Haven, CT, U.S.A.; Lydia Bourouiba, Massachusetts Institute of Technology, Cambridge, MA, U.S.A.
Subject Matter Committee Chairpersons: Robin Choudhury, University of Florida, Gainesville, FL, U.S.A.; Daniel J. Anco, Clemson University, Blackville, SC, U.S.A.

08:30
The fluid dynamics of disease transmission: Drop impacts and transfer of pathogens
L. BOUROUIBA, Massachusetts Institute of Technology, Cambridge, MA, U.S.A.

08:50
How where and when to control an established plant disease epidemic. Landscape-scale modeling of sudden oak death in California
N. J. CUNNIFFE (1), R. Cobb (2), R. K. Meentemeyer (3), D. M. Rizzo (4), C. A. Gilligan (5), (1) University of Cambridge, Cambridge, UNITED KINGDOM; (2) Cal Poly State University, San Luis Obispo, CA, U.S.A.; (3) North Carolina State University, Raleigh, NC, U.S.A.; (4) University of California, Davis, Davis, CA, U.S.A.; (5) University of Cambridge, CAMBRIDGE, UNITED KINGDOM

09:10
Concepts and parameters for modeling the persistence of human enteric pathogens on plants and related foodborne epidemics
M. T. BRANDL, Produce Safety and Microbiology Research Unit, USDA-ARS, Albany, CA, U.S.A.

09:30
Atmospheric dispersal of plant pathogens over multiple spatial and temporal scales
D. E. AYLOR, F. J. Ferrandino, The Connecticut Agricultural Experiment Station, New Haven, CT, U.S.A.

09:50
A mathematical framework for improving targeting of surveillance in complex pathosystems
A. MASTIN (1), F. Van den Bosch (2), T. R. Gottwald (3), S. R. Parnell (1), (1) University of Salford, Salford, UNITED KINGDOM; (2) Rothamsted Research, Harpenden, ENGLAND; (3) USDA-ARS, Fort Pierce, FL, U.S.A.

10:00
Simple models of durable resistance to plant diseases
R. L. BOWDEN (1), T. C. Todd (2), K. A. Garrett (3), B. Valent (2), (1) USDA-ARS, Manhattan, KS, U.S.A.; (2) Kansas State University, Manhattan, KS, U.S.A.; (3) Plant Pathology Department, University of Florida, Gainesville, FL, U.S.A.

CS **Advancing Disease Resistance Traits from Lab to Field**
08:30–10:30; *Room 312*
Organizers: Jack Westwood, 2Blades Foundation, Evanston, IL, U.S.A.; Diana M. Horvath, 2Blades Foundation, Evanston, IL, U.S.A.

08:30
Bringing potato disease resistance traits to market in the U.S.
N. CHAMPOURET, JR., Simplot Co., Boise, ID, U.S.A.

08:50
Developing durable genetic solutions to crop diseases
D. M. HORVATH, 2Blades Foundation, Evanston, IL, U.S.A.

09:10
Field performance of a biotech potato with late blight resistance in Uganda
M. GHISLAIN, International Potato Center, Nairobi, KENYA

09:30
Biotechnological strategies for control of banana Xanthomonas wilt disease
L. TRIPATHI, International Institute for Tropical Agriculture, Nairobi, KENYA

09:50
Co-expression of *Bs2* and *EFR* genes in tomato provides effective broad-spectrum field resistance against bacterial wilt and bacterial spot of tomato
S. KUNWAR (1), F. B. Iriarte (2), Q. Fan (1), E. da Silva (1), L. Ritchie (2), N. Nguyen (3), J. H. Freeman (2), R. E. Stall (4), J. B. Jones (5), G. V. Minsavage, Jr. (5), J. Colee (6), C. Zipfel (7), D. M. Horvath (8), J. Westwood (8), J. W. Scott (9), G. E. Vallad (10), S. Hutton (11), M. Paret (2), (1) University of Florida, Quincy, FL, U.S.A.; (2) North Florida Research and Education Center, University of Florida, Quincy, FL, U.S.A.; (3) University of Maine, Orono, ME, U.S.A.; (4) University of Florida, Gainesville, FL, U.S.A.; (5) Department of Plant Pathology, University of Florida, Gainesville, FL, U.S.A.; (6) Department of Statistics, University of Florida, Gainesville, FL, U.S.A.; (7) The Sainsbury Lab, Norwich, UNITED KINGDOM; (8) 2Blades Foundation, Evanston, IL, U.S.A.; (9) University of Florida, Wimauma, FL, U.S.A.; (10) Gulf Coast Research and Education Center, University of Florida, Wimauma, FL, U.S.A.; (11) University of Florida, Wimauma, FL, U.S.A.

CS **COST Action DIVAS: Impacts of Next Generation Sequencing Era in Plant Virology**
08:30–10:30; *Room 302*
Organizers: Sebastien Massart, University of Liège–Gembloux Agro-Bio Tech, Gembloux, BELGIUM; Antonio Olmos, Instituto Valenciano de Investigaciones Agrarias (IVIA), Moncada, Valencia, SPAIN
Subject Matter Committee Chairperson: Sebastien Massart, University of Liège–Gembloux Agro-Bio Tech, Gembloux, BELGIUM

08:30
Improved surveillance of diseases using nano-pore sequencing
N. BOONHAM (1,2), I. Adams (1), A. Fox (1), J. Smith (1), (1) Fera Science, Ltd., York, UNITED KINGDOM; (2) Newcastle University, Newcastle upon Tyne, UNITED KINGDOM

08:50
After the data deluge: Biological characterization of the new variants and viral species identified by NGS
S. MASSART (1), T. Candresse (2), J. Gil (3), C. Lacomme (4), L. Predajna (5), M. Ravnikar (6), J. S. Reynard (7), A. Rumbou (8), P. Saldarelli (9), D. Škorić (10), E. Vainio (11), J. Valkonen (12), H. Vanderschuren (13), T. Wetzel (14), (1) University of Liège–Gembloux Agro-Bio Tech, Gembloux, BELGIUM; (2) INRA Bordeaux, Villenave d'Ornon, FRANCE; (3) Swedish University of Agricultural Sciences SLU, Uppsala, SWEDEN; (4) Science and Advice for Scottish Agriculture (SASA), Edinburgh, UNITED KINGDOM; (5) Biomedical Research Center SAS, Institute of Virology, Bratislava, SLOVAKIA; (6) National Institute of Biology, Ljubljana, SLOVENIA; (7) Agroscope, Nyon, SWITZERLAND; (8) Humboldt University Berlin,

Berlin, GERMANY; (9) CNR Institute for Sustainable Plant Protection, Bari, ITALY; (10) University of Zagreb, Faculty of Science, Department of Biology, Zagreb, CROATIA; (11) Natural Resources Institute Finland, Helsinki, FINLAND; (12) University of Helsinki, Helsinki, FINLAND; (13) University of Liège–Gembloux Agro Bio-Tech, Gembloux, BELGIUM; (14) DLR Rheinpfalz, Neustadt, GERMANY

09:10
Decoding high-throughput sequencing data to address different layers of plant virus diversity
D. KUTNJAK, A. Pecman, K. Bačnik, I. Gutierrez Aguirre, N. Mehle, M. Tušek Žnidarič, M. Ravnikar, National Institute of Biology, Ljubljana, SLOVENIA

09:30
The game-changing impact of NGS in plant virology
T. CANDRESSE, INRA Bordeaux, Villenave d'Ornon, FRANCE

09:50
Prospects and challenges of high throughput sequencing for viral pathogen diagnosis and expedited release of quarantined propagative plant material
M. AL RWAHNIH (1), D. A. Golino (2), (1) Foundation Plant Services Facility, University of California, Davis, Davis, CA, U.S.A.; (2) University of California, Davis, Davis, CA, U.S.A.

10:00
EDNA–Water, using deep sequencing and bioinformatics approach for water-borne plant virus detection
L. PENA ZUNIGA, J. Daniels, A. Espindola, F. Ochoa Corona, Oklahoma State University, Stillwater, OK, U.S.A.

CS Development of Innovative Management Strategies for Economically Important Bacterial Diseases

08:30–10:30; *Room 210*

Organizers: Jong Hyun Ham, Louisiana State University Agricultural Center, Baton Rouge, LA, U.S.A.; Alejandra I. Huerta, Colorado State University, Fort Collins, CO, U.S.A.; Ana Cristina Fulladolsa, University of Wisconsin–Madison, Madison, WI, U.S.A.

Subject Matter Committee Chairperson: Quan Zeng, Department of Plant Pathology and Ecology, The Connecticut Agricultural Experiment Station, New Haven, CT, U.S.A.

08:30
Liposome delivery system of antimicrobial peptides against Huanglongbing
J. VELÁSQUEZ GUZMÁN (1), S. Basu (1), R. Rabara (1), L. Huynh (1), G. Basu (1), H. Nguyen (1), J. Shaw (2), Q. Shi (2), S. Zhang (1), E. Stover (2), G. Gupta (1), (1) New Mexico Consortium, Los Alamos, NM, U.S.A.; (2) U.S. Horticultural Research Laboratory, USDA-ARS, Fort Pierce, FL, U.S.A.

08:50
Phage therapy to manage bacterial canker in kiwifruit caused by *Pseudomonas syringae* pv. *actinidiae*
C. S. OH, Department of Horticultural Biotechnology, Kyung Hee University, Yongin, KOREA

09:10
Development of cisgenic lines of apple to enhance resistance to fire blight
G. A. L. BROGGINI (1,2), I. Schlathölter (1,2), B. Studer (3), A. Patocchi (2), (1) Molecular Plant Breeding, Institute of Agricultural Sciences, ETHZ, Wädenswil, SWITZERLAND; (2) Breeding Research, Agroscope, Wädenswil, SWITZERLAND; (3) Molecular Plant Breeding, Institute of Agricultural Sciences, ETHZ, Zurich, SWITZERLAND

09:30
Development and evaluation of nano-materials for management of copper-tolerant *Xanthomonas perforans* causing bacterial spot of tomato
M. L. PARET (1), A. L. Strayer (2), Y. Y. Liao (2), S. Wright (1), M. Young (3), I. Ocsoy (4), D. Averett (5), G. E. Vallad (6), S. Santra (7), W. Tan (4), J. B. Jones (8), S. M. Olson (9), J. H. Freeman (1), (1) North Florida Research and Education Center, University of Florida, Quincy, FL, U.S.A.; (2) University of Florida, Department of Plant Pathology, Gainesville, FL, U.S.A.; (3) University of Central Florida, Orlando, FL, U.S.A.; (4) University of Florida, Department of Chemistry, Gainesville, FL, U.S.A.; (5) EcoActive Surfaces, Inc., Pompano Beach, FL, U.S.A.; (6) Gulf Coast Research and Education Center, University of Florida, Wimauma, FL, U.S.A.; (7) NanoScience Technology Center, Department of Chemistry, University of Central Florida, Orlando, FL, U.S.A.; (8) Department of Plant Pathology, University of Florida, Gainesville, FL, U.S.A.; (9) University of Florida NFREC, Quincy, FL, U.S.A.

09:50
Suppression of bacterial soft-rot diseases utilizing plant phenolic compounds
I. YEDIDIA (1), J. R. Joshi (2), N. Khazanov (3), H. Senderowitz (3), (1) Agricultural Research Organization, The Volcani Center, Rishon LeTsiyon, ISRAEL; (2) The Hebrew University of Jerusalem, Rehovot, ISRAEL; (3) Bar Ilan University, Chemistry Department, Ramat Gan, ISRAEL

CS Regulatory Issues Surrounding the Global Movement of Cultures and Collections

08:30–10:30; *Room 304*

Organizers: Kimberly M. Webb, USDA-ARS, Soil Management and Sugar Beet Research Unit, Fort Collins, CO, U.S.A.; Sally M. Mallowa, Augustana University, Sioux Falls, SD, U.S.A.

Subject Matter Committee Chairpersons: Kimberly M. Webb, USDA-ARS, Soil Management and Sugar Beet Research Unit, Fort Collins, CO, U.S.A.; Sally M. Mallowa, Augustana University, Sioux Falls, SD, U.S.A.

08:30
Importation of plant-associated microbial cultures: What are the U.S. regulatory requirements?
Z. LIU, USDA APHIS PPQ, Riverdale, MD, U.S.A.

08:50
Maintaining diverse culture collections ensures adequate resources and capability to support plant biosecurity and global trade
N. SPENCE, Department for Environment, Food & Rural Affairs, York, UNITED KINGDOM

09:10
The World Federation on Culture Collections: Promoting microbial utilization for over 70 years
K. MCCLUSKEY, Kansas State University, Manhattan, KS, U.S.A.

09:30
Harmonization and standardization of pathogen strains for the global movement of seed
V. GRIMAULT, GEVES-SNES, Beaucouzé, FRANCE

09:50
International proficiency testing schemes in plant health supported by digital PCR
T. DREO, M. Pirc, N. Mehle, National Institute of Biology, Ljubljana, SLOVENIA

CS Molecular Fungi–Plant Interactions

09:30–10:20; *Room 208*

Moderators: Maria C. Quecine, University of São Paulo, Piracicaba, BRAZIL; Julia Courtial, University of Angers, Angers, FRANCE

09:30
Aldaulactone, a new phytotoxin involved in *Alternaria dauci–Daucus carota* interaction
J. COURTIAL (1), L. Hamama (1), J. J. Helesbeux (1), M. Lecomte (2), Y. Renaux (1), E. Guichard (1), L. Voisine (1), C. Yovanopoulos (1), B. Hamon (1), L. Ogé (3), P. Richomme (1), M. Briard (3), T. Boureau (1), S. Gagné (1), P. A. Poupard (1), R. Berruyer (1), (1) University of Angers, Angers, FRANCE; (2) SUBA France, Nogaro, FRANCE; (3) Agrocampus Ouest, Angers, FRANCE

09:40
The cuticle role as *Eucalyptus* spp. responses to biotrophic phytopathogen *Austropuccinia psidii*
I. Santos (1), M. Lopes, E. Figueiredo, T. Cataldi, J. Marques, C. Labate, M. C. QUECINE, University of São Paulo, Piracicaba, BRAZIL

09:50
Function of pathogenesis-related protein 10 (PR10) in soybean resistance to Asian soybean rust (ASR)
D. HU (1), S. Park (1), M. Ganiger (1), C. Zhang (2), Z. Y. Chen (1), (1) Louisiana State University Agricultural Center, Baton Rouge, LA, U.S.A.; (2) Alcorn State University, Alcorn State, MS, U.S.A.

10:00
Systematic characterization of ROS-responsive transcription factors in *Verticillium dahliae*
C. TANG, C. Tian, Y. Wang, Beijing Forestry University, Beijing, CHINA

10:10
The first seven days: Spatiotemporal transcriptome analysis of infection of a wheat flower by the ergot pathogen *Claviceps purpurea*
A. GORDON (1), E. Tente (2), N. Ereful (1), P. Grant (3), D. O'Sullivan (4), L. Boyd (5), (1) NIAB, Cambridge, UNITED KINGDOM; (2) NIAB/ University of Cambridge, Cambridge, UNITED KINGDOM; (3) Microsoft Research, Cambridge, UNITED KINGDOM; (4) School of Agriculture, Policy and Development, University of Reading, Reading, UNITED KINGDOM; (5) NIAB–The Bingham Laboratory, Cambridge, UNITED KINGDOM

CS Resistance to Nematodes

11:00–11:50; *Room 208*

Moderators: Érika Valéria Saliba Albuquerque, Embrapa, Brasilia, BRAZIL; Shamsul A. Bhuiyan, Sugar Research Australia Limited, Woodford, AUSTRALIA

11:00
Towards deciphering host resistance to phytonematodes: Transcriptome analysis of a coffee incompatible response to *Meloidogyne incognita*
P. Grynberg (1), A. S. Petitot (2), A. Mota (3), R. Togawa (1), D. Fernandez (2), E. V. S. ALBUQUERQUE (1), (1) Embrapa Recursos Genéticos e Biotecnologia, Brasilia, BRAZIL; (2) IRD, CIRAD, University of Montpellier, IPME, Montpellier, FRANCE; (3) Universidade do Rio Grande do Sul, Porto Alegre, BRAZIL

11:10
Novel source of nematode resistance for Australian sugar industry
S. A. BHUIYAN (1), B. Croft (2), M. Cox (3), P. Jackson (4), (1) Sugar Research Australia Limited, Woodford, AUSTRALIA; (2) SRA, Woodford, AUSTRALIA; (3) SRA, Bundaberg, AUSTRALIA; (4) CSIRO, Brisbane, AUSTRALIA

11:20
Understanding the function of a novel Gr29D09 effector family from the potato cyst nematode *Globodera rostochiensis* in host defense suppression
A. Y. C. YEH (1), S. Chen (1), T. T. Tran (1), T. J. Baum (2), X. Wang (3), (1) School of Integrative Plant Science, Cornell University, Ithaca, NY, U.S.A.; (2) Department of Plant Pathology and Microbiology, Iowa State University, Ames, IA, U.S.A.; (3) USDA-ARS, Robert W. Holley Center for Agriculture and Health, Ithaca, NY, U.S.A.

11:30
Functional characterization of a large group of CLE effectors encoded by *Globodera* cyst nematodes
S. CHEN (1), P. Lang (1), M. G. Mitchum (2), X. Wang (1,3), (1) School of Integrative Plant Science, Cornell University, Ithaca, NY, U.S.A.; (2) University of Missouri, Columbia, MO, U.S.A.; (3) USDA-ARS, Robert W. Holley Center for Agriculture and Health, Ithaca, NY, U.S.A.

CS **CRISPR/Cas9 Genome Editing for Plant Pathology and Disease Management**
11:00–13:00; *Room 302*
Organizers: Yulin Jia, USDA-ARS, Dale Bumpers National Rice Research Center, Stuttgart, AR, U.S.A.; Yinong Yang, The Pennsylvania State University, University Park, PA, U.S.A.; Jagdeep Kaur, Danforth Center, St. Louis, MO, U.S.A.
Subject Matter Committee Chairperson: Yulin Jia, USDA-ARS, Dale Bumpers National Rice Research Center, Stuttgart, AR, U.S.A.

11:00
Engineering plant immunity via CRISPR/Cas systems
M. MAHFOUZ, KAUST, Thuwal, SAUDI ARABIA

11:20
Improving CRISPR/Cas9 tools for precise genome editing of host plants and fungal pathogens
Y. YANG, The Pennsylvania State University, University Park, PA, U.S.A.

11:40
Generating disease resistant citrus varieties using CRISPR/Cas9
N. WANG, University of Florida, Lake Alfred, FL, U.S.A.

12:00
Surprises learned from plant immunity—Challenges and opportunities for crop protection
Y. JIA (1), H. Zhao (1), X. Wang (2), (1) USDA-ARS, Dale Bumpers National Rice Research Center, Stuttgart, AR, U.S.A.; (2) UA-USDA, Stuttgart, AR, U.S.A.

12:20
Efficient genome editing in *Fusarium oxysporum* based on CRISPR/Cas9 ribonucleoprotein (RNP) complexes
Q. WANG, P. Cobine, J. Coleman, Auburn University, Auburn, AL, U.S.A.

12:30
Understanding the basis of host and non-host defences during barley-aphid interactions
C. ESCUDERO-MARTINEZ (1,2), D. Leybourne (1,2), A. Barakate (1), J. Morris (1), P. Hedley (1), J. Stephens (1), J. Bos (1,2), (1) The James Hutton Institute, Invergowrie, UNITED KINGDOM; (2) University of Dundee, Dundee, UNITED KINGDOM

CS **Frontline of Fungal Secondary Metabolite and Mycotoxin Research to Mitigate Threats to Food Security**
11:00–13:00; *Room 311*
Organizers: Paola Battilani, Università Cattolica del Sacro Cuore, Piacenza, ITALY; Won-Bo Shim, Texas A&M University, College Station, TX, U.S.A.; Melvin D. Bolton, USDA-ARS, Red River Valley Agricultural Research Center, Fargo, ND, U.S.A.; Ronnie de Jonge, Plant–Microbe Interactions, Department of Biology, Faculty of Science, Utrecht University, Utrecht, NETHERLANDS
Subject Matter Committee Chairperson: Won-Bo Shim, Texas A&M University, College Station, TX, U.S.A.

11:00
Mycotoxin contamination in maize is controlled by oxylipin signals
M. V. KOLOMIETS (1), P. Battilani (2), E. J. Borrego (1), M. Reverberi (3), A. Lanubile (2), V. Scala (4), C. Falàvigna (5), C. Dall'Asta (5), J. Bennett (1), Y. S. Park (1), (1) Texas A&M University, College Station, TX, U.S.A.; (2) Università Cattolica del Sacro Cuore, Piacenza, ITALY; (3) Sapienza University, Roma, ITALY; (4) Consiglio per la Ricerca in Agricoltura e l'Analisi dell'Economia Agraria, Roma, ITALY; (5) University of Parma, Parma, ITALY

11:20
Fungicide resistance issues in scab pathogen *Fusarium graminearum* and DON contamination in wheat
Z. MA, Institute of Biotechnology, Zhejiang University, Hangzhou, CHINA

11:40
Development outcomes and impact of scaling-up of aflatoxin biocontrol in Africa
R. BANDYOPADHYAY (1), A. Adebowale (1), M. Konlambigue (2), C. Mutegi (3), L. Senghor (4), A. Ortega-Beltran (1), P. J. Cotty (5), (1) International Institute of Tropical Agriculture, Ibadan, NIGERIA; (2) International Institute of Tropical Agriculture (IITA), Accra, GHANA; (3) International Institute of Tropical Agriculture, Nairobi, KENYA; (4) International Institute of Tropical Agriculture, Dakar, SENEGAL; (5) USDA-ARS, University of Arizona, Tucson, AZ, U.S.A.

12:00
Trichothecene diversity and role of plant detoxification enzymes in host resistance
G. ADAM, H. Michlmayr, K. Twaruschek, J. Welsch, M. Siller, G. Wiesenberger, E. Varga, A. Malachova, M. Piatkowska, F. Berthiller, M. Doppler, R. Schuhmacher, University of Natural Resources and Life Sciences, Vienna, Tulln, AUSTRIA

12:20
Balancing selection for aflatoxin in *Aspergillus flavus* is maintained through interference competition with, and fungivory by insects
M. DROTT, M. G. Milgroom, Cornell University, Ithaca, NY, U.S.A.

12:30
Fusarium toxisomes may be necessary for synthesis of high levels of deoxynivalenol and production of the distinct sesquiterpene mycotoxin, culmorin
C. Flynn (1), G. Tang (2), M. Boenisch (1), A. Blum (3), K. Broz (4), Y. Chen (2), C. Schmidt-Dannert (1), Z. Ma (2), C. KISTLER (4), (1) University of Minnesota, St. Paul, MN, U.S.A.; (2) Institute of Biotechnology, Zhejiang University, Hangzhou, CHINA; (3) University of Queensland, Brisbane, AUSTRALIA; (4) USDA-ARS, St. Paul, MN, U.S.A.

CS How Apoplastic Events Mediate Host–Pathogen Interactions

11:00–13:00; *Room 304*

Organizers: Ralph A. Dean, North Carolina State University, Raleigh, NC, U.S.A.

11:00
Apoplastic venom allergen-like proteins of plant parasitic nematodes modulate the activation of damage triggered immunity by cell surface receptors
J. L. LOZANO-TORRES (1), R. H. P. Wilbers (1), S. Warmerdam (1), K. Varossieau (1), J. J. Willig (1), C. C. van Schaik (1), O. A. Asojo (2), R. Darwiche (3), R. Schneiter (3), C. Drurey (4), R. M. Maizels (4), A. Goverse (1), A. Schots (1), G. Smant (1), (1) Laboratory of Nematology, Wageningen University, Wageningen, NETHERLANDS; (2) National School of Tropical Medicine, Baylor College of Medicine, Houston, TX, U.S.A.; (3) Division of Biochemistry, Department of Biology, University of Fribourg, Fribourg, SWITZERLAND; (4) Wellcome Centre for Molecular Parasitology, University of Glasgow, Glasgow, UNITED KINGDOM

11:20
Central role of dsRNA in the elicitation of antiviral defenses in plants
M. HEINLEIN, Institut de Biologie Moléculaire des Plantes du CNRS (IBMP-CNRS), Strasbourg, FRANCE

11:40
Investigating the diversity and function of secreted *Clavibacter* effectors
S. Thapa (1), Q. Lyu (1), S. Pattathil (2), M. G. Hahn (2), R. L. Gilbertson (3), G. L. COAKER (1), (1) University of California, Davis, Davis, CA, U.S.A.; (2) University of Georgia, Athens, GA, U.S.A.; (3) Department of Plant Pathology, University of California, Davis, Davis, CA, U.S.A.

12:00
Dissecting the molecular cross-talk between *Phytophthora*-plant in the apoplastic battlefield
Y. WANG, Nanjing Agricultural University, Nanjing, CHINA

CS Surveillance for Emerging Plant Diseases

11:00–13:00; *Room 312*

Organizers: Stephen R. Parnell, University of Salford, Salford, UNITED KINGDOM
Subject Matter Committee Chairperson: Stephen R. Parnell, University of Salford, Salford, UNITED KINGDOM

11:00
New approaches to detection: Canine surveillance of high risk pathogens
T. R. GOTTWALD (1), G. Poole (1), G. McCollum (1), W. Luo (2), F. Louws (3), (1) USDA-ARS, Fort Pierce, FL, U.S.A.; (2) USDA-ARS and NCSU, Fort Pierce, FL, U.S.A.; (3) North Carolina State University, Raleigh, NC, U.S.A.

11:20
Global wheat stem rust monitoring: meeting the challenges of a re-emerging threat to wheat production
D. HODSON (1), Y. Jin (2), P. D. Olivera Firpo (3), L. J. Szabo (4), M. S. Hovmøller (5), M. Patpour (5), K. Nazari (6), C. A. Gilligan (7), M. Meyer (7), M. C. Hort (8), S. Millington (8), Z. A. Pretorius (9), R. F. Park (10), T. G. Fetch, Jr. (11), J. Grønbech Hansen (12), (1) CIMMYT, Addis Ababa, ETHIOPIA;

(2) USDA-ARS Cereal Disease Laboratory, St. Paul, MN, U.S.A.; (3) University of Minnesota, St. Paul, MN, U.S.A.; (4) USDA-ARS, St. Paul, MN, U.S.A.; (5) Aarhus University, Slagelse, DENMARK; (6) ICARDA, Izmir, TURKEY; (7) University of Cambridge, Cambridge, UNITED KINGDOM; (8) UK Met Office, Exeter, UNITED KINGDOM; (9) University of the Free State, Bloemfontein, SOUTH AFRICA; (10) University of Sydney Plant Breeding Institute, Cobbitty, AUSTRALIA; (11) Agriculture and Agri-Food Canada, Brandon, MB, CANADA; (12) Aarhus University, Aarhus, DENMARK

11:40
Tracking pests and insect-vectored diseases of broad-acre crops in tropical Asia: Challenges and opportunities
K. WYCKHUYS, Institute of Plant Protection–China Academy of Agricultural Sciences (CAAS), Beijing, CHINA

12:00
Quantitative methods for the improved surveillance of emerging plant pathogens; an epidemiological approach
S. R. PARNELL (1), T. R. Gottwald (2), A. Mastin (1), N. J. Cunniffe (3), C. A. Gilligan (3), F. Van den Bosch (4), (1) University of Salford, Salford, UNITED KINGDOM; (2) USDA-ARS, Fort Pierce, FL, U.S.A.; (3) University of Cambridge, Cambridge, UNITED KINGDOM; (4) Rothamsted Research, Harpenden, ENGLAND

12:20
Caliciopsis canker: An emerging disease in pine stands
N. LUCHI (1), C. Aglietti (2), D. Migliorini (3), A. Pepori (1), P. Capretti (2,4), I. A. Munck (5), K. D. Broders (6), A. Santini (1), (1) Institute for Sustainable Plant Protection–CNR, Sesto Fiorentino, ITALY; (2) University of Firenze, Firenze, ITALY; (3) Forestry and Agricultural Biotechnology Institute, University of Pretoria, Pretoria, SOUTH AFRICA; (4) University of Firenze–DISPAA, Firenze, ITALY; (5) USDA Forest Service, Durham, NH, U.S.A.; (6) Colorado State University, Fort Collins, CO, U.S.A.

12:30
Earth laughs in flowers: How emergent downy mildew diseases are affecting the ornamental crop industry and what to do about it
C. SALGADO-SALAZAR (1), N. LeBlanc (2), J. A. Crouch (2), (1) Mycology and Nematology Genetic Diversity and Biology Laboratory, USDA-ARS, Beltsville, MD, U.S.A.; (2) USDA-ARS, Beltsville, MD, U.S.A.

CS The EMPHASIS Project and Networks for Pest and Disease Management: Practical Solutions for Effective Integrated Management of Pests and Harmful Alien Species

11:00–13:00; *Room 210*

Organizers: Maria Lodovica Gullino, Agroinnova–University of Torino, Grugliasco, Torino, ITALY; John Mumford, Imperial College London, Ascot, UNITED KINGDOM

11:00
The strategic role of dissemination and communication in raising awareness on new IPM practical solutions: The EMPHASIS project
A. BERTIN (1), L. Vivani (2), A. Masino (3), (1) Spin-To SLR, Torino, ITALY; (2) Moverim Consulting SPRL, Bruxelles, BELGIUM; (3) Agroinnova–University of Torino, Grugliasco, Torino, ITALY

11:20
An analytical framework for consistent evaluation of pest and disease management technologies
J. MUMFORD (1), A. Leach (1), P. Baranowski (1), J. Holt (1), B. Agstner (2), G. Jones (2), J. Alden (1), M. Quinlan (1), (1) Imperial College London, Ascot, UNITED KINGDOM; (2) Fera Science Ltd., York, UNITED KINGDOM

11:40
Surveillance for plant pests using meta-barcoding and LAMP techniques
N. BOONHAM (1,2), T. Wood (3), J. Hodgetts (1), I. Adams (1), R. Caiazzo (3), S. Franco Ortega (4), R. Glover (1), M. Andreou (5), (1) Fera Science Ltd., York, UNITED KINGDOM; (2) Newcastle University, Newcastle upon Tyne, UNITED KINGDOM; (3) National Institute of Agricultural Botany, Cambridge, UNITED KINGDOM; (4) Agroinnova–University of Torino, Grugliasco, Torino, ITALY; (5) Optisense Ltd., Horsham, UNITED KINGDOM

12:00
Emerging diseases in horticultural crops
M. L. GULLINO (1), J. Thomas (2), G. Gilardi (1), A. Garibaldi (1), T. Wood (2), R. Caiazzo (2), (1) Agroinnova–University of Torino, Grugliasco, Torino, ITALY; (2) National Institute of Agricultural Botany, Cambridge, UNITED KINGDOM

12:20
Collaborative approaches in USAID global IPM to implement practical solutions to virus diseases by detection, diagnosis, and capacity building
S. A. TOLIN, Virginia Polytechnic Institute and State University, Blacksburg, VA, U.S.A.

CS Advances in Oomycete Detection and Screening

12:00–12:50; *Room 208*

Moderators: Frank N. Martin, USDA-ARS, Salinas, CA, U.S.A.; Kaitlin Morey Gold, University of Wisconsin–Madison, Madison, WI, U.S.A.

12:00
A systematic approach for developing molecular markers for oomycetes
F. N. MARTIN, USDA-ARS, Salinas, CA, U.S.A.

12:10
Using hyperspectral reflectance-based predictive models for early *Phytophthora infestans* and *Alternaria solani* detection in potato
K. M. GOLD, I. Herrmann, P. Townsend, A. J. Gevens, University of Wisconsin–Madison, Madison, WI, U.S.A.

12:20
Quantifying the value of a diagnostic test for early detection surveillance
A. MASTIN (1), F. van den Berg (2), F. Van den Bosch (3), T. R. Gottwald (4), S. R. Parnell (1), (1) University of Salford, Salford, UNITED KINGDOM; (2) Fera Science, Sand Hutton, York, UNITED KINGDOM; (3) Rothamsted Research, Harpenden, ENGLAND; (4) USDA-ARS, Fort Pierce, FL, U.S.A.

12:30
Developing a phenotyping tool for disease resistance in trees using Fourier transform infrared (FT-IR) and Raman spectroscopy
A. O. CONRAD (1), R. A. Sniezko (2), L. Rodriguez-Saona (3), P. Bonello (1), (1) Department of Plant Pathology, The Ohio State University, Columbus, OH, U.S.A.; (2) USDA FS Dorena Genetic Resource Center, Cottage Grove, OR, U.S.A.; (3) Department of Food Science and Technology, The Ohio State University, Columbus, OH, U.S.A.

12:40
Detection of multiple oomycetes in metagenomic data by using E-probe detection of nucleic analysis (EDNA)
M. F. PROANO, A. Espindola, C. D. Garzon, Oklahoma State University, Stillwater, OK, U.S.A.

CS Bacterial Effectors

14:30–15:20; *Room 207*

Moderators: Philip Albers, Leibniz–Institute of Vegetable and Ornamental Crops (IGZ), Grossbeeren, GERMANY; Kelley Clark, University of California, Riverside, Riverside, CA, U.S.A.

14:30
Identification of a novel target of the bacterial effector HopZ1a
P. ALBERS (1), S. Uestuen (1), K. Witzel (1), F. Bornke (1,2), (1) Leibniz–Institute of Vegetable and Ornamental Crops (IGZ), Grossbeeren, GERMANY; (2) University of Potsdam, Potsdam, GERMANY

14:40
The mechanism of xylose-dependent expression of *hrp* genes in a rice pathogen *Xanthomonas oryzae* pv. *oryzae*
Y. IKAWA, S. Tsuge, Kyoto Prefectural University, Sakyo-Ku, Kyoto, JAPAN

14:50
A sneak peek into the citrus defense response affected by *Candidatus* Liberibacter effectors
S. Basu (1), R. Rabara (1), L. Huynh (1), S. ZHANG (1), J. Velásquez Guzmán (1), H. Nguyen (1), Q. Shi (2), G. Hao (2), E. Stover (2), G. Gupta (1), (1) New Mexico Consortium, Los Alamos, NM, U.S.A.; (2) U.S. Horticultural Research Laboratory, USDA-ARS, Fort Pierce, FL, U.S.A.

15:00
An effector from the Huanglongbing-associated bacterium targets a specific family of proteases in citrus
K. CLARK (1), S. Schwizer (1), Z. Pang (2), E. Hawara (1), J. Franco (3), D. Pagliaccia (1), L. Zeng (1), G. L. Coaker (3), N. Wang (2), W. Ma (1), (1) University of California, Riverside, Riverside, CA, U.S.A.; (2) University of Florida, Lake Alfred, FL, U.S.A.; (3) University of California, Davis, Davis, CA, U.S.A.

15:10
Exception to the norm: Inactive TAL effectors trigger an atypical resistance mechanism in rice
A. I. HUERTA (1), L. R. Triplett (2), T. Borland (1), J. E. Leach (1), (1) Colorado State University, Fort Collins, CO, U.S.A.; (2) Department of Plant Pathology and Ecology, The Connecticut Agricultural Experiment Station, New Haven, CT, U.S.A.

CS Fungicide Resistance Management

14:30–15:20; *Room 208*

Moderators: Gerd Stammler, BASF SE, Limburgerhof, GERMANY; Geunhwa Jung, University of Massachusetts, Amherst, Amherst, MA, U.S.A.

14:30
Development of a quantitative PCR-based method for the detection and monitoring azoxystrobin resistance in *Pyricularia oryzae* populations
A. KUNOVA, C. Pizzatti, M. Pasquali, P. Cortesi, DeFENS, Università degli Studi di Milano, Milano, ITALY

14:40
Control of cereal pathogens in the light of resistance development in Europe
A. Rehfus, A. Huf, R. J. Bryson, D. Strobel, G. STAMMLER, BASF SE, Limburgerhof, GERMANY

14:50
Identifying molecular components of reduced demethylation inhibitor (DMI) fungicide sensitivity in *Blumeria graminis* f. sp. *tritici*
E. A. MEYERS (1), R. Whetten (2), C. Cowger (3), (1) Department of Entomology and Plant Pathology, North Carolina State University, Raleigh, NC, U.S.A.; (2) USDA-ARS Plant Science Unit, Raleigh, NC, U.S.A.; (3) USDA-ARS, Department of Entomology and Plant Pathology, North Carolina State University, Raleigh, NC, U.S.A.

15:00
Fungicide sensitivity study of European *Zymoseptoria tritici* populations using large scale phenotyping and targets-based amplicon sequencing
R. Frey (1), S. Widdison (2), G. Scalliet (1), H. Sierotzki (1), F. Walder (1), S. TORRIANI (1), (1) Syngenta Crop Protection, Stein, SWITZERLAND; (2) Syngenta Ltd., Bracknell, UNITED KINGDOM

15:10
Resistance mechanisms of SDHI fungicides in *Sclerotinia homoeocarpa* field isolates
G. JUNG (1), J. T. Popko (1), H. Sang (2), J. Lee (1), (1) University of Massachusetts, Amherst, Amherst, MA, U.S.A.; (2) Michigan State University, East Lansing, MI, U.S.A.

CS Fungal Canker and Vascular Diseases: A Global Threat to Woody Plant Health and Introduction of the Sentinel Concept

14:30–16:30; *Room 210*

Organizers: Jose Ramon Urbez-Torres, Summerland Research and Development Centre–Agriculture and Agri-Food Canada, Summerland, BC, CANADA; Laura Mugnai, Università degli Studi di Firenze, Florence, ITALY

Subject Matter Committee Chairperson: Laura Mugnai, Università degli Studi di Firenze, Florence, ITALY

14:30
Grapevine trunk diseases: A complex of related pathogens with global impacts
M. R. Sosnowski (1,2), D. Gramaje Perez (3), J. R. Urbez-Torres (4), L. MUGNAI (5), (1) South Australian Research and Development Institute (SARDI), Urrbrae, AUSTRALIA; (2) University of Adelaide, Adelaide, AUSTRALIA; (3) Instituto de Ciencias de la Vid y el Vino (ICVV), Logroño, SPAIN; (4) Agriculture and Agri-Food Canada–Summerland Research and Development Centre, Summerland, BC, CANADA; (5) DISPAA, University of Florence, Firenze, ITALY

14:50
The impacts of global trade on the dispersal of fungal trunk pathogens in nursery stock
D. GRAMAJE PEREZ (1), J. Armengol (2), R. Billones-Baaijens (3), F. Halleen (4), S. Di Marco (5), C. Rego (6), M. R. Sosnowski (7), J. R. Urbez-Torres (8), (1) Instituto de Ciencias de la Vid y el Vino (ICVV), Logroño, SPAIN; (2) Universitat Politecnica de Valencia, Valencia, SPAIN; (3) National Wine and Grape Industry Centre, Wagga Wagga, AUSTRALIA; (4) Stellenbosch University, Stellenbosch, SOUTH AFRICA; (5) IBIMET–CNR, Bologna, ITALY; (6) UTL, Lisbon, PORTUGAL; (7) University of Adelaide, Adelaide, AUSTRALIA; (8) Agriculture and Agri-Food Canada–Summerland Research and Development Centre, Summerland, BC, CANADA

15:10
The rise of fungal canker and vascular diseases in cultivated and native woody plants: A California case study
F. TROUILLAS (1), T. J. Michailides (2), A. Eskalen (3), J. R. Urbez-Torres (4), (1) Department of Plant Pathology, University of California, Davis, Parlier, CA, U.S.A.; (2) University of California, Davis, Parlier, CA, U.S.A.; (3) Department of Plant Pathology and Microbiology, University of California, Riverside, Riverside, CA, U.S.A.; (4) Agriculture and Agri-Food Canada–Summerland Research and Development Centre, Summerland, BC, CANADA

15:30
Sentinel nurseries and plantations, approaches to tackle invasive plant pathogens before they move from their area of origin: The study case of China
A. VANNINI (1), A. M. Vettraino (2), R. Eschen (3), (1) DIBAF–University of Tuscia, Viterbo, ITALY; (2) Università degli Studi della Tuscia, Viterbo, ITALY; (3) CABI, Delémont, SWITZERLAND

15:50
Grapevine and fungal trunk pathogens interactions and the global impacts of climatic events
F. FONTAINE, Université de Reims Champagne–Ardenne, Reims, FRANCE

16:00
Sentinel arboreta as 'bridge environment' to study novel host–pathogens interactions and detect potentially alien plant pathogens
C. MORALES-RODRIGUEZ (1), T. Dogmus-Lehtijarvi (2), S. Woodward (3), A. G. Aday Kaya (2), F. Oskay (4), A. Vannini (1), (1) DIBAF–University of Tuscia, Viterbo, ITALY; (2) Süleyman Demirel

University, Isparta, TURKEY; (3) University of Aberdeen, Aberdeen, SCOTLAND; (4) Çankırı Karatekin University, Ankara, TURKEY

CS **Innovative Technologies for Monitoring Emerging Diseases**
14:30–16:30; *Room 304*
Organizers: Lise Korsten, University of Pretoria, Pretoria, SOUTH AFRICA; Jean Ristaino, North Carolina State University, Raleigh, NC, U.S.A.
Subject Matter Committee Chairperson: Lise Korsten, University of Pretoria, Pretoria, SOUTH AFRICA

14:30
Plantwise: As a source of intelligence on emerging disease in developing countries including Asia
M. CHAUDHARY (1), R. Reeder (2), W. Jenner (3), K. Cameron (4), (1) CABI, New Delhi, INDIA; (2) CABI, Egham, UNITED KINGDOM; (3) CABI, Delémont, SWITZERLAND; (4) CABI, Wallingford, UNITED KINGDOM

14:50
Collaboratively managing sudden oak death in California and Oregon using tangible landscape models
D. Gaydos (1), R. Cobb (2), D. M. RIZZO (3), R. K. Meentemeyer (4), (1) Department of Forestry and Natural Resources, North Carolina State University, Raleigh, NC, U.S.A.; (2) Cal Poly State University, San Luis Obispo, CA, U.S.A.; (3) University of California, Davis, Davis, CA, U.S.A.; (4) North Carolina State University, Raleigh, NC, U.S.A.

15:10
The role of the Global Rust Reference Center for tracking variability and spread of wheat rust fungi
M. S. Hovmøller (1), J. RODRIGUEZ ALGABA (1), T. Thach (1), M. Patpour (1), C. K. Sorensen (1), A. F. Justesen (2), S. Ali (3), P. Lassen (4), J. Grønbech Hansen (4), (1) Aarhus University, Slagelse, DENMARK; (2) Danish Institute of Agricultural Sciences, Slagelse, DENMARK; (3) University of Agriculture, Peshawar, Peshawar, PAKISTAN; (4) Aarhus University, Tjele, DENMARK

15:30
Track emerging late blight in the U.S. and South America using a disease alert and surveillance systems and population genomics
J. B. RISTAINO (1), S. Restrepo (2), (1) North Carolina State University, Raleigh, NC, U.S.A.; (2) Universidad de los Andes, Bogota, COLOMBIA

15:50
Metagenomic analysis of the aerial mycobiome of rice paddies
S. FRANCO ORTEGA (1), I. Ferrocino (2), S. Silvestri (3), I. Adams (4), D. Spadaro (5), N. Boonham (4), M. L. Gullino (1), (1) Agroinnova–University of Torino, Grugliasco, Torino, ITALY; (2) Department of Agricultural, Forest and Food Science, University of Turin, Grugliasco, ITALY; (3) Ente Nazionale Risi, ENR, Milano, ITALY; (4) Fera Science Ltd., York, UNITED KINGDOM; (5) DISAFA and AGROINNOVA, University of Torino, Torino, ITALY

16:00
Automated detection of '*Ca*. Liberibacter asiaticus' infection in citrus using immune tissue prints and machine learning
J. SHAO (1), F. Ding (2), S. Fu (3), J. S. Hartung (1), (1) USDA-ARS Molecular Plant Pathology Lab, Beltsville, MD, U.S.A.; (2) Huazhong Agricultural University, Wuhan, CHINA; (3) Southwest University, Chongqing, CHINA

CS **Vector–Pathogen Complexes Around the World: What Could Be the Next Big Threat to Food Security?**
14:30–16:30; *Room 302*
Organizers: Kathleen M. Martin, Kansas State University, Manhattan, KS, U.S.A.; Ismael E. Badillo-Vargas, Texas A&M AgriLife Research, Weslaco, TX, U.S.A.
Subject Matter Committee Chairperson: Ismael E. Badillo-Vargas, Texas A&M AgriLife Research, Weslaco, TX, U.S.A.

14:30
Planthopper-transmitted tenuiviruses infecting rice in the Americas
W. CUELLAR, International Center for Tropical Agriculture (CIAT), Cali, Valle del Cauca, COLOMBIA

14:50
Whitefly-transmitted viruses induce contrasting changes in vector behavior and plant volatile emissions
A. FERERES, CSIC, Madrid, SPAIN

15:10
Forging new tools for the war against *Bactericera cockerelli* and '*Candidatus* Liberibacter solanacearum': A pathosystem on the move
I. E. BADILLO-VARGAS, Texas A&M AgriLife Research, Weslaco, TX, U.S.A.

15:30
Interactions between *Diaphorina citri* and '*Candidatus* Liberibacter asiaticus': A systems biology perspective
M. HECK (1,2,3), E. D. A. Ammar (4), J. Bruce (5), L. Chetelat (6), S. Fattahalhosseini (2), L. A. Fleites (2), D. Hall (7), S. Hosseinzadeh (2), R. Johnson (8), S. Krasnoff (9), A. Kruse (3), M. MacCoss (8), J. S.

Ramsey (9), S. Saha (2), R. Shatters (10), C. Slupsky (6), Z. Zhong (5), (1) Emerging Pests and Pathogens Research Unit, USDA-ARS, Ithaca, NY, U.S.A.; (2) Boyce Thompson Institute, Ithaca, NY, U.S.A.; (3) Section of Plant Pathology and Plant–Microbe Biology, Cornell University, Ithaca, NY, U.S.A.; (4) USDA-ARS, Fort Pierce, FL, U.S.A.; (5) University of Washington, Seattle, WA, U.S.A.; (6) University of California, Davis, Davis, CA, U.S.A.; (7) U.S. Horticultural Research Laboratory, USDA-ARS, Fort Pierce, FL, U.S.A.; (8) Department of Genome Sciences, University of Washington, Seattle, WA, U.S.A.; (9) USDA-ARS Emerging Pests and Pathogens Research Unit, Ithaca, NY, U.S.A.; (10) USDA-ARS, Fort Pierce, FL, U.S.A.

15:50
Analyzing the expression of '*Candidatus* Liberibacter solanacearum' effectors in insect and plant hosts
P. REYES CALDAS, L. M. M. Perilla Henao, S. Thapa, C. Casteel, G. L. Coaker, University of California, Davis, Davis, CA, U.S.A.

16:00
Insights into the epidemiology and transmission of grapevine red blotch virus
E. CIENIEWICZ (1), K. L. L. Perry (2), A. Kruse (3), M. Cilia (4), M. Fuchs (1), (1) Cornell University, Geneva, NY, U.S.A.; (2) Cornell University, Ithaca, NY, U.S.A.; (3) Section of Plant Pathology and Plant–Microbe Biology, Cornell University, Ithaca, NY, U.S.A.; (4) Emerging Pest and Pathogen Research Unit, USDA-ARS, Ithaca, NY, U.S.A.

CS Wheat Blast—Developing Strategies for Assessing and Managing a Global Threat on the Move

14:30–16:30; *Room 312*

Organizers: Md Tofazzal Islam, Bangabandhu Sheikh Mujibur Rahman Agricultural University, Gazipur, BANGLADESH; Christian D. Cruz, Purdue University, West Lafayette, IN, U.S.A.

With financial support from: Biotrigo Genetica–Brazil

Subject Matter Committee Chairperson: Mark Farman, University of Kentucky, Lexington, KY, U.S.A.

14:30
Wheat blast: Danger on the move
C. D. CRUZ (1), B. Valent (2), (1) Purdue University, West Lafayette, IN, U.S.A.; (2) Kansas State University, Manhattan, KS, U.S.A.

14:50
Open science and international collaboration to tackle the fearsome wheat blast in Asia and beyond
M. T. Islam (1), S. KAMOUN (2), (1) Bangabandhu Sheikh Mujibur Rahman Agricultural University, Gazipur, BANGLADESH; (2) The Sainsbury Laboratory, Norwich, UNITED KINGDOM

15:10
Wheat blast: Unveiling epidemiological aspects
M. FERNANDES (1), K. B. Mills (2), P. A. Paul (2), L. V. Madden (2), (1) Embrapa Wheat, Passo Fundo, BRAZIL; (2) The Ohio State University, Wooster, OH, U.S.A.

15:30
Mechanisms of evolution of the wheat blast fungus
Y. TOSA (1), Y. Inoue (2,3), T. Vy (4), R. Terauchi (3,5), B. Valent (6), M. L. Farman (7), (1) Kobe University, Kobe, JAPAN; (2) Kobe Univ., Kobe, JAPAN; (3) Kyoto University, Kyoto, JAPAN; (4) Kobe university, Kobe, JAPAN; (5) Iwate Biotechnology Research Center, Iwate, JAPAN; (6) Kansas State University, Manhattan, KS, U.S.A.; (7) University of Kentucky, Lexington, KY, U.S.A.

15:50
Wheat Blast Management: Host Resistance and Fungicide Protection
C. D. Cruz (1), P. SINGH (2), G. Cruppe (3), F. M. Santana (4), T. C. Todd (3), L. Calderon Daza (5), M. G. Rivadeneira Caballero (6), R. P. Singh (7), G. L. Peterson (8), H. J. Braun (7), B. Valent (3), (1) Purdue University, West Lafayette, IN, U.S.A.; (2) CIMMYT, El Batan, MEXICO; (3) Kansas State University, Manhattan, KS, U.S.A.; (4) Embrapa, Passo Fundo, BRAZIL; (5) Wheat Breeding Unit, Wheat and Oilseed Growers Association, Santa Cruz de la Sierra, BOLIVIA; (6) Centro de Investigación Agrícola Tropical, Santa Cruz de la Sierra, BOLIVIA; (7) CIMMYT, Mexico City (Distrito Federal), MEXICO; (8) USDA-ARS, Fort Detrick, MD, U.S.A.

CS Disease Control and Fungicide Resistance

15:30–16:20; *Room 208*

Moderators: Katrin Ayer, Cornell University, Geneva, NY, U.S.A.; Kendall Johnson, North Carolina State University, Mills River, NC, U.S.A.

15:30
A *myosin5* dsRNA that reduces the fungicide resistance and pathogenicity of *Fusarium asiaticum*
X. S. SONG, K. X. Gu, Y. Duan, Y. P. Hou, M. Zhou, Nanjing Agricultural University, Nanjing, CHINA

15:40
Rare sugar: A novel signal molecule for growth inhibition and defense induction in plants
K. AKIMITSU, Kagawa University, Miki, Kagawa, JAPAN

15:50
Sensitivity of the apple scab pathogen, *Venturia inaequalis*, to SDHI fungicides
K. AYER (1), M. W. Choi (1), S. M. Villani (2), K. D. Cox (1), (1) Cornell University, Geneva, NY, U.S.A.; (2) North Carolina State University, Mills River, NC, U.S.A.

16:00
Fungicide efficacy and molecular characterization of North Carolina *Colletotrichum* populations causing Glomerella leaf spot and fruit rot on apple
K. JOHNSON, R. Kreis, C. Justus, S. M. Villani, North Carolina State University, Mills River, NC, U.S.A.

16:10
The role of heteroplasmy for the cytochrome *b* gene in resistance to QoI fungicides in *Podosphaera xanthii*
A. VIELBA-FERNANDEZ (1), J. A. Tores (1), A. De Vicente (2), D. Fernandez-Ortuno (1), A. Perez Garcia (2), (1) IHSM-UMA-CSIC La Mayora, Algarrobo Costa, Malaga, SPAIN; (2) IHSM-UMA-CSIC La Mayora, University of Malaga, Malaga, SPAIN

CS **Oomycetes in Global Agriculture**
15:30–16:20; *Room 207*
Moderators: Silvia Restrepo, Universidad de los Andes, Bogota, COLOMBIA; Hossein Ali Narouei-Khandan, Ministry for Primary Industries, Wellington, NEW ZEALAND

15:30
Phytophthora betacei and *Phytophthora andina*: Controversy within the Clade 1c?
M. Mideros, M. Parra, N. Guayazan, G. Danies, S. RESTREPO, Universidad de los Andes, Bogota, COLOMBIA

15:40
Habitat suitability of *Phytophthora palmivora* using bioclimatic models
H. A. NAROUEI-KHANDAN, M. Ormsby, A. Herath, Ministry for Primary Industries, Wellington, NEW ZEALAND

15:50
Population genetics analysis of *Pythium myriotylum* and *Pythium aphanidermatum* in Japan
A. AULIANA (1), C. Borjigen (2), K. Otsubo (2), S. Fuji (3), A. Hieno (2), H. Suga (4), K. Kageyama (2), (1) United Graduate School of Agricultural Science, Gifu University, Gifu, JAPAN; (2) River Basin Research Center, Gifu University, Gifu, JAPAN; (3) Akita Prefectural University, Akita, JAPAN; (4) Life Science Research Center, Gifu University, Gifu, JAPAN

16:00
Ecology and evolution of oomycete communities in response to soybean seed treatments
Z. NOEL, H. Sang, M. Chilvers, Michigan State University, East Lansing, MI, U.S.A.

16:10
Late blight pathogen diversity in North-Eastern Europe
R. KIIKER (1), D. Cooke (2), I. Skrabule (3), A. Ronis (4), E. Runno-Paurson (1), (1) Estonian University of Life Sciences, Tartu, ESTONIA; (2) James Hutton Institute, Dundee, SCOTLAND; (3) Institute of Agricultural Resources and Economics, Priekuli Research Centre, Priekuli, LATVIA; (4) Institute of Agriculture, Lithuanian Research Centre for Agriculture and Forestry, Akademija, LITHUANIA

Taking photographs of poster content without permission of the author(s) is strictly prohibited.

Poster content listed in the program is as submitted by the authors/presenter and has NOT been edited.

Important Note: If you are presenting two posters and they are scheduled at the same time, please leave a note to indicate the number of the other poster (where you can be found).

POSTER HOURS

Monday, July 30

13:00–14:00	Poster Set-Up (Group 1)
16:00–17:30	Poster Viewing with Authors Present (Group 1, Odds)

Tuesday, July 31

08:00–17:30	Poster Viewing
16:00–17:30	Poster Viewing with Authors Present (Group 1, Evens)
18:00–18:30	Poster Take-Down (Group 1)

Wednesday, August 1

07:00–08:00	Poster Set-Up (Group 2)
10:00–11:30	Poster Viewing with Authors Present (Group 2, Odds)

Thursday, August 2

08:00–17:30	Poster Viewing
16:00–17:30	Poster Viewing with Authors Present (Group 2, Evens)
18:00–18:30	Poster Take-Down (Group 2)



Poster Categories—Group 1	Poster Numbers
Analytical and Theoretical Plant Pathology	1–22
Biochemistry and Cell Biology	23–52
Biotechnology and Genetic Engineering	53–71
Crop Loss Assessment	72–81
Fungicide and Antibiotic Resistance	82–117
Host Resistance Screening	118–149
Molecular Plant Microbe Interactions	150–244
Nematology	246–250
Oomycetes	251–261
Pathogen Detection, Quantification, and Diagnosis	262–378
Pathogen Vector Interactions	380–398
Phytobiomes	399–434
Population Biology and Genetics	435–523
Proteomics/Metabolomics/Genomics	524–595
Virology	596–632

Poster Categories—Group 2	Poster Numbers
Abiotic Interactions	633–655
Bacteriology	656–678
Biological Control	679–763
Chemical Control	764–840
Cultural Control	841–867
Genetics of Resistance	868–914
Integrated Pest Management	915–948
Mycology	949–964
New and Emerging Diseases	965–1009
Outreach and Engagement	1010–1031
Pathogen Dispersal and Survival	1032–1080
Pathogenicity and Host Specificity	1081–1142
Plant Defense Response	1143–1209
Postharvest Pathology and Mycotoxins	1210–1232
Regulatory Plant Pathology	1233–1251



Group 1

Analytical and Theoretical Plant Pathology

1-P **Strawberry *B. cinerea* IPM optimisation by iMETOS®sm forecasting model** N. RASIUKEVICIUTE, Lithuanian Research Centre for Agriculture and Forestry Institute of Horticulture, Babtai, Kaunas dist., LITHUANIA

2-P **Analysis of seed potato certification data for limiting potato disease incidence in Colorado** Y. ZENG, Colorado State University, Center, CO, USA

3-P **Relationship between weather, colonization and mycotoxins produced by *Fusarium graminearum* species complex on sorghum grain** L. ROTHMANN, University of the Free State, Bloemfontein, SOUTH AFRICA

4-P **Sclerotinia stem rot of soybean: the South African approach** N. MCLAREN, University of the Free State, Bloemfontein, SOUTH AFRICA

5-P **A rule-based prediction system improves spray precision for the control of strawberry powdery mildew** H. WILEMAN, University of Hertfordshire, Hatfield, Herts, UNITED KINGDOM

6-P **Analysis of the Influence of Climate on *Arceuthobium sichuanense*** C. TIAN, Beijing Forestry University, Beijing, CHINA

7-P **A Meta-Analytical Approach Towards Optimizing Peanut Digging Decisions in the Presence of Late or Early Leaf Spot Defoliation** D. ANCO, Clemson University, Blackville, SC, USA

8-P **Prediction and warning system in Chile: A way to face the risk of late blight** I. ACUNA, Agricultural Research Institute INIA Chile, Osorno, CHILE

9-P **Climatic and spatial factors associated with *Xylella fastidiosa* outbreaks in Italy and mainland Spain** A. VICENT CIVERA, Instituto Valenciano de Investigaciones Agrarias (IVIA), Moncada (Valencia), SPAIN

10-P **IPM Wheat Model - 22 years of prognosis systems for major wheat diseases in Germany** J. VERREET, University of Kiel, Kiel, GERMANY

11-P **A forecasting system for bacterial spot disease of stone fruits caused by *Xanthomonas arboricola* pv. *pruni*** I. LLORENTE, University of Girona, Girona, SPAIN

12-P **Effect of temperature and leaf wetness duration on development of *Sclerotinia sclerotiorum* on canola leaves** F. SHAHOVEISI, North Dakota State University, Fargo, ND, USA

13-P **Asian soybean rust control in response to the rainfall simulation after fungicides application** A. CHECHI, UPF, Passo Fundo, BRAZIL

14-P **Identification of weather variables associated with epidemics of sugarcane orange rust in Florida** B. CHAULAGAIN, University of Florida, Belle Glade, FL, USA

15-P **Predicting emergence of hop shoots systemically infected by *Pseudoperonospora humuli* in Wisconsin using a simple degree-day model** M. MARKS, University of Wisconsin-Madison, Madison, WI, USA

16-P **Geostatistical analysis of rice blast in China at three different scales** F. GUO, China Agricultural University, Beijing, CHINA

17-P **Integrating real-time edaphics into epidemic models for predicting risk in soilborne pathogen systems** J. HAYTER, Texas A&M University Department of Plant Pathology and Microbiology, College Station, TX, USA

18-P **Spatial Distribution of Foliar Diseases in Soybeans** M. PATTERSON, University of Arkansas-Fayetteville, MONTICELLO, AR, USA

19-P **Development and validation of standard area diagrams for assessment of coffee leaf rust *(Hemileia vastatrix* Berk. & Br.) severity in Columbia** C. ANGEL, National Coffee Research Center -Cenicafe, Manizales, COLOMBIA

20-P **Infectivity titration dose response curves within *Aspergillus flavus*: A Case for Infection Specificity** R. SWEANY, Louisiana State University AgCenter, Baton Rouge, LA, USA

21-P **An epidemic forecast model of cucumber downy mildew for whole growing season in greenhouse using meta-analysis** M. LI, National Engineering Research Center for Information Technology in Agriculture, Beijing, CHINA

22-P **30 years of polyetic development of the polycyclic onion disease Botrytis Leaf Blight** H. VAN DER HEYDEN, McGill University, Ste. Anne de Bellevue, QC, CANADA

Biochemistry and Cell Biology

23-P **Transcriptome alteration in *Phytophthora infestans* in response to phenazine-1-carboxylic acid production by *Pseudomonas fluorescens* LBUM223** M. FILION, Université de Moncton, Moncton, NB, CANADA

24-P **Genetic analysis of the contribution of bacterial phenyl acetic acid production to virulence of *Rhizoctonia solani* AG2-2IIIB** K. OBASA, UNIVERSITY OF FLORIDA, GAINESVILLE, FL, USA

25-P **Dissecting the intercellular trafficking of the movement protein of *Ourmia melon virus*** N. OZBER, The Pennsylvania State University, University Park, PA, USA

26-P **Digital imaging to investigate root architectural changes associated with a root rot disease** C. MATTUPALLI, Noble Research Institute, LLC, Ardmore, OK, USA

27-P **Nucleobase transport in *Erwinia amylovora*** N. SCHULTES, The Connecticut Agricultural Experiment Station, New Haven, CT, USA

28-P **Chitin synthases *PcCHS* and *PsCHS1* are involved in sporangial development, zoospore production, and plant infection in *Phytophthora*** X. LIU, China Agricultural University, Beijing, CHINA

29-P **Elucidating the functions of methyl-accepting chemotaxis (mcp) proteins of *Dickeya dianthicola*** A. NASARUDDIN, Colorado State University, Fort Collins, CO, USA

30-P ***Sclerotinia sclerotiorum* oxalate-minus mutants accumulate fumaric acid in a pH-responsive manner and remain pathogenic on most host plants** W. CHEN, USDA ARS, Pullman, WA, USA

31-P **Disruption of the Rice Blast genome to identify genes involved in production of Reactive Oxygen Species** J. PANCAKE, University of Delaware, Newark, DE, USA

32-P **Loss-of-function mutations in the Dpp and Opp permeases render *Erwinia amylovora* resistant to kasugamycin and blasticidin S** Y. GE, University of Illinois, Urbana, IL, USA

33-P ***Stemphylium lycopersici* isolates virulence depends on the synthesis of phytotoxic metabolites, which is modified by the environment.** P. BALATTI, Centro de Investigaciones de Fitopatologia (CIDEFI), La Plata, ARGENTINA

34-P **Stealth and brute force behavior of *Pectobacterium atrosepticum* inside the plant: ultrastructure, biochemistry and transcriptomics** V. GORSHKOV, Kazan Federal University, Kazan, RUSSIA

35-P **The infection process of *Exserohilum turcicum*: A microscopy investigation** R. KOTZE, Department of Plant and Soil Sciences, University of Pretoria, Pretoria, Gauteng, SOUTH AFRICA

36-P **Hypoxia, denitrification, and the fitness of *Fusarium verticillioides* as a fungal pathogen of maize** B. OAKLEY, Department of Plant Pathology, The University of Georgia, Athens, GA, USA

37-P **Regulation of toxin production by *Rathayibacter toxicus*, causative agent of bacterial head blight of grasses and annual ryegrass toxicity** E. ROGERS, USDA ARS FDWSRU, Fort Detrick, MD, USA

38-P **The mitogen-activated protein kinase kinase kinase SsOS4 regulates vegetative growth and fungicide sensitivity in *Sclerotinia sclerotiorum*** T. LI, Nanjing Agricultural University, Nanjing, CHINA

39-P ***Dickeya dadantii* forms elongated cells during the infection of potato tubers: causal conditions, molecular basis, and implications to pathogenicity** Z. CUI, Department of Plant Pathology & Ecology, The Connecticut Agricultural Experiment Station, New Haven, CT, USA

40-P **Identification and characterization of hemagglutinins at different stages of bacterial wilt disease** D. KHOKHANI, University of Wisconsin Madison, Madison, WI, USA

41-P **Role of the ubiquitin-conjugating enzymes in plant innate immunity** L. ZENG, University of Nebraska, Lincoln, NE, USA

42-P **An optimized *Agrobacterium tumefaciens*-mediated transformation protocol for *Ceratocystis albifundus*** B. WINGFIELD, Forestry and Agricultural Biotechnology Institute (FABI), University of Pretoria, Pretoria, SOUTH AFRICA

43-P **Differential Roles of Glucosinolates and Camalexin at Different Stages of *Agrobacterium*-Mediated Transformation** E. LAI, Institute of Plant and Microbial Biology, Academia Sinica, Taipei, TAIWAN

44-P ***Streptomyces scabies*, a causal agent of potato common scab, has the ability to degrade aromatic constituents of tuber periderm** C. BEAULIEU, Université de Sherbrooke, Sherbrooke, QC, CANADA

45-P **Ralfuranones feedback-regulate the quorum sensing, contributing to virulence of *Ralstonia solanacearum* strain OE1-1** Y. HIKICHI, Kochi University, Nankoku, JAPAN

46-P **Down-regulation of the mycotoxin beauvericin in a phytopathogen-endophyte interaction** M. BÄRENSTRAUCH, Museum of Natural History, Paris, FRANCE

47-P **Effects of codon bias on heterologous expression of fluorescent proteins in *Xylella fastidiosa*** T. LOWE-POWER, University of California Berkeley, Berkeley, CA, USA

48-P **Battles in the outer space: Extracellular DNases secreted by *Pectobacterium carotovorum* and its host plants** Z. XIONG, University of Arizona, Tucson, AZ, USA

49-P **Phyllosphere colonization strategies related to successful infection in *Xanthomonas vesicatoria*** A. ROMERO, Facultad de Agronomia, University of Buenos Aires, Buenos Aires, ARGENTINA

50-P **Unraveling the structure and function of an uncharacterized nuclease with putative DNA activities in *Xanthomonas campestris* pathovar *campestris*.** F. PERITORE-GALVE, Plant Pathology and Plant-Microbe Biology Section, Cornell University, Geneva, NY, USA

51-P **Fusel alcohol biosynthesis in the Ceratocystidaceae** M. VAN DER NEST, Forestry and Agricultural Biotechnology Institute (FABI), University of Pretoria, Pretoria, SOUTH AFRICA

52-P **Regulatory proteins involved in cyclic-di-GMP-mediated transcriptional regulation of amylovoran production in *Erwinia amylovora*** R. KHARADI, Michigan State University, East Lansing, MI, USA

Biotechnology and Genetic Engineering

53-P **Engineering citrus canker and Huanglongbing resistance by overexpressing of glutamate decarboxylase in citrus** S. ZHANG, New Mexico Consortium, Los Alamos, NM, USA

54-P **Design of a flagella-propelled bio-inspired submersible robot for hydroponic production and irrigation system inspection** F. BAYSAL-GUREL, Tennessee State University, McMinnville, TN, USA

55-P **CRISPR-Cas mediated RNA modulation for improved plant defense** V. SHARMA, Kansas State University, Manhattan, KS, USA

56-P **Engineering *xopAG* induced expression by *Xanthomonas citri* TALE confer resistance to citrus canker** D. SHANTHARAJ, Auburn University, Department of Biological Sciences, Auburn, AL, USA

57-P **Development of a protein-luciferase-based high-throughput screening system to monitor degradation of Jasmonate ZIM-domain family proteins** H. ISHIDA, Graduate School of Environment and Information Sciences, Yokohama National University, Yokohama, JAPAN

58-P **Development of the VIGS system towards enhancing the production level of hatching factors for potato cyst nematode using *Nicotiana benthamiana*** G. ATSUMI, National Institute of Advanced Industrial Science and Technology, Sapporo, Hokkaido, JAPAN

59-P **Regulation of citrus *DMR6* via RNA interference and CRISPR/Cas9-mediated gene editing to improve Huanglongbing tolerance** S. ZHANG, U.S. Horticultural Research Laboratory, USDA-ARS, Fort Pierce, FL, USA

60-P **Random T-DNA mutagenesis reveals gene candidates modulating pathogen virulence in postharvest *Penicillium*-apple fruit interactions** W. JURICK II, USDA-ARS Food Quality Laboratory, Beltsville, MD, USA

61-P **Application of Host-Induced Gene Silencing (HIGS) for control of rice blast disease** M. WANG, NCSU, Raleigh, NC, USA

62-P **Non-transgenic gene editing of *Citrus sinensis* using CRISPR/Cas9 ribonucleoprotein complexes** Y. WANG, CREC, university of florida, lake alfred, FL, USA

63-P **Engineering Resistance to Wheat Stripe Rust (*Puccinia striiformis* f. sp. *tritici*) Using a Protease Recognition System** M. HELM, Indiana University, Bloomington, IN, USA

64-P **Development of CRISPR/Cas9 mediated virus resistance** A. CHAKRABORTY, Murdoch University, Perth, WA, AUSTRALIA

65-P **Improve tobacco rattle virus-based microRNA silencing by special viral RNA interference suppressor** J. ZHAO, Texas A&M University, AgriLife Research Center at Dallas, Dallas, TX, USA

66-P **Increase of sweet orange resistance against *Xanthomonas citri* pv *citri* through translocation of DSF molecules from transgenic rootstocks** R. CASERTA, Centro de Citricultura Sylvio Moreira, Cordeirópolis, BRAZIL

67-P **A TMV-based viral vector for delivering gene editing tools** K. CHIONG, Texas A&M University, College Station, TX, USA

68-P **Development of high expression system of a foreign gene replacing a coat protein region in the cucumber mosaic virus vector through agroinfection** N. FUKUZAWA, National Institute of Advanced Industrial Science and Technology, Sapporo, Hokkaido, JAPAN

69-P **Editing citrus genome via SaCas9/sgRNA system** H. JIA, CREC, University of Florida, Lake Alfred, FL, USA

70-P **Use of biotechnological tools to incorporate broad virus resistance into wheat** M. NAVIA-URRUTIA, Kansas State University, Manhattan, KS, USA

71-P **A technique to reduce DNA methylation in a sequence-specific manner by using a ribozyme-expressing cucumber mosaic virus vector** R. ISODA, Research Faculty of Agriculture, Hokkaido University, Sapporo, Hokkaido, JAPAN

Crop Loss Assessment

72-P **Soil-borne diseases identified as key yield-limiting factors in potato crops** R. FALLOON, The New Zealand Institute for Plant & Food Research Limited, Christchurch, NEW ZEALAND

73-P **Impact of berry blotch disease (*Cercospora coffeicola* Berk. & Cooke.) on coffee quality and value in Columbia** C. ANGEL, National Coffee Research Center -Cenicafe, Manizales, COLOMBIA

74-P **Effect of *Puccinia kuehnii* on two sugarcane cultivars with intermediate resistance to orange rust.** F. ALINE CAVALCANTE LEITE, Federal University of São Carlos, Araras, BRAZIL

75-P ***Tomato chlorosis virus*: purification, antiserum production and yield loss on potato plants** A. BERGAMIN FILHO, University of São Paulo - ESALQ, Piracicaba, BRAZIL

76-P **Yield losses from foliar and soilborne peanut diseases** J. DAMICONE, Oklahoma State University, Stillwater, OK, USA

77-P **Impact of *Sugarcane yellow leaf virus* on sugarcane yield traits in the progenies from four diverse crosses** S. SOOD, USDA ARS, Canal Point, FL, USA

78-P **Effect of inoculation timing and hybrid resistance on yield loss attributed to Goss' wilt and leaf blight in North Dakota** E. BAUSKE, North Dakota State University, Fargo, ND, USA

79-P **Effect of Sugarcane Mosaic caused by *Sorghum mosaic virus* on Sugarcane in Louisiana** M. GRISHAM, USDA-ARS, SRU, Houma, LA, USA

80-P ***Brome mosaic virus* reduces wheat yield in both early and late growth stage infections** B. HODGE, The Ohio State University, Wooster, OH, USA

81-P **Soybean losses due to diseases and nematodes in the USA since 1996: General trends and observations** P. ESKER, Penn State University, UNIVERSITY PARK, PA, USA

Fungicide and Antibiotic Resistance

82-P **Chemosensitization of *Zymoseptoria tritici* isolates resistant to DMI and strobilurin fungicides** J. DELGADO, Dow AgroSciences, Indianapolis, IN, USA

83-P **Resistance to SDHI fungicides in *Botrytis cinerea* from commercial strawberry fields in Spain** D. FERNANDEZ-ORTUNO, IHSM-UMA-CSIC La Mayora, Algarrobo-Costa, Malaga, SPAIN

85-P **Managing QoI resistant *Cercospora beticola* on sugar beet (*Beta vulgaris* L.) in the USA** M. KHAN, North Dakota State University & University of Minnesota, Fargo, ND, USA

86-P **Identification and Characterization of Inherent Resistance to 14α-demethylation Inhibitors in *Colletotrichun truncatum*** S. CHEN, Institute of Plant Protection, Chinese Academy of Agricultureal Sciences, Beijing, CHINA

87-P ***Colletotrichum* Species Composition and Fungicide Tolerance in Isolates Causing Bitter Rot of Apples in Pennsylvania** P. MARTIN, Penn State University, Biglerville, PA, USA

88-P **Phenotypic and molecular characterization of *Botrytis cinerea* isolates from strawberry to isofetamid and cross-resistance with other SDHI fungicides.** A. ZUNIGA, Gulf Coast Research and Education Center; University of Florida, Wimauma, FL, USA

89-P **Virulence of multi-fungicide resistant *Zymoseptoria tritici* isolates under greenhouse conditions** C. AVILA-ADAME, Dow AgroSciences LLC, Indianapolis, IN, USA

90-P **Development of resistance in field populations of *Botrytis cinerea* following exposure to various fungicide programs** S. COSSEBOOM, Strawberry Center, California Polytechnic State University, San Luis Obispo, CA, USA

91-P **Evaluating *Helminthosporium solani*, causal agent of potato silver scurf blemish disease, for sensitivity to the fungicide azoxystrobin** S. MACCHIAVELLI GIRÓN, University of Wisconsin-Madison, Madison, WI, USA

92-P **Heterogenous expression of *Sclerotinia sclerotiorum* β-tubulin conferring benzimidazole-resistance in *Fusarium asiaticum*** Y. YANG, Nanjing Agricultural University, Nanjing, CHINA

93-P **A simple technique for rapid detection of fungicide resistance in *Phytophthora* species in citrus orchard soil** T. THIND, Department of Plant Pathology, Punjab Agricultural University, Ludhiana, INDIA

94-P **Lessons from two years of disease and fungicide resistance surveys of pome fruit in the U.S. Pacific Northwest** M. ALI, Washington State University, Wenatchee, WA, USA

95-P **Identification of QoI mutation in soybean pathogens in Brazil** F. DE MELLO, Londrina State University, Londrina, BRAZIL

96-P **Characterization of difenoconazole resistance in *Penicillium expansum* laboratory mutants** M. ALI, Washington State University, Wenatchee, WA, USA

97-P **QoI sensitivity in *Alternaria solani*, causal agent of potato early blight, is dependent upon the quantity of wildtype cytochrome *b*** S. DING, University of Wisconsin-Madison, Madison, WI, USA

98-P **Resistance of *Phytophthora cactorum* isolates causing crown and leather rot in Florida strawberries to Mefenoxam** M. MARIN, University of Florida, Wimauma, FL, USA

99-P **First report of mandipropamid resistance of grapevine downy mildew in North America** A. BAUDOIN, Virginia Tech, Blacksburg, VA, USA

100-P **Diversity of RPA190 in *Phytophthora infestans* resistant to metalaxyl** F. CHEN, Fujian Agriculture and Forestry University, Fuzhou, CHINA

101-P **Fungicide resistance in *Botrytis* spp. from strawberry fields in Norway** K. GREDVIG NIELSEN, Norwegian University of Life Sciences, Ås, NORWAY

102-P **Management of *Monilinia fructicola* resistance to tebuconazole in the field** L. MAY DE MIO, Federal University of Parana, Curitiba, BRAZIL

103-P **Evolution of fungicide resistance in UK field populations of *Zymoseptoria tritici*** B. FRAAIJE, Rothamsted Research, Hertfordshire, UNITED KINGDOM

104-P **Fungicide sensitivity of *Rhizoctonia spp.* isolated from soybean fields in Nebraska** N. GAMBHIR, University of Nebraska, Lincoln, NE, USA

105-P **Fungicide resistance profiles of *Botrytis cinerea* isolated from berry crops in Oregon** V. STOCKWELL, USDA ARS, Horticultural Crops Research Unit, Corvallis, OR, USA

106-P ***In vitro* and *in planta* assessment of the effect of mefenoxam-acquired resistance on sporulation in isolates of *Phytophthora infestans*** M. REGNIER, Universidad de los Andes, Bogota, COLOMBIA

107-P **Detection of QoI fungicide resistant *Cercospora beticola* airborne inoculum using quantitative PCR** K. CHITTEM, North Dakota State University, Fargo, ND, USA

108-P **Assessment of boscalid, fluopyram, and fluxapyroxad sensitivity in Michigan populations of *Blumeriella jaapii*** J. GLEASON, Michigan State University, East Lansing, MI, USA

109-P **Selection of boscalid resistance in *Blumeriella jaapii* populations treated with boscalid, fluopyram, or fluxapyroxad** C. OUTWATER, Michigan State University, East Lansing, MI, USA

110-P ***Rhizoctonia cerealis* sensitivity to fludioxonil in China and analysis of laboratory fludioxonil-resistant mutants** H. SUN, Jiangsu Academy of Agricultural Sciences, Nanjing, CHINA

111-P **Mutation in the *rpsL* gene are responsible for streptomycin resistance of *Clavibacter michiganensis* subsp. *michiganensis*** Q. LYU, China Agricultural University, Beijing, CHINA

112-P **Evaluating SDHI Fungicide Insensitivities in *Sclerotinia homoeocarpa*** A. ANTHONY, Department of Entomology and Plant Pathology, North Carolina State University, Raleigh, NC, USA

113-P **Rapid sampling techniques to determine QoI fungicide resistance in *Erysiphe necator*** S. LOWDER, Oregon State University, Corvallis, OR, USA

114-P **Evidence for CYP51-mediated reduced sensitivity to triazole fungicides in *Calonectria henricotiae*** J. HULVEY, Eastern Connecticut State University, Willimantic, CT, USA

115-P **In-season dynamics in sensitivity to azoxystrobin in the tobacco frogeye leaf spot pathogen, *Cercospora nicotianae*** E. PFEUFER, University of Kentucky, Lexington, KY, USA

116-P **N837 deletion in oxysterol binding protein-related protein confers oxathiapiprolin resistance in *Phytophthora capsici* and *P. sojae*** J. MIAO, China Agricultural University, Beijing, CHINA

117-P **Studying *Xanthomonas arboricola* pv. *corylina* strains from Serbia for streptomycin and kasugamycin resistance and copper sulfate sensitivity *in vitro*** A. PROKIĆ, University of Belgrade, Faculty of Agriculture, Belgrade, SERBIA AND MONTENEGRO

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118-P **Pear cultivar susceptibility to *Venturia pyrina* infection of shoots in pear orchards** R. RANCANE, Latvian Plant Protection Research Centre Ltd, Riga, LATVIA

119-P **Resistance to host damage is distinct from resistance to pathogen reproduction in the major wheat pathogen *Zymoseptoria tritici*** A. MIKABERIDZE, Epidemiology of Plant Diseases, ETH Zurich, Zurich, SWITZERLAND

120-P **Rapid screening for resistance against *Pseudocercospora* banana pathogens using relatively long detached banana leaves under controlled conditions** A. ORTEGA-BELTRAN, International Institute of Tropical Agriculture, Ibadan, NIGERIA

121-P **Evaluating inoculum source, application and timing in screening for resistance to *Sclerotinia sclerotiorum* on sunflower cultivars** M. BESTER, University of the Free State, Bloemfontein, SOUTH AFRICA

122-P **Identification of sweetpotato germplasm with resistance to root-knot nematodes from the Southeastern United States.** W. RUTTER, U.S. Vegetable Laboratory, USDA, ARS, Charleston, SC, USA

123-P **Fungal Diseases, Susceptibility of Nematodes, Efficacy of Herbicides, and Drought Tolerance/Heat of Birdsfoot Trefoil (*Lotus corniculatus*) Varieties** H. MOYE, Auburn University, Auburn, AL, USA

124-P **Rapid, reliable and efficient phenotyping for crown rot resistance and tolerance in wheat.** C. PERCY, University of Southern Queensland, Toowoomba, AUSTRALIA

125-P **The use of ascospores of the dieback fungus *Hymenoscyphus fraxineus* for infection reveals a period of biotrophic interaction in penetrated ash cells** J. MANSFIELD, Imperial College London, London, UNITED KINGDOM

126-P **Host resistance: the key to effectively manage Sclerotinia stem rot (*Sclerotinia sclerotiorum*) in canola *(Brassica napus)*** M. KHAN, Punjab Bio-Energy Institute,University of Agriculture, Faisalabad, PAKISTAN

127-P **Differential responses of potato cultivars to *Meloidogyne hapla*** A. GORNY, Plant Pathology & Plant-Microbe Biology Section, Cornell University, Geneva, NY, USA

128-P **Developing of new multi rust resistant bread wheat cultivar "Maaroof" for irrigated and rain-fed zones of Iraq** E. AL-MAAROOF, College of Agricultural Sciences, University of Sulaimani,, Sulaimani, IRAQ

129-P **Evaluating the stability of hybrid field maize reactions to gibberella ear rot and deoxynivalenol across environments** F. DALLA LANA, Ohio State University, Wooster, OH, USA

130-P **Development of laboratory bioassays to study powdery mildew pathogens of Phlox *in vitro*.** C. FARINAS, The Ohio State University, Columbus, OH, USA

131-P **Assessment of *Xanthomonas campestris pv. musacearum* host range and banana cultivars susceptibility in Rwanda** F. UWAMAHORO, University of Rwanda, Musanze, RWANDA

132-P **Rootstocks in Washington State winegrape vineyards: Effects on plant-parasitic nematodes and vineyard establishment** M. MOYER, Washington State University, Prosser, WA, USA

133-P **Improving resistance to Fusarium head blight in winter wheat by genomic selection** T. MIEDANER, University of Hohenheim (720), Stuttgart, GERMANY

134-P **Identification of resistances in pumpkin (*Cucurbita moschata*) accessions against *Squash leaf curl Philippines virus* in Taiwan** W. TSAI, National Chiayi University, Chiayi, TAIWAN

135-P **Cultivar screening for tolerance to *Sclerotinia sclerotiorum* using oxalate oxidase gene activity and detached leaf assays** L. VAN DER HOVEN, University of Pretoria, Pretoria, SOUTH AFRICA

136-P **Evaluation of development and production of common beans cultivars under infection of *Curtobacterium flaccumfaciens* pv. *flaccumfaciens*** A. MARINGONI, São Paulo State University, Botucatu, BRAZIL

137-P **Evaluation of potato germplasm for late blight resistance under field condition during winter season in Surkhet, Nepal** P. MAGAR, Nepal Agricultural Research Council (NARC), Kathmandu, NEPAL

138-P **Efficient field phenotyping for multiple disease resistance in a winter wheat panel** K. FLATH, Julius Kuehn-Institut, Kleinmachnow, GERMANY

139-P **A reliable glasshouse screening technique to detect BYDV-PAV disease resistance in cereal crops at early and late growth stage** S. CHOUDHURY, TIA, Launceston, AUSTRALIA

140-P **Evaluation of soybean breeding lines for resistance to Phomopsis seed decay: Results of 2014, 2015, and 2016 field trials in Stoneville, Mississippi** S. LI, USDA ARS CGRU, Stoneville, MS, USA

141-P **Symptoms of infected plants and selection of resistance to bacterial canker in Kiwifruit accessions (*Actinidia deliciosa* & *Actinidia chinensis*)** M. LEE, Namhae branch, NIHHS, RDA, Namhae-gun, KOREA

142-P **Resistance of pineapple genotypes to fusariosis and implication for disease management** J. VENTURA, Incaper - Instituto Capixaba de Pesquisa, Assistência Técnica e Extensão Rural, Vitória, MN, BRAZIL

143-P **Aggressiveness evaluation of *Diaporthe* species causing soybean stem canker in the United States** K. PETROVIC, Institute of Field and Vegetable Crops, Novi Sad, SERBIA

144-P **Utilization of a diversity panel to address genetic bottlenecks in cultivars of lima bean while improving their resistance to *Phytophthora phaseoli*** T. MHORA, University of Delaware, Newark, DE, USA

145-P **Susceptibility of some bambara groundnut [*Vigna subterrenea* (L.) Verdc.] accessions to foliar diseases under natural infection in Nigeria** C. GBOYEGA AFOLABI, Federal Univ of Agriculture, Abeokuta, Ogun State, NIGERIA

146-P **Demystifying the endophytic and saprophytic ecology of *Fusarium oxysporum* f.sp *lycopersci* race 3 for improved Fusarium wilt management in tomato** C. SWETT, Department of Plant Pathology, University of California - Davis, Davis, CA, USA

147-P **Resistance of Brazilian sugarcane cultivars to *Ceratocystis paradoxa*, the causal agent of pineapple sett rot.** J. UZAN, Federal University of São Carlos, Araras, BRAZIL

148-P **Disease resistance and yield performance of rice cultivars under organic production** X. ZHOU, Texas A&M AgriLife Research, Beaumont, TX, USA

149-P **Varietal susceptibility to multiple *Phytophthora* species in macadamia** O. JEFF-EGO, The University of Queensland, Brisbane, AUSTRALIA

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150-P **Differential regulatory systems of virulence-related functions between two strains of *Burkholderia glumae* require a common master regulator *qsmR*** T. DE PAULA LELIS, Louisiana State University, Baton Rouge, LA, USA

151-P **Mixed messages: The role of nitric oxide in *Ralstonia solanacearum* Type III Secretion and virulence** C. HENDRICH, University of Wisconsin, Madison, WI, USA

152-P **Critical role of cytochrome bc1 in tolerance of *Xanthomonas campestris* pv. *campestris* to Phenazine-1-carboxylic acid** J. WU, Nanjing agricultural university, Nanjing, CHINA

153-P **Reverse genetics for studying a strigolactone related *Brachypodium distachyon* cytochrome P450 monooxygenase in the Fusarium Head Blight context** V. CHANGENET, Institute of Plant Sciences Paris-Saclay, Gif sur Yvette, FRANCE

154-P **A cellulase as an essential virulence factor of *Clavibacter michiganensis* subsp. *michiganensis* causing bacterial canker in tomato** I. HWANG, Department of Horticultural Biotechnology, Kyung Hee University, Yongin, KOREA

155-P **Functional analysis of *Xylella fastidiosa* PD0576 gene encoding a histidine kinase and response regulator hybrid protein** H. CHEN, Auburn University, Auburn, AL, USA

156-P **Effect of *Hop stunt viroid* on host (*Humulus lupulus*) transcriptome and its interactions with hop powdery mildew (*Podospheara macularis*)** M. KAPPAGANTU, Washington State University, Pullman, WA, USA

157-P **An effector from the Huanglongbing-associated pathogen repressing host hypersensitive reaction to facilitate pathogenesis** Z. PANG, University of Florida, Lake Alfred, FL, USA

158-P **Identification and characterization of genes involved in virulence in fructose-specific pts operon from *Xanthomonas oryzae* pv. *oryzae*** F. LIU, Institute of Plant Protection, Jiangsu Academy of Agricultural Sciences, Nanjing, CHINA

159-P **Bacterial enhancer binding protein HrpS is regulated by three two-component systems and Lon protease in *Erwinia amylovora*** Y. ZHAO, University of Illinois at Urbana-Champaign, Urbana, IL, USA

160-P **A glycine-rich poly(U)-binding nuclear protein regulates asexual development and virulence of Magnaporthe oryzae** J. YANG, China Agricultural University, Beijing, CHINA

161-P **Identification and characterization of *in planta* expressed secreted effector proteins from *Rhizoctonia solani*** P. KANWAR, National Institute of Plant Genome Research (NIPGR), New Delhi, INDIA

162-P **The *Colletotrichum orbiculare MTF4* is a transcription factor downstream of MOR required for plant-derived signal dependent appressorium development** Y. KUBO, Kyoto Prefectural University, Kyoto, JAPAN

163-P **Microbial small molecules – weapons of plant subversion** R. DE JONGE, Plant-Microbe Interactions, Department of Biology, Faculty of Science, Utrecht, NETHERLANDS

164-P **Xanthomonas euvesicatoria Effector AvrRxo1 Interacts with AIN1 to EnhanceBacterial Growth on Pepper and Tobacco Plants** Z. WANG, Virginia Tech, Blacksburg, VA, USA

165-P ***Xylella fastidiosa* utilizes a β 1,4 endoglucanase to modulate exopolysaccharide production and the dynamics of biofilm development** C. CASTRO, University of California, Riverside, Riverside, CA, USA

166-P **The *Fusarium graminearum* Histone Acetyltransferases are Important for Morphogenesis, DON Biosynthesis, and Pathogenicity** H. ZHANG, Institute of Plant Protection, Chinese Academy of Agricultural Sciences, Beijing, CHINA

167-P **Comparative analysis of the *cypA – norB* gene region of *Aspergillus pseudotamarii*** C. CHING'ANDA, University of Arizona, Tucson, AZ, USA

168-P **Overexpression of *PsCRN70* effector enhances salt and drought stresses in *Nicotiana benthamiana*** N. RAJPUT, University of Agriculture, Faisalabad, Faisalabad, PAKISTAN

169-P **Domain-based interactions between a kinase of *Gossypium hirsutum* and a protein encoded by a betasatellite associated with Cotton leaf curl virus** H. PAPPU, Department of Plant Pathology, Washington State University, Pullman, WA, USA

170-P **Exploring the grapevine fanleaf virus RNA-dependent RNA polymerase-host protein interactome for insights into symptom development** L. OSTERBAAN, Cornell University, Geneva, NY, USA

171-P **Using Virulence Mutants to Identify Avr Genes in the wheat stem rust fungus, *Puccinia graminis* f. sp. *tritici*.** P. DODDS, CSIRO Agriculture and Food, Canberra, AUSTRALIA

172-P **Development of an Arabidopsis - *Pseudomonas syringae* co-culture system to investigate mechanisms of plant immunity against bacterial pathogens** Q. YAN, Oregon state University, Corvallis, OR, USA

173-P **The *hrpX* and *hrpG* play important roles in virulence of *Acidovorax citrulli*, the causal agent of bacterial fruit blotch of cucurbits.** T. ZHAO, Institute of Plant Protection, CAAS, Beijing, CHINA

174-P **Interaction transcriptomic profiling- enabled insights into the DSF-mediated quorum sensing regulation during *Xanthomonas citri* infection on citrus** J. LI, University of Florida, Lake Alfred, FL, USA

175-P **TAL effector targets the abscisic acid biosynthesis pathway for disease susceptibility in bacterial leaf streak of wheat** Z. PENG, Kansas State University, Manhattan, KS, USA

176-P **The calcium-dependent protein kinase OsCPK4 regulates a buffering mechanism that fine-tunes innate immunity in rice** W. SUN, Department of Plant Pathology, China Agricultural University, Beijing, CHINA

177-P **Dissecting the molecular cross-talk between *Phytophthora*-plant in the apoplastic battlefield** Y. WANG, Nanjing Agricultural University, Nanjing, CHINA

178-P **Identification and characterisation of *in-planta* expressed *Zymoseptoria tritici* effectors** S. KARKI, University College Dublin, Dublin, IRELAND

179-P **Transcriptome analysis of virulence-differentiated *Fusarium oxysporum* f. sp.*cucumerinum* during their colonization of cucumber** X. LU, Institute of Plant Protection, Chinese Academy of Agricultural Sciences, Beijing, CHINA

180-P **Identification of novel elicitors from *Phytophthora parasitica*** T. KE, Natl Taiwan Univ, Taipei, TAIWAN

181-P **Quorum sensing systems in *Dickeya solani* with different virulence levels.** M. POTRYKUS, Intercollegiate Faculty of Biotechnology University of Gdansk Medical University of Gdansk, Gdansk, POLAND

182-P **Identification of putative PAMPs in *Ralstonia solanacearum* proteins using Tajima's D test** N. ECKSHTAIN-LEVI, PPWS Department, Virginia Tech, Blacksburg, VA, USA

183-P **Role of type IV pili in biofilm formation and virulence of *Xylophilus ampelinus*** Y. PETERSEN, Agricultural Research Council, Stellenbosch, SOUTH AFRICA

185-P **The temporal and host specific expression of effectors from *Candidatus* Liberibacter asiaticus is associated with citrus Huanglongbing tolerance.** Q. SHI, U.S. Horticultural Research Laboratory, USDA-ARS, Fort Pierce, FL, USA

186-P **Type II toxin-antitoxin systems are essential for the survival of *Erwinia amylovora* under lethal stress conditions** T. SHIDORE, Department of Plant Pathology and Ecology, The Connecticut Agricultural Experiment Station, New Haven, CT, USA

187-P **XopJ6, a new member of the XopJ family of type III effectors, in *Xanthomonas perforans*.** F. IRUEGAS-BOCARDO, Department of Plant Pathology, University of Florida, Gainesville, FL, USA

188-P **Molecular mechanisms of mutation to virulence in *Leptosphaeria maculans* populations in the UK.** L. GAJULA, University of Hertfordshire, Hatfield, UNITED KINGDOM

189-P **Hypoxia tolerance is a virulence component in the colonization of maize seeds by *Aspergillus flavus*** S. CHALIVENDRA, Louisiana State University, Baton Rouge, LA, USA

190-P ***hok-sok* toxin-antitoxin system plays important roles in morphological plasticity, bacterial persistence, and catalase activity in *Erwinia amylovora*** J. PENG, Michigan State University, East Lansing, MI, USA

191-P **The role of TAL effectors in virulence of *Xanthomonas campestris* pv. *campestris*** Z. DUBROW, Cornell University, Ithaca, NY, USA

192-P **Validation of predicted miRNAs in *Phytophthora sojae* and *Phytophthora infestans*** M. OSPINA-GIRALDO, Lafayette College, Easton, PA, USA

193-P **The *Ustilago maydis* transcription factor, Zfp1 influences pathogenic development through the control of effector gene expression.** B. SAVILLE, Trent University, Peterborough, ON, CANADA

194-P **What's with all the *Bs* (*Bipolaris sorokiniana*) on 'Duster' wheat?** D. HOLMES, United States Department of Agriculture, Red River Valley Agricultural Research Center, Fargo, ND, USA

195-P **A *fliC* flagellin mutant of *Pseudomonas syringae* effectorless polymutant DC3000D36E reveals novel death elicitation activity in *Nicotiana benthamiana*** W. ZHANG, Cornell University, Ithaca, NY, USA

196-P **Dual dissection of fungi effectors and plant susceptibility factors reveals new candidate genes involved in the wheat/*Fusarium graminearum* interaction** L. BONHOMME, INRA, clermont ferrand, FRANCE

197-P **A genomic island carrying a type III effector enters stealth mode in a pathogen population infecting a resistant plant.** R. JACKSON, University of Reading, Reading, UNITED KINGDOM

198-P **Validation of a conserved effector associated with avirulence on Harbin and Tifang barley** N. WYATT, North Dakota State University, Fargo, ND, USA

199-P **Candidate effector gene of spot form net blotch identification using genetic mapping and whole genome sequencing** S. CLARE, North Dokata State University, Fargo, ND, USA

200-P ***Xylella fastidiosa* requires Type II-secreted endoglucanases for virulence in grapevine** B. INGEL, University of California, Riverside, Riverside, CA, USA

201-P **Genomic Analyses Reveal Localized Effector Diversification and Candidate *SnTox5* in *Parastagonospora nodorum*** J. RICHARDS, Plant Pathology Department, North Dakota State University, Fargo, ND, USA

202-P **Unravelling the molecular intricacies of the Fusarium-banana pathosystem** S. GHAG, UM-DAE Centre for Excellence in Basic Sciences, Mumbai, INDIA

203-P **Screening candidate effectors from *Botryosphaeria dothidea*** X. ZHU, China Agricultural University, Beijing, CHINA

204-P **GWAS-based analysis of quantitative traits in *Ceratocystis albifundus*** M. VAN DER NEST, Forestry and Agricultural Biotechnology Institute (FABI), University of Pretoria, Pretoria, SOUTH AFRICA

205-P **F-box like motif of the brassica yellows virus silencing suppressor P0 protein facilitates its stability *in vivo*** Y. LI, China Agricultural University, Beijing, CHINA

206-P **Virulence of *Fusarium oxysporum* f. sp. *cucumerinum* is affected by its successive generations on resistant and susceptible cucumber cultivars** S. LI, Institute of Plant Protection, Chinese Academy of Agricultural Sciences, Beijing, CHINA

207-P **Large-scale identification and characterization of *Heterodera avenae* putative effectors suppressing oriInducing cell death in *Nicotiana benthamiana*** Q. LIU, China Agricultural University, Beijing, CHINA

208-P **Two novel protein elicitors from *Magnaporthe oryzae* trigger defense response and improve plant growth in rice** H. ZENG, Institute of Plant Protection, Chinese Academy of Agricultural Sciences, Beijing, CHINA

209-P **Hfq is important for biofilm formation, motility and pathogenicity of the plant pathogen *Pantoea ananatis*** G. SHIN, Centre for Microbial Ecology and Genomics, University of Pretoria, Pretoria, SOUTH AFRICA

210-P **The Proline18 in P3a is important for Brassica yellows virus systemic infection which can be rescued by ectopically expressed P3a** C. HAN, China Agricultural University, Beijing, CHINA

211-P **Examining the role of an EF-Hand Protein in regulating virulence in *Xanthomonas*** S. BIBI, Department of Plant Pathology, University of Florida, Gainesville, FL, USA

212-P **Rice ubiquitin E3 ligases-mediated disease resistance mechanism against *Magnaporthe oryzae*** Y. NING, Institute of Plant Protection, Chinese Academy of Agricultural Sciences, Beijing, CHINA

215-P **Characterization of winter squash age-related resistance to *Phytophthora capsici* through fruit peel transcriptome profiling** S. ALZOHAIRY, Department of Plant Soil and Microbial Sciences, Michigan State University, East Lansing, MI, USA

216-P ***Ca*. Liberibacter asiaticus peroxiredoxin and peroxidase are virulence factors critical for survival**

and colonization of citrus D. GABRIEL, Institute of Food and Agricultural Sciences, University of Florida, Gainesville, FL, USA

218-P **Fungal β-lactamases, what's up with that?** S. GOLD, USDA-ARS Toxicology and Mycotoxin Research Unit, Athens, GA, USA

219-P **Characterization of a novel transcription factor from *Sclerotinia sclerotiorum* induced during infection of pea** H. SANG, Michigan State University, East Lansing, MI, USA

220-P **Oxidative stress tolerance is critical for xylem colonization and virulence of xylem-limited pathogens *Xanthomonas albilineans* and *Xylella fastidiosa*** M. JAIN, Institute of Food and Agricultural Sciences, University of Florida, Gainesville, FL, USA

221-P **Comparative transcriptome profiling of compatible and incompatible *Magnaporthe grisea*-pearl millet interaction** R. SHARMA, ICRISAT, Hyderabad, INDIA

222-P **Identifying oxalic acid independent compatibility factors from *Sclerotinia sclerotiorum*** P. YU, University of Florida, Gainesville, FL, USA

223-P **Transcriptomic and Phenotypic Responses of *Arabidopsis thaliana* to Infection with Pathogenic or Non-Pathogenic *Fusarium oxysporum*** K. VESCIO, University of Massachusetts, Amherst, MA, USA

224-P **Clathrin is essential for virulence factors delivery in the necrotrophic fungus *Botrytis cinerea*** N. POUSSEREAU, University Lyon 1, Lyon, FRANCE

225-P ***Bacillus pumilus* enhances the safflower (*Carthamus tinctorius* L.) growth under chromium stress by an antioxidative potential and nutrient acquisition** M. JAVED, Department of Botany, Government College University, Faisalabad, PAKISTAN

226-P ***Fusarium graminearum* chemotype differences and virulence** G. WIESENBERGER, University of Natural Resources and Life Sciences, Vienna, Tulln, AUSTRIA

227-P **Identification and characterization of a carbonic anhydrase involved in virulence and bacterial competition of *Pseudomonas syringae* pv. *tomato* DC3000** M. FILIATRAULT, USDA ARS, Ithaca, NY, USA

228-P **Cross-kingdom communication between *Ralstonia* and *Fusarium* mediate tomato wilt disease and microbial survival** N. VENKATESH, University of Wisconsin, Madison, WI, USA

229-P **A polyketide biosynthesis gene cluster is required for production of bactericidal activity by *Burkholderia contaminans* strain MS14.** S. LU, Mississippi State University, Mississippi State, MS, USA

230-P **Novel biosynthetic gene cluster in *Pantoea ananatis* is critical to foliar lesion development in center rot of onion** J. ASSELIN, Cornell University, Ithaca, NY, USA

231-P **Modulation of growth, twitching movement and biofilm formation in *Xylella fastidiosa* mediated by gene PD0913 under different calcium concentrations** L. GÓMEZ, Auburn University, Auburn, AL, USA

232-P **Gene conservation reveals perylenequinone toxin biosynthesis clusters in multiple plant pathogenic fungal species** R. SPANNER, North Dakota State University, Fargo, ND, USA

233-P **Auto-activated maize R protein recognizes a bacterial effector to trigger incomplete disease resistance in *Arabidopsis thaliana*** Q. LI, Virginia Tech, Blacksburg, VA, USA

234-P **Sethoxydim herbicide at sublethal dose synergizes biocontrol of green foxtail by *Pyricularia setariae* via triggering ABA-activated pathways and bZIP60** G. PENG, Agric & Agri-Food Canada, Saskatoon, SK, CANADA

235-P **Understanding the role of Type VI Secretion Systems for intra-specific competition and pathogenicity in *Erwinia tracheiphila*** C. VRISMAN, Department of Plant Pathology, The Ohio State University, Wooster, OH, USA

236-P **Utilizing genomic tools to identify and characterize effectors in the novel sugar beet pathogen *Fusarium secorum*** S. SHRESTHA, North Dakota State University, Fargo, ND, USA

237-P **Gene cluster conservation reveals novel cercosporin biosynthetic mechanisms in the sugarbeet pathogen *Cercospora beticola*** M. BOLTON, USDA-ARS, Red River Valley Agricultural Research Center, Fargo, ND, USA

238-P **The Bzip60 And Bzip17 Transcription Factors Are Critical To Suppressing PVX And PVY Infection in Arabidopsis and Potato.** G. ORQUERA_ TORNAKIAN, Texas A&M Agrilife Center in Dallas, Dallas, TX, USA

239-P **Identification of *Pseudomonas syringae* Genes Required for Initiating Type III Secretion in Response to Host Plant-derived Metabolite Signals** J. ANDERSON, Department of Botany and Plant Pathology, Oregon State University, Corvallis, OR, USA

240-P **Interactions among severity of spot blotch disease of wheat caused by *Bipolaris sorokiniana*, nitrogen supply and WRKY transcription factor functions** S. BABA, Newcastle University, Newcastle upon Tyne, UNITED KINGDOM

241-P **The PacC transcription factor regulates pH-dependent fungal development and virulence in the barley pathogenic fungus *Cochliobolus sativus*** Y. LENG, North Dakota State University, Fargo, ND, USA

242-P **HGT or Something More Interesting? Phylogeny of a Family of Enzymes Including One for a Bioprotective Alkaloid Produced by *Epichloë* spp.** C. SCHARDL, University of Kentucky, Lexington, KY, USA

243-P **The expanded lineage-specific C_2H_2-homeobox transcription factors regulate microsclerotia formation and virulence in *Verticillium dahliae*** Y. WANG, Beijing Forestry University, Beijing, CHINA

244-P **Use of a *Tobacco mosaic virus*-based vector for the identification of 16SrIII-J phytoplasma effector proteins** A. ZAMORANO, University of Chile, Santiago, CHILE

Nematology

246-P **Evaluation of potential trap crops for management of root-knot nematode on carrots** B. WESTERDAHL, University of California, Davis, Davis, CA, USA

247-P **Reproduction potential of soybean cyst nematode, *Heterodera glycines*, and synergetic interaction with *Fusarium virguliforme* on dry bean cultivars** M. FALL, Michigan State University, East Lansing, MI, USA

248-P **Effect of SiO_2 Nanoparticles on the Interaction of *Pseudomonas fluorescens* and *Meloidogyne incognita* in *Trachyspermum ammi* under Greenhouse Conditions** M. DANISH, Section of Plant Pathology and Nematology, Dept of Botany, Aligarh Muslim University, Aligarh, INDIA

250-P **Occurrence and distribution of plant- parasitic nematodes of blueberry in Georgia** G. JAGDALE, University of Georgia, Athens, GA, USA

Oomycetes

251-P **Adaptation of the causal agent of late blight, *Phytophthora infestans*, to climate change** A. CORDOBA, Universidad de los Andes, Bogota, COLOMBIA

252-P ***Pythium and Phytopythium* associated with Soybean in Buenos Aires (Argentina).** P. GRIJALBA, Univ. de Buenos Aires, Ciudad Autónoma de Buenos Aires, ARGENTINA

253-P **Isolation and identification of Oomycete species from cocoa farm soils in Nigeria based on PCR analysis** S. AIGBE, Ambrose Alli University, Ekpoma, NIGERIA

254-P ***Phytophthora nicotianae* and *P. palmivora*: Emerging pathogens of hybrid lavender (*Lavandula ×intermedia*)** D. DLUGOS, Clemson University, Clemson, SC, USA

255-P **Identification and characterization of *Pythium Phytopythium* and *Phytophthora* species in Argentina** H. PALMUCCI, Universidad de Buenos Aires, Buenos Aires, ARGENTINA

256-P **A proposed model for mating type determination in *Phytophthora infestans*** L. GUO, China Agricultural University, Beijing, CHINA

257-P **Root and Crown Rot of Walnut in Chile primarily affected by *Phytophthora* species** N. RIQUELME, Pontificia Universidad Católica de Valparaíso, Quillota, CHILE

258-P **Spatiotemporal dynamics of *Phytophthora* and *Pythium* communities in recycled irrigation water in a container nursery** N. REDEKAR, Oregon State University, Corvallis, OR, USA

259-P **Effect of temperature on aggressiveness of newly discovered *fsp* of the grape downy mildew pathogen *Plasmopara viticola fsp riparia* and *fsp aestivalis*** R. MOUAFO TCHINDA, Sherbrooke University, Sherbrooke, QC, CANADA

260-P **Enabling recycled water use: The diversity and management of cryptic oomycete pathogens in recycled irrigation water in Mid-Atlantic nurseries** J. BEAULIEU, University of Maryland, College Park, MD, USA

261-P **Detection, diversity and distribution of *Phytophthora* species associated with citrus decline in India** A. DAS, ICAR-Central Citrus Research Institute, Nagpur, INDIA

1300-P **Archival Data and Text Analytics to Track 19th Century Late Blight.** J. RISTAINO, NC State University, Raleigh, NC, USA

Pathogen Detection, Quantification, and Diagnosis

262-P **Cultural and morpho-molecular characterization of *Fusarium solani* and *Alternaria* spp. associated with fruit rot of strawberry** N. MEHMOOD, PMAS-Arid Agriculture University, Rawalpindi, Rawalpindi, PAKISTAN

263-P ***Colletotrichum* spp. causing anthracnose of *Capsicum annuum* and *Cap. frutescens* in Peninsular Malaysia** L. ZAKARIA, Universiti Sains Malaysia, Minden, MALAYSIA

264-P **Characterization of disease causing agent of apical necrosis of mango** S. IRAM, Fatima Jinnah Women University, Rawalpindi, Rawalpindi, PAKISTAN

265-P **Identification of species of Ganoderma and Assessment of Basal Stem Rot Disease in Oil palm Plantations of the Cameroon Development Cooperation** T. ROSEMARY KINGE, University of Florida, Gainsville, FL, USA

266-P **New methods for testing rice seed: LAMP assays for the detection of *Fusarium fujikuroi* and *Magnaporthe oryzae*** S. FRANCO ORTEGA, Agroinnova - University of Torino, Grugliasco, Torino, ITALY

267-P **Development of genome-informed diagnostics for detection of *Pectobacterium* species using recombinase polymerase amplification coupled with LFD** F. AHMED, University of Hawaii At Manoa, Honolulu, HI, USA

268-P **Biosurveillance for precision disease management of *Pseudoperonospora cubensis*, the cucurbit downy mildew pathogen** A. RAHMAN, NCSU, Raleigh, NC, USA

269-P **Specific detection of the wheat blast pathogen (*Magnaporthe oryzae* Triticum) by loop-mediated isothermal amplification** J. YASUHARA-BELL, Kansas State University, Manhattan, KS, USA

270-P **Development of a non-destructive high-throughput DNA extraction method for pulse seed-borne disease diagnostics and breeding applications** F. CRUTCHER, Montana State University EARC, Sidney, MT, USA

271-P **Prevalence of Fungal Diseases in Amurum Forest Reserve, Plateau State, Nigeria.** C. AMIENYO, University of Jos,Nigeria, Jos, NIGERIA

272-P **Improved detection and identification of *Xanthomonas* species causing bacterial leaf spot in Australia** R. ROACH, La Trobe University, Bundoora, AUSTRALIA

273-P **Molecular detection and quantification of leaf rust spores in wild blueberry.** N. NGUYEN, University of Maine, Orono, ME, USA

274-P **Development of a TaqMan probe-based insulated isothermal PCR (TiiPCR) in seed detection of watermelon fruit blotch** W. PEI-YI, National Pingtung University of Science and Technology, pingtung, TAIWAN

275-P **Morphological and molecular identification of seedborne fungi in squash (*Cucurbita maxima*)** G. ROMANAZZI, Marche Polytechnic University, Ancona, ITALY

276-P **Development of a novel and rapid loop-mediated isothermal amplification assay for specific detection of *Alternaria alternata* and *Alternaria solani*** R. CAIAZZO, National Institute of Agricultural Botany, Cambridge, UNITED KINGDOM

277-P **A multiplex PCR assay for *Xanthomonas citri* subsp. *citri* identification and pathotype determination** V. MAVRODIEVA, USDA APHIS PPQ S&T CPHST, Beltsville, MD, USA

278-P **Detection of latent infections caused by *Botrytis cinerea* in flowers and fruits on apple using conventional and molecular methods in MauleRegion,Chile** E. FERRADA, Universidad de Talca, Talca, CHILE

279-P **High-Resolution melting assay for identification of *Colletotrichum* species from strawberry and endpoint genotyping for detection of the G143A mutation** B. FORCELINI, Gulf Coast Research and Education Center, University of Florida, Wimauma, FL, USA

280-P **Identity and disease cycle of a smut fungus on wiregrass in a longleaf pine-grassland ecosystem in the southeastern USA** A. ALQURASHI, Clemson University, Clemson, SC, USA

281-P **Development of dual-labeled PNA probe-based fluorescence melting curve analysis as molecular diagnostic tool for *Erwinia amylovora* and *E. pyrifoliae*** M. NAM, Xenotype Company Limited, Daejeon, KOREA

282-P **The Characterization and pathology of *Colletotrichum* on papaya in South Africa** N. MTSWENI, Agricultural research council, South Africa, pretoria, SOUTH AFRICA

283-P **Specific TaqMan assay for the detection of *Acidovorax valerianellae* on the cotyledons of corn salad (*Valerianella locusta*).** S. BERENDSEN, Rijk Zwaan Breeding B.V., De Lier, NETHERLANDS

284-P **Towards improved methods for detection of *Xylella fastidiosa* in plant material using triplex TaqMan PCR and NGS analysis.** P. BONANTS, Wageningen Plant Research, Wageningen, NETHERLANDS

285-P **Potential role of soil and plant microbial communities in rapid and sudden decline of established apple trees** K. SILVA, Cornell University, Geneva, NY, USA

286-P **Loop Mediated Isothermal Amplification Assay for The Detection of Sugarcane White Leaf Disease** Q. NGUYEN, Nong Lam University, Ho Chi Minh, VIETNAM

287-P **LAMP based identification of phytoplasmas associated with cassava witches' broom and sesame phyllody diseases in Vietnam** Q. NGUYEN, Nong Lam University, Ho Chi Minh, VIETNAM

288-P **Application of molecular quantification of *Plasmodiophora brassicae* in soil** B. GOSSEN, Agric & Agri-Food Canada, Saskatoon, SK, CANADA

289-P **Development and validation of a multiplex real-time RT-PCR for detection of citrus and hibiscus-infecting *Citrus leprosis virus* C2** B. ADDUCCI, USDA-APHIS-PPQ-S&T-CPHST, Beltsville, MD, USA

290-P **Molecular detection and quantification of *Xanthomonas arboricola* pv. *juglandis,* the causal agent of walnut blight** J. ADASKAVEG, Department of Microbiology and Plant Pathology, University of California, Riverside, CA, USA

291-P **Development of a molecular tool for the diagnosis of the different avirulence genes of *Phytophthora sojae* isolates found in Canada** C. DUSSAULT-BENOIT, Université Laval, Quebec, QC, CANADA

292-P **Rapid methods for detection of *Phytophthora ramorum* in nursery water** D. LUSTER, USDA ARS FDWSRU, Frederick, MD, USA

293-P ***Fusarium species* causing crown rot of wheat in Eastern China** H. CHEN, Jiangsu Academy of Agricultural Sciences, Nanjing, CHINA

294-P **The use of third generation sequencing tool for detection and identification of plant pathogens** L. CHALUPOWICZ, ARO, The Volcani Center, Rishon LeZion, ISRAEL

295-P **Morphological and molecular characterization of *Colletotrichum* species causing anthracnose in soursop (*Annona muricata*)** N. ADIKARAM, National Institute of Fundamental Studies, Kandy, SRI LANKA

296-P **Fatty Acid Methyl Ester (FAME) Analyses for Characterization and Detection of Grapevine Pathogens** C. WALLIS, USDA ARS, Parlier, CA, USA

297-P **Soaking petiole cross-sections provides an alternative method to prepare samples for *Xylella fastidiosa* detection using the AmplifyRP kit** R. LI, Agdia, Inc., Elkhart, IN, USA

298-P **Detecting and quantifying latent infection of canker- and blight-causing pathogens in stone fruit and nut crops in California** P. LICHTEMBERG, University of California - Davis, Parlier, CA, USA

299-P **Detection and distribution of *Aphanomyces euteiches* in the United Kingdom.** B. Ó LOINSIGH, The University of Nottingham, Loughborough, UNITED KINGDOM

300-P **Identification of *Rathayibacter* and other bacteria associated with gumming disease of grasses in Oregon, U.S.A.** M. PUTNAM, Oregon State University, Botany and Plant Pathology, Corvallis, OR, USA

301-P ***Crossopsorella*: a new genus of rust fungus infecting native fruit plants with potential for cultivation in the Brazilian Cerrado** J. DIANESE, UNIVERSIDADE DE BRASÍLIA, BRASÍLIA, BRAZIL

302-P **Phylogeny and molecular diagnosis of nectriaceous fungi associated with black root rot in avocado** L. PARKINSON, Queensland Alliance for Agriculture and Food Innovation, The University of Queensland, Brisbane, AUSTRALIA

303-P **Development and evaluation of a novel and rapid detection assay for *Blumeria graminis* f. sp. *tritici* based on Loop-Mediated Isothermal Amplification** S. GONG, Hubei Key Laboratory of Crop Diseases, Insect Pests and Weeds Control, WUHAN, CHINA

304-P **Root Rot Disease Caused by *Fusarium solani* on Gromwell in Korea** G. KIM, Sunchon National University, Suncheon, KOREA

305-P **Isolation and identification of pathogens from maize seedling *Fusarium* root rot in Gansu Province, China** C. GUO, Institute of Plant Protection, Gansu Academy of Agricultural Sciences, Lanzhou, CHINA

306-P **Canker and wood rot pathogens associated with young apple trees and propagation material in South Africa** L. MOSTERT, Stellenbosch University, Stellenbosch, SOUTH AFRICA

307-P ***Diaporthe* species identified from woody plants close to vineyards in South Africa** F. HALLEEN, Stellenbosch University, Stellenbosch, SOUTH AFRICA

308-P **Fungal trunk disease pathogens in South-African olive nurseries** M. VERMEULEN, Stellenbosch University, Stellenbosch, SOUTH AFRICA

309-P **Development of loop-mediated isothermal amplification (LAMP) diagnostic kit for detecting phytoplasma on-site** K. ALVIAR, BIOTECH-University of the Philippines Los Banos, Los Banos, PHILIPPINES

310-P **Phenotypic characterization of *Pseudomonas syringae pv. syringae* van Hall, the causal agent of bacterial canker disease of Stone Fruits in Kyrgyzstan** S. BOBUSHOVA, Kyrgyz Turkish Manas University, Bishkek, KYRGYZSTAN

311-P **Development of a loop-mediated isothermal amplification assay for detection of *Fusarium avenaceum*** Y. LIU, Institute of Plant Protection, Gansu Academy of Agricultural Sciences, Lanzhou, CHINA

312-P **A species-specific PCR assay for the newly observed root lesion nematode, *Pratylenchus vulnus,* in Taiwan** Y. LIN, National Taiwan university, Taipei, TAIWAN

313-P **A loop-mediated isothermal amplification assay combined with lateral flow dipstick for rapid detection of *Aphelenchoides besseyi*** J. YANG, National Taiwan University, Taipei, TAIWAN

314-P **Surveillance and monitoring of the invasive forest pathogen *Heterobasidion irregulare* in Europe through an optimized LAMP assay** P. GONTHIER, University of Torino / DISAFA, Grugliasco, ITALY

315-P **Reliable detection of *Peach latent mosaic viroid* (PLMVd) by real-time RT-PCR** C. MARTÍNEZ, Instituto Valenciano Investigaciones Agrarias (IVIA), Moncada, Valencia, SPAIN

316-P **Investigating spatiotemporal and genotypic characters of *Phytophthora infestans,* causal agent of late blight, in Wisconsin during 2009-2017** T. WU, University of Wisconsin-Madison, Madison, WI, USA

317-P **Characterization of fungi species associated with Ascochyta blight of field peas in Montana** A. OWATI, Montana State University, Bozeman, MT, USA

318-P **Rapid diagnostic and soil inoculum quantification tools for soilborne pathogens of strawberry** A. BURKHARDT, USDA ARS, Salinas, CA, USA

319-P **Diagnosis of huanglongbing-associated *Candidatus* Liberibacter species in citrus roots by real-time PCR using primers targeting 16s rDNA and *nrdB* genes** M. KUNTA, Texas A&M University Kingsville Citrus Center, Weslaco, TX, USA

320-P **Digital (d)PCR protocol and tissue sample processing for detection and quantification of live *Erwinia amylovora* cells in fire blight cankers** R. SANTANDER, Cornell University, Plant Pathology and Plant-Microbe Biology Section, Highland, NY, USA

321-P **Development of a Multiplex-PCR diagnostic tool for the main pathogenic fungi causing cranberry fruit rot** M. CONTI, Université Laval, département de phytologie, Québec, QC, CANADA

322-P ***Rhizoctonia solani* AG-11 causes rice seedling disease in Texas** S. GAIRE, Texas A&M AgriLife Research, Beaumont, TX, USA

323-P **Prevalence of '*Candidatus* Liberibacter asiaticus' in citrus and the Asian citrus psyllid in Texas over a 10-year period (2007-2016)** O. ALABI, Dept. of Plant Pathology & Microbiology, Texas A&M University, Weslaco, TX, USA

324-P **A three-year analysis of rust fungi intercepted at Arizona ports of entry** D. SANDBERG, USDA-APHIS-PPQ, Nogales, AZ, USA

325-P **Isolation and Identification of Bacteria Causing Blackleg and Soft Rot of Potato in Northeastern U.S.** T. GE, University of Maine, ORONO, ME, USA

326-P **Use of LAMP detection to identify potential contamination sources of *Pythium irregulare* in hydroponic culture system of eustoma** W. FENG, United Graduate School of Agricultural Science, Gifu University, Gifu, JAPAN

327-P **Application of a carbon-nanotube filter that traps and concentrates virions to improve the limits of detection of *Tomato spotted wilt virus* in tomato** J. ITURRALDE MARTINEZ, Penn State University, University Park, PA, USA

328-P **Characterization of Candidatus *Liberibactor* asiaticus (CLas), from Pakistan using different molecular methods.** S. ATTA, Ghazi University, Dera Ghazi Khan, PAKISTAN

329-P **Fungal pathogens associated with red-skin root disease of *Panax ginseng* in Northeast China** W. GAO, Institute of Medicinal Plant Development, Chinese Academy of Medical Sciences, Beijing, CHINA

330-P **Evaluation of High Resolution Melting Analysis to discriminate between parental and hybrid *Phytophthora* species** M. RATTI, Department of Plant Pathology, University of Florida, Gainesville, FL, USA

331-P **Botryosphaeriaceae associated with stem blight and dieback of blueberry (Vaccinium corymbosum) in Australia** R. DANIEL, NSW Department of Primary Industries, Ourimbah, AUSTRALIA

332-P **The identification of powdery mildews on *Brassica chinensis* var. *oleifera* in China** S. LIU, Jilin Agricultural Univ, Changchun, Jilin Prov, CHINA

333-P **Identification of the *Alternaria* and *Fusarium* Species Associated with Seeds of *Brassica rapa*** X. WU, China Agricultural University, Beijing, CHINA

334-P ***Secreted in Xylem* genes used for PCR-based diagnostics of distinct *Fusarium oxysporum* f. sp. *cubense* races and vegetative compatibility groups** L. COSTA CARVALHAIS, Queensland Alliance for Agriculture and Food Innovation, The University of Queensland, Brisbane, AUSTRALIA

335-P ***Development of two LAMP assays for the diagnostic screening of the downy mildew pathogens Peronosclerospora philippinensis, P. sacchari and P. sorghi*** Y. RIVERA, USDA-APHIS-PPQ-S&T-CPHST, Beltsville, MD, USA

336-P **Improvements in assessments of disease severity in conventional scouting using UAV-assisted multispectral imaging in watermelon** M. KALISCHUK, North Florida Research and Education Center, University of Florida, Quincy, FL, USA

337-P **Multiplex qPCR of Ribonucleotide Reductase, 16S rRNA, Heat Shock Protein and Chaperonin genes for different Huanglongbing (HLB) detection purposes** J. RASCOE, USDA-APHIS-PPQ-S&T-CPHST, Beltsville, MD, USA

338-P **Information flow through diagnostic networks: understanding pepper disease risk in Florida** J. FULTON, Plant Pathology Department, University of Florida, Gainesville, FL, USA

339-P **Detection and identification of two phytoplasma subgroups associated with strawberry phyllody and red leaf disease in Chile** W. CUI, University of Chile, Santiago, CHILE

340-P **Specific detection of quarantine species, *Phytophthora ramorum*, *P. kernoviae* and *P. lateralis* by loop-mediated isothermal amplification (LAMP) assay** A. HIENO, River Basin Research Center, Gifu University, Gifu, JAPAN

341-P **Rapid detection and characterization of *Phytophthora infestans* isolations in the field.** P. WHARTON, University of Idaho, Aberdeen Research and Extension Center, Aberdeen, ID, USA

342-P **Validation of molecular diagnostic methods for specific detection of *Magnaporthe oryzae Triticum* pathotype, the causal agent of wheat blast** J. BIENAPFL, USDA-APHIS-PPQ-S&T-CPHST, Beltsville, MD, USA

343-P **Brn1 as a novel barcode for culture-independent identification of Bipolaris species** B. LANE, Department of Plant Pathology, University of Florida, Gainesville, FL, USA

344-P **Accurate detection of three waterborne plant virus genera allows fine screening to species level by High Resolution Melting analysis** F. OCHOA CORONA, Oklahoma State University, Stillwater, OK, USA

345-P **The infection cushion: "a fungal weapon for plant biomass destruction" ?** M. CHOQUER, University Lyon 1, Lyon, FRANCE

346-P **Multilocus sequence analysis reveals *Colletotrichum nymphaeae* as the dominant species causing strawberry anthracnose in the United States** N. WANG, University of Florida, Wimauma, FL, USA

347-P **Investigating the cause of red blotch disease in Grapevines (*Vitis spp*) in Oklahoma.** S. WALLACE, Oklahoma State University, Stillwater, OK, USA

348-P **Incidence of grape diseases in Maryland vineyards** R. POKHAREL, Maryland Dept of Agric, Annapolis, MD, USA

349-P **Use of real-time PCR and disease forecast models as spray thresholds for fire blight** V. PHILION, IRDA, Saint-Bruno-de-Montarville, QC, CANADA

350-P **Comparison of visual vegetation indices from aerial images to measure turfgrass health using small unmanned aircraft** H. SOMMER, The Pennsylvania State University, University Park, PA, USA

351-P **Apple bitter rot fungi of New York and Virginia – which *Colletotrichum* species are there?** Ž. PAVLOVIĆ, Cornell University, Plant Pathology and Plant-Microbe Biology Section, Highland, NY, USA

352-P **Novel Cytohabdovirus Identified in Native *Rubus* Exhibiting Virus-like Symptoms** M. GUZMAN, Oregon State University, Corvallis, OR, USA

353-P **Identification of *Pythium* spp. associated with diseased cucurbits in South Carolina** S. TOPOREK, Coastal Research and Education Center, Clemson University, Charleston, SC, USA

354-P **Genome-informed LAMP assays for specific detection of bacterial spot-causing bacteria, *Xanthomonas euvesicatoria* and *X. vesicatoria*** M. ARIF, University of Hawaii at Manoa, Honolulu, HI, USA

355-P **TaqMan-based qPCR detection of *Xylella fastidiosa* subspecies *pauca* CoDiRO strain** M. STULBERG, USDA-APHIS-PPQ-S&T-CPHST, Beltsville, MD, USA

356-P **Immunoassay test based on L-cysteine functionalized gold nanoparticles for direct detection of *Chrondrostereum purpureum*** J. MEJÍAS, Instituto de Investigaciones Agropecuarias, Temuco, CHILE

357-P **Whole Genome Sequencing for Development of PCR specific detection of *Monilinia* species for Quarantine applications.** J. SUTHERLAND, USDA-APHIS-PPQ-S&T-CPHST, Beltsville, MD, USA

358-P **Reliable and inexpensive Real-time RT-PCR method for Apple stem grooving virus and Apple stem pitting virus detection** E. BEAVER-KANUYA, Washington State University, Prosser, WA, USA

359-P **Sesame Root Rots of South Texas: A Fresh Look** K. COCHRAN, Texas A&M University, Uvalde, TX, USA

360-P **Design and testing of PCR-based diagnostics generated from NGS for distinguishing among *Monilinia* species of economic importance to US**

agriculture. J. SUTHERLAND, USDA-APHIS-PPQ-S&T-CPHST, Beltsville, MD, USA

361-P **Rapid detection of leaf spot pathogens on spinach using PCR and real-time PCR assays** B. LIU, Univ of Arkansas, Fayetteville, AR, USA

362-P **Third generation sequencing and EDNA for detection of aflatoxin production in the soil.** A. ESPINDOLA, Oklahoma State University, Stillwater, OK, USA

363-P **Estimating Abundance, Distribution, and Volume of the Chaga fungus (*Inonotus obliquus*) within the White Mountains National Forest** R. BRYDON-WILLIAMS, University of New Hampshire, Durham, NH, USA

364-P **Comparison between high throughput sequencing and current protocol for virus detection in berry crops** D. VILLAMOR, University of Arkansas, Fayetteville, AR, USA

365-P **Digital PCR reveals different effects of plant matrices on the recovery of *Xylella fastidiosa* DNA** T. DREO, National Institute of Biology, Ljubljana, SLOVENIA

366-P **Development of a recombinase polymerase amplification assay with qualitative end-point detection for diagnosis of thousand cankers disease in walnut** J. SIMMONS, University of California, Davis, CA, USA

367-P **Recombinase Polymerase Amplification Assay for in Field Detection of Tomato Bacterial Spot (*Xanthomonas euvesicatoria, X. gardneri*, and *X. perforans*)** A. STRAYER, University of Florida, Department of Plant Pathology, Gainesville, FL, USA

368-P **Direct RT-PCR assay for virus detection and eriophyoid species identification** T. DRUCIAREK, University of Arkansas, Fayetteville, AR, USA

369-P **Quantification of *Xylella fastidiosa* in pecan *(Carya Illionoinensis)* plant tissues** A. HILTON, Texas A&M University, College Station, TX, USA

370-P **Fungi associated with canker and regressive death in *Aristotelia chilensis* growing in Southern Chile** E. BRICENO, Universidad Austral de Chile, Valdivia, CHILE

371-P **Development of multiplex viroid rapid detection system for Solanaceae plants and seeds** F. JAN, Department of Plant Pathology, National Chung Hsing University, Taichung, TAIWAN

372-P **A PCR method for detection of *Colletotrichum acutatum* in strawberry nurseries: Development and Validation.** K. MANI, CSP Labs, Pleasant Grove, CA, USA

373-P **Foliar stage of gumming disease present in sugarcane plantations in Mexico** H. SILVA-ROJAS, Colegio de Postgraduados, Edo de Mexico, MEXICO

374-P **Automated primer design for DNA-based detection of the emerging potato pathogen *Dickeya dianthicola*** S. KARIM, Colorado State University, Fort Collins, CO, USA

375-P **Improvement of LCHV-1 detection by conventional RT-PCR and Real Time PCR protocols** N. FIORE, University of Chile, Santiago, CHILE

376-P **Identification of *fungal pathogens* associated with cassava root rot in Thailand** N. BUENSANTEAI, School of Crop Production Technology, Suranaree University of Technology, Nakhorn Ratchasima, THAILAND

377-P **Occurrence of Grapevine fanleaf virus in Russia** S. VINOGRADOVA, Russian State Agrarian University - Moscow Timiryazev Agricultural Academy, Moscow, RUSSIA

378-P **Virus detection in grapevines of Western Ciscaucasia region of Russia** S. VINOGRADOVA, Russian State Agrarian University - Moscow Timiryazev Agricultural Academy, Moscow, RUSSIA

Pathogen Vector Interactions

380-P **NextRAD sequencing unravels the genetic diversity of cassava-colonizing *Bemisia tabaci*** E. WOSULA, International Institute of Tropical Agriculture, Dar Es Salaam, TANZANIA

381-P **Effect of environmental temperature on transmission of mollicutes by *Dalbulus maidis* leafhopper in maize** E. DE OLIVEIRA SABATO, EMBRAPA-CNPMS, Sete Lagoas, BRAZIL

382-P **Root-feeding beetles and *Leptographium* and *Grosmannia* blue-stain fungi in loblolly pine stands with differing management practices** M. BULAND, D.B. Warnell School of Forestry and Natural Resources, University of Georgia, Athens, GA, USA

383-P **Carrot motley dwarf disease: a good example for synergistic relationships between viruses and between virus and vector** N. YOSHIDA, HOKUREN Agricultural Research Institute, Naganuma, Hokkaido, JAPAN

384-P **Effects of '*Candidatus* Liberibacter solanacearum' (haplotype B) on *Bactericera cockerelli* (Šulc) fitness and vitellogenesis** A. ALBUQUERQUE T. FRIAS, State University of Maringa, Maringá, BRAZIL

385-P ***Candidatus* Liberibacter asiaticus Forms ER-Associated Replicative Vacuoles inside *Diaphorina citri* Gut Cells.** A. LEVY, University of Florida, Lake Alfred, FL, USA

386-P **Feeding behavior associated to the transmission of *Xylella fastidiosa* by the meadow spittlebug *Philaenus spumarius*** A. FERERES, CSIC, Madrid, SPAIN

387-P **Feeding behavior of whiteflies associated to the transmission of *Torradoviruses*** A. FERERES, CSIC, Madrid, SPAIN

388-P **A bacterial plant pathogen employs the metabolism of its insect vector to fulfill its nutritional and energetic needs** N. KILLINY, Citrus research and education center, IFAS, University of Florida, Lake Alfred, FL, USA

389-P **Partnerships between ambrosia beetles and fungi: Varying levels of promiscuity among vectors of the laurel wilt pathogen, *Raffaelea lauricola*** R. PLOETZ, Tropical Research & Education Center, University of Florida, Homestead, FL, USA

390-P **Relationship between *Stemphylium vesicarium* and onion thrips (*Thrips tabaci*) in the development of Stemphylium leaf blight disease** A. LEACH, Cornell University, Geneva, NY, USA

391-P **Are vectors the bottleneck for Orthotospoviruses' fitness during mixed-infection?** K. ZHAO, Penn State University, University Park, PA, USA

392-P **Genome-wide piRNA profiles of the virus transmitting whitefly, *Bemisia tabaci* during feeding on TYLCV-infected tomato** K. LING, USDA-ARS, Charleston, SC, USA

393-P **Detection of the zebra chip pathogen *Candidatus* Liberibacter solanacearum in Canadian psyllids** L. KAWCHUK, Agriculture & Agri-food Canada, Lethbridge, AB, CANADA

394-P **Settling and feeding behavior of sharpshooter vectors of *Xylella fastidiosa* on new plum selections apparently resistant to leaf scald disease** H. THOMAZI KLEINA, Departamento de Fitotecnia, Universidade Federal do Paraná, Curitiba, PR, BRAZIL

395-P **Predicting the presence of whiteflies and tomato yellow leaf curl virus in Florida tomato fields** W. TURECHEK, USDA, ARS, U.S. Horticultural Research Laboratory, Fort Pierce, FL, USA

396-P **Survey of *Rose Rosette Virus* and its eriophyid mite vector in the Deep South** K. SOLO, University of Tennessee, Knoxville, TN, USA

397-P **Comparison of mycotoxigenic Fusarium genotypes associated with stink bugs and field corn in the mid-Atlantic U.S.** A. COOMBER, Cornell University, Ithaca, NY, USA

398-P **Acquisition of *Erwinia amylovora* by *Drosophila melanogaster*** M. BOUCHER, Cornell University, Geneva, NY, USA

Phytobiomes

399-P **Analysis of microbiomes and metatranscriptome of Norway spruce trees naturally infected by the conifer pathogen *Heterobasidion* sp.** F. ASIEGBU, University of Helsinki, Helsinki, FINLAND

400-P **Strawberry anthosphere microbiome structure and functional study of probiotics** Y. KWAK, Gyeongsang National University, Jinju, KOREA

401-P **Fungal diversity of developmental stages in table grapes grown in South Africa** P. CARMICHAEL, University of Pretoria, Pretoria, SOUTH AFRICA

402-P **Pyrosequencing-based microbial community analyses according to kiwi-biome organs** M. KIM, Department of plant medicine, Gyeongsang National University, Jinju, SOUTH KOREA

403-P **The mycobiome of deep soil profiles in no-till dryland wheat** T. PAULITZ, USDA ARS, Pullman, WA, USA

404-P **Does inoculation with *Pseudomonas fluorescens* LBUM223 impact the rhizosphere and geocaulosphere microbiomes of potato?** A. NOVINSCAK, Université de Moncton, Moncton, NB, CANADA

405-P **Influence of boxwood species and cultivars on the rhizosphere microbiome** N. LEBLANC, USDA-ARS, Beltsville, MD, USA

407-P **Foliar endophytic microbiome composition and functional capacities vary with soil nutrient inputs.** L. KINKEL, Department of Plant Pathology/University of Minnesota, Saint Paul, MN, USA

408-P **Effects of global warming on plant diversity-soil carbon relationships and implications for assembly of plant-associated microbiomes** S. CASTLE, Department of Plant Pathology/University of Minnesota, Saint Paul, MN, USA

409-P **Molecular characterization of rhizospheric bacterial populations associated with gladiolus corms in terms of quorum sensing and quorum quenching** A. HAMEED, Department of plant pathology, University of Agriculture, Faisalabad, Faisalabad, PAKISTAN

410-P **Exploring Microbiome of Medicinal Plants as Biocontrol Agents** G. ALI, University of Florida, 32703, FL, USA

411-P **The impact of pesticides on bacterial biodiversity in the turfgrass rhizosphere** E. BUCZKOWSI, University of Wisconsin, Madison, WI, USA

412-P **The structure and function of the global citrus root-associated microbiome** J. XU, University of Florida, Lake Alfred, FL, USA

414-P **Is Chemical Warfare More Common Among Seed Microbes Than Other Plant Microbes?** M. MARLIN, University of Idaho, Moscow, ID, USA

415-P **The microbiome of soils suppressive to *Spongospora* diseases of potato** R. FALLOON, The New Zealand Institute for Plant & Food Research Limited, Christchurch, NEW ZEALAND

416-P **Seasonal and potato cultivar effects on common scab causing *Streptomyces* spp. and bacterial communities** C. GOYER, Agriculture and Agri-Food Canada, Fredericton, NB, CANADA

417-P **Crop-specific microbiome responses to four-year rotational sequences** M. BENITEZ PONCE, The Ohio State University, Wooster, OH, USA

418-P **Contrasting microbial diversity in conducive and putative suppressive soils to garlic white rot** V. LOURENÇO, Embrapa, Brasília, BRAZIL

419-P **Bacterial communities colonizing creeping bentgrass undergo minimal shifts during the six month developmental period following seedling emergence** J. DOHERTY, University of Maryland, College Park, MD, USA

420-P **The secret life of bacteria: The interaction of *Enterobacter* and the soil pathogen *Rhizoctonia solani*** P. ZHANG, University of Florida, Gainesville, FL, USA

421-P **Microbiome associated with tall fescue under drought stress** G. GROBEN, Rutgers University, New Brunswick, NJ, USA

422-P **Evaluating the Microbiome of Industrial Hemp** A. CALA, Cornell University, Geneva, NY, USA

423-P **Metacoder and taxa: R packages for visualization and manipulation of community taxonomic diversity data** Z. FOSTER, USDA ARS, Corvallis, OR, USA

424-P **Deciphering the Dynamics of the Citrus Microbiome** N. GINNAN, University of California, Riverside, Riverside, CA, USA

425-P **Molecular Characterization of the Pathogen and Symbiotic Fungal Community composition in the rhizosphere of common European potato varieties** K. LOIT, Estonian University of Life Sciences, Chair of Plant Health, Tartu, ESTONIA

426-P **Ecological significance of soybean seed treatments on oomycete communities** Z. NOEL, Michigan State University, East Lansing, MI, USA

427-P **Deciphering the complex interactions between the apple microbiota and a biocontrol agent against post-harvest diseases (*Pichia anomala* strain K)** S. MASSART, University of Liège (ULg) - Gembloux Agro-BioTech, Gembloux, BELGIUM

428-P **Effect of native New Jersey Pine Barrens bacteria on germination of switchgrass (*Panicum virgatum*)** P. ENGEL, Rutgers University, New Brunswick, NJ, USA

429-P **Soil fungal diversity during a soybean-cover crop rotation using community sequencing** M. MARROQUIN-GUZMAN, University of Nebraska, Lincoln, NE, USA

430-P **Influence of temperature on the isolation of water molds using a soil bating technique** K. NAVARRO, The Ohio State University, Wooster, OH, USA

431-P **Do grafting and rootstock genotype affect the rhizobiome? A study of tomato systems** R. POUDEL, Plant Pathology Department, University of Florida, Gainesville, FL, USA

432-P **The avocado root phytobiome: microbial community structure under abiotic and biotic stress** S. CRANDALL, California State University Monterey Bay, Seaside, CA, USA

433-P **Study of seed-borne virome in cucurbits** S. SABANADZOVIC, Dept of Biochem, Mol Biology, Entomology and Plant Pathology, Mississippi State University, Mississippi State, MS, USA

434-P **RNA virome of two important phytopathogenic fungi** N. ABOUGHANEM-SABANADZOVIC, Institute for Genomics, Biocomputing and Biotechnology, Mississippi State University, Mississippi State, MS, USA

Population Biology and Genetics

435-P **Analysis of global populations of *Phytophthora cinnamomi* suggests presence of two dominant clonal lineages and evidence of sex in Southeast Asia** N. GRUNWALD, USDA-ARS, Horticultural Crops Research Unit, Corvallis, OR, USA

436-P **Morphological and molecular variability of *Alternaria* spp. causing leaf blight of cotton in India** S. ASHTAPUTRE, Department of Plant Pathology, Dharwad, INDIA

437-P **The incidence and pathogenicity of Alternaria leaf spot associated with canola (*Brassica napus*) in southern Australia** H. AL-LAMI, The University of

Western Australia Institute of Agriculture, Faculty of Science, Perth, AUSTRALIA

439-P **Population shifts in *Pseudoperonospora cubensis* in the U.S. following the 2004 cucurbit downy mildew epidemic** L. QUESADA, North Carolina State University, Raleigh, NC, USA

440-P **Deciphering the genetic variation of Asian soybean rust pathogen *Phakopsora pachyrhizi*** Y. GUPTA, The Sainsbury Laboratory, Norwich, UNITED KINGDOM

441-P **Diversity of *Streptomyces* spp. causing potato common scab in Eastern Canada** A. NOVINSCAK, Université de Moncton, Moncton, NB, CANADA

442-P **Genetic recombination in *Venturia effusa*, causal agent of pecan scab** C. YOUNG, Noble Research Institute, LLC, Ardmore, OK, USA

443-P **Genetic Diversity of *Tobacco rattle virus* isolates from Potato in the USA** L. MOYO, Department of Plant Pathology, Washington State University, Pullman, WA, USA

444-P **Novel Magnaporthales fungi pathogenic to switchgrass and turfgrasses** J. LUO, Rutgers University, New Brunswick, NJ, USA

445-P **The open road: A case study of reproducible research in plant pathology** S. EVERHART, University of Nebraska, Lincoln, NE, USA

446-P **Mapping the distribution and incidence of southwestern dwarf mistletoe on ponderosa pine in New Mexico National Forests using roadside surveys** G. REYNOLDS, US Forest Service, Forest Health Protection, Albuquerque, NM, USA

447-P **Investigation of Genotypes and Fungicide Resistance Profiles of *Botrytis* Populations on Single Strawberry Flowers** M. HU, University of Maryland, College park, MD, USA

448-P **Population structure and genetic diversity of *Melampsora* spp. collected from *Salix purpurea* in the Northeast United States** C. CROWELL, Plant Pathology and Plant-Microbe Biology Section, Cornell University, Geneva, NY, USA

449-P **Factors affecting the population dynamics and epidemiology of viruses infecting potato.** C. LACOMME, Science and Advice for Scottish Agriculture (SASA), Edinburgh, UNITED KINGDOM

450-P **White mold/dry bean: Population structure and phenotypic variation of *Sclerotinia sclerotiorum* from dry bean in the USA** S. EVERHART, University of Nebraska, Lincoln, NE, USA

451-P **Intra- and inter-field diversity of *Xanthomonas translucens* isolates associated with natural occurrence of bacterial leaf streak in wheat and barley** R. CURLAND, University of Minnesota, St. Paul, MN, USA

452-P ***Discula destructiva*, an exotic pathogen of *Cornus* spp. in North America: Evidence of independent introductions** D. HADZIABDIC, University of Tennessee, Knoxville, TN, USA

453-P **Variation of mutations in *AVR* genes in the field isolates of the tomato wilt fungus, *Fusarium oxysporum* f. sp. *lycopersici*** T. ARIE, Tokyo Univ of Agric & Tech (TUAT), Fuchu, Tokyo, JAPAN

454-P **Genetic Diversity Studies of Potato mop-top virus from Potato in the United States** Y. ZHAI, Department of Plant Pathology, Washington State University, Pullman, WA, USA

455-P **Population diversity of *Fusarium* on the main cereals in China** J. FENG, Institute of Plant Protection, Beijing, CHINA

456-P **Phenotypic and Genotypic diversity in *Phytophthora infestans* Isolates in Korea** M. AKTARUZZAMAN, Gangneung-Wonju National University, Gangneung, SOUTH KOREA

457-P **Phylogenetic analysis of South American *Berberis* species and their related rust fungi** C. BARNES, Instituto Nacional de Investigaciones Agropecuarias, Quito, Pichincha, ECUADOR

458-P ***Population structure, virulence and resistance to mefenoxam of Phytophthora capsici in Michigan*** Y. GUO, Michigan State University, East Lansing, MI, USA

459-P **Genetic structure of *Phoma betae* populations on *Beta vulgaris* in New York and Washington States, USA** L. KOENICK, Cornell University, Plant Pathology & Plant-Microbe Biology Section, Geneva, NY, USA

460-P **Genotypic diversity of globally derived isolates of *Fusarium oxysporum* f. sp. *fragariae*** P. HENRY, University of California, Davis, CA, USA

461-P **Identification of Resistance to Wet Bubble Disease and Genetic Diversity in Wild and Cultivated Strains of Agaricus bisporus** X. WANG, Jilin Agricultural University, CHANGCHUN, CHINA

462-P **MLVA-based diversity analysis of *Xanthomonas axonopodis pv. manihotis* (*Xam*) populations in Mali.** M. KANTE, Université de Segou , IRD , LBMA, Segou, MALI

463-P **Virulence characterization of *Puccinia striiformis* f. sp. *tritici* collections from China, Italy, Mexico, and Ecuador** X. CHEN, USDA ARS, Pullman, WA, USA

464-P **Population dynamics of the late blight pathogen in Canada for 2017.** R. PETERS, Agriculture and Agri-Food Canada, Charlottetown, PE, CANADA

465-P **Molecular characterization of Potato virus Y -NTN strain from India** Y. ZHAI, Department of Plant Pathology, Washington State University, Pullman, WA, USA

466-P **Genetic diversity of *Puccinia striifomris* f. sp. *tritici* from China and Sweden** B. LIU, Institute of Plant Protection Chinese Academy of Agricultural Sciences, Beijing, CHINA

467-P **How Andean *Ralstonia solanacearum* potato brown rot strains displace African brown rot strains in the Madagascar highlands** A. TRUCHON, University of Wisconsin, Madison, WI, USA

468-P **An international perspective on genetic structure and gene flow in *Cercospora beticola* populations** N. KNIGHT, Cornell University, Plant Pathology & Plant-Microbe Biology Section, Geneva, NY, USA

469-P **Phylogenetic, morphological, and pathogenic characterization of *Alternaria* species associated with fruit rot of mandarin in California** F. WANG, United States Department of Agriculture - Agricultural Research Service, Parlier, CA, USA

470-P **Investigating the distribution and diversity of *Leptosphaeria maculans* in northern Idaho** J. PICKARD, University of Idaho, Moscow, ID, USA

471-P **Race structure and genetic diversity of the *Pyrenophora tritici-repentis* population in North Dakota** Z. LIU, North Dakota State University, Fargo, ND, USA

472-P **Increased aggressiveness of *Fusarium pseudograminearum* isolates causing crown rot disease on wheat in Western Australia** M. KHUDHAIR, The university of Queensland/ CSIRO Agriculture and Food, Brisbane, AUSTRALIA

473-P **Aggressiveness studies of *Xanthomonas Oryzae* Pv. *Oryzae* isolates from rice in Pakistan** S. MANNAN, COMSATS institute of information technology, sahiwal campus, Sahiwal, PAKISTAN

474-P **Assessment of plant pathogenic fungal and oomycete communities in the soil of a long-term fertilization experiment** L. SOONVALD, Estonian University of Life Sciences, Chair of Plant Health, Tartu, ESTONIA

475-P **When natives become invasive: population genetic signatures following range expansion in members of thousand cankers disease complex** D. HADZIABDIC, University of Tennessee, Knoxville, TN, USA

476-P **Genetic diversity in *Verticillium dahliae* population from olive in Lebanon** W. HABIB, Lebanese Agricultural Research Institute, Beirut, LEBANON

477-P **Genetic diversity and virulence of *Fusarium oxysporum* f. sp. *vasinfectum* (FOV) races causing Fusarium wilt of cotton in the southeastern United States** H. HALPERN, University of Georgia, Athens, GA, USA

478-P **Epidemiology and pathogen diversity of *Xanthomonas campestris* pv. *campestris* in New York** H. LANGE, SIPS,Cornell University, Geneva, NY, USA

479-P **Relationships among Brazilian and worldwide isolates of *Fusarium oxysporum* f. sp. *lactucae* race 1 inferred from IGS-rDNA region and *EF*-1a gene** C. CABRAL, Embrapa Hortaliças, Brasília-DF, BRAZIL

480-P **Genetic variation and differentiation in global populations of the wheat leaf rust fungus, *Puccinia triticina*.** J. KOLMER, USDA ARS, St Paul, MN, USA

481-P **Population structure of *Phytophthora plurivora* on *Rhododendron* in Oregon nurseries** N. CARLESON, Oregon State University, Corvallis, OR, USA

482-P **Single-pustule inoculation to examine diversity of the Brazilian orange rust pathogen from various origins and uredia** L. PORTO, Federal University of Sao Carlos, Araras, BRAZIL

483-P **Population structure of *Tomato chlorotic spot virus,* an emerging tospovirus of tomato and other vegetable plants in the United States** B. POUDEL, University of Florida, Homestead, FL, USA

484-P ***Phytophthora* species introduced to Southern California restoration plantings on the Angeles National Forest threaten rare species habitat** S. FRANKEL, USDA Forest Service, Pacific Southwest Research Station, Albany, CA, USA

485-P **AmpSeq based SNP marker development for population analysis of geographically diverse isolates of hop powdery mildew (*Podosphaera macularis*)** W. WELDON, Cornell University, Geneva, NY, USA

486-P **Botryosphaeriaceae diversity on *Acacia koa* and *A. heterophylla* in Reunion and Hawaiian Islands** F. JAMI, Forestry and Agricultural Biotechnology Institute (FABI), University of Pretoria, Pretoria, SOUTH AFRICA

487-P **Diversity of Botryosphaeriaceae on Proteaceae in South Africa, Australia and Portugal** F. JAMI, Forestry and Agricultural Biotechnology Institute (FABI), University of Pretoria, Pretoria, SOUTH AFRICA

488-P **Diversity of "*Candidatus* Liberibacter asiaticus" strains in California** J. CHEN, USDA, ARS, SJVASC, Parlier, CA, USA

489-P **Deconstructing Australian *Fusarium oxysporum* species complex using genealogical concordance phylogenetic species recognition** S. ACHARI, AgriBio, Bundoora, AUSTRALIA

490-P **Current diversity of *Phytophthora infestans* infecting cultivated potato in the Peruvian Andes** A. ASTETE FARFAN, Universidad Nacional San Antonio Abad del Cusco, Cusco, PERU

491-P **Genetic and genomic studies of the Korean oak wilt fungus (*Raffaelea quercus-mongolicae*) provide information of its biology and ecology** M. KIM, Dept. of Forestry, Environment and Systems, Kookmin University, Seoul, SOUTH KOREA

492-P **Diversity of *Pectobacterium* spp. Isolated from Potato (*Solanum tuberosum* L.) on South Korea.** S. JEE, Rural development administration, Pyeongchang, KOREA

493-P **Identification and race characterization of melon powdery mildew pathogen in Bukidnon, Philippines** M. PINOTE, East-West Seed Company, Manolo Fortich, PHILIPPINES

494-P **The study on the pathogenic fungal diversity on chili pepper and its potential influencial factors** Y. DIAO, State Key Laboratory of Mycology, Institute of Microbiology, Chinese Academy of Sciences, Chaoyang Beijing, CHINA

495-P **Diversity of *Venturia inaequalis* in Latvia** O. SOKOLOVA, Institute of Horticulture, Dobele, LATVIA

496-P **Genotypic diversity and reproductive biology of *Thekopsora areolata*, the causal agent of cherry spruce rust in Norway spruce seed orchards.** Å. OLSON, Swedish University of Agricultural Sciences, Uppsala, SWEDEN

497-P **Genetic diversity analyses in *Ralstonia syzygii* species** I. SAFNI, University of Sumatera Utara, Medan, INDONESIA

498-P **Molecular characterization of *Colletotrichum* spp. isolates associated with southern highbush blueberry in north and central Florida** M. VELEZ-CLIMENT, Department of Plant Pathology, University of Florida, Gainesville, FL, USA

499-P **Regional distribution of soilborne diseases in cereal crops in Australia** G. VADAKATTU, CSIRO, Glen Osmond, AUSTRALIA

500-P **Fine scale population genetic structure and within tree distribution of mating types of *Venturia effusa*, cause of pecan scab in the USA** K. STEVENSON, University of Georgia, Tifton, GA, USA

502-P **Genotypic and phenotypic characterization of Stagnospora nodorum blotch of wheat in Virginia** N. KAUR, Virginia Tech Tidewater AREC, Suffolk, VA, USA

503-P **Investigation of *Erysiphe necator* Population Structure using Amplicon Sequencing (AmpSeq) without Clonal Isolation** B. KISSELSTEIN, USDA Grape Genetics Research Unit, Geneva, NY, USA

504-P **Applying population genomics to understand the genomic basis of speciation, pathogenicity and host specialization in *Ceratocystis fimbriata sensu lato*** T. DUONG, Forestry and Agricultural Biotechnology Institute (FABI), University of Pretoria, Pretoria, SOUTH AFRICA

505-P **Population biology and comparative genomics of *Claviceps purpurea* and other defensive mutualists in the Hypocreales** K. BRODERS, Colorado State University, Fort Collins, CO, USA

506-P **Diversity and distribution of *Phakopsora pachyrhizi* isolates in eastern Africa** H. MURITHI, Intl Inst of Tropical Agriculture (IITA), Dar Es Salaam, TANZANIA

507-P **Identification of hypervariable gene regions to evaluate relationships among isolates in the *Pythium irregulare* species complex.** H. NGUYEN, Agriculture & Agri-Food Canada, Ottawa, ON, CANADA

508-P **Characterization of cucurbit yellow vine disease strains of *Serratia marcescens* using whole genome sequencing** E. LITTLE, University of Georgia, Department of Plant Pathology, Athens, GA, USA

509-P **Phylogenetic characterization of *Colletotrichum gloeosporioides* isolates from Florida strawberry and non-cultivated hosts** M. OLIVEIRA, University of Florida, Wimauma, FL, USA

510-P **Genetic, morphological and pathogenic characterization of Chilean isolates of *Chondrostereum purpureum*** J. CHILIAN, INIA Quilamapu, Chillan, CHILE

511-P **Characterization of tan spot fungus populations from wheat in Oklahoma** S. SUAREZ, Oklahoma State University, Stillwater, OK, USA

512-P **Assessment of pathotype variability in *Phytophthora sojae* populations across the North Central region of the United States** L. WEBER, The Ohio State University, Dept. of Plant Pathology, Wooster, OH, USA

513-P **Relation and occurrence of *Fusarium virguliforme*, *Macrophomina phaseolina*, and *Heterodera glycines* in Tennessee** A. MCLAUGHLIN, University of Tennessee, Jackson, TN, USA

514-P **Characterization of *Xanthomonas* isolates causing black spot on tomato in South Africa** S. VOU, University of Pretoria, Pretoria, SOUTH AFRICA

515-P **Characterization of *Phytophthora infestans* populations from soils of the Ecuadorian Andes** M. BENITEZ PONCE, The Ohio State University, Wooster, OH, USA

516-P **Variation of the avirulence gene AvirPib among a worldwide collection of isolates of *Magnaporthe oryzae*** C. FENG, University of Arkansas, Fayetteville, AR, USA

517-P **Population biology of *Fusarium oxysporum* associated to banana in Ecuador** F. MAGDAMA, Escuela Superior Politécnica del Litoral, Guayaquil, ECUADOR

518-P **Diversity of begomoviruses causing disease in peppers (*Capsicum* spp.) in Asia** L. KENYON, World Vegetable Center, Shanhua, Tainan, TAIWAN

519-P **The presence of *secreted in xylem* genes in *Fusarium oxysporum* f.sp *zingiberi* from Australian ginger showing symptoms of Fusarium yellows.** E. AITKEN, School of Agriculture and Food Sciences, The University of Queensland, Brisbane, AUSTRALIA

520-P **Genetic characterization of *Rathayibacter* spp. present in the United States of America (USA).** B. SCHROEDER, University of Idaho, Moscow, ID, USA

521-P **Population genomics reveals high mutation rate and divergence among populations of blueberry pathogen *Exobasidium maculosum*** A. ABRAHAMS, University of Georgia, Athens, GA, USA

522-P **Identification and characterization of microRNA-like RNAs in *Fusarium oxysporum* f. sp. *cubense*** J. PENG, Chinese Acadey of Tropical Science, hAI, CHINA

523-P **Application of a new approach for study of virulence variation in cucurbit powdery mildew populations** A. LEBEDA, Palacky Univ in Olomouc, Olomouc-Holice, CZECH REPUBLIC

Proteomics/Metabolomics/Genomics

524-P **How many types of fungal & oomycete phytopathogens are there? Catastrophy for the bio/hemi/necrotroph divisions** R. OLIVER, Curtin University, Perth, AUSTRALIA

525-P **Whole Genome Sequencing and Secretome analysis of *Tilletia indica* inciting Karnal bunt of wheat Provides Pathogenesis-related genes** M. GURJAR, ICAR-Indian Agricultural Research Institute, New Delhi, INDIA

526-P **RNA Pulling: A novel approach for whole genome sequencing of monopartite ssRNA virus, a case study** S. SHARMA, Punjab Agricultural University, ludhiana, AE, INDIA

527-P **Transcriptome profiling reveals the EanI/R quorum sensing regulon in *Pantoea ananatis* LMG 2665^T** S. SIBANDA, University of Pretoria, Pretoria, SOUTH AFRICA

528-P **Temporal dynamics of the soil metabolome and microbiome in response to anaerobic soil disinfestation** M. MAZZOLA, USDA-ARS, Wenatchee, WA, USA

529-P **The pathogenic mechanism analysis of sugarcane ratoon stunting disease base on histology and transcriptomics** Y. GUO, Fujian Institute of Subtropical Botany, Xiamen, CHINA

530-P **Metabolic Phenotype Characterization of *Botrytis cinerea*, the causal agent of grey mould** H. WANG, Guizhou Academy of Tobacco Sciences, Gui Yang, CHINA

531-P **Genome sequencing and transcriptome analysis of the hop downy mildew pathogen *Pseudoperonospora humuli* reveal species-specific genes for diagnostics** A. RAHMAN, NCSU, Raleigh, NC, USA

532-P **Validation of a CANARY® multiplex testing platform for rapid identification of *Ralstonia solanacearum*** A. AHMAD, Department of Plant Pathology, Faculty of Agriculture, Minia University, EL-Minia, EGYPT

533-P **Proteomic Profile of *Aspergillus flavus* responses to oxidative stress** B. GUO, USDA ARS CPMRU, Tifton, GA, USA

534-P **Genome-wide identification of candidate secretory effector proteins of *Colletotrichum tanaceti* isolated from Australian pyrethrum** R. LELWALA, The University of Melbourne, Parkville, AUSTRALIA

535-P **Comparative genomic analysis of *Fusarium oxysporum* f. sp. *vasinfectum* isolates and their small secreted proteins** S. SEO, Auburn University, Auburn, AL, USA

536-P **Metabolome and transcriptome analyses to study plant-virus interaction: the case of study *Onion yellow dwarf virus* - 'rossa di tropea' onion.** A. TIBERINI, Università degli studi Mediterranea, Reggio Calabria, ITALY

537-P **Genomic analysis of *Xanthomonas arboricola*: pathogenicity and development of a real-time PCR protocol for bacterial spot disease of *Prunus* spp.** J. CUBERO, INIA, Madrid, SPAIN

538-P **Mining the *Penicillium expansum* proteome to unlock fungal virulence mechanisms during postharvest apple fruit decay** W. JURICK II, USDA-ARS Food Quality Laboratory, Beltsville, MD, USA

539-P **Metabolomics approach to elucidate the mechanisms underlying biological control of Fusarium root rot by PGPR** A. ADESEMOYE, University of Nebraska Lincoln, North Platte, NE, USA

540-P **The infectious process of *Colletotrichum lupini*, a major threat for lupin crops** G. DUBRULLE, Université de Brest, EA 3882, LUBEM, IBSAM, ESIAB, Plouzané, FRANCE

541-P **Molecular evolutionary genomics and population structure of *Iris yellow spot orthotospovirus* (Family: *Tospoviridae*; Genus: *Orthotospovirus*)** A. TABASSUM, Department of Plant Pathology, Washington State University, Pullman, WA, USA

542-P **Proteomics analysis based on iTRAQ LC-MS/MS reveals novel roles of *hshB* in *Xanthomonas oryzae* pv. *oryzicola*** Y. ZHAO, Institute of Plant Protection, Jiangsu Academy of Agricultural Sciences, Nanjing, CHINA

543-P **Genome architecture and virulence gene dynamics in oat crown rust populations** M. FIGUEROA, Department of Plant Pathology, University of Minnesota, St. Paul, MN, USA

544-P **Pheromone expression in the unisexual fungus, *Huntiella moniliformis*** A. WILSON, FABI, University of Pretoria, Pretoria, SOUTH AFRICA

545-P **The transcriptome of roots of sweet orange tree with symptoms of citrus blight** J. HARTUNG, USDA ARS MPPL, Beltsville, MD, USA

546-P **Whole genome comparisons of the host specific species *Ceratocystis fimbriata sensu stricto* and *C. manginecans*** A. FOURIE, Forestry and Agricultural Biotechnology Institute (FABI), University of Pretoria, Pretoria, SOUTH AFRICA

547-P **The composition and expression of Carbohydrate-Active Enzymes in *Rhizoctonia cerealis* transcriptome** W. LI, Jiangsu Academy of Agricultural Sciences, Nanjing, CHINA

548-P **Genome-based identification of genes involved in pathogen interactions with *Brassica* crops** C. KARANDENI-DEWAGE, University of Hertfordshire, Hatfield, UNITED KINGDOM

549-P **Metabolomic Profiling Revealed Chemical Elicitors Triggering Rice Defense Against *Magnaporthe oryzae* Infection** Z. WANG, Fujian Agriculture and Forestry University, Fuzhou, CHINA

550-P **Does transmission mode shape PVY quasispecies? Insights from Illumina deep sequencing** W. DA SILVA, Cornell University, Ithaca, NY, USA

551-P **Characterizing the epidemiological link between transplant and field outbreaks of bacterial spot on tomato with whole genome sequencing** P. ABRAHAMIAN, Gulf Coast Research and Education Center, University of Florida, Wimauma, FL, USA

552-P **Approaches to effectively use pathogenomics for wheat crop protection against rusts** G. BAKKEREN, Agric & Agri Food Canada, Summerland, BC, CANADA

553-P **Investigating the Role of Trehalose Metabolism During *Ralstonia solanacearum* Bacterial Wilt Disease** A. MACINTYRE, University of Wisconsin-Madison, Madison, WI, USA

554-P **Diversity of the Microbacteriaceae, with focus on the plant pathogenic genera *Clavibacter* and *Leifsonia*, based on environmental 16S data** T. GALHARDO EGREJA RIBEIRO SILVA, Department of Plant Pathology, University of Nebraska, Lincoln, NE, USA

555-P **Dynamics of chromosomal and plasmid-borne copper resistance systems in *Xanthomonas perforans* populations** R. BHANDARI, Auburn University, Auburn, AL, USA

556-P **Detection and Characterization of pXFSL21, a Novel Single-Copy Plasmid from Xylella fastidiosa Strain Stag's Leap** J. CHEN, USDA, ARS, SJVASC, Parlier, CA, USA

557-P **Comparative *Ralstonia solanacearum* dynamics and metabolomic profiling of advanced potato clones with different levels of bacterial wilt resistance.** M. SIRI, Bioscience Department, School of Chemistry, Universidad de la Republica, Montevideo, URUGUAY

558-P **Genome sequence of the common bean rust pathogen suggests coevolution with its common bean host** M. PASTOR-CORRALES, Soybean Genomics & Improvement Lab, BARC-West, ARS-USDA, Beltsville, MD, USA

559-P **Potential role of small noncoding RNAs in regulating hypovirulence in *Rhizoctonia solani* anastomosis group 3** E. CHAMPACO, University of Maine, Orono, ME, USA

560-P **Understanding the role of root exudation for pathogen germination and attraction, and their application for disease control** C. WILSON, University of Tasmania, New Town, AUSTRALIA

561-P **Detection of copy number variation for chromosomal sliding windows using high throughput sequencing data in the R environment** B. KNAUS, USDA-ARS, Horticultural Crops Research Unit, Corvallis, OR, USA

562-P **Diversified transcriptional modulation of alternative splicing repertoire during rice-*Magnaporthe oryzae* interactions** J. JEON, Seoul National University, Seoul, SOUTH KOREA

563-P **The wheat pathogen *Zymoseptoria tritici* senses and responds to different wavelengths of light** C. MCCORISON, Purdue University, West Lafayette, IN, USA

564-P **Dissection of non-host resistance to European pear scab fungus, *Venturia pirina* using fluorescence phenotyping and transcriptomics** K. PLUMMER, La Trobe University, Bundoora, AUSTRALIA

565-P **Expanded effector families in fruit scab fungi: *Venturia inaequalis, V. pirina* and *V. nashicola*** K. PLUMMER, La Trobe University, Bundoora, AUSTRALIA

566-P **Genome comparisons reveal factors responsible for host specificity in the *Fusarium fujikuroi* species complex** L. DE VOS, Forestry and Agricultural Biotechnology Institute (FABI), University of Pretoria, Pretoria, SOUTH AFRICA

567-P **Variation in gene content of a dispensable chromosome in members of the *Fusarium fujikuroi* species complex** L. DE VOS, Forestry and Agricultural Biotechnology Institute (FABI), University of Pretoria, Pretoria, SOUTH AFRICA

568-P **Evolution of carbohydrate and protein metabolism gene families in *Colletotrichum* spp.** M. THON, University of Salamanca, Instituto Hispano-Luso de Investigaciones Agrarias, CIALE, Villamayor, SPAIN

569-P **Comparative genomics of plant pathogenic bacteria *Dickeya solani* and *Pectobacterium parmentieri* for identifying specific traits involved in virulence** E. LOJKOWSKA, Intercollegiate Faculty of Biotechnology University of Gdansk Medical University of Gdansk, Gdansk, POLAND

570-P **Analysis of *Fusarium graminearum* pangenome** A. MACHADO, Rothamsted Research, Harpenden, UNITED KINGDOM

571-P **Analysis of *Chenopodium*-virus interactions using *Chenopodium quinoa* reference genome** N. SOLTANI, University of Tennessee, Department of Entomology and Plant Pathology, Knoxville, TN, USA

572-P **Characterization of a Sudden Death Syndrome (SDS) Core Effector Using Comparative Genomics between SDS-causing and non-SDS-causing *Fusarium* species** H. CHANG, Department of Plant Soil and Microbial Sciences, Michigan State University, East Lansing, MI, USA

573-P **A novel method for identifying polymorphic transposable elements *via* scanning of high-throughput short reads** H. KANG, Institute of Plant Protection (IPP);Chinese Academy of Agricultural Sciences (CAAS), Beijing, CHINA

574-P **Population genomic insights into the evolution of pathogenicity and host range expansion of *Xanthomonas perforans* to pepper** E. NEWBERRY, Department of Entomology and Plant Pathology, Auburn University, Auburn, AL, USA

575-P **Comparative genomics reveals the role of transposable elements in the evolution of pathogenicity in fungal pathogens of conifers** T. DUONG, Forestry and Agricultural Biotechnology Institute (FABI), University of Pretoria, Pretoria, SOUTH AFRICA

576-P **Genome-wide analysis of NBS-LRR genes in Indian mustard (*Brassica juncea*) and prediction of candidate disease resistance genes** F. INTURRISI, University of Western Australia, Perth, AUSTRALIA

577-P **Deciphering floral infection of blueberry pathogen *Monilinia vaccinii-corymbosi* using comparative genomics and transcriptomics** K. BANSAL, University of Florida, Gainesville, FL, USA

578-P **The genomes of *Ophiosphaerella* spp. reveal new insights into the bermudagrass spring dead spot pathosystem.** N. GRAF GRACHET, Oklahoma State University, Stillwater, OK, USA

579-P **Complete genome sequence of *Xanthomonas phaseoli* pv. *phaseoli* G66 reveals a particular repertoire of Type 3 effectors including a novel TAL effector** L. CAI, University of Florida, gainesville, FL, USA

580-P **Whole genome sequence analysis of *Xanthomonas perforans* shows widespread recombination events** S. TIMILSINA, Department of Plant Pathology, University of Florida, Gainesville, FL, USA

581-P **Genomic insights into the mechanisms of pathogenesis in *Raffaelea lauricola*, causal agent of laurel wilt disease** Y. ZHANG, Department of Plant Pathology, University of Florida, Gainesville, FL, USA

582-P **Understanding pathogenic success by identifying *Ralstonia solanacearum*'s *in planta* nutrient sources** C. HAMILTON, University of Wisconsin-Madison, madison, WI, USA

583-P **The differential role of plasmids in *Clavibacter* virulence on tomato** S. THAPA, University of California, Davis, CA, USA

584-P **A Global Outlook on the Evolution of Type Three Effectors in Xanthomonads causing Bacterial Spot on Tomato and Pepper** M. JIBRIN, Ahmadu Bello University, Zaria, NIGERIA

585-P **Deciphering how beet necrotic yellow vein virus overcomes rhizomania resistance genes in sugarbeet through metabolome analysis** K. WEBB, USDA-ARS, Soil Management and Sugar Beet Research Unit, Fort Collins, CO, USA

586-P **Unearthing Planet's Plant Virus Modulome: *Exploring Plant Virus Proteome Modularity for Taxonomic Classification and Biological Predictions*** R. TAHZIMA, Flanders Research Institute for Agriculture, Fisheries and Food (ILVO), Merelbeke, BELGIUM

587-P **Copy number variation appears increased in clonal lineages over sexual lineages of *Phytophthora infestans*** B. KNAUS, USDA-ARS, Horticultural Crops Research Unit, Corvallis, OR, USA

588-P **Deciphering the mechanism of *E. coli* resistance to a membrane-targeting antimicrobial peptide through genomic and transcriptomic approaches** J. VELÁSQUEZ GUZMÁN, New Mexico Consortium, Los Alamos, NM, USA

589-P **Exploring the genome of *Metschnikowia fructicola*, a biocontrol yeast effective against postharvest diseases** M. GULLINO, Agroinnova - University of Torino, Grugliasco, Torino, ITALY

590-P **Quantitative proteomic analysis reveals a role for ubiquitination in fine-tuning rice immune responses to PAMP elicitors** W. LIU, IPP CAAS, Beijing, CHINA

591-P **Genome-wide characterization of JAZ-COI-MYC module in maize reveals the distinct roles of differential JAZs in the immunity to *Gibberella* stalk rot** X. GAO, Nanjing Agricultural University, Nanjing, CHINA

592-P **Investigation of '*Candidatus* Liberibacter brunswickensis' identified in the Australian eggplant psyllid** J. MORRIS, Department of Economic Development, Jobs, Transport and Resources, Bundoora, AUSTRALIA

593-P **Investigating effector diversity as a source of cultivar-specific pathogenicity across global isolates of the lettuce bacterial leaf spot pathogen.** E. ROSENTHAL, The Pennsylvania State University, University Park, PA, USA

594-P **Diversity of proline/hydroxyproline-rich glycopeptides from dandelion (*Taraxacum officinale* Wigg.) flowers with high specific antimicrobial activity** E. ROGOZHIN, Shemyakin-Ovchinnikov Institute of Bioorganic Chemistry, Moscow, RUSSIA

595-P **Evolution of necrotrophic phytopathogenic bacteria in the Enterobacteriaceae** R. MCNALLY, Colorado State University, Fort Collins, CO, USA

Virology

596-P **A novel dsRNA virus stimulates sporulation of *Phytophthora infestans* and may have contributed to late blight epidemics** G. CAI, USDA-ARS / Purdue University, West Lafayette, IN, USA

597-P **Molecular characterization of viruses in country beans (*Lablab purpureus*) in Bangladesh** M. RAHMAN, Washington State University, Prosser, WA, USA

598-P **Host-specific lineages of *Bean common mosaic virus* in Bangladesh, Cambodia and Nepal** S. DAS, Washington State University, Prosser, WA, USA

599-P **Description of a novel mild strain of *Citrus tristeza virus* in California that reacts with monoclonal antibody MCA13** R. YOKOMI, USDA, ARS, SJVASC, Parlier, CA, USA

600-P **Molecular characterization of a novel nucleorhabdovirus from blackcurrant identified by high-throughput sequencing** R. LI, USDA ARS, Beltsville, MD, USA

601-P **Small RNA-Seq to characterise viruses responsible of Lettuce big-vein disease** M. ARANDA, CEBAS-CSIC, Murcia, SPAIN

602-P **A *Cilevirus* detected in *Hibiscus rosa-sinensis* and *Citrus sinensis* is a strain of *Citrus leprosis virus* C2 causing citrus leprosis disease in Colombia** A. ROY, USDA-APHIS-PPQ-S&T-CPHST, Beltsville, MD, USA

603-P **Distribution and incidence of sugarcane mosaic in Louisiana and evaluation of recovery from infection** J. RICE, Louisiana State University, Baton Rouge, LA, USA

604-P ***Vigna unguiculata* as a model system for studying *Soybean vein necrosis virus*** C. ZAMBRANA-ECHEVARRIA, University of Wisconsin-Madison, Madison, WI, USA

605-P **Characterization of a *Bean common mosaic virus* isolate from lima bean (*Phaseolus lunatus*)** X. FENG, University of Idaho EPPN Department, MOSCOW, ID, USA

606-P **Complete nucleotide sequence of a DNA virus isolated from *Vitis vinifera* in India: A symptomless host of Grapevine red blotch virus** A. MARWAL, Mody University of Science and Technology, Sikar, Rajasthan, INDIA

607-P **Comparison the effects of *Chrysanthemum stunt viroid*, *Hop stunt viroid* and *Citrus exocortis viroid* on tomatoes using Agro-inoculation** Y. CHENG, Taiwan Agricultural Research Institute, Taichung, TAIWAN

608-P **Study of synergistic interaction between two potexviruses, *Cactus virus X* and *Pitaya virus X*** Y. WU, Department of Plant Pathology and Microbiology, National Taiwan University, New Taipei City, TAIWAN

609-P **Development of novel virus eradication methods for pitaya** C. CHEN, Department of Plant Pathology and Microbiology, National Taiwan University, Tainan, TAIWAN

610-P **Virus diseases of vegetables in Mali, West Africa** W. LEGESSE, World Vegetable Center, Bamako, MALI

611-P **Outbreak of Groundnut ringspot virus, genus *Orthotospovirus*, in peanut fields in Argentina** S. DE BREUIL, CONICET, CABA, ARGENTINA

613-P **The impact of *Triticum mosaic* and *Wheat streak mosaic viruses'* co-infection on spring wheat performance** D. YABWALO, South Dakota State University, Brookings, SD, USA

615-P **Latent and incubation periods of *Cowpea aphid-borne mosaic virus* in passionflower.** D. MARQUES DE ALMEIDA SPADOTTI, University of São Paulo - ESALQ, Piracicaba, BRAZIL

616-P **Identification of a novel endornavirus in *Hydrocotyle* spp.** C. ESCALANTE GUARDADO, Louisiana State University Agricultural Center, Baton Rouge, LA, USA

617-P **PVS^{P}: A new potato virus S lineage infecting *Solanum phureja* in Colombia** M. MARIN, Universidad Nacional de Colombia, Medellin, COLOMBIA

618-P **Early viral infection on sweet potatoes under field conditions** A. FURTADO SILVEIRA MELLO, Embrapa Vegetables, Brasilia, BRAZIL

619-P ***Zucchini yellow mosaic virus* disease of cucurbits in a tropical environment: aphid vectors, alternate hosts, and epidemic drivers** R. JONES, Institute of Agriculture, University of Western Australia, Crawley, AUSTRALIA

620-P **Overview of occurrence and incidence of plant virus diseases in crop fields in Korea during 2012-2016** M. KIM, National Institute of Agricultural Science, Wanju, SOUTH KOREA

621-P **Deep sequencing of total RNAs in papaya for genome characterization of *Papaya ringspot virus* Bangladesh strain** J. HU, Department of Plant & Environmental Protection Sciences, University of Hawaii at Manoa, Honolulu, HI, USA

622-P **Molecular analysis indicates that papaya in Bangladesh is a host of multiple begomoviruses** I. HAMIM, Department of Plant & Environmental Protection Sciences, University of Hawaii at Manoa, Honolulu, HI, USA

623-P **Rose viruses: Understanding the current status and protecting the future of the UK rose sector.** I. VÁZQUEZ IGLESIAS, Newcastle University/ Fera Science Ltd., York, UNITED KINGDOM

624-P **Mapping synergistic interaction determinants between *Panicum mosaic virus* and *Satellite panicum mosaic virus*** C. R.V, USDA-ARS, Lincoln, NE, USA

625-P **Prevalence of maize-infecting potyviruses and maize chlorotic mottle virus in the United Republic of Tanzania during 2016-2017 growing seasons** D. MASSAWE, The Ohio State University, Wooster, OH, USA

626-P **Distribution and titer of *Little cherry virus 2* (LChV2) in *Prunus avium* in time and space.** A. WRIGHT, Washington State University, Prosser, WA, USA

627-P **Bipartite networks of hosts and viromes: diversity of viruses of papaya orchards, associated weeds and potential vectors in Southern Mexico** R. ALCALÁ-BRISEÑO, Department of Plant Pathology, University of Florida, Gainesville, FL, USA

628-P **Differential spread of Potato virus Y (PVY) strains in the field: implications for the rise of recombinant PVY strains in New Brunswick, Canada** X. NIE, Agriculture and Agri-Food Canada, Fredericton Research and Development Centre, Fredericton, NB, CANADA

630-P **Initial molecular characterization of a novel emaravirus from *Callicarpa* (beautyberry) identified by high-throughput sequencing** R. JORDAN, USDA-ARS, USNA, Floral & Nursery Plants Research, Beltsville, MD, USA

631-P **Application of tissue culture to produce virus-free plants from imported potato germplasm** R. FRENCH-MONAR, USDA-APHIS, Plant Germplasm Quarantine Program, Beltsville, MD, USA

632-P **Survey of potato viruses and viroids in Heilongjiang province of China by sRNA deep sequencing and VirusDetect** D. LV, Heilongjiang Academy of Agric Sciences, Harbin, CHINA

GROUP 2

Abiotic Interactions

633-P **Understanding pathogen and environmental drivers of white leaf spot (*Pseudocercosporella capsellae*) epidemics and their impacts on canola** T. MURTZA, Department of plant pathology, Faculty of Agriculture, University of Agriculture, Faisalabad, PAKISTAN

634-P **Comparative Effect of temperature on virulence and phenotypic characteristics of *Ralstonia solanacearum* from tobacco present in China** H. WANG, Guizhou Academy of Tobacco Sciences, Gui Yang, CHINA

635-P **Severity of wheat blast on heads at different rates of nitrogen fertilization in Paraná State, Brazil** A. CUSTODIO, Agricultural Research Institute of Paraná - IAPAR, Londrina, BRAZIL

636-P **Identification of temperature-sensitive resistance to *Puccinia striiformis* f. sp. *tritici* in Chinese and international differential hosts** J. FENG, Institute of Plant Protection, Chinese Academy of Agricultural Sciences, Beijing, CHINA

637-P **Temperature dependent RNA metabolism in *Xylella fastidiosa* during cold stress and grapevine infection** L. BURBANK, USDA-ARS, Parlier, CA, USA

638-P **Disease variation of *Sphaceloma manihoticola isolates* affecting cassava in Barbados.** A. ALLEYNE, The University of the West Indies, Cave Hill Campus, Bridgetown, BARBADOS

639-P **The effect of environmental conditions and wounding on disease progression of sweetpotato black rot caused by *Ceratocystis fimbriata*** M. STAHR, NCSU, Raleigh, NC, USA

640-P **Field response of near-isogenic *brown midrib* sorghum lines to *Fusarium thapsinum* and effects of controlled water deficit on stalk rot disease** D. FUNNELL-HARRIS, Wheat, Sorghum, and Forage Research Unit, USDA-ARS, Lincoln, NE, USA

641-P **Managing Phytophthora root rot on flood stressed woody ornamental plants** F. BAYSAL-GUREL, Tennessee State University, McMinnville, TN, USA

642-P **Silicon fertigation maintains optimum growth and ion homeostasis of maize (*Zea mays* L.) under combined stresses of cadmium and fungus (*Fusarium* spp.)** M. JAVED, Department of Botany, Government College University, Faisalabad, PAKISTAN

643-P **Copper phytoextraction mediated by *Medicago sativa* L. (alfalfa) plants plus soil acidification, biodegradable chelant and oomycete combination** D. TRUJILLO, Pontificia Universidad Católica de Valparaíso, Quillota, CHILE

644-P ***Avr-Rps* gene expression in an incompatible soybean-*Phytophthora sojae* interaction: the influence of silicon** A. RASOOLIZADEH, Université Laval, Quebec, QC, CANADA

645-P **Influence of soil pH and liming on Fusarium crown rot of wheat** K. SCHROEDER, University of Idaho, Moscow, ID, USA

647-P **Deficit irrigation and grapevine red blotch disease management** A. KC, Southern Oregon Research and Extension Center, Oregon State University, Central Point, OR, USA

648-P **Defining factors associated with rapid apple decline in the Southeastern United States** S. VILLANI, North Carolina State University, Mills River, NC, USA

649-P **Effect of soil-applied protoporphyrinogen oxidase inhibitor herbicides on root rot severity of soilborne pathogens in soybean [*Glycine max* (L.) merr.]** N. ARNESON, University of Nebraska-Lincoln, Lincoln, NE, USA

650-P **Spatial Correlations of Southern Rust and Soil Phosphorus in Corn** J. BAILEY, University of Arkansas-Fayetteville, MONTICELLO, AR, USA

651-P **A preliminary assessment of potential distributions for *Armillaria solidipes* and *Pseudotsuga menziesii* under changing climate within the western USA** N. KLOPFENSTEIN, Rocky Mountain Research Station, USDA Forest Service, Moscow, ID, USA

652-P **Temperature adaptation and fungicide sensitivity in *Macrophomina phaseolina*, the causal agent of charcoal rot on soybean and dry bean** V. ORTIZ LONDONO, Michigan State University, East Lansing, MI, USA

653-P **Seasonal variations in rose mosaic disease severity and risks associated with using non-symptomatic plants from contaminated crops** S. WRIGHT, North Florida Research and Education Center, University of Florida, Quincy, FL, USA

654-P **Sustained water stress increases black walnut susceptibility to the pathogen *Geosmithia morbida*** R. SITZ, Department of Bioagricultural Sciences and Pest Management, Colorado State Univeristy, Fort Collins, CO, USA

655-P **Do reduced irrigation practices alter opportunistic pathogen dynamics in nursery systems?** J. DEL CASTILLO MUNERA, University of California, Davis, CA, USA

Bacteriology

656-P **Light induced resistance to bacterial gall disease caused by *Pseudomonas syringae* pv. *cerasicola* in cherry tree (*Cerasus* × *yedoensis*)** M. ISHIHARA, Forestry and Forest Products Research Institute, Hokkaido Research Center, Sapporo, JAPAN

657-P ***Liberibacter crescens*, a presumed bacterial plant pathogen, forms biofilm in vitro** E. NARANJO, Department of Entomology and Plant Pathology, Auburn University, Auburn, AL, USA

658-P **Characterization of *Ralstonia solanaceraum* phage Rs-USA-M1 isolated from a tomato field in Florida, USA** A. AHMAD, Floral and Nursery Plants Research Unit, U. S. National Arboretum, USDA/ARS, Beltsville, MD, USA

659-P **A New (Type 3) Prophage of "*Candidatus* Liberibacter asiaticus" in China** Z. ZHENG, South China Agricultural University, Guangzhou, CHINA

660-P **Occurrence of bacterial pathogens, including non-toxigenic strains of *Pseudomonas syringae* pv. *phaseolicola*, in bean seed crops in Washington State** M. DERIE, Washington State University Mount Vernon NWREC, Mount Vernon, WA, USA

661-P **Evaluation of PGPR strains in multiple crop hosts and predictability of growth promotion efficacy by PGPR traits** A. ADESEMOYE, University of Nebraska Lincoln, North Platte, NE, USA

662-P **Limited movement of *Candidatus* Liberibacter asiaticus in split-root citrus provides a model system for local and systemic effects of Huanglongbing** J. VELOSO DOS SANTOS, UNESP Jaboticabal, Jaboticabal, BRAZIL

663-P **Bacteriocins play a key role in *Pseudomonas syringae* competition in the plant environment** H. EHAU-TAUMAUNU, Dept. of Plant Pathology and Environmental Microbiology, The Pennsylvania State University, University Park, PA, USA

664-P **Survey and characterization of *Ralstonia solanacearum* in solanaceous crops in Tanzania** H. KANYAGHA, The Ohio State University, Wooster, OH, USA

665-P **Characterization of bacteriophages against *Erwinia amylovora* and *Erwinia pyrifoliae* causing fire blight and black shoot blight in apple and pear** D. PARK, Kangwon National University, Chuncheon, KOREA

666-P **Robust bacterial pathogen inhibition mediated by conditionally redundant protein toxins** K. HOCKETT, Dept. of Plant Pathology and Environmental Microbiology, The Pennsylvania State University, University Park, PA, USA

667-P **Survey of pectolytic bacteria causing blackleg and soft rot in Pennsylvania potatoes.** A. MAINELLO, The Pennsylvania State University, University Park, PA, USA

668-P **Conservation of tunicamycin biosynthetic gene clusters across *Rathayibacter* species** M. TANCOS, USDA ARS FDWSRU, Frederick, MD, USA

669-P **A survey of soft rot pectobacteriaceae along the anthropogenic gradient of the Durance river** M. BARNY, INRA, Paris, FRANCE

670-P **Characterization of two new *Chromobacterium* species isolated from cranberry galls in Massachusetts** K. O'HARA-HANLEY, Midwestern University, Glendale, AZ, USA

671-P **Opportunistic plant pathogenic bacteria: unravelling meaning and significance** T. COUTINHO, University of Pretoria, Pretoria, SOUTH AFRICA

672-P **Report and characterization of bacterial diseases caused by *Xanthomonas oryzae* in Senegal** H. TALL, ISRA, Dakar, SENEGAL

673-P **'*Candidatus* Liberibacter asiaticus' bacteriophage search and the role of the OmpA protein in *Liberibacter* species** M. SENA VELEZ, Florida State University, Tallahassee, FL, USA

674-P **Characterization of two new *Pseudomonas* species isolated from cranberry galls in Massachusetts** T. CASTANEDA, Midwestern University, Glendale, AZ, USA

675-P **Bacteriocin sensitivity in *Pseudomonas syringae* depends on growth stage and nutritional status** P. KANDEL, Department of Plant Pathology and Environmental Microbiology, Penn State University, University Park, PA, USA

676-P **Evaluation of small molecules of biofilm-inhibiting compounds for control of bacterial spot of tomato** Q. LIU, UF-TREC, HOMESTEAD, FL, USA

677-P **LC2 and LC1 act as key regulators of bacteriophage SC1 in *Liberibacter crescens*** A. MUNOZ BODNAR, University of Florida, Gainesville, FL, USA

678-P **Enhanced virulence of *Xanthomonas citri* subsp. *citri* after coinfection with *Apple stem grooving virus* in citrus trees** H. HIRATA, Graduate School of Integrated Science and Technology, Shizuoka University, Shizuoka, JAPAN

Biological Control

679-P **The biological control of Fusarium wilt of sweet potato using non-pathogenic *Fusarium oxysporum* and *Trichoderma* species** R. SUTHERLAND, Agricultural Research Council, Pretoria, SOUTH AFRICA

680-P **Evaluation of flowering buds extracts of *Eucalyptus* for antifungal activity against *Bipolaris sorokiniana* in the greenhouse** K. BAHADAR, PARC Institute of Advanced Studies in Agriculture, ISLAMABAD, PAKISTAN

681-P **Methylotrophs as bio-compliment for crop protection and disease management** A. JACK, NewLeaf Symbiotics, St. Louis, MO, USA

682-P **Allelochemicals- A Significant Molecules for Control of Soil Borne Plant Pathogens from Rhizobacteria** D. PANDYA, Samarpan Science and Commerce College, Gandhinagar, INDIA

683-P **Evaluation of soybean nodule microbiome for biocontrol applications** A. MITRA, University of Nebraska, Lincoln, NE, USA

684-P **Inhibition of Fungal Growth by Bacterial Volatiles** G. EBADZADSAHRAI, Midwestern University, Glendale, AZ, USA

685-P **Arbuscular mycorrhizal fungus affects root knot nematode (*Meloidogyne incognita*) on cucumber (*Cucumis sativus*)** A. HOSSEINI KHAH, Islamic Azad University of Iran, tehran, IRAN

686-P **Isolation, Screening and Biocontrol Mechanism of Antagonistic Penicillium against dry rot of potato(*Fusarium solan*i)** R. SHEN, Ningxia Academy of Agricultural and Forestry Sciences, Yinchuan, CHINA

687-P **Effect of temperature and biological control agents on mycelial growth and sclerotia development of Sclerotinia sclerotiorum and Sclerotium rolfsii** Z. MERSHA, Virginia State University, Petersburg, VA, USA

688-P **Biological control activity of rice rhizosphere bacteria and their interactive effects with silica treatment against sheath blight of rice.** J. LEONARD, Louisiana State University, Baton Rouge, LA, USA

689-P **Efficacy of *Trichoderma* and gel treatment on drought tolerance, disease resistance and grain yield of rice** P. PANTHA, National Rice Research Program, Nepal Agricultural Research Council, Dhanusha, NEPAL

690-P **Induced Systemic Resistance and Stem Rot Management in Peanut Using Microbial Consortia** H. SUDINI, ICRISAT, Hyderabad, INDIA

691-P **Biocontrol of Pierce's disease of grapevine and citrus greening with a benign strain of *Xylella fastidiosa*** D. HOPKINS, University of Florida, Apopka, FL, USA

692-P **Inhibition of *Colletotrichum coccodes* and *Verticillium dahliae* by the Biocontrol Agent *Penicillium oxalicum* in Potato.** D. FARBER, Washington State University, Pullman, WA, USA

693-P **Biological control of Septoria tritici blotch: Harnessing fungal endophytes of wheat** M. LATZ, University of Copenhagen, Frederiksberg C, DENMARK

694-P ***Azospirillum brasilense* Sp7 x *Gibberella zeae* interactions in early growth stages of high carotenoid corn** S. LADE, University of Lleida, Lleida, SPAIN

695-P **Endophytic behaviour of *Metarhizium anisopliae* in tea ecosystem of Assam, India** H. KAUSHIK, Assam Agricultural University, Jorhat, INDIA

696-P **Biocontrol potential of bacteriophage KΦ1 in control of pepper bacterial spot** K. GAŠIĆ, Institute for Plant Protection and Environment, Belgrade, SERBIA AND MONTENEGRO

697-P **Effect of biological agents (strains-PUCV-VBL) on summer bunch rot of table grapes cv. Thompson seedless in Chile** F. CÁDIZ, Pontificia Universidad Católica de Valparaíso, Quillota, CHILE

698-P **Effect of 6 Exogenous Soybean Isoflavones on *Heterodera glycines*** Y. WANG, Shenyang Agricultural University, Shenyang, CHINA

699-P **Gingerwilt complex is a major threat to Ginger cultivation and food security in north East India** P. RAJA, College of Horticulture and Forestry, Pasighat, INDIA

700-P **Impact of Valinomycin, a novel antibiotic produced by *Streptomyces* sp. S8 in Large patch** C. JEON, Gyeongsang National University, Jinju, SOUTH KOREA

701-P **Endophytic establishment of *Beauveria bassiana* in maize, and its effects on plant growth and reproduction of grain aphids (*Sitobion avenae*)** Z. MAHMOOD, Aarhus University, Slagelse, DENMARK

702-P **Suppression of late blight disease caused by *Phytophthora infestans* and growth promotion in tomato using biocontrol** A. BAHRAMISHARIF, Heinrich Heine University Duesseldorf, Duesseldorf, GERMANY

703-P **Biocontrol of *Colletotrichum truncatum* in seeds of *Phaseolus lunatus* using essential oil of *Schinus terebinthifolius*** V. CARVALHO, Federal University of Alagoas, Maceió, BRAZIL

704-P **Efficacy of a biological control agent, *Rhizobium vitis* ARK-1, against grapevine crown gall in the United States** M. NITA, Virginia Polytechnic Institute and State University, Winchester, VA, USA

705-P **Evaluating the biocontrol potential of Plant Growth Promoting Rhizobacteria to control damping off in Chilli Pepper (*Capsicum annum* L.).** S. HYDER, Department of Plant Pathology, University of Arid Agriculture, Rawalpindi, PAKISTAN

706-P **Recombinant *Pseudomonas synxantha* 2-79 producing pyrrolnitrin has improved biocontrol activity against soilborne pathogens of wheat and canola** D. WELLER, USDA-ARS Wheat Health, Genetics and Quality Research Unit, Pullman, WA, USA

707-P **Biological control of *Agrobacterium rhizogenes* in hydroponic tomato using *Pseudomonas* strains** C. CHAGAS DE FREITAS, The Ohio State University, Wooster, OH, USA

708-P ***Botrytis cinerea* control with *Thymus vulgaris* and *Coriandrum sativum* essential oils** A. VALIUSKAITE, Lithuanian Research Centre for Agriculture and Forestry Institute of Horticulture, Babtai, Kaunas dist., LITHUANIA

709-P **What makes phenazine-producing *Pseudomonas* spp. good rhizosphere colonizers?** A. ZBORALSKI, Université de Moncton, Moncton, NB, CANADA

710-P **Biological control of plant-parasitic nematodes in carrot and wheat by the fungus *Clonostachys rosea*** M. IQBAL, Dept. Forest Mycology and Plant Pathology, Swedish University of Agricultural Sciences, Uppsala, SWEDEN

711-P **Elucidation of the mechanism of action of essential oils to control postharvest diseases of apples and peaches** D. SPADARO, DISAFA and AGROINNOVA, University of Torino, Torino, ITALY

712-P **Significant *in vitro* antagonism of the laurel wilt pathogen by endophytic fungi from avocado does not predict their ability to control the disease** R. PLOETZ, Tropical Research & Education Center, University of Florida, Homestead, FL, USA

713-P **Biological control of sugarcane red rot pathogen *Colletotrichum falcatum* by native rhizospheric bacteria** P. PATEL, C G Bhakta Institute of Biotechnology, Uka Tarsadia University, Bardoli, INDIA

714-P **Examining *MAT1-1* strain as biocontrol agent against aflatoxigenic *Aspergillus flavus* in maize** J. LUIS, North Carolina State University, Raleigh, NC, USA

715-P **Control of late blight (*Phytophthora infestans*) on tomatoes using biologicals** E. GACHANGO, AgBiome, LLC, Durham, NC, USA

716-P **Effect of seed treatment with *Bradyrhizobium japonicum* on soybean sudden death syndrome (*Fusarium virguliforme*) in irrigated and natural fields** S. NAVI, Iowa State University, Ames, IA, USA

717-P **Biological Control for Grapevine Crown Gall by Nonpathogenic *Rhizobium vitis* Strain ARK-1** A. KAWAGUCHI, Westen Region Agricultural Research Center, NARO, Fukuyama, JAPAN

718-P **Efficacy of Piperaceous plant extracts in controlling chili anthracnose** P. WIRIYAJITSOMBOON, Kasetsart University, Bangkok, THAILAND

719-P **Biological control of soybean diseases and growth promotion of soybean (*Glycine max*) by beneficial bacteria** R. CALDERON, College of Agriculture, Benguet State University, Benguet, PHILIPPINES

720-P **Rhizobacterial volatiles potentially inhibit the soil-borne fungal plant pathogen, *Rhizoctonia solani*** F. UDDIN RAJER, Sindh Agriculture University, Tandojam, PAKISTAN

721-P **A meta-analysis of endophytic colonization efficacy of *Beauveria bassiana* across the plant kingdom** S. YERUKALA, University of Tennessee, Department of Entomology and Plant Pathology, Knoxville, TN, USA

722-P **Improvement of fitness and viable cell qPCR monitoring in a biological control strain of *Lactobacillus plantarum*** A. BONATERRA, University of Girona, Girona, SPAIN

723-P **Biological efficacies of *Hyptis suaveolens* in pest management** O. OLOTUAH, Adekunle Ajasin University, Ondo State, NIGERIA

724-P **Use of *Streptomyces* spp. as biocontrol agents of wheat crown rot caused by fusaria** E. COLOMBO, DeFENS, Università degli Studi di Milano, Milano, ITALY

725-P **Biopreservation of fresh cut fruits of avocado treated with the essential oils from aerial parts of artemisia afra, incorporated in gum arabic** O. ADEOGUN, University of Fort Hare, Alice, SOUTH AFRICA

726-P **Efficacy of some plant extracts against *Colletotrichum gloeosporioides* (Penz.) the cause of anthracnose disease of yam (*Dioscorea rotundata* Poir.)** E. SOWLEY, University for Development Studies, Tamale, GHANA

727-P **Aflatoxin biological control beyond research-scale towards commercial-scale adoption** T. FALADE, International Institute of Tropical Agriculture, Ibadan, NIGERIA

728-P **Inhibition of mycelial growth of some fungi associated with diseased mango by Indigenous Bacilli** N. GORASHI, Environment, Natural Resources and Desertification Research Institute,, Khartoum, SUDAN

729-P **Contribution of native plasmids to fitness and fire blight biocontrol efficacy of *Pantoea vagans* strain C9-1** J. KLEIN, Department of Plant Pathology, University of Florida, Gainesville, FL, USA

730-P **Pursuit of Native Fungal Biocontrol Agent *Trichoderma* for Nepal and Ohio** R. KHADKA, Department of Plant Pathology, The Ohio State University, Wooster, OH, USA

731-P **Effect of Nemarioc-AL, Nemafric-BL and *Penicillium simplicissimum* on avocado root rot and mineral nutrient concentrations** N. MAMPHISWANA, University of Limpopo, Sovenga, SOUTH AFRICA

732-P **Essential oils as pepper seeds treatment for *Colletotrichum gloeosporioides* control** D. DO NASCIMENTO, São Paulo State University, Botucatu, BRAZIL

733-P **Root extracts from *Medicago truncatula* effectively inhibit rice blast (*Magnaporthe oryzae*) disease** K. HAYDON, University of Arkansas, Fayetteville, AR, USA

734-P **Botanical extracts as an alternative crop protection agent: Towards climate smart crop protection** L. MATSAUNYANE, Agricultural Research Council, Pretoria, SOUTH AFRICA

735-P **Attempts to use *Coriandrum sativum* essential oil to reduce seed pathogens** A. VALIUSKAITE, Lithuanian Research Centre for Agriculture and Forestry Institute of Horticulture, Babtai, Kaunas dist., LITHUANIA

736-P **Mechanism research of transcriptional regulator LeClp in the biosynthesis of WAP-8294A2 in *Lysobacter enzymogenes*** H. XU, Institute of Plant Protection, Jiangsu Academy of Agricultural Sciences, Nanjing, CHINA

737-P ***Ascophyllum nodosum* enhances growth and defense mechanisms in chickpea when combined with *Trichoderma asperellum*T42** A. MUKHERJEE, Banaras Hindu University, Varanasi, INDIA

738-P **Determining the antifungal activity of *Bacillus* species against *Fusarium graminearum*.** C. JIMENEZ-QUIROS, University of Worcester, Worcester, UNITED KINGDOM

739-P **Investigating the effect of a plant extract-based product and chitosan on the incidence of Fusarium head blight of wheat** M. DESHAIES, Auranta, Dublin, IRELAND

740-P **Endophytic bacteria as biocontrol agents of *Moniliophthora roreri*, a cacao (*Theobroma cacao*) pathogen** P. JIMÉNEZ, Universidad Militar Nueva Granada, Cajicá, COLOMBIA

741-P **Plant pathogen biocontrol potential of *Pseudomonas* strains isolated from Chilean wild flora.** M. VALENZUELA, Universidad Tecnica Federico Santa Maria, Valparaiso, CHILE

742-P **Induction of apoptosis in the anthracnose fungi by *Bacillus subtilis*** T. HUANG, Department of Plant Pathology, National Chung Hsing University, Taichung, TAIWAN

743-P **Biological control of charcoal rot of sorghum by plant growth-promoting actinomycetes** S. GOPALAKRISHNAN, ICRISAT, Hyderabad, INDIA

744-P **Isolate variability in *Phytophthora tentaculata* aggression and potential for biological control** T. WIDMER, USDA ARS FDWSRU, Ft. Detrick, MD, USA

745-P **Screening A Soybean Cyst Nematode Mycobiome for Potential Natural Antagonists in Search of Biological Control Agents and Biopesticides** D. RAJENDRAN, Plant Pathology, University of Minnesota, St Paul, MN, USA

746-P **Influence of applying microbial agents on the quality of sweet pepper** Y. LIANG, Department of Plant Pathology, National Chung Hsing University, Taichung, TAIWAN

747-P **A non-pathogenic *Fusarium oxysporum* W5 effectively controls "Bakanae" disease by competing with the pathogen on rice flowers and seedlings** H. SAITO, Tokyo Univ Agric & Tech(TUAT), Fuchu, Tokyo, JAPAN

748-P ***Burkholderia gladioli* can inhibit *Burkholderia glumae* in rice seedlings affected with bacterial panicle blight** J. CEVALLOS-CEVALLOS, Escuela Superior Politecnica del Litoral, ESPOL, Guayaquil, ECUADOR

749-P **The biocontrol of black rot disease of okro caused by *Macrophomina phaseolina* in Nigeria** D. OLUFOLAJI, Federal Univ of Technology, Akure, NIGERIA

750-P **Diversities of gut endosymbionts in Cowpea beetle on resistant and susceptible cowpea varieties** O. ALABI, University of Ibadan, Ibadan, NIGERIA

751-P **Elucidation of the mechanisms employed by *Bacillus mycoides* BM02 in controlling tomato Fusarium wilt** J. WU, Ph.D. Program in Microbial Genomics, National Chung Hsing University and Academia Sinica, Taichung, TAIWAN

752-P **Characterization of the effect of HSAF from *Lysobacter enzymogenes* on *Fusarium graminearum*** Y. ZHAO, Institute of Plant Protection, Jiangsu Academy of Agricultural Sciences, Nanjing, CHINA

754-P **Management of brown blight in tea caused by *Colletotricum gloeosporioides* by crude and purified leaf extract of *Xanthium strumarium*** D. SAHA, University of North Bengal, Siliguri, INDIA

755-P ***Bacillus* strains in the control of bacterial wilt in tomato** D. SARAVANAKUMAR, University of the West Indies, St. Augustine, Trinidad, TRINIDAD AND TOBAGO

756-P **Biological management of collar, stem and root rot disease complex and white grubs using *Trichoderma harzianum* and *Metarhizium anisopliae* in groundnut** P. SHARMA, Sri Karan Narendra Agriculture University (SKNAU), Durgapura, Jaipur, INDIA

757-P **Development of a botanical plant protection product from Larix by-products to protect grapevine from *Plasmopara viticola*** L. TAMM, Research Institute of Organic Agriculture FiBL, Frick, SWITZERLAND

758-P **Commercial Production of Hyper-active Isolates of *Trichoderma harzianum* against *Fusarium oxysporum*** A. HANNAN, Ghazi University, D G KHAN, PAKISTAN

759-P **Biological control of powdery mildew on cucurbits** K. MCCORKLE, AgBiome, Inc., Durham, NC, USA

760-P **Evaluation of *Bacillus* and *Pseudomonas* strains for bio-control activities on sheath blight and bacterial panicle blight of rice** A. MAHARJAN, Louisiana State University Agricultural Center, Baton Rouge, LA, USA

762-P **Agro-based and antioxidant crop substrates for enhancing shelf-life of Trichodema spp. possessing antagonism against wilt and stem rot of carnation** S. CHANDEL, Dr YSP University of Horticulture and Forestry, Nauni, Solan (Himachal Pradesh), INDIA

763-P **Understanding the interaction between biocontrol agent *Lysobacter enzymogenes* and soybean fungal/oomycetes pathogens** M. YU, UNIVERSITY OF ILLINOIS, Urbana, IL, USA

Chemical Control

764-P **Evaluation of concentrations of mancob m for the control of cercospora spot *(Cercospora sesami* Zimm*)* on some sesame varieties in Yola, Nigeria** A. SHADRACH, Federal College of Education Yola, Yola, NIGERIA

765-P **Augmentation of in-furrow applied insecticides with a superabsorbent polymer to improve management of spotted wilt of peanut** J. HAYNES, Clemson University, Blackville, SC, USA

766-P **Etiology and management of Septoria leaf spot on stevia** A. KOEHLER, North Carolina State University, Raleigh, NC, USA

767-P **The application of 8-hydroxyquinoline and its copper complex as seed treatment to seeds of corn and cucumber** D. YANG, Institute of Plant Protection, Chinese Academy of Agricultural Science, Beijing, CHINA

768-P **Biopriming - as a component of Integrated Disease Management Strategy for the eco-friendly management of Pod Blight Complex of Soybean in India** L. RAO, University of Agricultural Sciences,Dharwad, Dharwad, INDIA

769-P **Effect of Seed Treatments on Sudden Death Syndrome and Yield of Soybean** Y. KANDEL, Iowa State University, Ames, IA, USA

770-P **Rhizome rot of ginger a major threat in ginger production in Jammu region,India** S. AHAMAD, Sher-e-Kashmir University of Agricultural Sciences and Technology-Jammu, J.&K., India, Jammu, INDIA

771-P **Evaluation of fungicides and application timings for management of sorghum anthracnose in the mid-Atlantic region of the U.S.** B. ACHARYA, Virginia Tech, Suffolk, VA, USA

772-P **Dynamics of fungicide sensitivity in *Venturia effusa* and fungicide efficacy under field conditions.** J. STANDISH, University of Georgia, Tifton, GA, USA

773-P **Resistance inductors for potato late blight management in Peru** K. SANABRIA, International Potato Center, Lima, PERU

774-P **A novel alternative to copper bactericide: Magnesium based nanomaterials for management of tomato bacterial spot** Y. LIAO, University of Florida, Department of Plant Pathology, Gainesville, FL, USA

775-P **Fungicide efficacy for control of foliar and fruit diseases on pomegranate in Florida** K. XAVIER, Gulf Coast Research and Education Center; University of Florida, Wimauma, FL, USA

776-P **Evaluation of copper alternatives and enhancers for managing almond bacterial spot caused by *Xanthomonas arboricola* pv. *pruni* in California** S. HAACK, Department of Plant Pathology and Microbiology, University of California, Riverside, CA, USA

777-P **Chemical treatments inhibiting germination of wheat rust, clover anthracnose, canola blackleg and rice blast spores** P. BARUA, The University of Western Australia, School of Agriculture and Environment, Perth, AUSTRALIA

778-P **Characterisation and management of *Rhizoctonia* associated with sunflower seedlings in South Africa** S. LAMPRECHT, Agricultural Research Council-Plant Health and Protection, Stellenbosch, SOUTH AFRICA

779-P **Effect of post-application irrigation and the usage of soil surfactants on fungicide movement and efficacy** W. HUTCHENS, North Carolina State University, Raleigh, NC, USA

780-P **Agronomic and economic evaluation of fungicide seed treatments for soybean production in the Mid-Atlantic United States** A. KNESS, University of Maryland Extension, Forest Hill, MD, USA

781-P ***Pseudoperonospora cubensis* populations infecting wild and commercial cucurbit hosts display host-specific sensitivity to fungicides** K. D'ARCANGELO, North Carolina State University Department of Entomology and Plant Pathology, Raleigh, NC, USA

782-P ***Xylella fastidiosa* virulence *in planta* with copper supplementation** Q. GE, Auburn University, Auburn, AL, USA

783-P **Refinement of peach cover spray programs for sustainable management of brown rot** N. LALANCETTE, Rutgers University, Bridgeton, NJ, USA

784-P **The effect of plant resistance inducing products on fire blight (*Erwinia amylovora*) infection and severity on apple** B. LEHMAN, Penn State Fruit Research and Extension Center, Biglerville, PA, USA

785-P **Zinc nanoparticles for potential control of Huanglongbing on citrus** M. MURATA, University of Florida, Lake Alfred, FL, USA

786-P **Management of bitter rot of apple under optimal conditions for disease development in Georgia orchards** P. BRANNEN, University of Georgia, Athens, GA, USA

787-P **Control of Citrus Huanglongbing (HLB) via Trunk Injection of Plant Activators and Antibiotics** J. HU, School of Plant Sciences, University of Arizona, Tucson, AZ, USA

788-P **Efficacy of various physiochemical seed treatments for controlling poppy downy mildew in *Papaver* seed lots** T. THANGAVEL, University of Tasmania, Newtown, Hobart, AUSTRALIA

789-P **Identification, assessment and delivery of antimicrobial compounds for the management of citrus HLB** Y. DUAN, U.S. Horticultural Research Laboratory, USDA-ARS, Fort Pierce, FL, USA

791-P **Control of Huanglongbing through penicillin G trunk injection** X. SUN, Division of Plant Industry, Florida Department of Agriculture and Consumer Services (FDACS), Gainesville, FL, USA

792-P **Fungicide efficacy trials for the management of maize white spot in Paraná, Brazil** A. CUSTODIO, Instituto Agronômico do Paraná, Londrina, BRAZIL

793-P **TRIVAPRO® fungicide controlled rust and leafspot diseases and increased yield in corn.** T. HARP, Syngenta Crop Protection, Greensboro, NC, USA

794-P **Evaluation of the Postharvest Treatments to Control Green and blue Molds of Citrus Fruit** M. EL GUILLI, National Institute of Agricultural Research, Kenitra, MOROCCO

795-P **High levels of resistance to phosphonate fungicides in the hop downy mildew pathogen, *Pseudoperonospora humuli*** D. GENT, US Department of Agriculture, Agricultural Research Service, Corvallis, OR, USA

796-P **Mefentrifluconazole - a broad spectrum fungicide for use in turfgrass and ornamentals.** R. KEESE, BASF, Res Triangle Park, NC, USA

797-P **Mefentrifluconazole - A new broad-spectrum fungicide for use on row and specialty crops.** S. WALKER, BASF Corp, Res Triangle Park, NC, USA

798-P **Potency of difenoconazole against nine postharvest pathogens of pome fruit** A. AMIRI, Washington State University, Wenatchee, WA, USA

799-P **Adepidyn® a new fungicide for Fusarium Head Blight and foliar disease control in wheat** N. GLYNN, Syngenta, Vero Beach, FL, USA

800-P **Evaluation of novel Zinc-based antimicrobial formulations to control growth and biofilm formation of *Xanthomonas citri* and *Liberibacter crescens*.** H. MENDIS, Auburn University, Auburn, AL, USA

801-P **Adepidyn®, a new fungicide for the control of gummy stem blight in conventional cucurbit production** C. COLLAZO-GONZALEZ, Syngenta Crop Protection, Vero Beach, FL, USA

802-P **Effects of pyriofenone on the infection of wheat plants by *Blumeria graminis* f. sp. *tritici*** S. MITANI, Ishihara Sangyo Kaisha, Ltd., Kusatsu, JAPAN

803-P **Evaluation of fungicide timing for management of Phoma black stem of sunflowers** M. GILLEY, North Dakota State University, Fargo, ND, USA

804-P **Sensitivity to DMI, SDHI and phenylpyrrole fungicides of *Helminthosporium solani* causing silver scurf on potato in the US** N. ROSENZWEIG, Michigan State University, East Lansing, MI, USA

805-P **Miravis®: A new fungicide for control of Fusarium wilt in cucurbits** J. RAPICAVOLI, Syngenta Crop Protection, Rancho Mission Viejo, CA, USA

806-P **Secondary effects of pyriofenone against several important plant pathogens** Y. ABE, Ishihara Sangyo Kaisha, Ltd., Kusatsu, JAPAN

807-P **The use of prohexadione calcium and a systemic acquired resistance inducer to manage fire blight without antibiotics** A. WALLIS, PPPMB Cornell University, Plattsburgh, NY, USA

808-P **Effective supplementation of silicon by root against stem canker of pitaya (*Hylocereus polyrhizus*).** S. MOHAMED SIDIQUE, Universiti Malaysia Terengganu, Kuala Terengganu, MALAYSIA

809-P **Fungicide sensitivity of the Indian sub-clonal variants of the *Phytophthora infestans* 13_A2 lineage** S. GUHA ROY, West Bengal State University, Kolkata, INDIA

810-P **Use of fungicides to enhance grain yield and reduce disease levels in cultivated wild rice** D. SAMAC, USDA-ARS, St Paul, MN, USA

811-P **Evaluation of fungicides for control of *Ceratocystis fimbriata* and *Rhizopus stolonifer* on sweetpotato** H. COLLINS, North Carolina State University, Raleigh, NC, USA

812-P **Evaluation of nematicide seed treatments for control of root knot nematode (RKN) and soybean cyst nematode (SCN) in soybean in the mid-Atlantic U.S.** S. AHMED, Virginia Tech Tidewater AREC, Suffolk, VA, USA

813-P **Comparing protection afforded by different organic alternatives to conventional fungicides for reducing scab on pecan** C. BOCK, USDA ARS, Southeastern Fruit and Tree Nut Research Laboratory, Byron, GA, USA

814-P **Efficacy of Bordeaux mixture to control pecan scab in large-plot experiments** M. HOTCHKISS, USDA ARS, Byron, GA, USA

815-P **Adepidyn fungicide: Baseline sensitivity and cross resistance patterns in *Alternaria alternata* from almonds.** G. OLAYA, Syngenta Crop Protection, Vero Beach, FL, USA

816-P **Efficacy of fluopyram seed treatment in management against *Fusarium brasiliense*, a new dry bean root rot pathogen in Michigan** K. OUDMAN, Michigan State University, East Lansing, MI, USA

817-P **Sensitivity to eight fungicide chemical groups of *Colletotrichum fioriniae,* the cause of anthracnose of pistachio in California** P. LICHTEMBERG, University of California - Davis, Parlier, CA, USA

818-P **Development of organic pea seed treatments with efficacy against Pythium seed rot** L. PORTER, USDA-ARS, Prosser, WA, USA

819-P **Enhancing the constitutive resistance in *Capsicum annuum* L. fruits against anthracnose development** N. ADIKARAM, National Institute of Fundamental Studies, Kandy, SRI LANKA

820-P **Assessing the Curative and Residual Control of Wheat Powdery Mildew with Fungicides** N. KLECZEWSKI, University of Illinois, Urbana, IL, USA

821-P **Investigating fluopyram as a seed treatment against soybean cyst nematode in the presence of *F. virguliforme*** M. ROTH, Michigan State University, East Lansing, MI, USA

822-P **Picarbutrazox sensitivity of different *Pythium* species.** G. OLAYA, Syngenta Crop Protection, Vero Beach, FL, USA

823-P **N-acetylcysteine: a new alternative to control citrus canker** S. PICCHI, Centro de Citricultura Sylvio Moreira" - Agronomic Institute (IAC), Cordeiropolis, BRAZIL

824-P **Seed treatment versus in-furrow fungicide effects on plant stand establishment and control of Rhizoctonia crown and root rot in sugar beet** J. BRANTNER, University of Minnesota, Crookston, MN, USA

825-P **Picarbutrazox: A novel compound for the control of seedling damping-off caused by *Pythium* spp.** F. BRANDL, Syngenta Crop Protection, Basel, SWITZERLAND

826-P **Field efficacy of systemic acquired resistance inducers for fire blight management and pathogenesis-related protein gene expression in *Malus domestica*** R. KREIS, North Carolina State University, Mills River, NC, USA

827-P **Zinc nanoparticles mitigate some fruit symptoms of Huanglongbing on citrus** E. JOHNSON, University of Florida, Lake Alfred, FL, USA

828-P **A Quantitative Synthesis of the Efficacy and Profitability of Conventional and Biological Fungicides for Botrytis Fruit Rot Management on Strawberry** L. CORDOVA, University of Florida, Wimauma, FL, USA

829-P **Effect of a foliar fungicide applied at flowering on corn standability at harvest** A. ROBERTSON, Iowa State University, Department of Plant Pathology, Ames, IA, USA

830-P **Sensitivity of *Septoria glycines* isolates to quinone outside inhibitor (QoI) fungicides** D. NEVES, University of Kentucky, Princeton, KY, USA

831-P **Evaluation of fungicides for management of rust on oil seed and confection sunflower hybrids** B. BERGHUIS, North Dakota State University, Fargo, ND, USA

832-P **Novel Copper-Composites for Management of Bacterial Spot of Pepper Caused by *Xanthomonas euvesicatoria*** Q. FAN, University of florida, Quincy, FL, USA

833-P **A case study of misapplication of the fungicide flutriafol to grapevines in Texas** D. APPEL, Department of Plant Pathology and Microbiology, Texas A&M University, College Station, TX, USA

834-P **Evaluation of fungicide seed treatments for their efficacy in controlling blackleg of canola** L. DEL RIO MENDOZA, North Dakota State Univ, Fargo, ND, USA

835-P **Performance of cotton seed treatments under different planting dates and seeding rates** S. YOUNG, Texas Tech University, Lubbock, TX, USA

836-P **Effect of fungicide and nematicide seed treatments alone and in combination on cotton stand and yield** J. WOODWARD, Texas A&M AgriLife Extension Service, Lubbock, TX, USA

837-P **White mold incidence, severity and lima bean yield response to fungicide application timing in the Mid-Atlantic Region** H. DEMISSIE, PhD Student at the University of Maryland, College Park, MD, USA

838-P **Fungicide strategies to manage wheat stem rust** S. PEREYRA, National Institute for Agricultural Research (INIA), Colonia, URUGUAY

839-P **Effect of paclobutrazol on laurel wilt on redbay (*Persea borbonia*) and the laurel wilt pathogen, *Raffaelea lauricola*** S. ADAMS, The University of Florida & The Morton Arboretum, Gainesville, FL, USA

840-P **Genetic diversity and phylogeny of Fusarium species associated with panama disease of banana in Jordan** N. SALEM, The University of Jordan, Amman, JORDAN

Cultural Control

841-P **Solarization effects on the soil microbiome at an organic vegetable farm in the Pacific Northwest (USA)** J. PARKE, Oregon State University, Corvallis, OR, USA

842-P **Anaerobic soil disinfestation enhances endemic soil populations of *Trichoderma*** U. SHRESTHA, University of Tennessee, Plant Sciences, Knoxville, TN, USA

843-P **Effects of anaerobic soil disinfestation on *Sclerotinia sclerotiorum* and *Sclerotinia minor* in Ohio muck soil** A. SANABRIA, The Ohio State University, Wooster, OH, USA

844-P **Efficacy of biochar in the management of anthracnose disease of pepper** A. ADURAMIGBA-MODUPE, University of Ibadan, Ibadan, NIGERIA

845-P **Carbon amendments alter nutrient use and pathogen-suppressive potential of soil *Streptomyces*** J. DUNDORE-ARIAS, Department of Plant Pathology/ University of Minnesota, St Paul, MN, USA

846-P **Effect of sowing dates on severity of Stemphylium blight disease and yield of lentil** L. ARYAL, Grain Legume Research Program, Nepal Agricultural Research Council, Nepalgunj, NEPAL

847-P **Effect of Active Flower, a nutrient spray containing boron, on disease suppression in cucumber (*Cucumis sativus L.*) and canola (*Brassica napus L.)*** L. NI, Simon Fraser University, Burnaby, BC, CANADA

848-P **Synergism between food additives and heat to reduce postharvest sour rot of oranges** L. PALOU, IVIA, Postharvest Technology Center, Montcada, Valencia, SPAIN

849-P **Grafted processing tomato for the management of southern blight in California** N. SOLARES, University of California at Riverside, Riverside, CA, USA

850-P **Impact of heat and soil moisture stress on chickpea plant infection with fungal pathogens** M. SHARMA, ICRISAT, Patancheru, Telangana, INDIA

851-P **Efficacy of anaerobic soil disinfestation on the germination of sclerotia of *Sclerotinia sclerotiorum*** R. ATTANAYAKE, University of Kelaniya, Dalugama, SRI LANKA

852-P **Microwave radiation reduces survival of *Fusarium pseudograminearum* in infected durum wheat stubble** T. PETRONAITIS, Department of Primary Industries (DPI), Tamworth, AUSTRALIA

854-P **New technology for controlling strawberry diseases and arthropods** W. JANISIEWICZ, USDA-ARS AFRS, Kearneysville, WV, USA

855-P **Control of stem-end rot disease in mango fruit cultivar 'Karuthacolomban' using non-agrochemical methods** N. ADIKARAM, National Institute of Fundamental Studies, Kandy, SRI LANKA

856-P **Suppression of wheat powdery mildew (*Blumeria graminis* f. sp. *tritici*) by nighttime exposure to UV-B radiation** L. GRANKE, Dow AgroSciences, Indianapolis, IN, USA

857-P **Long-term effects of potato cropping system strategies on soilborne diseases and soil microbial communities** R. LARKIN, USDA-ARS, New England Plant, Soil, & Water Lab, Orono, ME, USA

858-P **ZnO nanoparticles for postharvest strawberry grey mould control** N. RASIUKEVICIUTE, Lithuanian Research Centre for Agriculture and Forestry Institute of Horticulture, Babtai, Kaunas dist., LITHUANIA

859-P **Meta-analysis of chlorine usage as a disinfestant in plant production** W. COPES, USDA ARS, Poplarville, MS, USA

860-P **Alternative control of *Macrophomina phaseolina* in soybean through the use of ozone** M. BRACALE, Universidade Estadual de Londrina, Londrina, Paraná, BRAZIL

861-P **Role of volatile fatty acids in suppression of *Sclerotium rolfsii* during anaerobic soil disinfestation** K. SWILLING, University of Tennessee, Plant Sciences, Knoxville, TN, USA

862-P **The deposition of silicon linked to the reduction in susceptibility to strawberry powdery mildew** C. ASIANA, University of Hertfordshire, Hatfield, Herts, UNITED KINGDOM

863-P **Selection of reference genes to develop an RNA-based viability assay in response to thermotherapy.** N. THAPA, University of Florida, Lake Alfred, FL, USA

864-P **Effect of crop rotation and tillage on Rhizoctonia root and crown rot and *Rhizoctonia solani* AG 2-2 soil populations** A. KALIL, North Dakota State University, Williston Research Extension Center, Williston, ND, USA

865-P **Fungal pathogens associated with maize crown and root rot under maize/legume intercropping system in the Limpopo province, South Africa** M. KENA, University of Limpopo, SOVENGA, SOUTH AFRICA

866-P **Using nanoparticles of metalloids and metallic oxides in plant disease suppression** W. ELMER, Connecticut Agric Exp Station, New Haven, CT, USA

867-P **Design, Operation, and Efficacy of an Apparatus Using Ultraviolet Light to Suppress Powdery Mildew of Strawberry in Open Field Production Systems** R. BORBA ONOFRE, University of Florida - Gulf Coast Research and Education Center, Wimauma, FL, USA

Genetics of Resistance

868-P **Novel sources of resistance to septoria nodorum blotch in the Vavilov wheat collection identified by GWAS** H. PHAN, Curtin University, Perth, AUSTRALIA

869-P **Virulence of *Puccinia triticina* and detection of leaf rust resistance genes in different Egyptian wheat genotypes** A. ABDELRHIM, Minia University, El Minia, EGYPT

870-P **Systematic phenotyping, comparative transcriptomics and functional validation of genes implicated in apple root resistance traits** Y. ZHU, USDA ARS, Wenatchee, WA, USA

871-P **Two major and five minor QTL confer adult plant resistance to stripe rust in winter wheat cultivar Skiles** L. LIU, Washington State University, Pullman, WA, USA

872-P **High-density Mapping of an Adult-plant Stripe Rust Resistance Gene *Yrbai* in Wheat Landrace Baidatou Using the Whole Genome DArT-seq and SNP Analysis** Q. LI, College of Plant Protection, Northwest A&F University, Yangling, Shaanxi, CHINA

873-P **Identification and functional validation of white rust resistance gene in *Brassica juncea*** H. ARORA, University of Delhi, New Delhi, INDIA

874-P **A quantitative PCR method for determining relative infection rates of maize callus by *Fusarium graminearum* in screening for fungal resistance genes** E. JOHNSON, USDA/ARS/NCAUR, Peoria, IL, USA

875-P **Durable resistance against wheat leaf spot group pathogens** B. CORSI, National Institute Agriculture Botany, Cambridge, UNITED KINGDOM

876-P **Exploring the resistance of an interspecific almond × peach population to *Monilinia* spp.** R. TORRES, IRTA, XaRTA-Postharvest, Edifici Fruitcentre, Lleida, Catalonia, SPAIN

877-P **Characterization of *Malus* Germplasm to Identify Novel Alleles Conferring Resistance to Apple Scab (*Venturia inaequalis*).** D. STRICKLAND, Cornell University, Geneva, NY, USA

878-P **Genome-wide mapping of genes controlling resistance to bakanae disease in rice** S. CHEN, Department of Plant Pathology and Microbiology, National Taiwan University, Taipei City, TAIWAN

879-P **Bulked segregant analysis with whole-genome resequencing to map QTL involved in Phytophthora crown and root rot resistance in *Cucurbita pepo*** G. VOGEL, Plant Breeding and Genetics Section, Cornell University, Ithaca, NY, USA

880-P **Characterizing the adaptation of *Phytophthora nicotianae* to partial resistance in tobacco** J. JIN, North Carolina State University, Raleigh, NC, USA

881-P **A new gene for resistance to *Triticum* isolates of *Pyricularia oryzae* stacked with *Rmg8* in a local landrace of common wheat** W. SHIZHEN, kobe university, kobe, JAPAN

882-P **The genomic RNAs of *Tomato spotted wilt orthotospovirus* are differentially targeted in infected tomato (*Solanum lycopersicum*) with or without *Sw5* gene** C. OLAYA, Department of Plant Pathology, Washington State University, Pullman, WA, USA

883-P **Leveraging Natural Variation to Identify New Sources of Resistance to *Pseudomonas syringae* pv. *tomato*** R. ROBERTS, Boyce Thompson Institute, Ithaca, NY, USA

884-P **Mapping quantitative trait loci (QTLs) controlling adult plant resistance in oat against *Puccinia coronata* f. sp. *avenae*** E. NAZARENO, Department of Plant Pathology, University of Minnesota, St. Paul, MN, USA

885-P **Multiline breeding and functional analysis of genes for resistance against *Magnaporthe oryzae* in rice** Y. CHEN, Department of Plant Pathology and Microbiology, National Taiwan University, Taipei City, TAIWAN

886-P **Understanding major gene-mediated resistance in *Brassica napus* (oilseed rape) against the apoplastic fungal pathogen, *Pyrenopeziza brassicae*** C. KARANDENI-DEWAGE, University of Hertfordshire, Hatfield, UNITED KINGDOM

887-P **Prediction and screening of candidate resistance genes of *Ocimum basilicum* in response to the basil downy mildew pathogen *Peronospora belbahrii*** K. ALLEN, Plant Biology Graduate Program, University of Massachusetts Amherst, Amherst, MA, USA

888-P **Novel sources of disease resistance in pepper against bacterial spot xanthomonads** N. POTNIS, Department of Entomology and Plant Pathology, Auburn University, Auburn, AL, USA

889-P **Reduced stomatal density in wheat and its potential for improving control of foliar pathogens** J. THOMAS, National Institute of Agricultural Botany, Cambridge, UNITED KINGDOM

890-P **Andean landrace G19833 of comon bean is broadly resistant to the common bean rust pathogen** M. PASTOR-CORRALES, Soybean Genomics & Improvement Lab, BARC-West, ARS-USDA, Beltsville, MD, USA

891-P **Molecular Characterization of Race 1 Bacterial Speck Resistance in a Wild Relative of Tomato** C. MAZO, School of Integrated Plant Science, Cornell University, Ithaca, NY, USA

892-P **Characterization of resistance to Sclerotinia, and its association with plant architecture and composition in lettuce** B. MAMO, University of California at Davis, c/o U.S. Agricultural Research Station, Salinas, CA, USA

893-P **A PCR assay for *Verticillium dahliae* race 1 resistance in lettuce based on genome sequencing of 60 resistant or susceptible cultivars** P. INDERBITZIN, University of California at Davis, Department of Plant Pathology, Davis, CA, USA

894-P **From plate to paddock: taking Fusarium crown rot resistance from the lab into the field** J. POWELL, CSIRO, St Lucia, AUSTRALIA

895-P **Genetic control of crown rot of wheat: applying genetic studies to breeding programs** P. DAVIES, University of Sydney, Narrabri, AUSTRALIA

896-P **Cell wall polysaccharide architecture and its potential impacts on grapevine susceptibility to Pierce's disease** Q. SUN, University of Wisconsin-Stevens Point, Stevens Point, WI, USA

897-P **Comparison of Quantitative Disease Resistance Loci in Soybean Towards Soil Borne Root Pathogens** A. DORRANCE, The Ohio State University, Dept. of Plant Pathology, Wooster, OH, USA

898-P **Forward genetic analysis defines candidate genes for fusiform rust resistance in loblolly pine and avirulence in *Cronartium quercuum* f.sp. *fusiforme*** D. ENCE, University of Florida, IFAS, Gainesville, FL, USA

899-P **First report of non-2NS resistance to wheat head blast** G. CRUPPE, Kansas State University, Manhattan, KS, USA

900-P **Broad-spectrum resistance and susceptibility to bacterial blight and bacterial leaf streak of rice** A. BOSSA-CASTRO, Colorado State University, Fort Collins, CO, USA

901-P **Genome-wide association mapping of resistance to *Fusarium proliferatum* in soybean** P. OKELLO, South Dakota State University, Brookings, SD, USA

902-P **Dissecting interactions of rice major and minor blast resistance genes with yield related components** Y. JIA, USDA ARS, Dale Bumpers National Rice Research Center, Stuttgart, AR, USA

903-P **Identification of QTLs associated with horizontal resistance in soybean against *Phytophthora sojae* with an efficient hydroponic system** M. DE RONNE, Université Laval, Quebec, QC, CANADA

904-P **Characterization of resistance to *Ustilago maydis* from teosinte and two maize-teosinte introgression lines** U. BHATTA, The University of Georgia, Athens, GA, USA

905-P **Broad resistance to U.S. powdery mildew isolates in newly developed watermelon germplasm lines** C. KOUSIK, U.S. Vegetable Laboratory, USDA, ARS, Charleston, SC, USA

906-P **Lectin genes in canola (*Brassica napus*) confer resistance to *Sclerotinia sclerotiorum*** L. BUCHWALDT, Agriculture and Agri-Food Canada, Saskatoon, SK, CANADA

907-P **Epigenetic regulation of *Rhg1*, a soybean cyst nematode resistance locus.** R. ZAPOTOCNY, University of Wisconsin-Madison, Department of Plant Pathology, Madison, WI, USA

908-P **Early origin and a new allele of *Rhg1*, an important locus for soybean cyst nematode resistance** D. GRUNWALD, University of Wisconsin-Madison, Department of Plant Pathology, Madison, WI, USA

909-P **Dissecting black spot resistance in polyploid hybrid roses** J. ZURN, USDA-ARS National Clonal Germplasm Repository, Corvallis, OR, USA

910-P **Molecular mapping of loci conferring resistance to spot blotch and powdery mildew in barley using the genotyping by sequencing approach** Y. LENG, North Dakota State University, Fargo, ND, USA

911-P **Genetic analysis of a source of Fusarium wilt resistance in banana from *Musa acuminata* ssp. *malaccensis*** E. AITKEN, School of Agriculture and Food Sciences, The University of Queensland, Brisbane, AUSTRALIA

912-P **Genetics and Genomics applied to Sclerotinia head rot resistance breeding in sunflower** C. FILIPPI, Consejo Nacional de Investigaciones Científicas y Técnicas, Capital Federal, ARGENTINA

913-P **Characterization of a bacterial leaf streak of rice resistance locus aided by nanopore sequencing** A. READ, Cornell University, Ithaca, NY, USA

914-P **Discovery and characterization of disease resistance loci using a unique gene copy number variant population** H. BASTIAANSE, USDA Forest Service, Davis, CA, USA

Integrated Pest Management

915-P **Integrating Host Resistance and Organic Amendments in a Non-chemical Approach to Managing Macrophomina Crown Rot in Strawberries** J. WINSLOW, Strawberry Center, California Polytechnic State University, San Luis Obispo, CA, USA

916-P **Silverleaf disease management on blueberry** A. FRANCE, INIA Quilamapu, Chillan, CHILE

917-P **Effect of Cultural Practices in Controlling Southern Blight of Potato in the Mid-Atlantic Region.** J. GARCIA GONZALEZ, Virginia Tech - Eastern Shore AREC, Painter, VA, USA

918-P **Management of leaf blight and stalk rot diseases in biomass sorghum (*Sorghum bicolor*) grown in the U.S. Mid-Atlantic** C. AGUILAR, Virginia Tech Tidewater Agricultural Research and Extension Center, Suffolk, VA, USA

920-P **Effect of chemical, biological fungicides and resistance inducers for the management of blackberry wilt caused by *Fusarium oxysporum*** A. REBOLLAR-ALVITER, Univ Autonoma Chapingo, Morelia, Michoacan, MEXICO

921-P **Understanding the ecology of blueberry rust to improve management in evergreen blueberry production in Australia** R. DANIEL, NSW Department of Primary Industries, Ourimbah, AUSTRALIA

922-P **Microbial diversity and disease suppression in turfgrass landscapes under intensive management** M. MILLICAN, University of Wisconsin, Madison, WI, USA

923-P **Ignored fungal pathogen sibling – *Leptosphaeria biglobosa*** Y. HUANG, University of Hertfordshire, Hatfield, UNITED KINGDOM

924-P **Integrated management of clubroot-crucial for sustainable oilseed rape production** A. WALLENHAMMAR, Rural Economy and Agricultural Sociery (REAS), Örebro, SWEDEN

925-P **Multi-dimensional control approach against *Marssonina coronaria* in apple** L. TAMM, Research Institute of Organic Agriculture FiBL, Frick, SWITZERLAND

926-P **Evaluation of chemical soil treatment and cultivar on the incidence of powdery scab and *Potato mop-top virus* in potato** A. FULLADOLSA, Colorado State University, Fort Collins, CO, USA

927-P **Variability of *Colletotrichum truncatum* through morphological & molecular approaches and management of pod blight complex of soybean in India** S. JAHAGIRDAR, Univ of Agricultural Sciences Dharwad, Dharwad, AK, INDIA

928-P **Disease control in variety mixtures is not directly linked with yield benefit.** A. NEWTON, James Hutton Institute, Dundee, UNITED KINGDOM

929-P **An integrated approach to controlling white grubs in forestry** B. SIVPARSAD, Institute for Commercial Forestry Research, Pietermaritzburg, SOUTH AFRICA

930-P **Evaluating management of stripe rust in North Dakota with foliar applied fungicides and host resistance** B. HALLEY, North Dakota State University, Fargo, ND, USA

931-P **Citrus decline a fast spreading disease of *Citrus reticulate* in South East Asia a quick diagnosis and management technique** P. RAJA, College of Horticulture and Forestry, Pasighat, INDIA

932-P **The biology and etiology of *Syzygites megalocarpus*, an emerging pathogen of the button mushroom *Agaricus bisporus*** J. DE SOTO, Pennsylvania State University, University Park, PA, USA

934-P **Modifying row cover systems to manage bacterial wilt in organic muskmelon in Iowa, USA** M. GLEASON, Iowa State University, Ames, IA, USA

935-P **Efficacy of organic treatments for managing tomato foliar and soilborne diseases in WV** R. MAHFUZ, West Virginia University, Morgantown, WV, USA

936-P **Integrated Fusarium head blight management under irrigation in spring wheat in Idaho** J. MARSHALL, University of Idaho, Idaho Falls, ID, USA

937-P **Effect of cultivar on biocontrol efficacy of *Pythium* in hydroponic tomato system** L. DEGENRING, University of New Hampshire, Durham, NH, USA

938-P **Southern blight epidemic: What management options are available to smallholder Common bean farmers in Uganda?** P. PAPARU, National Agricultural Research Organization -National Crops Resources Research Institute, P.O.Box 7084, UGANDA

939-P **Managing small patches of field infestation of *Plasmodiophora brassicae* (clubroot)** M. MCDONALD, University of Guelph, Guelph, ON, CANADA

940-P **Successful Control Cases of Bacterial Canker of Kiwifruit in Korea** Y. KOH, Sunchon National University, Suncheon, KOREA

941-P **Integrated management of Rhizoctonia in sugar beet: resistant varieties, seed treatments and postemergence fungicides** A. CHANDA, Department of Plant Pathology, University of Minnesota, Crookston, MN, USA

942-P **Agro-economic assessment of the improvements on the management of Fusarium head blight of wheat** R. XIA, University of Guelph, Ridgetown Campus, Ridgetown, ON, CANADA

943-P **The effect of cultivar, fungicide program, and light exposure on basil downy mildew under field conditions** J. POLLOK, Virginia Tech - Eastern Shore AREC, Painter, VA, USA

944-P **Sustainable control of Strawberry Powdery Mildew** A. HALL, University of Hertfordshire, Hatfield, Herts, UNITED KINGDOM

945-P **Site-specific management of spring dead spot of bermudagrass (*Cynodon* spp.)** J. BOOTH, Virginia Tech, Moseley, VA, USA

946-P **Risks associated with use of single drop potato tubers versus cut seed potato pieces for propagation** K. DUELLLMAN, University of Idaho, Idaho Falls, ID, USA

947-P **IPM in soybean – investigations in pairing cultivars, fungicides, and application timings to maximize disease control and yield** H. KELLY, University of Tennessee, Jackson, TN, USA

948-P **Fungicide application interval and hybrid tolerance for management of downy mildew (*Pseudoperonospora cubensis*) in pickling cucumber** C. TRUEMAN, University of Guelph, Ridgetown, ON, CANADA

Mycology

949-P **Characterization of *MAT1-2-7*: a novel *MAT* gene in the wood-infecting fungus *Huntiella omanensis*** A. WILSON, FABI, University of Pretoria, Pretoria, SOUTH AFRICA

950-P **Satellite uredinia: an important trait related to *Phakopsora* aggressiveness** I. PRIMIANO, University of Sao Paulo, Piracicaba, BRAZIL

951-P **Evidence for post-mating species barriers in *Ceratocystis*** M. WILKEN, Forestry and Agricultural Biotechnology Institute (FABI), University of Pretoria, Pretoria, SOUTH AFRICA

952-P **Mating strategies in the Ceratocystidaceae that includes pathogens of trees and agronomic crop plants** M. WILKEN, Forestry and Agricultural Biotechnology Institute (FABI), University of Pretoria, Pretoria, SOUTH AFRICA

953-P **Status on occurrence, sources of resistance and variability among Karnal bunt and *Fusarium* head blight pathogens of wheat in India** M. SAHARAN, ICAR-IARI, New Delhi, New Delhi, INDIA

954-P ***Apiosphaeria guaranitica* an important forest pathogen in Central Brazil: taxonomy and phylogeny.** J. DIANESE, UNIVERSIDADE DE BRASÍLIA, BRASÍLIA, BRAZIL

955-P **Functional characterization of mating-type peptide pheromone genes in *Fusarium circinatum*** E. STEENKAMP, Forestry and Agricultural Biotechnology Institute (FABI), University of Pretoria, Pretoria, SOUTH AFRICA

956-P **A rapid approach for isolating single fungal spores from rice blast diseased leaves** L. FEI, China Agricultural University, Beijing, CHINA

957-P **Suppression of *Bipolaris* spp. by the saprophytic fungus *Cladosporium pseudocladosporioides*** A. ADHIKARI, Department of Plant Pathology, University of Florida, Gainesville, FL, USA

958-P **Comparison of five potato-based protocols for conidial production by *Calonectria pseudonaviculata*** S. YANG, Hampton Roads Agricultural Research and Extension Center, Virginia Tech, Virginia Beach, VA, USA

959-P **Ramularia leaf spot of barley in New Zealand** I. HARVEY, PLANTwise Services Limited, Lincoln, NEW ZEALAND

960-P **Determining the effects of inoculum concentration and wounding on the development of fruit rot of winterberry holly** S. LIN, The Ohio State University, Columbus, OH, USA

961-P **Biological activity of *Phaeocryptopus gaeumannii* in Christmas trees (*Pseudotsuga menziesii* var. *glauca*) in Mexico** M. YÁÑEZ-MORALES, Colegio de Postgraduados, Texcoco, MEXICO

962-P **Pineapple fruit rot caused by *Ceratocystis paradoxa* and growth studies on two isolates** F. OKUNGBOWA, University of Benin, Benin City, NIGERIA

963-P **Interspecific hybridization involving a rare parental forest pathogen leads to asymmetrical accelerated evolution** M. GARBELOTTO, UC Berkeley, Berkeley, CA, USA

964-P **Colonization dynamics of red raspberry flowers and fruit by *Botrytis cinerea*** O. KOZHAR, Washington State University, Pullman, WA, USA

New and Emerging Diseases

965-P **Emerging diseases of *Cannabis sativa* L (marihuana) in Canada** Z. PUNJA, Simon Fraser University, Burnaby, BC, CANADA

966-P **Diagnosis and molecular diversity of *X. fastidiosa* subsp. *pauca* isolate from olive trees in Brazil** N. SAFADY, Universidade Federal de São Carlos, Araras, BRAZIL

967-P **The cacao swollen shoot disease complex in West Africa comprises at least five divergent badnavirus species** J. BROWN, School of Plant Sciences, University of Arizona, Tucson, AZ, USA

969-P **First Report of Root Rot on Naked barley (*Hordeum vulgare* L. var. nudum Hook.f.) Caused by *Clonostachys rosea* in Qinghai-tibet plateau, China** X. LI, Institute of Plant Protection, Gansu Academy of Agricultural Sciences, Lanzhou, CHINA

970-P **Two emerging pathogens associated with rapid decline and dieback symptoms in apple detected in Washington, USA** S. SZOSTEK, Washington State University, Prosser, WA, USA

971-P **Almomd witches' broom, a new lethal disease of almond, peach and nectarine: Over a decade of research and management.** Y. ABOU JAWDAH, American Univ of Beirut, Beirut, LEBANON

972-P **Molecular identification of *Alternaria* species associated with imported industrial hemp seed** R. WILHELM, Nevada Department of Agriculture, Sparks, NV, USA

973-P **Genetic relatedness and virulence of a novel *Ralstonia pseudosolanacearum* (*Ralstonia solanacearum* phylotype I) isolated from *Rosa* spp.** M. BERGSMA-VLAMI, NVWA, Wageningen, NETHERLANDS

974-P **Infectivity of cloned cacao swollen shoot associated badnaviral genome in *Nicotiana benthamiana*** N. CHINGANDU, School of Plant Sciences, University of Arizona, Tucson, AZ, USA

975-P **Distribution and impact in Northeastern USA of the emerging disease: Sirococcus shoot blight of eastern hemlock (*Tsuga canadensis*)** I. MUNCK, USDA Forest Service, Durham, NH, USA

976-P **Incidence of head blight complex on wheat and other cereals** S. BANU, Bangladesh Agricultural Research Institute, Joydebpur, BANGLADESH

977-P **Phylogeny of pectolytic bacteria associated with recent outbreaks of potato soft rot and blackleg in the United States** C. ISHIMARU, University of Minnesota, St. Paul, MN, USA

978-P ***Araucaria araucana* root rot caused by *Phytophthora multivora* and *P. citrophthora*** A. LARACH, Pontificia Universidad Católica de Valparaíso, Quillota, CHILE

979-P **First detection of *Golovinomyces ambrosiae* causing powdery mildew on medical marijuana plants in Nevada** J. SCHOENER, Nevada Department of Agriculture, Sparks, NV, USA

980-P **Emerging viruses in Florida and the Caribbean** S. ADKINS, USDA, ARS, US Horticultural Research Laboratory, Fort Pierce, FL, USA

981-P **A previously undiscovered *Emaravirus* associated with witches broom symptoms in blue palo verde (*Parkinsonia florida*) trees in Arizona** A. AVELAR, School of Plant Sciences, University of Arizona, Tucson, AZ, USA

982-P **First report and new hosts of the oak pathogen *Diplodia corticola* in Wisconsin** D. SMITH, University of Wisconsin-Madison, Madison, WI, USA

983-P **Old Enemy, New Disease.The association of *Turnip yellows virus* with Brassica stunting disorder in South Africa** L. ESTERHUIZEN, University of Johannesburg, Johannesburg, SOUTH AFRICA

984-P **Identification of *Pectobacterium carotovorum* as the causal agent of bacterial canker on *Pyrus communis* L in Brazil** Y. FRANCO CARDOZA, Agronômica - Laboratório de Diagnóstico Fitossanitário e Consultoria, Porto Alegre, BRAZIL

985-P **First detection of *Pythium aphanidermatum* crown rot of industrial hemp in Nevada** S. WANG, Nevada Department of Agriculture, Sparks, NV, USA

986-P **New fungal pathogens recently detected on ornamental plants in Italy** M. GULLINO, Agroinnova - University of Torino, Grugliasco, Torino, ITALY

987-P **First report of *Tomato chlorotic dwarf viroid* and *Southern tomato virus* infecting greenhouse tomato in Hawaii.** A. OLMEDO-VELARDE, University of Hawaii at Manoa, Department of Plant and Environmental Protection Sciences, Honolulu, HI, USA

988-P **First report and genomic sequence of a new alfalfa marafivirus from France** L. NEMCHINOV, USDA-ARS, BARC, Molecular Plant Pathology Laboratory, Beltsville, MD, USA

989-P **Cryphonectriaceae endophytes in Melastomataceae: latent pathogens in hiding** M. WINGFIELD, Forestry and Agricultural Biotechnology Institute (FABI), University of Pretoria, Pretoria, SOUTH AFRICA

990-P **Grapevine virus J, a novel vitivirus identified in grapevine via high-throughput sequencing** A. DIAZ LARA, Department of Plant Pathology, University of California-Davis, Davis, CA, USA

991-P **Comparative study of emerging *Ralstonia pseudosolanacearum* strains** D. NORMAN, Univ of Florida MREC, Apopka, FL, USA

992-P **Emerging pathogens of wasabi (*Wasabia japonica*) in British Columbia, Canada.** E. BETZ, Simon Fraser University, Burnaby, BC, CANADA

993-P ***Diplodia seriata* and *D. mutila* causal agents of gummy canker in *Araucaria araucana* trees** X. BESOAIN, Pontificia Universidad Católica de Valparaíso, Quillota, CHILE

994-P **Identification of a new virus from the family *Luteoviridae* in *Miscanthus sinensis*** D. MOLLOV, USDA-ARS, BARC, National Germplasm Recourses Laboratory, Beltsville, MD, USA

995-P **Brown Apical Necrosis (BAN) a new problem in English walnut (*Juglans regia* L.) production in the Biobio Region of Chile** E. MOYA-ELIZONDO, Universidad de Concepción, Chillán, CHILE

996-P **Powdery mildew (*Sawadaea bicornis*) on Rocky Mountain maple (*Acer glabrum*)** C. JENKINS, Utah State University, Logan, UT, USA

997-P **Exotic threats to sugarcane production in Australia** R. MAGAREY, Sugar Research Australia, Tully, AUSTRALIA

998-P ***Tomato chlorotic spot virus,* an emerging tospovirus threatening vegetable production in the United States** S. ZHANG, University of Florida, Homestead, FL, USA

999-P **Contribution of *Fusarium* spp. to sugarcane yellow canopy syndrome (YCS) in Australia** S. BASNAYAKE, Queensland Alliance for Agriculture and Food Innovation (QAAFI), St Lucia, AUSTRALIA

1001-P **Current situation of emerging banana viruses in Democratic Republic of Congo** L. MUKWA FAMA TONGO, Plant Clinic International-Kinshasa, Kinshasa, CONGO, DEM. REP.

1002-P **Byssochlamys Rot in the Orchard and the Effectiveness of Fungicides against this New Disease** M. BIANGO-DANIELS, Cornell University, Ithaca, NY, USA

1003-P **Anthracnose disease ratings on tea (*Camellia sinensis*) during the growing season in Florida.** J. ORROCK, University of Florida, Gainesville, FL, USA

1004-P ***Alternaria infectoria* species-group member emerges as a wheat pathogen in New York** M. FULCHER, Cornell University, Ithaca, NY, USA

1005-P **Molecular and biological characterization of *Turnip mosaic virus* infecting lettuce and chard in Brazil** M. RIBEIRO-JUNIOR, São Paulo State University, Botucatu, BRAZIL

1006-P ***Thielaviopsis sp.* as the causal agent of Black Rot of *Ilex paraguariensis* in Argentina.** M. RYBAK, Instituto Nacional de Tecnología Agropecuaria, Cerro Azul, ARGENTINA

1007-P **Investigation of new soil born pathogen on soybean (*Glycine max*) in Tennessee** R. GUYER, University of Tennessee, Jackson, TN, USA

1008-P **Dissecting a centennial problem for the peony industry** C. SHAFFER, University of Arkansas, Fayetteville, AR, USA

1009-P **Leaf lesions and fruit warts on pumpkin are caused by *Pseudomonas syringae sensu stricto*** L. TYMON, Washington State University-Mount Vernon NWREC, Mount Vernon, WA, USA

Outreach and Engagement

1010-P **About Plant Health: developing new strategies for research communication and public engagement** A. MASINO, Agroinnova - University of Torino, Grugliasco, Torino, ITALY

1011-P **Plant Pathology on stage. Telling more about science innovation in Horizon 2020 European projects** A. MASINO, Agroinnova - University of Torino, Grugliasco, Torino, ITALY

1012-P **INRA's flagship program to foster development of solutions for Sustainable Management of Crop Health** C. MORRIS, INRA, Montfavet, FRANCE

1013-P ***Food Security*: the first decade of publication** R. STRANGE, University College London, London, UNITED KINGDOM

1014-P **Training the next generation: incorporating student-designed experiments and plant pathology into an undergraduate microbiology classroom** A. DUNN, New York State Integrated Pest Management Program, Cornell University, Geneva, NY, USA

1015-P **Preparing North Dakota growers for soybean diseases: In-depth training for educators** J. HALVORSON, North Dakota State University, Fargo, ND, USA

1016-P **Engaging Undergraduate Honors Students in Plant Pathology** K. GWINN, University of Tennessee, Department of Entomology and Plant Pathology, Knoxville, TN, USA

1017-P **Pathogen hunters: non-scientist engagement in plant disease research** J. HULBERT, Forestry and Agricultural Biotechnology Institute, University of Pretoria, Stellenbosch, SOUTH AFRICA

1018-P **The Cape Town Hypothesis Test: *Phytophthora* species in urban vs natural areas** J. HULBERT, Forestry and Agricultural Biotechnology Institute, University of Pretoria, Stellenbosch, SOUTH AFRICA

1019-P **Laboratory and computer skills for employment-ready students in plant sciences** B. SPAKES RICHTER, University of Florida, Gainesville, FL, USA

1020-P **The use of direct and indirect methods in seed health testing** G. HIDDINK, Enza Zaden Seed Operations B.V., Enkhuizen, NETHERLANDS

1021-P **Using a Cross-Curricular Approach in a Molecular Diagnostics Course to Reach a Broader Student Audience** M. MCKELLAR, Cornell University, Ithaca, NY, USA

1022-P **Know thy enemy: Culturing *Candidatus* Liberibacter asiaticus is critical to developing new therapies for Huanglongbing** O. ALABI, Dept. of Plant Pathology & Microbiology, Texas A&M University, Weslaco, TX, USA

1023-P **Plant Pathology in Australia - a brief history** D. PERSLEY, Department of Agriculture and Fisheries, Brisbane, AUSTRALIA

1024-P **Age Demographics and Trends in Graduate Recruitment in Plant Pathology in the US University System** D. GADOURY, Cornell University, Geneva, NY, USA

1025-P **Critical thinking skills as an integral part of training in plant pathology diagnostic laboratories** S. BEC, University of Florida, Gainesville, FL, USA

1026-P **Keys to expanding online education beyond the campus: Ohio State's Master in Plant Health Management** M. LEWANDOWSKI, Ohio State Univ, Dept of Plant Pathology, Columbus, OH, USA

1027-P **More "Ideal Plant Clinics" required in the Anthropocene** D. HERRON, Forestry and Agricultural Biotechnology Institute, University of Pretoria, Pretoria, SOUTH AFRICA

1028-P **Using social media to reach a more diverse audience in Extension programming** A. WINDHAM, Soil, Plant, and Pest Center, Nashville, TN, USA

1029-P Expanding the Borlaug Global Rust Initiative: Delivering Genetic Gain in Wheat J. BAKUM, Cornell University, Ithaca, NY, USA

1030-P Big not always bad. Sustainable agriculture depends on farm S. SWITEK, Institute of Zoology, Poznan University of Life Sciences, Poznan, POLAND

1031-P The past, present, and future of plant diagnostic networks in Haiti J. FAYETTE, Plant Pathology Department, University of Florida, Gainesville, FL, USA

Pathogen Dispersal and Survival

1032-P Importance of seed as an inoculum source for High Plains Virus in sweet corn C. NISCHWITZ, Utah State University, Logan, UT, USA

1033-P Spatial and temporal heterogeneity in *Rhizoctonia solani* AG2-2IIIB inoculum density distribution in sugar beet fields M. ZELLNER, Bavarian State Research Centre for Agriculture, Freising, GERMANY

1034-P Host-to-host transmission rate of *Phytophthora ramorum* is highest during a relatively short period in mid-winter in California. W. SCHWEIGKOFLER, Dominican University of California, San Rafael, CA, USA

1035-P Release and dispersal of ascospores of *Stagonosporopsis citrulli* from colonized watermelon debris G. RENNBERGER, Coastal Research and Education Center, Clemson University, Charleston, SC, USA

1036-P Oilseed rape crop debris and potential spread of *Leptosphaeria maculans* (phoma stem canker) into China B. FITT, University of Hertfordshire, Hatfield, UNITED KINGDOM

1037-P A computer model to simulate the dynamics of mummy berry disease transmission in wild blueberry production S. ANNIS, University of Maine, Orono, ME, USA

1038-P Dispersal of *Colletotrichum gloeosporioides* by citrus pollen S. DE AFONSECA LOURENÇO, USP, Piracicaba, BRAZIL

1039-P Dispersal route of *Puccinia striiformis* f. sp. *tritici* in China X. HU, Northwest A&F University, Yangling, CHINA

1040-P Epidemiology of spinach downy mildew, including insights on oospore production and global transport on seed. K. SUBBARAD, University of California Davis, Salinas, CA, USA

1041-P Assessment of spore presence for *Cercospora beticola* as demonstrated by sentinel beets (*Beta vulgaris*) L. HANSON, USDA ARS, East Lansing, MI, USA

1042-P Localization of *Tomato yellow leaf curl virus* in tomato fruit and seed K. JUST, Estonian University of Life Sciences, Tartu, ESTONIA

1043-P Investigating regional differences in proportions of *Leptosphaeria maculans* and *Leptosphaeria biglobosa* in southern England A. JAVAID, University of Hertfordshire, Hatfield, UNITED KINGDOM

1044-P Preservation of genotypic diversity of a fungal pathogen within woody cankers M. DOWLING, Clemson University, Clemson, SC, USA

1045-P Systemic spread of *Plasmopara obducens* in *Impatiens* plants with roots exposed to sporangia or oospores. N. SHISHKOFF, USDA ARS FDWSRU, Frederick, MD, USA

1046-P Field infection of virus-free sugarcane by *Sugarcane yellow leaf virus* in south Florida W. BOUKARI, University of Florida, Belle Glade, FL, USA

1047-P Epidemiology of *Cytospora leucostoma*: A Major Limiting Factor for Colorado Peach Production S. MILLER, Colorado State University, Fort Collins, CO, USA

1048-P *Ceratocystis fimbriata* transmission by vegetative propagation in *Eucalyptus urograndis* J. BURIM CARDOSO, São Paulo State University, Botucatu, BRAZIL

1049-P Potential sources of inoculum and survival of *Macrophomina phaseolina* in Florida strawberry fields J. BAGGIO, GCREC - University of Florida, Wimauma, FL, USA

1050-P Epidemic status of cassava mosaic disease (CMD) and cassava brown streak disease (CBSD) in Orientale Province, Democratic Republic of M. GODEFROID, Agriculture University of Yangambi, Yangambi, REPUBLIC OF ZAIRE

1051-P Infection and development of *Botryosphaeria dothidea* in branches and fruits of apple B. LI, Qingdao Agricultural Univ, Qingdao, CHINA

1052-P Control of *Zymoseptoria tritici* a splash dispersed pathogen by the mean of wheat cultivars mixture; experimental and modelling biophysical approaches S. SAINT-JEAN, UMR ECOSYS AgroParisTech, INRA, Université Paris-Saclay, Thiverval-Grignon, FRANCE

1053-P Crops as hosts of *Curtobacterium flaccumfaciens* pv. *flaccumfaciens* in Brazil D. DO NASCIMENTO, São Paulo State University, Botucatu, BRAZIL

1055-P Impact of single-season Potato virus Y epidemics on small mixed-acreage vegetable farms S. RUARK, Cornell University, Ithaca, NY, USA

1056-P Survival of *Xanthomonas fragariae* on common materials found in strawberry nurseries H. WANG, Clemson University, Blackville, SC, USA

1057-P Survival of *Xanthomonas campestris* pv. *campestris* in cultivated plants and weeds J. SILVA, São Paulo State University, Botucatu, BRAZIL

1058-P Relationships among measures of wheat blast under field conditions K. MILLS, Ohio State University, Wooster, OH, USA

1059-P Seed transmission of begomoviruses in economic crops E. KIL, Sungkyunkwan University, Suwon, KOREA

1060-P Flower blights of macadamia caused by *Botrytis cinerea*, *Pestalotiopsis macadamiae* and *Neopestalotiopsis macadamiae* in Australia O. AKINSANMI, The University of Queensland, Brisbane, AUSTRALIA

1061-P Plant pathogen removal by managed aquifer recharge of fresh tile drainage water for safe reuse as irrigation water in salinized agricultural areas C. EISFELD, Delft University of Technology, Faculty of Civil Engineering and Geosciences, Delft, NETHERLANDS

1062-P The pitch canker pathogen *Fusarium circinatum*: endophytic on grasses in South Africa D. HERRON, Forestry and Agricultural Biotechnology Institute, University of Pretoria, Pretoria, SOUTH AFRICA

1063-P Dispersal of *Botrytis cinerea* conidia in raspberry fields O. CARISSE, Agric & Agri-Food Canada, Saint-Jean-sur-Richelieu, QC, CANADA

1064-P Management practices of cruciferous crops and edaphic and weather conditions related to clubroot presence in eight geographic regions in Colombia F. PADILLA-HUERTAS, Universidad Nacional de Colombia, Bogotá, COLOMBIA

1065-P Dispersal of *Colletotrichum acutatum* conidia from citrus and strawberry under controlled conditions A. GAMA, University of Florida - Gulf Coast Research and Education Center, Wimauma, FL, USA

1066-P The influence of leaf age and cultivar on infection of celery by *Colletotrichum fioriniae* S. REYNOLDS, University of Guelph, Guelph, ON, CANADA

1068-P Using spread models to optimise surveillance for *Xylella fastidiosa*. A. MASTIN, University of Salford, Salford, UNITED KINGDOM

1069-P Understanding the mechanisms of infection and survival of the maize pathogen *Xanthomonas vasicola* pv *vasculorum* M. ORTIZ-CASTRO, Colorado State University, Fort Collins, CO, USA

1070-P ***Huanglongbing*** **spatial pattern in Sao Paulo state, Brazil** K. PAZOLINI, University of São Paulo, Piracicaba, BRAZIL

1071-P **Evaluation and Identification of Oospores on Cucurbit Downy Mildew Infected Field Samples** J. JONES, University of Maryland College Park, Lower Eastern Shore Research and Education Center, Salisbury, MD, USA

1072-P **Effect of flower age and antibiotic treatment on the population dynamics of** ***Erwinia amylovora*** **on apple flower stigmas** S. SLACK, Michigan State University, East Lansing, MI, USA

1073-P **Water mediated virus transmission: sources, detection and inactivation** M. RAVNIKAR, National Institute of Biology, Ljubljana, SLOVENIA

1074-P **Dispersal patterns of** ***Fusarium circinatum*** **in North Florida loblolly and slash pine forests across two growing seasons.** T. QUESADA, University of Florida, Gainesville, FL, USA

1075-P **Transmission of** ***Magnaporthiopsis maydis*** **from maize seeds to seedlings** G. MUNKVOLD, Iowa State University, Ames, IA, USA

1076-P **Potential for seed transmission of** ***Xanthomonas vasicola*** **pv.** ***vasculorum*** **on maize collected from fields in the United States** S. ARIAS, Iowa State University, Ames, IA, USA

1077-P **'*Candidatus* Liberibacter asiaticus' cells remain viable in citrus seeds for several months** M. MERFA, Department of Entomology and Plant Pathology, Auburn University, Auburn, AL, USA

1078-P **Automated spore capture and decision support for air borne disease control** N. BOONHAM, Fera Science Ltd, York, UNITED KINGDOM

1079-P **Sporulation and dispersal of the biological control agent** ***Aspergillus flavus*** **AF36 under field conditions in nut crops in California** R. JAIME, University of California, Davis/Kearney Agricultural Research and Extension Center, Parlier, CA, USA

1080-P **Strawberry runner colonization by** ***Fusarium oxysporum*** **f. sp.** ***fragariae*** A. PASTRANA LEON, Post Doctoral Scholar, DAVIS, CA, USA

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1081-P ***Fusarium pseudograminearum*** **anti-apoptosis gene** ***FpBir1*** **is required for conidiation and pathogenesis** L. CHEN, Department of Plant Pathology,Henan Agricultural University, Zhengzhou, CHINA

1082-P **Downy mildew (*Hyaloperonospora parasitica*) pathotypes in Australia** A. MOHAMMED, The University of Western Australia Institute of Agriculture, Faculty of Science, Perth, AUSTRALIA

1083-P **Differential pathogenicity and genetic diversity among** ***Fusarium pseudograminearum*** **isolates from Huang-huai wheat growing region of China** H. LI, Department of Plant Pathology, Henan Agricultural University, Zhengzhou, CHINA

1084-P ***Verticillium dahliae*** **from asymptomatic hosts likely emerged from sympatric potato crops in the Columbia Basin of Washington** D. WHEELER, Washington State University, Pullman, WA, USA

1085-P **The** ***Secreted in Xylem*** **Gene Profile of the Spinach Fusarium Wilt Pathogen** A. BATSON, Washington State University, Mount Vernon, WA, USA

1086-P **Characterization of** ***Fusarium graminearum*** **salicylate hydroxylases and their potential role in wheat pathogenesis** G. HAO, USDA-ARS, Fort Pierce, FL, USA

1087-P **'Estilosantes Campo Grande' in the management of** ***Pratylenchus brachyurus*** **in crop-livestock integration systems in Brazil** C. FERNANDES, Embrapa, Campo Grande, BRAZIL

1088-P **Distribution and colonization of human opportunistic pathogen of** ***Fusarium oxysporum*** **in tomato** C. WANG, National Chung Hsing University, Taichung, TAIWAN

1089-P **Effector diversity within the US-23 clonal lineage of** ***Phytophthora infestans*** M. SUDERMANN, Plant Pathology and Plant Microbe Biology Section, Cornell University, Geneva, NY, USA

1090-P **Virulence testing of South African** ***Venturia inaequalis*** **inoculum using qPCR** T. KOOPMAN, ARC Infruitec-Nietvoorbij, Stellenbosch, SOUTH AFRICA

1092-P **Determining the warm-season turfgrass host range of** ***Curvularia malina*** **sp. nov., the ink spot pathogen** H. RENFROE, Mississippi State University, Mississippi State, MS, USA

1093-P **Weedy grasses as a potential reservoir of the pathogen causing bacterial leaf streak of wheat** K. LEDMAN, University of Minnesota, St. Paul, MN, USA

1094-P **Determinants of aggressiveness in** ***Fusarium graminearum*****.** M. SALAZAR, University of Illinois at Urbana-Champaign, Urbana, IL, USA

1095-P **Uncovering host range for the maize pathogen** ***Harpophora maydis*** O. DEGANI, Migal – Galilee Research Institute, Kiryat Shmona, ISRAEL

1096-P **Virulence profiling of** ***Phytophthora sojae*** **based on genomic signature of avirulence genes** G. ARSENAULT-LABRECQUE, Université Laval, Québec, QC, CANADA

1097-P **Emerging understanding of the pathogenesis of** ***Rhizoctonia zeae*** **in row crops** S. KODATI, University of Nebraska Lincoln, North Platte, NE, USA

1098-P **Pathogenicity and host specialization of** ***Ceratocystis*** **spp. associated with rapid `ōhi`a death (ROD) in Hawai`i** L. KEITH, USDA-ARS, Hilo, HI, USA

1099-P **Characterization of the infection cycle of** ***Phytophthora betacei*** **during disease development on tree tomato (*Solanum betaceum*).** N. GUAYAZAN, Universidad de los Andes, Bogota, COLOMBIA

1100-P **Two type III effectors are sufficient to transform nonpathogenic or pathogenic bacteria into host-specific gall-forming pathogens** I. BARASH, Tel Aviv University, Tel Aviv, ISRAEL

1101-P **Effect of seedborne** ***Alternaria infectoria*** **on susceptibility of wheat seedlings to** ***Fusarium pseudograminearum*** S. LAMPRECHT, Agricultural Research Council-Plant Health and Protection, Stellenbosch, SOUTH AFRICA

1102-P **Establishment a gene silencing system in** ***Verticillium dahliae*** **and identification of a novel gene required for microsclerotia formation and virulence** D. XIONG, Beijing Forestry University, Beijing, CHINA

1103-P **Codon adaptation of** ***Papaya ringspot virus*** **to different hosts** A. SAHA, University of North Bengal, Siliguri, INDIA

1104-P **Pathogenicity and phylogeny of** ***Fusarium oxysporum*** **causing cucurbit wilting in Taiwan** C. CHUNG, National Chung Hsing University, Taichung, TAIWAN

1105-P **Genomic basis for host adaptation in** ***Puccinia striiformis*** C. XIA, Washington State University, Pullman, WA, USA

1106-P **Functional analysis of the** ***MSP18*** **root-knot nematode virulence gene in rice** D. FERNANDEZ, IRD, CIRAD, Univ Montpellier, IPME, Montpellier cedex 5, FRANCE

1107-P **Molecular interactions that influence virulence contributions of the IPI-O family of** ***Phytophthora infestans*** **effectors.** S. ABDULLAH, UW, Madison, WI, USA

1108-P **Identification of genomic regions associated with host specificity and aggressiveness in** ***Ceratocystis*** **species** A. FOURIE, Forestry and Agricultural Biotechnology Institute (FABI), University of Pretoria, Pretoria, SOUTH AFRICA

1109-P **Investigating host preference of *Acidovorax citrulli*, the causal agent of bacterial fruit blotch of cucurbits** M. ZHAO, The University of Georgia, Athens, GA, USA

1110-P **Thioredoxinand glutaredoxin systemsrequired for oxidative stress resistance, fungicide sensitivityand virulenceof *Alternaria alternata*** H. LI, Zhejiang University, Hangzhou Zhejiang, CHINA

1111-P **A genetic locus determining pathogenicity of *Pantoea ananatis*** Y. TAKIKAWA, Shizuoka University, Shizuoka, JAPAN

1112-P **Identification and functional characterization of the toxin produced by *Colletotrichum fragaricola* in strawberry** S. YU, Department of Plant Pathology and Microbiology, National Taiwan University, Taipei City, TAIWAN

1113-P **Changes of epidemiological components and histopathology in infection process of UV-B induced mutant strains of *Puccinia striiformis* f. sp. *tritici*** Y. ZHAO, Department of Plant Pathology, China Agricultural University, Beijing, CHINA

1114-P **The role of the *VmXyl1* gene in virulence of *Valsa mali*** C. WANG, College of Plant Health and Medicine, Qingdao Agricultural University, Qingdao, CHINA

1115-P **Weeds like survival niches of *Xanthomonas campestris* pv. *campestris*** K. TELES GIROTTO, São Paulo State University, Botucatu, BRAZIL

1116-P **Investigation of the role of Nep1-like protein from *Leptosphaeria maculans in planta*** G. MITROUSIA, University of Hertfordshire, Hatfield, UNITED KINGDOM

1117-P **Infectivity and pathogenicity of two different *Plantago asiatica mosaic virus* isolates in lilies** K. KOMATSU, Tokyo Univ Agric & Tech (TUAT), Fuchu, Tokyo, JAPAN

1118-P **Identification of host transcription modulating effectors in the rice blast fungus** S. KIM, Seoul National University, Seoul, SOUTH KOREA

1119-P **Genomic regions of wheat yellow mosaic virus involved in the pathotypes against wheat cultivars** T. OHKI, Hokkaido Agricultural Research Ctr, NARO, Sapporo, JAPAN

1120-P **Pathological specialization of *Venturia nashicola*, the cause of Asian pear scab, and resistance of pear cultivars** H. ISHII, Kibi International University, Minami-awaji, JAPAN

1121-P **Ras2 Affects Pathogenicity in *Fusarium circinatum*** E. STEENKAMP, Forestry and Agricultural Biotechnology Institute (FABI), University of Pretoria, Pretoria, SOUTH AFRICA

1122-P **Distribution, variation and function of the *AVR-Pita* gene family among clonal lineages of *Magnaporthe oryzae* in the United States** S. PARK, Sunchon National University, Suncheon, KOREA

1123-P **Susceptibility profiles of soil borne Fusarium species on major Tomato cultivars in Nigeria** M. ABIALA, Mountain Top University, Prayer City, Ogun State, NIGERIA

1124-P ***Fusarium virguliforme* and corn: exploring temporal field dynamics within an asymptomatic host** A. BAETSEN-YOUNG, Michigan State University, East Lansing, MI, USA

1125-P **Insights into *Candidatus* Liberibacter asiaticus Pathogenicity and Biology** E. WATSON CARTER, University of Florida, Lake Alfred, FL, USA

1126-P **Examination of the experimental host range of Plantago asiatica mosaic virus** J. HAMMOND, USDA-ARS, USNA, Floral and Nursery Plant Research Laboratory, Beltsville, MD, USA

1127-P ***Phytophthora sansomeana* host characterization in Michigan field crops** A. MCCOY, Michigan State University, East Lansing, MI, USA

1128-P **Association Mapping of *Sclerotinia sclerotiorum* mid-stalk rot virulence on two sunflower inbred lines** K. BELAY, North Dakota State University, Fargo, ND, USA

1129-P **Variation among putative necrotrophic effector genes in host-specialized populations of *Corynespora cassiicola*** L. SUMABAT, University of Georgia, Athens, GA, USA

1130-P **Tolerance of *Pinus patula* hybrids to novel *Fusarium circinatum* haplotypes from Guatemala and Nicaragua** I. BARNES, Forestry and Agricultural Biotechnology Institute (FABI), University of Pretoria, Pretoria, SOUTH AFRICA

1131-P **Identification of atypical chitin synthase genes horizontally transferred in plant pathogens** M. CHOQUER, University Lyon 1, Lyon, FRANCE

1132-P ***N.benthamiana* as a surrogate host for studying the pathogenicity of *A.citrulli*, the causal agent of bacterial fruit blotch of cucurbits** M. KIREMIT, Virginia Tech, Blacksburg, VA, USA

1133-P **Genetic variability of the avirulence gene *AvrLm4-7* among *Leptosphaeria maculans* isolates by high resolution melting analysis.** F. CEVALLOS, Oklahoma State University, Stillwater, OK, USA

1134-P **Screening soybean and corn root colonization by a *Fusarium virguliforme* natural population** J. CHEN, Michigan State University, East Lansing, MI, USA

1135-P **Investigating the impacts of continuous artificial culture systems on *Phytophthora infestans* virulence** E. LARSON, University of Wisconsin-Madison, Madison, WI, USA

1136-P **Germination stage effects susceptibility to infection of soybean by *Pythium* species** R. MATTHIESEN, Iowa State University, Department of Plant Pathology, Ames, IA, USA

1137-P **Comparative component analysis of *Calonectria pseudonaviculata* epidemiology on boxwood, pachysandra and sweet box** P. KONG, Hampton Roads Agricultural Research and Extension Center, Virginia Tech, Virginia Beach, VA, USA

1138-P **Pathogenic and physiological variability among *Macrophomina phaseolina* isolates associated with soybean in Ohio** T. NIBLACK, The Ohio State University, Columbus, OH, USA

1139-P **Assessment of isolates of *Fusarium oxysporum* f. sp. *vasinfectum* as seedling pathogens to cotton using a rolled towel assay.** J. DIAZ, California State University, Fresno, Fresno, CA, USA

1140-P **A novel recombinant strain of *Beet curly top virus* collected from pepper in Mexico** M. ALA POIKELA, University of Idaho, Moscow, ID, USA

1141-P **Australian *Verticillium dahliae* goes against the group – VCG 2A causes severe disease in Australian cotton** P. DADD-DAIGLE, NSW Department of Primary Industries, NSW, AUSTRALIA

1142-P **Stalk rot of sweet sorghum caused by genetically diverse *Fusarium thapsinum* strains** V. BUSHULA, University of Pretoria, Hatfield, SOUTH AFRICA

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1143-P **Antioxidant-Mediated Survival of Primed Finger Millet Plants against Blast Disease** S. PATIL, Jain University, Bangalore, INDIA

1144-P **Evaluation of physiological effect of fungal culture filtrate (FCF) and mycelial cell wall fraction (MCW) of *Alternaria* sp. on banana plant** Z. PATEL, Sardar Patel University, Bakrol, INDIA

1145-P **Physiological response of naturally regenerated *Pinus taeda* L. saplings to four levels of stem inoculation with *Leptographium terebrantis*** J. MENSAH, School of Forestry and Wildlife Sciences, Auburn University, Auburn, AL, USA

1146-P Expression Analysis of Soybean PAL Induced by Biocontrol Rhizobia Sneb183 Y. WANG, Shenyang Agricultural University, Shenyang, CHINA

1147-P Defense response, water balance and photosynthesis in oak leaves infected with purple mold disease caused by *Cystotheca wrightii* T. IKEDA, Kyoto Prefectural University, Kyoto, JAPAN

1148-P Development of inoculation methods to understand interactions of phoma stem canker and light leaf spot causal pathogens during leaf infection. J. FORTUNE, University of Hertfordshire, Hatfield, UNITED KINGDOM

1149-P N utilization response of *Trichoderma asperellum* T42 led to plant growth and disease resistance against *Xanthomonas oryzae* pv. *oryzae* in *tobacco* B. SINGH, Banaras Hindu University, VARANASI, INDIA

1150-P Transgenic expression of a plant defensin in alfalfa (*Medicago sativa*) leads to increased resistance to crown rot pathogens A. SATHOFF, University of Minnesota, Saint Paul, MN, USA

1151-P The potential effect of karrikinolide (KAR_1) in inducing resistance against *Alternaria solani* on tomato A. DAKUIDREKETI, University of Queensland, St Lucia, AUSTRALIA

1152-P Involvement of tryptophan-derived metabolites in the post-invasive resistance of *Arabidopsis thaliana* against multiple fungal pathogens A. KOSAKA, Kyoto University, Graduate School of Agriculture, Kyoto, JAPAN

1153-P The molecular mechanisms of resistance in tomato induced by *Pseudomonas fluorescens* Sneb825 against root-knot nematode H. FAN, Shenyang Agricultural University, Shenyang, CHINA

1154-P Nanochitosan mediated induced systemic resistance against pearl millet downy mildew through nitric oxide generation C. NAYAKA, University of Mysore, Mysore, INDIA

1155-P Transcriptome and GWAS-based approaches to understand the mechanisms of *Fusarium fujikuroi* resistance in rice D. SPADARO, DISAFA and AGROINNOVA, University of Torino, Torino, ITALY

1156-P Identifying susceptibility genes for citrus Huanglongbing in sweet orange. F. NOGALES C. VASCONCELOS, University of Florida, Lake Alfred, FL, USA

1157-P Intensification on PAMP-triggered immunity confers disease resistance against bacterial soft rot Z. JING-LIN, National Pingtung University of Science and Technology, Pingtung, TAIWAN

1158-P Intensification on PAMP triggered immunity by *Bacillus* strains to control bacterial wilt of tomato T. HO, Department of Plant Medicine, National Pingtung University of Science and Technology, Pingtung, TAIWAN

1159-P Cloning and functional analysis of a defensin-encoding gene in *Agave sisalana* X. HUANG, Environment and Plant Protection Institute, CATAS, Haikou, CHINA

1160-P Lignin reduction in alfalfa (*Medicago sativa*) does not affect foliar disease resistance D. SAMAC, USDA-ARS, St Paul, MN, USA

1161-P Network analysis to uncover and quantify host defense signaling-dependent virulence effects of *Pseudomonas syringae* pv. *tomato* A. TURO, Ohio State University, Columbus, OH, USA

1162-P Transcriptome profile of Carrizo citrange roots in response to *Phytophthora parasitica* infection Z. AFZAL, University of Florida, Apopka, FL, USA

1163-P OsGRDP1 Is a Positive Regulator of Cell Death and Disease Resistance by Activate OsAP25 in Rice W. ZHAO, China Agricultural University, Beijing, CHINA

1164-P Induction of defense enzymes in rice by ecofriendly pesticide and growth promoting compound (PGPC) against brown leaf spot and blast diseases J. CHRISTOPHER, DEPARTMENT OF PLANT PATHOLOGY, ANNAMALAI UNIVERSITY, CUDDALORE, INDIA

1165-P Transcriptome-based screening of plant responses that determine the resistance or susceptibility to *Pectobacterium atrosepticum* R. GUBAEV, Kazan Institute of Biochemistry and Biophysics, Kazan, RUSSIA

1166-P Potato elicitor-induced resistance to late blight depends on genotype defense responses and on *Phytophthora infestans* effectors expression C. THOMAS, INRA UMR 1349 IGEPP (Institute of Genetics, Environment and Plant Protection), Le Rheu Cedex, FRANCE

1167-P Expression patterns of plant defense genes during early stem infection of susceptible and tolerant potatoes by *Dickeya dadantii* Y. LIU, Cornell University, Ithaca, NY, USA

1168-P Controlling *Sclerotinia sclerotiorum* in *Glycine max* by targeting oxalic acid production using host-induced gene silencing M. MCCAGHEY, University of Wisconsin-Madison, Madison, WI, USA

1169-P Transcriptomic analysis for differentially expressed genes in response to the phytoalexin gossypol in *Fusarium oxysporum* f. sp. *vasinfectum* A. POKHREL, Auburn University, Auburn, AL, USA

1170-P Foliar resistance to bacteria in potato D. HALTERMAN, USDA ARS, Madison, WI, USA

1171-P Phylloxera galls as *Plasmopara viticola* infection and sporulation sites on leaves of grapevines partially resistant to downy mildew C. HONG, University of Georgia, Athens, GA, USA

1172-P WRKYs phosphorylated by MAPK regulate chloroplast-mediated ROS burst in plant immunity H. YOSHIOKA, Nagoya University, Nagoya, JAPAN

1173-P A standardised set of differential potato cultivars to identify pathotypes in *Synchytrium endobioticum* G. VAN LEEUWEN, National Reference Centre NPPO-NL, Wageningen, NETHERLANDS

1174-P Biochemical activation of defense in response to tomato against *fusarium* wilt through plant inducers M. ATIQ, University of Agriculture, Faislabad, PAKISTAN

1175-P Pathogenicity properties of some fungal species from *Colletotrichum acutatum* species complex J. VILCANE, University of Latvia, Riga, LATVIA

1176-P Molecular mechanism of high-temperature resistance to yellow rust in Xiaoyan6 J. WANG, Northwest A&F University, Yangling, CHINA

1177-P Host induced gene silencing targeting a*flM* reduced aflatoxin contamination in transgenic corn Y. RARUANG, Louisiana State University Agricultural Center, Baton Rouge, LA, USA

1178-P Enhancing type II-resistance in crops through modification of the cell wall polymer callose T. HANAK, University of Hamburg, Hamburg, GERMANY

1179-P Antibacterial and plant defence elicitor peptides for plant disease control E. MONTESINOS, University of Girona, Girona, SPAIN

1180-P Explore the function of Papain-like cysteine proteases (PLCPs) in citrus resistance against Huanglongbing (HLB). Y. HUANG, University of Florida, Lake alfred, FL, USA

1181-P Analysis of two switchgrass ecotypes indicates genetic diversity of a disease resistance gene class that contains a serine-threonine protein kinase L. NISSEN, The University of Georgia, Athens, GA, USA

1182-P **Multiple phytohormonal signaling mediates citrus response to the bacterial pathogen *Candidatus* Liberibacter asiaticus** Y. NEHELA, Citrus research and education center, IFAS, University of Florida, Lake Alfred, FL, USA

1183-P **Exploring Plant Pathogen Nutrient Exchange for Novel Disease-Control Strategies** J. HERLIHY, Virginia Tech, Blacksburg, VA, USA

1185-P **Interplay between defense, development and gibberellic acid signaling in Verticillium-host interactions** N. DHAR, UC Davis, Salinas, CA, USA

1186-P **Elucidating the Key Roles of Arabidopsis ETHYLENE RESPONSE 1 and ETHYLENE INSENSITIVE 3 in Mediating Plant Susceptibility to Beet Cyst Nematode** S. PIYA, University of Tennessee, Knoxville, TN, USA

1187-P **A DnaJ protein negatively regulates rice resistance to *Magnaporthe oryzae*** X. WANG, Institute of Plant Protection, Chinese Academy of Agricultural Sciences, Beijing, CHINA

1188-P **Barley recognition of AvrPphB suggests a programmable system for pathogen protease recognition analogous to PBS1 decoy in *Arabidopsis*** M. CARTER, Cornell University, Ithaca, NY, USA

1189-P **Association of a quantitative trait locus with growth of *F. circinatum*** B. SWALARSK-PARRY, Forestry and Agricultural Biotechnology Institute (FABI), University of Pretoria, Pretoria, SOUTH AFRICA

1190-P **Jasmonic acid has a dominant role in Cucumber mosaic virus induced aphid resistance in *Arabidopsis thaliana*** T. TUNGADI, University of Cambridge, Cambridge, UNITED KINGDOM

1191-P **Induction of defense in the Potato/*Phytophthora infestans* pathosystem by elicitors from different origins in distinct potato genotypes** R. LOPES MARTIN, Agrocampus-Ouest / INRA UMR IGEPP, Rennes, FRANCE

1192-P **Maize phenylalanine ammonia lyases contribute to resistance to sugarcane mosaic virus infection** T. ZHOU, Department of Plant Pathology, China Agricultural University, Beijing, CHINA

1193-P **Chemical defence responses of Australian *Acacia* trees to infection by *Ceratocystis albifundus* and *C. manginecans*** B. SWALARSK-PARRY, Forestry and Agricultural Biotechnology Institute (FABI), University of Pretoria, Pretoria, SOUTH AFRICA

1194-P **The impact of the grapevine trunk disease fungus *Lasiodiplodia* on the physiological responses of different grapevine cultivars** P. REIS, Instituto Superior de Agronomia, LEAF, Universtiy of Lisbon, Lisboa, PORTUGAL

1195-P **Differential roles of the plant secondary metabolite melatonin in plant-host resistance and pathogen suppression** M. MANDAL, ORISE participant, US Vegetable Laboratory, USDA, ARS, Charleston, SC, USA

1196-P **Effect of a biostimulant on Resistance Gene Expression in Wheat** A. TWAMLEY, School of Agriculture and Food Science, University College Dublin, Belfield, Dublin, IRELAND

1197-P **Transcriptional responses of *Escherichia coli* O157:H7 during plant immunity and plant disease** A. LOVELACE, University of Georgia, Athens, GA, USA

1198-P **Evaluation of inactivated fungal extracts as defense inducers against fungal diseases in strawberry** S. MOSCHEN, Instituto Nacional de Tecnología Agropecuaria (INTA), EEA Famaillá., Famaillá, ARGENTINA

1199-P **Involvement of hormone pathways in early onset of TSWV resistance** J. WALLS III, The Pennsylvania State University, University Park, PA, USA

1201-P **Chemical genomics reveals resistant soybean line inhibits *Sclerotinia sclerotiorum* by targeting its ergosterol biosynthesis pathway** A. RANJAN, University of Wisconsin-Madison, Madison, WI, USA

1202-P **Friend or foe: The genetics of an endophytic tree pathogen infection** B. SLIPPERS, Forestry and Agricultural Biotechnology Institute (FABI), University of Pretoria, Pretoria, SOUTH AFRICA

1203-P **Drought-acclimated *Arabidopsis* plants have increased bacterial disease resistance that requires a functional RD21A** K. WANG, Virginia Tech, Blacksburg, VA, USA

1204-P **Effects of engineered nanomaterials on plant innate immune responses** K. EFFERTZ, Department of Plant Pathology, North Dakota State University, Fargo, ND, USA

1205-P **Systemic root-to-shoot defense signaling induced by arachidonic acid and extract of the brown seaweed, *Ascophyllum nodosum*** R. BOSTOCK, University of California, Davis, CA, USA

1206-P **Subcellular localization of resistance-associated AAPermease$_{RhgI}$ in response to soybean cyst nematode infection** S. HAN, University of Wisconsin-Madison, Department of Plant Pathology, Madison, WI, USA

1207-P **The *Nec3* gene is a putative negative regulator of pathogen induced programmed cell death in barley** G. AMEEN, Department of Plant Pathology, North Dakota State University, Fargo, ND, USA

1208-P **Alternatation of WRKY62 and WRKY76 Expression Reprograms Rice Metabolism for Defense** Z. GUO, China Agricultural University, Beijing, CHINA

1209-P **Botanical extract of chamomile (*Matricaria chamomilla)* induces expression of resistance genes in Papaya fruit tree** G. CHAVES-BEDOYA, Universidad Francisco de Paula Santander, Cucuta, COLOMBIA

Postharvest Pathology and Mycotoxins

1210-P **Baseline sensitivity of *Botrytis cinerea* isolates to natamycin and its control of gray mold on stored mandarin fruit** S. SAITO, USDA ARS, Parlier, CA, USA

1211-P **Pathogenicity, Incidence, and Distribution of Fungi Causing Root Rot in Idaho Sugar Beet Storage Piles** C. STRAUSBAUGH, USDA ARS NWISRL, Kimberly, ID, USA

1212-P **Integrated management of *Penicillium digitatum* in citrus fruit using preharvest silicon applications, plus postharvest hot water treatments** I. BASDEW, Discipline of Plant Pathology: University of KwaZulu-Natal, Pietermaritzburg, SOUTH AFRICA

1213-P **The ethylene biosynthetic pathway in two major postharvest pathogens *Penicillium digitatum* and *Penicillium expansum: in vitro* studies** R. TORRES, IRTA, XaRTA-Postharvest, Edifici Fruitcentre, Lleida, Catalonia, SPAIN

1214-P **Is increased inoculum for *Fusarium graminearum* an unintended consequence of stay green maize?** K. ELI, University of Guelph, Ridgetown Campus, Ridgetown, ON, CANADA

1215-P ***Pantoea agglomerans-Fusarium graminearum* interaction for Fusarium head blight management and mycotoxin control** Y. CHEN*, Institute of Biotechnology, Zhejiang University, Hangzhou, CHINA

1216-P **Microbial correlates of *Fusarium* biomass and deoxynivalenol content in individual wheat seeds** M. BAKKER, USDA ARS, Peoria, IL, USA

1217-P **Influence of agronomic factors on fusarium and mycotoxins spectra winter wheat in Poland** Z. SAWINSKA, Departament of Agronomy, Poznan University of Life Sciences, Poznan, POLAND

1219-P **Curing apples to control blue mold rot** R. VALDEBENITO-SANHUEZA, PROTERRA Research Center, Vacaria, BRAZIL

1220-P **Effect of fresh water algae, *Chlorella fusca* on improving self-life of organic strawberry in cold storage** C. SHIM, National Institute of Agricultural Sciences, Wanju-gun, KOREA

1221-P ***In vitro* efficacy of plasma activated water against *Colletotrichum alienum*** K. BAYLISS, Murdoch University, Murdoch, AUSTRALIA

1222-P ***Salmonella* Typhimurium reduces the population of several phytopathogens in tomato plants** L. DEBLAIS, Food and Animal Health Research Program and Sciences, The Ohio State University, Wooster, OH, USA

1223-P **Aflatoxin contamination of dried fruits and insects in Zambia** P. KACHAPULULA, Univ of Arizona, Tucson, AZ, USA

1224-P **Is fungicide thermo-nebulization the solution for managing postharvest diseases?** A. AMIRI, Washington State University, Wenatchee, WA, USA

1225-P **Characterization of oat cultivars for their reaction to Fusarium head blight and DON contamination in South Dakota** S. ALI, South Dakota State University, Brookings, SD, USA

1226-P **Mycotoxin analysis of Bt and non-Bt maize from ears inoculated with *Fusarium subglutinans* and *F. temperatum* and infested with lepidopteran insects.** D. MAYFIELD, Iowa State University, Ames, IA, USA

1227-P **Effects of a culture filtrate and systemic infection of an atoxigenic strain of *Aspergillus flavus* on aflatoxin accumulation in preharvest corn grain** G. WINDHAM, USDA ARS, Mississippi State, MS, USA

1228-P **Postharvest fungal decay in onion (*Allium cepa* L.) storage and the associated risks of *Listeria monocytogenes*** K. BRITT, University of Florida, Gainesville, FL, USA

1229-P **The Role of Yeasts in the Cranberry Fruit Rot Complex** Z. ZALEWSKI, University of Wisconsin Madison, Madison, WI, USA

1230-P **Fitness of *Aspergillus flavus* in soil is affected by temperature and soil microbial community** M. DROTT, Cornell University, Ithaca, NY, USA

1231-P **Diagnosis and management of postharvest fruit rots of winter squash (*Cucurbita maxima*) in Oregon's Willamette Valley** H. RIVEDAL, Department of Botany and Plant Pathology, Oregon State University, Corvallis, OR, USA

1232-P **Fumonisin levels in corn from the Texas High Plains as influenced by harvest date and kernel damage** M. CARTWRIGHT, Texas A&M University, Lubbock, TX, USA

Regulatory Plant Pathology

1233-P **The linear mitochondrial genome of the quarantine pest *Synchytrium endobioticum*; insights in the evolutionary history of an obligate biotroph** B. VAN DE VOSSENBERG, Wageningen University and Research, Wageningen, NETHERLANDS

1234-P **Pest Risk Management associated with importing fresh fruits and vegetables for consumption into the United States** J. HERNANDEZ, USDA APHIS RPM, Riverdale, MD, USA

1235-P **Evaluating regional management strategies for avocado laurel wilt** R. CHOUDHURY, University of Florida, Gainesville, FL, USA

1236-P **The bioSAFE project: developing tools for the genomic biosurveillance of forest invasive alien pathogens in Canada** L. BERNIER, Université Laval, Centre d'Étude de la Forêt (CEF), Quebec, QC, CANADA

1237-P **Proficiency Testing for Regulatory Plant Pathogen Diagnostics - the United States Model** V. MAVRODIEVA, USDA APHIS PPQ S&T CPHST, Beltsville, MD, USA

1238-P **National Seed Health Accreditation Pilot Program: quality management systems approaches to reducing the risk of CGMMV in cucurbit seed** T. BRUNS, Iowa State University, Ames, IA, USA

1239-P **Interceptions of exotic fungi associated with the international movement of medicinal plant material from Asia and the Pacific** W. SUENO, USDA APHIS PPQ, Honolulu Plant Inspection Station, Honolulu, HI, USA

1240-P **Impact of accreditation rules on the scope of phytosanitary diagnostic laboratories** P. DE SOUZA TELÓ, Agronômica - Laboratório de Diagnóstico Fitossanitário e Consultoria, Porto Alegre, BRAZIL

1241-P **Next generation sequencing as a tool for pathogen detection in plant introductions grown in quarantine** M. MALAPI-WIGHT, USDA-APHIS, Plant Germplasm Quarantine Program, Beltsville, MD, USA

1242-P **Validating Methods for Eradicating Select Agent and Phylotype I Strains of *Ralstonia solanacearum*** M. HAYES, UW-Madison, Madison, WI, USA

1243-P **Review of quality management systems and accreditation programs to mitigate phytosanitary risk in seed trade** S. GARCIA FIGUERA, University of California-Davis, Davis, CA, USA

1244-P **The National Clean Plant Network: Improving status and availability of clean stock.** K. FARRAR, Foundation Plant Services, Davis, CA, USA

1245-P **Development of assays for the detection and genotyping of regulated plant pathogens using genomic information for identification of molecular markers.** G. BILODEAU, Canadian Food Inspection Agency, Ottawa, ON, CANADA

1246-P **Phytosanitary regulations and ISF's Regulated Pest List Initiative** S. THOMAS, Monsanto, CREVE COEUR, MO, USA

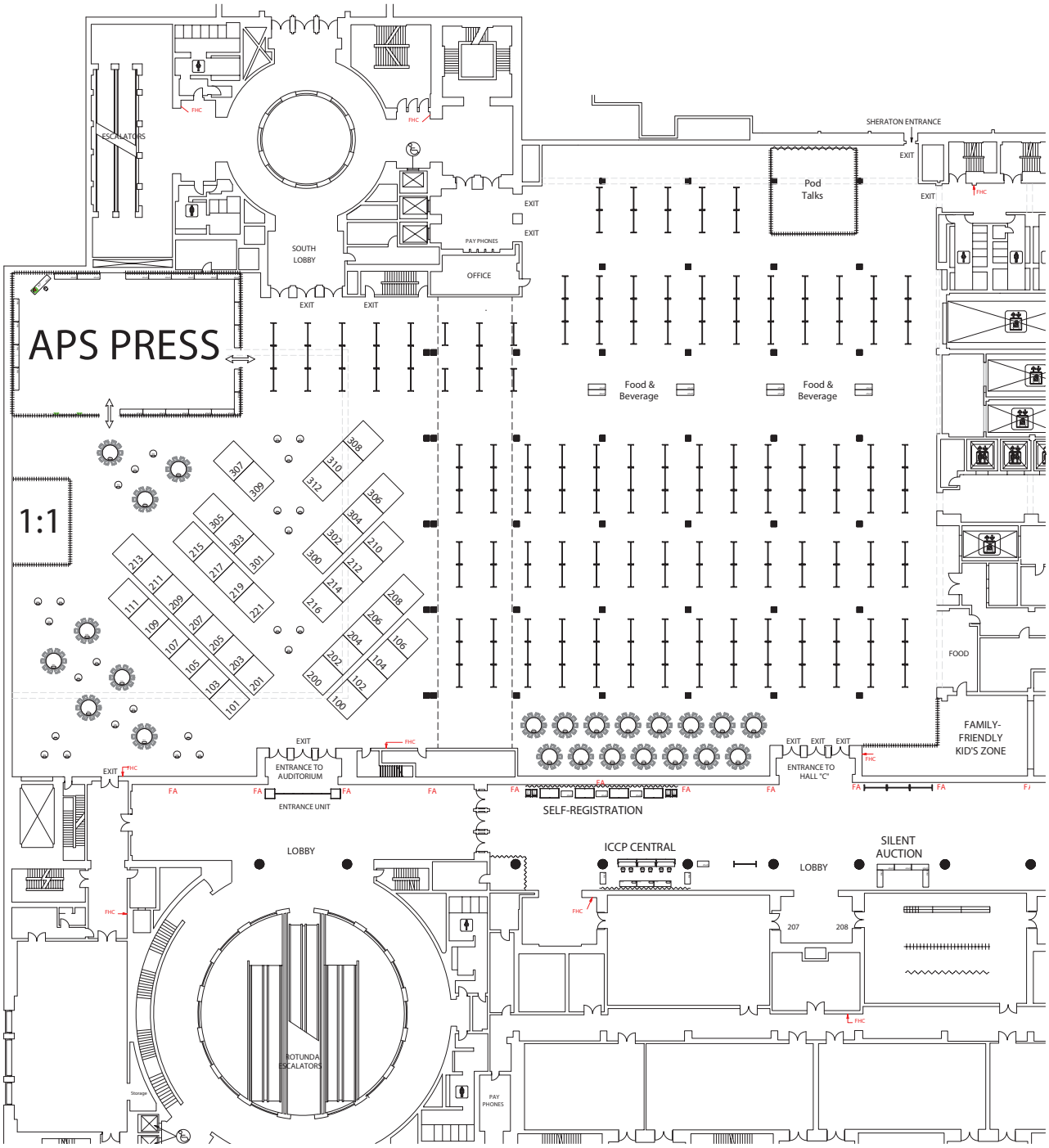
1247-P **Virus-tested plant material in Colombia – An appeal for a certification program for important exports** J. CUTLER, Humboldt-Universität zu Berlin, Phytomedicine Division, Berlin, GERMANY

1248-P **Stone fruit surveys in Texas monitoring for plum pox virus, European stone fruit yellows, phony peach disease, & light brown apple moth: 2017-2018** S. RHODES, Texas A&M AgriLife Extension Service, College Station, TX, USA

1249-P **PestLens: A web-based phytosanitary early-warning system** R. NOAR, North Carolina State University, Raleigh, NC, USA

1250-P **Risk assessment for epidemic spread of the quarantined potato pathogen *Synchytrium endobioticum* in the Republic of Georgia** K. ANDERSEN, Institute for Sustainable Food Systems, Gainesville, FL, USA

1251-P **Management of Pest Risks Associated with Plants Imported into the United States for Planting** Y. BALCI, USDA, APHIS, Riverdale, MD, USA


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Representatives from leading industry suppliers will be at ICPP2018 to answer questions and share information on products and services. Thank you to all our 2018 exhibitors for being a part of this meeting! Exhibitors are listed as of June 27, 2018. Visit icpp2018.org/ExhibitSponsor/ for updates. Descriptions of exhibiting companies can be found on the mobile app. The floor plan can also be found on the mobile app.

Exhibit Hours
Veterans Memorial Auditorium/Exhibit Hall C, Convention Center

Monday, July 30

08:30–15:00	Exhibit Set-Up
16:00–17:30	Exhibits Open

Tuesday, July 31

16:00–18:30	Exhibits Open

Wednesday, August 1

10:00–11:30	Exhibits Open

Thursday, August 2

16:00–18:00	Exhibits Open
18:00–20:00	Exhibitor Take-Down

Exhibitor List
Exhibitors are listed in numerical order of assigned booth numbers.

100/102	Agdia, Inc.	agdia.com
101/103	MONSANTO	monsanto.com
104	BioChambers, Inc.	biochambers.com
105	Conviron	conviron.com
106	International Congress for Molecular Plant-Microbe Interactions (IC-MPMI)	ismpmi.org/congress/2019
107	OptiGene Limited	optigene.co.uk
109	International Society for Plant Pathology	isppweb.org
111	Springer	springer.com
200	Gylling Data Management, Inc.	gdmdata.com
201	Microbiology International	800ezmicro.com
202	APS Office of International Programs (OIP)	apsnet.org/members/outreach/oip
203	Penn State Department of Plant Pathology and Environmental Microbiology	plantpath.psu.edu
204	Fungicide Resistance Action Committee (FRAC)	frac.info
205	PathSensors, Inc.	pathsensors.com
206	Norgen Biotek Corp.	norgenbiotek.com
207	APS Public Policy Board (PPB)	apsnet.org/members/outreach/ppb
208	BIOREA AG/Eurofins BioDiagnostics, Inc.	eurofinsus.com/biodiagnostics/bioreba-ag
210	Chiquita Brands	chiquita.com
213	The Phytopathological Society of Japan	
214	New Phytologist Trust	newphytologist.org
215	APS Office of Public Relations and Outreach (OPRO)	apsnet.org/members/outreach/opro
216	Dino-Lite Scopes	dinolite.us
219	Environmental Growth Chambers	egc.com
221	*Phyto*Technology Laboratories	phytotechlab.com
300	CABI	cabi.org
301	PhytoAB, Inc.	phytoab.com
302	Nano Diagnostics, LLC	nanodiaincs.com
303	USDA	aphis.usda.gov
305	APS Foundation	apsnet.org/members/foundation
306	OPS Diagnostics	opsdiagnostics.com
307/309	BASF Corporation	
308	Percival Scientific, Inc.	percival-scientific.com
310	Corteva Agriscience, Agriculture Division of DowDuPont	corteva.com
311	British Society for Plant Pathology	
312	CSP Labs, Inc.	csplabs.com
Back of Exhibit Hall	APS PRESS	shopapspress.org

Get Social During the Meeting!
Keep your finger on the pulse of the meeting, follow the official #ICPP2018 hashtag, and engage with fellow attendees! Locate your favorite workshops, view photos, and exchange ideas with colleagues on social media. Use #ICPP2018 on Twitter, Facebook, and Instagram to share your ICPP2018 experience with your network.

Don't have a smartphone but still want to access the abstracts online while you're onsite? Two mobile stations will be available, where you can look up authors, browse abstracts, and view what's coming up in the schedule. One station will be located in the exhibit hall, and the second station will be located on the third floor outside the session rooms.

Live Streaming Sessions
Check out the live-streaming sessions during ICPP2018 on the ICPP website at icpp2018.org/livestream. Share the session times with your colleagues who are not attending the meeting, and encourage them to join in. All times listed are Eastern Daylight Time.

- Opening Plenary Session • Sunday, July 29, 17:00–18:15
- Monday Plenary Session—Plant Health Is Earth's Wealth • Monday, July 30, 08:30–10:00

ICPP Central—Registration Hours
Hall C Foyer, Convention Center

Sunday, July 29	07:30–20:00
Monday, July 30	07:30–18:30
Tuesday, July 31	07:30–18:30
Wednesday, August 1	07:30–13:00
Thursday, August 2	07:30–18:00
Friday, August 3	08:00–15:00

Open Meeting Room
A small meeting room for up to 30 people is available for use during the meeting at the John B. Hynes Veterans Memorial Convention Center. To check on its availability and reserve a time slot, stop by ICPP Central.

Speaker Ready Room
Room 205, Convention Center

The Speaker Ready Room is available for presenters to make any last-minute changes to presentations and to do the final loading of presentations. **All session presenters must upload their presentations the day before they are scheduled to present.** ICPP2018 will be recording Concurrent Session presentations with author approval.

Sunday, July 29	12:00–17:00
Monday, July 30	07:00–16:00
Tuesday, July 31	07:00–16:00
Wednesday, August 1	07:00–12:00
Thursday, August 2	07:00–16:00

Family Friendly Offerings
The Family Friendly Team is excited to share the offerings and events planned for ICPP2018! Go online to find out more (icpp2018.org/hoteltravel/Pages/Family-Friendly) or stop by the Family Friendly Bulletin Board near ICPP Central.

Nursing Mothers Room
Room 301, Convention Center

ICPP2018 is pleased to offer a dedicated private room for nursing mothers for the duration of the meeting.

Sunday, July 29	07:30–20:00
Monday, July 30	07:30–18:30
Tuesday, July 31	07:30–18:30
Wednesday, August 1	07:30–13:00
Thursday, August 2	07:30–18:00
Friday, August 3	08:00–15:00

Boston CVB Concierge Desk
2nd Floor, Convention Center

A visitor services desk is provided on the second floor of the convention center. This desk will be staffed with a Boston expert, who will be able to answer questions and assist with dinner reservations, tours, and activities.

Saturday, July 28	08:00–18:00
Sunday, July 29	08:00–19:00
Monday, July 30	08:00–18:00
Tuesday, July 31	08:00–18:30
Wednesday, August 1	08:00–13:30
Thursday, August 2	08:00–18:00
Friday, August 3	08:00–17:00

Photo Release
Photographs will be taken during the meeting. By registering for this meeting, you agree to allow ISPP and APS to use photos of you in any of their publications and/or on their websites and membership materials.

Dress
The official dress for the meeting is business casual.

John B. Hynes Veterans Memorial Convention Center
900 Boylston Street
Boston, MA 02115
+1.877.393.3393

Sheraton Boston Hotel (Headquarters Hotel)
39 Dalton Street
Boston, MA 02199
+1.617.236.2000

Boston Marriott Copley Place
110 Huntington Ave.
Boston, MA 02116
+1.617.236.5800

Hilton Boston Back Bay
40 Dalton Street
Boston, MA 02115
+1.617.236.1100

The Midtown Hotel
220 Huntington Ave.
Boston, MA 02115
+1.617.262.1000

Colonnade Boston
120 Huntington Avenue
Boston, MA 02116
+1.617.424.7000

OFFSITE VENUES

LGBTQ Social and Networking Happy Hour
Wednesday, August 1, 17:00–19:00
Back Bay Social Club
867 Boylston Street, Boston, MA 02199 • Phone: 617.247.3200

Congress Closing Event
Thursday, August 2, 19:00–23:00
House of Blues, Boston
15 Lansdowne Street, Boston, MA 02215 • Phone: 888.693.2583

Safety Tips

Don't travel alone! Stay in groups, and travel in well-lit areas. *Remove your name badge when outside the hotel or convention center, unless you are participating in a meeting event.*

- Don't give out your room number to anyone you don't know and avoid giving out your room number in conversations where strangers may hear you talking.
- When inside your hotel room, bolt the door and open it only when you know who is on the other side. (*Note:* Hotel personnel wear uniforms and have identification badges. If in doubt about an employee's identity, call hotel security to verify.)
- Don't leave your door ajar if you are going down the hall for ice. Someone may enter when you aren't looking.
- Know where the stairs are located in case of a fire. (Don't use the elevator.) Also count the number of doors to the nearest exit in case you must make your way in a smoke-filled hallway.
- Keep valuables, airline tickets, and money in a hotel safety deposit box or in a room safe, if available.

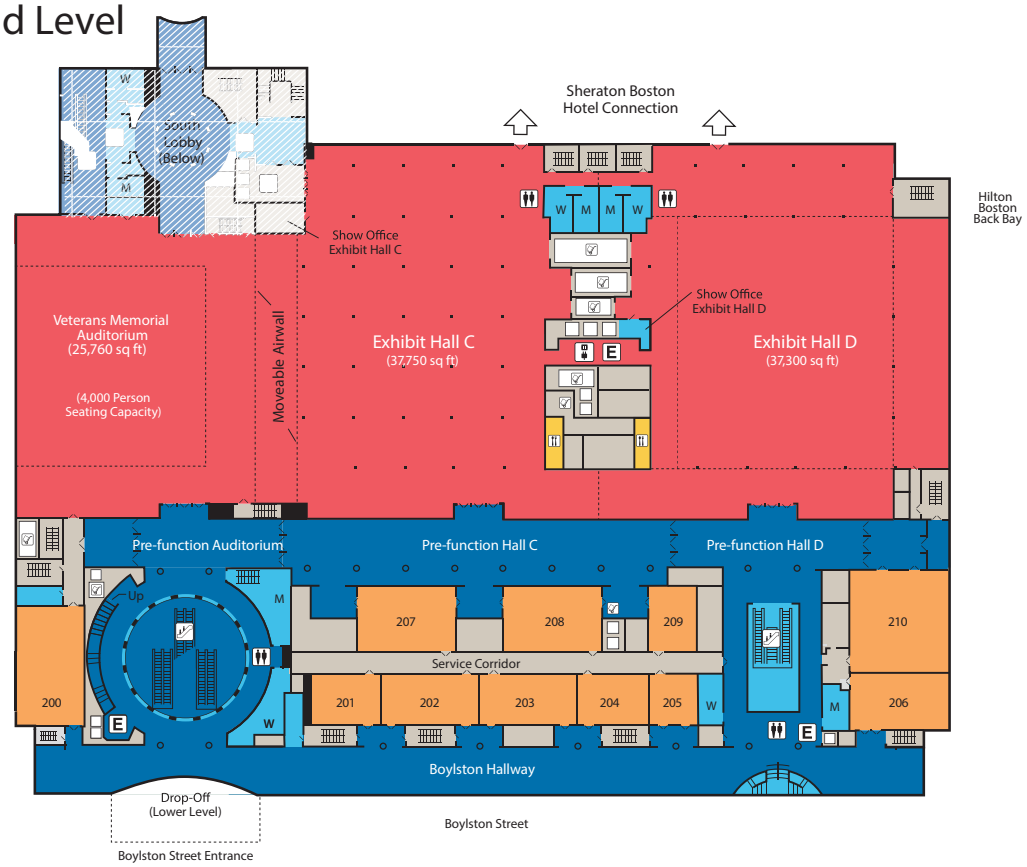
Procedures in Case of a Fire

- Try to leave the hotel as quickly as possible. If you cannot, stay in your room and call the operator or security to let them know you are in your room.
- Before opening your room door, put your hand on it to see if it's hot. If it is, don't open the door quickly. Open it just a crack to see what's on the other side, and be prepared to slam it shut quickly, if necessary.
- If you leave your room, take your room key with you. Also shut your room door to keep out smoke. You may have to return if the exit is blocked. Remember the way back to your room as you go to the exit in case you need to return.
- If necessary, drop to your knees to avoid smoke. Tie a wet towel around your nose and mouth to act as a smoke filter. Fold it into a triangle and put the corner in your mouth.
- Don't take the elevator when you smell smoke or if you know there is a fire in the building.

U.S. Food Waste Challenge

On June 4, 2013, the U.S. Department of Agriculture (USDA), in collaboration with the U.S. Environmental Protection Agency (EPA), launched the U.S. Food Waste Challenge, calling on others across the food chain—including producer groups, processors, manufacturers, retailers, communities, and other government agencies—to join the effort to reduce, recover, and recycle food waste. ICPP2018 supports this effort by working with the hotels and convention centers to donate food from the meeting to food shelves in the local area.

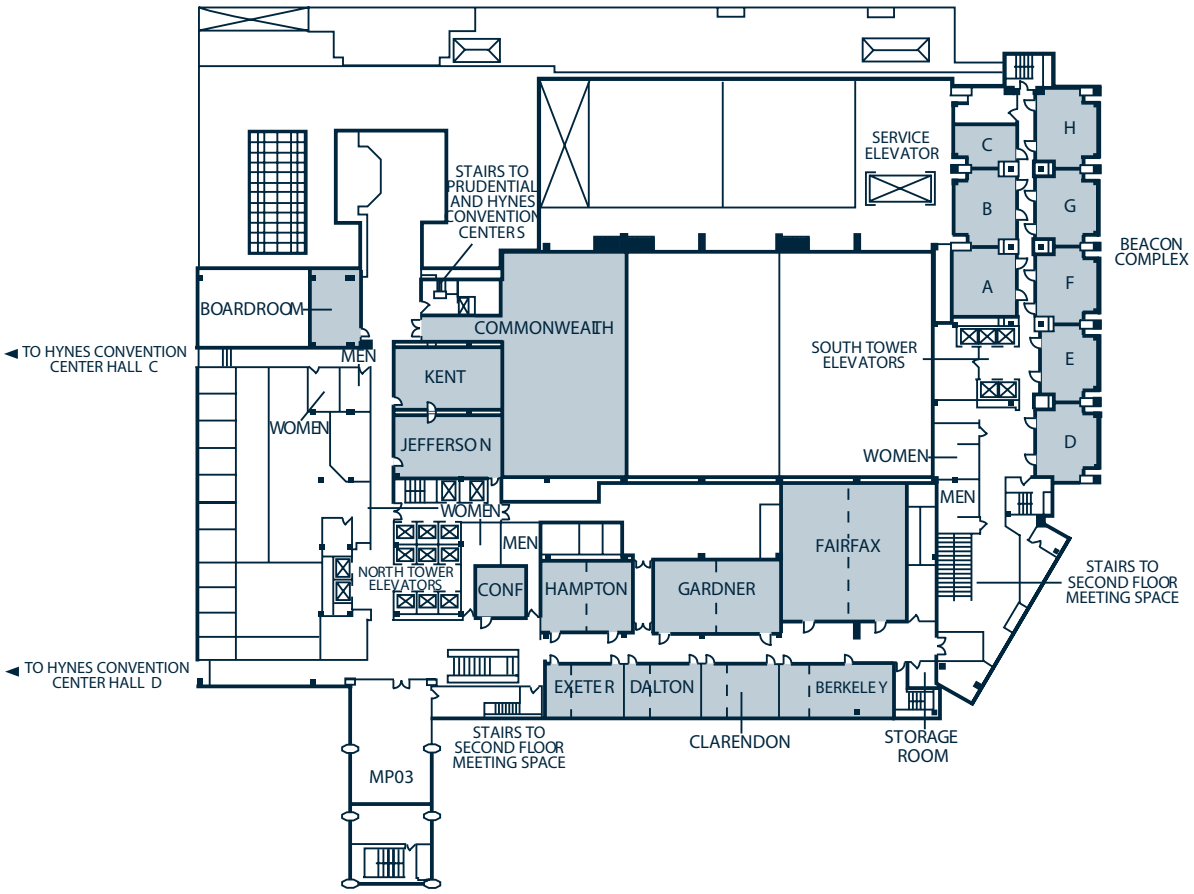
Second Level



Third Level



THIRD FLOOR


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8. Set up a custom-saved search alert in APS Journals.
9. Contribute $200–$499 to the APS Foundation to get the exclusive Foundation coaster.
10. Purchase *Untold Stories* and have it signed by author R. James Cook on Tuesday at 3:00 p.m.

Collect the entire set during the meeting!





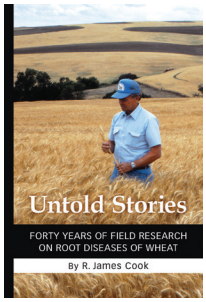
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Special Event! Book Signing

Tuesday, July 31 | 3:00–4:00 p.m. | APS PRESS Bookstore

Dr. R. James Cook – *Untold Stories: Forty Years of Field Research on Root Diseases of Wheat*

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Key Features of AmplifyRP XRT

- Use crude extracts without the need to denature at high temperatures
- Total assay time less than 30 minutes with positive results available in as little as 7 to 10 minutes.
- Similar sensitivity / specificity compared to other molecular methods such as PCR and qPCR
- No separate RT step required for RNA pathogens
- Develop your own assays with our AmplifyRP XRT Discovery platform
- Scalable for high-throughput applications

Take Advantage of This Special Offer

Purchase an AmpliFire by 12/1/2018 and receive:

- $1,000 off the AmpliFire (Retail price $8,995)
- An AmplifyRP XRT Discovery or pathogen specific kit of your choice at no charge
- Three hours of primer / probe design consultation by an Agdia R&D scientist specializing in AmplifyRP assay design
- 10% off all AmplifyRP test kits through May 31st, 2019

Visit us at booth #100 / 102 to learn more!

AmplifyRP® is a registered trademark of Agdia, Inc.

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