Plant Health in a Global Economy
11th International Congress of Plant Pathology
July 29–August 3
Boston, Massachusetts, U.S.A.
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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.
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**Get the app—it’s free!** Available for iOS (iPhone and iPad) and Android devices; Blackberry and Windows phone users have access to a mobile website that will offer the same functionality.

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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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.”

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!
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.

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!

Mary Palm,  
President of APS
PROGRAM–AT–A–GLANCE

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 Reischneider
• One to One Conversations with an Expert
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

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**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

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**Coffee Break**  
10:00–11:30

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

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

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**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

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**10:30–11:30**  
- One to One Conversations with an Expert

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**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
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

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

**Lunch 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
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.

**SUNDAY, JULY 29**

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

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

08:30–10:00
Monday Plenary Session—Plant Health Is Earth’s Wealth • Ballroom A/B/C

10:00–11:00
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
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.*

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**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.

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**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.

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

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

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**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

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**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), (1) The Pennsylvania State University, University Park, PA, U.S.A.; (2) Cornell University, Ithaca, NY, U.S.A.; (3) Volcani Center, ARO, Rishon Letzion, ISRAEL; (4) Volcani Center, ARO, MP Negev, ISRAEL
Associations of Armillaria root rot, *Trichoderma* endophytes and host plants in UK gardens

J. DRAKULIC (1), N. Bashir (2), M. Cromey (1), G. Clover (1), L. Beal (1), (1) Royal Horticultural Society, Woking, UNITED KINGDOM; (2) University of Nottingham, Nottingham, UNITED KINGDOM; (3) Royal Horticultural Society, London, UNITED KINGDOM

**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, Suståne 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 Rockhampton, AUSTRALIA; (3) Department of Agriculture & Fisheries, South Johnstone, AUSTRALIA

12:00 Resource competition and antagonism in natural soil suppressive to Bayoud disease on date palm (*Phoenix dactylifera*) in Morocco

History of plant pathology in Italy  
L. Mugnai, A. Scala, G. Surico, DISPAA, University of Florence, Firenze, ITALY

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

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

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

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

Fusarium tropical race 4 a disease threatening a global smallholder and industrial crop  
M. A. Dita Rodriguez (1), C. Staver (2), (1) Embrapa, Jaguariúna, SP, BRAZIL; (2) Bioversity International, Montpellier, FRANCE

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

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

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

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

Cytokinrin-regulated transcriptional networks regulating plant development and defense  
C. Argueso, Colorado State University, Fort Collins, CO, U.S.A.

A ‘cool’ mechanism of salicylic acid-mediated defense and growth tradeoff  
C. J. Tsai, University of Georgia, Athens, GA, U.S.A.

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

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.

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

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

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
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. Poulidard (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

14:40
Characterization of two biologically distinct variants of Tomato spotted wilt virus

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

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

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.

New Insights into Rice–Pathogens Interactions
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. Dereep (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 (USTTBB), 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

Plant Health in a Global Economy: Mobilizing Global Support for a Healthy Planet
14:00–16:00; Room 210

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

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) Hefei University of Engineering, Hefei, 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
**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
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

**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
**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.

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**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

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**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.

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

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DAILY SCHEDULE

Monday

IC  IC  IC  IC  IC  IC  IC  IC  PT  PT
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
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 mid-twentieth 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 heighten 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.
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.
Session content listed in the program is as submitted by the author/presenter and has NOT been edited.

### 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.

### 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.

### Hot Topics
Catch the latest science on topics that are “hot” in plant pathology.

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

### 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

09:10
Mycotoxigenic *Fusarium* spp. associated with stink bugs collected from corn fields in the mid-Atlantic U.S.

### 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.
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.

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. V. D. 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

10:00 Dickieya fangzhoudai causing soft rot of Phalaenopsis orchids and bacteriophage biocontrol options
Š. ALIČ (1,2), T. Naglič (1,3), F. Van Gijsen (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

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

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.

09:50 The Pectobacterium complex: Diversity and phylogeny
09:30
Stability of the spread parameter of the power law model for dispersal gradients of disease epidemics

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.

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, University of Nebraska, Lincoln, NE, U.S.A.; (4) Department of Plant Pathology, University of California, Davis, CA, U.S.A.

The First Line of Defense Against Plant Disease in the Developing World: Mineral Nutrition
08:30–10:30; Room 311


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.

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.

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 leaf spot 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) Universidad de Concepción, Chillán, CHILE; (3) INIA Quilamapu, Chillán, CHILE

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

**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

**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

**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
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.

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

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

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.

Suppressive soils: New paradigms for an old story?
Targeted microbiome design for plant health
G. BERG, TU Graz, Environmental Biotechnology, Graz, AUSTRIA

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

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

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

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

Multiscale aspects of vector transmission of plant viruses: From landscapes to co-infections
A. POWER, Cornell University, Ithaca, NY, U.S.A.

Molecular evidence of insect vector manipulation by a plant virus

MicroRNA profiling of the whitefly Bemisia tabaci in response to feeding on tomato infected with Tomato yellow leaf curl virus

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.

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 (2), 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–Istituto per la Protezione e la Gestione della Quidità (IPGRI), Rome, 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. Rebaltato (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

**TUESDAY EXHIBIT HALL PROGRAMMING**

**IC**

**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, Palmitra, 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. Herrera (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, Jeddahpur, 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. Ehtisham-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

**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.
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.
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.

**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.
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.

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.

Hot Topics
Catch the latest science on topics that are “hot” in plant pathology.

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

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, DISAA-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

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.

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. Duteux (1,2), M. H. Balesdent (1), N. Lapalou (1), C. Cruaud (2), T. ROUXEL (1), (1) INRA Bioger, Thiverval-Grignon, FRANCE; (2) CEA CNRS, Évry, FRANCE

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

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

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. Manechoat (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


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. Gadourey (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!

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: 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 Vicsa, Vicsa, 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 Turin, Turin, 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 State 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, Pullman, 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 Symaptic 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
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 biopesticides 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

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.
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

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, Bundaberg, AUSTRALIA; (2) LaTrobe University, Bundaberg, 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, Bundaberg, AUSTRALIA; (2) LaTrobe University, Bundaberg, AUSTRALIA; (3) AgriBio, Bundaberg, 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, CA, U.S.A.; (2) University of California, 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.
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

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. Dudlemans (1), Y. Griekspoor (1), O. Mendes (2), M. van Gent (1), R. A. Van Der Vlugt (1), J. Bergervoet
Quality assurance, validation of tests, and collections in plant pest diagnostics: Approaches and experience in the EPPO region

Application of spectral reflectance to differentiate between leaf diseases and abiotic stresses in wheat

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

Electrolized water for the control of postharvest decay of fruits and vegetables

Integration of postharvest fungicides and fruit sanitation treatments to optimize decay control and address food safety concerns

Spacial and compositional diversity in the microbiota of harvested fruits: What can it tell us about biological control of postharvest diseases

Innovative management strategies for *Aspergillus* spp. and *Penicillium* spp. on nuts

Effects of UV photocatalytic ethylene removal on interactions between *Colletotrichum gloeosporioides* and *Solanum lycopersicum* (tomato) fruit

Asexual evolution and population sensitivity changes over time in *Sclerotinia homoeocarpa* in the absence of fungicide pressure

Azole fungicide resistance: Evolution on a rugged fitness landscape

Population Dynamics of Fungicide Resistance

When pathogen populations diverge: Why understanding species boundaries is critical for managing fungicide resistance

Asexual evolution and population sensitivity changes over time in *Sclerotinia homoeocarpa* in the absence of fungicide pressure

Azole fungicide resistance: Evolution on a rugged fitness landscape

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

Population Dynamics of Fungicide Resistance

When pathogen populations diverge: Why understanding species boundaries is critical for managing fungicide resistance

Asexual evolution and population sensitivity changes over time in *Sclerotinia homoeocarpa* in the absence of fungicide pressure

Azole fungicide resistance: Evolution on a rugged fitness landscape

When pathogen populations diverge: Why understanding species boundaries is critical for managing fungicide resistance

Asexual evolution and population sensitivity changes over time in *Sclerotinia homoeocarpa* in the absence of fungicide pressure

Azole fungicide resistance: Evolution on a rugged fitness landscape
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

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

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

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

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

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

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

Spectral characterization of bacterial leaf blight of rice through spectroscopy and remotely sensed multispectral imagery
R. T. ALBERTO, Central Luzon State University, Science City of Munoz, Nueva EciJa, PHILIPPINES

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.

Effect of irrigation on the severity of charcoal rot and yield on selected drought tolerant soybean genotypes
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

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.

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

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

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

Integrated pest management (IPM) still not sufficiently used in practice
Z. Sawinska (1), J. Strzelańska (1), S. SWITEK (2), R. Glowicka-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

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

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
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

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

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

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
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 nutritionally 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 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 Fitopatologia, 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.

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

09:00
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

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), T. Wetzel (13), T. Wetzl (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, Nyona, SWITZERLAND; (8) Humboldt University Berlin, GERMANY

09:00
Co-expression of Bs2 and EFR genes in tomato provides effective broad-spectrum field resistance against bacterial wilt and bacterial spot of tomato
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

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

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. Poupart (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. Tokawa (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

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
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.

Trichothecene diversity and role of plant detoxification enzymes in host resistance

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.

Fusarium toxisomes may be necessary for synthesis of high levels of deoxynivalenol and production of the distinct sesquiterpene mycotoxin, culmorin
C. Flynn (1), Q. Lyu (2), 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.

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.

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.

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

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

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.

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

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

New approaches to detection: Canine surveillance of high risk pathogens

Global wheat stem rust monitoring: meeting the challenges of a re-emerging threat to wheat production
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 Turin, 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) Spino-To SLR, Torino, ITALY; (2) Moverim Consulting SPRL, Bruxelles, BELGIUM; (3) Agroinnova–University of Turin, 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 (2), 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 Turin, 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 Turin, 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.
Advances in Oomycete Detection and Screening
12:00–12:50; Room 208

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.

12:40
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.

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, 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), E. 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

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 (1), C. Pizzatti, M. Pasquali, P. Cortesi, DeFENS, Università degli Studi di Milano, Milano, ITALY

DAILY SCHEDULE
Friday
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

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.

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

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.

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-Baijens (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 Politècnica de València, 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), J. R. Urbez-Torres (4), (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
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. Grenbech Hansen (4), (1) Aarhus University, Slagelse, DENMARK; (2) Danish Institute of Agricultural Sciences, Slagelse, DENMARK; (3) University of Agriculture, 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 Turin, Grugliasco, Torino, ITALY; (2) Department of Agricultural, Forest and Food Science, University of Turin, Grugliasco, ITALY; (3) Ente Nazionale Risi, ENR, Milano, ITALY; (4) EnT a Science Ltd., York, UNITED KINGDOM; (5) DISAFA and AGROINNOVA, University of Turin, 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, Wuhu, CHINA; (3) Southwest University, Chongqing, CHINA

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**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.
Analyzing the expression of ‘Candidatus Liberibacter solanacearum’ effectors in insect and plant hosts
P. Reyes-Caldas (1), L. M. M. Perilla Henao (2), S. Thapa (3), C. Casteel (4), G. L. Coaker (5), University of California, Davis, CA, U.S.A.

16:00 Insights into the epidemiology and transmission of grapevine red blotch virus

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. V. (/), R. Terauchi (3,5), B. Valent (6), M. L. Farman (7), (1) Kobe University, Kobe, JAPAN; (2) Kobe University, 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. Singhi (2), G. Gruppo (3), F. M. Santana (4), T. C. Todd (3), L. Calderon Daza (5), M. G. Rivadeneira Caballero (6), P. Singh (7), G. L. Peterson (8), H. J. Braun (7), B. Valent (3), 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.

Disease Control and Fungicide Resistance
15:30–16:20; Room 208

15:30 A myosin5 dsRNA that reduces the fungicide resistance and pathogenicity of Fusarium asiaticum
X. S. Song (1), 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

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. Torres (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

**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. Kiker (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
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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

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<td>Biotechnology and Genetic Engineering</td>
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<td>Regulatory Plant Pathology</td>
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1-P Strawberry B. cinerea IPM optimisation by iMETOS®sm forecasting model N. RASIUKKEVICIUTE, 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 sachuenense 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 Xyella 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. SHAHOVEIS, University of Manitoba, Winnipeg, MB, CANADA

13-P Asian soybean rust control in response to the rainfall gene after fungicides application A. CHECHI, Univ. of Georgia, Athens, GA, USA

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. PATTTERSON, 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 Colombia C. ANGEL, National Coffee Research Center -Cenicafé, 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 PsCHS 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. PANKAKE, 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 Stenophyllum lycopersici isolates virulence depends on the synthesis of phytotoxic metabolites, which is modified by the environment P. BALATTI, Centro de Investigaciones de Fitopatología (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
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

The mitogen-activated protein kinase kinase kinase SoS4 regulates vegetative growth and fungicide sensitivity in Sclerotinia sclerotiorum. T. LI, Nanjing Agricultural University, Nanjing, CHINA

Dickeya dauditii 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

Identification and characterization of hemagglutinins at different stages of bacterial wilt disease. K. KHOKHANI, University of Wisconsin Madison, Madison, WI, USA

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

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

Differential Roles of Glucosinolates and Camalexin at Different Stages of Agrobacterium-Mediated Transformation. E. LAL, Institute of Plant and Microbial Biology, Academy Sinica, Taipei, TAIWAN

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

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

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

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

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

Phyllosphere colonization strategies related to successful infection in Xanthomonas vesicatoria. A. ROMERO, Facultad de Agronomía, University of Buenos Aires, Buenos Aires, ARGENTINA

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

Fusel alcohol biosynthesis in the Cerato cystidiaeae. M. VAN DER NEST, Forestry and Agricultural Biotechnology Institute (FABI), University of Pretoria, Pretoria, SOUTH AFRICA

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

Decarboxylase in citrus. S. ZHANG, New Mexico Consortium, Los Alamos, NM, USA

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

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

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

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

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

Regulation of citrus DMRI6 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

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

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

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

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

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

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

Increase of sweet orange resistance against Xanthomonas citri pv citri through translocation of DSR molecules from transgenic rootstocks. R. CASERTA, Centro de Citricultura Sylvia Moreira, Porto de Alcântara, Bauru, BRAZIL

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

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

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

Use of biotechnological tools to incorporate broad virus resistance into wheat. M. NAVIA-URRUTIA, Kansas State University, Manhattan, KS, USA
### Crop Loss Assessment

**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

**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 blight disease (Cercospora coffeicola Berk. & Cooke) on coffee quality and value in coffee C. ANGEL, National Coffee Research Center -Cenicafé, Manizales, COLOMBIA

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

**75-P** <i>Tomato chlorosis virus</i>: 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 <i>Sugarcane yellow leaf virus</i> on <i>Sugarcane</i> 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 <i>Sugarcane Mosaic virus</i> on <i>Sugarcane</i> in Louisiana M. GRISHAM, USDA-ARS, SRU, Houma, LA, USA

**80-P** <i>Brome mosaic virus</i> 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 <i>Zymoseptoria tritici</i> isolates resistant to DMI and strobilurin fungicides J. DELGADO, Dow AgroSciences, Indianapolis, IN, USA

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

**84-P** Managing QoI resistant <i>Cercospora beticola</i> 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 <i>Celatocritum truncatum</i> S. CHEN, Institute of Plant Protection, Chinese Academy of Agricultural Sciences, Beijing, CHINA

**87-P** <i>Celatocritum</i> 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 <i>Botrytis cinerea</i> 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 <i>Zymoseptoria tritici</i> isolates under greenhouse conditions C. AVILA-ADAME, Dow AgroSciences LLC, Indianapolis, IN, USA

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

**91-P** Evaluating <i>Helminthosporium solani</i>, causal agent of potato silver scurf blight disease, for sensitivity to the fungicide azoxystrobin S. MACCHiAVElli GIRON, University of Wisconsin-Madison, Madison, WI, USA

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

**93-P** A simple technique for rapid detection of fungicide resistance in <i>Phytophthora</i> 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 <i>Penicillium expansum</i> laboratory mutants M. ALI, Washington State University, Wenatchee, WA, USA

**97-P** QoI sensitivity in <i>Alternaria solani</i>, 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 <i>Phytophthora cactorum</i> 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 <i>Phytophthora infestans</i> resistant to metalaxyl F. CHEN, Fujian Agriculture and Forestry University, Fuzhou, CHINA

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

**102-P** Management of <i>Moniilina fructicola</i> 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 <i>Zymoseptoria tritici</i> B. FRAAIJE, Rothamsted Research, Hertfordshire, UNITED KINGDOM

**104-P** Fungicide sensitivity of <i>Rhizoctonia</i> spp. isolated from soybean fields in Nebraska N. GAMBHIB, University of Nebraska, Lincoln, NE, USA

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

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

**107-P** Detection of QoI fungicide resistant <i>Cercospora beticola</i> airborne inoculum using quantitative PCR K. CHITTEM, North Dakota State University, Fargo, ND, USA
108-P Assessment of boscalid, fluopyram, and flupyradroxyl sensitivity in Michigan populations of Blumeria jaapii. J. GLEASON, Michigan State University, East Lansing, MI, USA

109-P Selection of boscalid resistance in Blumeria jaapii populations treated with boscalid, fluopyram, or flupyradroxyl. 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 Sensitivities 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 CYPSI-mediated reduced sensitivity to triazole fungicides in Colletotrichum henticotiae. 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 NR37 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. coryli 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

Host Resistance Screening

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 Hyphomycetes fuscineans 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. GORN, 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, Kleinhachnow, GERMANY

139-P A reliable glasshouse screening technique to detect BYDV-PV 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 delicosa & Actinidia chinensis). M. LEE, Namhae branch, NIHHS, RDA, Namhae-gun, KOREA

142-P Resistance of pineapple genotypes to fusariosis and implications 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 bamba groundnut [Vigna subterranea (L.) Verdc.] accessions to foliar diseases under natural infection in Nigeria C. GBOYEGA AFOLABI, Federal Univ of Agriculture, Abeokuta, Ogun State, NIGERIA

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 strioglactone related Brachypodium distachyon cytochrome P450 monoxygenase 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 (Podosphaera 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 hiricola 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 AvrRxv1 interacts with AIN1 to EnhanceBacterial Growth on Pepper and Tobacco Plants Z. WANG, Virginia Tech, Blacksburg, VA, USA

165-P Xylella fastidiosa utilizes α 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 PsCNR70 effector enhances salt and drought stresses in Nicotiana benthamiana N. RAJPUR, 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 hopX and hopG 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. ECKSHTAIJ-LEV1, PPWS Department, Virginia Tech, Blacksburg, VA, USA

183-P Role of type IV pili in biofilm formation and virulence of *Xylellus amelicans* 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. GAULJA, 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 *Usiliagous maydis* transcription factor, Zip1 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 D3C3000D36E 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, elemonth 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 Dakota 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 SnTox3 in *Pseudomonas syringae* 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 or inducing 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 Prolin18 in *Psa* is important for Brassica yellows virus systemic infection which can be rescued by ectopically expressed *Psa* C. HAN, China Agricultural University, Beijing, CHINA

211-P Examining the role of an EF-Hand Protein in regulating virulence in *Xanthomonas*. S. BIBB, 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
234-P Sethoxydim herbicide at sublethal dose synergizes modulation of growth, twitching movement and novel biosynthetic gene cluster in

231-P Characterization of a novel transcription factor from Sclerotinia sclerotiorum induced during infection of pea H. SANG, Michigan State University, East Lansing, MI, USA

230-P Oxidative stress tolerance is critical for xylem colonization and virulence of xylem-limited pathogens Xanthomonas abildiniae and Xylella fastidiosa M. JAIN, Institute of Food and Agricultural Sciences, University of Florida, Gainesville, FL, USA

229-P Clathrin is essential for virulence factors delivery Identifying oxalic acid independent compatibility factors from Sclerotinia sclerotiorum P. YU, University of Florida, Gainesville, FL, USA

228-P The expanded lineage-specific C

227-P Identification and characterization of a carbonic anhydrase involved in virulence and bacterial competition of Pseudomonas syringae pv. tomato DC3000 M. FILLIATRAULT, USDA ARS, Ithaca, NY, USA

226-P Fusarium graminearum chemotype differences and virulence G. WIESENBERGER, University of Natural Resources and Life Sciences, Vienna, Tulln, AUSTRIA

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

and colonization of citrus D. GABRIEL, Institute of Food and Agricultural Sciences, University of Florida, Gainesville, FL, USA

221-P Identification and characterization of a carbonic anhydrase involved in virulence and bacterial competition of Pseudomonas syringae pv. tomato

220-P Comparative transcriptome profiling of compatible and incompatible Magnaporthe grisea-pearl millet interaction R. SHARMA, ICRISAT, Hyderabad, INDIA

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

218-P Cross-kingdom communication between Ralstonia and Fusarium mediate tomato wilt disease and microbial survival N. VENKATESH, University of Wisconsin, Madison, WI, USA

217-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

216-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

215-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

214-P Gene conservation reveals perylenequinone toxin biosynthesis clusters in multiple plant pathogenic fungal species R. SPANNER, North Dakota State University, Fargo, ND, USA

213-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

212-P Sethoxydim herbicide at sublethal dose synergizes biocontrol of green foxtail by Pyricularia oryzae via triggering ABA-activated pathways and bZIP60 G. PENG, Agric & Agri-Food Canada, Saskatoon, SK, CANADA

211-P Understanding the role of Type VI Secretion Systems for intra-specific competition and pathogenicity in Erwinia tracheiphilica C. VRSIMAN, Department of Plant Pathology, The Ohio State University, Wooster, OH, USA

210-P Utilizing genomic tools to identify and characterize effectors in the novel sugar beet pathogen Fusarium segorum S. SHRESTHA, North Dakota State University, Fargo, ND, USA

209-P Gene cluster conservation reveals novel cercosporin biosynthetic mechanisms in the sugar beet pathogen Cercospora beticola M. BOLTON, USDA-ARS, Red River Valley Agricultural Research Center, Fargo, ND, USA

208-P The Bzip60 and Bzip17 Transcription Factors Are Critical To Suppressing PVX And PVY Infection in Arabidopsis and Potato. G. ORQUERE, TORNAKJAN, Texas A&M Agrilife Center in Dallas, Dallas, TX, USA

207-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

206-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

205-P The PaC 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

204-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

203-P The expanded lineage-specific C$_{3}$H$_{2}$-homeobox transcription factors regulate microsclerotia formation and virulence in Verticillium dahliae Y. WANG, Beijing Forestry University, Beijing, CHINA

202-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

245-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

244-P Effect of SiO$_2$ Nanoparticles on the Interaction of Pseudomonas fluorescens and Meloidogyne incognita in Truchypsernum ammi under Greenhouse Conditions M. DANISH, Section of Plant Pathology and Nematology, Dept of Botany, Aligarh Muslim University, Aligarh, INDIA

243-P Occurrence and distribution of plant- parasitic nematodes of blueberry in Georgia G. JAGDALE, University of Georgia, Athens, GA, USA

242-P Oomycetes

251-P Adaptation of the causal agent of late blight, Phytophthora infestans, to climate change A. CORDOBA, Universidad de los Andes, Bogota, COLOMBIA

250-P Pythium and Phytophthum associated with Soybean in Buenos Aires (Argentina), P. GRIJALBA, Univ. de Buenos Aires, Ciudad Autónoma de Buenos Aires, ARGENTINA

249-P Oomycetes
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. ADDUCCHI, 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 sourpsop (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 Xyella fastidiosa detection using the AmplifyRIP 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. Ö LOINSIGH, The University of Nottingham, Loughborough, UNITED KINGDOM

300-P Identification of Rathayibacter and other bacteria associated with gummy disease of grasses in Oregon, U.S.A. M. PUTNAM, Oregon State University, Botany and Plant Pathology, Corvallis, OR, USA

301-P Crossosporella: a new genus of rust fungus infecting native fruit plants with potential for cultivation in the Brazilian Cerrado J. DIANESE, UNIVERSIDADE DE BRASILIA, BRASILIA, 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 Diaportha 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. BOBUSHKOVA, Kyrgyz Turkish Manas University, Bishkek, KYRGYZSTAN

311-P Development of a loop-mediated isothermal amplification assay for detection of Fusarium avenaceum Y. LII, 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 Apheleleceoides 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. GONTHER, University of Torino / DISAFA, Grugliasco, ITALY

315-P Reliable detection of Peach latent mosaic viroid (PLMVd) by real-time RT-PCR C. MARTINEZ, 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 soliborne 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 phytopathologie, 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 Phytophthora irregularis in hydroponic culture system of cucumis 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 Liberibacter 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 oxyssporum 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, R. sacchari and P. sorgii 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 Tricicum 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

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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? Z. PAVLOVIĆ, Cornell University, Plant Pathology and Plant-Microbe Biology Section, Highland, NY, USA

352-P Novel Cytophabavirus 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-eyecise functionalized gold nanoparticles for direct detection of Cronostreptereum purpureum J. MEJIAS, 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 illinoinensis) 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 dianthiocola 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. BUENSAANTEAI, School of Crop Production Technology, Suranaree University of Technology, Nakhon 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

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, EMRAERP-CNPM, Sete Lagoas, BRAZIL

382-P Root-feeding beetles and Leptographium and Grossmania 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 cockerellii (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 Stenphylium versicaerium and onion thrips (Thrips tabaci) in the development of Stenphylium leaf blight disease A. LEACH, Cornell University, Geneva, NY, USA

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392-P Genome-wide piRNA profiles of the virus transmitting whitfly, 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 Fitolocnia, 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
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

Acquisition of Erwinia amylovora by Drosophila melanogaster M. BOUCHER, Cornell University, Geneva, NY, USA

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Analysis of microbiomes and metatranscriptome of Norway spruce trees naturally infected by the conifer pathogen Heterobasidion sp. F. ASIEGBU, University of Helsinki, Helsinki, FINLAND

Strawberry anthosphere microbiome structure and functional study of probiotics Y. KWAK, Gyeongsang National University, Jinju, KOREA

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Pyrosequencing-based microbial community analyses according to kiwi-biome organs M. KIM, Department of plant medicine, Gyeongsang National University, Jinju, SOUTH KOREA

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Does inoculation with Pseudomonas fluorescens LBUM223 impact the rhizosphere and geocaulosphere microbiomes of potato? A. NOVINSCKAV, Université de Moncton, Moncton, NB, CANADA

Influence of boxwood species and cultivars on the rhizosphere microbiome N. LEBLANC, USDA-ARS, Beltsville, MD, USA

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

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

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

Exploring Microbiome of Medicinal Plants as Biocontrol Agents G. ALI, University of Florida, 32703, FL, USA

The impact of pesticides on bacterial biodiversity in the turfgrass rhizosphere E. BUCZKOWSKI, University of Wisconsin, Madison, WI, USA

The structure and function of the global citrus root-associated microbiome J. XU, University of Florida, Lake Alfred, FL, USA

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The microbiome of soils suppressive to Spongospora diseases of potato R. FALLOON, The New Zealand Institute for Plant & Food Research Limited, Christchurch, NEW ZEALAND

Seasonal and potato cultivar effects on common scab causing Streptomyces spp. and bacterial communities C. GOYER, Agriculture and Agri-Food Canada, Fredericton, NB, CANADA

Crop-specific microbiome responses to four-year rotational sequences M. BENITEZ PONCE, The Ohio State University, Wooster, OH, USA

Contrasting microbial diversity in conducive and putative suppressive soils to garlic white rot V. LOURENÇO, Embrapa, Brasilia, BRAZIL

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

The secret life of bacteria: The interaction of Enterobacter and the soil pathogen Rhizoctonia solani P. ZHANG, University of Florida, Gainesville, FL, USA

Microbiome associated with tall fescue under drought stress G. GROBEN, Rutgers University, New Brunswick, NJ, USA

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Ecological significance of soybean seed treatments on oomycete communities Z. NOEL, Michigan State University, East Lansing, MI, USA

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

Effect of native New Jersey Pine Barrens bacteria on germination of switchgrass (Panicum virgatum) P. ENGEL, Rutgers University, New Brunswick, NJ, USA

Soil fungal diversity during a soybean-cover crop rotation using community sequencing M. MARROQUIN-GUZMAN, University of Nebraska, Lincoln, NE, USA

Influence of temperature on the isolation of water molds using a soil bating technique K. NAVARRO, The Ohio State University, Wooster, OH, USA

Do grafting and rootstock genotype affect the rhizobiome? A study of tomato systems R. POUDEL, Plant Pathology Department, University of Florida, Gainesville, FL, USA

The avocado root phytobiome: microbial community structure under abiotic and biotic stress S. CRANDALL, California State University Monterey Bay, Seaside, CA, USA

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

RNA virome of two important phytopathogenic fungi N. ABOUGHANEM-SABANADZOVIC, USDA ARS, Corvallis, OR, USA

Population Biology and Genetics

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

Morphological and molecular variability of Alternaria spp. causing leaf blight of cotton in India S. ASHTAPUTRE, University of Pretoria, Pretoria, SOUTH AFRICA

The incidence and pathogenicity of Alternaria leaf spot associated with canola (Brassica napus) in southern Australia H. AL-LAMI, The University of
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 AvrPib 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. KENNYON, World Vegetable Center, Shanhu, Taian, TAIWAN

519-P  The presence of secreted in xylem genes in *Fusarium oxysporum* Lsp 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 Academy 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

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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 Ealn/R quorum sensing regulon in *Pantoea ananatis*. L.MG 2665*. 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 rattoon 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. RAHM, 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. AUGUSTO, 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, ESIA, 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 *hsb* 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 unicellular 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. mangineicans*. 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 *Rhizocloctena 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
Metabolomic Profiling Revealed Chemical Elicitors Triggering Rice Defense Against Magnaporthe oryzae Infection Z. WANG, Fujian Agriculture and Forestry University, Fuzhou, CHINA

Does transmission mode shape PVY quasispecies? Insights from Illumina deep sequencing W. DA SILVA, Cornell University, Ithaca, NY, USA

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

Approaches to effectively use pathogenomics for wheat crop protection against rusts G. BAKKEREN, Agric & Agri Food Canada, Summerland, BC, CANADA

Investigating the Role of Trehalose Metabolism During Ralstonia solanacearum Bacterial Wilt Disease A. MACINTYRE, University of Wisconsin-Madison, Madison, WI, USA

Diversity of the Microbacteriaceae, with focus on the plant pathogenic genera Clavibacter and Leifsonia, based on environmental 16S data T. GALHARDO EGIREJA RIBEIRO SILVA, Department of Plant Pathology, University of Nebraska, Lincoln, NE, USA

Dynamics of chromosomal and plasmid-borne copper resistance systems in Xanthomonas perforans populations R. BHANDARI, Auburn University, Auburn, AL, USA

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

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

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

Potential role of small noncoding RNAs in regulating hypovirulence in Rhizoctonia solani anastomosis group 3 E. CHAMPAKO, University of Maine, Orono, ME, USA

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

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

Diversified transcriptional modulation of alternative splicing repertoire during rice-Magnaporthe oryzae interactions J. EON, Seoul National University, Seoul, SOUTH KOREA

The wheat pathogen Zymoseptoria tritici senses and responds to different wavelengths of light C. MCCORISON, Purdue University, West Lafayette, IN, USA

Dissection of non-host resistance to European pear scab fungus, Venturia pirina using fluorescence phenotyping and transcriptomics K. PLUMMER, La Trobe University, Bundoora, AUSTRALIA

Expanded effector families in fruit scab fungi: Venturia inaequalis, V. pirina and V. nashicola K. PLUMMER, La Trobe University, Bundoora, AUSTRALIA

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

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

Evolution of carbohydrate and protein metabolism gene families in Colletotrichum spp. M. THON, University of Salamanca, Instituto Hispano-Luso de Investigaciones Agrarias, CIALÉ, Villamayor, SPAIN

Comparative genomics of plant pathogenic bacteria Dickeya solani and Pectobacterium carotovorum for identifying specific traits involved in virulence E. LOJIKOWSKA, Intercollegiate Faculty of Biotechnology University of Gdansk Medical University of Gdansk, Gdansk, POLAND

Analysis of Fusarium graminearum pangenome A. MACHADO, Rothamsted Research, Harpenden, UNITED KINGDOM

Analysis of Chenopodium virus interactions using Chenopodium quinoa reference genome N. SOLTANI, University of Tennessee, Department of Entomology and Plant Pathology, Knoxville, TN, USA

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

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

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

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

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

Deciphering floral infection of blueberry pathogen Monilinia vaccinii-corymbosi using comparative genomics and transcriptomics B. BANSAL, University of Florida, Gainesville, FL, USA

The genomes of Ophiophaearella spp. reveal new insights into the bermudagrass spring dead spot pathosystem. N. GRAF GRACHET, Oklahoma State University, Stillwater, OK, USA

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

Whole genome sequence analysis of Xanthomonas perforans shows widespread recombination events S. TIMELSINA, Department of Plant Pathology, University of Florida, Gainesville, FL, USA

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, USADA-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 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 L. MORRIS, Department of Economic Development, Jobs, Transport and Resources, Bundabura, 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

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596-P A novel dsRNA virus stimulates sporulation of Phytophthora infestans and may have contributed to late blight epidemics G. CAI, USADA-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 necrohabdovirus from blackcurrant identified by high-throughput sequencing R. LI, USADA-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 Claviviruses detected in Hibiscus rosa-sinensis and Citrus sinensis is a strain of Citrus leprosis virus C2 causing citrus leprosis disease in Colombia A. ROY, USADA-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 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*: 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. HAMM, 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 mosaico virus and Satellite panicum mosaic virus. C. R.V, USDA-ARS, Lincoln, NE, USA

625-P Prevalence of maize-infesting 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 (LCV2) 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 recombination of PVV 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

633-P Understanding pathogen and environmental drivers of white leaf spot (Pseudocercospora 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 nomyocyte 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 University, Fort Collins, CO, USA
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655-P Do reduced irrigation practices alter opportunistic pathogen dynamics in nursery systems? J. DEL CASTILLO MUNERA, University of California, Davis, CA, USA

656-P Light induced resistance to bacterial gall disease caused by \textit{Pseudomonas syringae pv. cerasioca} in cherry tree (\textit{Cerasus} × \textit{yedoensis}) M. ISHIHARA, Forestry and Forest Products Research Institute, Hokkaido Research Center, Sapporo, JAPAN

657-P \textit{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 \textit{Ralstonia solanacearum} 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 \textit{‘Candidatus Liberibacter asiaticus’} in China Z. ZHENG, South China Agricultural University, Guangzhou, CHINA

660-P Occurrence of bacterial pathogens, including non-toxicogenic strains of \textit{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 \textit{Candidatus Liberibacter asiaticus} in split-root citrus provides a model system for local and systemic effects of Huanglongbing J. VELOSO DOS SANTOS, UNESCO Jabioticabal, Jabioticabal, BRAZIL

663-P Bacteriocins play a key role in \textit{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 \textit{Ralstonia solanacearum} in solanaceous crops in Tanzania H. KANYAGHA, The Ohio State University, Wooster, OH, USA

665-P Characterization of bacteriophages against \textit{Erwinia amylovora} and \textit{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 \textit{Potato} potatoes. A. MAINEILLO, The Pennsylvania State University, University Park, PA, USA

668-P Conservation of tunicamycin biosynthetic gene clusters across \textit{Rathayibacter} species M. TACOS, USDA ARS FDWSRU, Frederick, MD, USA

669-P A survey of soft rot bacteriaceae along the anthropogenic gradient of the Durance river M. BARNY, INRA, Paris, FRANCE

670-P Characterization of two new \textit{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 \textit{Xanthomonas oryzae} in Senegal H. TALL, ISRA, Dakar, SENEGAL

673-P \textit{’Candidatus Liberibacter asiaticus’} bacteriophage search and the role of the OmpA protein in \textit{Liberibacter} species M. SENA VELEZ, Florida State University, Tallahassee, FL, USA

674-P Characterization of two new \textit{Pseudomonas} species isolated from cranberry galls in Massachusetts T. CASTANEDA, Midwestern University, Glendale, AZ, USA

675-P Bacteriocin sensitivity in \textit{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-REC, HOMESTEAD, FL, USA

677-P LC2 and LC1 act as key regulators of bacteriophage SC1 in \textit{Liberibacter crescens} A. MUNOZ BODNAR, University of Florida, Gainesville, FL, USA

678-P Enhanced virulence of \textit{Xanthomonas citri} subsp. \textit{citri} after coinfection with \textit{Apple stem grooving virus} in citrus trees H. HIRATA, Graduate School of Integrated Science and Technology, Shizuoka University, Shizuoka, JAPAN

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679-P The biological control of \textit{Fusarium} wilt of sweet potato using non-pathogenic \textit{Fusarium oxysporum} and \textit{Trichoderma} species R. SUTHERLAND, Agricultural Research Council, Pretoria, SOUTH AFRICA

680-P Evaluation of flowering buds extracts of \textit{Eucalyptus} for antifungal activity against \textit{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 \textit{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 \textit{Bacterial Volatiles} G. EBDAZDASRAHI, Midwestern University, Glendale, AZ, USA

685-P Arbascular mycorrhizal fungus affects root knot nematode (\textit{Meloidogyne incognita}) on cucumber (\textit{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 \textit{Potato} potatoes(\textit{Fusarium solani}) 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 \textit{Sclerotinia sclerotiorum} and \textit{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 \textit{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

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694-P  Acospirillum brasiliense 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 K01 in control of pepper bacterial spot K. GASIĆ, Institute for Plant Protection and Environment, Belgrade, SERBIA AND MONTENEGRO

697-P  Effect of biological agents (strains-UCV-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 Isolavones on Heteroderia glycines Y. WANG, Shenyang Agricultural University, Shenyang, CHINA

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701-P  Endophytic establishment of Beauveria bassiana in maize, and its effects on plant growth and reproduction of grain aphids (Sitobion avenue) Z. MAHMOD, 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 pyrocinin 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, Bubtai, 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 rhizosphere bacteria P. PATEL, C G Bhakta Institute of Biotechnology, Uka Tarsadia University, Bardoli, INDIA

714-P  Examining MAT1-1 strain as biocontrol agent against aflatoxinogenic Aspergillus flavus in maize J. LUIS, North Carolina State University, Raleigh, NC, USA

715-P  Control of late blight (Phytophthora infestans) on tomatoes using biocontrol 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 Piperaceae plant extracts in controlling chilli anthracnose P. WIRIYAJITSOMBOON, Kasetsart University, Bangkok, THAILAND

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720-P  Rhizobacterial volatiles potentially inhibit the soil-borne fungal 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

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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 E. 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
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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 plasmodis to fitness and fire blight biocontrol efficacy of Pantoea vagans strain C9-1 T. 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

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732-P Essential oils as pepper seeds treatment for Colletotrichum gloeosporioides control D. D. 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, Batba, Kaunas dist., LITHUANIA

736-P Mechanism research of transcriptional regulator LeClp in the biosynthesis of WAP-82942 in Lysobacter enzymogenes H. XU, Institute of Plant Protection, Jiangsu Academy of Agricultural Sciences, Nanjing, CHINA

737-P Ascochyta 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 roteri, a cacao (Theobroma cacao) pathogen P. JIMENEZ, Universidad Militar Nueva Granada, Cajica, 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, University of Minnesota, St Paul, MN, USA

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

753-P Management of brown blight in tea caused by Colletotrichum gloeosporioides by crude and purified leaf extract of Xanthium strumarium D. SAHA, University of North Bengal, Siliguri, INDIA

754-P Bacillus strains in the control of bacterial wilt in tomato D. SARAVANUKUMAR, University of the West Indies, St. Augustine, Trinidad, TRINIDAD AND TOBAGO

755-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

756-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

757-P Commercial Production of Hyper-active Isolates of Trichoderma harzianum against Fusarium oxysporum A. HANNAH, Ghazi University, D G KHAN, PAKISTAN

758-P Biological control of powdery mildew on cucurbits K. MCCORKLE, AgBiome, Inc., Durham, NC, USA

759-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

760-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

761-P Understanding the interaction between biocontrol agent Lysobacter enzymogenes and soybean fungal oomycetes pathogens M. YU, UNIVERSITY OF ILLINOIS, Urbana, IL, USA
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764-P Evaluation of concentrations of mancozeb m for the control of cercospora spot (Cercospora sesea 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,Dharwar, Dharwar, 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 inducers 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, Winterma, FL, USA

776-P Evaluation of copper alternatives and enhancers for managing almond bacterial spot caused by Xanthomonas axonopodis 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

790-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

791-P Fungicide efficacy trials for the management of maize white spot in Paraná, Brazil A. CUSTODIO, Instituto Agronômico do Paraná, Londrina, BRAZIL

792-P TRIVAPRO® fungicide controlled rust and leafspot diseases and increased yield in corn. T. HARP, Syngenta Crop Protection, Greensboro, NC, USA

793-P Evaluation of the Postharvest Treatments to Control Green and blue Molds of Citrus Fruit M. EL GUILI, National Institute of Agricultural Research, Kenitra, MOROCCO

794-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

795-P Mefentrifluconazole - a broad spectrum fungicide for use in turfgrass and ornamentals. R. KEENE, BASF, Res Triangle Park, NC, USA

796-P Mefentrifluconazole - A new broad-spectrum fungicide for use on row and specialty crops S. WALKER, BASF Corp, Res Triangle Park, NC, USA

797-P Potency of difenoconazole against nine postharvest pathogens of pome fruit A. AMIRI, Washington State University, Wenatchee, WA, USA

798-P Adepidyne® a new fungicide for Fusarium Head Blight and foliar disease control in wheat N. GLYNN, Syngenta, Vero Beach, FL, USA

799-P Adepidyne®, a new fungicide for control of gummy stem blight in conventional cucurbit production C. COLLAZO-GONZALEZ, Syngenta Crop Protection, 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 Adepidyne®, 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 pyrofenone 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 pyrofenone 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, KUALA LUMPUR, 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, West Bengal, 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 solonifer* 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 *peca* C. BOCK, USDA ARS, Southeastern Fruit and Tree Nut Research Laboratory, Byron, GA, USA

814-P Efficacy of Bordeaux mixture to control *peca* scab in large-plot experiments M. HOTHCHIKSS, USDA ARS, Byron, GA, USA

815-P Aepidinid 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 brasilienise*, 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. KLECEWSKI, 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 Citicultura 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 beets 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, Ft. Lauderdale, 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 eucalytorica* 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 seedling 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

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860-P Alternative control of 
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Suppression of wheat powdery mildew ( 
New technology for controlling strawberry diseases
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Impact of heat and soil moisture stress on chickpea
Grafted processing tomato for the management of 
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Research Centre for Agriculture and Forestry Institute of 
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Plant, Soil, & Water Lab, Orono, ME, USA
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University of Ibadan, Ibadan, NIGERIA
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J. DUNDOR-ARIA, Department of Plant Pathology/ University of Minnesota, St Paul, MN, USA
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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
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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 Rng8 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 Swc5 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, e/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 E. 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 acuminate 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
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 Apionphaeria guaranitica an important forest pathogen in Central Brazil: taxonomy and phylogeny. J. DIANESE, UNIVERSIDADE DE BRASILIA, BRASILIA, 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. J. 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. YAÑEZ-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

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. paucu 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 leastfive 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.) 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 Almond 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 phytoptype I) isolated from Rosu spp. M. BERGSMAN-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: Siroccoccus 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. SCHONER, 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 Fitosanitário 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, Agrinovo - 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
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

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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 AG2-211B 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 Stagonosporosis citri 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 Sycamore 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

1049-P Potential sources of inoculum and survival of Macrophomina phaseolina in Florida strawberry fields J. BAGGIO, GCRC - 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 ECOYS 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 floriniae 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 vasculosa pv vasculorum M. ORTIZ-CASTRO, Colorado State University, Fort Collins, CO, USA
1070-P  *Huangleongbing* spatial pattern in Sao Paulo state, Brazil K. PAZOLINI, University of Sao 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 *Magnaporthe grisea* from maize seeds to seedlings G. MUNKVOLD, Iowa State University, Ames, IA, USA

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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

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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 pseudogaeorum* 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 pseudogaeorum* 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. SUDELMANN, 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 *Harposporidium maydis* D. DEGANI, Migal – Galilee Research Institute, Kiryat Shmona, ISRAEL

1096-P  Virulence profiling of *Phytophthora sojae* based on genomic signature of avirulence genes G. ARSENAULT-LAFORET, 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 *Ceratoxyctis* spp. associated with rapid ‘ôhí’ a death (ROD) in Hawai‘i L. KEITH, USDA-ARS, Hilo, HI, USA

1099-P  Characterization of the infection cycle of *Phytophthora betae* 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 1. BARASH, Tel Aviv University, Tel Aviv, ISRAEL

1101-P  Effect of seedborne *Alternaria infectoria* on susceptibility of wheat seedlings to *Fusarium pseudogaeorum* 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. FOURJE, Forestry and Agricultural Biotechnology Institute (FABI), University of Pretoria, Pretoria, SOUTH AFRICA
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1110-P Thioredoxin and glutaredoxin systems required for oxidative stress resistance, fungicide sensitivity and virulence of Alternaria alternata H. LI, Zhejiang University, Hangzhou Zhejiang, CHINA

1111-P A genetic locus determining pathogenicity of Pantoaea ananatis Y. TAKIKAWA, Shizuoka University, Shizuoka, JAPAN

1112-P Identification and functional characterization of the toxin produced by Colletotrichum frugicola 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 YmXyl1 gene in virulence of Vaisha 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 samsunensis 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 cassicola 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. MATTHEISEN, 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 (MCWF) 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 terrebrantis J. MENSAH, School of Forestry and Wildlife Sciences, Auburn University, Auburn, AL, USA
Expression Analysis of Soybean PAL Induced by Biocontrol Rhizobia Sneb183 Y. WANG, Shenyang Agricultural University, Shenyang, CHINA

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

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

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

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

The potential effect of karrikinolide (KAR) in inducing resistance against Alternaria solani on tomato A. DAKUIDREKETI, University of Queensland, St Lucia, AUSTRALIA

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

The molecular mechanisms of resistance in tomato induced by Pseudomonas fluorescens Sneb825 against root-knot nematode H. FAN, Shenyang Agricultural University, Shenyang, CHINA

Nanochitosan mediated induced systemic resistance against pearl millet downy mildew through nitric oxide generation C. NAYAKA, University of Mysore, Mysore, INDIA

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

Identifying susceptibility genes for citrus Huanglongbing in sweet orange. F. NOGALES C. VASCONCELOS, University of Florida, Lake Alfred, FL, USA

Intensification on PAMP-triggered immunity confers disease resistance against bacterial soft rot Z. JING-LIN, National Pingtung University of Science and Technology, Pingtung, TAIWAN

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

Cloning and functional analysis of a defensin-encoding gene in Agave sisalana X. HUANG, Environment and Plant Protection Institute, CATAS, Haikou, CHINA

Lignin reduction in alfalfa (Medicago sativa) does not affect foliar disease resistance D. SAMAC, USDA-ARS, St Paul, MN, USA

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

Transcriptome profile of Carrozio citrusge roots in response to Phytophthora parasitica infection Z. AFZAL, University of Florida, Apopka, FL, USA

OsGRDP1 Is a Positive Regulator of Cell Death and Disease Resistance by Activate OsAP25 in Rice W. ZHAO, China Agricultural University, Beijing, CHINA

Induction of defense enzymes in rice by ecofriendly pesticide and growth promoting compound (PGP) against brown leaf spot and blast diseases J. CHRISTOPHER, DEPARTMENT OF PLANT PATHOLOGY, ANNAMALAI UNIVERSITY, CUDDALORE, INDIA

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

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

Expression patterns of plant defense genes during early stem infection of susceptible and tolerant potatoes by Dickeya dadaa L. LIU, Cornell University, Ithaca, NY, USA

Controlling Sclerotinia sclerotiorum in Glycine max by targeting oxalic acid production using host-induced gene silencing M. MCCACHEY, University of Wisconsin-Madison, Madison, WI, USA

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

Foliar resistance to bacteria in potato D. HALTERMAN, USDA ARS, Madison, WI, USA

Phylooxera 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

WRKYs phosphorylated by MAPK regulate chloroplast-mediated ROS burst in plant immunity H. YOSHIKOA, Nagoya University, Nagoya, JAPAN

A standardised set of differential potato cultivars to identify pathotypes in Synchytrium endobioticum G. VAN LEEUWEN, National Reference Centre NPPO-NL, Wageningen, NETHERLANDS

Biochemical activation of defense in response to tomato against fusarium wilt through plant inducers M. ATIQ, University of Agriculture, Faisalabad, PAKISTAN

Pathogenicity properties of some fungal species from Colletotrichum acutatum species complex J. VILCANE, University of Latvia, Riga, LATVIA

Molecular mechanism of high-temperature resistance to yellow rust in Xiaoyan6 J. WANG, Northwest A&F University, Yangling, CHINA

Host induced gene silencing targeting afM reduced aflatoxin contamination in transgenic corn Y. RARUANG, Louisiana State University Agricultural Center, Baton Rouge, LA, USA

Enhancing type II-resistance in crops through modification of the cell wall polymer callose T. HANAK, University of Hamburg, Hamburg, GERMANY

Antibacterial and plant defence elicitor peptides for plant disease control E. MONTESINOS, University of Girona, Girona, SPAIN

Explore the function of Papain-like cysteine proteases (PLCPs) in citrus resistance against Huanglongbing (HLB). Y. HUANG, University of Florida, Lake alfred, FL, USA

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, University 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. LOVEACE, 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 Tecnologia 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 genetics 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 in response to soybean cyst nematode infection. S. HAN, University of Wisconsin-Madison, Department of Plant Pathology, Madison, WI, USA

1207-P The *Nic3* 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 Alternation 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, Department 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 altenum 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 atoxic 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

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. CHOUGHURY, 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’Etude 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 TELO, Agronomica - Laboratório de Diagnóstico Fitosanitário 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 Phytophage 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, pony 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, USDA, APHIS, Riverdale, MD, 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

Regulatory Plant Pathology

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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

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<tr>
<td>18:00–20:00</td>
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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  newphytologist.org
214 New Phytopathologist Trust  apsnet.org/members/outreach/opro
215 APS Office of Public Relations and Outreach (OPRO)  dinolite.us
216 Dino-Lite Scopes  egc.com
219 Environmental Growth Chambers  phytotechlab.com
221 PhytoTechnology Laboratories  cabi.org
300 CABI  phytoab.com
301 PhytoAB, Inc.  nanodiaincs.com
302 Nano Diagnostics, LLC  aphs.usda.gov
303 USDA  apsnet.org/members/foundation
305 APS Foundation  opsdiagnostics.com
306 OPS Diagnostics  BASF Corporation  percival-scientific.com
307/309 Corteva Agriscience, Agriculture Division of DowDuPont  corteva.com
310 British Society for Plant Pathology  csplabs.com
311 Back of Exhibit Hall  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

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<td>Friday, August 3</td>
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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.

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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.
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.
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1. Order 4 or more books.
2. Subscribe to the APS Image Database.
3. Subscribe to the Online Compendium Series.
4. Subscribe to the Online Phytophthora Protocols.
6. Recommend the APS Online Books and APS Image Database to Your Library.
7. Set up or refresh your reviewer records in the APS Journals Manuscript Central sites.
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.

*While supplies last during the meeting. Attendees may receive one coaster for up to five of the ten items above. Repeats not allowed except for item #1.

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All T-shirts on Sale
PLUS FREE T-shirt giveaway every day!

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

Ask ‘Alexa’ about APS!
THE APS PRESS BOOKSTORE—We’re in the back of the Exhibit Hall.
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AmplifyRP XRT is a real-time isothermal nucleic acid amplification and detection system that is revolutionizing the world of molecular detection technology. This platform offers highly specific and sensitive detection capabilities equivalent to PCR while addressing the shortcomings of other isothermal chemistries. AmplifyRP XRT eliminates laborious and costly nucleic acid extractions and results are obtained in as little as 10 minutes.

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