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**SPECIAL EVENT!**

**Book Signing**

Sunday, August 6; 4:30 – 6:00 p.m.
**AND**
Monday, August 7; 2:30 – 4:00 p.m.
APS PRESS Bookstore, Exhibit Hall

Dr. R. James Cook –
*Untold Stories: Forty Years of Field Research on Root Diseases of Wheat*

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On behalf of The American Phytopathological Society, welcome to San Antonio for the 2017 Annual Meeting! This year’s theme “Changing Landscapes of Plant Pathology” highlights two factors that will have a profound impact on the science and practice of plant pathology: new technologies and the next generation of plant pathologists who will employ them in their pursuit of solutions to plant health problems. During the next few days, we will explore the latest and greatest discoveries in plant pathology and related disciplines. New this year is a change for the Awards Ceremony, with Fellows presented on Sunday and Excellence and Named Awards on Monday. Sunday takes on the addition of keynote speaker Jack Bobo discussing agriculture and the future of our planet. The Plenary Session on Monday will feature our Excellence and Named Award winners, as well as three scientists discussing some exciting new technologies and their applications to plant pathology. The General Session on Wednesday morning will leave you with some thought-provoking highlights from the previous few days. This year’s scientific program will include our familiar special, technical, and poster sessions, as well as workshops and field trips. Several new activities have been planned for this year’s meeting, including some family-friendly additions to the meeting, making it easier for our members with families to connect. Please take advantage of the many social gatherings and networking opportunities available to renew old friendships, make new ones, and engage with colleagues from all over the world.

We’re happy to see you at the 2017 APS Annual Meeting!

Timothy D. Murray, APS President

A warm welcome to San Antonio and the 2017 APS Annual Meeting. I’m very excited about the program that we—and that is we “writ large!”—have put together for you this year. Back by popular demand, you will again have the opportunity to hear from four Phytopathologists of Distinction (PoDs) and learn about their life stories as plant pathologists. We have more than 50 concurrent and technical sessions and 700 posters that will highlight the latest research advances and solutions. A number of the sessions will be a prelude to the 2018 International Congress of Plant Pathology, where similar topics will be addressed in an international context.

This year you have a number of Hot Topic sessions in which to participate, including “Navigating Contentious Conversations,” “Science as Story and Story as Science: Telling Plant Pathology Research Stories,” “Next Generation of Plant Pathologists Exploiting Sequencing Strategies to Further our Understanding of Plant Virus-insect Vector Interactions,” a participatory panel discussion on “Seed-borne versus Seed-transmitted Diseases: What Is the Difference?” and “Highs and Lows of Cannabis Pathology.” There is something for everyone and, as is often the case, it will be difficult to choose among the many possible sessions!

And of course, there will be ample opportunities to network at the various socials, between sessions, and in interactive sessions such as the Idea Cafés. Idea Cafés will be held at two times during this meeting: on Monday afternoon during poster viewing and on Wednesday morning, when you can enjoy coffee and pastries while you engage in Idea Cafés or with poster authors.

Welcome—and enjoy!

Mary E. Palm, APS Program Chair and President-Elect
The American Phytopathological Society (APS)
APS is a vibrant community of exciting and committed plant health scientists and practitioners from around the world. APS members from more than 100 practice areas have access to significant cutting-edge research to drive the science of plant pathology and their professional development. Members also contribute their expertise to a variety of volunteer positions and gain valuable experience to propel their careers.

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. APS supports this effort by working with the hotels and convention centers to donate food from APS meetings to food shelves in the local area.
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Why use the app? More content than the Program Book + features connecting you with other attendees and the latest updates….and it is FREE!

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- **Connect** with other attendees: send messages and make appointments
- **Schedule Posters by Appointment** by connecting with poster authors to make appointments to meet and discuss poster content [in addition to the poster author time]

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 mobileapp.apsnet.org to find links to your mobile app store or search APS Meeting in your app store.

Registration Hours
Hall 1 Registration, Convention Center
Saturday, August 5 ..........................12:00 – 6:00 p.m.
Sunday, August 6 ............................7:00 a.m. – 6:00 p.m.
Monday, August 7 ............................7:30 a.m. – 6:00 p.m.
Tuesday, August 8 ...........................7:30 a.m. – 5:30 p.m.
Wednesday, August 9 ......................7:30 a.m. – 2:00 p.m.

Exhibit and Poster Hours
Exhibit Hall 1, Convention Center
**Sunday, August 6**
8:00 a.m. – 2:00 p.m..............Exhibit Set-Up
12:00 – 2:00 p.m. ..................Poster Set-Up
4:00 – 6:00 p.m. ...............Social Gathering with Exhibition and Posters
4:00 – 6:00 p.m. ...............Poster Viewing

**Monday, August 7**
8:00 a.m. – 6:00 p.m ..................Poster Viewing
11:30 a.m. – 6:00 p.m ............Exhibits Open
11:30 a.m. – 6:00 p.m ............OIP Silent Auction
2:30 – 3:00 p.m. ..................Poster Huddles – see page 47 for a list of topics
3:00 – 5:00 p.m ..................Poster Viewing with Authors Present
3:00 – 4:00 p.m. Posters 1 – 320 (even-numbered posters)
4:00 – 5:00 p.m. Posters 321 – 465 (even-numbered posters)
If you are presenting two posters and they are scheduled during the same time period, please leave a note to indicate the other poster number where you can be found.

**Tuesday, August 8**
8:00 a.m. – 6:00 p.m ..................Poster Viewing
10:00 a.m. – 6:00 p.m ..........Exhibits Open
2:30 – 3:00 p.m ..................Poster Huddles – see page 47 for a list of topics
2:30 – 5:00 p.m ..................Career Fair
3:00 – 5:00 p.m ..................Poster Viewing with Authors Present
3:00 – 4:00 p.m. Posters 1 – 320 (odd-numbered posters)
4:00 – 5:00 p.m. Posters 321 – 465 (odd-numbered posters)
If you are presenting two posters and they are scheduled during the same time period, please leave a note to indicate the other poster number where you can be found.

**Wednesday, August 9**
8:00 – 10:30 a.m ...............Exhibits Open
9:00 – 10:30 a.m ...............Poster Viewing
9:00 – 10:30 a.m ...............PhytoCafe (with coffee and light breakfast items)
9:00 – 9:30 a.m. Poster Huddles
9:30 – 10:30 a.m. Idea Cafes
9:30 – 10:30 a.m. One-to-One (1:1) Conversation with an Expert
10:30 – 11:00 a.m ...............Poster Take-Down
10:45 a.m. – 12:30 p.m ...........Exhibit Take-Down

Looking for Breakfast, Lunch, Beverage, or a Snack?
If you are looking for a quick snack or a nice dining experience you do not have to go far. We welcome you to sit and relax in between events or sessions at one of the three onsite dining locations throughout the Henry B. González Convention Center. The Market Café is conveniently located in the Main Lobby near the Registration desk. Stop here to get coffee, snacks and meals on your way into the Exhibits Hall.
Open Meeting Room
A small meeting room for up to 20 people is available for use during the meeting at the Henry B. González Convention Center. To check availability and reserve a room, stop by the Registration Desk.

Speaker Ready Room
Room 223, Convention Center
APS will again be recording scientific session presentations with author approval. The Speaker Ready Room is available for presenters to do the final loading of presentations and make any last-minute changes to presentations.
Saturday, August 5  4:00 – 8:00 p.m.
Sunday, August 6  9:00 a.m. – 5:00 p.m.
Monday, August 7  7:00 a.m. – 4:00 p.m.
Tuesday, August 8  7:00 a.m. – 4:00 p.m.
Wednesday, August 9  7:00 a.m. – 12:00 p.m.

New! Networking Event: Pitch120 Training and Practice
Sponsored by the Office of Public Relations & Outreach (OPRO), the Pitch120 Training & Practice Session is a free workshop, available to all meeting attendees. Held Sunday, August 6, from 7:00 to 9:00 p.m. in Room Travis AB, Hyatt, OPRO board members will provide training to attendees on how to “pitch” your research in under two minutes using straight-forward, clear, and interesting approaches. Then, armed with these new skills, attendees will show off their own Pitch120. The goal is to equip attendees with the skills they need to quickly and effectively communicate their science to a wide audience.

Give and Help Grow with the APS Foundation
Visit the APS Foundation booth—located near the Registration— desk to discover how your donations create opportunities for new leaders in plant pathology. Learn about the 2017 Foundation awardees and new funding initiatives. Students donating at least $20 will be entered into a drawing to win a $500 travel grant to next year’s annual meeting! The foundation will also collect donations for the ICPP2018 Bursary Fund to be used for travel support for early- and mid-career plant pathologists and related plant health scientists working in developing countries who otherwise would not be able to participate in the congress. Donate today and make a difference tomorrow.

OIP Silent Auction
The Office of International Programs (OIP) invites you to this years’ silent auction! Proceeds will support scientists traveling to ICPP2018 from developing economies. Bid on an item to support this exciting event! The auction will take place Monday, August 7, from 11:30 a.m. to 6 p.m. in the Exhibit Hall.

Photo Release
Photographs will be taken during the meeting. By registering for this meeting, you agree to allow APS to use your photo in any of their publications or on their website and membership materials.

Dress
The official dress for the meeting is business casual.

Meeting Facilities
Henry B. González Convention Center
900 E. Market Street
San Antonio, Texas 78205
+1.210.207.8500

Grand Hyatt San Antonio
600 East Market Street
San Antonio, Texas 78205
+1.210.224.1234

La Quinta Inn & Suite (San Antonio Riverwalk)
San Antonio Riverwalk
303 Blum St.
San Antonio, TX 78205-3303
+1.210.222.9181

Menger Hotel
204 Alamo Plaza
San Antonio, TX 78205
+1.210.223.4361

Offsite Venues
Industry & Extension Networking Event
Monday, August 7, 6:30 – 9:00 p.m.
Sunset Station (located a short walk from the convention center, maps available at the registration desk)
The Depot Room
1174 East Commerce Street

LGBTQ Social and Networking Hour
Tuesday, August 8, 6:30 – 7:30 p.m.
Veranda Room, Casa Rio Restaurant (located on the Riverwalk, a short walk from the convention center)
430 E. Commerce Street • Phone: 210.225.6718

Committee for Diversity and Equality presents “STRIDE for the Future” Workshop
Tuesday, August 8, 7:30 – 9:30 p.m.
Veranda Room, Casa Rio Restaurant (located on the Riverwalk, a short walk from the convention center)
430 E. Commerce Street • Phone: 210.225.6718
Safety Tips
Do not travel alone—stay in groups and travel in well-lit areas. Remove name badges when outside the hotel or convention center unless you are participating in a meeting event.
• Do not give your room number out to anyone you do not know and avoid giving out your room number in conversations where strangers may hear you talking.
• Bolt your hotel room door and only open it when you know who is on the other side. (Note: Hotel personnel wear uniforms and have identification badges. If in doubt, call hotel security to verify an employee’s identity.)
• Do not leave your door ajar if you are going down the hall for ice. Someone may enter when you are not looking.
• Know where the stairs are located in case of a fire (do not use elevators). Also count the number of doors to the nearest exit in case you cannot see in a smoke-filled hallway.
• Valuables, airline tickets, and money should be kept 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.
• Put your hand on the room door to see if it is hot before opening it. If it is, do not open it quickly. Open it just a crack to see what is on the other side and be prepared to slam it shut quickly if necessary.
• If you leave the room, take your room key with you! Shut your room door to keep smoke out. 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.
• Do not take the elevator when you smell smoke or if you know that there is a fire in the building.
Leading Plant Science Research

Wiley is the world’s leading society publisher and a market leader in publishing Plant Science research with three journals ranked in the top 10 of the Plant Science category.

- **Journal of Phytopathology**
  - Impact Factor: 0.853
  - Published in association with the British Society for Plant Pathology
- **Molecular Plant Pathology**
  - Impact Factor: 4.897
  - Published in association with the British Society for Plant Pathology
- **Plant Pathology**
  - Impact Factor: 2.425
  - Published in association with the British Society for Plant Pathology
- **Phytotherapy Research**
  - Impact Factor: 3.092
  - Published in association with the Society for Experimental Biology
- **Pest Management Science**
  - Impact Factor: 3.253
  - Published by the Society of Chemical Industry
- **Forest Pathology**
  - Impact Factor: 1.547

- **Annals of Applied Biology**
  - Impact Factor: 2.046
  - Published on behalf of the Association of Applied Biologists
- **Plant Breeding**
  - Impact Factor: 1.335
- **Journal of Plant Nutrition and Soil Science**
  - Impact Factor: 2.102
  - Published in association with the German Society for Plant Nutrition
- **The Plant Journal**
  - Impact Factor: 5.901
  - Published in association with the Society for Experimental Biology
- **Plant Biotechnology Journal**
  - Impact Factor: 7.443
  - Published in association with the Society for Experimental Biology and the Association of Applied Biologists
- **Plant Direct**
  - Published in association with the Society for Experimental Biology and the American Association of Plant Biologists

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MEETING FACILITIES

Henry B. Gonzalez Convention Center

APS Registration – Hall 1
General and Plenary Sessions
Live Streaming Sessions—APS Reaches Out with Global Connections

Check out the live streaming sessions during the APS annual meeting on the APS website. Share the session times with your colleagues who are not attending the meeting and encourage them to join in. Times listed are Central Daylight Time.

- **Opening General Session and Awarding of Fellows, followed by Keynote Speaker Jack Bobo;** Sunday, August 6, 10:30 a.m. – 12:00 p.m.
- **Special Session: Show Me the Money! Assessing the Value of Disease Control in a Changing Landscape;** Sunday, August 6, 1:00 – 4:00 p.m.
- **Special Session: Best Practices in Diagnostic Test Development and Deployment;** Monday, August 7, 8:00 – 9:15 a.m.
- **Plenary Session: Changing Landscapes of Plant Pathology and Awards;** Monday, August 7, 9:30 – 11:30 a.m.
- **Special Session: A Bridge Over Troubled Ecosystems: How Host Cultivation Creates Novel Pathogens;** Monday, August 7, 1:00 – 2:15 p.m.
- **Special Session: The Rise and Management Challenges of Multi-Fungicide-Resistant Pathogens;** Tuesday, August 8, 8:30 – 11:30 a.m.
- **Special Session: The Socioeconomic Impact of New and Re-emerging Bacterial Diseases: A National Perspective;** Tuesday, August 8, 1:00 – 2:15 p.m.
- **General Session with Speaker Jeff Hurt: “Making the Science of Plant Pathology Work for You: What Now? What Next?”;** Wednesday, August 9, 10:45 a.m. – 12:00 p.m.
- **Special Session: Adapt, Change, and Improvise: How to Control Diseases as the Climate Is Changing;** Wednesday, August 9, 1:00 – 4:00 p.m.

UNIQUE APPROACHES TO THE EXCHANGE OF SCIENCE

**PhytoView Session**
**Seedborne vs. Seed-Transmitted Plant Pathogens: The Curious Case of Phomopsis spp. on Spinach Seed**
*Sunday, August 6, 2:45 – 4:00 p.m.; Room 221B, Convention Center*

Engage in facilitated conversations that explore questions/issues relevant to plant pathology as we explore all points of view. For more information, see page 21 of the Program Book.

**Hot Topics**
*Sunday through Tuesday*

Catch the latest topics that are trending in plant pathology with information from experts in the know. Hot Topics take place during the scientific sessions; check the daily program schedule for Hot Topic sessions held throughout the meeting.

**Idea Cafés**
*New days and times! Tuesday, August 8, 5:00 – 6:00 p.m., and Wednesday, August 9, 9:30 – 10:30 a.m.; Exhibit Hall, Convention Center*

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 our list of topics! Idea Cafés gather great minds in plant pathology in an informal setting (one round table of 10 assigned to each topic) to converse on an area of interest to you! For a complete listing of table topics, see page 23 of the Program Book.

**Back by Popular Demand!**
**PODs—Conversations with Phytopathologists of Distinction**
*Sunday, August 6, 2:45 – 4:00 p.m.; Room 224, Convention Center*

**Monday, August 7, 1:00 – 2:15 p.m.; Room 224, Convention Center**

Based on the well-known and popular TED talks (Technology, Entertainment, Design), conversations with Phytopathologists of Distinction (PODs) offer meeting attendees in all stages of their career an opportunity to connect with APS fellows in an informal setting as they discuss their career journey. Join in as they share “their story,” insights, and life experiences in the world of plant pathology. For a complete listing of PODs, see page 19 of the Program Book.

**New for 2017!**
**One-to-One (1:1): Conversation with an Expert**
*Monday, August 7, 2:30 – 4:00 p.m., and Wednesday, August 9, 9:30 – 10:30 a.m.; Exhibit Hall, Convention Center*

This is your opportunity to gain access to a selection of our most knowledgeable experts in plant pathology. These experts have the desire to share their knowledge, skills, and experiences in a variety of scientific and professional areas. These informal 15-minute meetings can be used to get answers to your questions, generate new research ideas, and obtain advice on your professional goals/career. Spaces are limited, sign-up is available during the meeting, watch for signs in the Registration Area and Exhibit Hall.
Can Agriculture Save the Planet Before It Destroys It?
Jack A. Bobo, Senior Vice President, Chief Communications Officer, Intrexon

In a hot, flat, hyper-connected world, public perception of risk may determine if agriculture saves the planet by 2050 or destroys it. Science and technology may hold the key to addressing the world’s biggest problems related to hunger, sustainability, and climate change, but if media experience with pink slime and GMOs are any indication, we may be in for a bumpy ride. This presentation examines global trends in food and agriculture, the interplay between science and public perception of risk, and how organizations, farmers, and scientists build trust to navigate these trends.

RNA-Based Applications for Agricultural Productivity
Greg Heck, Science Strategy Operations Manager, Monsanto

RNA-based technologies can be applied to a wide range of agricultural improvement objectives. These applications range from the modification of harvestable plant components to crop protection scenarios. Extant examples are present in current agricultural production for virus control while additional applications, such as plant-produced dsRNA targeting insect predators, are advancing pending regulatory approvals for commercial release. Numerous considerations need to be taken into account as applications mature. Components of successful utilization include efficacy, robustness, specificity, and safety of dsRNA as an active agent. A historical perspective, advanced examples, and prospects will be presented.

Global Movement, Local Consequences: Using Population Genomics to Understand the Changing Landscape of Plant Pathogens
Erica Goss, Assistant Professor, Plant Pathology and Emerging Pathogens Institute, University of Florida

Plants and their associated microbes are crossing oceans and international borders at unprecedented rates. Consequently, plant pathologists are dealing with a barrage of introduced plant pathogens. Long-distance movement changes the global distribution of plant pathogens and increases pathogen genetic diversity. Changes in the genetic make-up of existing pathogen populations can disrupt disease control strategies and research programs as much as the emergence of new pathogens. This presentation will include how population genetics and genomics can help identify pathways of movement, genetic shifts in local pathogen populations, and ultimately changes in disease observed by pathologists in the field.

State-of-the-Art on Sensing Technologies for Plant Disease Detection
Lav Khot, Assistant Professor, Department of Biological Systems Engineering, IAREC, Washington State University

Site-specific disease detection is one of the key aspects of effective crop (loss) management. Recent advances in detectors (optical, chemical) have improved the feasibility of development and use of rapid noncontact/nondestructive sensing techniques in plant disease detection. Advances in versatile ground-aerial platforms and internet of things (IOT)-enabled data acquisition, in-field on-board processing, and near-real-time delivery techniques have also helped in easing logical concerns, about time and labor, of field-level crop scouting. This presentation will focus on state-of-the-art in the field of chemical and optical sensors, platforms, and IOT-based technologies that could aid in rapid disease detection. Through case studies in specialty crops, this talk will discuss feasibility of the technology in field-level disease detection as well as challenges that need further research before its commercial use.
NEW SESSION AND FORMAT! WEDNESDAY GENERAL SESSION WITH SPEAKER JEFF HURT

Wednesday, August 9, 10:45 a.m. – 12:00 p.m.; Lila Cockrell Theatre, Convention Center (live-streamed session)

On this last meeting day, don’t miss this session where we recognize members who have served on various committees, learn more about the ICPP2018 (International Congress of Plant Pathology), and hear our engaging speaker, Jeff Hurt.

Making the Science of Plant Pathology Work For You: What Now? What’s Next?
Jeff Hurt, Executive Vice President, Education & Engagement, Velvet Chainsaw Consulting

You’ve listened to the observations of the changing landscape’s researchers. You’ve heard the diverse theories from the APS community of pathologists. You’ve reviewed and discussed the findings of selected plant pathologists who are employing their results in their pursuit of solutions to plant health problems. Your brain is so full of scientific information that it hurts. What did you really learn from the 2017 APS annual meeting? How will you remember critical research? Even more importantly, how will you remember the critical information so you can apply and share it? Your success following this meeting depends on the science of learning. Let’s marry the scientific findings of 2017 plant pathology research with the biological process of learning. Understanding and applying these revolutionary new insights from neuroscience, neuro-education, cognitive psychology, and biology will have tremendous impact on your attitude, behavior, and skill changes.

The Last Alamo Revelry
Wednesday, August 9, 7:00 – 9:30 p.m.; The Grotto (lower level), Convention Center

Your APS Annual Meeting experience will be as unforgettable as San Antonio’s historic Alamo with this special event designed to celebrate what truly brings us together each year: the bonds of education and friendship. Make the Final Night Celebration memorable by getting into the spirit of the Lone Star State by donning your frontier finery, sampling culinary delights, delighting in the live entertainment, and jumping into interactive activities. So, join your colleagues and the APS team for a surprise or two along the way as we network and revel the night away deep in the heart of Texas!

Ticket to the event and a drink ticket are included with full registration. Guest tickets are available for purchase at the Registration Desk.

NEW from APS PRESS!

Compelling and Practical Musings by Celebrated Plant Pathologist R. James Cook

Dr. Cook’s highly anticipated new book, Untold Stories: Forty Years of Field Research on Root Diseases of Wheat, is a comprehensive account of his four decades of field research—and his personal and professional growth while developing his knowledge, expertise, and unique approach to research on the ecological and biological control of soilborne plant pathogens.

More than simply an autobiographical collection of compelling first-person stories, Dr. Cook imparts unique experiences and knowledge for budding and veteran scientists alike; plus, it serves up “bushels” of knowledge that readers can utilize to make more informed and successful decisions in the field.

SPECIAL PRICING at Dr. Cook’s Book Signing!

Sunday, August 6; 4:30 – 6:00 p.m. AND Monday, August 7; 2:30 – 4:00 p.m.
APS PRESS Bookstore, Exhibit Hall
FREE APS Journal Mugs at the APS PRESS Bookstore

Get your FREE mug of choice by updating your APS Journals profile and creating a custom alert. Experience our feature-rich publishing platform and get a mug showing off your favorite APS Journal. Also check out our NEW online collection of books and lab protocols!

Limited quantities available. First come, first served. One per attendee.

Visit Monday, Tuesday, or Wednesday during bookstore hours!
SUNDAY afternoon

1:00 – 2:15 p.m.
OPENING SESSION FOLLOW-UP with Keynote Speaker Jack Bobo • Room 221 B
TECHNICAL SESSION: Genetics of Resistance and Virulence • Room 221 C
TECHNICAL SESSION: Pathogen Detection and Diagnosis • Room 225 B

1:00 – 4:00 p.m.
SPECIAL SESSION: Beautiful Efficiency: The Multifunctional Nature of Virus Proteins • Room 221 A
SPECIAL SESSION: Schroth – Faces of the Future Session: Host Resistance and Host Pathogens Interactions • Room 225 A
SPECIAL SESSION: Show Me the Money! Assessing the Value of Disease Control in a Changing Landscape • Room 221 D
SPECIAL SESSION: Unfriendly and Beneficial Plant-Parasite Interactions • Room 225 C

2:45 – 4:00 p.m.
POD TALK: A Conversation with Phytopathologists of Distinction Jim Cook and Allison Tally • Room 224
PYHTOVIEWS: Seedborne vs. Seed-Transmitted Plant Pathogens: The Curious Case of Phomopsis spp. on Spinach Seed • Room 221 B
TECHNICAL SESSION: Integrated Pest Management • Room 221 C
TECHNICAL SESSION: Root Phytobiome • Room 225 B

MONDAY morning

8:00 – 9:15 a.m.
HOT TOPIC: Highs and Lows of Cannabis Pathology • Room 221 A
SPECIAL SESSION: Best Practices in Diagnostic Test Development and Deployment • Room 221 D
SPECIAL SESSION: New Products and Services, Part I (ends at 9:30 a.m.) • Room 221 B
SPECIAL SESSION: Phytobiomes 2.0: Functional Approaches in Forest Ecosystem • Room 225 A
TECHNICAL SESSION: Fungal Diseases • Room 221 C
TECHNICAL SESSION: Phenotyping and Population Dynamics • Room 225 B
TECHNICAL SESSION: Resistance Identification • Room 225 D
TECHNICAL SESSION: Virus Biology • Room 225 C

MONDAY afternoon

1:00 – 2:15 p.m.
HOT TOPIC: Science as Story and Story as Science: Telling Plant Pathology Research Stories • Room 221 A
POD TALK: A Conversation with Phytopathologists of Distinction Charlie Delp and Sue Tolin • Room 224
SPECIAL SESSION: A Bridge Over Troubled Ecosystems: How Host Cultivation Creates Novel Pathogens • Room 221 D
SPECIAL SESSION: Genomics-Based Approaches Facilitate Diagnostic and Population Genetic Marker Development for Plant Pathogens • Room 221 B
SPECIAL SESSION: Phyllosphere Microbial Assemblages: Friends, Foes, and Strangers • Room 221 C
SPECIAL SESSION: Recruiting NextGen Scientists: Strategies for Inclusive Outreach • Room 225 A
TECHNICAL SESSION: Bacterial Virulence and Effectors • Room 225 B
TECHNICAL SESSION: Fungicide Resistance • Room 225 D
TECHNICAL SESSION: Oomycete Diversity • Room 225 C

Changing Landscapes
of Plant Pathology
All sessions take place in the convention center

TUESDAY morning

8:30 – 9:45 a.m.
SPECIAL SESSION: Re-emergence of Bacterial Blight of Cotton • Room 221 C
TECHNICAL SESSION: Oomycetes • Room 225 B
TECHNICAL SESSION: Viral-Host Interactions • Room 221 B

8:30 – 11:30 a.m.
SPECIAL SESSION: 17th I. E. Melhus Graduate Student Symposium: Today’s Students Addressing Tomorrow’s Challenges Concerning Plant Diseases and Phytobiomes • Room 225 A
SPECIAL SESSION: Addressing Nematode Parasitic Tactics Through Biology • Room 225 C
SPECIAL SESSION: The Rise and Management Challenges of Multi-Fungicide-Resistant Pathogens • Room 221 D
SPECIAL SESSION: Translation of Basic Biological Control Research into Effective Grower Products and Practices • Room 221 A

10:15 – 11:30 a.m.
HOT TOPIC: Next Generation of Plant Pathologists Exploiting Sequencing Strategies to Further Our Understanding of Plant Virus-Insect Vector Interactions • Room 221 C
TECHNICAL SESSION: Pathogen Virulence and Effectors • Room 225 B
SPECIAL SESSION: New Products and Services, Part II (ends at 11:45 a.m.) • Room 221 B

TUESDAY afternoon

1:00 – 2:15 p.m.
HOT TOPIC: Navigating Contentious Conversations • Room 221 A
SPECIAL SESSION: Plant Pathologists of the Future: Showcasing the Top Graduate Students from the APS Division Meetings • Room 221 B
SPECIAL SESSION: Pursuit of Solutions to Mycotoxin Risks by Next Generation Plant Pathologists • Room 225 A

SPECIAL SESSION: The Socioeconomic Impact of New and Re-emerging Bacterial Diseases: A National Perspective • Room 221 D
TECHNICAL SESSION: Biological Control • Room 221 C
TECHNICAL SESSION: Epidemiology and Quantification of Disease • Room 225 B
TECHNICAL SESSION: Fungicide Resistance and Fitness • Room 225 C

WEDNESDAY afternoon

1:00 – 2:15 p.m.
SPECIAL SESSION: Labs, A Mechanism To Enhance Learning In The Changing World of Plant Pathology • Room 221 B
TECHNICAL SESSION: Floral and Fruit Diseases • Room 221 C
TECHNICAL SESSION: Virology Detection and Descriptions • Room 225 B

1:00 – 4:00 p.m.
SPECIAL SESSION: Adapt, Change and Improvise: How to Control Diseases as the Climate is Changing • Room 221 D
SPECIAL SESSION: New Insights into NLR on Plant Immunity: Pathogen Recognitions, Molecular Interactions, and Novel Disease Control Strategies • Room 221 A

2:45 – 4:00 p.m.
SPECIAL SESSION: An Ever-Changing Extension Environment: Keeping a Foot in the Furrow and a Hand in Cyberspace • Room 221 B
TECHNICAL SESSION: Chemical Control • Room 221 C
TECHNICAL SESSION: Mycotoxins • Room 225 B
Meetings take place in the San Antonio Henry B. González Convention Center (CC) unless otherwise noted. Field Trip and other bus departures leave from the Grand Hyatt Hotel.

### SATURDAY, AUGUST 5

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>7:30 a.m. – 5:00 p.m.</td>
<td><strong>Field Trip:</strong> Ornamental</td>
<td>Offsite</td>
</tr>
<tr>
<td>8:00 – 11:30 a.m.</td>
<td><strong>Workshop:</strong> Population Genomics in R</td>
<td>301A, CC</td>
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<tr>
<td>8:00 a.m. – 5:00 p.m.</td>
<td><strong>Workshop:</strong> Principles of Diagnostic Assay Validation</td>
<td>303A, CC</td>
</tr>
<tr>
<td>8:30 a.m. – 4:30 p.m.</td>
<td><strong>APS Leadership Institute:</strong> Managing Change with Resilience, Focus, and Influence</td>
<td>Travis CD, Hyatt Independence, Hyatt</td>
</tr>
<tr>
<td>9:00 – 11:00 a.m.</td>
<td><strong>APS Financial Advisory Committee Meeting</strong></td>
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<tr>
<td>9:00 a.m. – 4:40 p.m.</td>
<td><strong>Workshop:</strong> Morphological ID of Phytopathogenic Fungi</td>
<td>Bonham E, Hyatt</td>
</tr>
<tr>
<td>10:00 – 11:30 a.m.</td>
<td><strong>Plant Health Progress Editorial Board Meeting, by invitation</strong></td>
<td>Travis B, Hyatt</td>
</tr>
<tr>
<td>10:00 a.m. – 5:00 p.m.</td>
<td><strong>Workshop:</strong> Meta-Analysis for Combining Results from Multiple Studies in Plant Pathology</td>
<td>301B, CC</td>
</tr>
<tr>
<td>12:00 – 2:30 p.m.</td>
<td><strong>APS PRESS Board Meeting</strong></td>
<td>Travis A, Hyatt</td>
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<tr>
<td>12:00 – 6:00 p.m.</td>
<td>Registration Open</td>
<td>Hall 1 Registration</td>
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<tr>
<td>1:00 – 5:00 p.m.</td>
<td><strong>Workshop:</strong> Design Matters! Experimental Design in Lab, Greenhouse, and Field Settings</td>
<td>Bonham D, Hyatt</td>
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<tr>
<td>1:00 – 5:00 p.m.</td>
<td><strong>Workshop:</strong> Fact Finders for Agriculture – Hands-on Workshop for Use of USDA National Agriculture Statistics Service (NASS) Databases</td>
<td>Bonham C, Hyatt</td>
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<tr>
<td>1:00 – 5:00 p.m.</td>
<td><strong>GDM New ARM Software Tips and Techniques Workshop</strong></td>
<td>303C, CC</td>
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<tr>
<td>1:00 – 5:00 p.m.</td>
<td><strong>North American Fungicide Resistance Action Committee (NA-FRAC) Meeting</strong></td>
<td>Independence, Hyatt</td>
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<tr>
<td>2:00 – 5:00 p.m.</td>
<td><strong>Workshop:</strong> The Current State of Introductory Plant Pathology Courses: What We Learned and How You Can Improve Your Own Course</td>
<td>Republic B, Hyatt</td>
</tr>
<tr>
<td>3:00 – 4:30 p.m.</td>
<td><strong>APS Committee Chair/Vice Chair Orientation</strong></td>
<td>301C, CC</td>
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<tr>
<td>3:00 – 5:00 p.m.</td>
<td><strong>APS Publications Board Meeting</strong></td>
<td>Travis B, Hyatt</td>
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<tr>
<td>4:30 – 5:30 p.m.</td>
<td><strong>First Timers’ Orientation</strong></td>
<td>303B, CC</td>
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<tr>
<td>5:00 – 6:00 p.m.</td>
<td><strong>Microbial Forensics Interest Group Meeting</strong></td>
<td>302B, CC</td>
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<td>5:00 – 6:00 p.m.</td>
<td><strong>PDMR Editors’ Meeting</strong></td>
<td>Travis A, Hyatt</td>
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<tr>
<td>5:30 – 6:00 p.m.</td>
<td><strong>Undergraduate Student Primer</strong></td>
<td>303B, CC</td>
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<tr>
<td>6:00 – 7:00 p.m.</td>
<td><strong>Committee Meetings (open to any meeting attendee)</strong></td>
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<tr>
<td></td>
<td>• Bacteriology Committee</td>
<td>Republic B, Hyatt</td>
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<td></td>
<td>• Biotechnology Committee</td>
<td>302C, CC</td>
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<td></td>
<td>• Chemical Control Committee</td>
<td>301B, CC</td>
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<td>• Crop Loss Assessment and Risk Evaluation (CLARE) Committee</td>
<td>Bonham C, Hyatt</td>
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<td>• Diseases of Ornamental Plants Committee</td>
<td>Bonham D, Hyatt</td>
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<td>• Molecular and Cellular Phytopathology Committee</td>
<td>303C, CC</td>
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<td>• Mycology Committee</td>
<td>302A, CC</td>
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<td>• Nematology Committee</td>
<td>302B, CC</td>
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<td></td>
<td>• Plant Pathogen and Disease Detection Committee</td>
<td>301A, CC</td>
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<td></td>
<td>• Teaching Committee</td>
<td>301C, CC</td>
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<td>• Vector-Pathogen Complexes Committee</td>
<td>Bonham A, Hyatt</td>
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<tr>
<td>7:15 – 8:15 p.m.</td>
<td><strong>Committee Meetings (open to any meeting attendee)</strong></td>
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<td>• Committee for Diversity and Equality</td>
<td>301A, CC</td>
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<td>• Diagnostics Committee</td>
<td>301C, CC</td>
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<td>• Emerging Diseases and Pathogens Committee</td>
<td>301B, CC</td>
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<td></td>
<td>• Evolutionary Genetics and Genomics Committee</td>
<td>Bonham C, Hyatt</td>
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<td>• Forest Pathology Committee</td>
<td>Bonham B, Hyatt</td>
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<td></td>
<td>• Graduate Student Committee</td>
<td>303C, CC</td>
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<td>• Integrated Plant Disease Management Committee</td>
<td>Bonham E, Hyatt</td>
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<td>• Mycotoxicology Committee</td>
<td>Bonham D, Hyatt</td>
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<td>• Phyllosphere Microbiology Committee</td>
<td>225D, CC</td>
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<td>• Postharvest Pathology Committee</td>
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<td>• Soil Microbiology and Root Diseases Committee</td>
<td>303A, CC</td>
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<td></td>
<td>• Tropical Plant Pathology Committee</td>
<td>302C, CC</td>
</tr>
</tbody>
</table>
**Committee Meetings** *(open to any meeting attendee)*
- Biological Control Committee
- Collections and Germplasm Committee
- Epidemiology Committee
- Extension Committee
- Host Resistance Committee
- Industry Committee
- Pathogen Resistance Committee
- Regulatory Plant Pathology Committee
- Seed Pathology Committee
- Turfgrass Pathology Committee
- Virology Committee

**APS Leadership Institute:**
**Managing Change with Resilience, Focus, and Influence**

**Saturday, August 5**
8:30 a.m. – 4:30 p.m.; Travis CD, Hyatt

**Organizers:** Staci Rosenberger, Monsanto Company and APS Leadership Institute Chair

**Sponsoring Committee:** APS Leadership Institute Committee

**Financial Sponsors:** APS Council and Monsanto Company

This year you will benefit from an interactive workshop focused on managing and leading change. You will learn approaches to develop resilience and the strategies you need to stay focused and effective in times of change and uncertainty. This year’s workshop features an expert facilitator in this core leadership area, Sherry Harsch-Porter, Ph.D., president of PorterBay Insight. The workshop fee, substantially supported by APS Council and Monsanto, includes an individual work style assessment, workshop materials, coffee breaks, and lunch with a networking opportunity. **Preregistration required.**
Meetings take place in the San Antonio Henry B. González Convention Center (CC) unless otherwise noted.

**SUNDAY, AUGUST 6**

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>7:00 – 9:00 a.m.</td>
<td>APS Education Center Editorial Board Meeting</td>
<td>Independence, Hyatt</td>
</tr>
<tr>
<td>7:00 – 9:00 a.m.</td>
<td>Vegetable Seed Industry Breakfast, by invitation</td>
<td>303C, CC</td>
</tr>
<tr>
<td>7:00 a.m. – 6:00 p.m.</td>
<td>Registration Open</td>
<td>Hall 1 Registration</td>
</tr>
<tr>
<td>8:00 – 9:00 a.m.</td>
<td>APS Phytopathology Senior Editors’ Meeting</td>
<td>302C, CC</td>
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<tr>
<td>8:00 – 9:00 a.m.</td>
<td>APS Plant Disease Senior Editors’ Meeting</td>
<td>302A, CC</td>
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<tr>
<td>8:00 a.m. – 2:00 p.m.</td>
<td>Exhibit Set-Up</td>
<td>Exhibit Hall 1</td>
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<tr>
<td>8:30 – 9:00 a.m.</td>
<td>Moderator Orientation (for moderators of all scientific sessions)</td>
<td>221A, CC</td>
</tr>
<tr>
<td>8:30 – 10:00 a.m.</td>
<td>APS Phytobiomes Senior and Associates Editors Meeting</td>
<td>222, CC</td>
</tr>
<tr>
<td>9:00 – 10:00 a.m.</td>
<td><em>Phytopathology</em> Editorial Board Meeting</td>
<td>302C, CC</td>
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<tr>
<td>9:00 – 10:00 a.m.</td>
<td><em>Plant Disease</em> Editorial Board Meeting</td>
<td>302A, CC</td>
</tr>
<tr>
<td>10:30 a.m. – 12:00 p.m.</td>
<td>Opening General Session and Awarding of Fellows followed by Keynote Speaker Jack Bobo, “Can Agriculture Save the Planet before It Destroys It?” (live-streamed session)</td>
<td>Lila Cockrell Theatre, CC</td>
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<tr>
<td>12:00 – 1:00 p.m.</td>
<td>Lunch Break</td>
<td>302C, CC</td>
</tr>
<tr>
<td>1:00 – 2:00 p.m.</td>
<td>APS 2026 Professional Development Forum, by invitation</td>
<td>Travis AB, Hyatt</td>
</tr>
<tr>
<td>1:00 – 2:00 p.m.</td>
<td>Division Officers’ Luncheon</td>
<td>Travis C, Hyatt</td>
</tr>
<tr>
<td>1:30 – 3:00 p.m.</td>
<td>APS-IPS Working Group Meeting, by invitation</td>
<td>Independent, Hyatt</td>
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<tr>
<td>1:30 – 3:00 p.m.</td>
<td>PMN Editorial Board Meeting</td>
<td>Independence, Hyatt</td>
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<tr>
<td>2:45 – 4:00 p.m.</td>
<td>Social Gathering with Exhibition and Posters</td>
<td>Exhibit Hall 1</td>
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<tr>
<td>3:00 – 4:00 p.m.</td>
<td>Leadership Institute Committee Meeting</td>
<td>Travis C, Hyatt</td>
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<tr>
<td>3:00 – 4:00 p.m.</td>
<td>USABlight Committee Meeting</td>
<td>222, CC</td>
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<tr>
<td>3:00 – 4:30 p.m.</td>
<td>NPDR Town Hall</td>
<td>302A, CC</td>
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<tr>
<td>4:00 – 6:00 p.m.</td>
<td>APS PRESS Bookstore Open</td>
<td>Exhibit Hall 1</td>
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<tr>
<td>5:00 – 6:00 p.m.</td>
<td>National Plant Disease Recovery System (NPDRS) Meeting</td>
<td>Exhibit Hall 1</td>
</tr>
<tr>
<td>6:00 – 7:00 p.m.</td>
<td>APS Public Policy Board (PPB) Meeting, invitation only</td>
<td>303B, CC</td>
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</tbody>
</table>
but never a dull moment—there was simply no time!

there have been some great successes, a few disappointments,
pathologist in the corporate world. During 34 years in industry,
to commitments, enabled a very rewarding career as a plant

A Conversation with Phytopathologist of Distinction Allison
Tally: Corporate Plant Pathologist – Jack-of-All-Trades,
Master of None

Allison Tally, Syngenta Technical Lead (retired), Greensboro, NC

Allison’s story: When I finished college, I knew I liked plants but was unsure what that meant for my future career. With intentions of conducting environmental impact assessments, my grad advisor suggested a plant pathology class and I was hooked! While my research projects included both basic and applied aspects, my long-term goal became clear—a career in industry. To facilitate that, I made as many contacts as I could while assisting in field trials. The timing was good as companies were ‘diversifying.’ “She’s not afraid to get dirty” was one of the key selling points! With hands-on experience with weed and insect control as well as disease management, I understood many of the challenges and practices of growers. Being willing to learn, by stepping up to challenges, knowing when to “agree to disagree,” and keeping to commitments, enabled a very rewarding career as a plant pathologist in the corporate world. During 34 years in industry, there have been some great successes, a few disappointments, but never a dull moment—there was simply no time!

Back by popular demand!
Conversations with Phytopathologists of Distinction (PODs)

Sunday, August 6
2:45 – 4:00 p.m.; Room 224, Convention Center
A Conversation with Phytopathologist of Distinction Jim Cook: From Farmer to a Farmer’s Scientist

Jim Cook, Dean & Professor Emeritus, Washington State University

Jim’s story: Growing up on a farm and the oldest of eight siblings, I learned first hand about farming at an early age. My intention to be a farmer began to change during my second year at North Dakota State University when got a job with ARS plant pathologist Roland Timian. I loved chemistry and could now envision a career in science, a decision finalized when my fiancée announced that she did not intend to live on a farm. After an undergraduate major in agronomy, I was the first to receive a graduate degree in plant pathology at NDSU. At UC Berkeley, I did my Ph.D. thesis under W. C. Snyder on Fusarium root rot of beans. This set me on a course of research on soilborne plant pathogens, crediting my background in agronomy and growing up on a farm that led to my Forty Years of Field Research on Root Diseases of Wheat.

A Conversation with Phytopathologist of Distinction Allison Tally: Corporate Plant Pathologist – Jack-of-All-Trades, Master of None

Monday, August 7
1:00 – 2:15 p.m.; Room 224, Convention Center
A Conversation with Phytopathologist of Distinction Charlie Delp: Phytophthora: The Full Circle of My Career

Charlie Delp, DuPont Senior Research Scientist, E. I. du Pont de Nemours

Charlie’s story: My excitement with Phytophthora infestans caught the attention of a botany professor at Colorado A&M. Following his advice to pursue a Ph.D. in plant pathology at UC Davis led to 32 years as a research scientist with the DuPont Company. Our discovery of systemic fungicides spurred international interest when I introduced Benlate® at the 1st International Congress for Plant Pathology in 1968. The creation of industries’ Fungicide Resistance Action Committee (FRAC) entailed working with “competitive scientists.” Serving as secretary of APS, my professional family, and organizing OIP was rewarding. After retirement, I was an AAAS Congressional Science Fellow on the House Committee on Hunger and conducted Fungicide Resistance Management workshops on four continents. Volunteering in the U.S. Peace Corps in Samoa to get them back into production after devastation by taro leaf blight, Phytophthora colocasiae, was the satisfying culmination to a career enriched by professional contacts near and far.
Meetings take place in the San Antonio Henry B. González Convention Center (CC) unless otherwise noted.

**MONDAY, AUGUST 7**

6:30 – 8:00 a.m. Extension Plant Pathologists’ Breakfast
7:30 a.m. – 6:00 p.m. Registration Open
8:00 a.m. – 6:00 p.m. Poster Viewing
8:00 – 9:15 a.m. **Scientific Sessions**

**HOT TOPIC:** Highs and Lows of Cannabis Pathology
**SPECIAL SESSION:** Best Practices in Diagnostic Test Development and Deployment (*live-streamed session*)
**SPECIAL SESSION:** New Products and Services, Part I, *ends at 9:30 a.m.*
**SPECIAL SESSION:** Phytobiomes 2.0: Functional Approaches in Forest Ecosystem • ICPP2018 Preview Topic

8:00 – 10:00 a.m. **Take-a-Walk Session:** San Antonio River Improvements Project—Mission Reach, preregistration required. Meet at the APS Registration area, at 7:45 a.m., bus transportation will leave promptly at 8:00 a.m. Requires 1–1.5 miles of walking once at the destination.

9:30 – 11:30 a.m. **Plenary Session and Awards: Changing Landscapes of Plant Pathology** (*see page 11* (*live-streamed session*))

11:00 a.m. – 6:00 p.m. APS PRESS Bookstore Open
11:30 a.m. – 1:00 p.m. Lunch Break
11:30 a.m. – 1:00 p.m. Graduate Student & Industry Lunch
11:30 a.m. – 1:00 p.m. Widely Prevalent Plant Pathogenic Fungi Working Group, *by invitation*
11:30 a.m. – 1:30 p.m. Storkan-Hanes-McCaslin Research Foundation Luncheon, *by invitation*
11:30 a.m. – 6:00 p.m. Exhibits Open
11:30 a.m. – 6:00 p.m. OIP Silent Auction
12:00 – 2:00 p.m. USDA, ARS Meeting, *brown bag lunch*
1:00 – 2:15 p.m. **Scientific Sessions**

**HOT TOPIC:** Science as Story and Story as Science: Telling Plant Pathology Research Stories (*see page 34 for description*)
**POD TALK:** A Conversation with Phytopathologists of Distinction
**SPECIAL SESSION:** A Bridge Over Troubled Ecosystems: How Host Cultivation Creates Novel Pathogens (*live-streamed session*)
**SPECIAL SESSION:** Genomics-Based Approaches Facilitate Diagnostic and Population Genetic Marker Development for Plant Pathogens
**SPECIAL SESSION:** Phyllosphere Microbial Assemblages: Friends, Foes, and Strangers
**SPECIAL SESSION:** Recruiting NextGen Scientists: Strategies for Inclusive Outreach
**TECHNICAL SESSION:** Bacterial Virulence and Effectors
**TECHNICAL SESSION:** Fungicide Resistance
**TECHNICAL SESSION:** Oomycete Diversity

1:30 – 3:00 p.m. APS-SBF Working Group Meeting, *by invitation*

2:30 – 5:00 p.m. **Poster Viewing with Authors, Poster Huddles, and One-to-One (1:1)**

**Conversation with an Expert**

**2:30 – 3:00 p.m. Poster Huddles**

HUDDLE #1 — Strategies for managing diseases caused by microsclerotia-producing fungi

HUDDLE #2 — Challenges to developing effective strategies for managing emerging plant diseases

HUDDLE #3 — Innovative approaches for plant disease management

**2:30 – 4:00 p.m. One-to-One (1:1): Conversation with an Expert** (*advanced sign-up encouraged, see page 10 for description*)

**3:00 – 5:00 p.m. Poster Viewing with Authors**

3:00 – 4:00 p.m. Posters 1 – 320 (even numbered posters)
4:00 – 5:00 p.m. Posters 321 – 645 (even numbered posters)

3:30 – 5:00 p.m. APS Divisional Forum
PhytoViews
Your opportunity to engage in facilitated conversations as we explore all points of view on these topics of interest!

Seedborne vs. Seed-Transmitted Plant Pathogens: The Curious Case of Phomopsis spp. on Spinach Seed

**Sunday, August 6, 2:45 – 4:00 p.m.; Room 221B, Convention Center**
**Organizer and Moderator:** Ron Walcott, The University of Georgia

**Presenters:**
- Lindsey du Toit, WSU Mount Vernon Northwestern Washington Research & Extension Center (NWREC), Mount Vernon, WA, U.S.A.
- Ric Dunkle, American Seed Trade Association, Alexandria, VA, U.S.A.
- Christina Devorshak, USDA/APHIS – PPQ, CPHST, Raleigh, NC, U.S.A.

This PhytoView session will explore the nuanced differences between seedborne and seed-transmitted pathogens, including the implications of these terms for researchers, seed producers, growers, and regulatory agencies. Three panelists will share the connotations of seedborne vs. seed-transmitted from the perspectives of a university seed pathologist, a commercial seed producer, and a regulatory agency. Finally, *Phomopsis* spp. detected on spinach seed will be used to highlight a unique challenge presented by seedborne organisms that might not be seed transmitted, and for which the taxonomic state of flux of this genus has prevented the development of a resolution to a seed trade quarantine.

Take-a-Walk Sessions
Out of the convention center and into where the action is! Take-a-Walk Sessions focus on local issues in plant pathology in the environment where issues exist....this year on the San Antonio River Walk.

**Monday, August 7, and repeated Tuesday, August 8**

8:00 – 10:00 a.m. • Preregistration required, ticketed session. Meet at the APS Registration area at 7:45 a.m., bus transportation will leave promptly at 8:00 a.m. from the Grand Hyatt. Requires 1–1.5 miles of walking once at the destination.

**Take-a-Walk Session:**
**San Antonio River Improvements Project—Mission Reach**
**Presenter:** Matthew Driffill, Recreation Superintendent, San Antonio River Authority

The San Antonio River Improvements Project includes the largest urban river restoration in the United States, which extended the Historic River Walk to both the north and south, expanding the opportunities for the 11.5 million visitors who visit the San Antonio River annually. This trip will take participants along the 8-mile Mission Reach ecosystem restoration project. This project has more than 400 acres of native plantings, including 23,000+ native trees. Participants will learn about the project funding, construction, management, native vegetation, community governance, and ongoing ecosystem management. In addition to a restored riverine environment, the Mission Reach also provides recreational opportunities, connects four of San Antonio’s 18th century missions that are important historical and cultural resources, provides for significant economic growth opportunities, and is a recently inscribed UNESCO World Heritage Site. Preregistration is required. Attendance is limited.
Meetings take place in the San Antonio Henry B. González Convention Center (CC) unless otherwise noted.

**TUESDAY, AUGUST 8**

7:00 – 8:30 a.m.  Sustaining Associates' Breakfast, by invitation 303B, CC
7:00 – 9:00 a.m.  Annual Meeting Board Meeting, by invitation 222, CC
7:30 – 9:30 a.m.  Small Fruit Diseases Workers' Discussion 303A, CC
7:30 a.m. – 5:30 p.m.  Registration Open Hall 1 Registration
8:00 – 10:00 a.m.  Take a Walk Session: San Antonio River Improvements Project—Mission Reach, preregistration required. Meet at the APS Registration areaat 7:45 a.m., bus transportation will leave promptly at 8:00 a.m. Requires 1–1.5 miles of walking once at the destination.
8:00 – 11:00 a.m.  Academic Unit Leaders' Forum Meeting 303C, CC
8:30 – 11:30 a.m.  Special Sessions
  - SPECIAL SESSION: 17th I. E. Melhus Graduate Student Symposium: Today's Students Addressing Tomorrow's Challenges Concerning Plant Diseases and Phytobiomes 225A, CC
  - SPECIAL SESSION: Addressing Nematode Parasitic Tactics Through Biology 225C, CC
  - SPECIAL SESSION: The Rise and Management Challenges of Multi-Fungicide-Resistant Pathogens • ICPP2018 Preview Topic (live-streamed session) 221D, CC
  - SPECIAL SESSION: Translation of Basic Biological Control Research into Effective Grower Products and Practices 221A, CC
9:00 a.m. – 5:00 p.m.  APS PRESS Bookstore Open Exhibit Hall 1
9:30 a.m. – 12:00 p.m.  APS Foundation Board Meeting, by invitation 302C, CC
10:00 a.m. – 6:00 p.m.  Exhibits Open Exhibit Hall 1
10:15 – 11:30 a.m.  Special Sessions
  - HOT TOPIC: Next Generation of Plant Pathologists Exploiting Sequencing Strategies to Further Our Understanding of Plant Virus-Insect Vector Interactions • ICPP2018 Preview Topic 221C, CC
  - SPECIAL SESSION: New Products and Services, Part II, ends at 11:45 a.m. 225B, CC
  - TECHNICAL SESSION: Pathogen Virulence and Effectors 225B, CC
11:30 a.m. – 1:00 p.m.  Lunch Break
11:45 a.m. – 12:45 p.m.  Sugarcane Orange Rust Meeting, brown bag lunch Independence, Hyatt
12:00 – 1:00 p.m.  APHIS Widely Prevalent Bacteria Committee Meeting, by invitation 222, CC
1:00 – 2:00 p.m.  Phytopathology News Advisory Committee Meeting Travis A, Hyatt
1:00 – 2:15 p.m.  Special Sessions
  - HOT TOPIC: Navigating Contentious Conversations 221A, CC
  - SPECIAL SESSION: Plant Pathologists of the Future: Showcasing the Top Graduate Students from the APS Division Meetings (ends at 2:30 p.m.) 221B, CC
  - SPECIAL SESSION: Pursuit of Solutions to Mycotoxin Risks by Next-Generation Plant Pathologists 225A, CC
  - SPECIAL SESSION: The Socioeconomic Impact of New and Re-emerging Bacterial Diseases: A National Perspective • ICPP2018 Preview Topic (live-streamed session) 221D, CC
2:00 – 3:30 p.m.  APS-CSPP Working Group Meeting, by invitation Presidio B, Hyatt
2:30 – 5:00 p.m.  Career Fair Exhibit Hall 1
2:30 – 5:00 p.m.  Poster Viewing with Authors and Poster Huddles Exhibit Hall 1

**Poster Viewing with Authors and Poster Huddles**

2:30 – 3:00 p.m.  Poster Huddles
  - HUDDLE #4 – Pathogenicity and virulence determinants of soilborne fungal pathogens
  - HUDDLE #5 – Novel approaches for screening for plant disease resistance
  - HUDDLE #6 – Advances in phytobiome research
3:00 – 5:00 p.m.  Poster Viewing with Authors
  - 3:00 – 4:00 p.m. Posters 1 – 320 (odd numbered posters)
  - 4:00 – 5:00 p.m. Posters 321 – 645 (odd numbered posters)
IDEA CAFÉS

Enhance your scientific content, find solutions to existing problems, discover innovative ideas in your area of research or outreach! Idea Cafés are your opportunity for an in-depth round-table discussion on an area of interest. Meet great minds in plant pathology in an informal setting. One table per topic, located at specified tables at the front entrance area of the Exhibit Hall. Topics are listed as determined at print time. Check the addendum for any changes in topic areas to be discussed and/or moderators.

Tuesday, August 8
5:00 – 6:30 p.m.

- Cultural Sensitivities and Culture Shock – Margarita L. Bateman, APHIS
- Family-Friendly APS: How Did We Do? – Renee Rioux, Bayer
- Framework for Diagnostic Assay Validation Research – Kitty Cardwell, Oklahoma State University
- Give Me Spots on My Apples: Can Phytopathologists Contribute to the Anti-Food Waste Movement? – Lindsey Triplett, The Connecticut Agricultural Experiment Station
- Graduate School 101: Everything Someone Applying or in Their First Year Needs to Know – Carolee Bull, Pennsylvania State University; Alejandra Huerta, Colorado State University
- Next-Generation Seed Health Testing: Using DNA Metabarcoding for Crop Seed Microbial Profiling. What Are the Challenges and Opportunities? – Tracy Bruns, Iowa State University
- Science Communication: How Can We Actively Work Toward Bridging the Gap? – Lauri Lutes, Oregon State University
- The Phosphite Fungicides – What They Can and Cannot Do – Tim Brenneman, University of Georgia-Athens
- The Potato Blackleg Epidemic – Jianjun (Jay) Hao, University of Maine

Wednesday, August 9
9:30 – 10:30 a.m.

- Disease Management and Outreach Needs for Rapid Adaptation to Climate Changes and Water Scarcity – Cassandra Swett, University of California-Davis
- Effects of Ambient Ozone Pollution on Plant-Pathogen Interactions and Food Safety – Al-Sayeed Mashaheet, North Carolina State University
- Endornaviruses – What Are They and What Do They Do To Plants? – Rodrigo A. Valverde, Louisiana State University
- How to Combat Diseases in Organic Agriculture? – Shane Zhou, Texas A&M University
- Imposter Syndrome and You: A Discussion of a Little-Discussed Phenomenon – Michelle Marks and Katelyn Butler, University of Wisconsin-Madison
- Microbial Assemblages: Friends, Foes, and Strangers – Robin Choudhury, University of Florida
- Selling Innovation: How Do We Get Others to Join Us in Thinking Outside the Box? – Renee Rioux, Bayer
- Teaching Biosecurity and Microbial Forensics – Francisco Ochoa Corona, Oklahoma State University
- The Looming Threat of Multiple Fungicide Resistance – Katherine Stevenson, University of Georgia-Athens
- What I Wish I Learned in Grad School – Ana Cristina Fulladolsa and Alejandra Huerta, Colorado State University
- Why Light Matters – Anticipated and Unanticipated Effects of Light on Plant Pathogens – David Gadoury, Cornell University, Mark Rea, RPI Lighting Research Center
Meetings take place in the San Antonio Henry B. González Convention Center (CC) unless otherwise noted.

**WEDNESDAY, AUGUST 9**

7:00 – 9:00 a.m.  Food Safety Interest Group  Independence, Hyatt
7:30 – 9:30 a.m.  APS Awards and Honors Committee Meeting, *by invitation*  Travis A, Hyatt
7:30 – 9:30 a.m.  Office of International Programs (OIP) Board Meeting  303B, CC
7:30 a.m. – 2:00 p.m.  Registration  Hall 1 Registration
8:00 – 10:30 a.m.  Exhibits Open  Exhibit Hall 1
8:00 – 11:00 a.m.  APS PRESS Bookstore  Exhibit Hall 1
9:00 – 10:30 a.m.  **PhytoCafe featuring Poster Huddles, Idea Cafés, One-to-One (1:1) Conversation with an Expert plus Exhibits and Poster Viewing—coffee, tea, and light breakfast snack provided**

**9:00 – 9:30 a.m. Poster Huddles**
- HUDDLE #7 – Pros & cons of pathogen detection strategies
- HUDDLE #8 – Improved understanding of pathogen dispersal/dissemination.
- HUDDLE #9 – Advances in understanding fungicide resistance

**9:00 – 10:30 a.m. Poster Viewing**

**9:30 – 10:30 a.m. Idea Cafés**
Small round-table discussions on topics of interest (see page 23 for description)

**9:30 – 10:30 a.m. One-to-One (1:1): Conversation with an Expert**  
(advanced sign-up encouraged, see page 10 for description)

9:30 – 10:30 a.m.  **New Session! Committees: How to Be Effective Session**  
(open to any meeting attendee)  221A, CC

10:30 – 11:00 a.m.  Poster Take-Down  Exhibit Hall 1
10:45 a.m. – 12:00 p.m.  **General Session with Speaker Jeff Hurt, “Making The Science Of Plant Pathology Work For You: What Now? What’s Next?” (live-streamed session)**  
Lila Cockrell Theatre, CC

10:45 a.m. – 12:30 p.m.  **Exhibit Take-Down**  Exhibit Hall 1
12:00 – 1:00 p.m.  Lunch Break  Travis CD, Hyatt
12:00 – 3:00 p.m.  APS Council Meeting  Travis CD, Hyatt
1:00 – 2:15 p.m.  **Scientific Sessions**
- SPECIAL SESSION: Labs, A Mechanism to Enhance Learning in the Changing World of Plant Pathology  221B, CC
- TECHNICAL SESSION: Floral and Fruit Diseases  221C, CC
- TECHNICAL SESSION: Virology Detection and Descriptions  225B, CC

1:00 – 4:00 p.m.  **Scientific Sessions**
- SPECIAL SESSION: Adapt, Change, and Improvise: How to Control Diseases as the Climate Is Changing  
  *(live-streamed session)*
- SPECIAL SESSION: New Insights into NLR on Plant Immunity: Pathogen Recognitions, Molecular Interactions, and Novel Disease Control Strategies  
  221A, CC

2:00 – 4:00 p.m.  **Office of Public Relations & Outreach (OPRO) Board Meeting**  Travis A, Hyatt

2:45 – 4:00 p.m.  **Scientific Sessions**
- SPECIAL SESSION: An Ever-Changing Extension Environment: Keeping a Foot in the Furrow and a Hand in Cyberspace  221B, CC
- TECHNICAL SESSION: Chemical Control  221C, CC
- TECHNICAL SESSION: Mycotoxins  225B, CC

7:00 – 9:30 p.m.  **Final Night Celebration—The Last Alamo Revelry**  The Grotto, CC

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**New! For committee leaders, committee members, and anyone interested!**

**Committees: How to Be Effective Session**

*9:30 – 10:30 a.m.; 221A, Convention Center*

**Organizers and Presenters:** Lindsey J. du Toit, Washington State University Mount Vernon NWREC, Mount Vernon, WA; Paul Vincelli, University of Kentucky, Lexington, KY

Looking for new ways to get the most out of serving on an APS committee? Through a combination of open discussion and informal presentation, this session will assist in facilitating highly effective committees. Selected, short resources will be provided.
SATURDAY AUGUST 5, 2017

FIELD TRIP & WORKSHOPS

Field Trips

Ornamental
7:30 a.m. – 5:00 p.m.
Organizers: S. C. Rhodes, Kevin Ong, Texas A&M AgriLife Extension Service, College Station, TX, U.S.A; Ann Chase, Chase Agricultural Consulting, Cottonwood, AZ, U.S.A; Fulya Bay-sal-Gurel, Tennessee State University, McMinnville, TN, U.S.A.
Sponsoring Committee: Disease of Ornamental Plants Committee, Extension Committee
Financial Sponsor: Chase Agricultural Consulting LLC

Participants on the ornamental field trip will be visiting a range of ornamental productions and get to see how these plants are used in a public setting. Tour participants will have the opportunity to visit Mortellaro’s Nursery, a wholesale nursery specializing in woody and native ornamental production, and Color Spot San Antonio, a wholesale nursery specializing in everything from small color annuals to very large woody ornamentals, including many colorful and unique plants used in the southern landscape across the country. Since Color Spot starts many of their own plants, a visit to the propagation area will be included. Another stop on the tour is San Antonio Botanical Gardens. This 38-acre garden is a top San Antonio attraction that serves as a museum of plants, as well as a research and conservation facility that provides a beautiful and engaging environment. From the Rose Garden to the tropical selections in the exhibit rooms of the Conservatory to the Texas Native Trail, there’s always something new to see at this Texas-style Botanical Garden. Fee includes transportation, lunch, and all admissions. Preregistration required.

Workshops

(listed in alphabetical order)

The Current State of Introductory Plant Pathology Courses: What We Learned and How You Can Improve Your Own Course
2:00 – 5:00 p.m.; Republic B, Hyatt
Organizers: Maya C. Hayslett, University of Wisconsin, Madison, WI, U.S.A.; Brantlee Spakes Richter, University of Florida, Gainesville, FL, U.S.A.; Anissa M. Poleatewich, University of New Hampshire, Durham, NH, U.S.A.
Sponsoring Committee: Teaching Committee
Financial Sponsor: NIFA

The APS Teaching Committee recently completed a research project to investigate the state of introductory plant pathology curricula nationwide, their alignment with industry needs, and their uses of best practices for learning. This workshop is for instructors of plant pathology courses to discuss in an interactive forum the key findings of the study. What are the core concepts and skills that should be taught in an introductory plant pathology course? What do employers expect of students who have completed an introductory plant pathology course? This workshop brings instructors together with industry representatives to directly discuss the needs and challenges in aligning course content to employer expectations. Attendees will spend time in working groups to plan modifications to their courses (content, structure, delivery, pedagogy) based on the recommendations of the study.

Design Matters! Experimental Design in Lab, Greenhouse, and Field Settings
1:00 – 5:00 p.m.; Bonham D, Hyatt
Sponsoring Committee: Epidemiology Committee

This workshop will be geared to anyone who has not previously learned about designs (graduate students) or those who would like a refresher course. Registrants will learn the basics of experimental designs that are typically used in greenhouse-, lab-, and field-based plant pathology, why one would choose to use a certain design for their study, and how to evaluate prior to doing the study whether a good choice was made. We will link experimental design and study planning with the analysis of observed data and interpretation of statistical results through several examples given during the workshop and also provide the registrant opportunities for deeper study post-workshop. Code will be provided in SAS and it is recommended (but not required) that registrants have SAS on their computers. No prior in-depth statistics or programming skills will be needed.

Fact Finders for Agriculture – Hands-on Workshop for Use of USDA National Agricultural Statistics Service (NASS) Databases
1:00 – 5:00 p.m.; Bonham C, Hyatt

When agricultural statistics make the headlines, the focus is usually on the latest statistics that help to minimize the uncertainties and risks associated with the production and marketing of commodities. NASS reports are often used directly and indirectly by farmers, producer organizations, agribusinesses, researchers, policymakers, and government agencies. This training will also be used to enhance the understanding of the phytobiome and in continuing APS’s commitment to enabling sustainability of agricultural production. This workshop will provide training on the NASS Survey Programs, Quickstats use demonstrations, and a new, guided interface to Quickstats 2.0. Experts from NASS will provide understanding and skills to help users get commonly requested statistics from the online database. Workshop participants may submit specific questions to be addressed by the NASS experts during the training. These questions can cover virtually every U.S. agriculture, including production and supplies of food, feed, and fiber; pricing; chemical use; demographic data; and much more.
Meta-Analysis for Combining Results from Multiple Studies in Plant Pathology
10:00 a.m. – 5:00 p.m.; 301B, Convention Center
Organizers: Laurence V. Madden, Pierce Paul, Ohio State University, Wooster, OH, U.S.A.
Sponsoring Committee: Epidemiology Committee

Meta-analysis is the analysis of results of multiple independent studies, which is performed in order to synthesize the evidence from many possible sources in a formal quantitative manner. In the most common case, the outcome of each study becomes a single observation in the meta-analysis of all available studies. The discipline developed originally in the social sciences in the 1970s and has now been embraced within many scientific disciplines. This workshop will cover basic concepts and approaches in meta-analysis and show how to estimate parameters and interpret results. Methods for expanding the meta-analytical model to account for study-level characteristics (so called moderator variables) and for multiple treatments per study will be reviewed. Methods will be explained primarily using SAS software and also with R.

Morphological ID of Phytopathogenic Fungi
9:00 a.m. – 4:00 p.m.; Bonham E, Hyatt
Organizers: Lindsey D. Thiessen, North Carolina State University, Raleigh, NC, U.S.A.; Megan K. Romberg, USDA APHIS PPQ NIS, Beltsville, MD, U.S.A.
Sponsoring Committee: Mycology Committee

While molecular techniques can help clarify relationships between fungi and provide for diagnostics of cryptic species or nonsporulating fungi, these techniques may not be rapid enough for diagnosticians or extension specialists to quickly and efficiently diagnose disease in the clinic or in the field. In addition, the lack of sequences for many fungi in public databases means that, even if molecular techniques can be employed, the identity of a fungus may still elude the diagnostican. This workshop is geared toward improving the skills of plant pathologists in morphological identification of fungi. Morphological identification of several groups of fungi, including tips for sample preparation, will be addressed as well as important events in fungal taxonomy and nomenclature.

Population Genomics in R
8:00 – 11:30 a.m.; 301A, Convention Center
Organizer: Niklaus Grunwald, USDA ARS, Corvallis, OR, U.S.A.
Sponsoring Committee: Evolutionary Genetics and Genomics Committee

Analysis of population genetic data remains challenging, particularly in the genomics era. High-throughput sequencing has resulted in the opportunity to sequence variants (SNPs, indels, etc.) at the genome scale. However, application of these technologies for the characterization of pathogens provides unique challenges. This workshop will focus on the kinds of analyses typically conducted by plant pathologists. It will cover analyses of data from tools such as whole-genome variant calling and genotyping-by-sequencing or RADseq once variant call data are in hand. This workshop will not cover genome assembly, read mapping to reference genomes, or the calling of variants. This workshop will focus on the processing and filtering of variants obtained by tools such as TASSEL, SAMtools, or GATK. Participants will gain hands-on experience with analysis of variant calling format (VCF) data in R using datasets provided by instructors. We will use R packages such as adegenet, poppr, and vcfR. Basic familiarity with R is required.

Principles of Diagnostic Assay Validation
8:00 a.m. – 5:00 p.m.; 303A, Convention Center
Organizers: Kitty F. Cardwell, Oklahoma State University, Stillwater, OK, U.S.A.; James P. Stack, Kansas State University, Manhattan, KS, U.S.A.; Laurene Levy, USDA APHIS PPQ CPHST, Riverdale, MD, U.S.A.; Arif Mohammad, Kansas State University, Manhattan, KS, U.S.A.; Carla D. Garzon, Oklahoma State University, Stillwater, OK, U.S.A.; Jacqueline Fletcher, Oklahoma State University, Stillwater, OK, U.S.A.; Laurene Levy, USDA APHIS PPQ CPHST, Riverdale, MD, U.S.A.; Kitty F. Cardwell, Oklahoma State University, Stillwater, OK, U.S.A.; Laurene Levy, USDA APHIS PPQ CPHST, Riverdale, MD, U.S.A.; Arif Mohammad, Kansas State University, Manhattan, KS, U.S.A.; Carla D. Garzon, Oklahoma State University, Stillwater, OK, U.S.A.; Jacqueline Fletcher, Oklahoma State University, Stillwater, OK, U.S.A.
Sponsoring Committee/Sponsor: Forensic Microbiology Interest Group, Plant Pathogen and Disease Detection Committee, Diagnostics Committee, Emerging Diseases Committee
Financial Sponsors: Agdia; PathSensors, Inc.

This is a one-day workshop to develop a conceptual framework to discuss and define the principles of diagnostic assay validation. The vocabulary of assay validation is only loosely understood in our discipline. Specifications of confidence, defined by metrics of specificity, inclusivity, sensitivity, and exclusivity, and then robustness of an assay in the hands of multiple users are not standardized. We propose to look at confidence across a range of stringency requirements; bioforensic analysis by law enforcement; discriminatory analyses for regulators and PPQ; and diagnostic tools used by NPDN and industry clinics for local sample triage and assessment. Expected Outcomes: (1) The diagnostic community and assay developers will have a common understanding of the language and metrics of validation. (2) A framework for discussion about validation protocols will be proposed in advance of a 2018 international symposium on assay validation standards. (3) A position paper will be developed and published that will provide a potential framework for review of APS journal articles on diagnostic assay development.
All Scientific Sessions take place in the CONVENTION CENTER.

Special Sessions listed first, followed by Oral Technical Sessions. Listed alphabetical by session title. Find complete details on the meeting website apsnet.org/meet. As a courtesy to presenters, please DO NOT TAKE PHOTOS during their presentation or of the slide content without presenter approval. Session content listed in the program is as submitted by the authors/presenter and has NOT been edited.

**Special Sessions**

**Beautiful Efficiency: The Multifunctional Nature of Virus Proteins**

1:00 – 4:00 p.m. • Room 221A, Convention Center  
**Organizers:** Richard S. Nelson, Samuel Roberts Noble Foundation, Inc., Ardmore, OK, U.S.A.; Carl M. Deom, University of Georgia, Athens, GA, U.S.A.  
**Moderators:** Carl M. Deom, University of Georgia, Athens, GA, U.S.A.; Richard S. Nelson, Samuel Roberts Noble Foundation, Inc., Ardmore, OK, U.S.A.  
**Section:** Molecular and Cellular Plant-Microbe Interactions  
**Sponsoring Committee:** Virology Committee  
**Financial Sponsor:** The Noble Research Institute, LLC; APS/APHIS Widely Prevalent Virus Committee

1:00 p.m. • 1-S  
The P6 Effector Protein of Cauliflower mosaic virus: A Masterswitch in the Virus Infection Cycle  

1:30 p.m. • 2-S  
The tobamovirus 126-kDa protein: A multifunctional, multi-interacting, and evolving protein that influences disease  

2:00 p.m. • 3-S  
The p33 protein of Citrus tristeza virus: A conundrum of multiple functions  
S. Y. Folimonova, University of Florida, Gainesville, FL, U.S.A.

2:30 p.m. • Break

2:45 p.m. • 4-S  
Functional variation in cognate proteins of nucleotrophic negative-strand RNA viruses of plants  
M. M. Goodin, University of Kentucky, Lexington, KY, U.S.A.

3:15 p.m. • 5-S  
Dissecting the mechanism of Potato virus X insertion into plasmodesmata  
Y. Lu (1), D. Burnett (1), M. Zabrady (2), J. Tilsner (1,3), (1) James Hutton Institute, Dundee, UNITED KINGDOM; (2) University of St Andrews, St Andrews, UNITED KINGDOM; (3) University of St. Andrews, St. Andrews, UNITED KINGDOM

3:45 p.m. • 6-S  
Geminivirus C4 proteins: Divergent functions  
C. M. Deom, University of Georgia, Athens, GA, U.S.A.

**Schroth – Faces of the Future Session: Host Resistance and Host Pathogens Interactions**

1:00 – 4:00 p.m. • Room 225A, Convention Center  
**Organizer and Moderator:** Martha M. Malapi-Wight, USDA-APHIS, Beltsville, MD, U.S.A.  
**Section:** Professionalism/Outreach  
**Sponsoring Committee:** Early Career Professionals Committee  
**Financial Sponsor:** APS Foundation

1:00 p.m. • 7-S  
Lose the effector or die tryin’: Novel quantitative resistance loci for bacterial blight  
A. I. Huerta (1), E. Delorean (1), A. Bossa-Castro (1), C. Raghavan (2), R. Corral (1), V. M. Verdier (3), H. Leung (4), J. E. Leach (1), (1) Colorado State University, Fort Collins, CO, U.S.A.; (2) International Rice Research Institute, Metro Manila 1301, PHILIPPINES; (3) IRD, Cirad, Univ Montpellier, IPME, Montpellier, FRANCE; (4) Intl Rice Research Inst, Metro Manila, PHILIPPINES

1:30 p.m. • 8-S  
How Does Plant Immunity Restrict Bacterial virulence?  
B. Kvitko, A. Lovelace, University of Georgia, Athens, GA, U.S.A.

2:00 p.m. • Break

2:15 p.m. • 9-S  
Managing Phomopsis stem canker of sunflower using host resistance  
F. M. Mathew (1), T. Olson (1), L. Marek (2), (1) South Dakota State University, Brookings, SD, U.S.A.; (2) Iowa State University, Ames, IA, U.S.A.

2:45 p.m. • 10-S  
Evolving Phenolic Roles in Host Defense: The Cases of ‘Candidatus Liberibacter solanacearum’ Potato Infections and that of Grapevine Pathogens  
C. M. wallis (1), S. A. Lee (1), E. Rogers (2), (1) USDA ARS, Parlier, CA, U.S.A.; (2) USDA ARS FDWSRU, Fort Detrick, MD, U.S.A.; (3) University of California Davis, Davis, CA, U.S.A.; (4) USDA ARS, Davis, CA, U.S.A.
Show Me the Money! Assessing the Value of Disease Control in a Changing Landscape
1:00 – 4:00 p.m. • Room 221D, Convention Center (live-streamed session)

**Organizers:** Kelsey F. Andersen, Plant Pathology Department, Gainesville, FL, U.S.A.; Robin Choudhury, University of Florida Plant Pathology Department, Gainesville, FL, U.S.A.

**Moderators:** Robin Choudhury, University of Florida Plant Pathology Department, Gainesville, FL, U.S.A.; Kelsey F. Andersen, Plant Pathology Department, Gainesville, FL, U.S.A.

**Section:** Epidemiology

**Sponsoring Committees:** Crop Loss Assessment and Risk Evaluation Committee, Epidemiology Committee

**Financial Sponsor:** Monsanto

1:00 p.m. • 11-S
Losses, regrets and expectations: an overview of attaching value to disease management decisions
N. MCROBERTS, University of California-Davis, Davis, CA, U.S.A.

1:15 p.m. • 12-S
Risk analysis and economic optimization of late blight management tactics

1:30 p.m. • 13-S
Networked real time disease risk evaluation: a cost-effective approach to disease management
O. CARISSE (1), H. Van Der Heyden (2), (1) Agric & Agri-Food Canada, Saint-Jean-sur-Richelieu, QC, CANADA; (2) Compagnie de recherche Phytodata, Sherrington, QC, CANADA

2:00 p.m. • Break

2:15 p.m. • 14-S
Cost-benefit analysis of integrated management strategies for F. U.S.A. rium head blight of wheat
P. A. PAUL, J. Salgado, L. V. Madden, Ohio State Univ, Ohio Agricultural Research and Development Center, Dept of Plant Pathology, Wooster, OH, U.S.A.

2:45 p.m. • 15-S
Impact Network Analysis: A framework for evaluating the effects of technologies through linked socioeconomic and biophysical networks
K. A. GARRETT, University of Florida Plant Pathology Department, Gainesville, FL, U.S.A.

3:15 p.m. • 16-S
Disease Control: A Seed Company Perspective
J. W. PITKIN PHD, Monsanto, Chesterfield, MO, U.S.A.
Genetics of Resistance and Virulence
1:00 – 2:15 p.m. • Room 221C, Convention Center
Moderators: Jonathan Richards, North Dakota State University, Fargo, ND, U.S.A.; Ashish Ranjan PhD, University of Wisconsin Madison, Madison, WI, U.S.A.

1:00 p.m. • 1-O
Genetics, genomics, and transcriptomics reveal candidate avirulence/virulence effectors in *Pyrenophora teres f. teres*)
J. RICHARDS (1), V. Koladla (1), R. S. Brueggeman (1), T. L. Friesen (2), (1) North Dakota State University, Fargo, ND, U.S.A.; (2) USDA ARS, Fargo, ND, U.S.A.

1:15 p.m. • 2-O
Volatiles from LOX10 promote maize susceptibility to *Colletotrichum graminicola* by hijacking jasmonic and salicylic acids antagonism
Z. GORMAN (1), S. Christensen (2), Y. He (1), Y. Yan (3), E. J. Borrego (1), M. V. Kolomiets (1), (1) Texas A&M University, College Station, TX, U.S.A.; (2) Chemistry Unit, Center of Medical, Agricultural, and Veterinary Entomology, USDA, Gainesville, TX, U.S.A.; (3) Nanjing Agricultural University, Nanjing, CHINA

1:30 p.m. • 3-O
Resistance to *Sclerotinia sclerotiorum* in soybean deciphered by transcriptome and metabolome analyses
A. RANJAN PHD (1), D. L. Smith (2), M. Kabbage (2), (1) University of Wisconsin Madison, Madison, WI, U.S.A.; (2) University of Wisconsin Madison, Madison, WI, U.S.A.

1:45 p.m. • 4-O
Identifying functions of effectors and small RNAs involved in wheat-rust interactions
S. R. RAMACHANDRAN (1), C. Yin (1), N. A. Mueth (2), K. Tanaka (3), S. H. Hulbert (1), (1) Dept. of Plant Pathology, Washington State University, Pullman, WA, U.S.A.; (2) Department of Plant Pathology, Washington State University, Pullman, WA, U.S.A.; (3) Department of Plant Pathology, Washington State University, Pullman, WA, U.S.A.

2:00 p.m. • 5-O
Dissection of the AP1P6-mediated ubiquitin-proteasome pathway in rice immunity against *Magnaporthe oryzae*
Y. NING (1), G. L. Wang (1,2), (1) Institute of Plant Protection, Chinese Academy of Agricultural Sciences, Beijing, CHINA; (2) The Ohio State University, Columbus, OH, U.S.A.

Pathogen Detection and Diversity
1:00 – 2:15 p.m. • Room 225B, Convention Center
Moderators: Jerry E. Weiland, USDA ARS, Corvallis, OR, U.S.A.; Adrienne M. Gorny, Cornell University, Plant Pathology & Plant Microbe Biology Section, Geneva, NY, U.S.A.

1:00 p.m. • 6-O
A performance-based approach to the detection of Acidovorax citrulli in cucurbit seed samples
K. D. KLEINHESSELINK, Monsanto, Woodland, CA, U.S.A.

2:45 p.m. PhytoView
Seedborne vs. Seed Transmitted Plant Pathogens: The Curious Case of *Phomopsis* spp. on Spinach Seed • ICPP2018 Preview Topic

Organizer: Ron Walcott, The University of Georgia, Athens, GA

Presenters:
- Lindsey du Toit, WSU Mount Vernon Northwestern Washington Research & Extension Center (NWREC), Mount Vernon, WA
- Ric Dunkle, American Seed Trade Association, Alexandria, VA
- Christina Devorshak, USDA/APHIS – PPQ, CPHST, Raleigh, NC

Integrated Pest Management
2:45 – 4:00 p.m. • Room 221C, Convention Center

2:45 p.m. • 11-O
Anaerobic soil disinfection to manage soilborne disease complexes in protected culture tomato production
A. L. TESTEN, S. A. Miller, The Ohio State University OARDC, Wooster, OH, U.S.A.
3:00 p.m. • 12-O
Effect of tillage and cultivar on sudden death syndrome and yield of soybean in Iowa
Y. R. KANDEL, L. F. S. Leandro, D. S. Mueller, Iowa State University, Ames, IA, U.S.A.

3:15 p.m. • 13-O
Design and operational considerations for use of UV and red light for suppression of plant diseases under field conditions
D. M. GADOURY (1), A. Bierman (2), M. Rea (2), A. Stensvand (3), A. Suthaparan (4), R. Borba Onofre (5), (1) Cornell University, Geneva, NY, U.S.A.; (2) Lighting Research Center, Rensselaer Polytechnic Institute, Troy, NY, U.S.A.; (3) Norwegian Institute of Bioeconomy Research, Ås, NORWAY; (4) Norwegian University of Life Sciences, Ås, NORWAY; (5) University of Florida - Gulf Coast Research and Education Center, Wimauma, FL, U.S.A.

3:30 p.m. • 14-O
A Multi-state Coordinated Project to Evaluate Integrated Management Strategies for Fusarium Head Blight and Deoxynivalenol in Wheat

3:45 p.m. • 15-O
Assessment and utilization of risk factors in predicting the development of soybean sudden death syndrome
M. ROTH, Z. Noel, J. Wang, A. Byrne, M. Chilvers, Michigan State University, East Lansing, MI, U.S.A.

2:45 p.m. • 16-O
A model bacterial community of maize roots
B. NIU (1), J. Paulson (2,3), X. Zheng (2,4), R. Kolter (1), (1) Department of Microbiology and Immunobiology, Harvard Medical School, Boston, MA, U.S.A.; (2) Department of Biostatistics and Computational Biology, Dana-Farber Cancer Institute, Boston, MA, U.S.A.; (3) Department of Biostatistics, Harvard T. H. Chan School of Public Health, Boston, MA, U.S.A.; (4) Department of Mathematics, Shanghai Normal University, Shanghai, CHINA

3:00 p.m. • 17-O
Functional diversity of citrus microbiomes correlates with Huanglongbing disease symptom severity

3:15 p.m. • 18-O
The effects of cultivar, production system, and nursery on the composition of the rhizosphere microbiome of cultivated rhododendrons in Oregon
Z. FOSTER (1,2), J. E. Weiland (1), C. Scagel (1), N. Grunwald (1), (1) USDA ARS, Corvallis, OR, U.S.A.; (2) Oregon State University, Corvallis, OR, U.S.A.

3:30 p.m. • 19-O
Impact of Long-Term Tillage and Fertility Treatments on Soil Microbial Communities

3:45 p.m. • 20-O
Effect of Copper Nanomaterials on the Soil Microbiome
All Scientific Sessions take place in the CONVENTION CENTER.

Special Sessions listed first, followed by Oral Technical Sessions. Listed alphabetical by session title.
Find complete details on the meeting website apsnet.org/meet.
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**Hot Topic**

**Highs and Lows of Cannabis Pathology**

8:00 – 9:15 a.m. • Room 221A, Convention Center

Organizer: Janna Beckerman, Department of Botany and Plant Pathology, Purdue University, West Lafayette, IN

It’s definitely a hot topic. Get the latest information about diseases of Cannabis as well as the challenges associated with serving this growing industry.

- Regulatory and Legal Issues in Identifying Pests on Cannabis - Mitchell Yergert, Colorado Department of Agriculture, U.S.A.
- Hemp Disease Risks, Myths, and Blurred Lines - Nicole W. Gauthier, Extension Pathology, University of Kentucky, Lexington, KY, U.S.A.
- Industrial Hemp: The Inside Dope - Janna Beckerman, Department of Botany and Plant Pathology, Purdue University, West Lafayette, IN, U.S.A.

**Special Sessions**

**Best Practices in Diagnostic Test Development and Deployment**

8:00 – 9:15 a.m. • Room 221D, Convention Center

Organizers: Kevin Ong, Texas A&M AgriLife Extension Service, College Station, TX, U.S.A.; Scott A. Heuchelin, DuPont Pioneer, Johnston, IA, U.S.A.

Moderator: Scott A. Heuchelin, DuPont Pioneer, Johnston, IA, U.S.A.

Section: Diseases of Plants

Sponsoring Committees: Diagnostics Committee, Plant Protection and Disease Detection Committee, Seed Pathology Committee, Diseases of Ornamental Plants Committee, Evolutionary Genetics and Genomics Committee, Epidemiology Committee

8:00 a.m. • 23-S
The need for accurate repeatable diagnostic assays and the pitfalls of testing anomalies: Case study examples from the seed industry
S. A. HEUCHELIN, DuPont Pioneer, Johnston, IA, U.S.A.

8:10 a.m. • 24-S
International validation and harmonization efforts for seed health testing
C. C. BLOCK, G. P. Munkvold, T. Bruns, Iowa State University, Ames, IA, U.S.A.

8:25 a.m. • 25-S
Obtaining DNA template of adequate purity for amplification and avoiding compounds present that inhibit amplification: A Verticillium dahliae example
G. J. BILODEAU, Canadian Food Inspection Agency, Ottawa, ON, CANADA

8:40 a.m. • 26-S
Transferring PCR assays into isothermal platforms: How to make sure it works in real world settings.
T. MILES, California State University-Monterey Bay, Seaside, CA, U.S.A.

8:55 a.m. • 27-S
USDA APHIS NPPLAP Proficiency Testing and planned methods deviation as a part of the methods’ validation process for a network of laboratories
V. A. MAVRODIEVA (1), G. Dennis (2), P. J. Shiel (3), (1) USDA APHIS-PPQ-S&T-CPHST, Beltsville, MD, U.S.A.; (2) USDA APHIS-PPQ-S&T-CPHST, Raleigh, NC, U.S.A.; (3) USDA APHIS PPQ CPHST, Raleigh, NC, U.S.A.

**New Products and Services, Part I**

8:00 – 9:30 a.m. • Room 221B, Convention Center

Organizer and Moderator: Neil Glynn, Syngenta, Vero Beach, FL, U.S.A.

Section: Plant Disease Management

Sponsoring Committee: Industry Committee

8:00 a.m.

8:15 a.m.
The Miravis® Brand Family of Fungicides; K. BUXTON, Syngenta, Vero Beach, Florida, U.S.A.

8:30 a.m.
Exteris Stressgard Fungicide; R. RIOUX, Bayer Crop Science, Durham, North Carolina, U.S.A.

8:45 a.m.
Dow New Fungicide Fenpicoxamid; C. YAO, Dow AgroSciences LLC, Indianapolis, Indiana, U.S.A.

9:00 a.m.
MBI-110 and MBI-601 for Above and Below Ground Disease Management; T. JOHNSON, Marrone Bio Innovations, Davis, California

9:15 a.m.
POWER PLUS; V. THIMAKAPURA, Green Lifescience Technologies Pvt. Ltd., Vijayanagara, Mysore, KARNATAKA, INDIA
Phytophotobomes 2.0: Functional Approaches in Forest Ecosystems  
ICPP2018 Preview Topic

8:00 – 9:15 a.m.  Room 225A, Convention Center

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.

Moderators: Caterina Villari, D.B. Warnell School of Forestry and Natural Resources, University of Georgia, Athens, GA, U.S.A.; Jane Stewart, Colorado State University, Fort Collins, CO, U.S.A.

Section: Molecular and Cellular Plant-Microbe Interactions

Sponsoring Committee: Forest Pathology Committee

8:00 a.m.  28-S

Metagenomic approaches to examine relationships of soil microbial communities with Armillaria root disease

8:15 a.m.  29-S

Movement of bacteria between plant species drive assembly of epiphytic bacterial communities
S. LINDOW, University of California Berkeley, Berkeley, CA, U.S.A.

8:30 a.m.  30-S

Microbial communities of bristlecone needles and resistance in white pine blister rust

8:45 a.m.  31-S

Role of leaf microbiome associated with European ash in mediating resistance to ash dieback
M. CLEARY, Swedish University of Agricultural Sciences, Alnarp, SWEDEN

9:00 a.m.  32-S

The Populus microbiome: Progress and limitations of our understanding of phytophobime communities
D. JACOBSON (1,2), P. Jones (2), G. Tuskan (1), W. Muchero (1), J. Chen (1), (1) Oak Ridge National Laboratory, Oak Ridge, TN, U.S.A.; (2) University of Tennessee, Oak Ridge, TN, U.S.A.

8:00 – 9:15 a.m. Room 221C, Convention Center

Fungal Diseases

8:00 a.m.  21-O

Emerging plant pathogens on ornamental crops in south Florida

8:15 a.m.  22-O

Detection of virulent races from international populations of Puccinia graminis f. sp. tritici

8:30 a.m.  23-O

Endophytic fungi associated with Populus roots: the Ilyonectria complex

8:45 a.m.  24-O

Disease dynamics of Verticillium wilt fungi in the biocontrol of Ailanthus altissima.
K. WICKERT (1), M. T. Kasson (2), (1) West Virginia University, Morgantown, WV, U.S.A.; (2) West Virginia University, Division of Plant and Soil Sciences, Morgantown, WV, U.S.A.

9:00 a.m.  25-O

Radiant energy thresholds and spectral distribution of light as regulatory factors in sporulation of Erysiphe necator

Phenotyping and Population Dynamics

8:00 – 9:15 a.m. Room 225B, Convention Center


8:00 a.m.  26-O

Feeling the heat: Towards predicting pitch canker outbreaks in the context of climate change

8:15 a.m.  27-O

Three complete genome sequences of novel Xanthomonas citri strains from Texas carry atypical PthA alleles and unusual large plasmids
SCIENTIFIC SESSIONS

8:00 a.m. • 28-O
Differences in *Fusarium virgatum* species in brown midrib sorghum and in air populations in production fields
D. L. FUNNELL-HARRIS (1), E. Scully (2), S. Sattler (1), P. O’Neill (1), (1) USDA-ARS, Lincoln, NE, U.S.A.; (2) USDA-ARS, Manhattan, KS, U.S.A.

8:45 a.m. • 29-O
Population dynamics of *Phytophthora rubi* indicate high rates of migration between states and nurseries in the Pacific Northwestern United States
J. TABIMA (1), I. A. Zasada (2), N. Grunwald (2), (1) Oregon State University, Corvallis, OR, U.S.A.; (2) USDA ARS, Corvallis, OR, U.S.A.

9:00 a.m. • 30-O
Characterizing Optimum Conditions for the Lolium pathotype of *Magnaporthe oryzae* to Infect and Cause Wheat Blast
K. B. MILLS (1), P. A. Paul (2), L. V. Madden (2), (1) Ohio State University, Wooster, OH, U.S.A.; (2) Ohio State Univ, Ohio Agricultural Research and Development Center, Dept of Plant Pathology, Wooster, OH, U.S.A.

Resistance Identification
8:00 – 9:15 a.m. • Room 225D, Convention Center

8:00 a.m. • 31-O
Simultaneous fine mapping and locus characterization of the Andean Ur-4 and Mesaoamerican Ur-5 rust resistance genes in *Phaseolus vulgaris*
O. P. HURTADO-GONZALES (1), G. Valentini (2), T. Gilio (2), Q. Song (1), M. Pastor-Corrales (1), (1) Soybean Genomics & Improvement Lab, BARC-West, ARS-USDA, Beltsville, MD, U.S.A.; (2) Universidade Estadual de Maringá, Maringá, PR, BRAZIL.

8:15 a.m. • 32-O
Soybean resistance locus *Rhg1* can confer resistance in diverse plant families to multiple cyst nematode species
K. J. BUTLER (1), J. Smith (1), S. Chen (2), X. Wang (3), A. F. Bent (1), (1) University of Wisconsin-Madison, Department of Plant Pathology, Madison, WI, U.S.A.; (2) Cornell University, School of Integrative Plant Science, Ithaca, NY, U.S.A.; (3) USDA-ARS, Robert W. Holley Center for Agriculture and Health, Ithaca, NY, U.S.A.

8:30 a.m. • 33-O
New sources of soybean cyst nematode resistance in *Forrest* soybean identified through forward and reverse genetics
Z. ZHOU (1), N. Lakhsassi (1), S. Liu (1), S. Bekal (1), V. Colantonio (1), K. Lambert (2), A. Barakat (3), K. Meksem (1), (1) Southern Illinois University, Carbondale, IL, U.S.A.; (2) University of Illinois, Urbana, IL, U.S.A.; (3) University of South Dakota, Vermillion, SD, U.S.A.

8:45 a.m. • 34-O
Characterization and marker development for three resistance loci to the spinach downy mildew pathogen
C. FENG (1), B. H. Bluhm (1), J. C. Correll (2), (1) University of Arkansas, Fayetteville, AR, U.S.A.; (2) Unv of Arkansas, Fayetteville, AR, U.S.A.

9:00 a.m. • 35-O
Lose the effector or die tryin’: Novel quantitative resistance loci for bacterial blight
A. I. HUERTA (1), E. Delorean (1), A. Bossa-Castro (1), C. Raghavan (2), R. Corral (1), V. M. Verdier (3), H. Leung (4), J. E. Leach (1), (1) Colorado State University, Fort Collins, CO, U.S.A.; (2) International Rice Research Institute, Metro Manila 1301, PHILIPPINES; (3) IRD, Cirad, Univ Montpellier, IPME, Montpellier, FRANCE; (4) Intl Rice Research Inst, Metro Manila, PHILIPPINES.

Virus Biology
8:00 – 9:15 a.m. • Room 225C, Convention Center
Moderators: Shaopius Mondal, Cornell University, Ithaca, NY, U.S.A.; Maria Regina Mendoza, Texas A&M University, College Station, TX, U.S.A.

8:00 a.m. • 36-O
Viral metagenomics uncovers virus diversity in wild and cultivated blueberry (*Vaccinium corymbosum*).

8:15 a.m. • 37-O
Current status of Tomato chlorotic spot virus in Florida and the Caribbean

8:30 a.m. • 38-O
Strain specificity of helper components encoded by *Potato virus Y*
S. MONDAL, G. Stewart, Cornell University, Ithaca, NY, U.S.A.

8:45 a.m. • 39-O
Two RNA viruses as tools for the co-expression of proteins in the same cells of infiltrated plants
M. R. MENDOZA, B. D. Shaw, H. B. Scholthof, Texas A&M University, College Station, TX, U.S.A.

9:00 a.m. • 40-O
Viral delivery of a gene editing tool for transient screening of gene function
W. B. CODY (1), H. B. Scholthof (1), T. E. Mirkov (2), (1) Texas A&M University, College Station, TX, U.S.A.; (2) Texas A&M Agrilife, Welsaco, TX, U.S.A.
MONDAY AFTERNOON, AUGUST 7

All Scientific Sessions take place in the CONVENTION CENTER.

Special Sessions listed first, followed by Oral Technical Sessions. Listed alphabetical by session title.

Find complete details on the meeting website apsnet.org/meet.

As a courtesy to presenters, please DO NOT TAKE PHOTOS during their presentation or of the slide content without presenter approval.

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Hot Topic

Science as Story and Story as Science: Telling Plant Pathology Research Stories
1:00 – 2:15 p.m., • Room 221A, Convention Center
Organizers and Moderators: Jim Bradeen, Dylan VanBoxtel, Department of Plant Pathology, University of Minnesota, St. Paul, MN, U.S.A.

As scientists, educators, and communicators we have all heard the adage “we should be telling our story and educating people about science.” But for some, storytelling (especially when it is about our research) seems daunting. Who is the audience? How can I make my science accessible without ‘dumbing it down’? How can I get my message out there? Come to this session to learn what research tells us about how to craft narratives to increase comprehension, interest, and engagement. You will learn about and work with one framework for translating plant pathology research into stories for nonexpert audiences. You will walk away from this session with quick and easy ideas about how you can tell effective plant pathology research stories that align with your personal brand.

Special Sessions

A Bridge over Troubled Ecosystems: How Host Cultivation Creates Novel Pathogens
1:00 – 2:15 p.m. • Room 221D, Convention Center (live-streamed session)
Moderators: Denita Hadziabdic, University of Tennessee, Knoxville, TN, U.S.A.; Anna O. Conrad, University of Kentucky, Lexington, KY, U.S.A.
Section: Epidemiology
Sponsoring Committee: Forest Pathology Committee

1:00 p.m. • 33-S
Rapid Ohia Death: The fast track from houseplants to Hawaii’s native forests?
L. M. KEITH, USDA-ARS, Hilo, HI, U.S.A.

1:15 p.m. • 34-S
Pathways and populations in Phytophthora: A legacy of destruction
E. M. GOSS (1), J. Wang (2), (1) Department of Plant Pathology, University of Florida, Gainesville, FL, U.S.A.; (2) Kansas State University, Manhattan, KS, U.S.A.

1:30 p.m. • 35-S
Tree domestication and host jump trigger the making of a novel tree disease
N. FEAU (1), R. C. Hamelin (1,2), (1) Department of Forest and Conservation Sciences, University of British Columbia, Vancouver, BC, CANADA; (2) Institut de Biologie Intégrative des Systèmes, Université Laval, Quebec, CANADA

1:45 p.m. • 36-S
Fly without wings: Genetic structure and adaptation of fungal pathogen and associates with bark beetle outbreak in the western Canada and U.S.A.
C. K. M. TSUI (1,2), D. Alayon (1), N. Feau (1), Y. Zhang (1), A. Capron (1), B. Dhillon (3), R. C. Hamelin (1), (1) Department of Forest and Conservation Sciences, University of British Columbia, Vancouver, BC, CANADA; (2) Faculty of Medicine, University of British Columbia, Vancouver, BC, CANADA; (3) University of Arkansas, Fayetteville, AR, U.S.A.

2:00 p.m. • 37-S
Sphaerulina through history in North America: Consequences of human-aided dissemination
M. L. SAKALIDIS, Michigan State University, East Lansing, MI, U.S.A.

Genomics-Based Approaches Facilitate Diagnostic and Population Genetic Marker Development for Plant Pathogens
1:00 – 2:15 p.m. • Room 221B, Convention Center
Organizers: Edwin Rene Palencia, North Carolina State University, Raleigh, NC, U.S.A.; Erica M. Goss, Department of Plant Pathology, University of Florida, Gainesville, FL, U.S.A.; Jeffrey James Coleman, Auburn University, Auburn, AL, U.S.A.; Steve Klosterman, USDA ARS, Salinas, CA, U.S.A.
Section: Diseases of Plants
Sponsoring Committees: Evolutionary Genetics and Genomics Committee, Diagnostics Committee

1:00 p.m. • 38-S
Next-generation sequencing to develop molecular diagnostics for Pseudoperonospora cubensis
L. M. QUESADA, North Carolina State University, Raleigh, NC, U.S.A.

1:15 p.m. • 39-S
Understanding and managing emerging diseases in the southeastern U.S. using comparative genomics for marker development for fungal plant pathogens
M. T. BREWER, L. G. Sumabat, H. Li, University of Georgia, Athens, GA, U.S.A.

1:30 p.m. • 40-S
Searching for the genetic basis of phenotypic traits of interest of the cuU.S.A.I agent of late blight disease through a genome-wide association study
G. DANIES (1), L. Gonzalez-Garcia (1), K. L. Myers (2), H. S.
Judelson (3), W. E. Fry (2), S. Restrepo (1), (1) Universidad de los Andes, Bogota, COLOMBIA; (2) Cornell University, Ithaca, NY, U.S.A.; (3) University of California, Riverside, CA, U.S.A.

1:45 p.m. • 41-S
Marker development for Puccinia striiformis f. sp. tritici
X. HU, Northwest A&F University, China, Yangling, CHINA

2:00 p.m. • 42-S
Comparative genomics informed detection of Pseudomonas syringae associated with bacterial leaf spot of watermelon and squash
E. NEWBERRY (1), D. Mol (2), J. B. Jones (3), M. Paret (4), R. Willmann (2), B. P. Woudt (2), (1) University of Florida, Quincy, FL, U.S.A.; (2) Syngenta Seeds, Enkhuizen, NETHERLANDS; (3) Department of Plant Pathology, University of Florida, Gainesville, FL, U.S.A.; (4) North Florida Research and Education Center, University of Florida, Quincy, FL, U.S.A.

Phyllosphere Microbial Assemblages: Friends, Foes, and Strangers
1:00 – 2:15 p.m. • Room 221C, Convention Center
Organizers: Steve Lindow, University of California Berkeley, Berkeley, CA, U.S.A.; Robin Choudhury, University of California Davis, Davis, CA, U.S.A.
Moderators: Robin Choudhury, University of California Davis, Davis, CA, U.S.A.; Steve Lindow, University of California Berkeley, Berkeley, CA, U.S.A.
Section: Epidemiology
Sponsoring Committees: Phyllosphere Microbiology Committee, Bacteriology Committee

1:00 p.m. • 43-S
Light as a driver of phyllosphere microbial behavior
G. A. BEATTIE, Iowa State University, Ames, IA, U.S.A.

1:15 p.m. • 44-S
Nonpathogens in the phyllosphere
J. H. J. LEVEAU, University of California-Davis, Davis, CA, U.S.A.

1:30 p.m. • 45-S
Strangers with benefits, remaking the phyllosphere through disease
J. D. BARAK, University of Wisconsin-Madison, Madison, WI, U.S.A.

1:45 p.m. • 46-S
An unusual ménage à trois in the phyllosphere
R. R. BÉLANGER (1), J. Laur (1), C. Labbe (1), G. Bojarajan Ramakrishnan (1), P. D. Spanu (2), (1) Université Laval, Quebec, QC, CANADA; (2) Imperial College of Sci Tech & Medicine, London, UNITED KINGDOM

2:00 p.m. • 47-S
Get me out of here: Modeling in-canopy turbulence and pathogen dispersion
W. MAHAFFEE (1), B. Bailey (2), N. Miller (3), L. Ulmer (3), E. Pardyjak (3), R. Stoll (3), (1) USDA, Corvallis, OR, U.S.A.; (2) University of California, Davis, Davis, CA, U.S.A.; (3) University of Utah, Salt Lake, UT, U.S.A.
1:00 p.m. • 51-O
Evolutionary relatedness and sources of US lineages of *Phytophthora infestans* (Mont.) de Bary.
A. C. SAVILLE, J. Ristaino, North Carolina State University, Raleigh, NC, U.S.A.

1:15 p.m. • 52-O
A new multilocus genotype of *Phytophthora nicotianae* found in isolates from pineapple heart rot disease
M. F. RATTI (1), M. Ascunce (1), J. Landivar (2), E. M. Goss (1), (1) Department of Plant Pathology, University of Florida, Gainesville, FL, U.S.A.; (2) Facultad de Ingeniería Maritima, Ciencias Biológicas Oceánicas y Recursos Naturales, ESPOL, Guayaquil, ECUADOR

1:30 p.m. • 53-O
Population Structure of the oomycete soilborne pathogen *Phytophthora capsici* in North Carolina
L. M. Quesada, C. H. PARADA ROJAS, North Carolina State University, Raleigh, NC, U.S.A.

1:45 p.m. • 54-O
Temporal and host driven variation of *Pythium* and *Globisorangium* populations in chrysanthemum and geranium
M. F. PROANO (1), C. Ayala (2), A. Chiriboga (2), P. Garrido (3), E. Díaz (1), S. M. Marek PhD (1), H. A. Melouk (4), M. L. Daughtrey (5), C. D. Garzon PhD (1), (1) Oklahoma State University, Stillwater, OK, U.S.A.; (2) Universidad de las Fuerzas Armadas ESPE, Sangolquí, ECUADOR; (3) AGROCALIDAD, Quito, ECUADOR; (4) USDA ARS, Stillwater, OK, U.S.A.; (5) Cornell University, Long Island, NY, U.S.A.

2:00 p.m. • 55-O
Unraveling historical shifts in *Pseudoperonospora cubensis* populations in the U.S. that resulted in the 2004 cucumber downy mildew epidemic
TUESDAY MORNING, AUGUST 8

All Scientific Sessions take place in the CONVENTION CENTER.

Special Sessions listed first, followed by Oral Technical Sessions. Listed alphabetical by session title.

Find complete details on the meeting website APSNET.ORG/MEET

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**Special Sessions**

**17th I. E. Melhus Graduate Student Symposium: Today’s Students Addressing Tomorrow’s Challenges Concerning Plant Diseases and Phytobiomes**

*8:30 – 11:30 a.m. • Room 225A, Convention Center*

**Organizers:** Pierce A. Paul, Ohio State Univ, Ohio Agricultural Research and Development Center, Dept of Plant Pathology, Wooster, OH, U.S.A.; Forrest W. Nutter Jr., Iowa State University, Ames, IA, U.S.A.

**Moderators:** Forrest W. Nutter Jr., Iowa State University, Ames, IA, U.S.A.; Pierce A. Paul, Ohio State Univ, Ohio Agricultural Research and Development Center, Dept of Plant Pathology, Wooster, OH, U.S.A.

**Section:** Epidemiology

**Sponsoring Committees/Sponsors:** APS Epidemiology Committee

**Financial Sponsor:** APS Foundation, APS Crop Loss and Risk Evaluation Committee, DuPont Pioneer, and APS Epidemiology Committee, Monsanto, APHIS Widely Prevalent Bacteria Committee

8:30 a.m. • I.E. Melhus-Graduate Mentor and APS Leader

8:45 a.m. • 53-S

Ecology and epidemiology of grapevine red blotch disease

E. CIENIEWICZ, M. Fuchs, Cornell University, Geneva, NY, U.S.A.

9:15 a.m. • 54-S

Optimization of fungicides for disease management and enhanced overwintering of stevia

A. KOEHLER, North Carolina State University, Raleigh, NC, U.S.A.

9:45 a.m. • Break

10:00 a.m. • 55-S

Microbiome Networks: A Systems Framework for Identifying Candidate Microbial Assemblages for Disease Management in the Era of Genomics and Phytobiomes


10:30 a.m. • 56-S

Effects of three chemical compounds on *Ralstonia solanacearum* physiological functions and disease development

H. T. TSENG, A. L. Mila, North Carolina State University, Raleigh, NC, U.S.A.

11:00 a.m. • Honorable Mention Awards and Wrap up

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**Addressing Nematode Parasitic Tactics Through Biology**

*8:30 – 11:30 a.m. • Room 225C, Convention Center*

**Organizers:** Qianwei Jiang, Monsanto Vegetable Seeds, Felda, FL, U.S.A.; Rachel Medina, Ohio State Univ, Wooster, OH, U.S.A.

**Moderator:** Qianwei Jiang, Monsanto Vegetable Seeds, Felda, FL, U.S.A.

**Section:** Molecular and Cellular Plant-Microbe Interactions

**Sponsoring Committees:** Nematology Committee, Soil Microbiology and Root Diseases Committee

**Financial Sponsor:** Monsanto

8:30 a.m. • 57-S

Global efforts to control potato cyst nematodes

L. M. C. DANDURAND, University of Idaho, Moscow, ID, U.S.A.

9:00 a.m. • 58-S

Breadth of nematode effectors

M. G. MITCHUM, University of Missouri, Columbia, MO, U.S.A.

9:30 a.m. • 59-S

Nematode parasitism genes and their manipulation of host plants

C. GLEASON (1), L. Zhang (1), N. Leelarasamee (2), J. Utermark (2), S. Habash (3), A. Elashry (3), (1) Washington State University, Pullman, WA, U.S.A.; (2) Georg August University, Goettingen, GERMANY; (3) Bonn University, Bonn, GERMANY

10:00 a.m. • Break

10:15 a.m. • 60-S

The soybean cyst nematode: Managing a chronic disease using sustainable approaches

K. LAMBERT, University of Illinois, Urbana, IL, U.S.A.

10:45 a.m. • 61-S

New technologies for nematode management: RNAi

P. VIEIRA, Virginia Polytechnic Institute and State University, Blacksburg, VA, U.S.A.
New Products and Services, Part II
10:15 – 11:45 a.m. • Room 221B, Convention Center
**Organizer and Moderator:** Neil Glynn, Syngenta, Vero Beach, FL, U.S.A.
**Section:** Plant Disease Management
**Sponsoring Committee:** Industry Committee

10:15 a.m.
A2000 Growth Chamber; M. SINGLE, Conviron, Winnipeg, Manitoba, Canada

10:30 a.m.
ARM Trial Management Software Enhancements; S. GYLLYING, Gylling Data Management Inc., Brookings, South Dakota, U.S.A.

10:45 a.m.
CANARY HLB Assay for Psyllids; A. FLANNERY, Pathsensors, Baltimore, Maryland, U.S.A.

11:00 a.m.
sporeSENTRY; M. ANDREOU, OptiGene Limited, Horsham, West Sussex

11:15 a.m.
AG13064; T. A. HAYDEN, Winfield United, Owensboro, Kentucky, U.S.A.

11:30 a.m.
Dominus Biofumigant; G. STALLINGS, Isagro, Cama, Washington, U.S.A.

Re-emergence of Bacterial Blight of Cotton
8:30 – 9:45 a.m. • Room 221C, Convention Center
**Organizers:** Jason E. Woodward, Texas A&M AgriLife Extension Service, Lubbock, TX, U.S.A.; Libo Shan, Texas A&M University, College Station, TX, U.S.A.

8:30 a.m. • 62-S
Genetic diversity among host and pathogen in the cotton bacterial blight pathosystem
R. BART, Donald Danforth Plant Science Center, St Louis, MO, U.S.A.

8:45 a.m. • 63-S
A 20-year Hiatus of Bacterial Blight
T. WHEELER, Texas A&M AgriLife Research, Lubbock, TX, U.S.A.

9:00 a.m. • 64-S
qPCR Detection of Bacterial Blight Pathogen of Cotton
T. W. ALLEN JR., Mississippi State Univ, Stoneville, MS, U.S.A.

9:15 a.m. • 65-S
Mechanisms of Susceptibility to Bacterial Blight in Cotton
K. Cox (1), L. SHAN (2), (1) Dept. Plant Pathology and Microbiology, Texas A&M University, College Station, TX, U.S.A.; (2) Texas A&M University, College Station, TX, U.S.A.

9:30 a.m. • 66-S
Management strategies for Bacterial Blight in Cotton
J. E. WOODWARD, Texas A&M AgriLife Extension Service, Lubbock, TX, U.S.A.

The Rise and Management Challenges of Multi-Fungicide-Resistant Pathogens • ICPP2018 Preview Topic
8:30 – 11:30 a.m. • Room 221D, Convention Center (live-streamed session)
**Organizers:** Guido Schnabel, Clemson University, Clemson, SC, U.S.A.; Jeffrey Stein, Monsanto, Chesterfield, MO, U.S.A.; Jeffrey R. Standish, University of Georgia, Tifton, GA, U.S.A.; Allysson Lunos, LSU AgCenter, Baton Rouge, LA, U.S.A.
**Moderators:** Allysson Lunos, LSU AgCenter, Baton Rouge, LA, U.S.A.; Jeffrey R. Standish, University of Georgia, Tifton, GA, U.S.A.

8:30 a.m. • 67-S
The advent and spread of prodigious multi-fungicide resistance in Botrytis cinerea
G. SCHNABEL (1), M. Hahn (2), N. Peres (3), M. Hu (1), (1) Clemson University, Clemson, SC, U.S.A.; (2) Department of Biology, University of Kaiserslautern, Kaiserslautern, GERMANY; (3) Gulf Coast Research and Education Center; University of Florida, Wimauma, FL, U.S.A.

8:45 a.m. • 68-S
Evolution of multi-fungicide resistance in cereal pathogens and impact on disease control
B. B. Fraaije, Rothamsted Research, Hertfordshire, ENGLAND

9:15 a.m. • 69-S
Rethinking Apple IPM
J. L. BECKERMAN (1), G. W. Sundin (2), (1) Purdue Univ, West Lafayette, IN, U.S.A.; (2) Michigan State University, East Lansing, MI, U.S.A.

9:30 a.m. • 70-S
Healthy vegetables at the cost of multi-fungicide-resistant pathogens
M. T. MCGRATH, Cornell University, Riverhead, NY, U.S.A.

10:00 a.m. • 71-S
Multiple fungicide resistances in Cercospora beticola of sugar beet
G. A. SECOR (1), V. Rivera-Varas (1), M. D. Bolton (2), (1) North Dakota State University, Fargo, ND, U.S.A.; (2) USDA ARS NCSL, Fargo, ND, U.S.A.

10:15 a.m. • 72-S
How to manage multiple fungicide resistance in plant-pathogenic fungi
G. STAMMLER, K. Klappach, BASF SE, Limburgerhof, GERMANY

10:30 a.m. • 73-S
Multiple resistance in fungal plant pathogens, its selection schemes and impact on disease control management strategies
S. TORRIANI, Syngenta Crop Protection, Stein, SWITZERLAND

10:45 a.m. • Panel Discussion
Translation of Basic Biological Control Research into Effective Grower Products and Practices
8:30 – 11:30 a.m. • Room 221A, Convention Center
Section: Biology and Disease Management
Sponsoring Committee: Biological Control Committee

8:30 a.m. • Welcoming Remarks

8:35 a.m. • 75-S
The phytobiome and biological control: What does the future hold?
J. E. LEACH, Colorado State University, Fort Collins, CO, U.S.A.

8:50 a.m. • Interactive

8:55 a.m. • 76-S
What happens to good results? From the academic research lab to labeled product for growers.
B. J. JACOBSEN (1), M. B. Dimock (2), (1) Montana State University, Bozeman, MT, U.S.A.; (2) Certis U.S.A., LLC, Columbia, MD, U.S.A.

9:25 a.m. • 77-S
The new biofungicide natamycin as a preplant dip treatment against QoI-resistant populations of Colletotrichum acutatum in strawberry
S. E. HAACK (1), K. L. Ivors (2), (1) Department of Plant Pathology and Microbiology, University of California, Riverside, CA, U.S.A.; (2) Strawberry Center, California Polytechnic State University, San Luis Obispo, CA, U.S.A.

9:40 a.m. • Interactive

9:45 a.m. • Break

10:00 a.m. • 78-S
Accelerating microbial products for sustainable agriculture
S. HUSE, V. Urisn, Indigo Ag, Charlestown, MA, U.S.A.

10:30 a.m. • 79-S
Characterization of antimicrobial-producing beneficial bacteria from citrus rhizosphere

10:45 a.m. • Interactive

10:50 a.m. • 80-S
Nonbiological biological control

11:20 a.m. • Concluding Remarks

8:30 a.m. Technical Sessions

Oomycetes
8:30 – 9:45 a.m. • Room 225B, Convention Center
Moderators: William E. Fry, Cornell University, Ithaca, NY, U.S.A.; Terence Mhora, University of Delaware, Newark, DE, U.S.A.

8:30 a.m. • 56-O
Genic copy number variation reveals an unexpected mosaic of varying ratios of diploidy and triploidy among isolates of Phytophthora infestans
B. J. KNAUS (1), J. Tabima (2), S. Shakya (3), H. S. Judelson (4), N. Grunwald (5), (1) USDA ARS, Corvallis, OR, U.S.A.; (2) Oregon State University, Corvallis, OR, U.S.A.; (3) OREGON STATE UNIVERSITY, Corvallis, OR, U.S.A.; (4) University of California, Riverside, CA, U.S.A.; (5) USDA-ARS, Horticultural Crops Research Unit, Corvallis, OR, U.S.A.

8:45 a.m. • 57-O
Growth medium affects physiology and virulence of Phytophthora infestans sporangia.

9:00 a.m. • 58-O
Presence-absence polymorphism and balancing selection of RxLR genes in Phytophthora clade 1c species
S. SHAKYA (1), B. J. Knaus (2), J. Tabima (1), H. S. Judelson (3), N. Grunwald (2), (1) OREGON STATE UNIVERSITY, Corvallis, OR, U.S.A.; (2) USDA ARS, Corvallis, OR, U.S.A.; (3) University of California, Riverside, CA, U.S.A.

9:15 a.m. • 59-O
Application of Genotyping-by-Sequencing in the development of downy mildew resistant lima bean cultivars
T. MHORA (1), C. Scanlan (1), N. F. Gregory (1), E. Ernest (2), S. Polson (1), R. J. Wisser (1), T. A. Evans (1), N. M. Donofrio (1), (1) University of Delaware, Newark, DE, U.S.A.; (2) University of Delaware, Georgetown, DE, U.S.A.

9:30 a.m. • 60-O
Identification and characterization of Phytophthora isolates from citrus orchards of South Texas
S. CHAUDHARY (1,2,3), V. Ancona PhD (2), C. Barbola (4), (1) Texas A&M University, College Station, TX, U.S.A.; (2) Texas A&M Kingsville Citrus Center, Weslaco, TX, U.S.A.; (3) South Texas College, McAllen, TX, U.S.A.; (4) Texas A&M University-Kingsville, Citrus Center, Weslaco, TX, U.S.A.

Viral-Host Interactions
8:30 – 9:45 a.m. • Room 221B, Convention Center

8:30 a.m. • 61-O
Use of KASP markers to screen the Pisum sativum single plant core collection and commercial varieties for resistance to Pea seed-borne mosaic virus
L. D. Porter, K. D. SWISHER, USDA-ARS, Prosser, WA, U.S.A.

8:45 a.m. • 62-O
Host protein interaction network associated with the non-
incorporated form of the potato leafroll virus RTP identified using mass spectrometry

9:00 a.m. • 63-O
Genetic and functional analysis of na resistance durability to Potato virus Y in tobacco
V. MICHEL (1), E. Julio (2), J. Cotutcheau (2), F. Dorlha de Borne (2), L. Glais (3), E. Jacquot (4), V. Decrooq (1), T. Candresse (1), S. German-Retana (1), (1) INRA Bordeaux, UMR 1332 BFp; Villenave d’Ornon, FRANCE; (2) Imperial Tobacco, Bergerac, FRANCE; (3) FN3PT/RD3PT, Paris, FRANCE; (4) INRA, Montpellier Cedex, FRANCE

9:15 a.m. • 64-O
Characterization of a symptom determinant of grapevine fanleaf virus suggests a novel function for its RNA-dependent RNA polymerase
L. J. OSTERBAAN, M. Fuchs, Cornell University, Geneva, NY, U.S.A.

9:30 a.m. • 65-O
Mapping Loci that Control Tuber and Foliar Symptoms Caused by PVY in Autotetraploid Potato (Solanum tuberosum L.)

10:15 a.m. Hot Topic
Next Generation of Plant Pathologists Exploiting Sequencing Strategies to Further Our Understanding of Plant Virus-Insect Vector Interactions • ICPP2018 Preview Topic
10:15 – 11:30 a.m. • Room 221C, Convention Center
Organizer and Moderator: Israel E. Badillo-Vargas, Texas A&M AgriLife Research, Weslaco, TX, U.S.A.

More than 250 plant-infecting viruses known to date are transmitted from plant-to-plant by insect vectors. The least common modes of transmission among these vector-borne plant-infecting viruses are the persistent-circulative and persistent-propagative; both of which involve the internalization and dissemination of virus particles inside the insect’s body for transmission to occur. Currently, sequencing strategies are being exploited to understand the interactions between plant-infecting viruses with their insect vectors to not only further our knowledge of these complex interactions but also devise novel control strategies to deter the population increase of these little foes and transmission of these ugly, microscopic pathogens to increase good plant health and production. In this session, we will hear from early career professionals on how they are tackling different problems within this hot topic in plant pathology and insect vector biology.

Speakers:
- Understanding whitefly-virus interactions through genome sequencing and transcriptome analyses – Daniel K. Hasegawa, USDA-ARS, U.S. Vegetable Laboratory, U.S.A.
- Virus infection alters expression of transcripts with enriched abundance in the salivary gland of Frankliniella occidentalis” – Sulley K. Ben-Mahmoud, Postdoctoral Research Associate, University of California-Davis, U.S.A.

10:15 a.m. Technical Sessions

Pathogen Virulence and Effectors
10:15 – 11:30 a.m. • Room 225B, Convention Center
Moderators: Pengfei Bai, The Ohio State University, Columbus, OH, U.S.A.; Miaoying Tian, University of Hawaii at Manoa, Honolulu, HI, U.S.A.

10:15 a.m. • 66-O
Role of lysine residues of the Magnaporthe oryzae effector AvrPiz-t in effector and PAMP-triggered immunity
P. BAI (1), C. H. Park (1), G. Shirsekar (2), P. Songkumarn (1), M. D. Bellizzi (1), G. L. Wang (1), (1) The Ohio State University, Columbus, OH, U.S.A.; (2) Max Planck Institute for Developmental Biology, Tuebingen, GERMANY

10:30 a.m. • 67-O
Localization and functional study of Ustilago hordei avirulence effector UhAVR1 using barley and Nicotiana benthamiana plant systems
A. P. MONTENEGRO ALONSO (1), G. Bakkeren (2), (1) University of British Columbia, Vancouver, CANADA; (2) Agric & Agi Food Canada, Summerland, BC, CANADA

10:45 a.m. • 68-O
A unique group of CLE effectors from cyst nematodes in the Globodera genus
P. Lang (1), S. Chen (1), J. A. Zsada (2), M. G. Mitchum (3), X. WANG (1,4), (1) Cornell University, School of Integrative Plant Science, Ithaca, NY, U.S.A.; (2) USDA ARS, Corvallis, OR, U.S.A.; (3) University of Missouri, Columbia, MO, U.S.A.; (4) USDA-ARS, Robert W. Holley Center for Agriculture and Health, Ithaca, NY, U.S.A.

11:00 a.m. • 69-O
Dissecting the pathogenicity mechanisms of Phytophthora palmivora
M. TIAN (1), R. L. Gumtow (1), N. Nave (1), D. Wu (1), S. Schornak (2), J. Y. Uchida (1), (1) University of Hawaii at Manoa, Honolulu, HI, U.S.A.; (2) Sainsbury Laboratory, University of Cambridge, Cambridge, UNITED KINGDOM

11:15 a.m. • 70-O
Phytophthora hijacks host BAG7 and bZIP28 resulting in sequestration in endoplasmic reticulum for compatibility via effector-mediated BiP accumulation
M. JING (1), Y. Li (1), Y. Wang (2), M. B. Dickman (1), (1) Texas A&M University, College Station, TX, U.S.A.; (2) Nanjing Agric Univ, Nanjing, Jiangsu, CHINA
Navigating Contentious Conversations
1:00 – 2:15 p.m. • Room 221A, Convention Center
Organizer: Paul Vincelli, University of Kentucky, Lexington, Kentucky, U.S.A.

Lessons learned from experienced plant pathologists about engaging the public in controversial issues.
- Restoring Civil Discourse to the Topic of Fungicide Use in Field Crops - Kiersten A. Wise, Purdue University, West Lafayette, Indiana, U.S.A.
- Engaging the Public on Genetically Engineered Crops - Paul Vincelli, University of Kentucky, Lexington, Kentucky, U.S.A.

Special Sessions
Plant Pathologists of the Future: Showcasing the Top Graduate Students from APS Division Meetings
1:00 – 2:30 p.m. • Room 221B, Convention Center
Organizers: Nicole M. Donofrio, University of Delaware, Newark, DE, U.S.A.; Jay W. Pscheidt, Oregon State University, Corvallis, OR, U.S.A.
Moderators: Jay W. Pscheidt, Oregon State University, Corvallis, OR, U.S.A.; Nicole M. Donofrio, University of Delaware, Newark, DE, U.S.A.

1:00 p.m. • 81-S
Management of downy mildew of lima bean: chemical control
T. MHora, A. Duckett, N. F. Gregory, T. A. Evans, N. M. Donofrio, University of Delaware, Newark, DE, U.S.A.

1:15 p.m. • 82-S
A phylogenetic network of the soilborne fungal pathogen Sclerotium rolfsii in the Southeastern US

1:30 p.m. • 83-S
Plant-parasitic nematodes associated with potatoes (Solanum tuberosum L.) in different soil texture classes from Costa Rica
R. Sandoval RUIZ, L. Flores Chaves, D. Humphreys Pereira, University of Costa Rica, San José, COSTA RICA

1:45 p.m. • 84-S
Effects of fluopyram on soybean cyst nematode resistance management under greenhouse conditions
K. C. Broderick (1), C. Picinini (2), L. J. Giesler (3), (1) University of Nebraska-Lincoln, Lincoln, NE, U.S.A.; (2) University of Sao Paulo - Escola Superior de Agricultura Luiz de Queiroz, Piracicaba, BRAZIL; (3) Univ of Nebraska-Lincoln, Lincoln, NE, U.S.A.

2:00 p.m. • 85-S
Etiology and Management of Sour Rot in Grapes

2:15 p.m. • 86-S
Almond Trunk and Scaffold Canker Diseases in California: Diagnosis, Pathogenicity, and Management
L. A. Holland (1), N. Nouri (2), N. Morris (1), M. Crespo (2), F. Trouillas (2), (1) Department of Plant Pathology, University of California, Davis, Davis, CA, U.S.A.; (2) Department of Plant Pathology, UC Kearney Ag. Research and Extension Center, Parlier, CA, U.S.A.

Pursuit of Solutions to Mycotoxin Risks by Next-Generation Plant Pathologists
1:00 – 2:15 p.m. • Room 225A, Convention Center
Organizers: Won-Bo Shim, Texas A&M University, College Station, TX, U.S.A.; Rebecca R. Sweany, Louisiana State Univ Ag Center, Baton Rouge, LA, U.S.A.
Moderator: Rebecca R. Sweany, Louisiana State Univ Ag Center, Baton Rouge, LA, U.S.A.
Section: Biology and Disease Management
Sponsoring Committees: Mycotoxicology Committee, Integrated Plant Disease Management Committee

1:00 p.m. • 87-S
Aspergillus flavus functional genomics: Toward enhancing host resistance to aflatoxin contamination under drought using biotechnology
J. C. Fountain (1), G. Agarwal (1), P. Bajaj (2), M. Pandey (2), S. Nayak (3), R. C. Kemeraite (4), R. Varshney (2), B. Guo (5), (1) University of Georgia, Tifton, GA, U.S.A.; (2) University of Agricultural Sciences, Dharwad, Dharwad, INDIA; (3) University of Georgia - Department of Plant Pathology, Tifton, GA, U.S.A.; (4) International Crop Research Institute for the Semi-Arid Tropics, Hyderabad, INDIA; (5) USDA ARS CPICRU, Tifton, GA, U.S.A.

1:15 p.m. • 88-S
Comparative genomics of Aspergillus flavus S and L morphotypes yields insights into niche adaptation
M. Ohkura (1), P. J. Cotty (2), M. Orbach (1), (1) University of Arizona, Tucson, AZ, U.S.A.; (2) USDA-ARS, University of Arizona, Tucson, AZ, U.S.A.

1:30 p.m. • 89-S
Computational prediction of time-course subnetwork modules associated with histidine kinase activities in maize pathogen *Fusarium verticillioides*

M. KIM, W. B. Shim, Texas A&M University, College Station, TX, U.S.A.

1:45 p.m. • 90-S
Modeling complex associations among weather, deoxynivalenol contamination, and *Fusarium* head blight in wheat
W. BUCKER MORAES (1), F. Dalla Lana (2), B. K. Baik (3), P. B. Schwarz (4), L. V. Madden (5), P. A. Paul (5), (1) The Ohio State University, Wooster, OH, U.S.A.; (2) Ohio State University, Columbus 43210, OH, U.S.A.; (3) United States Department of Agriculture, WOOSTER, OH, U.S.A.; (4) North Dakota State University, Fargo, ND, U.S.A.; (5) Ohio State Univ, Ohio Agricultural Research and Development Center, Dept of Plant Pathology, Wooster, OH, U.S.A.

2:00 p.m. • 91-S
Casting a new die: Integrating novel biological insights and translational approaches to combat mycotoxin problems in maize
J. B. RIDENOUR (1), W. D. Hawkins (1), B. Dhillon (1), J. E. Smith (1), Y. Ramegowda (1), W. B. Shim (2), C. P. Woloshuk (3), B. H. Bluhm (1), (1) University of Arkansas, Fayetteville, AR, U.S.A.; (2) Texas A&M University, College Station, TX, U.S.A.; (3) Purdue University, West Lafayette, IN, U.S.A.

The Sociocultural Impact of New and Emerging Bacterial Diseases: A National Perspective • ICPP2018 Preview Topic

1:00 – 2:15 p.m. • Room 221D, Convention Center (live-streamed session)

Organizers: Jose Pablo Dundore-Arias, University of Minnesota, St Paul, MN, U.S.A.; Ana Cristina Fulladolsa, University of Wisconsin, Madison, WI, U.S.A.; Alejandra I. Huerta, Colorado State University, Fort Collins, CO, U.S.A.

Moderators: Jose Pablo Dundore-Arias, University of Minnesota, St Paul, MN, U.S.A.; Ana Cristina Fulladolsa, University of Wisconsin, Madison, WI, U.S.A.

Section: Biology and Disease Management

Sponsoring Committees: Bacteriology Committee, Epidemiology Committee, Emerging Diseases and Pathogens Committee

1:00 p.m. • 92-S
Epidemiology and distribution of bacterial leaf streak of corn caused by Xanthomonas vasicola
T. HARTMAN (1), J. Harbour (1), B. Tarnish (1), J. Van Meter (2), T. A. Jackson-Ziems (1), (1) University of Nebraska-Lincoln, Lincoln, NE, U.S.A.; (2) Nebraska Department of Agriculture, Lincoln, NE, U.S.A.

1:15 p.m. • 93-S
Understanding the Recent Outbreak of Dickeya dianthicola Causing Potato Soft Rot and Blackleg in the United States

1:30 p.m. • 94-S
Zebra chip, what we know and where are we headed

E. A. PIERSON, Texas A and M University, College Station, TX, U.S.A.

1:45 p.m. • 95-S
Detection and characterization of *Xanthomonas vasica pv. vasicola* causing bacterial leaf streak of corn in the United States

2:00 p.m. • 96-S
The socioeconomic impact of emerging and re-emerging disease epidemics
A. O. CHARKOWSKI, Colorado State University, Fort Collins, CO, U.S.A.

**Technical Sessions**

**Biological Control**

1:00 – 2:15 p.m. • Room 221C, Convention Center

Moderators: Mark A. Weaver, USDA ARS, Stoneville, MS, U.S.A.; Ghazal Ebadzadsahrai, Midwestern University, Glendale, AZ, U.S.A.

1:00 p.m. • 71-O
Effect of a contact sterilant on apple flower microbial populations and impacts on biological control of fire blight by *Aureobasidium pullulans*
S. M. SLACK (1), S. Gebben (1,2), B. Begley (1), C. A. Outwater (1), G. W. Sundin (1), (1) Michigan State University, East Lansing, MI, U.S.A.; (2) University of Florida, Immokalee, FL, U.S.A.

1:15 p.m. • 72-O
Bioplastic seed coating formulations combining pesticides with biocontrol isolates to control agricultural pests
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.

1:30 p.m. • 73-O
Integration of biological control and transgenic insect protection for mitigation of mycotoxins in corn
M. A. WEAVER (1), H. K. Abbas (2), M. Brewer (3), L. Pruter (4), N. Littie (5), (1) USDA ARS, Stoneville, MS, U.S.A.; (2) USDA ARS BCPRU, Stoneville, MS, U.S.A.; (3) Texas AgriLife Research and Extension Center-Corpus Christi, Corpus Christi, TX, U.S.A.; (4) Texas A&M AgriLife Research and Department of Entomology, Corpus Christi, TX, U.S.A.; (5) Southern Insect Management Research Unit USDA-ARS, Stoneville, MS, U.S.A.

1:45 p.m. • 74-O
A Bacillus-based biocontrol system for the mitigation of Aspergillus ear rot and aflatoxin contamination
S. CHALIVENDRA (1), J. A. Reyes-Pineda (1), C. DeRobertis...
Inhibition of Fungal growth by bacterial volatiles
G. EBADZADSAHRAI, A. Harrison, S. Soby, Midwestern University, Glendale, AZ, U.S.A.

Epidemiology and Quantification of Disease
1:00 – 2:15 p.m. • Room 225B, Convention Center
Moderators: Mamadou L. Fall, Michigan State University, East Lansing, MI, U.S.A.; Kaitlin Morey Gold, University of Wisconsin-Madison, Madison, WI, U.S.A.

Inhibition of Fungal growth by bacterial volatiles
G. EBADZADSAHRAI, A. Harrison, S. Soby, Midwestern University, Glendale, AZ, U.S.A.

Spatial pattern of FUSARIUM Wilt (FUSIDIUM oxysporum f. sp. cubense) in banana fields
D. W. Heck (1), M. A. Dita Rodriguez (2), E. M. Del Ponte (1), E. S. G. Mizubuti (1), (1) Universidade Federal de Vicsosa, Vicsosa, BRAZIL; (2) Embrapa, Jaguariúna, SP, BRAZIL

Temporal distribution pattern of SCLEROTINIA sclerotiorum apothecia is modulated by row spacing and weather variables in soybean
M. L. FALL (1,2), J. F. Willbur (3), D. L. Smith (4), A. Byrne (1), M. Chilvers (1), (1) Michigan State University, East Lansing, MI, U.S.A.; (2) Agriculture and AgriFood Canada, Saint-Jean-sur-Richelieu, QC, CANADA; (3) University of Wisconsin-Madison, Madison, WI, U.S.A.; (4) University of Wisconsin, Madison, WI, U.S.A.

Spore production of Phylllosticta spp. in citrus leaf litter associated with citrus black spot in Florida

Cold induced disease resistance may explain unexpected stalling of foliar epidemics of hop powdery mildew (Podosphaera macularis)

Developing the capacity of reflectance spectroscopy for early late blight detection in potato
K. MOREY GOLD (1), J. Couture (2), P. Townsend (1), A. J. Gevans (1), (1) University of Wisconsin-Madison, Madison, WI, U.S.A.; (2) Purdue University, West Lafayette, IN, U.S.A.

Visit the OIP Silent Auction!
Monday, August 7, from 11:30 a.m.–6 p.m.
Exhibit Hall 1

The Office of International Programs (OIP) invites you to this year’s auction! Proceeds will support scientists traveling to ICPP 2018 from developing economies. Donate an item to support this exciting event!

Multidrug resistance mechanisms by xenobiotics detoxification, a case study: Sclerotinia homoeocarpa, a U.S.A.I agent of dollar spot
G. JUNG (1), H. Sang (1), J. P. Hulvey (2), R. Green (1), T. Chang PhD (3), (1) University of Massachusetts, Amherst, MA, U.S.A.; (2) Univ of Massachusetts, Amherst, MA, U.S.A.; (3) Kyungpook National University, Sangju, Gyeungbuk, KOREA

Fitness, Competitive Ability and Mutation Stability of Strawberry Colletotrichum acutatum Isolates Resistant to Quinone-outside Inhibitor Fungicides
B. B. FORCELINI (1), C. Rebello (2), N. Peres (3), (1) University of Florida, Wimauma, FL, U.S.A.; (2) Universidade Estadual Paulista, Registro, BRAZIL; (3) Gulf Coast Research and Education Center; University of Florida, Wimauma, FL, U.S.A.

Sensitivity and resistant management for the SDHI fungicide fluxapyroxad in the apple scab pathogen Venturia inaequalis

High levels of fludioxonil resistance in Botrytis fragariae and investigation of potential resistance mechanisms
M. HU, G. Schnabel, Clemson University, Clemson, SC, U.S.A.

Assessing fitness of Pythium aphanidermatum isolates with dual resistance to mefenoxam and fenamidone
E. LOOKABAUGH (1), B. Shew (2), (1) North Carolina State University, Raleigh, NC, U.S.A.; (2) NC State University, Raleigh, NC, U.S.A.

Multidrug resistance mechanisms by xenobiotics detoxification, a case study: Sclerotinia homoeocarpa, a U.S.A.I agent of dollar spot
G. JUNG (1), H. Sang (1), J. P. Hulvey (2), R. Green (1), T. Chang PhD (3), (1) University of Massachusetts, Amherst, MA, U.S.A.; (2) Univ of Massachusetts, Amherst, MA, U.S.A.; (3) Kyungpook National University, Sangju, Gyeungbuk, KOREA

Fitness, Competitive Ability and Mutation Stability of Strawberry Colletotrichum acutatum Isolates Resistant to Quinone-outside Inhibitor Fungicides
B. B. FORCELINI (1), C. Rebello (2), N. Peres (3), (1) University of Florida, Wimauma, FL, U.S.A.; (2) Universidade Estadual Paulista, Registro, BRAZIL; (3) Gulf Coast Research and Education Center; University of Florida, Wimauma, FL, U.S.A.

Sensitivity and resistant management for the SDHI fungicide fluxapyroxad in the apple scab pathogen Venturia inaequalis

High levels of fludioxonil resistance in Botrytis fragariae and investigation of potential resistance mechanisms
M. HU, G. Schnabel, Clemson University, Clemson, SC, U.S.A.

Assessing fitness of Pythium aphanidermatum isolates with dual resistance to mefenoxam and fenamidone
E. LOOKABAUGH (1), B. Shew (2), (1) North Carolina State University, Raleigh, NC, U.S.A.; (2) NC State University, Raleigh, NC, U.S.A.
WEDNESDAY AFTERNOON, AUGUST 9

All Scientific Sessions take place in the CONVENTION CENTER.

Special Sessions listed first, followed by Oral Technical Sessions. Listed alphabetical by session title.
Find complete details on the meeting website apsnet.org/meet.
As a courtesy to presenters, please DO NOT TAKE PHOTOS during their presentation or of the slide content without presenter approval.
Session content listed in the program is as submitted by the authors/presenter and has NOT been edited.

Special Sessions

Adapt, Change, and Improvise: How to Control Diseases as the Climate Is Changing
1:00 – 4:00 p.m. • Room 221D, Convention Center (livestreamed session)
Organizers: Cassandra L. Swett, University of Maryland, College Park, College Park, MD, U.S.A.; Johanna M. Del Castillo Munera, University of Maryland, College Park, MD, U.S.A.
Moderator: Ghazal Ebadzadsahrai, Midwestern University, Glendale, AZ, U.S.A.
Section: Epidemiology
Sponsoring Committees: Soil Microbiology and Root Diseases Committee, Crop Loss Assessment and Risk Evaluation Committee

1:00 p.m. • 97-S
Adapting disease forecasting models to climate change scenarios
K. A. GARRETT (1), R. Choudhury (1), K. F. Andersen (2), (1) University of Florida Plant Pathology Department, Gainesville, FL, U.S.A.; (2) Plant Pathology Department, Gainesville, FL, U.S.A.

1:30 p.m. • 98-S
Adapting to water insecurity: Balancing reduced water use with root disease risk
J. M. DEL CASTILLO MUNERA (1,2), B. Belayneh (2), J. Lea-Cox (2), C. L. Swett (3), (1) University of California, Davis, Davis, CA, U.S.A.; (2) University of Maryland, College Park, MD, U.S.A.; (3) Department of Plant Pathology, University of California - Davis, Davis, CA, U.S.A.

2:00 p.m. • 99-S
How changes of annual soil temperature and moisture affect rhizosphere oomycete communities

2:30 p.m. • Break

2:45 p.m. • 100-S
Presence of *Ralstonia solanacearum* cold virulent strains in the U.S. and mechanisms of virulence at low temperature
1:30 p.m. • 107-S
Positive and negative regulation of the NLR immune receptor Piz-t in rice
G. L. WANG, The Ohio State University, Columbus, OH, U.S.A.

2:00 p.m. • 108-S
Barley Bait-and-Switch: a receptor kinase bait switches on programmed cell death in response to *Puccinia graminis*
R. S. BRUEGGEMAN, S. Solanki, R. Sharma Poudel, J. Richards, G. Ameen, North Dakota State University, Fargo, ND, U.S.A.

2:30 p.m. • Break

2:45 p.m. • 109-S
An atypical pair Mi-1.2 and SERK1 regulate aphid resistance in tomato
I. KALOSHIAN, University of California, Riverside, CA, U.S.A.

3:15 p.m. • 110-S
Using decoys to expand the recognition specificity of a plant disease resistance protein
M. HELM, R. Innes, Indiana University, Bloomington, IN, U.S.A.

3:45 p.m. • 111-S
Transfer of an NLR gene from pigeonpea into soybean confers resistance to Asianbean rust
P. VAN ESSE (1), C. Kawashima (1), J. Jones (1), S. Brommonschenkel (2), (1) The Sainsbury Laboratory, Norwich, UNITED KINGDOM; (2) Universidad Federal de Viçosa, Viçosa, BRAZIL

An Ever-Changing Extension Environment: Keeping a Foot in the Furrow and a Hand in Cyberspace
2:45 – 4:00 p.m. • Room 221B, Convention Center
Moderator: Thomas W. Allen Jr., Mississippi State Univ, Stoneville, MS, U.S.A.
Section: Professionalism/Outreach
Sponsoring Committee: Extension Committee

2:45 p.m. • 112-S
Blippity BLOPs: Goals, information, uncertainty, and trust in Extension adoption problems
N. MCROBERTS, University of California-Davis, Davis, CA, U.S.A.

3:15 p.m. • 113-S
Maintaining relevance and impact in food, feed, & fiber security: Opportunities for the Extension service
K. A. EVERSOLE, K. J. Owens, Eversole Associates, Bethesda, MD, U.S.A.

3:30 p.m. • 114-S
Social media outreach with Extension: Where people are succeeding and where they're failing miserably
O. TAYLOR, AgFax, Jackson, MS, U.S.A.
1:15 p.m. • 92-O
Detection of cucurbit viruses in Oklahoma combining EDNA with Multiplex RT-PCR coupled with High Resolution Melting
L. PENA ZUNIGA (1), A. Espindola (1), H. A. Melouk (2), A. Ali (3), K. F. Cardwell (1), E. Ochoa Corona (1), (1) Oklahoma State University, Stillwater, OK, U.S.A.; (2) USDA ARS, Stillwater, OK, U.S.A.; (3) Univ of Tulsa, Tulsa, OK, U.S.A.

1:30 p.m. • 93-O
Field status and dynamics of cassava mosaic disease in Zambia R. M. MULENGA (1), P. C. Chikoti (1), J. P. Legg (2), O. J. Alabi (3), (1) Zambia Agriculture Research Institute, LUSAKA, ZAMBIA; (2) International Institute of Tropical Agriculture, Dar Es Salaam, TANZANIA; (3) Dept. of Plant Pathology & Microbiology, Texas A&M University, Weslaco, TX, U.S.A.

1:45 p.m. • 94-O
Developing RNA interference technology to manage whitefly-transmitted begomoviruses

2:00 p.m. • 95-O

2:45 p.m. • 96-O
Meta-analysis and yield loss analysis of multiple site-year fungicide evaluations for improved Sclerotinia stem rot management in soybean

3:00 p.m. • 97-O
Chemical synthesis of Zinc oxide nanoparticle: its application for antimicrobial activity and plant health management
H. KAUSHIK, P. Dutta, Assam Agricultural University, Jorhat, INDIA

3:15 p.m. • 98-O
Reduction in the number of fungicide applications for lettuce downy mildew by timing application based on aerial spore load N. DHAR (1), A. Anchita (2), F. N. Martin (2), S. T. Koike (3), K. V. Subbarao (4), S. Klosterman (2), (1) UC Davis, Salinas, CA, U.S.A.; (2) USDA ARS, Salinas, CA, U.S.A.; (3) Univ of California, Salinas, CA, U.S.A.; (4) University of California at Davis, c/o U.S. Agricultural Research Station, Salinas, CA, U.S.A.

3:30 p.m. • 99-O
Chemical options for managing Cytospora canker, a major limiting factor for Colorado peach production

3:45 p.m. • 100-O
The grape powdery mildew conundrum: fungicide selection and timing
B. WARNEKE (1), L. D. Thiessen (2), T. Neill (3), W. Mahaffee (3), (1) Oregon State University, Corvallis, OR, U.S.A.; (2) North Carolina State University, Raleigh, NC, U.S.A.; (3) USDA, Corvallis, OR, U.S.A.

Mycotoxins
2:45 – 4:00 p.m. • Room 225B, Convention Center
Moderators: Lourena R L Arone, University of Arizona, Tucson, AZ, U.S.A.; Eli J. Borrego, Texas A&M University, College Station, TX, U.S.A.

3:00 p.m. • 102-O
Atoxigenic growth rates and intraspecific aflatoxin inhibition R. R. SWEANY (1), C. DeRobertis (2), K. E. Damann (3), (1) Louisiana State Univ Ag Center, Baton Rouge, LA, U.S.A.; (2) Louisiana State UniversityAgCenter, Baton Rouge, LA, U.S.A.; (3) Louisiana State University AgCenter, Baton Rouge, LA, U.S.A.

3:15 p.m. • 103-O
Atoxigenic Aspergillus flavus: A hidden mechanism of biocontrol P. SINGH (1), P. J. Cotry (2), (1) University of Arizona, Tucson, AZ, U.S.A.; (2) USDA-ARS, University of Arizona, Tucson, AZ, U.S.A.

3:30 p.m. • 104-O
Description of a novel aflatoxin-producing Aspergillus species from a region of the United States with perennial aflatoxin contamination P. SINGH (1), P. J. Cotry (2), (1) University of Arizona, Tucson, AZ, U.S.A.; (2) USDA-ARS, University of Arizona, Tucson, AZ, U.S.A.

3:45 p.m. • 105-O
Colonization, conidiation, and aflatoxin contamination of maize seed by Aspergillus flavus requires oxylipins from both host and pathogen E. J. BORREGO, M. V. Kolomiets, Texas A&M University, College Station, TX, U.S.A.
**SCIENTIFIC POSTERS**

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

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**Posters by Appointment** allows meeting attendees to connect with poster authors, by use of the mobile app, to make appointments to meet and discuss poster content (in addition to the poster author time).

**POSTER VIEWING HOURS**

*Poster huddles are subject to change*

**Sunday, August 6**
- 12:00 – 2:00 p.m. Poster Set-Up
- 4:00 – 6:00 p.m. Poster Viewing

**Monday, August 7**
- 8:00 a.m. – 6:00 p.m. Poster Viewing
- 2:30 – 3:00 p.m. Poster Huddles*  
  HUDDLE #1 – Strategies for managing diseases caused by microsclerotia-producing fungi  
  *Moderator: Debra Inglis*  
  HUDDLE #2 – Challenges to developing effective strategies for managing emerging plant diseases  
  *Moderators: Randy Ploetz and Akif Eskalen*  
  HUDDLE #3 – Innovative approaches for plant disease management  
  *Moderators: James Stack, Megan Mccaghey, and Chellappan Padmanabhan*

- 3:00 – 5:00 p.m. Poster Viewing with Authors Present  
  If you are presenting two posters and they are scheduled during the same time period, please leave a note to indicate the other poster number where you can be found.

  - 3:00 – 4:00 p.m. Posters 1 – 320 (even-numbered posters)
  - 4:00 – 5:00 p.m. Posters 321 – 645 (even-numbered posters)

**Tuesday, August 8**
- 8:00 a.m. – 6:00 p.m. Poster Viewing
- 2:30 – 3:00 p.m. Poster Huddles*  
  HUDDLE #4 – Pathogenicity and virulence determinants of soilborne fungal pathogens  
  *Moderator: Kishore Chittem*  
  HUDDLE #5 – Novel approaches for screening for plant disease resistance  
  *Moderators: Krishna Subbarao and Deborah Samac*  
  HUDDLE #6 – Advances in phytobiome research  
  *Moderators: Erica Goss and Timothy Paulitz*

- 3:00 – 5:00 p.m. Poster Viewing with Authors Present  
  If you are presenting two posters and they are scheduled during the same time period, please leave a note to indicate the other poster number where you can be found.

  - 3:00 – 4:00 p.m. Posters 1 – 320 (odd-numbered posters)
  - 4:00 – 5:00 p.m. Posters 321 – 645 (odd-numbered posters)

**Wednesday, August 9**
- 8:30 – 10:00 p.m. Poster Viewing
- 9:00 – 9:30 a.m. Poster Huddles*  
  HUDDLE #7 – Pros & cons of pathogen detection strategies  
  *Moderator: Caterina Villari and Roland Willmann*  
  HUDDLE #8 – Improved understanding of pathogen dispersal/dissemination  
  *Moderator: Kathy Kosta*  
  HUDDLE #9 – Advances in understanding fungicide resistance  
  *Moderator: Katherine Stevenson*

- 10:30 – 11:00 a.m. Poster Take-Down

*Poster Huddles are small groupings of posters and the poster authors that focus on special areas of interest among the submitted posters, offering more in-depth discussion of research and findings.*
### POSTER CATEGORIES

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

<table>
<thead>
<tr>
<th>Poster Categories</th>
<th>Poster Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abiotic Interactions</td>
<td>1-23</td>
</tr>
<tr>
<td>Bacteriology</td>
<td>24-32</td>
</tr>
<tr>
<td>Biochemistry and Cell Biology</td>
<td>33-44</td>
</tr>
<tr>
<td>Biological Control</td>
<td>45-72</td>
</tr>
<tr>
<td>Chemical Control</td>
<td>73-127</td>
</tr>
<tr>
<td>Crop Loss Assessment</td>
<td>128-135</td>
</tr>
<tr>
<td>Cultural Control</td>
<td>136-165</td>
</tr>
<tr>
<td>Disease Detection and Diagnosis</td>
<td>166-220</td>
</tr>
<tr>
<td>Fungicide Resistance</td>
<td>221-235</td>
</tr>
<tr>
<td>Genetics of Resistance</td>
<td>236-272</td>
</tr>
<tr>
<td>Host Resistance Screening</td>
<td>273-292</td>
</tr>
<tr>
<td>Integrated Pest Management</td>
<td>293-308</td>
</tr>
<tr>
<td>Molecular Plant-Microbe Interactions</td>
<td>309-385</td>
</tr>
<tr>
<td>Mycology</td>
<td>386-401</td>
</tr>
</tbody>
</table>

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<thead>
<tr>
<th>Poster Categories</th>
<th>Poster Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nematology</td>
<td>402-406</td>
</tr>
<tr>
<td>New and Emerging Diseases</td>
<td>407-444</td>
</tr>
<tr>
<td>Oomycetes</td>
<td>445-454</td>
</tr>
<tr>
<td>Outreach and Engagement</td>
<td>455-462</td>
</tr>
<tr>
<td>Pathogen Dispersal</td>
<td>463-481</td>
</tr>
<tr>
<td>Pathogen-Vector Interactions</td>
<td>482-489</td>
</tr>
<tr>
<td>Pathogenicity and Host Specificity</td>
<td>490-510</td>
</tr>
<tr>
<td>Phytophages</td>
<td>511-519</td>
</tr>
<tr>
<td>Plant Defense Responses</td>
<td>520-532</td>
</tr>
<tr>
<td>Population Biology Genetics</td>
<td>533-569</td>
</tr>
<tr>
<td>Postharvest Pathology and Mycotoxins</td>
<td>570-590</td>
</tr>
<tr>
<td>Proteomics/Metabolomics/Genomics</td>
<td>591-615</td>
</tr>
<tr>
<td>Virology</td>
<td>616-642</td>
</tr>
</tbody>
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### Abiotic Interactions

**1-P** The effect of cold stress on damping-off of soybean caused by *Pythium sylvaticum*
M. SERRANO, A. E. Robertson. Iowa State University, Ames, IA, USA

**2-P** Bioprospecting rhizobacteria to improve drought resistance in grasses
M. JOCHUM (1), S. P. Gaire (1), G. Niu (2), Y. K. Jo (1).
(1) Texas A&M University, College Station, TX, USA; (2) Texas A&M University, Agricultural Research and Extension Center, El Paso, TX, USA

**3-P** Over-wintering soil microbial communities in corn/soybean rotation fields in Indiana
G. CAI (1), S. Brittsan (2), G. Nowling (2). (1) USDA-ARS/Purdue University, West Lafayette, IN, USA; (2) USDA-ARS, West Lafayette, IN, USA

**4-P** Influence of biotic and abiotic factors on common scab severity and pathogenic *Streptomyces* spp. populations in agricultural fields
C. GOYER (1), S. Neupane (1), S. Whitney (1), B. Zebarth (1), M. Chantigny (2), D. Burton (3). (1) Agriculture and Agri-Food Canada, Fredericton, NB, CANADA; (2) Agriculture and Agri-Food Canada, Quebec, QC, CANADA; (3) Dalhousie University, Truro, NS, CANADA

**5-P** A greenhouse system to study the effect of soil pH on Fusarium wilt of tomato caused by *Fusarium oxysporum* f. sp. *lycopersici* race 3
C. J. LAND (1), H. Adkison (2), R. Willis (1), G. E. Vallad (2). (1) University of Florida, Wimauma, FL, USA; (2) University of Florida, Gulf Coast Research and Education Center, Wimauma, FL, USA

**6-P** Rice plants exhibiting bacterial blight resistance at high temperature suppress abiotic response
S. COHEN (1), H. Liu (2), C. Argueso (1), C. M. Vera Cruz (3), V. M. Verdier (4), J. E. Leach (1). (1) Colorado State University, Fort Collins, CO, USA; (2) Institute of Crop Sciences, Chinese Academy of Agricultural Sciences, Beijing, CHINA; (3) International Rice Research Institute, Los Baños, Laguna, PHILIPPINES; (4) IRD, Cirad, University of Montpellier, IPME, Montpellier, FRANCE

**7-P** Growth of legume species under variable zinc regimes and different mycorrhizal fungi
M. L. PAWLOWSKI (1), G. L. Hartman (2). (1) University of Illinois-Urbana Champaign, Urbana, IL, USA; (2) USDA-ARS at the University of Illinois, Urbana, IL, USA

**8-P** Ecology and epidemiology of *Helminthosporium solani* and *Colletotrichum coccodes* on potato in the San Luis Valley of Colorado
F. J. LICHTNER, K. D. Broders. Colorado State University, Fort Collins, CO, USA

**9-P** Effects of N-P-K fertilizer rates on the interaction between *Fusarium virguliforme* and soybean cyst nematode on soybean
P. OKELLO (1), S. Osborne (2), F. M. Mathew (1). (1) South Dakota State University, Brookings, SD, USA; (2) USDA ARS, Brookings, SD, USA

**10-P** Variation in phenylpropanoid intermediates associated with adaptation to abiotic stress in the perennial tree species *Prunus persica* and *P. armeniaca*
A. O. CONRAD (1), T. Zhebentayeva (2), M. Staton (3), J. M. Audergon (4), V. Decroocq (5), Z. Liu (6), C. D. Dardick (7), C. D. Nelson (8), A. Abbott (1). (1) University of Kentucky, Lexington, KY, USA; (2) Clemson University, Clemson, SC, USA; (3) University of Tennessee, Knoxville, TN, USA; (4) INRA, Avignon, FRANCE; (5) INRA, Bordeaux, FRANCE; (6) USDA ARS, Kearneysville, WV, USA; (7) Appalachian Fruit Research Station, USDA ARS, Kearneysville, WV, USA; (8) USDA-Forest Service, Southern Research Station, Lexington, KY, USA

**11-P** Effect of moisture at physiological maturity on soybean seed infection by *Phomopsis longicolla* and *Cercospora flagellaris*
J. C. RUPE, R. Holland, A. Steger. University of Arkansas, Fayetteville, AR, USA
12-P An intriguing taste of 30 years of coevolution: Monitoring coffee leaf rust (Hemileia vastatrix Berk. & Br.) in Colombia
C. A. ANGEL (1), M. Cristancho (1,2), A. Jaramillo (1), A. L. Gaitan (1), (1) CENICAFE, Colombia, Manizales, COLOMBIA; (2) Bioinformatics and Computational Biology of Colombia –BIOS, Manizales, COLOMBIA

13-P Identifying the most efficient agroecosystems for potato production in Nariño, Colombia
P. URIBE, C. A. Benavides, D. Calvache. Corporación Colombiana de Investigación Agropecuaria, Pasto, COLOMBIA

14-P Use of the disease severity index for null hypothesis testing
K. S. P. CHIANG (1), C. H. Bock (2). (1) Division of Biometrics, Department of Agronomy, National Chung Hsing University, Taichung, TAIWAN; (2) USDA ARS, Southeastern Fruit and Tree Nut Research Laboratory, Byron, GA, USA

15-P Spline regression providing the area under the sensitivity curve as an alternative for the EC_{50} values on fungicide resistance studies
P. D. S. F. LICHTEMBERG (1), W. Zeviani (2), T. J. Michailides (1). (1) University of California-Davis, Parlier, CA, USA; (2) Universidade Federal do Paraná, Curitiba, BRAZIL

16-P Validation of a Florida strawberry anthracnose fruit rot (AFR) warning system in Iowa
X. ZHANG (1), J. C. Batcher (1), X. Li (1), N. Peres (2), M. L. Gleason (1), (1) Iowa State University, Ames, IA, USA; (2) Gulf Coast Research and Education Center; University of Florida, Wimauma, FL, USA

17-P Impact network analysis of avocado laurel wilt disease
R. CHOUDHURY (1,2,3), J. H. Crane (4), D. Carrillo (4), E. Evans (4), J. Wasielewski (5), R. C. Ploetz (4), K. A. Garrett (1,2,3). (1) University of Florida, Plant Pathology Department, Gainesville, FL, USA; (2) Institute for Sustainable Food Systems, Gainesville, FL, USA; (3) Emerging Pathogens Institute, Gainesville, FL, USA; (4) University of Florida, Tropical Research and Education Center, Homestead, FL, USA; (5) University of Florida, IFAS Extension, Homestead, FL, USA

18-P A Meta-analysis of maize yield response to azoxystrobin and propiconazole as influenced by foliar disease intensity and application timing
F. DALLA LANA (1), A. E. Robertson (2), C. A. Bradley (3), D. L. Smith (4), D. A. Shah (5), K. A. Wise (6), L. V. Madden (7), P. Esker (8), S. Conley (9), P. A. Paul (7). (1) Ohio State University, Wooster, OH, USA; (2) Iowa State University, Department of Plant Pathology, Ames, IA, USA; (3) University of Kentucky, Princeton, KY, USA; (4) University of Wisconsin, Madison, WI, USA; (5) Kansas State University, Manhattan, KS, USA; (6) Purdue University, West Lafayette, IN, USA; (7) Ohio State University, Ohio Agricultural Research and Development Center, Department of Plant Pathology, Wooster, OH, USA; (8) University of Costa Rica, San Jose, COSTA RICA; (9) Purdue University, West Lafayette, IN, USA

19-P “I heard it through the grapevine”: Assessing effects of information diffusion on disease recognition and response within the Florida pepper industry
J. FULTON (1), C. Lapaire Harmon (2), S. Turner (1), K. A. Garrett (3). (1) University of Florida, Gainesville, FL, USA; (2) University of Florida PDC, Gainesville, FL, USA; (3) Plant Pathology Department, University of Florida, Gainesville, FL, USA

20-P Validation of models for predicting the daily infection risk of cucurbit host types by Pseudoperonospora cubensis
K. N. NEUFELD (1), A. P. Keinath (2), P. Ojiambo (1). (1) North Carolina State University, Raleigh, NC, USA; (2) Coastal Research and Education Center, Clemson University, Charleston, SC, USA

21-P Climatic variables related to the development of peanut foliar pathogens
W. ELWAKIL, R. Barocco, N. S. Dufault. University of Florida, Gainesville, FL, USA

22-P Meta-analysis of a web-based disease forecast system for control of anthracnose and Botrytis fruit rots of strawberry in southeastern United States
L. CORDOVA (1), L. V. Madden (2), A. Amiri (3), G. Schnabel (4), N. Peres (5). (1) University of Florida, Wimauma, FL, USA; (2) Ohio State University, Ohio Agricultural Research and Development Center, Department of Plant Pathology, Wooster, OH, USA; (3) Washington State University, Wenatchee, WA, USA; (4) Clemson University, Clemson, SC, USA; (5) Gulf Coast Research and Education Center; University of Florida, Wimauma, FL, USA

23-P Development and deployment of a strawberry disease advisory system in North Carolina
F. LOUWS (1), R. Mahfuz (2), G. Buol (1), G. Willkerson (1), R. Boyles (3). (1) North Carolina State University, Raleigh, NC, USA; (2) West Virginia University, Morgantown, WV, USA; (3) SE Climate Science Center, Raleigh, NC, USA

24-P Hok/Sok toxin-antitoxin system in Erwinia amylovora: “To be, or not to be”
J. PENG, G. W. Sundin. Michigan State University, East Lansing, MI, USA

25-P Identification of bacterial leaf spot disease caused by Xanthomonas campestris pv. vitians on lettuce in Taiwan
W. L. DENG (1,2), Y. C. Huang (2), J. Y. Tseng (2). (1) Agricultural Biotechnology Center, Taichung, TAIWAN; (2) National Chung Hsing University, Taichung, TAIWAN

26-P Occurrence of pepper stem black spot disease caused by Pectobacterium carotovorum subsp. brasilienne in Guangdong of China
X. SHE, Z. Ye, H. Tang, L. Yu. Plant Protection Research Institute, Guangdong Academy of Agricultural Sciences, Guangzhou, CHINA
27-P First report of phytoplasmas subgroups 16SrIII-B, 16SrIII-J and 16SrVII-B in *Brassica rapa*, a weed species present in brassica crops in Brazil
T. BANZATO (1), I. Bedendo (2). (1) Universidade de Sao Paulo, Piracicaba, BRAZIL; (2) ESALQ-USP, Piracicaba, BRAZIL

28-P Survey of the natural infection by *Erwinia amylovora* in Korea
C. S. OH (1), D. H. Park (2). (1) Kyung Hee University, Yongin, KOREA; (2) Kangwon National University, Chuncheon, KOREA

29-P Induction and resuscitation of viable but nonculturable (VBNC) state in *Acidovorax citrulli*
Y. KAN, K. Bai, Q. Lv, N. Jiang, L. Luo, J. Li. China Agricultural University, Beijing, CHINA

30-P Role of spring cankers in bacterial spot epidemics of peach in North Carolina
D. F. RITCHIE. North Carolina State University, Raleigh, NC, USA

31-P Identification and characterization of *Pantoea ananatis* as a cause of etiolation on perennial ryegrass
G. Z. Achenef, J. A. ROBERTS. University of Maryland, College Park, MD, USA

32-P Phytoplasma survey in Pennsylvania
E. V. NIKOLAEEVA (1), K. A. Peter (2), J. Lesperance (1), T. Jones (3), S. Costanzo (4), R. E. Davis (5). (1) Pennsylvania Department of Agriculture, Harrisburg, PA, USA; (2) Pennsylvania State University, University Park, PA, USA; (3) Pennsylvania State University, Harrisburg, PA, USA; (4) USDA-APHIS-PPQ-S&F-CHPST; Beltsville, MD, USA; (5) USDA ARS Molecular Plant Pathology Laboratory, Beltsville, MD, USA

33-P Impact of *Macrophomina phaseolina* infection on plastid- and cell-membrane integrity and lipid based signaling capacity of sorghum stalk tissues
A. Y. BANDARA, S. Liu, C. R. Little. Kansas State University, Manhattan, KS, USA

34-P *Macrophomina phaseolina* infection down-regulates phytosterol biosynthesis in stalk tissues of a charcoal rot-susceptible sorghum genotype
A. Y. BANDARA, S. Liu, C. R. Little. Kansas State University, Manhattan, KS, USA

35-P Genetics underlying intra-species antagonism in *Pseudomonas syringae* and the potential for bacterial pathogen control
K. HOCKETT. Pennsylvania State University, University Park, PA, USA

36-P Whole genome sequences reveal polymorphisms in bacteriocin genes of *Xanthomonas perforans* in Florida
J. KLEIN (1), S. Timilsina (1), P. Abrahamian (2), G. V. Minsavage Jr. (1), N. Potnis (3), J. B. Jones (1), G. E. Vallad (2), E. M. Goss (1). (1) Department of Plant Pathology, University of Florida, Gainesville, FL, USA; (2) Gulf Coast Research and Education Center, University of Florida, Wimauma, FL, USA; (3) Department of Entomology and Plant Pathology, Auburn University, Auburn, AL, USA

37-P The interplay between apoptosis and autophagy in the pathogenicity of *Sclerotinia sclerotiorum*
Y. LI, M. B. Dickman. Texas A&M University, College Station, TX, USA

38-P Plasmid transfer by conjugation in *Xylella fastidiosa*
L. BURBANK, D. C. Stenger. USDA-ARS, Parlier, CA, USA

39-P Antimicrobial activities of cationic antimicrobial peptides immobilized on plant virus-like particles
R. W. HAMMOND (1), N. Kovalskaya (1), N. Kreger (1), J. Mowery (2), C. Gulbronson (2), J. Hammond (3). (1) USDA ARS Molecular Plant Pathology Laboratory, Beltsville, MD, USA; (2) USDA ARS Electron and Confocal Microscopy Unit, Beltsville, MD, USA; (3) USDA ARS Floral and Nursery Plant Research Laboratory, Beltsville, MD, USA

40-P Characterization of bacterial endophytes and their applications
C. MEI (1,2), R. Chretien (1), S. Yan (1), J. Carey (1), Y. He (1), S. Lowman (1,2). (1) Institute for Advanced Learning and Research, Danville, VA, USA; (2) Department of Horticulture, Virginia Tech, Blacksburg, VA, USA

41-P TOR signaling pathway regulates lipid droplets biosynthesis in *Fusarium graminearum*
N. LIU, Z. Ma, L. Xu. Institute of Biotechnology, Zhejiang University, Hangzhou, CHINA

42-P Unraveling the cyclic-di-GMP mediated transcriptional regulation of amylovoran production in *Erwinia amylovora*
R. R. KHARADI, G. W. Sundin. Michigan State University, East Lansing, MI, USA

43-P Binding properties of cercosporin and their role in symptoms of *Cercospora* leaf blight in soybean
B. WARD (1), C. L. Robertson (1), P. Abhayawardhana (1), M. Macnaughtan (2), R. W. Schneider (2). (1) Louisiana State University Agricultural Center, Baton Rouge, LA, USA; (2) Louisiana State University, Baton Rouge, LA, USA

44-P Epiphyllous growth and conidiation of *Hordeum* spp. endophytes and the conidial dissemination potential
M. YI, C. A. Young. The Samuel Roberts Noble Foundation, Ardmore, OK, USA

45-P Potential to manage date palm black scorch disease in the United Arab Emirates using a resident actinomycete isolate
K. A. EL-TARABILY, S. Abuqamar, E. E. Saeed, Z. Salmin. United Arab Emirates University, Al-Ain, UNITED ARAB EMIRATES

46-P Biological control of root and stem rot of soybean caused by *Rhizoctonia solani* using chitinolytic and ACC deaminase producing yeasts
L. BURBANK, D. C. Stenger. USDA-ARS, Parlier, CA, USA
51

52-P Prospective endophyte antagonists of Verticillium dahliae isolated from three field-grown cucurbit cultivars in western Washington
L. TYMON, P. Morgan, D. A. Inglis. Washington State University-NWREC, Mount Vernon, WA, USA

53-P Identification of bioactive secondary metabolites from a Bacillus amyloliquefaciens strain for control of fungal plant pathogens
T. Qu (1), Y. Yin (2), L. Xiao (2), S. TIAN (1), P. Ji (1). (1) University of Georgia, Tifton, GA, USA; (2) Qingdao Agricultural University, Qingdao, CHINA

54-P Screening mycotoxins for quorum inhibition in a biocontrol bacterial endophyte
C. W. BACON (1), D. Hinton (2). (1) USDA ARS, Athens, GA, USA; (2) Richard Russell Research Center, Athens, GA, USA

55-P Biological control of aflatoxins in maize and groundnut through use of Asflas products developed for Ghana
D. Agbetiameh (1,2), A. ORTEGA-BELTRAN (1), R. Awuah (2), J. Atehnekeng (3), P. J. Cotry (4), R. Bandopadhyay (1). (1) International Institute of Tropical Agriculture, Ibadan, NIGERIA; (2) Kwame Nkrumah University of Science and Technology, Kumasi, GHANA; (3) International Institute of Tropical Agriculture, Lilongwe, MALAWI; (4) USDA-ARS, University of Arizona, Tucson, AZ, USA

56-P Antagonistic potential of biocontrol bacteria against Sclerotinia sclerotiorum causing lettuce drop
A. D. SANABRIA, C. G. Taylor, S. A. Miller. The Ohio State University, Wooster, OH, USA

57-P Serenade ASO: A sustainable agricultural solution providing multiple modes of action against bacterial pathogens
M. IOTT. Bayer, West Sacramento, CA, USA

58-P Effects of seed treatment with biocontrol agents and gibberellic acid on seedling disease, plant growth, yield, and quality in organic rice
X. ZHOU. Texas A&M University AgriLife Research, Beaumont, TX, USA

59-P Evaluation of the antagonistic activity of native Trichoderma isolates from Texas citrus orchards against Phytophthora nicotianae
M. GURUNG (1), F. Gurung (1), C. Simpson (1), J. L. Hernandez (2), V. Ancona (1). (1) Texas A&M Kingsville, Citrus Center, Weslaco, TX, USA; (2) Instituto Politecnico Nacional Centro de Biotecnologia Genomica, Reynosa, MEXICO

60-P Characterization of the interaction between biological control agent ZJU60 and Fusarium graminearum
J. WANG, Y. Chen, N. Yang, Z. Ma. Institute of Biotechnology, Zhejiang University, Hangzhou, CHINA

61-P Biological seed treatments for soybean cyst nematode (Heterodera glycines) management
W. ALJAAFRI (1), G. W. Lawrence (2), V. Klink (2), S. Lu (2), D. Long (3), K. S. Lawrence (4). (1) Mississippi State University, Starkville, MS, USA; (2) Mississippi State University, Mississippi State, MS, USA; (3) Albaugh, LLC, Olive Branch, MS, USA; (4) Auburn University, Auburn, AL, USA

62-P Field-testing potential biological control agents for enhanced Fusarium head blight mitigation
A. L. BEHARI, G. Kulda. Pennsylvania State University, University Park, PA, USA

63-P Paecilomyces lilacinus in Nacobbus aberrans control in tomato cv. San Marzano
R. GARCIA-VELASCO, E. A. Chavarro-Carrero. Universidad Autónoma del Estado de México, Tenancingo, MEXICO

64-P New products for managing lesion nematode on Easter lilies
B. B. WESTERDAHL (1), D. D. Giraud (2). (1) University of California-Davis, Davis, CA, USA; (2) University of California, Eureka, CA, USA

65-P Potential of native yeasts from Washington vineyards as biocontrol agents against Botrytis bunch rot of grape
X. WANG (1), E. Kramer (1), D. A. Glawe (1), T. D. Murray (1), D. M. Weller (2), P. A. Okubara (2). (1) Washington State University, Pullman, WA, USA; (2) USDA-ARS Wheat Health, Genetics and Quality Research Unit, Pullman, WA, USA

66-P Thermo-stability, dose effects, and shelf-life of antifungal compounds produced by the symbiotic bacterium Xenorhabdus szentirmaii
S. Hazir (1), D. I. Shapiro-Illan (2), C. H. BOCK (2), L. G. Leite (3). (1) Faculty of Arts and Sciences, Department of Biology, Adnan Menderes University, Aydin, TURKEY; (2) USDA ARS, Southeastern Fruit and Tree Nut Research Laboratory, Byron, GA, USA; (3) Instituto Biologico, APTA, Campinas, BRAZIL

67-P Characterization of an Aspergillus flavus population from Argentina and its potential use as biocontrol agents for mycotoxins in maize
B. X. Camiletti (1), J. Moral (2), A. K. Torrico (3), C. M. Asensio (1), M. D. L. P. Giménez Pecchi (3), E. I. Lucini (1), T. J. MICHAILEDIES (4). (1) Universidad Nacional de Córdoba, Córdoba, ARGENTINA; (2) Universidad De Cordoba/University of California-Davis, Parlier, CA, USA; (3) Instituto Nacional de Tecnologia Agropecuaria, Córdoba, ARGENTINA; (4) University of California-Davis, Parlier, CA, USA

68-P Sensitivity of biocontrol agents to common soybean seed treatment fungicide active ingredients
J. V. LACEY (1), A. Kachroo (1), A. M. Fakhoury (2), C. A. Bradley (3). (1) University of Kentucky, Lexington, KY, USA; (2) Southern Illinois University, Carbondale, IL, USA; (3) University of Kentucky, Princeton, KY, USA

69-P Integration and biological effect of the filamentous phage ϕRs551 on its Ralstonia solanacearum host
A. A. AHMAD (1,2), Q. Huang (1). (1) FNPRU, U.S. National Arboretum, USDA ARS, Beltsville, MD, USA; (2) Minia University, El-Minia, EGYPT

70-P Controlling soilborne pathogens by use of biologicals
B. ESPEJO (1), E. Gachango (1), M. Twizeyimana (2), S. Ronyak (1), K. Tyson (1), K. Craig (1), P. E. Hammer (1). (1) AgBiome, Inc., Research Triangle Park, NC, USA; (2) AgBiome Inc., Durham, NC, USA

71-P Differential antibiosis of hydrolytic enzymes and metabolites by Paraguayan isolates of Trichoderma spp. against Macrophomina phaseolina
F. A. Villalba Silvero (1), A. D. SANABRIA (2), M. E. Flores-Giubii (1), J. E. Barua (1). (1) Universidad Nacional de Asuncion, Central, PARAGUAY; (2) Paraguayan Institute of Agrarian Technology (IPTA), Central, PARAGUAY

72-P Serenade: Research advances in soil performance of the biological fungicidal/bactericidal product
S. HOVINGA. Bayer Crop Science, West Sacramento, CA, USA

Chemical Control

73-P Metabolomic-based elucidation of fungicide-microbe interactions in banana and potato fungal pathogens

74-P Preserving efficacy of new FRAC group from resistance development in impatiens downy mildew
S. N. SUAREZ (1), P. Lopez (1), A. R. Chase Zemke (2), A. J. Palmateer (3). (1) University of Florida, Homestead, FL, USA; (2) Chase Agricultural Consulting, Cottonwood, AZ, USA; (3) Bayer Environmental Science, Homestead, FL, USA

75-P Blossom application of novel silver compounds for fire blight (Erwinia amylovora) management in apples
C. NISCHWITZ (1), M. W. Harding (2), E. Pettizzo (1), P. Nadworny (3). (1) Utah State University, Logan, UT, USA; (2) Alberta Agriculture and Forestry, Crop Diversification Center South, Brooks, AB, CANADA; (3) Innovotech, Inc., Edmonton, AB, CANADA

76-P Fungicides and biological controls for the management of Septoria leaf spot on stevia
A. KOEHLER, D. Shew. North Carolina State University, Raleigh, NC, USA

77-P Management of laurel wilt of avocado, caused by Raffaelea lauricola
R. C. PLOETZ (1), J. Konkol (2), J. Pérez-Martínez (3). (1) University of Florida, Tropical Research and Education Center, Homestead, FL, USA; (2) University of Florida, Homestead, FL, USA; (3) University of Florida/University of Frankfurt, Homestead, FL, USA

78-P Managing Helminthosporium solani, causal agent of silver scurf in Wisconsin potatoes

79-P Developing post-harvest fungicides for sugarbeet
N. GLYNN (1), P. J. Kuhn (2), D. Ruppel (3). (1) Syngenta, Vero Beach, FL, USA; (2) Syngenta Crop Protection, Greensboro, NC, USA; (3) Syngenta Seeds, Akron, MI, USA

80-P Correlation between fungicide sensitivity of Phakopsora pachyrhizi and Puccinia triticina under greenhouse conditions
C. AVILA-ADAME, C. J. Klittich, G. Gustafson. Dow AgroSciences LLC, Indianapolis, IN, USA

81-P Sensitivity of sugarcane orange rust (Puccinia kuehnii) to fungicides in spore germination and detached leaf bioassays
B. CHAULAGAIN (1), M. Hincapie (1), S. Sanjel (1), N. S. Dufault (2), R. N. Raid (1), P. C. Rott (1). (1) University of Florida, Belle Glade, FL, USA; (2) University of Florida, Gainesville, FL, USA

82-P Evaluation of fungicides for control of Ceratocystis fimbriata causing black rot on sweetpotato
H. COLLINS, L. M. Quesada. North Carolina State University, Raleigh, NC, USA

83-P Variation in sensitivity to DMI fungicides tebuconazole and prothioconazole 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, USA; (2) USDA-ARS Plant Science Unit, Raleigh, NC, USA; (3) USDA-ARS, Department of Entomology & Plant Pathology, North Carolina State University, Raleigh, NC, USA
84-P Saponins in chenopods and potential for control of nematodes
K. GWINN (1), E. Batson (2), T. Kouser (2), M. M. Dee (1), (1) University of Tennessee, Department of Entomology and Plant Pathology, Knoxville, TN, USA; (2) University of Tennessee, Knoxville, TN, USA

85-P Investigating chemical control options for Colletotrichum dieback of clementine in California
J. S. MAYORQUIN (1), J. D. Carrillo (1), B. B. Peacock (1), K. Moreno (2), L. F. Torres (1), A. Eskalen (1). (1) University of California-Riverside, Riverside, CA, USA; (2) Department of Plant Pathology and Microbiology, University of California-Riverside, Riverside, CA, USA

86-P In vitro evaluation of efficacy of novel antifungal compounds for control of the rice sheath blight fungus
Z. GUO (1), X. Zhou (1), B. Liu (2), X. Lei (3). (1) Texas A&M University, AgriLife Research, Beaumont, TX, USA; (2) Hunan Agricultural University, Changsha, CHINA; (3) Lamar University, Beaumont, TX, USA

87-P The influence of water quality on efficacy of fungicides for turf disease control
T. STACY, R. Latin. Purdue University, West Lafayette, IN, USA

88-P Calonectria pseudonaviculata microsclerotia viability after exposure to fungicides
J. A. LAMONDIA, K. Maurer. Connecticut Agricultural Experiment Station, Windsor, CT, USA

89-P Efficacy of SDHI fungicide, pydiflumetofen, against Fusarium graminearum
H. SUN, W. Li, Y. Deng, A. Zhang, H. Chen. Jiangsu Academy of Agricultural Sciences, Nanjing, CHINA

90-P Protection of new cucumber growth from Pseudoperonospora cubensis with oxathiapiprolin-based fungicides
S. E. SALAS, C. P. Shepherd, H. K. Ngugi. DuPont Crop Protection, Newark, DE, USA

91-P Partitioning and local systemic movement of oxathiapiprolin for protection of potato against Phytophthora infestans
H. K. Ngugi, S. E. SALAS, C. P. Shepherd, L. J. Watson. DuPont Crop Protection, Newark, DE, USA

92-P Efficacy of copper hydroxide on four clonal lineages of Phytophthora infestans
T. WU, E. Silva, A. J. Gevens. University of Wisconsin-Madison, Madison, WI, USA

93-P WITHDRAWN

94-P Efficacy of seed treatment fungicides on frequently isolated seedborne fungi of pulse crops in Montana
C. PELUOLA, J. Mgbechi-Ezeri, A. Owari, M. E. Burrows, B. Agindotan. Montana State University, Bozeman, MT, USA

95-P Nematicidal effects of absinth wormwood (Artemisia absinthium) against soybean cyst nematode in in-vitro and in-vivo conditions
P. BASNET, E. Z. Byamukama. South Dakota State University, Brookings, SD, USA

96-P A comparison of ground-based air-blast sprayer and aircraft application of fungicides to manage scab in tall pecan trees
C. H. Bock (1), M. W. HOTCHKISS (2). (1) USDA ARS, Southeastern Fruit and Tree Nut Research Laboratory, Byron, GA, USA; (2) USDA ARS, Byron, GA, USA

97-P Physiological effects and mode of action of ZnO nanoparticles against postharvest fungal contaminants
D. SARDELLA, R. Gatt, V. Valdramidis. University of Malta, Msida, MALTA

98-P Fungicide dip treatment of strawberry transplants as management of Botrytis cinerea resistant isolates
M. OLIVEIRA (1), L. Cordova (1), M. Marin (1), N. Peres (2). (1) University of Florida, Wimauma, FL, USA; (2) Gulf Coast Research and Education Center, University of Florida, Wimauma, FL, USA

99-P Effect of fungicide seed treatment and temperature on cotton stand establishment in soils with different cropping histories
S. YOUNG (1), J. E. Woodward (2). (1) Texas Tech University, Lubbock, TX, USA; (2) Texas A&M University, AgriLife Extension Service, Lubbock, TX, USA

100-P Influence of fungicides on gas exchange of pecan foliage
B. W. Wood, C. H. BOCK. USDA ARS, Southeastern Fruit and Tree Nut Research Laboratory, Byron, GA, USA

101-P New fungicides for management of avocado root rot in California
R. J. Belisle, W. Hao, B. McKee, P. Manosalva, J. E. ADASKAVEG. Department of Plant Pathology and Microbiology, University of California, Riverside, CA, USA

102-P Magnesium oxide nanomaterial, a novel bactericide for control of bacterial spot of tomato without accumulating in fruit
Y. Y. LIAO (1), A. L. Strayer (1), J. C. White (2), A. Mukherjee (2), R. De La Torre-Roche (2), W. H. Elmer (2), M. Young (3), S. Santra (3), L. Ritchie (4), J. H. Freeman (4), J. B. Jones (5), M. Paret (6). (1) University of Florida, Department of Plant Pathology, Gainesville, FL, USA; (2) USDA ARS, Byron, GA, USA; (3) University of Central Florida, Orlando, FL, USA; (4) University of Florida, Quincy, FL, USA; (5) North Florida Research and Education Center, University of Florida, Quincy, FL, USA; (6) University of Agriculture, Faisalabad, PAKISTAN

103-P Evaluation of new fungicides against Fusarium oxysporum causing wilt in strawberry
A. HANNAN (1,2), S. Atta (2), T. Akhtar (3), I. Ahmad (3), M. Atiq (3). (1) University of Florida, Gainesville, FL, USA; (2) Ghazi University, Dera Ghazi Khan, PAKISTAN; (3) University of Agriculture, Faisalabad, PAKISTAN

104-P Physiological benefits from foliar application of penthiopyrad fungicide in wheat
105-P Efficacy of a single late-dormant application of mineral oil plus chlorothalonil for control of peach scab, caused by Venturia carpophila
T. GLENN (1), P. M. Brannen (2), C. H. Bock (3), M. W. Hotchkiss (4), J. Pitts (5), E. J. Sikora (6). (1) University of Georgia, Plant Pathology Department, Athens, GA, USA; (2) University of Georgia, Athens, GA, USA; (3) USDA ARS, Southeastern Fruit and Tree Nut Research Laboratory, Byron, GA, USA; (4) USDA ARS, Byron, GA, USA; (5) Auburn University, Clanton, AL, USA; (6) Auburn University, Department of Plant Pathology, Auburn, AL, USA

106-P Fungicide sensitivity and aggressiveness of Phytophthora betacei isolates in Colombia
M. MIDEROS, M. Parra, N. Guayazan, G. Danies, S. Restrepo. Universidad de los Andes, Bogota, COLOMBIA

107-P Baseline sensitivity to difenoconazole in Penicillium expansum isolates from apple
M. E. ALI, D. R. De Angelis, K. A. Mulvaney, L. K. Pandit, A. Amir. Washington State University, Wenatchee, WA, USA

108-P Evaluation of sensitivity of Blumeriella jaapii to SDHI fungicides
J. C. GLEASON (1), S. M. Slack (1), T. J. Proffer (1,2), C. A. Ouartwater (1), N. Rothwell (1), G. W. Sundin (1). (1) Michigan State University, East Lansing, MI, USA; (2) Kent State University, Salem, OH, USA

109-P Effects of fungicide and fertility on disease development and yield in winter wheat
M. R. BREUNIG (1), M. Nagelkirk (2), A. Byrne (1), M. Chilvers (1). (1) Michigan State University, East Lansing, MI, USA; (2) Michigan State University Extension-Sanilac County, Sandusky, MI, USA

110-P Fungicide sensitivity profiles of Phacidiopycnis piri and Phacidiopycnis washingtoniensis isolates from pome fruit in Washington
M. E. ALI, L. K. Pandit, D. R. De Angelis, K. A. Mulvaney, A. Amir. Washington State University, Wenatchee, WA, USA

111-P Effect of at-plant drench applications of Actigard on tomato seedlings for bacterial leaf spot control
H. ADKISON (1), A. Wen (2), G. E. VALLAD (1). (1) University of Florida, Gulf Coast Research and Education Center, Wimauma, FL, USA; (2) University of Florida, Wimauma, FL, USA

112-P Discovery and characterization of small molecules inhibitory to Erwinia tracheiphila
C. VRISMAN, L. Deblais, G. Rajashekar, S. A. Miller. The Ohio State University, Wooster, OH, USA

113-P Integrated management of stripe rust of winter wheat in Wisconsin
B. MUELLER, S. Chapman, S. Conley, D. L. Smith. University of Wisconsin-Madison, Madison, WI, USA

114-P Oxathiapiprolin baseline sensitivity distribution in isolates of Pseudoperonospora cubensis
G. OLAYA (1), R. Linley (1), K. Edlebeck (1), P. J. Kuhn (2), A. Thomas (3), P. Ojiamo (3). (1) Syngenta Crop Protection, Vero Beach, FL, USA; (2) Syngenta Crop Protection, Greensboro, NC, USA; (3) North Carolina State University, Raleigh, NC, USA

115-P Identification of two potential small molecule chemical controls for Pierce's disease of grape

116-P Early season applications of azoxystrobins with starter fertilizer for Rhizoctonia crown and root rot control in sugar beet
G. POON, C. Irwin. Vive Crop Protection, Toronto, ON, CANADA

117-P At-bloom applications of Merivon provides season-long control of anthracnose on pomegranate in Florida
A. Nepal (1), K. Xavier (2), G. E. VALLAD (3). (1) Oregon State University, Central Point, OR, USA; (2) University of Florida/IFAS, Gulf Coast Research and Education Center, Wimauma, FL, USA; (3) Gulf Coast Research and Education Center, University of Florida, Wimauma, FL, USA

118-P Potential persistence of flutiafol in vineyard soils treated for control of cotton root rot, caused by Phymatotrichopsis omnivora
S. MCBRIDE, D. N. Appel. Department of Plant Pathology and Microbiology, Texas A&M University, College Station, TX, USA

119-P Suppression of charcoal rot (Macrophomina phaseolina) in annual strawberry through chemigation treatments
J. C. MERTELY, R. Martin, N. Peres. University of Florida, Gulf Coast Research and Education Center, Wimauma, FL, USA

120-P Evaluation of fungicide efficacy and application timing for the management of Glomerella leaf spot and fruit rot in North Carolina
S. M. VILLANI, R. Kreis, K. Johnson. North Carolina State University, Mills River, NC, USA

121-P In vitro sensitivity of a vascular wilt pathogen, Ophiostoma novo-ulmi, to paclobutrazol
S. M. ADAMS (1), J. A. Smith (2). (1) University of Florida & The Morton Arboretum, Gainesville, FL, USA; (2) University of Florida, Gainesville, FL, USA

122-P Efficacy of fungicide-based management of blueberry rust in southern Georgia
R. J. INGRAM (1), P. M. Brannen (1), M. Slusher (2), J. Taylor (3), W. Lovett (4), S. Curry (5). (1) University of Georgia, Athens, GA, USA; (2) University of Georgia Extension, Waycross, GA, USA; (3) University of Georgia Extension, Lakeland, GA, USA; (4) University of Georgia Extension, Alma, GA, USA; (5) University of Georgia Extension, Baxley, GA, USA
123-P Fungicide sensitivity and population structure of Sclerotinia sclerotiorum isolates from Argentina, Brazil, and U.S.A.
T. J. J. Miorini, A. Pannullo, J. R. Steadman, S. E. EVERHART. University of Nebraska, Lincoln, NE, USA

124-P Alternative soil fumigation to control Macrophomina phaseolina, causal agent of charcoal rot of strawberries
J. BAGGIO (1), E. Zelinski (2), L. Cordova (3), M. Chamorro (4), J. W. Noling (5), N. Peres (1). (1) University of Florida, Gulf Coast Research and Education Center, Wimauma, FL, USA; (2) Federal University of Para (UFPR), Curitiba, BRAZIL; (3) University of Florida, Wimauma, FL, USA; (4) Driscoll’s of Europe, Moguer, SPAIN; (5) University of Florida, Lake Alfred, FL, USA

125-P In vitro evaluation of fungicides for the management of rice kernel smut in Texas
S. S. UPPALA, S. Zhou. Texas A&M University, AgriLife Research, Beaumont, TX, USA

126-P Survival of Ceratocystis fagacearum following red oak log fumigation with sulfuryl fluoride
J. Juzwik (1,2), A. YANG (1), S. Myers (3), M. Furtado (3), A. Taylor (4). (1) University of Minnesota, St. Paul, MN, USA; (2) USDA Forest Service, St. Paul, MN, USA; (3) USDA APHIS PPQ, Buzzards Bay, MA, USA; (4) University of Tennessee, Knoxville, TN, USA

127-P Comparative additive control of Fusarium verticillioides infesting maize using Hyptis suaveolens and synthetic insecticide
O. F. OLOTUAH. Adekunle Ajasin University, Ondo State, NIGERIA

Crop Loss Assessment

128-P Comparison of reflectance meters for evaluation of peanut leaf spot in Georgia
B. S. JORDAN, A. K. Culbreath. University of Georgia, Tifton, GA, USA

129-P Relationship of yield loss caused by smut in sugarcane and soil properties in Louisiana
R. M. Johnson, M. P. GRISHAM. USDA-ARS, Sugarcane Research Unit, Houma, LA, USA

130-P Incidence-severity relationships for scab on foliage and fruit of pecan
C. H. BOCK. USDA ARS, Southeastern Fruit and Tree Nut Research Laboratory, Byron, GA, USA

131-P Development and validation of risk assessment tools for Verticillium wilt of mint
D. L. WHEELER (1), J. K. S. Dung (2), D. A. Johnson (1). (1) Washington State University, Pullman, WA, USA; (2) Oregon State University, Madras, OR, USA

132-P Comparing the effects of Wheat streak mosaic virus strains on plant growth characteristics and symptom severity in hard red winter wheat
D. YARWALO (1), C. Tande (1), R. L. Geppert (2), E. Byamukama (1), M. A. Langham (1), (1) South Dakota State University, Brookings, SD, USA; (2) South Dakota State University, Small Grain Pathology, Brookings, SD, USA

133-P Gano derma root and butt rot in California almond
B. JOHNSON, D. M. Rizzo. University of California, Davis, CA, USA

134-P Development of a quantitative assessment method for fungal-soil particle dispersion on glass surfaces during image acquisition

135-P AG MAPSS: Autonomous Guidance Modular Aerial Plant Survey System
J. RUPP, M. Bruce. Montana State University, Bozeman, MT, USA

Cultural Control

136-P Factors affecting emission of AITC and subsequent disease control efficacy of Brassica juncea seed meal soil amendment
L. WANG (1), M. Mazzola (2). (1) Washington State University, Wenatchee, WA, USA; (2) USDA ARS, Wenatchee, WA, USA

137-P Effect of different Gramineae carbon inputs on efficacy of ASD for control of Macrophomina phaseolina in strawberry
S. S. HEWAVITHARANA (1), M. Mazzola (2). (1) Washington State University, Wenatchee, WA, USA; (2) USDA ARS, Wenatchee, WA, USA

138-P Deciphering potential mechanisms of anaerobic soil disinfection (ASD)-mediated control of Pratylenchus penetrans
S. S. HEWAVITHARANA (1), M. Mazzola (2). (1) Washington State University, Wenatchee, WA, USA; (2) USDA ARS, Wenatchee, WA, USA

139-P Evaluating the effect of tillage on soil-borne wheat pathogens in the dryland Pacific Northwest
D. Kroeze (1), K. McLaughlin (2), C. HAGERTY (1). (1) Oregon State University, Pendleton, OR, USA; (2) Oregon State University, Corvallis, OR, USA

140-P The effect of planting date on severity of Fusarium wilt of lettuce in California
K. R. PAUGH (1), T. R. Gordon (2). (1) University of California-Davis, Davis, CA, USA; (2) Department of Plant Pathology, University of California-Davis, Davis, CA, USA

141-P Vacuum steam as a promising alternative to methyl bromide for killing Ceratocystis fagacearum in Quercus rubra logs for global export
A. YANG (1), J. Juzwik (1,2), M. White (3), Z. Chen (3), S. Shugrue (4), R. Mack (4). (1) University of Minnesota, St. Paul, MN, USA; (2) USDA Forest Service, St. Paul, MN, USA; (3) Virginia Tech, Blacksburg, VA, USA; (4) USDA APHIS PPQ, Buzzards Bay, MA, USA
142-P Design and operation of static and mobile arrays to suppress powdery mildews in greenhouse and tunnel production systems with UV and visible light
A. STENSVAND (1,2), A. Suthaparan (2), P. J. From (2), L. Grimstad (2), N. Bjugstad (2), K. A. Solhaug (2), H. R. Gislerød (2), N. S. Johansen (1), D. M. Gadoury (3), A. Bierman (4), M. Rea (4). (1) Norwegian Institute of Bioeconomy Research, Ås, NORWAY; (2) Norwegian University of Life Sciences, Ås, NORWAY; (3) Cornell University, Geneva, NY, USA; (4) Lighting Research Center, Rensselaer Polytechnic Institute, Troy, NY, USA

143-P Sensing of UV and visible light by powdery mildew pathogens
R. PATHAK (1), A. Sundaram (2), L. E. Cadle-Davidson (3), K. A. Solhaug (1,4), H. R. Gislerød (1), A. Suthaparan (1). (1) Norwegian University of Life Sciences, Ås, NORWAY; (2) Norwegian Sequencing Centre, Oslo University Hospital, Oslo, NORWAY; (3) USDA Grape Genetics Research Unit, Geneva, NY, USA; (4) Norwegian Institute of Bioeconomy Research, Ås, NORWAY

144-P Sustainable approaches for soilborne disease management in nursery production
P. Liyanapathiranage, M. N. Kabir, T. Simmons, F. BAYSAL-GUREL. Tennessee State University, McMinnville, TN, USA

145-P Effect of carbon sources in anaerobic soil disinfestation to reduce soilborne pests in okra and brinjal in Nepal
R. B. KHADKA (1), M. Marasini (2), R. Rawal (2), A. L. Testen (3), S. A. Miller (1). (1) The Ohio State University, Wooster, OH, USA; (2) Regional Agricultural Research Station, Nepal Agricultural Research Council, Banke, NEPAL; (3) The Ohio State University OARDC, Wooster, OH, USA

146-P Incorporating disease-suppressive rotation crops and organic amendments into improved potato cropping systems
R. P. LARKIN. USDA ARS, Orono, ME, USA

147-P Practical and accurate measurement of ultraviolet radiation (UV) for research and application in plant pathosystems
A. BIERMAN (1), L. Radetsky (1), J. S. Patel (1), M. Figueiro (2), T. Plummer (1), M. Rea (1), D. M. Gadoury (3), A. Suthaparan (4), A. Stensvand (5), N. Peres (6), R. Borba Onofre (6). (1) Lighting Research Center, Rensselaer Polytechnic Institute, Troy, NY, USA; (2) Lighting Research Center, Troy, NY, USA; (3) Cornell University, Geneva, NY, USA; (4) Norwegian University of Life Sciences, Ås, NORWAY; (5) Norwegian Institute of Bioeconomy Research, Ås, NORWAY; (6) University of Florida, Gulf Coast Research and Education Center, Wimauma, FL, USA

148-P Modifying row cover systems to manage bacterial wilt in organic muskmelon in Iowa
H. M. NELSON. Iowa State University, Ames, IA, USA

149-P Impact of cover crop usage on soilborne pathogens in a nursery production system
S. Dawadi, K. Addesso, P. A. O’Neal, P. Liyanapathiranage, M. Pandey, F. BAYSAL-GUREL. Tennessee State University, McMinnville, TN, USA

150-P UV–C radiation treatment on Andean lupine seed for control anthracnose infection and increase crop production
C. E. FALCONI (1), V. Yanez-Mendizábal (2). (1) Universidad de Las Fuerzas Armadas - ESPE, Carrera de Ingeniería Agropecuarias, Sangolquí, ECUADOR; (2) Universidad de las Americas, Facultad de Facultad de Ingeniería y Ciencias Agropecuarias, Quito, ECUADOR

151-P Root response of huanglongbing-affected citrus trees to steam thermotherapy
K. GERBERICH (1), S. L. Commerford (1), R. Ehsani (2), M. M. Dewdney (2), E. G. Johnson (2). (1) University of Florida Citrus Research and Education Center, Lake Alfred, FL, USA; (2) University of Florida, Lake Alfred, FL, USA

152-P Severity of strawberry powdery mildew in open field vs under plastics that either block or transmit UV light
R. BORBA ONOFRE (1), R. Luis Vieira (2), A. Arupillai (3), A. Stensvand (4), D. M. Gadoury (5), N. Peres (1). (1) University of Florida, Gulf Coast Research and Education Center, Wimauma, FL, USA; (2) Universidade de Passo Fundo, Passo Fundo, BRAZIL; (3) Norwegian University of Life Sciences, Ås, NORWAY; (4) Norwegian Institute of Bioeconomy Research (NIBIO), Ås, NORWAY; (5) Cornell University, Geneva, NY, USA

153-P Heat treatment for management of Botrytis cinerea inoculum on strawberry
A. ZUNIGA (1), N. Peres (2). (1) University of Florida, Wimauma, FL, USA; (2) Gulf Coast Research and Education Center, University of Florida, Wimauma, FL, USA

154-P Boron tolerance and clubroot development in Brassica napus
A. McLean (1), B. D. GOSEN (2), M. R. McDonald (1). (1) University of Guelph, Guelph, ON, CANADA; (2) Agriculture & Agri-Food Canada, Saskatoon, SK, CANADA

155-P Effective pruning method for twigs showing black shoot blight disease symptoms in apple trees
D. H. PARK (1), C. S. Oh (2). (1) Kangwon National University, Chuncheon, KOREA; (2) Kyung Hee University, Yongin, KOREA

156-P Effects of dry heat treatment on Cucumber green mottle mosaic virus and infection activity
C. LIANG (1,2,3,4), L. Luo (1,2), J. Li (1,2), B. Baker (3,4). (1) China Agricultural University, Beijing, CHINA; (2) Beijing Key Laboratory of Seed Disease Testing and Control, Beijing, CHINA; (3) Plant Gene Expression Center, USDA-ARS, Albany, CA, USA; (4) Department of Plant and Microbial Biology, University of California, Berkeley, CA, USA

157-P The effect of tree wound pastes on callus formation
S. H. LEE (1), J. H. Park (2). (1) National Institute of Forest Science, Jejudo, REPUBLIC OF (SOUTH) KOREA; (2) Korea Forest Research Inst, Seoul, REPUBLIC OF (SOUTH) KOREA
158-P  Heat treatment as an alternative to fungicide application for control of strawberry anthracnose caused by <i>Colletotrichum acutatum</i>
N. Y. WANG (1), W. W. Turechek (2), N. Peres (1), (1) University of Florida, Gulf Coast Research and Education Center, Wimauma, FL, USA; (2) USDA ARS SAA SPP, Fort Pierce, FL, USA

159-P  Evaluation of a nutritional approach for disease control of <i>Burkholderia glumae</i> and <i>B. gladioli</i> interaction in rice
C. A. Riera-Ruiz (1,2), J. Castro-Lara (3), M. I. Jimenez Feijoo (3), J. CEVALLOS-Cevallos (4). (1) Centro de Investigaciones Biotecnologicas del Ecuador, Guayaquil, ECUADOR; (2) CIBE-ESPOL, Guayaquil, ECUADOR; (3) Escuela Superior Politecnica del Litoral, Guayaquil, ECUADOR; (4) Escuela Superior Politecnica del Litoral, ESPOL, Guayaquil, ECUADOR

160-P  Broccoli residue and chitin amendments reduce <i>Verticillium</i> wilt in three soil types
K. D. PURI (1), D. P. G. Short (1), P. Inberdbitzin (2), D. O. Chellemi (3), K. V. Subbarao (4). (1) University of California-Davis, Salinas, CA, USA; (2) University of California, Davis, CA, USA; (3) Agricultural Solutions, Fernandina Beach, FL, USA; (4) University of California-Davis, c/o U.S. Agricultural Research Station, Salinas, CA, USA

161-P  Canopy and root response of HLB-affected citrus trees to steam-generated thermotherapy
N. THAPA (1), S. L. Commerford (2), R. Ehsani (1), E. G. Johnson (1), M. M. Dewdney (1). (1) University of Florida, Lake Alfred, FL, USA; (2) University of Florida Citrus Research and Education Center, Lake Alfred, FL, USA

162-P  Switchgrass extractives reduce bacterial diseases of tomato foliage and populations of foodborne pathogens on tomato fruit
A. I. Bruce (1), B. H. OWNLEY (1), J. Tao (2), N. Labbé (2), K. Gwinn (1), D. D’Souza (3), N. Moustaid-Moussa (4). (1) University of Tennessee, Department of Entomology and Plant Pathology, Knoxville, TN, USA; (2) University of Tennessee, Center for Renewable Carbon, Knoxville, TN, USA; (3) University of Tennessee, Food Science Department, Knoxville, TN, USA; (4) Texas Tech University, Department of Nutritional Sciences, Lubbock, TX, USA

163-P  The use of eco-mesh bags for environmentally friendly controlling pine wilt

164-P  Pre-inoculation treatment of basil plants with ultraviolet-B radiation induces resistance to downy mildew
J. S. PATEL (1), L. Radetsky (1), T. Plummer (1), A. Bierman (1), D. M. Gadouy (2), M. Rea (1). (1) Lighting Research Center, Rensselaer Polytechnic Institute, Troy, NY, USA; (2) Cornell University, Geneva, NY, USA

165-P  Utility of planting variable-sized whole tubers simulating a European belt-style planter to reduce seed piece decay in seed potato production
K. M. DUELLMAN KINZER (1), M. C. Bertram (1), M. A. Lent (1), J. C. Randall (1), S. A. Clark (2). (1) University of Idaho, Idaho Falls, ID, USA; (2) Brigham Young University-Idaho, Rexburg, ID, USA

Disease Detection and Diagnosis

166-P  Survey of viruses infecting sweet cherry (<i>Prunus avium</i>) in Oregon
L. A. LUTES, J. W. Pscheidt. Oregon State University, Corvallis, OR, USA

167-P  A real-time PCR assay for the differentiation of <i>Pantoea stewartii</i> subsp. <i>stewartii</i> from <i>Pantoea stewartii</i> subsp. <i>indologenes</i> in corn seed
N. Pal (1), C. C. BLOCK (2). (1) USDA-ARS, Ames, IA, USA; (2) Iowa State University, Ames, IA, USA

168-P  Development and validation of two rapid isothermal detection assays for root-infecting fungi detection on turfgrass
B. KARAKKAT, M. Franchett, M. Olson, C. Mullenberg, P. L. Koch. University of Wisconsin, Madison, WI, USA

169-P  Development and validation of a loop-mediated isothermal amplification (LAMP) assay for detection of citrus leprosis cytoplasmic type 2 in plants
B. ADDUCCI, G. Wei, A. Roy, V. A. Mavrodieva, M. K. Nakha. USDA-APHIS-PPQ-S&T-CPHST, Beltsville, MD, USA

170-P  Validation of a quadruplex real-time RT-PCR assay for simultaneous detection of three citrus leprosis viruses in plants
B. ADDUCCI (1), G. Wei (1), A. Roy (1), V. A. Mavrodieva (1), G. Dennis (2), W. Schneider (3), R. H. Bransky (4), M. K. Nakha (1). (1) USDA-APHIS-PPQ-S&T-CPHST, Beltsville, MD, USA; (2) USDA-APHIS-PPQ-S&T-CPHST, Raleigh, NC, USA; (3) USDA ARS FDWSRU, Fort Detrick, MD, USA; (4) University of Florida, Lake Alfred, FL, USA

171-P  Development of two multiplex RT-PCRs for simultaneous detection of five cytoplasmic and three nuclear viruses associated with citrus leprosis complex
A. ROY (1), A. L. Stone (2), G. Leon Martinez (3), G. Otero-Colina (4), M. J. Melzer (5), J. S. Hartung (6), S. I. Nakha. USDA-APHIS-PPQ-S&T-CPHST, Beltsville, MD, USA; (2) USDA ARS FDWSRU, Fort Detrick, MD, USA; (3) CORPOICA, Villavicencio, COLOMBIA; (4) Colegio de Postgraduados, Texcoco, MEXICO; (5) University of Hawaii, Honolulu, HI, USA; (6) USDA ARS MPPL, Beltsville, MD, USA; (7) University of Florida, Lake Alfred, FL, USA
172-P Development of a rapid, specific, and sensitive isothermal assay for the detection of *Verticillium alfafae*  
A. J. Reyes Gaige (1), J. K. S. Dung (2), J. E. WEILAND (3). (1) Oregon State University, Corvallis, OR, USA; (2) Oregon State University, Madras, OR, USA; (3) USDA ARS, Corvallis, OR, USA

173-P Development of digital PCR assays for plant pathogen diagnosis  
Q. XIANG (1), J. Rascoe (1), S. Costanzo (1), Z. Liu (2), M. K. Nakhla (1). (1) USDA-APHIS-PPQ-S&T-CPHST, Beltsville, MD, USA; (2) USDA APHIS PPQ, Riverdale, MD, USA

174-P Genomics-informed molecular detection of *Xanthomonas vasicola* causing bacterial leaf streak of corn in the United States  
M. J. STULBERG (1), B. Kasiborski (1), D. Studholme (2), G. P. Munkvold (3), C. C. Block (3), S. Arias (3), J. Rascoe (1), M. K. Nakhla (1). (1) USDA-APHIS-PPQ-S&T-CPHST, Beltsville, MD, USA; (2) University of Exeter, Exeter, UNITED KINGDOM; (3) University of Minnesota, St. Paul, MN, USA

175-P Optimizing the molecular tools for *Phytophthora cinnamoni* detection in environmental samples  
S. CRANDALL (1), P. M. Manosalva (2), T. Miles (1). (1) California State University-Monterey Bay, Seaside, CA, USA; (2) Department of Plant Pathology and Microbiology, University of California, Riverside, CA, USA

176-P Development of a sensitive real-time PCR detection method for *Citrus tatter leaf virus*  
M. KUNTA, J. W. Park, M. Gonzalez, P. Vedasharan, J. V. da Graça. Texas A&M University Kingsville, Citrus Center, Weslaco, TX, USA

177-P A new diagnostic real-time PCR method for huanglongbing detection in citrus root tissue  
J. W. Park (1), W. E. Braswell (2), P. Stansly (3), J. Rascoe (4), E. Louzada (1), G. McCollum (5), J. V. da Graça (1), M. KUNTA (1). (1) Texas A&M University Kingsville, Citrus Center, Weslaco, TX, USA; (2) USDA APHIS PPQ CPHST, Edinburg, TX, USA; (3) University of Florida/IFAS/SWFREC, Immokalee, FL, USA; (4) USDA-APHIS-PPQ-S&T-CPHST, Beltsville, MD, USA; (5) USDA, ARS, USHRL, Fort Pierce, FL, USA

178-P Measurement of complex permittivity of plant cells and detection of cellular state alteration by waveguide penetration and coaxial probe  
T. FURUKAWA (1), A. Kazamaki (2), A. Kik (2), Y. Suzuki (2). (1) Department of Biological Sciences, Tokyo Metropolitan University, Hachioji-shi, JAPAN; (2) Department of Electrical & Electronic Engineering, Tokyo Metropolitan University, Tokyo, JAPAN

179-P Rapid detection of *Hop stunt viroid, Potato spindle tuber viroid, and Tomato chlorotic dwarf viroid* using isothermal AmplifyRP  
S. ZHANG (1), P. Russell (1), B. Davenport (1), R. Li (1), D. Groth-Helms (1), R. W. Hammond (2), (1) Agdia, Inc., Elkhart, IN, USA; (2) USDA ARS Molecular Plant Pathology Laboratory, Beltsville, MD, USA

180-P Use of LAMP for in-field early detection of *Raffaelea lauricola*, the causal agent of laurel wilt disease  
J. N. Workman (1), S. W. Fredrich (2), C. VILLARI (1). (1) D.B. Warnell School of Forestry and Natural Resources, University of Georgia, Athens, GA, USA; (2) USDA Forest Service, Athens, GA, USA

181-P First detection of *Phytophthora* species of concern at the U.S.A.: The role of the USDA-APHIS-PPQ-CPHST Beltsville Laboratory  

182-P Detection of *Papaya ringspot virus* using an ultrasensitive single-tube nested PCR  
I. HAMIM, J. S. Hu. University of Hawaii at Manoa, Honolulu, HI, USA

183-P Exploring the use of NGS technology for citrus HLB diagnosis and microbiome research  
Z. Zheng (1), F. Wu (1), M. Xu (1), X. Deng (1), M. J. Stulberg (2), J. Rascoe (2), X. Sun (3), A. Jeyaprakash (3), J. CHEN (4). (1) South China Agricultural University, Guangzhou, CHINA; (2) USDA-APHIS-PPQ-S&T-CPHST, Beltsville, MD, USA; (3) Florida Department of Agriculture & Consumer Service, Gainesville, FL, USA; (4) USDA-ARS-PWA, Parlier, CA, USA

184-P Molecular detection and quantification of root-lesion nematode, *Pratylenchus penetrans*, from soil using real-time PCR  
R. Baidoo, G. YAN. North Dakota State University, Department of Plant Pathology, Fargo, ND, USA

185-P Development of a CANARY (cellular analysis and notification of antigen risk and yield) assay for detection of *Ralstonia solanacearum* R3B2  
W. CAI (1), F. Nargi (2), J. Elphinstone (3). (1) South China Agricultural University, Guangzhou, CHINA; (2) USDA-APHIS-PPQ-S&T-CPHST, Beltsville, MD, USA; (3) USDA-APHIS-PPQ-S&T-CPHST, Beltsville, MD, USA

186-P Evaluation of immunoreagents for development of a diagnostic assay specific for *Rathayibacter toxicus*  
D. LUSTER (1), M. B. McMahon (1), A. Sechler (1), E. E. Rogers (1), W. Schneider (1), B. Schroeder (2), T. Murray (3). (1) USDA ARS FDWSRU, Fort Detrick, MD, USA; (2) University of Idaho, Moscow, ID, USA; (3) USDA-APHIS PPQ, Riverdale, MD, USA

187-P Rollout of a simplified DNA isolation method and LAMP for on-site detection of citrus black spot  
G. MARRERO (1), K. A. Zeller (1), K. Levin (1), T. D. Riley (2), H. D. Gomez (3), Z. G. Abad (1). (1) USDA-APHIS-PPQ-S&T-CPHST, Beltsville, MD, USA; (2) USDA APHIS PPQ, Orlando, FL, USA; (3) USDA APHIS PPQ, Davie, FL, USA

188-P Development and evaluation of molecular methods for species-specific detection of *Phytophthora quercina*  
J. C. BIENAPFL (1), K. Jennings (1), L. Schena (2), J. Juzwik (3), Z. G. Abad (1). (1) USDA-APHIS-PPQ-S&T-CPHST, Beltsville, MD, USA; (2) USDA APHIS PPQ, Orlando, FL, USA; (3) USDA-APHIS PPQ, Riverdale, MD, USA
189-P Comparison of next-generation sequencing platforms and library preparation for the analysis of metagenomic diversity
D. Sherman (1), A. L. Stone (1), J. King (2), A. Bronzato (2), W. SCHNEIDER (1), USDA ARS FDWSRU, Fort Detrick, MD, USA; (2) Mississippi State University, Mississippi State, MS, USA

190-P A novel molecular toolkit for rapid detection of the pathogen and primary vector of thousand cankers disease
E. Oren (1), W. Klingeman (1), R. O. Gazis (1), J. Moulton (1), P. Lambdin (1), M. Coggshall (2), J. Hulcr (3), S. J. Seybold (4), D. HADZIABDIC (1), University of Tennessee, Knoxville, TN, USA; (2) USDA Forest Service, Northern Research Station, West Lafayette, IN, USA; (3) University of Florida, Gainesville, FL, USA; (4) USDA Forest Service, Pacific Southwest Research Station, Davis, CA, USA

191-P Development of a recombinase-polymerase amplification assay for Clavibacter michiganensis subsp. sepedonius
R. Li (1), P. Russell (1), D. GROTH-HELMS (1), S. Zhang (1), B. Davenport (1), K. Schuettz (1), C. A. Ishimaru (2), Agdia, Inc., Elkhart, IN, USA; (2) University of Minnesota, St. Paul, MN, USA

192-P A reverse transcription-loop mediated isothermal amplification assay for the detection of pospiviroids in tomato seeds
N. A. GONZALEZ, G. P. Munkvold. Iowa State University, Ames, IA, USA

193-P Development of multiplex-PCR for simultaneous detection of phytoplasmas causing lethal yellowing and date palm lethal decline in palms
A. RAVINDRAN, J. Ueckert, K. Ong. Texas A&M University, AgriLife Extension Service, College Station, TX, USA

194-P Coupling spore traps and quantitative PCR assays for detection of Cercospora sojina, the causal agent of soybean frogeye leaf spot
B. LIN (1), H. M. Kelly (1), H. Yu (2), A. Mengistu (3). University of Tennessee, Jackson, TN, USA; (2) Tusculum College, Greeneville, TN, USA; (3) USDA ARS, Jackson, TN, USA

195-P Harmonization of seed testing methods for Pepper mild mottle virus
T. BRUNS (1), G. P. Munkvold (1), R. L. Dunkle (2), Iowa State University, Ames, IA, USA; (2) American Seed Trade Association, Alexandria, VA, USA

196-P Detection, quantification, and seasonal movement of Xylella fastidiosa in grafted and own-root Meadowlark blueberries
D. BAYO (1), R. Darnell (2), J. Williamson (2), P. Harmon (1). Department of Plant Pathology, University of Florida, Gainesville, FL, USA; (2) Horticultural Sciences Department, University of Florida, Gainesville, FL, USA

197-P Detection of Spiroplasma citri by droplet digital PCR
Y. Maheshwari (1), V. Selvaraj (1), S. Hajeri (2), R. K. YOKOMI (3), USDA ARS, Parlier, CA, USA; (2) Citrus Pest Detection Program (CCTEA), Tulare, CA, USA; (3) USDA ARS PWA, Parlier, CA, USA

198-P Dickeya black leg—A new challenge for Florida’s potato farmers and a new pathogen detection task for University of Florida Plant Diagnostic Center
S. BEC, C. Lapaire Harmon. University of Florida, Plant Diagnostic Center, Gainesville, FL, USA

199-P Utilizing mitochondrial markers and T-RFLP data to identify Phytophthora species in mixed environmental samples
T. MILES (1), K. P. Coats (2), A. Chastagner (2), F. N. Martin (3), University of California University-Monterey Bay, Seaside, CA, USA; (2) Washington State University, Puyallup, WA, USA; (3) USDA ARS, Salinas, CA, USA

200-P EDNA-Rose a novel approach for detecting rose viruses combining next-generation sequencing and bioinformatics
L. PENA ZUNIGA (1), A. Espindola (1), P. Klein (2), T. Debener (3), J. Rees (4), A. Cardwell (1), University of Oklahoma State University, Stillwater, OK, USA; (2) Texas A&M University, College Station, TX, USA; (3) Leibniz Universität Hannover, Institute of Plant Genetics, Hannover, GERMANY; (4) Agricultural Research Council-Biotechnology Platform, Pretoria, SOUTH AFRICA

201-P Detection and differentiation of arthropod-transmitted viruses of cereal crops using multiplex PCR and high resolution melting
P. RYDZAK (1), F. Ochoa Corona (1), A. E. Whitfield (2), A. C. Wayadande (1). University of Oklahoma State University, Stillwater, OK, USA; (2) Kansas State University, Manhattan, KS, USA

202-P Introducing PrimerCHECKER, a PCR primer performance graphic display generator
K. V. Salinas Villacís (1), E. Espitia-Navarro (2), J. Garcia-Suarez (3), F. OCHOA CORONA (4). Freelance Consultant, Quito, ECUADOR; (2) Georgia Institute of Technology, Atlanta, GA, USA; (3) The Army University - ESPE, Sangolquí, ECUADOR; (4) Oklahoma State University, Stillwater, OK, USA

203-P Two genomospecies in the culture collection strains of Pseudomonas syringae pv. atrofaciens
D. SHIN (1), G. I. Heo (2), H. I. Lee (3), S. J. Cha (4). Chungbuk National University, Cheongju-Si, REPUBLIC OF (SOUTH) KOREA; (2) Chungbuk National University, Cheongjoo-si, KOREA; (3) Animal and Plant Quarantine Agency, Gimcheon, KOREA; (4) Chungbuk National University, Cheongju Chungbuk, KOREA

204-P Development of a sequence-specific PCR assay for burrowing nematode (Radopholus similis) detection
C. S. CHANG (1), J. I. Yang (2). (1) Department of Plant Pathology and Microbiology, National Taiwan University, Taipei, TAIWAN; (2) National Taiwan University, Taipei, TAIWAN
205-P Validation of viability/enrichment (ve) PCR-based detection of viable Acidovorax citrulli in melon and watermelon seed samples
R. WILLMANN, A. Becepooot, B. P. Woudt. Syngenta Seeds, Enkhuizen, NETHERLANDS

206-P Detection and genome characterization of a mixed infection of Crinum mosaic, Nerine latent, and Nerine yellow stripe viruses in ornamental Crinum
R. I. JORDAN (1), M. Wingert (2), C. Louden (2), M. A. Guaragna (1). (1) USDA-ARS, USNA, Floral & Nursery Plants Research, Beltsville, MD, USA; (2) Biotechnology Academy, Applications and Research Lab (Howard County), Ellicott City, MD, USA

207-P Development of a CANARY™ multiplex testing platform for rapid identification of Ralstonia solanacearum
A. A. AHMAD (1,2), D. N. Kalkofen (3), R. Rana (2), J. J. Lehett (3), A. R. Flannery (3), Q. Huang (1). (1) FNPRU, U.S. National Arboretum, USDA/ARS, Beltsville, MD, USA; (2) Minia University, El-Minia, EGYPT; (3) PathSensors, Inc., Baltimore, MD, USA

208-P Multiplex assay for the quantitative assessment of Rhizoctonia solani AG2-2, AG4, and R. zeae from the soil
T. ALBRECHT (1), K. M. Webb (2), R. M. Harveson (3), K. D. Broders (1). (1) Colorado State University, Fort Collins, CO, USA; (2) USDA-ARS, Soil Management and Sugar Beet Research Unit, Fort Collins, CO, USA; (3) University of Nebraska, Panhandle Research & Extension Center, Scottsbluff, NE, USA

209-P Detection and quantification of Septoria glycines in soybeans with real-time PCR
H. A. LIN, S. X. Mideros Mora. University of Illinois at Urbana-Champaign, Urbana, IL, USA

210-P Improved media for isolation of Pseudomonas savastanoi pv. savastanoi from olive knots and development of an in vitro pathogenicity bioassay
M. Salman (1), D. A. KLUEPFEL (2). (1) Palestine Technical University-Kadoorie, Tulkarm, PALESTINE; (2) USDA ARS, Crops Pathology & Genetics Research Unit, Davis, CA, USA

211-P Comparison of primers for the detection of North American strains of Dickeya species in seed potato stems and tubers
A. S. B. NASARUDDIN (1), B. N. Babler (2), N. T. Perna (2), J. D. Glaser (2), A. O. Charkowski (1). (1) Colorado State University, Fort Collins, CO, USA; (2) University of Wisconsin, Madison, WI, USA

212-P High-throughput molecular screening for the presence of citrus pathogens in the citrus germplasm collection of Punjab, Pakistan
R. Haq (1), S. BODAGHI (2), T. Dang (2), I. Lavagi (2), S. H. Tan (2), S. Naz (1), G. Vidalakis (2). (1) Lahore College for Women University, Lahore, PAKISTAN; (2) University of California-Riverside, Riverside, CA, USA

213-P Molecular diagnostics for exotic cotton leaf curl begomovirus-betasatellites undergoing diversification and expansion
A. S. AVELAR, J. K. Brown, M. Ilyas. School of Plant Sciences, University of Arizona, Tucson, AZ, USA

214-P Validation of species-specific primers for detection and discrimination of Pythium aphanidermatum and P. deliense
S. Wallace (1), M. F. Proano (1), A. Espindola (1), M. Arif (2), M. L. Daughtrey (3), C. D. GARZON (1). (1) Oklahoma State University, Stillwater, OK, USA; (2) University of Hawaii at Manoa, Honolulu, HI, USA; (3) Cornell University, Long Island, NY, USA

215-P Seed extract TaqMan PCR for the detection of Clavibacter michiganensis subsp. michiganensis in seeds of tomato
H. KOENRAADT. Naktuinbouw, Roelofarendsveen, NETHERLANDS

216-P Identification and distribution of pathogens associated with field pea diseases in Montana State
J. MGBECHI-EZERI, A. Owati, C. Peluola, M. E. Burrows, B. Agindotan. Montana State University, Bozeman, MT, USA

217-P Rapid detection of pathogen in complex metagenomic data by EDNA
M. SHARP. Oldsbooma State University, Stillwater, OK, USA

218-P Detection and absolute quantification of Sugarcane yellow leaf virus (SCYLV) by real-time PCR for successive vegetative cycles in sugarcane in Colombia
C. Cardozo (1,2), Y. C. Acosta Vega (2,3), M. Cadavid (2), H. A. Chica (2), J. C. Angel S. (2), J. I. Victoria (2), C. A. ANGEL (2,4). (1) Universidad Nacional de Colombia Campus Palmira, Palmira, COLOMBIA; (2) Cenicafé, Cali, COLOMBIA; (3) Bogota, COLOMBIA; (4) Cenicafé-Colombia, Manizales, COLOMBIA

219-P Mitochondrial markers to detect Pythium at a genus and species-specific level using TaqMan and recombinase polymerase amplification
T. MILES (1), F. N. Martin (2). (1) California State University-Monterey Bay, Seaside, CA, USA; (2) USDA ARS, Salinas, CA, USA

220-P Analysis of Amylostereum areolatum (Russulales: Amylostereacea) symbiont from two populations of Sirex noctilio Fabricius (Hymenoptera: Siricidae)
R. O. OLATINWO (1), T. Schowalter (2). (1) USDA Forest Service, Pineville, LA, USA; (2) Louisiana State University AgCenter, Baton Rouge, LA, USA

221-P Detection of mefenoxam-insensitive populations of Pseudoperonospora cubensis populations causing cucurbit downy mildew in commercial and wild hosts
K. D’ARCANGELO (1,2), T. Miles (3), L. Quesada-Ocampo (4). (1) North Carolina State University, Raleigh, NC, USA

222-P Occurrence of fungicide resistance in Pseudoperonospora cubensis populations causing cucurbit downy mildew in commercial and wild hosts
M. E. MARKS, A. J. Gevens. University of Wisconsin-Madison, Madison, WI, USA
223-P Fungicide resistance in *B. fraxarieae* and species prevalence in the United States East Coast
M. DOWLING, M. Hu, G. Schnabel. Clemson University, Clemson, SC, USA

224-P Characterizing spatial and temporal variation in fungicide sensitivity of *Venturia effusa* within a pecan orchard
J. R. STANDISH, T. B. Brenneman, K. L. Stevenson. University of Georgia, Tifton, GA, USA

225-P *Botrytis cinerea* isolates lacking the Mrr1 R632I mutation are multi-resistant to postharvest fungicides which impacts apple grey mold management
W. M. Jurick II (1), O. Macarisin (2), V. L. Gaskins (1), I. Vico (3), J. Yu (2), K. A. Peter (4), W. J. Janisiewicz (5), K. D. COX (6). (1) USDA-ARS Food Quality Laboratory, Beltsville, MD, USA; (2) USDA ARS, Beltsville, MD, USA; (3) University of California-Davis, Parlier, CA, USA; (4) Penn State University, College of Agricultural Sciences, University Park, PA, USA; (5) USDA-ARS AFRS, Kearneysville, WV, USA; (6) Cornell University, Geneva, NY, USA

226-P Effect of SDHI-fungicide sprays and pistachio hedging on *Alternaria alternata* sensitivity
P. D. S. F. LICHTEMBERG (1), W. Zeviani (2), R. Puckett (1), T. J. Michailides (1). (1) University of California-Davis, Parlier, CA, USA; (2) Universidade Federal do Paraná, Curitiba, BRAZIL

227-P QoI resistance among *Colletotrichum* species found in Virginia vineyards
D. McHenry, A. Bly, C. L. Oliver, M. NITA. Virginia Polytechnic Institute and State University, Winchester, VA, USA

228-P Resistance of *Botrytis cinerea* from California strawberries to ten fungicides
S. D. Cosseboom (1), G. SCHNABEL (2), K. L. Ivors (1), G. J. Holmes (1). (1) Strawberry Center, California Polytechnic State University, San Luis Obispo, CA, USA; (2) Clemson University, Clemson, SC, USA

229-P Occurrence of prochloraz resistance in *Colletotrichum biginellianum* in South China
L. YU, G. Lan, X. She, Y. Tang, M. Deng, Z. He. Plant Protection Research Institute, Guangdong Academy of Agricultural Sciences, Guangzhou, CHINA

230-P *Alternaria* leaf spot in Michigan and fungicide sensitivity issues
L. E. HANSON (1), N. Rosenzweig (2), Q. Jiang (2), P. Samohano (2). (1) USDA ARS, East Lansing, MI, USA; (2) Michigan State University, East Lansing, MI, USA

231-P Effect of mefenoxam-acquired resistance on sporulation and dry weight in *Phytophthora infestans*
M. REGNIER, J. Gonzalez Tobon, M. Mideros, S. Restrepo, G. Danies. Universidad de los Andes, Bogota, COLOMBIA

232-P Is the phenomenon of acquired resistance in *Phytophthora infestans* universal?
J. GONZALEZ TOBON (1), R. Childers (2), M. Regnier (1), M. Mideros (1), S. Restrepo (1), G. Danies (1). (1) Universidad de los Andes, Bogota, COLOMBIA; (2) Harvard University, Cambridge, MA, USA

233-P *Sclerotinia homoeocarpa* populations and their resistance to fungicides
C. STEPHENS, J. E. Kaminski III. Penn State University, University Park, PA, USA

234-P Sensitivity to azoxystrobin in selected Kentucky populations of *Cercospora nicotianae*, the frogeye leaf spot pathogen of tobacco
W. Barlow, E. W. Dixon, R. Pearce, E. E. PFUEFER. University of Kentucky, Lexington, KY, USA

235-P Occurrence of fungicide resistance in *Alternaria* populations to commonly used fungicides in Idaho
K. FAIRCHILD (1), A. Malek (1), P. S. Wharton (2). (1) University of Idaho, Idaho, ID, USA; (2) University of Idaho, Aberdeen Research and Extension Center, Aberdeen, ID, USA

GENETICS OF RESISTANCE

236-P Response of sorghum stalk pathogens to near-isogenic brown midrib plants and their soluble extracts
D. L. FUNNELL-HARRIS (1), P. O’Neill (1), S. Sattler (1), T. Gries (1), M. Berhow (2). (1) USDA-ARS, Lincoln, NE, USA; (2) USDA-ARS, Peoria, IL, USA

237-P Evaluation of *Cucurbita pepo* breeding lines with reduced susceptibility to root and crown rot caused by *Phytophthora capsici*
G. VOGEL (1), K. LaPlant (1), M. Mazourek (1), M. Gore (1), C. D. Smart (2). (1) Plant Breeding and Genetics Section, Cornell University, Ithaca, NY, USA; (2) Plant Pathology and Plant Microbe Biology Section, Cornell University, Geneva, NY, USA

238-P Molecular mapping and comparison of *YrTr1* with other genes on chromosome 1BS for resistance to wheat stripe rust
J. Feng (1,2), M. Wang (1), X. CHEN (3). (1) Washington State University, Pullman, WA, USA; (2) Biotechnology and Nuclear Technology Research Institute, Chengdu, CHINA; (3) USDA ARS, Pullman, WA, USA

239-P Adaptation of *Phytophthora nicotianae* to partial resistance in tobacco
J. JIN, I. Carbone, D. Shew. North Carolina State University, Raleigh, NC, USA

240-P Host resistance of flue-cured tobacco (*Nicotiana tabacum* L.) for the management of tobacco black shank (*Phytophthora nicotianae*)
L. D. THIESSEN. North Carolina State University, Raleigh, NC, USA

241-P Use of FT-IR for rapid phenotyping of European ash resistance levels to ash dieback
C. VILLARI (1), A. Dowkiw (2), R. Enderle (3),
242-P Genetic characterization of resistance to Sclerotinia in lettuce cultivar Eruption
(1) University of California-Davis, c/o U.S. Agricultural Research Station, Salinas, CA, USA; (2) USDA ARS, Forage Seed and Cereal Research Unit, Corvallis, OR, USA; (3) USDA ARS, Corvallis, OR, USA; (4) University of California-Davis, Genome Center and Department of Plant Sciences, Davis, CA, USA; (5) USDA ARS, Crop Improvement and Protection Unit, Salinas, CA, USA

243-P Two new late blight resistant home garden varieties of tomato with tolerance to Septoria leaf spot
R. MAHFUZ, M. E. Gallegly Jr. West Virginia University, Morgantown, WV, USA

244-P Using allele-specific PCR for genotyping different mutations selected by the use of SDHI in populations of Alternaria alternata in California
P. D. S. F. LICHTENBERG, Y. Luo, T. J. Michailides. University of California-Davis, Parlier, CA, USA

245-P QTL mapping for Meloidogyne incognita and M. hapla resistance in one recombinant inbred line population of soybean
C. Li (1), J. Wang (1), J. Abe (2), F. Kong (1), C. WANG (1). (1) Northeast Institute of Geography and Agroecology, Chinese Academy of Sciences, Harbin, CHINA; (2) Laboratory of Plant Genetics and Evolution, Hokkaido University, Sapporo, JAPAN

246-P Population dynamics of blast fungus leads to breakdown of resistance to rice blast

247-P Tomato functional genomic screen to find novel resources for development of resistant cultivars against Sclerotinia minor
M. Ghasemkhani (4), T. Kiritisits (5), E. Kjaer (6), D. Marčiulyniénė (7), L. McKinney (6), B. Metzler (3), F. Munoz (2), L. Rostgaard Nielsen (6), A. Plütra (7), L. G. Stener (8), V. Suchokas (7), L. Rodriguez-Saona (9), P. Bonello (10), M. Cleary (4), (1) D.B. Warrnell School of Forestry and Natural Resources, University of Georgia, Athens, GA, USA; (2) INRA, Ardon, Orléans Cedex, FRANCE; (3) Forest Research Institute Baden-Württemberg, Department Forest Protection, Freiburg, GERMANY; (4) Swedish University of Agricultural Sciences (SLU), Southern Swedish Forest Research Centre, Alnarp, SWEDEN; (5) University fur Bodenkultur (BOKU), Vienna, AUSTRIA; (6) Department of Geosciences and Natural Resource Management, University of Copenhagen, Copenhagen, DENMARK; (7) Lithuanian Research Centre for Agriculture and Forestry, Institute of Forestry, Girionys, Kaunas District, LITHUANIA; (8) The Forestry Research Institute of Sweden (SKOGFORSK), Svalöv, SWEDEN; (9) Department of Food Science and Technology, The Ohio State University, Columbus, OH, USA; (10) Department of Plant Pathology, The Ohio State University, Columbus, OH, USA

A. HATTORI (1), Y. Ishiga (2). (1) Graduate School of Life and Environmental Sciences, University of Tsukuba, Tsukuba, JAPAN; (2) University of Tsukuba, Tsukuba, JAPAN

248-P Development of an RAPD-based SCAR marker linked with smut disease resistance in commercial sugarcane cultivars
Y. B. PAN (1), M. Khan (2), M. P. Grisham (1), J. Iqbal (2). (1) USDA ARS, SRU, Houma, LA, USA; (2) School of Biological Sciences, Lahore, PAKISTAN

249-P Identification of factors involved in foliar resistance to bacteria in potato
D. A. HALTERMAN (1), P. Basnal (2). (1) USDA ARS, Madison, WI, USA; (2) Madison Area Technical College, Madison, WI, USA

250-P Using decoys to expand the recognition specificity of a plant disease resistance protein
M. HELM, R. W. Innes. Indiana University, Bloomington, IN, USA

251-P Identification of major-gene resistance to Leptosphaeria maculans in winter canola cultivars and breeding lines
F. CEVALLOS (1), M. Stamm (2), J. P. Damicone (1). (1) Oklahoma State University, Stillwater, OK, USA; (2) Kansas State University, Manhattan, KS, USA

252-P Understanding the genetic control of quantitative resistance to yellow spot in wheat
E. DINGLASAN (1), D. Singh (1), I. Godwin (2), L. Hickey (1). (1) Queensland Alliance for Agriculture and Food Innovation, Brisbane, AUSTRALIA; (2) The University of Queensland, Brisbane, AUSTRALIA

253-P Quantitative analysis of wilt using time lapse videography
E. LARSON (1), Q. Jiang (2), M. K. Clayton (1), A. O. Charkowski (3). (1) University of Wisconsin-Madison, Madison, WI, USA; (2) Citi Bank, Madison, WI, USA; (3) Colorado State University, Fort Collins, CO, USA

254-P Genotypic and phenotypic evaluation of Pyrenophora tritici-repentis isolates for their race structure in South Dakota
S. ABDULLAH, S. Sehgal, K. D. Glover, S. Ali. South Dakota State University, Brookings, SD, USA

255-P Response of wheat cultivars to tan spot against race 1, 5, and unknown race isolates in South Dakota
S. ABDULLAH, S. Sehgal, K. D. Glover, S. Ali. South Dakota State University, Brookings, SD, USA

256-P High-resolution genetic dissection of two disease resistance genes in common bean cultivar Ouro Negro
G. Valentini (1), O. P. Hurtado-Gonzales (2), S. de Lima Castro (1), M. Gonçalves Vidigal (1), Q. Song (2), M. PASTOR-CORRALES (2). (1) Universidad Estadual de Maringá, Maringá, PR, BRAZIL; (2) Soybean Genomics & Improvement Lab, BARC-West, USDA ARS, Beltsville, MD, USA

257-P Identification of markers associated with race-specific resistance to Aphanomyces root rot in alfalfa
D. A. SAMAC (1), B. Bucciarelli (1), M. Dornbusch (1), M. Ghasemkhani (4), T. Kiritisits (5), E. Kjaer (6), D. Marčiulyniénė (7), L. McKinney (6), A. Plütra (7), L. G. Stener (8), V. Suchokas (7), L. Rodriguez-Saona (9), P. Bonello (10), M. Cleary (4), (1) D.B. Warrnell School of Forestry and Natural Resources, University of Georgia, Athens, GA, USA; (2) INRA, Ardon, Orléans Cedex, FRANCE; (3) Forest Research Institute Baden-Württemberg, Department Forest Protection, Freiburg, GERMANY; (4) Swedish University of Agricultural Sciences (SLU), Southern Swedish Forest Research Centre, Alnarp, SWEDEN; (5) University fur Bodenkultur (BOKU), Vienna, AUSTRIA; (6) Department of Geosciences and Natural Resource Management, University of Copenhagen, Copenhagen, DENMARK; (7) Lithuanian Research Centre for Agriculture and Forestry, Institute of Forestry, Girionys, Kaunas District, LITHUANIA; (8) The Forestry Research Institute of Sweden (SKOGFORSK), Svalöv, SWEDEN; (9) Department of Food Science and Technology, The Ohio State University, Columbus, OH, USA; (10) Department of Plant Pathology, The Ohio State University, Columbus, OH, USA

A. HATTORI (1), Y. Ishiga (2). (1) Graduate School of Life and Environmental Sciences, University of Tsukuba, Tsukuba, JAPAN; (2) University of Tsukuba, Tsukuba, JAPAN
258-P Development and evaluation of four molecular markers tightly linked to the Potato virus Y resistance gene $\text{Ry}_{90}$ in diploid potato populations

A. C. FULLADOLSA (1), S. H. Jansky (2), D. R. Smith (1), C. M. Abramczak (1), A. O. Charkowski (3). (1) University of Wisconsin-Madison, Madison, WI, USA; (2) USDA-ARS, University of Wisconsin-Madison, Madison, WI, USA; (3) Colorado State University, Fort Collins, CO, USA

259-P Development of KASP markers for the identification of Pea seed-borne mosaic virus pathotype P-1 resistant alleles of eIF4E in Pisum sativum

K. D. Swisher, L. D. PORTER. USDA ARS, Prosser, WA, USA

260-P Managing bacterial wilt disease of tomato in open field conditions by improving host resistance through transgenic approach

S. Kunwar (1), E. da Silva (2), F. B. Iriarte (3), L. Ritchie (2), D. Clark (2), J. H. Freeman (2), R. E. Stall (1), J. B. Jones (4), G. V. Minsavage Jr. (4), C. Zipfel (5), D. M. Horvath (6), M. Paret (7), Q. FAN (2). (1) University of Florida, Gainesville, FL, USA; (2) University of Florida, Quincy, FL, USA; (3) University of Florida - IFAS NFREC, Quincy, FL, USA; (4) Department of Plant Pathology, University of Florida, Gainesville, FL, USA; (5) The Sainsbury Laboratory, Norwich, UNITED KINGDOM; (6) Blades Foundation, Evanston, IL, USA; (7) North Florida Research and Education Center, University of Florida, Quincy, FL, USA

261-P Genomic approaches to dissecting Phytophthora crown and root rot resistance and applications to strawberry improvement

S. LEE (1), Y. Noh (1), J. A. Mangandi (2), S. Verma (1), V. Whitaker (1). (1) University of Florida, Wimauma, FL, USA; (2) Gulf Coast Research & Education Center, Wimauma, FL, USA

262-P QTL mapping and candidate gene discovery in potato for resistance to the Verticillium wilt pathogen Verticillium dahliae

A. KUMAR (1), S. H. Jansky (2), J. Endelman (1), D. A. Halterman (3). (1) University of Wisconsin-Madison, Madison, WI, USA; (2) USDA-ARS, University of Wisconsin-Madison, Madison, WI, USA; (3) USDA ARS, Madison, WI, USA

263-P Characterization of Verticillium dahliae disease reactions in lettuce differential cultivars

D. P. G. SHORT (1), K. D. Puri (1), G. V. Sandoya (2), I. Simko (3), R. J. Hayes (4,5), K. V. Subbarao (6). (1) University of California-Davis, Salinas, CA, USA; (2) University of Florida, Gainesville, Belle Glade, FL, USA; (3) USDA ARS, Crop Improvement and Protection Unit, Salinas, CA, USA; (4) USDA ARS, Corvallis, OR, USA; (5) USDA ARS, Forage Seed and Cereal Research Unit, Corvallis, OR, USA; (6) University of California-Davis, c/o U.S. Agricultural Research Station, Salinas, CA, USA

264-P Interactions between diverse Clavibacter michiganensis subsp. nebraskensis isolates and maize inbreds and hybrids influence severity of Goss's wilt


265-P Development of a sweet cherry pepper line with resistance to the southern root-knot nematode Meloidogyne incognita

W. B. RUTTER, S. Buckner, M. Farnham, R. Fery, C. Kousik. U.S. Vegetable Laboratory, USDA ARS, Charleston, SC, USA

266-P GBS-SNP-based linkage mapping and QTL associated with resistance to race 1 Fusarium wilt in Cucumis melo

W. P. WECHTER, S. Branham, A. Levi. USDA ARS, Charleston, SC, USA

267-P Gene expression profiling of resistant vs susceptible tomato (Solanum lycopersicum) cultivar after challenging with Ralstonia solanacearum

M. DASGUPTA (1), M. R. Sahoo (1), S. V. Ngachan (2). (1) University of Tennessee, Knoxville, TN, USA; (2) ICAR Research Complex for NEH Region, Meghalaya, INDIA

268-P Quantitative trait loci (QTL) conferring resistance in soybean to root rot caused by Pythium aopapillum

E. LERCH (1), N. Arritt (1), A. E. Dorrance (2), A. E. Robertson (3). (1) Iowa State University, Ames, IA, USA; (2) The Ohio State University, Wooster, OH, USA; (3) Iowa State University, Department of Plant Pathology, Ames, IA, USA

269-P Physiologic specialization of Puccinia hordei on barley in the United States from 2012 to 2016

M. ROUSE. USDA ARS Cereal Disease Laboratory, St. Paul, MN, USA

270-P The Colombian strategy against devastating coffee diseases: Preparation for coffee berry disease (Colletotrichum kahawae subsp. kahawae)

C. E. MALDONADO, L. Angel, A. L. Gaitan. CENICAFE, Colombia, Manizales, COLOMBIA

271-P Genetics behind avirulence: The identification of avr-factors in Magnaporthe oryzae

D. TATE, T. K. Mitchell. The Ohio State University, Columbus, OH, USA

272-P Identification of markers associated with resistance to Leptosphaeria maculans in a collection of Brassica napus plant introductions

S. M. MANSOURIPOUR, M. Rahman, L. E. del Rio Mendoza. North Dakota State University, Fargo, ND, USA
Host Resistance Screening

273-P Reaction of potato genotypes to infection with Tomato chlorosis virus (ToCV)
L. R. PINTO, D. Bampi, J. A. M. Rezende, A. Bergamin Filho. University of São Paulo - ESALQ, Piracicaba, BRAZIL

274-P Reaction of sweet potato genotypes to the root-knot nematode (Meloidogyne javanica)
A. FURTADO SILVEIRA MELLO, R. Souza, A. Macedo, D. Bicaia, A. Moita, R. Lemos, L. Fonseca, J. Pinheiro. EMARAPRA, Brasilia, BRAZIL

275-P Tomato spotted wilt virus (TSWV) on pepper seedlings (Capsicum annuum) in a breeding nursery and difference in susceptibility among breeding lines
B. S. KIM, S. H. Lee. Kyungpook National University, Daegu, REPUBLIC OF (SOUTH) KOREA

276-P Assessment of soybean breeding lines for resistance to Phomopsis seed decay from field trials in Stoneville, Mississippi
S. LI (1), J. R. Smith (2). (1) USDA ARS CCRU, Stoneville, MS, USA; (2) USDA ARS, Stoneville, MS, USA

277-P Characterization of black walnut genotypes for resistance to thousand cankers disease
E. LAURITZEN, C. Nischwitz. Utah State University, Logan, UT, USA

278-P Host resistance to Botrytis bunch rot in Vitis spp. and its correlation with Botrytis leaf spot
R. P. NAEGELE. USDA ARS, Parlier, CA, USA

279-P Egyptian Blumeria graminis f. sp. tritici virulence frequencies and powdery mildew resistance of Egyptian wheat cultivars
A. S. G. ABDEL-RHIM (1,2), H. Abd-Allah (2), M. Ismail (2), C. Cowger (3). (1) North Carolina State University, Raleigh, NC, USA; (2) Minia University, El-Minia, EGYPT; (3) USDA ARS, Department of Entomology & Plant Pathology, North Carolina State University, Raleigh, NC, USA

280-P Resistance in species of Cucurbitaceae to gummy stem blight caused by Stagonospora citrulli under field conditions
G. RENNBERGER, A. P. Keinath. Coastal Research and Education Center, Clemson University, Charleston, SC, USA

281-P Breeding of high quality Korean carrot lines resistant to root-knot nematodes
Y. H. KIM (1), E. Kim (2), Y. Seo (2), Y. S. Kim (3), Y. Park (3). (1) Seoul National University, Seoul, REPUBLIC OF (SOUTH) KOREA; (2) Department of Agricultural Biotechnology, Seoul National University, Seoul, REPUBLIC OF (SOUTH) KOREA; (3) KC Carrot Breeding Institute, Co. Ltd., Daegu, REPUBLIC OF (SOUTH) KOREA

282-P Foliar and tuber reactions of five fresh market potato cultivars with three Potato virus Y strains
D. A. INGLIS (1), B. Gunderson (1), A. Beissinger (2), A. V. Karasev (3). (1) Washington State University-Mount Vernon NWREC, Mount Vernon, WA, USA; (2) University of Idaho, Moscow, ID, USA

283-P Seasonal and potato cultivar effects on pathogenic Streptomyces spp.
K. NAHAR (1), C. Goyer (1), B. Zebarth (1), D. Burton (2), S. Whitney (1). (1) Agriculture and Agri-Food Canada, Fredericton, NB, CANADA; (2) Dalhousie University, Truro, NS, CANADA

284-P Interaction of onion cultivar and growth stages on incidence of Pantoea annanatis bulb infection
S. STUMPF (1), R. D. Gitaitis (1), T. W. Coolong (1), C. Riner (2), B. Dutta (1). (1) University of Georgia, Tifton, GA, USA; (2) University of Georgia, Lyons, GA, USA

285-P Evaluating host resistance to Macrophomina crown rot in strawberry
J. WINSLOW (1), M. Mazzola (2), G. J. Holmes (1), K. L. Ivors (1). (1) Strawberry Center, California Polytechnic State University, San Luis Obispo, CA, USA; (2) USDA ARS, Wenatchee, WA, USA

286-P Resistance of almond cultivars to Aspergillus flavus and A. parasiticus
J. Moral (1), R. Puckett (2), K. Tomari (3), A. Ortega-Beltran (4), T. M. Gradziel (5), T. J. MICHAILDIES (2). (1) University De Cordoba/University of California-Davis, Parlier, CA, USA; (2) University of California-Davis, Parlier, CA, USA; (3) Kearney Agricultural and Extension Center, Parlier, CA, USA; (4) International Institute of Tropical Agriculture, Ibadan, NIGERIA; (5) Department of Plant Sciences, University of California-Davis, Davis, CA, USA

287-P Kiwifruit susceptibility to Botrytis cinerea and Botrytis prunorum during fruit development in Chile
D. RIQUELME, H. Valdés, J. P. Zoffoli. Pontificia Universidad Católica de Chile, Santiago, CHILE

288-P Susceptibility of dry bean varieties to species of Fusarium and Rhizoctonia associated with root rot disease
A. O. ADESEMOYE (1), S. Kodati (1), M. Eskelson (1), R. M. Harveson (2). (1) University of Nebraska-Lincoln, North Platte, NE, USA; (2) University of Nebraska, Panhandle Research & Extension Center, Scottsbluff, NE, USA

289-P Resistance to cereal cyst nematode in spring wheat in southeastern Idaho
P. ENSAFI (1), M. T. Moll (2), J. M. Marshall (2). (1) University of Idaho, Aberdeen, ID, USA; (2) University of Idaho, Idaho Falls, ID, USA

290-P Rose rosette disease resistance field trials in north Texas
M. SHIRES (1), K. Ong (2), D. Byrne (1). (1) Texas A&M University, College Station, TX, USA; (2) Texas A&M University, AgriLife Extension Service, College Station, TX, USA

291-P Potential sources of resistance to Phytophthora crown rot in Cucurbita maxima and Cucurbita moschata
K. MANTOOTH (1), J. Ikard (2), M. K. Mandal (3), S. Kousik (2). (1) Clemson University, Coastal Research and
Integrated Pest Management

293-P Factors influencing the occurrence of foliar pathogens in commercial watermelon fields in South Carolina in 2015 and 2016
G. RENNBERGER (1), A. P. Keinath (1), P. Gerard (2), (1) Coastal Research and Education Center, Clemson University, Charleston, SC, USA; (2) Department of Mathematical Sciences, Clemson University, Clemson, SC, USA

294-P Evaluation of β-nicotinamide adenine dinucleotide for the potential to manage fungal and bacterial diseases on vegetable crops
S. ZHANG (1), S. Bibi (2), Z. Mou (3), (1) University of Florida, Homestead, FL, USA; (2) PMAS Arid Agriculture University, Rawalpindi, PAKISTAN; (3) University of Florida, Gainesville, FL, USA

295-P Seed treatments to eradicate Pyrenopeziza brassicae from infected mustard (Brassica juncea) seed
S. CARMODY, L. du Toit. Washington State University, Mount Vernon, WA, USA

296-P Non-target effects of horticultural and pest management practices in fall and winter on development of Exobasidium leaf and fruit spot of blueberry
H. SCHERM (1), R. M. Allen (2), R. J. Ingram (1), P. M. Brannen (1). (1) University of Georgia, Athens, GA, USA; (2) University of Georgia Extension, Alma, GA, USA

297-P Modelling daytime light integral and light quality effects to optimize suppression of powdery mildews by nighttime applications of UV and red light
A. Suthaparan (1), K. A. Solhaug (1), H. R. Gislerød (1), A. STENSVAND (1,2), D. M. Gadouy (3), A. Bierman (4), M. Rea (4). (1) Norwegian University of Life Sciences, Ås, NORWAY; (2) Norwegian Institute of Bioeconomy Research, As, NORWAY; (3) Cornell University, Geneva, NY, USA; (4) Lighting Research Center, Rensselaer Polytechnic Institute, Troy, NY, USA

298-P Effect of UV-C/dark treatment on bacterial and fungal microbiome of strawberry fruit
W. J. JANISIEWICZ (1), B. Evans (1), F. Takeda (1), W. M. Jurick II (2), P. Ramachandran (3), E. Reed (3), A. Ottesen (3). (1) USDA-ARS AFRES, Kearneysville, WV, USA; (2) USDA-ARS Food Quality Laboratory, Beltsville, MD, USA; (3) FDA, College Park, MD, USA

299-P Nighttime treatments of ultraviolet (UV) light targeting powdery mildews also suppress the two-spotted spider mite (Tetranychus urticae)
N. S. Johansen (1), B. A. Tadesse (1), A. Suthaparan (2), A. STENSVAND (1), P. J. From (2), D. M. Gadouy (3). (1) Norwegian Institute of Bioeconomy Research, Ås, NORWAY; (2) Norwegian University of Life Sciences, Ås, NORWAY; (3) Cornell University, Geneva, NY, USA

300-P Characterizing Colletotrichum orbiculare, the causal agent of cucurbit anthracnose, for fungicide efficacy and host susceptibility in North Carolina
N. NOEL, L. M. Quesada. North Carolina State University, Raleigh, NC, USA

301-P Control of root rot diseases of woody ornamentals using biorational products and fungicides
M. N. Kabir, P. Liyanapathirana, T. Simmons, F. BAYSAL-GUREL. Tennessee State University, McMinnville, TN, USA

302-P Management of Rhizoctonia diseases in sugar beet using an integrated approach
A. K. CHANDA (1), J. R. Brantner (2). (1) Department of Plant Pathology, University of Minnesota, Crookston, MN, USA; (2) University of Minnesota, Crookston, MN, USA

303-P Fungicides and cultivars can limit hop downy mildew (Pseudoperonospora humuli) in Michigan
D. S. HIGGINS (1), M. K. Hausbeck (2). (1) Michigan State University, Department of Plant, Soil, and Microbial Sciences, East Lansing, MI, USA; (2) Michigan State University, East Lansing, MI, USA

304-P Options for control of Fusarium wilt tropical race 4 in bananas
A. DRENTH, J. Henderson. University of Queensland, Brisbane, AUSTRALIA

305-P Progress in managing bacterial spot of cucurbits, caused by Xanthomonas cucurbitae
M. BABADOOST, S. Thapa, X. Zhang, S. Sulley. University of Illinois, Urbana, IL, USA

306-P Novel phytosanitary treatment of Xylella fastidiosa-infected pecan scions using carbon nanotubes
A. HILTON (1), M. Handiseni (1), W. Choi (1), X. Wang (2), L. J. Grauke (2), C. Yu (1), Y. K. Jo (1). (1) Texas A&M University, College Station, TX, USA; (2) USDA-ARS Pecan Breeding and Germplasm Repository, Somerville, TX, USA

307-P Integration of biopesticides, a SAR inducer, and copper for managing bacterial spot of tomato; a long-term evaluation in production areas in Florida
M. PARET (1,2), P. D. Roberts (3), G. E. Vallad (4), J. H. Freeman (5), S. M. Olson (1), L. Ritchie (5), D. Clark (5). (1) North Florida Research and Education Center, University of Florida, Quincy, FL, USA; (2) University of Florida, Department of Plant Pathology, Gainesville, FL, USA; (3) University of Florida, Immokalee, FL, USA; (4) Gulf Coast Research and Education Center, University of Florida, Wimauma, FL, USA; (5) University of Florida, Quincy, FL, USA

308-P Survey and field efficacy trials to manage bacterial spot of fresh market tomatoes in North Carolina
F. LOUWS (1), P. Adhikari (1), T. B. Adhikari (2), D. Panthee (3), I. Meadows (3). (1) North Carolina State
Molecular Plant-Microbe Interactions

309-P Cloning of a chitinase gene from *Trichoderma asperellum* and its efficacy against Alternaria leaf spot
R. T. P. Pandian, M. Raja, A. Kumar, P. SHARMA, ICAR-Indian Agricultural Research Institute, New Delhi, INDIA

310-P The interaction between the Lon protease and other major regulatory systems in *Erwinia amylovora*
J. H. LEE, Y. Zhao, University of Illinois at Urbana-Champaign, Urbana, IL, USA

311-P *Macrophomina phaseolina* promotes charcoal rot susceptibility in sorghum through induced host cell wall-degrading enzymes (CWDES)
A. Y. BANDARA, D. K. Weerarathna, S. Liu, C. R. Little. Kansas State University, Manhattan, KS, USA

312-P Dynamics of host glutathione and glutathione-related enzymes in the *Macrophomina phaseolina*-sorghum *bicolor* interaction
A. Y. BANDARA, D. K. Weerarathna, S. Liu, C. R. Little. Kansas State University, Manhattan, KS, USA

313-P The necrotrophic fungus *Macrophomina phaseolina* induces strong oxidative stress in charcoal rot susceptible sorghum genotypes
A. Y. BANDARA, D. K. Weerarathna, S. Liu, C. R. Little. Kansas State University, Manhattan, KS, USA

314-P Development of antisense antimicrobials for fire blight management
Q. ZENG, Department of Plant Pathology & Ecology, The Connecticut Agricultural Experiment Station, New Haven, CT, USA

315-P A multi-resistance plasmid transfers at high frequencies among *Pseudomonas syringae*
L. BARDAJI, M. Echeverria, J. Murillo. Universidad Pública de Navarra, Pamplona, SPAIN

316-P Direct evidence of *CsLOB1* being the susceptibility gene of citrus canker caused by *Xanthomonas citri*
S. DUAN, University of Florida, Lake Alfred, FL, USA

317-P Does *Salmonella enterica* translocate type III effectors into plant cells?
L. CHALUPOWICZ (1), G. Nissan (2), M. T. Brandl (3), M. McClelland (4), G. Sessa (2), I. Barash (2), S. Manulis-Sasso (1). (1) ARO, The Volcani Center, Rishon LeZion, ISRAEL; (2) Tel Aviv University, Tel Aviv, ISRAEL; (3) Produce Safety and Microbiology Research Unit, Albany, CA, USA; (4) University of California, Irvine, CA, USA

318-P Contribution of *dspE* and *eop1* to *Erwinia tracheiphila* virulence
O. I. OLAKUNLE, M. L. Gleason, G. A. Beattie. Iowa State University, Ames, IA, USA

319-P Identification and characterization of plasmids from *Xylella fastidiosa* using next-generation sequencing analyses
C. VAN HORN (1), F. Wu (2), Z. Zheng (2), J. Chen (1). (1) USDA-ARS-PWA, Parlier, CA, USA; (2) South China Agricultural University, Guangzhou, CHINA

320-P Role of cytosine-5 DNA methyltransferases in morphogenesis and virulence of phytopathogen *Cryphonectria parasitica*
J. Bal, Y. H. Ko, K. K. So, D. H. KIM. Chonbuk National University, Jeonju, REPUBLIC OF (SOUTH) KOREA

321-P Characterization of a putative tunicamycin gene cluster in *Rathayibacter toxisus*
M. TANCOS, A. Sechler, M. B. McMahon, D. Luster, W. Schneider, E. E. Rogers. USDA ARS FDWSRU, Fort Detrick, MD, USA

322-P Characterization of effectors from *Fusarium graminearum*
G. HAO, M. Vaughan, S. McCormick, A. Kelly, T. J. Ward. USDA/ARS/NCAUR, Peoria, IL, USA

323-P *TsnRNA-IIIb* induces citrus dwarfing and alters the hormone profile of the trees

324-P Influence of *Xylella fastidiosa* cold shock proteins on pathogenesis in grapevine
L. BURBANK. USDA-ARS, Parlier, CA, USA

325-P Analysis of a virulence gene family of *Pyricularia* from cereal and grass hosts
D. J. EBBOLE (1), Y. Han (1,2), M. L. Chen (1,2), W. Zheng (1,2), X. Wu (1,2), G. Lu (2), Z. H. Wang (2). (1) Texas A&M University, College Station, TX, USA; (2) Fujian Agriculture and Forestry University, Fuzhou, CHINA

326-P *In silico* predictive studies translate into an understanding of complex molecular interactions between pospiviroid pathogens and their tomato host
R. W. HAMMOND, N. Kovalskaya, N. Kreger, K. Avina-Padilla. USDA ARS, Molecular Plant Pathology Laboratory, Beltsville, MD, USA

327-P A five amino acid motif in the *Potato leafroll virus* minor capsid protein regulates local virus movement
Y. XU, G. Stewart. Cornell University, Ithaca, NY, USA

328-P TAL effector *PthA4* is required for the hypersensitive response by *Xanthomonas citri* in kumquat
D. TEPER, N. Wang. University of Florida, Lake Alfred, FL, USA

329-P Generating canker-resistant citrus varieties by modification of the citrus canker susceptibility gene *CsLOB1* via Cas9/sgRNA technology
H. JIA, Y. Zhang, V. Orlovic, J. Xu, N. Wang. Citrus Research and Education Center, University of Florida, Lake Alfred, FL, USA
330-P Characterization of a 21 member effector gene family from the rice blast fungus
M. L. CHEN (1,2), Y. Han (1,2), W. Zheng (1,2), X. Wu (1,2), G. Lu (2), Z. Wang (2), D. J. Ebbole (1), (1) Texas A&M University, College Station, TX, USA; (2) Fujian Agriculture and Forestry University, Fuzhou, CHINA

331-P Two citrus viruses encode silencing suppressors to suppress posttranscriptional gene silencing
S. H. TAN, S. Bodaghi, S. Abuhajar, G. Vidalakis. University of California-Riverside, Riverside, CA, USA

332-P *Pseudomonas syringae* pv. *tomato* oxidative stress transcription factor OxyR and sigma factor AlgU play an important role for virulence
Y. ISHIGA (1), T. Ishiga (1), Y. Ichinose (2). (1) University of Tsukuba, Tsukuba, JAPAN; (2) Okayama University, Okayama, JAPAN

333-P AefR transcription factor negatively regulates the virulence of *Pseudomonas syringae* pv. *tomato* DC3000
T. ISHIGA (1), Y. Ishiga (1), T. Kiyokawa (1), N. Maruyama (1), S. Betseyaku (1), Y. Ichinose (2), N. Nomura (1). (1) University of Tsukuba, Tsukuba, JAPAN; (2) Okayama University, Okayama, JAPAN

334-P *FRN1*, a gene encoding putative GPCR protein, is critical for ear rot and fumonisin biosynthesis in maize pathogen *Fusarium verticillioides*
H. YAN (1), M. Kim (1), J. Huang (2), W. B. Shim (1). (1) Texas A&M University, College Station, TX, USA; (2) Plant Protection College, Fujian Agriculture & Forestry University, Fuzhou, CHINA

335-P Characterization of two major facilitator superfamily (MFS) transporters in multi-drug resistance in the citrus fungal pathogen *Alternaria alternata*
K. R. CHUNG. National Chung-Hsing University, Taichung, TAIWAN

336-P Chromosomally encoded peroxiredoxin CLIBASIA_00485 of ‘Ca. Liberibacter asiaticus’ is a virulence factor needed for survival and colonization of citrus

337-P *Verticillium dahliae* LHS1 is required for virulence and expression of extracellular enzymes involved in cell-wall degradation
W. Cui, X. Dai, W. GUO. Institute of Food Science and Technology, Chinese Academy of Agricultural Sciences, Beijing, CHINA

338-P The involvement of LsGRP1 in salicylic acid-related disease resistance and photosynthesis
C. A. Chen, C. H. Lin, C. Y. CHEN. National Taiwan University, Taipei, TAIWAN

339-P Stringent response regulator DksA positively regulates virulence traits of *Xanthomonas citri*
Y. ZHANG, N. Wang. University of Florida, Lake Alfred, FL, USA

340-P Genetic analysis of motility and phytohormone biosynthesis of an endophyical bacterium from *Rhizoctonia solani*


341-P Screening of secreted in xylem (SIX) genes in *Fusarium* wilt pathogens of palms
S. PONUKUMATI (1), M. L. Elliott (1), J. A. Rollins (2), B. Desjardin (1). (1) University of Florida, Fort Lauderdale, FL, USA; (2) University of Florida, Gainesville, FL, USA

342-P Identification and characterization of *Fusarium graminearum* pathogenesis genes
M. SALAZAR, F. Kolb, S. X. Mideros Mora. (1) University of Illinois at Urbana-Champaign, Urbana, IL, USA

343-P Hormone cross-talk in the interaction between ‘Candidatus Liberibacter asiaticus’ and citrus rootstock
J. WU (1), F. Alferz (2), E. G. Johnson (1), J. H. Graham (1). (1) University of Florida, Lake Alfred, FL, USA; (2) University of Florida, Immokalee, FL, USA

344-P Investigating sRNA regulation of carbohydrate utilization in *Erwinia amylovora*
E. SWEENEY. Michigan State University, East Lansing, MI, USA

345-P A mass spectrometry-based approach to quantitatively measure translocation of multiple type III secretion system effectors
D. GILLIS. University of Georgia, Department of Plant Pathology. Athens, GA, USA

346-P Differential gene expression within *Meloidogyne incognita*: Response to exposure to sub-lethal doses of post-plant nematicides
C. WRAM (1,2), A. Peetz (2), I. A. Zasada (3). (1) Oregon State University, Corvallis, OR, USA; (2) USDA ARS, Horticultural Crops Research Unit, Corvallis, OR, USA; (3) USDA ARS, Corvallis, OR, USA

347-P Evolutionary and biological basis of *Xanthomonas* systemic pathogenesis of plants
J. M. JACOBS (1), T. Vancheva (2), A. Cerutti (3), J. M. Lang (1), C. Pesce (4), L. Noel (3), C. Allen (5), J. E. Leach (1), B. Szurek (6), S. Cunnac (6), C. G. Bragard (2), R. Koebnik (6). (1) Colorado State University, Fort Collins, CO, USA; (2) Universite Catholique de Louvain, Louvain-la-Neuve, BELGIUM; (3) LIPM Laboratoire des Interactions Plantes Micro Organismes, UMR CNRS/INRA 2594/441, Castanet-Tolosan, FRANCE; (4) University of New Hampshire, Durham, NH, USA; (5) University of Wisconsin, Madison, WI, USA; (6) Institut de Recherche pour le Developpement, Montpellier, FRANCE

348-P Live visualization of type III effector activity in stomata and mesophyll cells by *Xanthomonas translucens* during leaf infection
J. M. JACOBS (1), C. Pesce (2), T. Vancheva (3), F. Bini (4), J. Burchacas (5), G. Hensel (4), I. Otto (4), B. Szurek (5), J. Kumlehn (4), C. G. Bragard (3), R. Koebnik (5). (1) Colorado State University, Fort Collins, CO, USA; (2) University of New Hampshire, Durham, NH, USA; (3) Universite Catholique de Louvain, Louvain-la-Neuve, BELGIUM; (4) Institute for Plant Genetics & Crop Plant Research, Gatersleben, GERMANY; (5) Institut de Recherche pour le Developpement, Montpellier, FRANCE
349-P  Evolution of avirulence genes in the wheat blast pathogen *Pyricularia graminis-tritici*  
University of Sao Paulo State, Ilha Solteira, SP, BRAZIL

350-P  AM-toxin and virulence in *Alternaria tenuissima* isolated from apple moldy core  
K. ELFAR, B. A. Latorre, J. P. Zoffoli. Pontificia  
Universidad Católica de Chile, Santiago, CHILE

351-P  Small RNA-mediated gene regulation of pathogen and host during wheat stripe rust infection  
N. A. MUETH (1), S. H. Hulbert (2). (1) Washington State University, Pullman, WA, USA; (2) Department of Plant Pathology, Washington State University, Pullman, WA, USA

352-P  Stop and smell the fungi: Uncovering overlooked roles of volatile metabolites emitted by *Verticillium* species in plant growth and development  
N. Li, S. Kang. The Pennsylvania State University, University Park, PA, USA

353-P  Multiple roles of *Wheat streak mosaic virus* coat protein in wheat curl mite transmission, disease modulation, and host range extension  
S. TATINENI, A. J. McMechan, G. L. Hein. USDA ARS, University of Nebraska-Lincoln, Lincoln, NE, USA

354-P  FvLcp1, a novel LysM/chitin-binding protein, is important for ear rot virulence and fumonisin biosynthesis in *Fusarium verticillioides*  
H. Zhang (1), M. Kim (1), J. Huang (2), W. B. SHIM (1).  
(1) Texas A&M University, College Station, TX, USA; (2) Plant Protection College, Fujian Agriculture & Forestry University, Fuzhou, CHINA

355-P  Development of a virulence model system to assay virulence in *Chromobacterium vaccinii*  
E. WIESNER, J. Park, G. Ebadzadsahrai, A. Harrison, S. Soby. Midwestern University, Glendale, AZ, USA

356-P  Virulence factors regulated by quoruming sensing in *Chromobacterium vaccinii*  
J. PARK, E. Wiesner, A. Harrison, G. Ebadzadsahrai, S. Soby. Midwestern University, Glendale, AZ, USA

357-P  The type III effector AvrBst enhances *Xanthomonas perforans* fitness in tomato  
P. ABRAHAMIAN (1,2), S. Timilsina (1,2), G. V. Minsavage Jr. (2), N. Potnis (3), E. M. Goss (2), J. B. Jones (2), G. E. Vallad (1,2). (1) Gulf Coast Research Laboratory, University of Southern Mississippi, St. George Island, FL, USA; (2) University of Florida, Gainesville, FL, USA; (3) Department of Plant Pathology, University of Florida, Gainesville, FL, USA; (4) Department of Entomology and Plant Pathology, University of Florida, Wimauma, FL, USA; (5) Department of Chemistry, Physics and Geology, Winthrop University, Rock Hill, SC, USA

358-P  *Panicum mosaic virus* modulates reactive oxygen species homeostasis in *Bromelaidium distachyon*  
(1) Texas University A&M AgriLife Research & Extension Center, Weslaco, TX, USA; (2) Chemistry Unit, Center of Medical, Agricultural, and Veterinary Entomology, USDA, Gainesville, TX, USA; (3) School of Biological Sciences, Illinois State University, Normal, IL, USA; (4) Department of Plant Pathology and Microbiology, Texas A&M University, College Station, TX, USA

359-P  A novel type III Xop effector in *Xanthomonas cynarum* associated with rapid cell death  
S. Kara (1), S. TIMILSINA (2), M. A. Jacques (3), N. Potnis (4), G. E. Vallad (5), M. Fischer-Le Saux (3), J. C. Hulbert (6), G. V. Minsavage Jr. (2), J. B. Jones (2). (1) University of Florida, Gainesville, FL, USA; (2) Department of Plant Pathology, University of Florida, Gainesville, FL, USA; (3) INRA UMR PAVE, Beaouceu Cedex, FRANCE; (4) Department of Entomology and Plant Pathology, Auburn University, Auburn, AL, USA; (5) Gulf Coast Research and Education Center, University of Florida, Wimauma, FL, USA; (6) Department of Chemistry, Physics and Geology, Winthrop University, Rock Hill, SC, USA

360-P  Pump up the virulence: RND efflux pumps in *Pseudomonas syringae*  
N. ECKSHTAI-LEVI (1), B. Kvitko (2), B. A. Vinatzer (1). (1) PPWS Department, Virginia Tech, Blacksburg, VA, USA; (2) University of Georgia, Athens, GA, USA

361-P  Transcriptomic profiling of watermelon-powdery mildew (*Podosphaera xanthii*) interactions  
M. K. MANDAL (1), S. Haktan (2), C. Kousik (3). (1) ORISE participant, U.S. Vegetable Laboratory, USDA ARS, Charleston, SC, USA; (2) Virginia Tech, Blacksburg, VA, USA; (3) U.S. Vegetable Laboratory, USDA ARS, Charleston, SC, USA

362-P  Influence of the P6 effector protein of *Cauliflower mosaic virus* (*CaMV*) on the expression and subcellular localization of the *CaMV* movement protein  
J. E. Schoelz, M. ADHAB. University of Missouri, Columbia, MO, USA

363-P  Cofactor engineering as a pathogenesis strategy: A *Xanthomonas* secreted effector modifies NAD in planta  
T. Shidore (1), J. Long (2), C. Broeckling (2), J. Kirkwood (2), J. E. Leach (2), L. R. TRIPLETT (1). (1) Connecticut Agricultural Experiment Station, New Haven, CT, USA; (2) Colorado State University, Fort Collins, CO, USA

364-P  Identifying the host targets of rice blast effector proteins using proximity-dependent biotin labelling  
K. HAYDON, A. Rogers, M. Egan. University of Arkansas, Fayetteville, AR, USA

365-P  Identification of phloem specific translatome alterations in response to *Tobacco mosaic virus* infection  
T. COLLUM (1), J. N. Culver (1,2). (1) Institute for Bioscience and Biotechnology Research, College Park, MD, USA; (2) Department of Plant Science and Landscape Architecture, University of Maryland, College Park, MD, USA

366-P  Transcriptional regulation in geminiviruses  
J. GUERRERO, G. Sunter. University of Texas-San Antonio, San Antonio, TX, USA
367-P Controlling Sclerotinia stem rot using gene silencing
M. MCCAGHEY, A. Ranjan, J. Kurczewski, M. Kabbage, D. L. Smith. University of Wisconsin, Madison, WI, USA

368-P Functional characterization of potential Sclerotinia sclerotiorum candidate virulence genes on canola
K. CHITTTEM, L. E. del Rio Mendoza. North Dakota State University, Fargo, ND, USA

369-P Interplay of ascorbate glutathione cycle and redox signaling in host resistance of taro-Phytophthora interaction
M. R. SAHOO (1), M. Dasgupta (1), N. Prakash (2), S. V. Ngachan (3). (1) University of Tennessee, Knoxville, TN, USA; (2) ICAR Research Complex for NEH Region, Imphal, INDIA; (3) ICAR Research Complex for NEH Region, Meghalaya, INDIA

370-P Methodology for profiling of phloem translatomes in Prunus domestica L. in response to virus infection
T. COLLUM (1), E. Lutton (2), A. L. Stone (3), D. Sherman (3), W. Schneider (3), C. D. Dardick (2), J. N. Culver (4). (1) Institute for Bioscience and Biotechnology Research, College Park, MD, USA; (2) Appalachian Fruit Research Station, USDA ARS, Kearneysville, WV, USA; (3) USDA ARS FDWSRU, Fort Detrick, MD, USA; (4) Department of Plant Science and Landscape Architecture University of Maryland-College Park, College Park, MD, USA

371-P Tomato yellow leaf curl virus C4 protein is a determinant of disease phenotype in tomato
C. PADMANABHAN (1), Y. Zheng (2), M. Shaminuzzaman (1), Z. Fei (2), K. S. Ling (1). (1) USDA-ARS, Charleston, SC, USA; (2) Boyce Thompson Institute, Ithaca, NY, USA

372-P Exploring the trans-acting short-interfering RNAs (ta-siRNAs) technology for virus control in plants
C. PADMANABHAN (1), Y. Zheng (2), M. Shaminuzzaman (1), Z. Fei (2), K. S. Ling (1). (1) USDA-ARS, Charleston, SC, USA; (2) Boyce Thompson Institute, Ithaca, NY, USA

373-P Functional characterization of the triple gene block 1 (TGB1) gene of Pepino mosaic virus in tomato
C. PADMANABHAN (1), Y. Zheng (2), M. Shaminuzzaman (1), Z. Fei (2), K. S. Ling (1). (1) USDA-ARS, Charleston, SC, USA; (2) Boyce Thompson Institute, Ithaca, NY, USA

374-P Towards the control of ‘Ca. Liberibacter asiaticus’ (Las) by interfering with lytic phage repressors

375-P C-di-GMP regulates pectate lyase activity through the H-NS-rsmB-Rma pathway in the soft rot bacterial pathogen Dickeya dadantii
X. YUAN (1,2), F. Tian (2,3), G. Severin (4), C. Waters (4), F. Liu (1), C. H. Yang (2). (1) Institute of Plant Protection, Jiangsu Academy of Agricultural Sciences, Nanjing, CHINA; (2) Department of Biological Sciences, University of Wisconsin-Milwaukee, Milwaukee, WI, USA; (3) Institute of Plant Protection, Chinese Academy of Agricultural Sciences, Beijing, CHINA; (4) Department of Microbiology and Molecular Genetics, Michigan State University, East Lansing, MI, USA

376-P Transcriptome changes in the whitefly B. tabaci in response to feeding on Cucurbit yellow stunting disorder virus infected melon
N. Kaur (1), W. Chen (2), Z. Fei (2), W. M. WINTERMANTEL (1). (1) USDA-ARS, Salinas, CA, USA; (2) Boyce Thompson Institute, Ithaca, NY, USA

377-P Transcriptional profiling and phenotypic analysis to identify genes involved in stress response and conidiogenesis in Fusarium graminearum
C. Blaschke, Z. O. Bilton, K. Lambert, M. Rothrock, R. Manspeaker, J. FLAHERTY. Coker College, Hartsville, SC, USA

378-P Taxonomic reorganization of the family Endornaviridae
S. SABANADZOVIC (1), R. A. Valverde (2), M. Khalifa (3), M. N. Pearson (4), R. Okada (5), N. Aboughanem-Sabanadzovic (6). (1) Department of Biochemistry, Molecular Biology, Entomology and Plant Pathology, Mississippi State University, Mississippi State, MS, USA; (2) Department of Plant Pathology and Crop Physiology, Louisiana State University AgCenter, Baton Rouge, LA, USA; (3) School of Biological Sciences, The University of Auckland, Auckland, NEW ZEALAND; (4) University of Auckland, Auckland, NEW ZEALAND; (5) Faculty of Agriculture, Tokyo University of Agriculture and Technology, Tokyo, JAPAN; (6) Institute for Genomics, Biocomputing and Biotechnology, Mississippi State University, Mississippi State, MS, USA

379-P Influence of reactive oxygen species on the Rcs phosphorelay and its relationship to a large RTX toxin in Pantoaea stewartii
P. VIRAVATHANA, M. C. Roper. University of California-Riverside, Riverside, CA, USA

380-P A role for Erwinia amylovora elongation factor P in fire blight disease development
S. Klee (1), I. Mostafa (2), S. Chen (3), C. Dufresne (4), B. L. Lehman (5), J. P. Sinn (1), K. A. Peter (5), T. W. MCNEILLIS (1). (1) Pennsylvania State University, University Park, PA, USA; (2) Zagazig University, Zagazig, EGYPT; (3) University of Florida, Gainesville, FL, USA; (4) Thermo Fisher Scientific, West Palm Beach, FL, USA; (5) Pennsylvania State University, Biglerville, PA, USA

381-P Two class I hydrophobins, TvHyd1 and TvHyd2, from Trichoderma viride
J. TAYLOR (1), B. A. Horwitz (2). (1) Texas A&M University, College Station, TX, USA; (2) Israel Institute of Technology, Haifa, ISRAEL

382-P A coin with two sides: Probing non-pathogenic versus pathogenic interactions using the Fusarium oxysporum-Arabidopsis thaliana pathosystem
K. VESCIO, L. Guo, L. J. Ma. University of Massachusetts, Amherst, MA, USA
383-P Functional characterization of ubiquitin carboxyl-terminal hydrolase gene **Muop1** in *Magnaaporthe oryzae*
D. CHEN, X. Yang, Z. Zhao, G. Lu. Fujian Agriculture and Forestry University, Fuzhou, CHINA

384-P Further characterization of OsSULTR3:6 the first susceptibility gene identified for bacterial leaf streak of rice
(1) Cornell University, Ithaca, NY, USA; (2) University of Minnesota, St. Paul, MN, USA; (3) University of Buenos Aires, Buenos Aires, ARGENTINA; (4) Cornell University Plant Transformation Facility, Ithaca, NY, USA

385-P Effector repertoire of the citrus fungal pathogen *Colletotrichum acutatum*
V. Candian (1), L. CANO (2), D. Oppelaar (3). (1) University of Torino, Department of Agricultural Food Science, Grugliasco, ITALY; (2) University of Florida, IFAS, Department of Plant Pathology, Indian River Research and Education Center, Fort Pierce, FL, USA; (3) Wageningen University, Wageningen, NETHERLANDS

**Mycology**

386-P Effect of *Phymatotrichopsis* root rot disease on alfalfa root morphology and forage quality
C. MATTUPALLI, S. Kwon, J. K. Rogers, C. A. Young. The Samuel Roberts Noble Foundation, Ardmore, OK, USA

387-P Infection rate by *Fusarium proliferatum* in aerial garlic bulbils is reduced compared to rate in seed cloves when both originate from infected bulbs
F. M. DUGAN, S. Lupien, B. Hellier. USDA ARS WRPIS, Pullman, WA, USA

388-P Disease interaction of late leaf spot and white mold on peanut
M. MUNIR (1), D. J. Anco (2). (1) Clemson University, Clemson, SC, USA; (2) Clemson University Blackville, SC, USA

389-P Multivariate analysis of fungal communities associated with diseased winter squash in western Oregon
H. RIVEDAL, A. G. Stone, P. Severns, K. B. Johnson. Oregon State University, Corvallis, OR, USA

390-P *Armillaria altimontana* is not associated with damage to western white pine (*Pinus monticola*) planted in northern Idaho
J. W. Hanna (1), M. V. Warwell (1), G. I. McDonald (1), M. S. Kim (2), B. M. Lalande (3), J. E. STEWART (3), N. B. Klopfenstein (1). (1) Rocky Mountain Research Station, USDA Forest Service, Moscow, ID, USA; (2) Kookmin University, Seoul, REPUBLIC OF (SOUTH) KOREA; (3) Colorado State University, Fort Collins, CO, USA

391-P Influence of temperature and moisture on germination of *Cercospora kaki*, causal agent of persimmon angular leaf spot
R. FERNANDES ALVES, M. Bellato Spósito. University of São Paulo, Piracicaba, BRAZIL

392-P Phylogeny of Northern Hemisphere *Armillaria* and *Desarmillaria*: Neighbor-net and Bayesian analyses of translation elongation factor 1-α gene sequences
M. S. KIM (1), J. E. Stewart (2), J. W. Hanna (3), N. B. Klopfenstein (3). (1) Kookmin University, Seoul, REPUBLIC OF (SOUTH) KOREA; (2) Colorado State University, Fort Collins, CO, USA; (3) Rocky Mountain Research Station, USDA Forest Service, Moscow, ID, USA

393-P Microfungi associated with diseases on *Theobroma cacao* L. in Merida state, Venezuela
S. MOHALI-CASTILLO (1), J. E. Stewart (2). (1) Universidad de Los Andes. Facultad de Ciencias Forestales y Ambientales, Merida, VENEZUELA; (2) Colorado State University, Fort Collins, CO, USA

394-P Effects of soil conditions on root rot of soybean caused by *Fusarium graminearum*
D. R. CRUZ, D. A. Mayfield, G. P. Munkvold, L. F. S. Leandro. Iowa State University, Ames, IA, USA

395-P The effect of temperature and wounding on resistance of ornamental grasses to *Sclerotinia sclerotiorum*
M. A. GRABOWSKI (1), D. K. Malvick (2). (1) University of Minnesota Extension, Andover, MN, USA; (2) University of Minnesota, St. Paul, MN, USA

396-P Distribution of AM fungi in coal mine soils associated with four forest tree species of North Telangana region
S. PODETI. Department of Biotechnology, Warangal, INDIA

397-P *Alternaria* species causing moldy core of apple in Chile
K. ELFAR, B. A. Lazore, J. P. Zoffoli. Pontificia Universidad Católica de Chile, Santiago, CHILE

398-P Transmission of mycoviruses of *R. solani* and effects on fungal growth
T. J. STETINA, I. E. Tzanetakis. University of Arkansas, Fayetteville, AR, USA

399-P Isolation of *Diaporthe longicolla* from asymptomatic sunflower root
A. ADHIKARI, T. Olson, B. Kontz, F. M. Mathew. South Dakota State University, Brookings, SD, USA

400-P Discovery of multiple sexual cycles in a rust fungus alternating between *Berberis fendleri* and *Elymus glaucus*
Y. JIN (1), G. Cisar (2). (1) USDA-ARS Cereal Disease Laboratory, St. Paul, MN, USA; (2) Cornell University, Loveland, CO, USA

401-P Interceptions of fungal pathogens from grass seed imported to Oregon
J. J. QIU. USDA, Animal and Plant Health Inspection Service, Plant Protection and Quarantine, Portland, OR, USA

**Nematology**

402-P Species and population densities of stubby root nematodes from multiple states in the United States
(4), W. Ye (5), P. A. Agudelo (6), W. T. Crow (7), S. L. Haef (8). (1) North Dakota State University, Department of Plant Pathology, Fargo, ND, USA; (2) USDA-ARS, Aberdeen, ID, USA; (3) Oregon State University, Herriman Agricultural Research & Extension Center, Herriman, OR, USA; (4) USDA-ARS, Prosser, WA, USA; (5) North Carolina Department of Agriculture & Consumer Services, Raleigh, NC, USA; (6) Clemson University, Plant and Environmental Sciences Department, Clemson, SC, USA; (7) University of Florida, Entomology and Nematology Department, Gainesville, FL, USA; (8) University of Idaho, Parma Research and Extension Center, Parma, ID, USA

403-P Changes in vertical distribution of *Pratylenchus crenatus* associated with corn in Ohio
A. C. M. SIMON (1), T. L. Niblack (1), R. Lewandowski (2), P. A. Paul (3). (1) The Ohio State University, Columbus, OH, USA; (2) Ohio State University Extension, Athens, OH, USA; (3) Ohio State University, Ohio Agricultural Research and Development Center, Department of Plant Pathology, Wooster, OH, USA

404-P Response of cotton cultivars with varying levels of resistance to *Meloidogyne incognita* to irrigation
J. E. WOODWARD (1), R. Roper (2), T. Wheeler (3). (1) Texas A&M University AgriLife Extension Service, Lubbock, TX, USA; (2) Texas Tech University, Lubbock, TX, USA; (3) Texas A&M University AgriLife Research, Lubbock, TX, USA

405-P Evaluating fertilizer effect on the interaction between *Fusarium proliferatum* and soybean cyst nematode on soybean
P. N. OKELLO (1), S. Osborne (2), J. Kleinjan (1), F. M. Mathew (1). (1) South Dakota State University, Brookings, SD, USA; (2) USDA ARS, Brookings, SD, USA

406-P Association mapping of resistance to *Heterodera glycines* within the USDA core collection of common bean
S. JAIN (1), S. Poromarto (2), J. Osorno (3), B. D. Nelson (4). (1) North Dakota State University, Fargo, ND, USA; (2) Agrotechnology, Sebelas Maret University, Surakarta, INDONESIA; (3) Plant Sciences 7670, North Dakota State University, Fargo, ND, USA; (4) Plant Pathology 7660, North Dakota State University, Fargo, ND, USA

**New and Emerging Diseases**

407-P Characterization of a new tymovirus from Ecuador
K. GREEN (1), D. S. Mollov (2), D. F. Quito-Avila (3), A. V. Karasev (1). (1) University of Idaho, Moscow, ID, USA; (2) USDA, Beltsville, MD, USA; (3) Prometeo, CIBE-ESPOL, Guayaquil, ECUADOR

408-P Complete nucleotide sequence and genome organization of a novel filamentous virus from alfalfa (*Medicago sativa*)
L. G. NEMCHINOV (1), S. Grinstead (2), D. S. Mollov (3). (1) USDA ARS MPPL, Beltsville, MD, USA; (2) USDA ARS-NGLRL, Beltsville, MD, USA; (3) USDA, Beltsville, MD, USA

409-P A new virus complex in babaco (*Carica pentagona*) shows evolutionary relationships with two viruses involved in meleira disease of papaya (*C. papaya*)
J. F. Cornejo (1), R. A. Alvarez-Quinto (2,3), D. QUITO-AVILA (4,5). (1) Escuela Superior Politecnica del Litoral, Guayaquil, ECUADOR; (2) CIBE-ESPOL, Guayaquil, ECUADOR; (3) Centro de Investigaciones Biotecnologicas del Ecuador, Guayaquil, ECUADOR; (4) Escuela Superior Politecnica del Litoral, Facultad Ciencias de la Vida, Guayaquil, ECUADOR; (5) Escuela Superior Politecnica del Litoral, CIBE-ESPOL, Guayaquil, ECUADOR

410-P Five *Fusarium* species associated with root rot and sudden death of industrial hemp in Nevada
J. Schoener, R. Wilhelm, R. Rawson, P. Schmitz, S. WANG. Nevada Department of Agriculture, Sparks, NV, USA

411-P First detection for *Fusarium oxysporum* and *F. solani* causing wilt of medical marijuana plants in Nevada
J. Schoener, R. Wilhelm, R. Rawson, P. Schmitz, S. WANG. Nevada Department of Agriculture, Sparks, NV, USA

412-P The blueberry stem and twig blight complex in New Jersey
J. J. POLASHOCK. USDA ARS, Chatstown, NJ, USA

413-P New virus from the family *Tombusviridae* infecting sugarcane
M. N. Tahir (1), S. Grinstead (2), D. S. MOLLOV (3). (1) USDA ARS, Beltsville, MD, USA; (2) USDA ARS-NGLRL, Beltsville, MD, USA; (3) USDA, Beltsville, MD, USA

414-P First report of *Armillaria* spp. infecting citrus trees on sour orange rootstock in the Lower Rio Grande Valley, Texas
M. KUNTA, P. Vedasharan, J. W. Park, E. Louzada. Texas A&M University Kingsville Citrus Center, Weslaco, TX, USA

415-P A dieback disease affecting blackberry in North Carolina
J. Mercier, P. WIESE, K. Cobaugh. Driscoll Strawberry Associates, Watsonville, CA, USA

416-P *Pseudomonas viridiflava*: A potential emerging pathogen associated with bacterial canker of plum trees in the Western Cape, South Africa
K. BOPHELA (1), Y. Petersen (2), J. Roux (1), T. Coutinho (1). (1) University of Pretoria, Pretoria, SOUTH AFRICA; (2) Agricultural Research Council, Stellenbosch, SOUTH AFRICA

417-P First detection of two new, unnamed root-lesion nematodes *Pratylenchus* spp. on soybean in North Dakota
G. YAN (1), D. Huang (1), A. Plaisance (1), Z. A. Handoo (2). (1) North Dakota State University, Department of Plant Pathology, Fargo, ND, USA; (2) USDA-ARS, Mycology and Nematology Genetic Diversity and Biology Laboratory, Beltsville, MD, USA

418-P First detection of the spiral nematode *Helicotylenchus microurus* on soybean in North Dakota
G. YAN (1), D. Huang (1), A. Plaisance (1), Z. A. Handoo (2). (1) North Dakota State University, Department of Plant Pathology, Fargo, ND, USA; (2) USDA-ARS, Mycology and Nematology Genetic Diversity and Biology Laboratory, Beltsville, MD, USA
419-P Neofusicoccum australe, N. luteum, and N. mediterraneum are new blight and canker pathogens of coast redwood (Sequoia sempervirens) in California
S. G. ACIMOVIC (1,2), S. N. Rooney-Latham (3), D. M. Grosm (2), J. J. Dooccola (2), (1) Cornell University, Hudson Valley Research Laboratory, Highland, NY, USA; (2) Research and Development Laboratory, Arborjet Inc., Woburn, MA, USA; (3) California Department of Food & Agriculture, Sacramento, CA, USA

420-P Identification of the Constricta yellow dwarf virus strain of Potato yellow dwarf virus in field grown peppers and tomatoes in Maryland
J. HAMMOND (1), J. Stommel (2), M. Reinsel (1), C. Gulbronson (3), M. M. Goodin (4). (1) USDA ARS, Floral and Nursery Plants Research Laboratory, Beltsville, MD, USA; (2) USDA ARS, Genetic Improvement of Fruits & Vegetables Laboratory, Beltsville, MD, USA; (3) USDA ARS Electron and Confocal Microscopy Unit, Beltsville, MD, USA; (4) University of Kentucky, Department of Plant Pathology, Lexington, KY, USA

421-P Zucchini tigre mosaic virus, an emerging potyvirus in cucurbit vegetables in South Asian countries
B. Bagewadi (1), K. Nagendra (2), R. B. Khadka (3), G. Karthikeyan (4), S. M. S. Hossain (5), L. Shah (6). A. C. Fayad (7), R. NAIDU (1). (1) Washington State University-Prosser, Prosser, WA, USA; (2) ICAR-Indian Institute of Vegetable Research, Varanasi, INDIA; (3) Khajura Regional Agriculture Research Station, Khajura, Banke, NEPAL; (4) Tamil Nadu Agricultural University, Madurai, INDIA; (5) Horticulture Research Center, Gazipur, BANGLADESH; (6) iDE, Kathmandu, NEPAL; (7) Virginia Polytechnic Institute and State University, Blacksburg, VA, USA

422-P First report of bacterial leaf streak of corn caused by Xanthomonas vasicola in Oklahoma
J. P. DAMICONE, F. Cevallos, J. D. Olson. Oklahoma State University, Stillwater, OK, USA

423-P Current assessment of Xanthomonas citri subsp. malvacearum race designation in Texas cotton
J. E. WOODWARD (1), T. Wheeler (2), T. S. Isaktee (3), K. Ong (4), R. Bart (5), A. Phillips (5). (1) Texas A&M University AgriLife Extension Service, Lubbock, TX, USA; (2) Texas A&M University AgriLife Research, Lubbock, TX, USA; (3) Texas A&M University, College Station, TX, USA; (4) Texas A&M University AgriLife Extension Service, College Station, TX, USA; (5) Donald Danforth Plant Science Center, St. Louis, MO, USA

424-P Identification of a novel bipartite begomovirus isolated from Lycianthes biflora in China
Z. HE, Y. Tang. Plant Protection Research Institute, Guangdong Academy of Agricultural Sciences, Guangzhou, CHINA

425-P A new potyvirus found in Dioscorea bulbifera in Florida
K. DEY (1), M. J. Melzer (2), C. Kerr (1), C. Li (1), X. Sun (1), S. T. Adkins (3). (1) Florida Department of Agriculture and Consumer Services, Gainesville, FL, USA; (2) University of Hawaii, Honolulu, HI, USA; (3) USDA ARS USHRL, Fort Pierce, FL, USA

426-P Report and characterization of bacterial diseases caused by Xanthomonas oryzae in Senegal
H. Tall (1), K. Noha (2), B. Szurek (3), S. Cunnac (3), C. Tekete (4), V. M. VERDIER (5). (1) ISRA, Dakar, SENEGAL; (2) UCAD, Dakar, SENEGAL; (3) Institut de Recherche pour le Developpement, Montpellier, FRANCE; (4) LBMA, USTTB, Bamako, Mali, Bamako, MALI; (5) IRD, Citad, University of Montpellier, IPME, Montpellier, FRANCE

427-P Survey of spinach leaf spot diseases in Texas
B. LIU (1), C. Peng (1), A. Manley (1), R. Garcia Rodriguez (1), L. Stein (2), K. Cochran (3), L. du Toit (4). (1) University of Arkansas, Fayetteville, AR, USA; (2) Department of Horticulture, Uvalde, TX, USA; (3) Texas A&M University, Uvalde, TX, USA; (4) Washington State University, Mount Vernon, WA, USA

428-P A hunt for novel pathogens in cranberries
Z. ZALEWSKI, P. S. McManus. University of Wisconsin-Madison, Madison, WI, USA

429-P A new virus disease of sunflower in Nebraska
R. M. HARVESON (1), M. Al Rwahnih (2), T. Tian (3), A. V. Karasev (4), T. Gulya (5). (1) University of Nebraska, Panhandle Research & Extension Center, Scottsbluff, NE, USA; (2) Department of Plant Pathology, University of California, Davis, CA, USA; (3) California Department of Food & Agriculture, Sacramento, CA, USA; (4) University of Idaho, Moscow, ID, USA; (5) USDA-ARS, Northern Crop Science Laboratory, Fargo, ND, USA

430-P Bacterial wilt outbreaks of multiple sequevars on blueberries in Florida
D. J. NORMAN (1), A. M. Bocsanczy (1), P. Harmon (2), C. Lapaire Harmon (3), A. Khan (4). (1) University of Florida MREC, Apopka, FL, USA; (2) University of Florida, Department of Plant Pathology, Gainesville, FL, USA; (3) University of Florida PDC, Gainesville, FL, USA; (4) University of Florida, Orlando, FL, USA

431-P Status of huanglongbing (HLB) multi-agency coordination (MAC) projects on thermal treatment of citrus trees with citrus greening (2017)
D. A. KOMM (1), R. Elshani (2), P. Ravenna (3). (1) USDA, Raleigh, NC, USA; (2) University of Florida, Lake Alfred, FL, USA; (3) Ag Harvester, Au Gres, MN, USA

432-P An assessment of putative foliar pathogens on different accessions of tea grown in Florida
J. ORROCK, K. Kemfert, K. Sandsted, R. Healy, B. Spakes Richter, B. Rathinasabapathi. University of Florida, College of Agriculture and Environmental Sciences, Gainesville, FL, USA

433-P Molecular characterization of a new member of the genus Waikavirus
T. Thekke Veetil (1), T. Ho (2), J. D. Postman (3), I. E. SEKHET (1). (1) University of Arkansas, Fayetteville, AR, USA; (2) Driscoll’s, Watsonville, CA, USA; (3) USDA ARS, Corvallis, OR, USA

434-P Phylogenetic relationship of Grapevine vein clearing virus isolates in wild plant species and in cultivated grapevines
S. PETERSEN, C. Keith, K. Austin, W. Qiu. Missouri State University, Springfield, MO, USA
435-P A species of Pestalotiopsis identified infecting red mangrove in the Bahamas
R. E. Rossi (1), C. A. Layman (2), J. B. Ristaino (1).
(1) North Carolina State University, Raleigh, NC, USA; (2) North Carolina State University, Department of Applied Ecology, Raleigh, NC, USA

436-P Identification of a caulimo-like virus in pistachio via high-throughput sequencing
A. Diaz Lara (1), K. Stevens (2), N. Westrick (1), D. A. Golino (3), M. Al Rwahnih (1).
(1) Department of Plant Pathology, University of California-Davis, Davis, CA, USA; (2) Foundation Plant Services, University of California-Davis, Davis, CA, USA; (3) University of California, Davis, CA, USA.

437-P Characterizing Sclerotinia sclerotiorum as the cause of white rot on short-day strawberry cultivars in the Mid-Atlantic region
E. Hellman (1), E. Koivunen (2), C. L. Swett (1).
(1) University of California-Davis, Davis, CA, USA; (2) Plant Sciences, Inc., Watsonville, CA, USA.

438-P Characterization of Tomato leaf curl purple vein virus, a new monopartite New World begomovirus infecting tomato in Northeast Brazil
(1) University of California-Davis, Davis, CA, USA; (2) Goiano Federal Institute, Morrinhos, BRAZIL; (3,4) EMBRAPA, Brasilia, BRAZIL.

439-P Sugarcane (Saccharum spp.) and itch grass (Rottboellia cochinchinensis): New hosts to Maize yellow mosaic virus (genus Polerovirus)
(1) Ahmadu Bello University, Zaria, NIGERIA; (2) Department of Plant Pathology, University of California-Davis, Davis, CA, USA; (3) Department of Plant Pathology and Microbiology, Texas A&M University AgriLife Research and Extension Center, Weslaco, TX, USA; (4) International Institute of Tropical Agriculture, Ibadan, NIGERIA; (5) Department of Plant Pathology & Microbiology, Texas A&M University, Weslaco, TX, USA.

440-P Survival of the Goss's wilt pathogen, Clavibacter michiganensis subsp. nebraskensis, on maize leaf residue in Central and South Texas
T. S. Isakeit (1), G. Steele (2), S. Halfmann (3).
(1) Texas A&M University, College Station, TX, USA; (2) Monsanto, Hillsboro, TX, USA; (3) Monsanto, College Station, TX, USA.

441-P Differential accumulation and transmission of traditional and emergent Beet curly top virus strains from the western United States
(1) USDA-ARS, Salinas, CA, USA; (2) University of California, Davis, CA, USA.

442-P Rapid research response to emerging wheat stem rust pathogen races in Ethiopia
(1) Cornell University, Kulumusa, ETHIOPIA; (2) Ethiopian Institute of Agricultural Research, Debre Zeit, ETHIOPIA; (3) Ethiopian Institute of Agricultural Research, Ambo, ETHIOPIA; (4) University of Minnesota, St. Paul, MN, USA; (5) University of Arizona, Maricopa, AZ, USA; (6) USDA-ARS Cereal Disease Laboratory, St. Paul, MN, USA; (7) CIMMYT, Adis Ababa, ETHIOPIA; (8) Ethiopian Institute of Agricultural Research, Kulumusa, ETHIOPIA; (9) Cornell University, Loveland, CO, USA.

443-P Viral metagenomics unravels the etiology of lethal necrosis of St. Augustinegrass ‘Floratam’
R. I. Acalá-Briseno, P. Harmon, J. Polston.
Department of Plant Pathology, University of Florida, Gainesville, FL, USA.

444-P Identifying the causal agent of the rotten rhizome syndrome in Achira (Canna edulis)
P. Uribe, M. C. Ortega. Corporación Colombiana de Investigación Agropecuaria, Pasto, COLOMBIA

Oomycete

445-P Charles Darwin and the Irish Potato Famine: “A painfully interesting subject”
J. B. Beagle (1), D. Pfister (2).
(1) North Carolina State University, Raleigh, NC, USA; (2) Harvard University, Cambridge, MA, USA.

446-P Assessing the potential for Phytophthora to move between native plant nurseries and interstate shipping nurseries
(1) California State University-Monterey Bay, Seaside, CA, USA; (2) Dominican University of California, San Rafael, CA, USA; (3) California Department of Food & Agriculture, Sacramento, CA, USA.

447-P Distribution of root rot on pea and lentil crops on the Canadian prairies, 2016
B. D. Gossen (1), S. G. Chatterton (2), D. L. McLaren (3).
(1) Agriculture & Agri-Food Canada, Saskatoon, SK, CANADA; (2) Agriculture & Agri-Food Canada, Lethbridge, AB, CANADA; (3) Agriculture & Agri-Food Canada, Brandon, MB, CANADA.

448-P Viability of resting spores of Plasmodiophora brassicae throughout the soil profile
F. Al-Daoud (1), B. D. Gossen (2), M. R. Mcdonald (1).
(1) University of Guelph, Guelph, ON, CANADA; (2) Agriculture & Agri-Food Canada, Saskatoon, SK, CANADA.

449-P Phytophthora species present in two Missouri Ozark valleys with white oak mortality
S. E. Reed, J. T. English, R. M. Muzika. University of Missouri, Columbia, MO, USA.
451-P Incidence of Phytophthora in Maryland nurseries
R. R. POKHAREL, Maryland Department of Agriculture, Annapolis, MD, USA

452-P Survival of Peronospora belbahrii sporangia isolated from host plant tissue
K. S. ALLEN, G. Higgins, L. J. Ma, R. L. Wick. University of Massachusetts-Amherst, Amherst, MA, USA

453-P Susceptibility to infection of soybean by P. sylvaticum depends on germination stage
R. L. MATTHIESEN (1), A. E. Robertson (2). (1) Iowa State University, Ames, IA, USA; (2) USDA ARS National Soil Tilth Lab, Ames, IA, USA

454-P Historical pattern of Phytophthora species associated with Abies root rot in Pennsylvania
J. E. Kim (1), E. V. NIKOLAeva (2), T. N. Olson (2), S. Kang (1), S. H. Kim (2). (1) Pennsylvania State University, University Park, PA, USA; (2) Pennsylvania Department of Agriculture, Harrisburg, PA, USA

455-P Exciting changes for the Journal of Environmental Horticulture
J. CALABRO (1), J. Derr (2). (1) AmericanHort/HRI, Washington, DC, USA; (2) Weed Science Society of America, Virginia Beach, VA, USA

456-P Survey and awareness plan for identification and management of clubroot on canola in North Dakota
K. Hernandez, S. Sharpe, I. MEADOWS. North Carolina State University, Department of Entomology, Columbus, OH, USA; (2) USDA-ARS, Northern Crop Science Laboratory, Fargo, ND, USA; (3) North Dakota State University, Fargo, ND, USA; (4) USDA-ARS, Northern Crop Science Laboratory, Fargo, ND, USA; (5) South Dakota State University, Brookings, SD, USA; (6) University of Southern Queensland, Toowoomba, AUSTRALIA

457-P A model for sustainable IPM technology transfer in Nepal
A. C. FAYAD (1), R. N. Muniappan (1), L. Shah (2). (1) Virginia Polytechnic Institute and State University, Blacksburg, VA, USA; (2) International Development Enterprises iDE, Lalitpur, Kathmandu, NEPAL

458-P An abridged technique to determine Phyllocoptes fructiphilus populations on roses endangered by rose rosette disease
S. COLLINS (1), K. Solo (1), A. S. Windham (2), F. Hale (2), Q. Cheng (1), M. T. Windham (1). (1) University of Tennessee, Knoxville, TN, USA; (2) Soil, Plant, and Pest Center, Nashville, TN, USA

459-P Engaging non-traditional and online students in Ohio State’s Master in Plant Health Management: A SWOT analysis
M. M. LEWANDOWSKI (1), A. E. Dorrance (2)., L. Canas (3), C. Welty (4), F. Peduto Hand (1), D. Shetlar (4), P. A. Paul (5), A. Londo (6), S. D. Ellis-Williams (1), W. Klooster (4). (1) Ohio State University, Department of Plant Pathology, Columbus, OH, USA; (2) The Ohio State University, Wooster, OH, USA; (3) Ohio State University, Ohio Agricultural Research and Development Center, Department of Entomology, Wooster, OH, USA; (4) Ohio State University, Department of Entomology, Columbus, OH, USA; (5) Ohio State University, Ohio Agricultural Research and Development Center, Department of Plant Pathology, Wooster, OH, USA; (6) Ohio State University Extension, Columbus, OH, USA

460-P News and 2016 activities of the Clemson University Plant Problem Clinic
M. WILLIAMSON. Clemson University, Department of Plant Industry, Pendleton, SC, USA

461-P The Sunflower Pathology Working Group
S. G. MARKELL (1), R. M. Harveson (2), C. C. Block (3), T. Gulya (4), F. M. Mathew (5), S. Thompson (6). (1) North Dakota State University, Fargo, ND, USA; (2) University of Nebraska, Panhandle Research & Extension Center, Scottsbluff, NE, USA; (3) Iowa State University, Ames, IA, USA; (4) USDA-ARS, Northern Crop Science Laboratory, Fargo, ND, USA; (5) South Dakota State University, Brookings, SD, USA; (6) University of Southern Queensland, Toowoomba, AUSTRALIA

462-P Volunteerism in international development: Disease notes from abroad
J. C. HIMMELSTEIN. ACDI/VOCA, Washington, DC, USA

463-P Relative abundance of Potato virus Y strains in commercial potato fields of the Columbia Basin, 2011 to 2015
C. FUNKE, O. V. Nikolaeva, K. Green, L. Tran, A. V. Karasev. University of Idaho, Moscow, ID, USA

464-P Spread of bacterial leaf spot (Xanthomonas perforans) among tomato seedlings in the greenhouse
K. Hernandez, S. Sharpe, I. MEADOWS. North Carolina State University, Mills River, NC, USA

465-P Transmission of Monilinia fructicola genotypes from blossoms to twigs
M. DOWLING (1), B. Cox (1), T. Sroka (1), J. Wilson (2), G. Schnabel (1). (1) Clemson University, Clemson, SC, USA; (2) Cornell University, Ithaca, NY, USA

466-P Investigating the dispersal efficiency of pathogens causing potato early blight and brown spot
S. DING, D. Rouse, K. Meinholz, A. J. Gevens. University of Wisconsin-Madison, Madison, WI, USA

467-P Incidence of silverleaf disease caused by Chondrostereum purpureum in apple nursery plants
A. FRANCE, D. Grinbergs, J. Chilian. INIA Quilamapu, Chillan, CHILE

468-P Transmission efficiency of Cucumber green mottle mosaic virus via soil
C. LIANG (1,2,3,4), X. A Bie (1,2), L. Luo (1,2)., J. Li
469-P Epidemic network analysis for mitigation of invasive pathogens in seed systems: Potato in Ecuador
C. BUDDENHAGEN (1,2,3), J. F. Hernandez Nopsa (1,2,3), K. F. Andersen (1,2,3), J. L. Andrade-Piedra (4), P. Kromans (5), G. A. Forbes (6), S. Thomas-Sharma (7), K. A. Garrett (1,2,3). (1) University of Florida, Plant Pathology Department, Gainesville, FL, USA; (2) Institute for Sustainable Food Systems, Gainesville, FL, USA; (3) Emerging Pathogens Institute, Gainesville, FL, USA; (4) International Potato Center (CIP), Lima, PERU; (5) International Potato Center, Quito, ECUADOR; (6) USDA ARS, Miami, FL, USA; (7) USDA Forest Service, Asheville, NC, USA

470-P Pollen can spread Colletotrichum acutatum among citrus flowers
M. C. DE GODOY GASPAROTO (1), A. B. Gama (2), S. de Aonseca Lourenço (2), G. J. Silva Junior (3), L. Amorim (2). (1) UNESP. Registro, BRAZIL; (2) USP, Piracicaba, BRAZIL; (3) FUNDECITRUS, Araraquara, BRAZIL

471-P Assessment of the presence of Plasmodiophora brassicaceae viable inoculum in the irrigation sediments in the savannah of Bogota
J. S. Navas Martínez, A. BOTERO RAMIREZ, D. J. Urbano Muñoz, J. S. Urquijo Ruiz, C. García. Universidad Nacional de Colombia, Bogotá, COLOMBIA

472-P Assessment of the vertical and horizontal distribution of Plasmodiophora brassicaceae in soil
L. Tarazona, A. BOTERO RAMIREZ, C. García. Universidad Nacional de Colombia, Bogotá, COLOMBIA

473-P Environmental factors impact temporal Passalora sequoiae conidia counts from Leyland cypress
J. L. Williams-Woodward (1), W. E. COPES (2). (1) University of Georgia, Department of Plant Pathology, Athens, GA, USA; (2) USDA ARS, Poplarville, MS, USA

474-P Germination of oospores of the impatients downy mildew at different temperatures
N. SHISHKOFF. USDA ARS FDWSRU, Frederick, MD, USA

475-P Lack of pheromone reduces nematode dispersal
A. PERRET-GENTIL (1), A. Mirti (1), J. Giurintano (1), E. Sampson (1), X. Gao (1), D. I. Shapiro-Ilan (2), F. Kaplan (1). (1) Pheronym, Inc., Gainesville, FL, USA; (2) USDA/ARS, Southeastern Fruit and Tree Nut Research Laboratory, Byron, GA, USA

476-P Elevated temperature reduces seed-to-seedling transmission of bacterial fruit blotch of cucurbits caused by Acidovorax citrulli
M. ZHAO, R. R. Walcott. The University of Georgia, Athens, GA, USA

477-P Analyzing key nodes and epidemic risk in seed networks:
Sweetpotato in northern Uganda
K. F. ANDERSEN (1,2,3), C. Buddenhagen (1,2,3), P. Rachikara (4), R. Gibson (5), S. Kalule (4), D. Phillips (5), K. A. Garrett (1,2,3). (1) University of Florida, Plant Pathology Department, Gainesville, FL, USA; (2) Institute for Sustainable Food Systems, Gainesville, FL, USA; (3) Emerging Pathogens Institute, Gainesville, FL, USA; (4) Department of Rural Development and Agribusiness, Gulu, UGANDA; (5) Natural Resource Institute, Greenwich, UNITED KINGDOM

478-P A network model to predict spread and mesoscale level development of hop powdery mildew
D. H. GENT (1), S. Bhattacharyya (2), T. Ruiz (2), M. Twomey (3), S. Wolfenbarger (3). (1) USDA ARS, Corvallis, OR, USA; (2) Oregon State University, Department of Statistics, Corvallis, OR, USA; (3) Oregon State University, Department of Botany and Plant Pathology, Corvallis, OR, USA

479-P A low-cost spore trap allows collection of Fusarium circinatum airborne spores for real-time PCR quantification
T. QUESADA (1), J. Hughes (1), K. Smith (2), P. James (1), K. Shin (1), J. A. Smith (1). (1) University of Florida, Gainesville, FL, USA; (2) USDA Forest Service, Gainesville, FL, USA

480-P Biological relevance of the detection of pospiviroids on pepper and tomato seeds
H. KOENRAADT. Naktuinbouw, Roelofarendsveen, NETHERLANDS

481-P Is the begomovirus, Sweet potato leaf curl virus, really seed transmitted in sweetpotato?
K. S. LING, P. Wadl, L. Williams, A. Simmons, M. Jackson. USDA-ARS, Charleston, SC, USA

482-P Presence and prevalence of Raffaelea lauricola, cause of laurel wilt, in different species of ambrosia beetle in Florida
R. C. PLOETZ (1), J. Konkol (2), T. Navarez (2), R. Duncan (2), J. R. Saucedo Carabez (2), A. Campbell (3), J. Mantilla (2), D. Carrillo (1), P. Kendra (3). (1) University of Florida, Tropical Research and Education Center, Homestead, FL, USA; (2) University of Florida, Homestead, FL, USA; (3) USDA ARS, Miami, FL, USA

483-P Species diversity of Leptographium and Grossmannia blue-stain fungi associated with root-feeding beetles in loblolly pine stands
M. BULAND (1), B. Barnes (1), K. Klepzig (2), K. Gandhi (1), C. Villari (1). (1) D.B. Warnell School of Forestry and Natural Resources, University of Georgia, Athens, GA, USA; (2) USDA Forest Service, Asheville, NC, USA

484-P Two novel fungal symbionts of invasive Kuroshio shot hole borer (Euwallaceae sp. n. fornicatus) causing Fusarium dieback on woody hosts in California
J. D. CARRILLO (1), J. S. Mayorquin (2), F. Na (2), J. Stajich (2), A. Eskalen (1). (1) University of California-Riverside, Department of Plant Pathology
485-P Genetic diversity and spatial structure of the walnut twig beetle, *Pityophthorus juglandis*, the vector of thousand cankers in U.S.A. and Europe
E. Oren (1), W. Klingeman (1), J. Moulton (1), P. Lambdin (1), M. Faccoli (2), D. HADZIABDIC (1). (1) University of Tennessee, Knoxville, TN, USA; (2) University of Padua, Legnano, ITALY

486-P Occurrence of *Xanthomonas vasicola* on maize seeds in the United States
S. ARIAS (1), C. C. Block (1), D. A. Mayfield (1), T. A. Jackson-Ziems (2), K. D. Broders (3), G. P. Munkvold (1). (1) Iowa State University, Ames, IA, USA; (2) University of Nebraska-Lincoln, Lincoln, NE, USA; (3) Colorado State University, Fort Collins, CO, USA

487-P Preliminary assessment of insect-associated *Geosmithia* species in Tennessee
K. CHAHAL, R. O. Gazis, J. Grant, D. Hadziabdic, P. Lambdin, W. Klingeman, M. T. Windham. University of Tennessee, Knoxville, TN, USA

488-P Potential alternative vectors of *Geosmithia morbida* (thousand cankers disease) in east Tennessee
K. CHAHAL, R. O. Gazis, J. Grant, D. Hadziabdic, P. Lambdin, W. Klingeman, D. Paulsen, M. T. Windham. University of Tennessee, Knoxville, TN, USA

489-P Impact of late season vine-kill on incidence of ‘Candidatus Liberibacter solanacearum’ in potato tubers
F. WORKNEH (1), L. Paetzold (1), C. M. Rush (2). (1) Oregon State University, Corvallis, OR, USA; (2) University of Missouri, Columbia, MO, USA

Pathogenicity and Host Specificity

490-P Pathogenicity of *Verticillium dahliae* Klebahn in rootstock rose cv. Manetti.

491-P Investigations on the lily bulb- and root rot disease complex involving multiple pathogenic fungi and the root nematode *Pratylenchus penetrans*
D. LAKSHMAN (1), K. Kamo (2), P. Vieira (3), R. Pandey (4). (1) University of California, Riverside, Riverside, CA, USA; (2) University of Hawaii, Hilo, HI, USA; (3) University of Florida, Gainesville, FL, USA; (4) University of Georgia, Athens, GA, USA

492-P Host preferences of *Colletotrichum* species isolated from mango and tree tomato in Colombia
L. Cabrera Villamizar (1), C. P. Rojas (1), C. J. Pardo De la Hoz (1), S. Rojas (1), M. Mideros (1), L. Lopez (2), P. Jimenez (3), S. RESTREPO (1). (1) University of Los Andes, Bogota, COLOMBIA; (2) Universidad Nacional, Bogota, COLOMBIA; (3) Universidad Militar Nueva Granada, Bogota, COLOMBIA

493-P Pathogenicity of *Stemphylium vesicarium* on asparagus and onion
J. Foster (1), C. S. Tayviah (1), B. D. Gossen (2), M. R. MCDONALD (1). (1) University of Guelph, Guelph, ON, CANADA; (2) Agriculture & Agri-Food Canada, Saskatoon, SK, CANADA

494-P Identification of *Colletotrichum* species causing anthracnose of pomegranate in Florida
K. V. XAVIER (1), A. Nepal (2), N. Peres (1), G. E. Vállad (1). (1) Gulf Coast Research and Education Center, University of Florida, Wimauma, FL, USA; (2) Oregon State University, Central Point, OR, USA

495-P Genome wide association mapping of resistance to tan spot in durum wheat
N. N. Galagedara (1), X. Li (1), S. Chao (2), S. Xu (2), J. D. Faris (2), Z. LIU (1). (1) North Dakota State University, Fargo, ND, USA; (2) USDA-ARS, Northern Crop Science Laboratory, Fargo, ND, USA

496-P Pathogenicity of *Rhizoctonia solani* and *Phytophthora nicotianae* to *Brassicaeaeae* biofumigant cover crops
P. Liyanapathiranage, T. Simmons, F. BAYSAL-GUREL. Tennessee State University, McMinnville, TN, USA

497-P Host specificity and survival of *Colletotrichum* species on celery and common weeds
S. Reynolds (1), M. J. Celetr (2), K. S. Jordan (1), M. R. MCDONALD (1). (1) University of Guelph, Guelph, ON, CANADA; (2) OMAFRA, Guelph, ON, CANADA

498-P Cross pathogenicity of *Diaporthe gulyae* on sunflower and weed hosts
B. KONTZ (1), A. Adhikari (1), T. Olson (1), P. O. Johnson (1), S. G. Markell (2), F. M. Mathew (1). (1) South Dakota State University, Brookings, SD, USA; (2) North Dakota State University, Fargo, ND, USA

499-P Determination of rose black spot (*Diplocarpon rosae*) race diversity in Canada to facilitate targeted disease resistance breeding
A. M. POLEATEWICH (1), I. Perez-Valdes (2), P. Ojiambo. North Carolina State University, Raleigh, NC, USA; (2) Sustainable Agricultural System Innovation Centre, Vineland Station, ON, CANADA

500-P Genetic structure, geography, and host specialization within populations of *Pseudoperonospora cubensis* in the United States
A. THOMAS, I. Carbone, P. Ojiambo. North Carolina State University, Raleigh, NC, USA

501-P Survey of fungi from symptomatic leaves of cornelian cherry dogwood (*Cornus mas*) in eastern Tennessee
T. COLLINS, M. M. Dee, D. D. Hensley, B. H. Ownley. University of Tennessee, Department of Entomology and Plant Pathology, Knoxville, TN, USA

502-P Thousand cankers disease severity is not determined by *Geosmithia morbida* genetic grouping nor a synergistic relationship with *Fusarium solani*
R. A. SITZ (1,2), E. K. Luna (1), J. R. Ibarra Caballero (1), N. A. Tisserat (1), W. S. Cranshaw (1), J. E. Stewart (1),
503-P Long-term monitoring of cucurbit powdery mildew (Podosphaera xanthii) races in Charleston, South Carolina
C. Kousik (1), J. Ikerd (1), M. K. Mandal (2). (1) U.S. Vegetable Laboratory, USDA ARS, Charleston, SC, USA; (2) ORISE participant, U.S. Vegetable Laboratory, USDA ARS, Charleston, SC, USA

504-P Comparing inoculation methods to study the aggressiveness of Diaporthe aspalathi causing southern stem canker of soybean
K. Ghimire (1), B. Kontz (1), D. L. Smith (2), C. A. Bradley (3), D. S. Mueller (4), K. A. Wisc (5), N. Braun (1), F. M. Mathew (1). (1) South Dakota State University, Brookings, SD, USA; (2) University of Wisconsin, Madison, WI, USA; (3) University of Kentucky, Princeton, KY, USA; (4) Iowa State University, Ames, IA, USA; (5) Purdue University, West Lafayette, IN, USA

505-P Characterization of Fusarium spp. isolates recovered from dry bean in Michigan
K. Oudman, J. L. Jacobs, M. Chilvers. Michigan State University, East Lansing, MI, USA

506-P Screening inoculation methods and recombinant inbred lines for partial resistance to Phytophthora sojae in soybean
R. D. S. Chowdhiury. South Dakota State University, Brookings, SD, USA

507-P Berberis bulbii is functional as an alternate host for Puccinia graminis f. sp. tritici in eastern Africa
Y. Jin (1), G. Woldeyufael (2), M. Lim (3), P. D. Olivera Firpo (4), E. Hallu (2), R. O. Wanyera (5). (1) USDA-ARS, Cereal Disease Laboratory, St. Paul, MN, USA; (2) Ethiopian Institute of Agricultural Research, Ambo, ETHIOPIA; (3) USDA ARS, St. Paul, MN, USA; (4) University of Minnesota, St. Paul, MN, USA; (5) Kenya Agricultural & Livestock Research Organization, Njoro, KENYA

508-P Pathotypes of Phytophthora sojae from South Dakota soybean fields
R. D. S. Chowdhiury. South Dakota State University, Brookings, SD, USA

509-P Temporal dynamics of Fusarium virguliforme colonization on soybean and corn roots: Field to lab
A. M. Baetsen-Young, J. L. Jacobs, A. Byrne, B. Day, M. Chilvers. Michigan State University, East Lansing, MI, USA

510-P Towards sustainable solutions for Fusarium wilt: Ecology of putative pathogenicity factors in populations of Fusarium oxysporum from banana
G. R. Tesdali, F. A. Magdama, M. D. M. Jimenez-Gasco. The Pennsylvania State University, University Park, PA, USA

511-P The impact of pesticides on the turfgrass rhizosphere microbiome
E. Buczadowski, M. Millican, P. L. Koch. University of Wisconsin-Madison, Madison, WI, USA

512-P Mycobiome study reveals pathogens of Camassia in the Pacific Northwest
G. M. Freed (1), T. C. Paulitz (2), F. M. Dugan (3). (1) Washington State University, Pullman, WA, USA; (2) USDA ARS, Pullman, WA, USA; (3) USDA ARS WRPIS, Pullman, WA, USA

513-P Successional dynamics of fungal and oomycete communities in herbicide-killed wheat roots
D. C. Schlatter, T. C. Paulitz. USDA ARS, Pullman, WA, USA

514-P Potato crop yields and soil microbiome composition in response to nitrogen amendments in fumigated and nonfumigated soils
J. P. Dundore-Arias, L. K. Otto-Hanson, C. Rosen, L. L. Kinkel. University of Minnesota, St. Paul, MN, USA

515-P Minimal impacts of repeated glyphosate use on wheat-associated bacterial microbiomes
D. C. Schlatter (1), C. Yin (2), S. H. Hulbert (2), I. Burke (3), T. C. Paulitz (1). (1) USDA ARS, Pullman, WA, USA; (2) Department of Plant Pathology, Washington State University, Pullman, WA, USA; (3) Department of Crop and Soil Science, Washington State University, Pullman, WA, USA

516-P The effects of penicillin injection on the bacterial phytobiome of citrus roots and petioles are dose and time dependent
M. Ascunce (1), K. Shin (2), J. C. Huguet-Tapia (2), A. H. van Bruggen (2), E. M. Goss (1). (1) Department of Plant Pathology, University of Florida, Gainesville, FL, USA; (2) University of Florida, Gainesville, FL, USA

517-P The effects of cover crops on the soil microbiome: A metagenomics study
J. Hackman (1), A. Y. Sour (1), R. Cook (2), J. P. Bond (1), A. M. Fakhoury (1). (1) Southern Illinois University, Carbondale, IL, USA; (2) North Carolina State University, Raleigh, NC, USA

518-P Metacoder: An R package for visualization and manipulation of community taxonomic diversity data
Z. Foster (1,2), T. Sharpton (2), N. Grunwald (1). (1) USDA ARS, Corvallis, OR, USA; (2) Oregon State University, Corvallis, OR, USA

519-P A Vavilovian approach to the phytobiome: Impact of domestication on the common bean microbiome
G. Iriarte, K. D. Broders. Colorado State University, Fort Collins, CO, USA
520-P Potential pleiotropic effects of 43 leaf rust resistance genes in ozone tolerance of spring wheat variety ‘Thatcher’
A. M. MASHAHEET (1,2), D. S. Marshall (3), R. Ullah (4), A. Abdelrahim (2,5), K. Burkey (3). (1) Damanhour University, Damanhour, EGYPT; (2) North Carolina State University, Raleigh, NC, USA; (3) USDA-ARS, Raleigh, NC, USA; (4) The University of Agriculture, Khyber Pakhtunkhwa, PAKISTAN; (5) Minia University, Minia, EGYPT

521-P Molecular mechanisms of resistance in alfalfa to bacterial stem blight caused by *Pseudomonas syringae* pv. *syringae*
L. G. NEMCHINOV (1), J. Shao (2), O. Postnikova (3), D. A. Samac (4). (1) USDA ARS MPPL, Beltsville, MD, USA; (2) USDA, Beltsville, MD, USA; (3) USDA ARS, Beltsville, MD, USA; (4) USDA ARS, St. Paul, MN, USA

522-P Phenotypic characterization and transcriptomic analysis of apple root defense responses to apple replant soilborne pathogen *Pythium ultimum*
Y. ZHU (1), M. Mazzola (1), G. Fazio (2), J. Shao (3), R. E. Davis (4), J. Zhao (5), Z. Zhou (6). (1) USDA ARS, Wenatchee, WA, USA; (2) Cornell University, Geneva, NY, USA; (3) USDA, Beltsville, MD, USA; (4) USDA ARS, Molecular Plant Pathology Lab, Beltsville, MD, USA; (5) Hebei Academy of Forestry Science, Shijiazhuang, CHINA; (6) Institute of Pomology, Chinese Academy of Agricultural Sciences, Beijing, CHINA

523-P Comparing root knot nematode (*Meloidogyne* spp.) effects on tomato (*Solanum lycopersicum*) and grapevine (*Vitis* spp.) metabolic profiles
C. M. WALLIS. USDA ARS, Parlier, CA, USA

524-P Below-ground attack by the root knot nematode *Meloidogyne graminicola* predisposes rice to blast disease

525-P Functional study of rice 14-3-3 proteins GF14c and GF14f in resistance to *Magnaporthe oryzae*
P. SUTTIVIRIYA (1), C. H. Park (1), M. D. Bellizzi (1), G. L. Wang (1,2). (1) USDA ARS MPPL, Beltsville, MD, USA; (2) Institute of Plant Protection, Chinese Academy of Agricultural Sciences, Beijing, CHINA

526-P Characterization of the structural basis of winter squash fruit age-related resistance to *Phytophthora capsici*
S. A. ALZOHAIRY (1), R. Hammerschmidt (2), M. K. Hausbeck (2). (1) Department of Plant Soil and Microbial Sciences, Michigan State University, East Lansing, MI, USA; (2) Michigan State University, East Lansing, MI, USA

527-P A functional developmental genomics screen is identifying genes functioning within cells that function in plant to a root pathogen
B. R. LAWAJU. Mississippi State University, Starkville, MS, USA

528-P NPR1 interacts with TCP15 to regulate the transcription of *PR5* in plant defense
M. Li, Z. Fu, H. Chen, J. Chen. University of South Carolina, Columbia, SC, USA

529-P Group I and II *Acidovorax citrulli* strains elicit different gene expression profiles in susceptible melon seedlings
Y. Zhang (1,2), M. Zhao (3), Y. Yang (1), W. Guan (1), W. Ji (2), Q. R. Bai (2), J. Gao (2), R. R. Walcott (3), T. ZHAO (1,2). (1) Institute of Plant Protection, CAAS, Beijing, CHINA; (2) Jilin Agricultural University, Changchun, CHINA; (3) The University of Georgia, Athens, GA, USA

530-P Disruption of the genome of rice blast to identify genes involved in production of reactive oxygen species
J. COOPER, N. M. Donofrio. University of Delaware, Newark, DE, USA

531-P Understanding the mechanism of resistance breaking on tomato by *Tomato mottle mosaic virus*
X. Sui (1,2), M. SHAMIMUZZAMAN (1), Y. Zheng (3), A. Simmons (1), Z. Fei (3). (1) USDA-ARS, Charleston, SC, USA; (2) Fujian Agriculture and Forestry University, Fuzhou, CHINA; (3) Boyce Thompson Institute, Ithaca, NY, USA

532-P Inactivation of SnR1K by geminiviruses AC2/C2 proteins plays an important role in the regulation of plant innate immune responses
M. LOCKWOOD, G. Sunter. University of Texas-San Antonio, San Antonio, TX, USA

533-P Psyllid haplotypes in southern Idaho potato fields, 2012 to 2015, and incidence of *Candidatus Liberibacter solanacearum* causing zebra chip disease
J. DAHAN (1), E. J. Wenninger (2), B. Thompson (1), S. Eid (1), N. L. Olsen (2), A. V. Karasev (1). (1) University of Idaho, Moscow, ID, USA; (2) University of Idaho, Kimberly, ID, USA

534-P Metabarcoding pathogenic *Fusarium* spp. in soybean seeds
R. PEDROZO (1), A. Jumpponen (2), C. R. Little (1). (1) Kansas State University, Manhattan, KS, USA; (2) Biology Department, Kansas State University, Manhattan, KS, USA

535-P Understanding *Fusarium* species causing Fusarium root rot in corn, soybean, and wheat in Nebraska
L. P. PARIKH, S. Kodati, M. Eskelson, A. O. Adesemoye. University of Nebraska-Lincoln, North Platte, NE, USA

536-P Genetic analysis of *Pyrenopeziza brassicae*, cause of light leaf spot of brassicas, in the European Union, Oceania, and North America
S. CARMODY (1), K. King (2), B. Claassen (3), B. B. Fraanje (2), J. West (2), C. M. Ockamb (3), L. du Toit (1). (1) Washington State University, Mount Vernon, WA, USA; (2) Rothamsted Research, Hertfordshire, ENGLAND; (3) Oregon State University, Corvallis, OR, USA
537-P  Morphological and molecular characterization of Mycosphaerella nanae isolates from persimmon leaf
O. Hassan (1), J. Y. Jeon (1), J. S. Shin (1), N. K. Oh (1), T. CHANG (2). (1) Kyungpook National University, Sangju, REPUBLIC OF (SOUTH) KOREA; (2) Kyungpook National University, Sangju, Gyungbuk, KOREA

538-P  In vitro evidence for sexual reproduction in Venturia effusa, causal agent of pecan scab
N. D. CHARLTON (1), C. Mattupalli (1), C. H. Bock (2), C. A. Young (1). (1) The Samuel Roberts Noble Foundation, Ardmore, OK, USA; (2) USDA ARS, Southeastern Fruit and Tree Nut Research Laboratory, Byron, GA, USA

539-P  Genotypic characterization of isolates of Golovinomyces magnicellulatus, the biotrophic powdery mildew pathogen of Phlox
C. FARINAS (1), F. Peduto Hand (2). (1) The Ohio State University, Columbus, OH, USA; (2) Ohio State University, Department of Plant Pathology, Columbus, OH, USA

540-P  A 2-year analysis of rust fungi intercepted at Arizona ports of entry
D. C. SANDBERG. USDA-APHIS-PPQ, Nogales, AZ, USA

541-P  Molecular phylogeny of Septoria isolates from tomato in Brazil
C. A. da Costa (1), V. LOURENÇO JR. (2), C. H. Bock (3), M. E. D. N. Fonseca (2), A. Reis (2). (1) Universidade Federal Rural de Pernambuco, Recife, BRAZIL; (2) Embrapa, Brasilia, BRAZIL

542-P  A phylogenomic marker-based comparative studies of Pseudomonas syringae and its related species
M. RANJAN, P. B. Patil. CSIR-IMTECH, Chandigarh, INDIA

543-P  Stripe rust epidemics of wheat and barley and races of Puccinia striiformis identified in the United States in 2016
A. Wan (1), M. Wang (1), X. CHEN (2). (1) Washington State University, Pullman, WA, USA; (2) USDA ARS, Pullman, WA, USA

544-P  Diversity of Fusarium oxysporum f. sp. niveum from watermelon in Georgia
A. PETKAR, P. Ji. University of Georgia, Tifton, GA, USA

545-P  Genetic variability among natural populations of Sugarcane mosaic virus (SCMV) in the northern Guinea savannah agroecological region of Nigeria
A. YAHAJA (1), D. B. Dangora (1), L. Gregg (2), M. D. Alegebojo (1), P. L. Kumar (3), O. J. Alabi (4). (1) Ahmadu Bello University, Zaria, NIGERIA; (2) Department of Plant Pathology and Microbiology, Texas A&M University AgrilLife Research and Extension Center, Weslaco, TX, USA; (3) International Institute of Tropical Agriculture, Ibadan, NIGERIA; (4) Department of Plant Pathology & Microbiology, Texas A&M University, Weslaco, TX, USA

546-P  Prevalence and pathogenicity of Rhizoctonia spp. from soybean in Nebraska
S. KODATI (1), N. Gambhir (2), S. E. Everhart (2), A. O. Adesemoye (1). (1) University of Nebraska-Lincoln, North Platte, NE, USA; (2) University of Nebraska, Lincoln, NE, USA

547-P  Genetic and morphological characterisation of Verticillium dahliae collected from cotton crops throughout NSW, Australia
K. KIRKBY (1), T. Chapman (2), S. Roser (1), P. A. Lonergan (1), P. Dadd-Daigle (2), S. Harden (3). (1) Biosecurity and Food Safety, NSW Department of Primary Industries, Narrabri, AUSTRALIA; (2) Biosecurity and Food Safety, NSW Department of Primary Industries, Narellan, AUSTRALIA; (3) NSW Department of Primary Industries, Tamworth, AUSTRALIA

548-P  Genome-wide informative microsatellite database and global population structure of Fusarium virguliforme
G. CAI (1), T. J. Fleury (2), K. A. Wise (3), T. J. Hughes (4). (1) USDA-ARS, Purdue University, West Lafayette, IN, USA; (2) USDA-ARS, West Lafayette, IN, USA; (3) Purdue University, West Lafayette, IN, USA; (4) Monsanto Co., Chesterfield, MO, USA

549-P  Genomic fingerprinting and phylogenetic analyses of Xanthomonas perforans strains provide insights into bacterial evolution and global movement
S. TIMILSINA (1), P. Abrahamian (2), F. Iruegas-Bocardo (1), G. V. Minsavage Jr. (1), B. Kolaczkowski (3), F. F. White (4), B. Staskawicz (5), G. E. Vallad (2), E. M. Goss (1), J. B. Jones (1). (1) Department of Plant Pathology, University of Florida, Gainesville, FL, USA; (2) Gulf Coast Research and Education Center, University of Florida, Wimauma, FL, USA; (3) Department of Microbiology and Cell Science, University of Florida, Gainesville, FL, USA; (4) University of Florida, Gainesville, FL, USA; (5) University of California, Berkeley, CA, USA

550-P  Characterization of microsatellites from a genome of Venturia carpophila
C. Chen (1), P M. Brannen (2), J. E. Adaskaveg (3). (1) USDA-ARS, Southeastern Fruit and Tree Nut Research Laboratory, Byron, GA, USA; (2) University of Georgia, Athens, GA, USA; (3) Department of Plant Pathology and Microbiology, University of California, Riverside, CA, USA

551-P  Distribution and abundance of Macrophomina phaseolina in Paraguay
H. D. LOPEZ-NICORA (1), C. Grabowski Ocampos (2), A. L. Orrego Fuente (2), L. M. Pedrozo (3), E. Hahn Villalba (4), T. I. Ralston (1), T. L. Niblack (1). (1) The Ohio State University, Columbus, OH, USA; (2) Facultad de Ciencias Agrarias, Universidad Nacional de Asunción, San Lorenzo, PARAGUAY; (3) Facultad de Ciencias Agropecuarias, Universidad Tecnológica Agropecuaria (IPTA), Caacupe, PARAGUAY; (4) Facultad de Ciencias Agropecuarias, Universidad Católica, Hohenau, PARAGUAY

552-P  Genetic diversity, aggressiveness, and fungicide sensitivity of Pythium irregulare isolated from soybean in Ohio
J. HUZAR NOVAKOWISKI, A. E. Dorrance. The Ohio State University, Wooster, OH, USA
553-P Influence of sampling on detection of simple sequence repeat haplotypes of Aspergillus flavus associated corn
D. EDMUNDS (1), H. L. Mehl (2), P. J. Cotty (3). (1) University of Arizona, Tucson, AZ, USA; (2) Virginia Tech Tidewater AREC, Suffolk, VA, USA; (3) USDA-ARS, University of Arizona, Tucson, AZ, USA

554-P I think we’re a clone now: Factors influencing inference of clonality in diploid populations
Z. N. KAMVAR (1), S. E. Everhart (1), N. Grunwald (2). (1) University of Nebraska, Lincoln, NE, USA; (2) USDA-ARS, Corvallis, OR, USA

555-P AmpSeq: Use of a new genotyping tool to address practical questions in pathogen biology, population studies, and fungicide resistance
B. KISSELSTEIN (1), L. E. Cadle-Davidson (2), W. Weldon (1), B. B. Forcellini (3), N. Peres (4), M. T. McGrath (5), B. A. Tadesse (6), A. Stensvand (6), D. M. Gadouy (1). (1) Cornell University, Geneva, NY, USA; (2) USDA Grape Genetics Research Unit, Geneva, NY, USA; (3) USDA, Fort Pierce, FL, USA; (4) Gulf Coast Research and Education Center, University of Florida, Wimauma, FL, USA; (5) USDA ARS SAA SPP, Fort Pierce, FL, USA; (6) Department of Plant Pathology, North Carolina State University, Raleigh, NC, USA

556-P Cluster analysis of Anisogramma anomala isolates collected from the Pacific Northwest and New Jersey
J. TOBIA (1), M. Muehlbauer (1), J. Honig (1), J. Pscheidt (2), T. J. Molnar (1). (1) Rutgers University, New Brunswick, NJ, USA; (2) Oregon State University, Corvallis, OR, USA

557-P Population genetic analysis for a worldwide collection of Phytophthora palmivora
Y. GUO, G. A. Torres-Londono, M. K. Hausbeck. Michigan State University, East Lansing, MI, USA

558-P Population biology and comparative genomics of Claviceps purpurea and other defensive mutualists in the Hypocreales
S. WYKA, G. Wu, K. D. Broders. Colorado State University, Fort Collins, CO, USA

559-P Genetic diversity and population characterization of Erysiphe pulchra, the causal agent of dogwood powdery mildew, from the eastern United States
C. R. WYMAN (1), S. L. Bogess (1), D. Hadzibiadic (1), T. A. Rinehart (2), A. S. Windham (3), P. A. Wadl (4). R. Trigiano (1). (1) University of Tennessee, Knoxville, TN, USA; (2) USDA, Poplarville, MS, USA; (3) Soil, Plant, and Pest Center, Nashville, TN, USA; (4) U.S. Vegetable Laboratory, Charleston, SC, USA

560-P Identification of promising bacterial root symbionts from switchgrass (Panicum virgatum) growing in the prairies of Oklahoma
M. H. CHI, K. D. Craven. The Samuel Roberts Noble Foundation, Ardmore, OK, USA

561-P Metagenomic sequencing reveals bacterial community composition of native and cultivated cranberry bogs
G. EBADZADSAHRAI, A. Harrison, S. Soby, S. Gadagkar. Midwestern University, Glendale, AZ, USA

562-P Diversity and fungicide sensitivity of the cacao pathogens Moniliophthora perniciosa and M. roreri
M. G. Mariduena-Zavala (1), A. Freire-Penalvera (1), M. Villavicencio-Vasquez (2), R. Espinoza-Lozano (2), J. CEVALLOS-CEVALLOS (1). (1) Escuela Superior Politecnica del Litoral, ESPOL, Guayaquil, ECUADOR; (2) ESPOL, Guayaquil, ECUADOR

563-P Population biology of the downy mildew pathogen on tolerant and susceptible cucumber in southeastern United States
M. K. MANDAL (1), J. Ikard (2), E. Wallace (3), R. Grace (4), W. W. Turechek (5), L. Quesada-Ocampo (6). C. Kousik (2). (1) ORISE participant, U.S. Vegetable Laboratory, USDA ARS, Charleston, SC, USA; (2) U.S. Vegetable Laboratory, USDA ARS, Charleston, SC, USA; (3) North Carolina State University, Raleigh, NC, USA; (4) U.S. Horticultural Research Laboratory, USDA ARS, Fort Pierce, FL, USA; (5) USDA ARS SAA SPP, Fort Pierce, FL, USA; (6) Department of Plant Pathology, North Carolina State University, Raleigh, NC, USA

564-P Leaf spot fungi of no-till wheat in Oklahoma and evaluation of SSR loci for population biology of the tan spot fungus, Pyrenophora triticirepentis
S. SUAREZ, S. M. Marek, R. M. Hunger, C. D. Garzon. Oklahoma State University, Stillwater, OK, USA

565-P Temperature adaptation in Macrophomina phaseolina, the causal agent of charcoal rot on soybean
V. ORTIZ LONDONO (1), K. A. Wise (2), M. Chilvers (1). (1) Michigan State University, East Lansing, MI, USA; (2) Purdue University, West Lafayette, IN, USA

566-P CRISPR/Cas sequence-based confirmation of an emergent population of Rathayibacter toxicus in South Australia
J. P. STACK (1), G. Y. Busot (1). R. Arif (2). (1) Kansas State University, Manhattan, KS, USA; (2) University of Hawaii, Oahu, HI, USA

567-P Characterization of Phytophthora infestans isolates from Indonesia
S. DANGI (1), D. Douches (2), P. S. Wharton (1). (1) University of Idaho, Aberdeen Research and Extension Center, Aberdeen, ID, USA; (2) Michigan State University, Department of Plant, Soil, and Microbial Sciences, East Lansing, MI, USA

568-P Phylogenetic analysis of Diasporthe spp. in highbush blueberries in Michigan
G. KOTAMRAJU, K. Clemens, A. C. Schilder. Michigan State University, East Lansing, MI, USA

569-P Trade-offs and synergies in microbial mediated functions for potato plant health
R. LANKAU. University of Wisconsin, Madison, WI, USA
570-P The use of plant extracts for the management of postharvest diseases of tomato in Kenya
G. M. KARIUKI. Kenyatta University, Nairobi, KENYA

571-P Aspergillus section flavi community structure impacts aflatoxin contamination in Zambia
P. W. KACHAPULULA (1,2), J. Akello (3). (1) University of Arizona, Tucson, AZ, USA; (2) University of Zambia, Lusaka, ZAMBIA; (3) International Institute of Tropical Agriculture (IITA-Zambia), Lusaka, ZAMBIA; (4) International Institute of Tropical Agriculture, Ibadan, NIGERIA; (5) USDA-ARS, University of Arizona, Tucson, AZ, USA

572-P Control of Rhizopus rot of tomato fruit by postharvest fungicide application
J. BARTZ (1), D. Spiceland (1), S. Sargent (1), A. Berry (1), M. T. Elkakhy (2), G. E. Vallad (3). (1) University of Florida, Gainesville, FL, USA; (2) Mansoura University, Mansoura, EGYPT; (3) Gulf Coast Research and Education Center, University of Florida, Wimauma, FL, USA

573-P Options to reduce costs of aflatoxin control in commercial cotton with area-wide programs utilizing atoxigenic biocontrol agents
R. JAIME (1), L. Antilla (2), L. Liesner (2), P. J. Cotty (3). (1) University of Arizona, Tucson, AZ, USA; (2) Arizona Cotton Research and Protection Council, Phoenix, AZ, USA; (3) USDA-ARS, University of Arizona, Tucson, AZ, USA

574-P Molecular bases for loss of pectinase P2c activity in morphologically and geographically distinct populations of Aspergillus flavus
S. SMITH (1), P. J. Cotty (2). (1) The University of Arizona, Tucson, AZ, USA; (2) USDA-ARS, University of Arizona, Tucson, AZ, USA

575-P Characterization of atoxigenic Aspergillus parasiticus from peanuts in Malawi
C. CHING’ANDA (1), J. Arehnkeng (2), R. Bandyopadhyay (3), P. J. Cotty (4). (1) University of Arizona, Tucson, AZ, USA; (2) International Institute of Tropical Agriculture, Lilongwe, MALAWI; (3) International Institute of Tropical Agriculture, Ibadan, NIGERIA; (4) USDA-ARS, University of Arizona, Tucson, AZ, USA

576-P Evaluation of Academy™ postharvest fungicide to control blue mold of stored apple fruit caused by Penicillium expansum
W. M. Jurick II (1), V. L. Gaskins (1), M. W. Choi (2), K. D. COX (2,3). (1) USDA-ARS Food Quality Laboratory, Beltsville, MD, USA; (2) Cornell University, Geneva, NY, USA; (3) Cornell University, Plant Pathology & Plant-Microbe Biology Section, Geneva, NY, USA

577-P Effect of humidity, temperature, and inoculum level on disease progression of sweetpotato black rot caused by Ceratocystis fimbriata
M. STAHR, L. M. Quesada. North Carolina State University, Raleigh, NC, USA

578-P Control of sour rot (Geotrichum candidum) on tomato in a commercial packing house using a post-harvest fungicide drip application
C. COLLAZO-GONZALEZ (1), C. Weaver (2). (1) Syngenta Crop Protection, Vero Beach, FL, USA; (2) Syngenta Crop Protection, Visalia, CA, USA

579-P Prevalence and incidence of postharvest diseases of mandarin fruit in California
S. SAIITO, C. L. Xiao. USDA ARS, Parlier, CA, USA

580-P Unassembled transcriptome analysis to infer aflatoxin production in Aspergillus flavus strains infecting corn using EDNA
A. ESPINDOLA (1), W. Schneider (2), H. A. Melouk (3), S. M. Marek (1), K. F. Cardwell (1), C. D. Garzon (1). (1) USDA ARS, Stillwater, OK, USA; (2) USDA ARS FDWSRU, Fort Detrick, MD, USA; (3) USDA ARS, Stillwater, OK, USA

581-P Fusarium ear rot and mycotoxin production by Fusarium subglutinans and F. tempeatum on Bt and non-Bt maize infested with lepidopteran insect pests
D. A. MAYFIELD (1), F. E. Lanza (2), M. Sulyok (3), R. Krska (3), G. P. Munkvold (1). (1) Iowa State University, Ames, IA, USA; (2) CAPES Foundation, Ministry of Education of Brazil, Brasília, BRAZIL; (3) Department of Agrobiotechnology, University of Natural Resources and Life Sciences, Vienna, AUSTRIA

582-P Mexican maize landraces and their association with potentially toxigenic Fusarium spp.

583-P Botrytis cinerea and B. prunorum associated with calyx-end rot in apples and pears in postharvest in the Maule Region, Chile
E. E. FERRADA, M. A. Lolas, G. A. Diaz. Universidad de Talca, Talca, CHILE

584-P Identification of zearalenone degradation by Clonostachys rosea isolates, cloning and expression of zhd101 gene

585-P Aspergillus flavus, population biology of corn infectors
J. A. REYES-PINEDA (1), K. E. Damann (2). (1) Louisiana State University, Baton Rouge, LA, USA; (2) Louisiana State University AgCenter, Baton Rouge, LA, USA

586-P Interactions among active ingredients of a multi-isolate aflatoxin biocontrol product
K. C. SHENGE (1), H. L. Mehl (2), P. J. Cotty (3). (1) USDA ARS, Tucson, AZ, USA; (2) Virginia Tech Tidewater AREC, Suffolk, VA, USA; (3) USDA-ARS, University of Arizona, Tucson, AZ, USA
587-P Influence of Bt maize (*Zea mays* (L.)) trait packages on aflatoxin contamination in south Texas maize production
G. L. SCHUSTER (1), D. Mays (2), M. Setamou (3), S. Nelson (1). (1) Texas A&M University-Kingsville, Kingsville, TX, USA; (2) Texas A&M University AgriLife Extension Service, Brownfield, TX, USA; (3) Texas A&M University Kingsville, Citrus Center, Weslaco, TX, USA

588-P Interaction between Bt and non-Bt corn hybrids and Afla-Guard to reduce aflatoxin contamination
D. MAYS (1), G. L. Schuster (2), M. Setamou (3), S. Nelson (1). (1) Texas A&M University, (2) Texas A&M University-Kingsville, Kingsville, TX, USA; (2) Texas A&M University-Kingsville, Citrus Center, Weslaco, TX, USA

589-P Ecological diversity of *Aspergilli* community and aflatoxin prevalence in Mozambique
J. AUGUSTO (1), J. Atehnkeng (2), J. Akello (3), P. J. Cotry (4), R. Bandypadhyay (5). (1) International Institute of Tropical Agriculture, Nampula, MOZAMBIQUE; (2) International Institute of Tropical Agriculture, Lilongwe, MALAWI; (3) International Institute of Tropical Agriculture (IITA-Zambia), Lusaka, ZAMBIA; (4) USDA-ARS, University of Arizona, Tucson, AZ, USA; (5) International Institute of Tropical Agriculture, Ibadan, NIGERIA

590-P Effect of concentration of *Pythium ultimum* inoculum in soil, and on tubers at harvest, and storage temperature on disease incidence and severity
S. DANGI (1), A. Malek (2), J. Woodhall (3), K. Fairchild (2), P. S. Wharton (1). (1) University of Idaho, Aberdeen Research and Extension Center, Aberdeen, ID, USA; (2) University of Idaho, Aberdeen, ID, USA; (3) University of Idaho, Parma, ID, USA

### Proteomics/Metabolomics/Genomics

591-P A comparative genomic analysis of cell wall-degrading enzymes encoded proteins in *Magnaporthe oryzae*, *Neurospora crassa*, and *Aspergillus* sp.
Q. NGUYEN (1,2), T. Ho (3), C. Nguyen (4). (1) Research Institute for Biotechnology and Environment, Ho Chi Minh, VIETNAM; (2) Nong Lam University, Ho Chi Minh, VIETNAM; (3) International University, Ho Chi Minh, VIETNAM; (4) Ho Chi Minh City Open University, Ho Chi Minh, VIETNAM

592-P NGS of *Monilinia* causing brown rot of fruit and comparative genomics for diagnostics development
K. A. ZELLER, Y. Rivera, J. Sutherland, M. Galvez, Z. G. Abad. USDA-APHIS-PPQ-S&T-CPHST, Beltsville, MD, USA

593-P Transcriptomic profiling of soybean leaves reveals the programming language of glyceollin biosynthesis against *Phakopsora pachyrhizi*
M. Z. HOSSAIN. University of Tsukuba, Tsukuba, JAPAN

594-P Whole transcriptome analysis of *Xylella fastidiosa* grown inside microfluidic chambers identified specific calcium-regulated genes
H. CHEN, L. De La Fuente. Auburn University, Auburn, AL, USA

595-P *Pseudomonas syringae* exhibits a genome-wide, bacteriophytochrome-mediated response to light and a stronger response to far-red than blue/red light
B. JANSSEN, H. Dong, G. A. Beattie. Iowa State University, Ames, IA, USA

596-P Genomic comparisons of *Armillaria solidipes* and *A. altimontana*—Species with different ecological behaviors
J. R. IBARRA CABALLERO (1), M. S. Kim (2), J. Hanna (3), N. B. Klopfenstein (3), J. Stewart (1). (1) Colorado State University, Fort Collins, CO, USA; (2) Kookmin University, Seoul, REPUBLIC OF (SOUTH) KOREA; (3) Rocky Mountain Research Station, USDA Forest Service, Moscow, ID, USA

597-P Comparative whole genome analysis of the wheat eyespot pathogens, *Oculimacula yallundae* and *O. acuformis*
H. SHENG, T. D. Murray. Washington State University, Pullman, WA, USA

598-P Comparative genomics of *Xanthomonas vasicola* pv. *vасculorum* isolates recovered from maize
G. WU, M. C. Ortiz, J. M. Lang, J. E. Leach, K. D. Broders. Colorado State University, Fort Collins, CO, USA

599-P Genome assembly and comparison of *Macrophomina phaseolina* isolates on strawberry and alfalfa
A. BURKHARDT (1), K. L. Childs (2), M. Ramon (1), F. N. Martin (1). (1) USDA ARS, Salinas, CA, USA; (2) Michigan State University, East Lansing, MI, USA

600-P Functional genomics and detection of virulence factors in *Clavibacter michiganensis* subsp. *nebraskensis*
J. C. HUGUET-TAPIA (1), B. Z. Fu (2), A. E. Robertson (3), S. Liu (4), F. E. White (1). (1) University of Florida, Gainesville, FL, USA; (2) Hubei Engineering University, Xiaogan Hubei, CHINA; (3) Iowa State University, Department of Plant Pathology, Ames, IA, USA; (4) Kansas State University, Manhattan, KS, USA

601-P High-quality genome of the peach scab pathogen, *Venturia carpobola*
C. Chen, C. H. BOCK, B. W. Wood. USDA ARS, Southeastern Fruit and Tree Nut Research Laboratory, Byron, GA, USA

602-P Genome-wide characterization of alternative splicing patterns in sugarcane modulated during infection with smut pathogen, *Sporisorium scitamineum*
R. BEDRE (1), S. Irigoyen (1), P. Schaker (2). (1) University of Arizona, Tucson, AZ, USA; (2) University of São Paulo, Piracicaba, BRAZIL

603-P Open pangenomes and recombination-generated diversity in *Xanthomonas euvesicatoria* and *X perforans*
M. JIBRIN (1), P. D. Roberts (2), S. Timilsina (3), G. V. Minsavage Jr. (3), J. A. Hovde (4), G. S. Vallad (4), E. M. Goss (3), J. B. Jones (3). (1) University of Florida, Gainesville, FL, USA; (2) University of Florida, Immokalee, FL, USA; (3) Department of Plant Pathology, University of Florida, Gainesville, FL, USA; (4) Department of Entomology and Plant Pathology, Auburn University, Auburn, AL, USA; (5) Gulf Coast Research and Education Center, University of Florida, Wimauma, FL, USA
604-P Morphological, metabolic and transcriptional characterization of sexual fertilization in Aspergillus flavus
J. M. S. LUIS (1), I. Carbone (1), G. A. Payne (1), D. Bhatnagar (2), J. Cary (2), M. Lebar (2), G. Moore (2), P. Ojiambo (1). (1) North Carolina State University, Raleigh, NC, USA; (2) USDA ARS, SRRC, New Orleans, LA, USA

605-P Comparative genomic analysis of Clavibacter michiganensis subsp. nebraskensis isolates representing naturally occurring virulence diversity

606-P Gene expression profile of Acidovorax citrulli during the early stages of watermelon seed germination
G. CHEN, R. R. Walcot. The University of Georgia, Athens, GA, USA

607-P Survey of toxin-antitoxin system distribution and diversity among genomes of plant-associated bacteria
L. R. TRIPLETT. Connecticut Agricultural Experiment Station, New Haven, CT, USA

608-P Using next-generation sequencing tools to incorporate herbarium specimens in systematic research
E. C. WALLACE (1,2), J. A. Crouch (2). (1) ARS-ORISE Research Participation Program, Beltsville, MD, USA; (2) USDA ARS, Beltsville, MD, USA

609-P Metagenomic analysis of viruses and virus-like pathogens infecting pistachio in California
M. AL RWAHNIIH (1), D. A. Golino (2), N. Westrick (1), K. Stevens (3,4), F. P. Trouillas (2), J. Preece (5), C. Kallsen (6), K. Farrar (4), A. Rowhani (2). (1) Department of Plant Pathology, University of California-Davis, Davis, CA, USA; (2) University of California, Davis, CA, USA; (3) Department of Evolution and Ecology, University of California-Davis, Davis, CA, USA; (4) Foundation Plant Services, University of California-Davis, Davis, CA, USA; (5) USDA-ARS National Clonal Germplasm Repository, Davis, CA, USA; (6) Cooperative Extension Kern County, Bakersfield, CA, USA

610-P Pantoea ananatis comparative genetics and in planta kinetics
S. STICE (1), B. Kvitko (1), B. Dutta (2). (1) University of Georgia, Athens, GA, USA; (2) University of Georgia, Tifton, GA, USA

611-P Genetic characterization of cucumber yellow vein disease strains of Serratia marcescens using whole-genome sequencing
Z. MATTEEN, E. L. Little. University of Georgia, Department of Plant Pathology, Athens, GA, USA

612-P Deciphering protein-protein interaction network in the rice blast fungus, Magnaporthe oryzae
H. Kim, Y. H. LEE. Seoul National University, Seoul, REPUBLIC OF (SOUTH) KOREA

613-P Pan-genome analyses of black rot pathogen of crucifers, Xanthomonas campestris pv. campestris
A. Larrea (1), A. M. Alvarez (1), J. P. Stack (2), M. ARIF (1). (1) University of Hawaii at Manoa, Honolulu, HI, USA; (2) Kansas State University, Manhattan, KS, USA

614-P Tissue-specific transcriptional responses related to the horizontal and vertical transmission of a bacterial pathogen by its insect vector
I. E. BADILLO-VARGAS, R. Bedre, G. Esparza-Diaz, C. Avila, K. Mandadi. Texas A&M University AgriLife Research, Weslaco, TX, USA

615-P Effects of sublethal fungicide stress on genomes of Sclerotinia sclerotiorum
N. GAMBHIR, Z. N. Kamvar, S. E. Everhart. University of Nebraska, Lincoln, NE, USA

616-P Pseudomonas oleovorans strain KBPF-004 culture supernatants reduced seed transmission of CGMMV and PMMoV, and remodeled aggregation of 126-kDa protein
H. S. LIM (1), N. G. Kim (2), C. N. Park (2), H. S. Park (2), I. H. Kim (1), J. K. Kim (1), E. Y. Seo (1), L. L. Domier (3), H. G. Kim (1), C. Jang (2), J. Hammond (4). (1) Applied Biology, Chungnam National University, Daejeon, REPUBLIC OF (SOUTH) KOREA; (2) Central Research Institute, Kyung Nong Co. Ltd., Gyeongju, KOREA; (3) USDA ARS, Urbana, IL, USA; (4) USDA ARS Floral and Nursery Plant Research Laboratory, Beltsville, MD, USA

617-P Survey and identification of viruses infecting tomato crops in Guam
R. L. SCHLUB (1), M. Marutani (1), C. Padmanabhan (2), Z. Fei (3), K. S. Ling (2). (1) University of Guam, Mangilao, AP, USA (2) USDA-ARS, Charleston, SC, USA; (3) Boyce Thompson Institute, Ithaca, NY, USA

618-P Influence of Beet necrotic yellow vein virus and freezing temperatures on sugar beet roots in storage
C. A. STRAUSBAUGH, I. Eujayl. USDA ARS NWISRL, Kimberly, ID, USA

619-P Natural infection of Sorghum bicolor germplasm by Sugarcane yellow leaf virus in Florida
W. BOUKARI (1), C. Wei (1), E. Malandesia (1), M. Hincapie (1), D. S. Mollov (2), R. Beiriger (1), P. C. Rott (1). (1) University of Florida, Belle Glade, FL, USA; (2) USDA, Beltsville, MD, USA

620-P Taxonomic consideration and molecular characterization of a novel bipartite dsRNA mycovirus from Trichoderma atroviride NFCF005
J. Chun, H. E. Yang, M. Jo, S. Y. Choi, D. H. KIM. Chonbuk National University, Jeonju, REPUBLIC OF (SOUTH) KOREA

621-P Effect of single and mixed infections of Tomato severe rugose virus (ToSRV) and Tomato chlorosis virus (ToCV) on plant development and virus titer
D. BAMPI (1), G. Favara (2), J. M. Rezende (1). (1) University of São Paulo-ESALQ, Piracicaba, BRAZIL; (2) University of São Paulo, Piracicaba, BRAZIL

622-P State-wide surveys indicated widespread distribution of grapevine leafroll than red blotch in Washington vineyards
J. ADIPUTRA, R. Naidu. Washington State University, Prosser, WA, USA
623-P Epidemiology of Tobacco ringspot virus causing fanleaf degeneration and decline symptoms in wine grape (Vitis vinifera) cultivars
N. NATRA (1), S. Akinbade (2), A. Schultz (3), R. Naidu (1). (1) Washington State University, Prosser, WA, USA; (2) Washington State Department of Agriculture, Prosser, WA, USA; (3) Hattrup Farms, Wapato, WA, USA

624-P Molecular characterization of Citrus tatter leaf virus and its detection using reverse-transcription quantitative PCR
S. H. TAN (1), F. Osman (2), S. Bodaghi (1), T. Dang (1), S. Abuhajar (1), S. Hammado (1), G. Vidalakis (1). (1) University of California-Riverside, Riverside, CA, USA; (2) University of California-Davis, Davis, CA, USA

625-P Stone fruit survey efforts in Texas monitoring for Plum pox virus, European stone fruit yellows & light brown apple moth: 2016-2017
S. C. RHODES, K. Ong. Texas A&M University AgriLife Extension Service, College Station, TX, USA

626-P Effect of sequence variation in the constricta strain on the protein localization and interaction of Potato yellow dwarf virus
C. JANG (1), R. Wang (1), J. Wells (1), F. Leon (1), M. L. Farman (1), J. Hammond (2), M. M. Goodin (1). (1) University of Kentucky, Lexington, KY, USA; (2) USDA ARS Floral and Nursery Plant Research Laboratory, Beltsville, MD, USA

627-P Rosa species resistance to eriophyid mite populations
K. SOLO (1), S. Collins (1), Q. Cheng (1), B. England (2), F. Hale (3), A. S. Windham (3), D. Byrne (4), N. Anderson (4), M. T. Windham (1). (1) University of Tennessee, Knoxville, TN, USA; (2) University of Tennessee, Crossville, TN, USA; (3) Soil, Plant, and Pest Center, Nashville, TN, USA; (4) Texas A&M University, College Station, TX, USA

628-P The ever-expanding range of tospoviruses: A case of phytosanitary risk
C. OLAYA (1), N. Y. Velasquez (2), M. Betancourt Vasquez (3), W. Cuellar (4), H. R. Pappu (1). (1) Department of Plant Pathology, Washington State University, Pullman, WA, USA; (2) Grupo de Investigación de Sanidad Vegetal (GISAVE), Universidad Católica de Oriente, Rionegro, COLOMBIA; (3) CORPOICA, Bogota, Cundinamarca, COLOMBIA; (4) International Center for Tropical Agriculture (CIAT), Cali, Valle del Cauca, COLOMBIA

629-P Grapevine Pinot gris virus: An emerging virus in Napa Valley vineyards
M. AL RWAHNIH (1), D. A. Golino (2), N. Westrick (1), A. Diaz Lara (1), M. Cooper (3), R. J. Smith (4), M. Battany (5), L. Bertiga (6), S. Zhuang (7), K. L. Arnold (2), K. Farrar (8), A. Rowhani (2). (1) Department of Plant Pathology, University of California-Davis, Davis, CA, USA; (2) University of California, Davis, CA, USA; (3) University of California, Napa, CA, USA; (4) University of California, Santa Rosa, CA, USA; (5) University of California, San Luis Obispo, CA, USA; (6) University of California, Salinas, CA, USA; (7) University of California Cooperative Extension - Fresno County, Fresno, CA, USA; (8) Foundation Plant Services, Davis, CA, USA

630-P The prevalence of viruses in Ohio wheat fields
B. A. HODGE (1), L. R. Stewart (2), P. A. Paul (3). (1) The Ohio State University, Wooster, OH, USA; (2) USDA ARS, Wooster, OH, USA; (3) Ohio State University, Ohio Agricultural Research and Development Center, Department of Plant Pathology, Wooster, OH, USA

631-P Effect of Bell pepper endornavirus to bell pepper (Capsicum annuum)
C. ESCALANTE GUARDADO (1), R. A. Valverde (1, 2). (1) Louisiana State University AgCenter, Baton Rouge, LA, USA; (2) Department of Plant Pathology and Crop Physiology, Louisiana State University AgCenter, Baton Rouge, LA, USA

632-P An endornavirus from cluster bean (Cyamopsis tetragonoloba)
R. I. ALCALÁ-BRISEÑO (1), F. Herrera (2), R. A. Valverde (3). (1) University of Florida, Gainesville, FL, USA; (2) Louisiana State University AgCenter, Baton Rouge, LA, USA; (3) Department of Plant Pathology and Crop Physiology, Louisiana State University AgCenter, Baton Rouge, LA, USA

633-P Endornaviruses of Capsicum species
R. I. Alcalá-Briñeo (1), C. Escalante Guardado (2), R. A. VALVERDE (3). (1) University of Florida, Gainesville, FL, USA; (2) Louisiana State University AgCenter, Baton Rouge, LA, USA; (3) Department of Plant Pathology and Crop Physiology, Louisiana State University AgCenter, Baton Rouge, LA, USA

634-P Recovery from Ilarvirus symptoms in cranberry
S. THOMAS-SHARMA, R. Page, T. L. German, P. S. McManus. University of Wisconsin-Madison, Madison, WI, USA

635-P A survey for grapevine viruses in Tennessee vineyards
N. SOLTANI (1), D. D. Hensley (1), D. Lockwood (2), M. Staron (1), K. L. Perry (3), M. R. Hajimorad (1). (1) University of Tennessee, Department of Entomology & Plant Pathology, Knoxville, TN, USA; (2) University of Tennessee, Department of Plant Sciences, Knoxville, TN, USA; (3) Cornell University, Plant Pathology & Plant-Microbe Biology Section, Ithaca, NY, USA

636-P Genetic diversity of pepper and tomato-infecting begomoviruses in eastern Thailand
W. S. TSAI, L. T. Shen. National Chiayi University, Chiayi, TAIWAN

637-P Prevalence of viruses associated with maize lethal necrosis (MLN) in Tanzania
D. P. Massawe (1), L. R. STEWART (2). (1) The Ohio State University, Wooster, OH, USA; (2) USDA ARS, Wooster, OH, USA

638-P Molecular characterization of divergent Grapevine leafroll-associated virus 3 isolates in California, U.S.A.
M. AL RWAHNIH (1), V. Klaassen (2), K. Stevens (3), K. L. Arnold (4), H. J. Maree (5), N. Westrick (1), D. A. Golino (4). (1) Department of Plant Pathology, University of California-Davis, Davis, CA, USA; (2) Foundation Plant Services, Davis, CA, USA; (3) Department of Evolution
Grapevine vein clearing virus is prevalent in wild plant species
C. Keith, S. Petersen, W. Qiu. Missouri State University, Springfield, MO, USA

Association of Grapevine leafroll-associated virus 2 with atypical symptoms on Pinot Noir grapevines in California
H. E. McCown (1), J. Vo (1), M. R. Sudarshana (2). (1) University of California-Davis, Davis, CA, USA; (2) USDA-ARS, Davis, CA, USA

A new virus in Luteoviridae is associated with raspberry leaf curl disease
P. Di Bello (1), A. Diaz Lara (2), R. R. Martin (3). (1) Oregon State University, Corvallis, OR, USA; (2) Foundation Plant Services, University of California - Davis, Davis, CA, USA; (3) USDA ARS, Corvallis, OR, USA

Prevalence, distribution, and characterization of major viral diseases of sugarcane from southern India
R. K. N (1), V. K. K. Koramraju (2), S. S. Uppala (3). (1) Acharya N G Ranga Agricultural University, Anakapalle, INDIA; (2) Acharya N G Ranga Agricultural University, Regional Agricultural Research Station, Anakapalle, INDIA; (3) Texas A&M University AgriLife Research, Beaumont, TX, USA

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APS is truly appreciative of the continued support and involvement from its Sustaining Associate Members who help create solutions and build relationships to advance the science of plant pathology.

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Indicate your interest in unique APS volunteer activities! Stop by the volunteer board located near the APS registration desk and pin your “Volunteer Ticket” to show what activity you might like to try. You will be contacted after the meeting to get started.
Representatives from leading industry suppliers will be at this year’s annual meeting to answer questions and share information on products and services. Thank you to all our 2017 exhibitors for being a part of this meeting! Exhibitors are listed as of June 23, 2017. Visit apsnet.org/meet 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 Hall Floor Plan

Exhibitor list in numerical order of assigned booth numbers.

01 TwistDx
twistdx.co.uk
02 APS Office of Public Relations & Outreach
apsnet.org/members/outreach/opro
03 Bioreba AG/Eurofins BioDiagnostics Inc.
eurofinus.com/biodiagnostics
04 ADAMA
adama.com
05 Texas A&M University Plant Pathology & Microbiology
plantpathology.tamu.edu
06 Conviron
conviron.com
07 Monsanto
monsanto.com
08 OPTIGENE
optigene.co.uk
09 Pro-Lab Diagnostic
pro-lab-direct.com
10 Acetylcholine
acetylcholine.com
11 AMP Biotech
ampbiotech.com
12 Sociedade Brasileira de Fitopatologia (SBF)
sbfito.com.br
13 Microbiology Internations
800ezmicro.com
14 Percival Scientific, Inc.
percival-scientific.com
15 Midco Global
midcoglobal.com
16 Dino-Lite Scopes (BigC)
dinolite.us
17 Gylling Data Management Inc.
gdmdata.com
18 APS Public Policy Board
apsnet.org/members/outreach/ppb
19 Agro Research International LLC
agresearchinternational.com
20 AC Diagnostics Inc.
acdiainc.com
21 Biolog Inc.
bilog.com
22 Biolog Inc.
bilog.com
23 BioChambers Incorporated
biochambers.com
24 USDA-APHIS
aphis.usda.gov
25 PathSensors, Inc.
pathsensors.com
26 APS Diagnostics Committee
27 PhytoTechnology Laboratories
phytotechlab.com
28 Environmental Growth Chambers
egc.com
29 ACSESS Alliance of Crop, Soil & Environmental Science Societies
dl.sciencesocieties.org
30 Agdia Inc.
agdia.com
AMAZINGLY, more than 1,300 members are actively engaged in APS through their contributions on various boards, offices, forums, divisions, task forces, working groups, and committees. APS volunteers tackle important issues and cover the breadth of the science as well as key policy, program, product, and societal priorities. APS simply wouldn’t be what it is without the commitment and involvement of the membership. Special thanks to everyone who served in this capacity this year! For a comprehensive, up-to-date, listing linking you to all the branches of APS leadership visit apsnet.org/members/apsleadership/. The majority of these groups meet during the annual meeting and welcome new participation. View the daily schedule and plan to join in and learn more about how you can be involved!

Thank You
Committee Members
What a Difference 1,300+ Members Make

Amazingly, more than 1,300 members are actively engaged in APS through their contributions on various boards, offices, forums, divisions, task forces, working groups, and committees. APS volunteers tackle important issues and cover the breadth of the science as well as key policy, program, product, and societal priorities. APS simply wouldn’t be what it is without the commitment and involvement of the membership. Special thanks to everyone who served in this capacity this year! For a comprehensive, up-to-date, listing linking you to all the branches of APS leadership visit apsnet.org/members/apsleadership/. The majority of these groups meet during the annual meeting and welcome new participation. View the daily schedule and plan to join in and learn more about how you can be involved!

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**APS Annual Meeting Program Vice Chair** ........................ Kira L. Bowen, Auburn University, U.S.A.

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Naidu A. Rayapati, Washington State University, U.S.A.
Jeffrey A. Rollins, University of Florida, U.S.A.
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Jerry E. Weiland, USDA ARS, U.S.A.

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Sunday Awardees

Congratulations to this year’s APS Fellows who have been selected for their significant contributions in one or more of the following areas: original research, teaching, administration, professional and public service, and/or extension and outreach. Join us on Sunday, August 6, at 10:30 a.m. in the Opening General Session to celebrate these APS Fellow awardees and their accomplishments. Biographies on each of the awardees is available at apsnet.org/members/awards/Pages/2017AwardeesAnnounced.aspx.

**Thomas J. Baum, Iowa State University, U.S.A.**
Dr. Baum has been selected to receive this award in recognition of his pioneering contributions that have advanced our understanding of effector proteins from nematodes and the molecular signals that occur between the nematodes and their host plants.

**Gary P. Munkvold, Iowa State University, U.S.A.**
Dr. Munkvold has been selected to receive this award in recognition of his contributions to seed health testing and the epidemiology and management of seed and seedling pathogens and phytosanitary guidelines and for his distinguished service to APS.

**Andrew F. Bent, University of Wisconsin, U.S.A.**
Dr. Bent has been selected to receive this award in recognition of his research that has significantly advanced our knowledge of molecular mechanisms underlying plant disease resistance, such as cloning the Rhg1 R gene in soybeans and the ‘floral dip’ Arabidopsis transformation protocol that is widely used.

**David M. Rizzo, University of California, U.S.A.**
Dr. Rizzo has been selected to receive this award in recognition of his pioneering work on sudden oak death as well as the outreach to educate undergrads in the important of plant diseases and the interface of science and society.

**Glen L. Hartman, USDA ARS, U.S.A.**
Dr. Hartman has been selected to receive this award in recognition of his global expertise on Asian soybean rust and many other soybean diseases and his collaborative efforts with breeders to develop disease control solutions.

**Wayne F. Wilcox, Cornell University, U.S.A.**
Dr. Wilcox has been selected to receive this award in recognition of his global expertise in the biology and control of grape diseases and for work in resistance management with subsequent dissemination of information to growers, industry, and regulatory authorities.

**Seogchan Kang, Pennsylvania State University, U.S.A.**
Dr. Kang has been selected to receive this award in recognition of his efforts to catalog/store accumulated data and knowledge for future reference and development of molecular diagnostics tool kits in preparation of invasive pathogens.

**Brenda D. Wingfield, University of Pretoria, South Africa**
Dr. Wingfield has been selected to receive this award in recognition of her research on molecular and genomic characterization of fungal pathogens on trees and for the educational outreach to the young scientists of Africa.

**Yong-Hwan Lee, Seoul National University, Korea**
Dr. Lee has been selected to receive this award in recognition of his outstanding work in understanding the molecular and genomic basis for the causal agent of rice blast by characterizing and analyzing hundreds of transcription factors to understand the fungus-plant interactions.

**Jennifer H. McBeath, University of Alaska Fairbanks, U.S.A.**
Dr. McBeath has been selected to receive this award in recognition of her international collaboration resulting in market access and developing production practices and biocontrol methods for artic conditions.

**Xiangming Xu, NIAB East Malling Research, United Kingdom**
Dr. Xu has been selected to receive this award in recognition of his significant contribution to epidemiology and modeling of diseases in fruit trees and other small fruits that have found practical applications to help growers and for work to understand the microbial ecology to improve crop production.
Congratulations 2017 APS Excellence and Named Award Recipients

Congratulations to APS’s Excellence and Named Award recipients who have been selected to receive awards in honor of their significant contributions to the science of plant pathology. Join us on Monday, August 7, at 9:30 a.m. in the Plenary Session to celebrate the accomplishments of the following APS awardees. Biographies on each of the awardees is available at www.apsnet.org/members/awards/Pages/2017AwardeesAnnounced.aspx.

**Excellence in Extension Award**
Frank J. Louws, North Carolina State University, U.S.A.
Dr. Louws has been selected to receive this award in recognition of the quality and utility of his published extension bulletins and digital-based information as well as his development of alternative strategies for disease control for growers in the Southeast.

**Excellence in International Service Award**
Ranajit Bandyopadhyay, IITA
Dr. Bandyopadhyay has been selected to receive this award in recognition of his contributions to efforts to control aflatoxin in sub-Saharan Africa via local atoxigenic strains of *A. flavus* and for the creation of labs for testing in other countries.

**Excellence in Teaching Award**
Brantlee Spakes Richter, University of Florida, U.S.A.
Dr. Spakes Richter has been selected to receive this award in recognition of her contributions to classroom teaching to science and non science majors alike and her ability to make learning engaging and fun.

**Ruth Allen Award**
Hailing Jin, University of California, U.S.A.
Dr. Jin has been selected to receive this award in recognition of her discovery of cross-kingdom RNAi during plant-pathogen interaction and potential use of RNA-based fungicides.

**Lee M. Hutchins Award**
Megan M. Dewdney, University of Florida, U.S.A.
Dr. Dewdney has been selected to receive this award in recognition of her recent publications in APS journals on the epidemiology and management of new citrus diseases and development of novel management strategies for citrus HLB.

**Noel T. Keen Award for Research Excellence in Molecular Plant Pathology**
Martin B. Dickman, Texas A&M University, U.S.A.
Dr. Dickman has been selected to receive this award in recognition of his pioneering research on programmed cell death and the role this plays in controlling plant disease and plant stress responses; this could lead to new strategies and products for enhancing crop productivity.

**William Boright Hewitt and Maybelle Ellen Ball Hewitt Award**
Lina Maria Quesada, North Carolina State University, U.S.A.
Dr. Quesada has been selected to receive this award in recognition of the quality and utility of her efforts to study resistance via genetic changes in the pathogen population when fungicides are applied; she excels at integrating basic and applied research with her eye on the stakeholders in both developed and developing countries.

**Syngenta Award**
Anna E. Whitfield, Kansas State University, U.S.A.
Dr. Whitfield has been selected to receive this award in recognition of her research into the events leading to virus acquisition and transmission by arthropod vectors that could
2017 APS Foundation Awards

Congratulations to the 2017 APS Foundation Awardees

The APS Foundation is excited to announce the names of 60 individuals who received awards from the APS Foundation in 2017, totaling more than $38,000 in awards. Awardees will be recognized during the Opening Session of the APS Annual Meeting. Special thanks to everyone who donated to the APS Foundation! Your continued support makes these opportunities possible. Be sure to visit the foundation's booth to learn more about funding opportunities and to help support future leaders in plant pathology.

lead to new strategies in virus control.
Books for the World Award
Sylvester Aigbe, Ambrose Alli University, U.S.A.

Browning Plant Medicine and Health Travel Award
Salvador Ramirez, University of Nebraska-Lincoln, U.S.A.

Frank L. Howard Undergraduate Fellowship Award
Juliana González Tobón, Universidad de los Andes, Colombia

Lucy Hastings de Gutiérrez Award for Excellence in Teaching
Brantlee Spakes Richter, University of Florida, U.S.A.

Noel T. Keen Award for Research Excellence in Molecular Plant Pathology
Martin (Marty) B. Dickman, Texas A&M University, U.S.A.

Don and Judy Mathre Educational Endowment Award
Joseph Hulbert, Forestry and Agricultural Biotechnology Institute, U.S.A.

Don and Judy Mathre Student Educational Award
Rodrigo Borba Onofre, University of Florida – Gulf Coast Research and Education Center, U.S.A.

Plant Pathology Experiential Award – Individual
Mihir Mandal, USDA ARS, U.S.A.

Plant Pathology Experiential Award – Department
University of Georgia Plant Pathology Department, U.S.A.

17th I. E. Melhus Graduate Student Symposium Award
Elizabeth Cieniewicz, Cornell University, U.S.A.
Alyssa Koehler, North Carolina State University, U.S.A.
Ravin Poudel, University of Florida, U.S.A.
Hsien-Tzer Tseng, North Carolina State University, U.S.A.

International Travel Award
Diego Fernando Quiro-Ávila, Centro de Investigaciones Biotecnológicas del Ecuador, Ecuador

JANE International Service Award
Ranajit Bandyopadhyay, International Institute of Tropical Agriculture, Nigeria

JANE Research Award
Diana Schultz, Florida Gulf Coast University, U.S.A.

Raymond J. Tarleton Student Fellowship Award
Ananda Bandara, Kansas State University, U.S.A.

Schroth Faces of the Future Early Career Professionals Symposium Awardees
Alejandra Huerta, Colorado State University, U.S.A.
Brian Kvitko, University of Georgia, U.S.A.
Febina Mathew, South Dakota State University, U.S.A.
Christopher Wallis, USDA ARS, U.S.A.

Student Travel Awards

2017 Undergraduate Awardee
John F. Fulkerson Student Travel Award
Kelly Allen, University of Arizona, U.S.A.

H. J. Dubin Student Travel Award in honor of the Peace Corps
Lourena Arone, University of Arizona, U.S.A.

Inaugural Lisa Shepherd Student Travel Award
Shannon Carmody, Washington State University, U.S.A.

Malcolm C. Shurtleff Student Travel Award
Ranwnaq Chowdhury, South Dakota State University, U.S.A.

Virology Student Travel Award
Will Cody, Texas A&M University, U.S.A.

J. Artie and Arra Browning Student Travel Award
Stephen Cohen, Colorado State University, U.S.A.

Myron K. Brakke Student Travel Fund
Washington da Silva, Cornell University, U.S.A.

Joseph Kuc Student Travel Award
Megan Daniels, Cornell University, U.S.A.

Albert Paulus Student Travel Award
Bruna Forcelini, University of Florida, U.S.A.

Luis Sequeira Student Travel Award
Gretchen Freed, Washington State University, U.S.A.

Donald E. Munnecke Student Travel Award
Nikita Gambhir, University of Nebraska, U.S.A.

Tsune Kosuge Student Travel Award
Donald Gillis, University of Georgia, U.S.A.

Stephen A. Johnston and Joseph P. Fulton Joint Student Travel Award
Stacey Haack, University of California-Riverside, U.S.A.

Indian Phytopathological Society Student Travel Award
Himadri Kaushik, Assam Agricultural University, India

Kenneth and Betty Barker and Stuart D. Lyda Joint Student Travel Award
Ram Khadka, The Ohio State University, U.S.A.
Roger C. Pearson Student Travel Award  
Roshni Kharadi, *Michigan State University, U.S.A.*

Larry Wallace Moore and Dennis H. Hall Joint Student Travel Award  
Jeannie Klein, *University of Florida, U.S.A.*

Harold “Sande” McNabb, Jr. and Forest Pathology Joint Student Travel Award  
Elisa Lauritzen, *Utah State University, U.S.A.*

Dow AgroSciences and Harry Ernest Wheeler Joint Student Travel Award  
Ningxiao Li, *The Pennsylvania State University, U.S.A.*

Janell M. Stevens Johnk Student Travel Award  
Prabha Liyanathirananage, *Tennessee State University, U.S.A.*

Arthur Kelman Student Travel Award  
Amelia Lovelace, *University of Georgia, U.S.A.*

Robert W. Fulton Student Travel Award  
Lauri Lutes, *Oregon State University, U.S.A.*

Elise J. and Robert Aycock Student Travel Fund  
Dana Martin, *The Ohio State University, U.S.A.*

Gustaaf A. and Ineke C. M. de Zoeten Student Travel Award  
Megan McCaghey, *University of Wisconsin, U.S.A.*

Milt and Nancy Schroth Student Travel Award  
Michelle Oliveira, *University of Florida, U.S.A.*

H. David Thurston Student Travel Award  
Viviana Ortiz Londono, *Michigan State University, U.S.A.*

William J. Moller and Kyung Soo Kim Joint Student Travel Award  
Larissa Osterbaan, *Cornell University, U.S.A.*

Richard Gabrielson Student Travel Award  
Kelly Paugh, *University of California-Davis, U.S.A.*  
Zahir Eyal Student Travel Award  
Lizbeth Pena-Zuniga, *Oklahoma State University, U.S.A.*  
Jose and Silvia Amador and Caribbean Joint Student Travel Award  
Sushma Ponukumati, *University of Florida, U.S.A.*  
Evanthia D. and D. G. Kontaxis and Eddie Echandi Joint Student Travel Award  
Maria Ratti, *University of Florida, U.S.A.*  
William Malcolm Brown, Jr. and Landis International Joint Student Travel Award  
John Ridenour, *University of Arkansas, U.S.A.*  
Kenneth F. Baker and R. James Cook Student Travel Fund  
Pummi Singh, *University of Arizona, U.S.A.*  
Joseph M. Ogawa and George Herman Starr Joint Student Travel Award  
Shaun Stice, *University of Georgia, U.S.A.*  
Raymond G. Grogan Student Travel Award  
Spencer Stumpf, *University of Georgia, U.S.A.*  
C. Lee Campbell Student Travel Award  
Javier Tabima, *Oregon State University, U.S.A.*  
Efrat Gamliel-Atinsky Student Travel Award  
Kathryn Vescio, *University of Massachusetts, U.S.A.*  
Malcolm and Catherine Quigley Student Travel Award  
Catherine Wram, *Oregon State University, U.S.A.*  
John S. Niederhauser Student Travel Award  
Tina Wu, *University of Wisconsin-Madison, U.S.A.*  
Raymond D. Martyn Student Travel Award  
Mei Zhao, *University of Georgia, U.S.A.*

### APS 2016–2017 Division Awardees

The top awardee from each division participates in the Plant Pathologists of the Future Symposium during the annual meeting. A full list of all division awardees is posted online at [apsnet.org/members/divisions/Pages/DivisionAwardees.aspx](http://apsnet.org/members/divisions/Pages/DivisionAwardees.aspx).

#### 2017 Plant Pathologists of the Future Symposium Awardees

**Caribbean Division**  
Rebeca Sandoval Ruiz, *Universidad de Costa Rica, Costa Rica*

**North Central Division**  
Kyle Broderick, *University of Nebraska-Lincoln, U.S.A.*

**Northeastern Division**  
Megan Hall, *Cornell University, U.S.A.*

**Pacific Division**  
Leslie Holland, *University of California-Davis, U.S.A.*

**Potomac Division**  
Terence Mhora, *University of Delaware, U.S.A.*

**Southern Division**  
Patricia Soria, *University of Florida, U.S.A.*
Invitation to the International Congress of Plant Pathology 2018

APS hosts ICPP 2018 in Boston for a unique opportunity to engage

Next summer Boston will become the epicenter of plant pathology science, research and knowledge during what is sure to be a historic convening of International Congress of Plant Pathology (ICPP). Do not miss the rare opportunity to conduct invaluable face-to-face dialogues with leading experts from around the world. Consume a wealth of science and research from international delegates. Network with the diverse community of plant pathology scientists.

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APS has the honor and privilege of hosting the 11th International Congress of Plant Pathology (ICPP2018) from July 29 to August 3, 2018 in the great city of Boston! As the host society, APS will not hold its usual APS annual meeting in 2018, but will host ICPP2018 on behalf of the International Society of Plant Pathology (ISPP), its members, and plant health delegates from public and private sectors of countries from around the world.

“Celebrate the great progress in our profession, and look to what the future holds for assuring plant health that is earth’s wealth”
—Rick Bennett, President, ICPP2018

The theme of the 2018 International Congress of Plant Pathology (ICPP2018) is: Plant Health in a Global Economy. The vision, “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 plant pathology holds within the international community of scientists.

Although there will be no APS annual meeting in 2018, the ICPP2018 will adhere to the highest level of meeting planning, organization and scientific quality in content and scope for which APS is known throughout the world. In order to provide a comprehensive scientific program reflective of the diversity of interests from an international audience perspective within the limits of a robust week-long meeting, many APS committees, boards and offices will not host meetings during the Congress. Instead, the ICPP2018 Scientific Program Committee is asking that these meetings be held prior to the Congress, through conference calls or other vehicles of communication.

“I thank our ICPP2018 Organizing Committee and volunteers who have already selflessly committed their support and enthusiasm throughout the planning process of this Congress. Concurrent Session submissions have already closed, and the Scientific Program Committee, chaired by Scott Adkins with support from Amy Charkowski and the APS Annual Meeting Board (AMB), are currently determining Concurrent Session assignments. Plenary and keynote sessions are being planned by APS President-Elect, Mary Palm and APS Vice President Kira Bowen. ICPP2018 vice presidents, Lodovica Gullino, Serge Savary, You Liang Peng and Barbara Valent are promoting the Congress and supporting the efforts of the International Advisory Committee chaired by Sophien Kamoun. To ensure that the ICPP2018 truly reflects the diversity of plant pathology issues impacting the world, the ICPP Bursary and Finance Committee, chaired by Mike Boehm and Steve Slack, with support from several APS volunteers, are currently raising money for a Bursary Fund to help subsidize costs of attendance of plant health scientists and students from less developed nations who have limited resources from within their home country and institution. If you would like to contribute to this travel fund, please contact APS Foundation which is working closely with the Bursary and Finance Committee.

It is exciting that the ICPP2018, during the 50th anniversary of ISPP, will be held in Boston, a city strongly influenced by the massive immigration of Irish and Europeans fleeing the late blight potato famine and the “Great Famine” of the 19th Century. This famine, although not the first nor the last caused by plant pathogens, marked the beginning of plant pathology as a recognized scientific discipline and the rise to prominence of the U.S. Land Grant University System as a world leader in agricultural research.

On behalf of ISPP President Greg Johnson, Organizing Chair Tom Evans, and the entire ICPP2018 Organizing Committee, I am pleased to invite you to Boston, Massachusetts for the 2018 International Congress of Plant Pathology. Please join us in the beautiful city of Boston, July 29 – August 3, 2018. We look forward to seeing you in 2018!

More information about the program and venue can be found on the ICPP 2018 website: icpp2018.org.

Rick Bennet, ICPP2018 President
Save the Date

2018 is already going down in history.

For the first time in over 25 years, ICPP will convene in North America!

ISPP will celebrate its 50th anniversary!

Will YOU be in attendance?

Help to make history. Join us in Boston for ICPP2018.

Learn more at icpp2018.org

ICPP
BOSTON
JULY 29 - AUGUST 3 2018

The International Congress of Plant Pathology (ICPP) is hosted by The American Phytopathological Society (APS) on behalf of the International Society for Plant Pathology (ISPP)

Apply for an ICPP2018 Bursary Assistance Award today!

Deadline to apply August 31, 2017
Introducing AmplifyRP® XRT+ for *Xylella fastidiosa*

*Xylella fastidiosa* (Xf) is a bacterial pathogen that severely impacts multiple crops in several countries around the world. Xf is most commonly known for causing Pierce’s disease in grape, citrus variegated chlorosis (CVC), almond leaf scorch disease, and olive quick decline syndrome.

AmplifyRP XRT+ for Xf is an isothermal DNA amplification and detection system that offers unrivaled detection capabilities in an easy-to-use testing format. It is highly specific and offers equivalent, or better, sensitivity compared to published PCR methods while eliminating laborious and costly nucleic acid extractions. Real-time (Figure 1) or end-point (Figure 2) detection options are available. Prior molecular diagnostic experience is not required to perform AmplifyRP XRT+ tests.

### Assay Features / Specifications

- No DNA purification required
- Reactions supplied as single-use lyophilized pellets
- Total assay time 30 (real-time) to 45 (end-point) minutes depending on detection method
- **Sensitivity:** 22 copies of Xf genomic DNA

### Ordering Information

- **AmplifyRP XRT+ Kit for Xf**
  - **Product Number:** XCS 34501/0048
  - **Contents:** 48 reactions and necessary buffers / diluents for real-time detection

- **AmpliFire Isothermal Fluorometer (required for real-time detection)**
  - **Product Number:** ACC 00090
  - **Contents:** 1 AmpliFire

- **Portable heat block (required for end-point detection)**
  - **Product Number:** ACC 00150
  - **Contents:** Portable heat block, mini-pipettes, tips, PCR tube rack

- **Ampicon Detection Chamber (required for end-point detection)**
  - **Product Number:** ADC 98800/0001
  - **Contents:** 1 Ampicon Detection Chamber

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