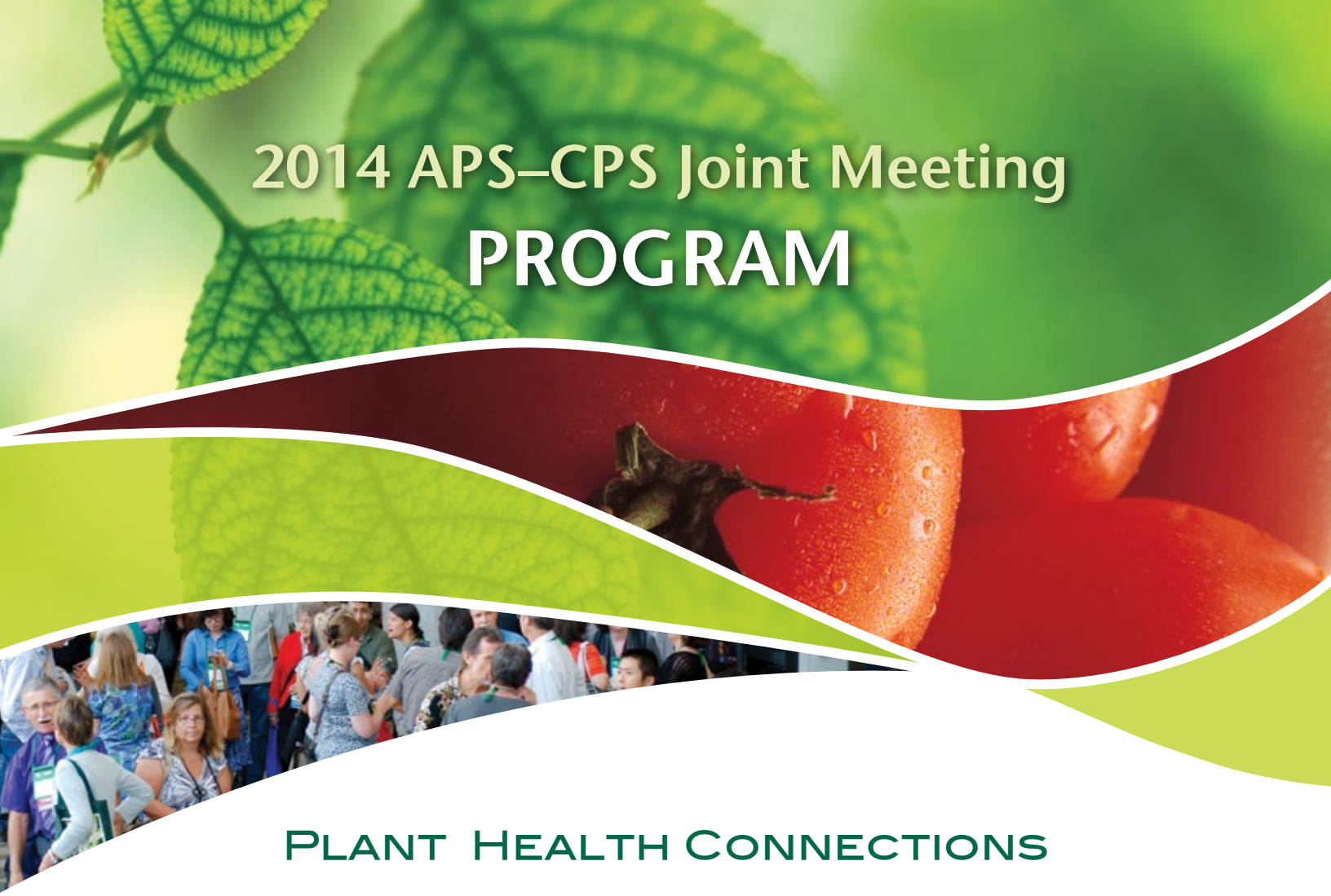
2014 APS–CPS Joint Meeting

PROGRAM



Plant Health Connections

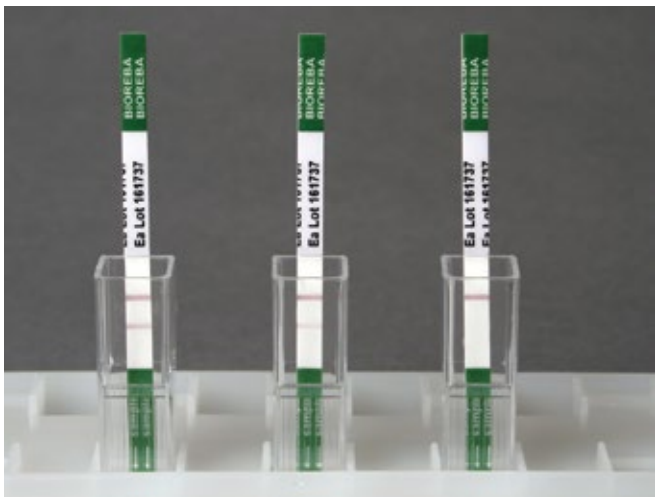
2014 APS • CPS
Joint Meeting
August 9–13
Minneapolis, Minnesota

The American Phytopathological Society • Canadian Phytopathological Society

BIOREBA

AgriStrip - Lateral flow tests

Complete kits for fast and easy use in field and greenhouse



ELISA tests for plant pathogens

Complete kits, reagents, buffers, microtiter plates and controls for laboratory use

Equipment and Disposables

Homex 6 homogenizer and extraction bags for sample preparation in ELISA and PCR

Certified Management System SQS ISO 9001

Your Partner in Agro-Diagnostics

BIOREBA AG Switzerland
www.bioreba.com

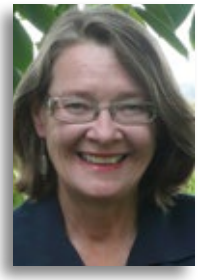
For the US please contact our distributor

Eurofins/STA Laboratories, Inc
toll free 1 800 426 9124
www.eurofinsus.com/stalabs

Presidents' Welcome

"By gathering the diverse domestic and international members of our society, we are able to exchange the latest scientific information, share knowledge on current hot topics being debated publicly, and contribute directly to the grand challenges facing agriculture and society today. Beyond the exciting workshops, sessions and poster presentations, take time to visit the informative booths of our exhibitors and supporters. Sincere thanks to the APS Annual Meeting Board, headquarters staff and members of APS and CPS for planning a comprehensive, balanced and entertaining program for all to enjoy."

George Abawi, APS President



"The last joint meeting of our two societies was in Quebec City in 2006, so this is a rare opportunity to share our work and be inspired by others from around the world. To fulfill our meeting theme, 'Plant Health Connections,' we need to focus on the equation: plant health + soil health + environmental health = community health. This can only be achieved by a vibrant and financially viable agricultural industry. The comprehensive content at this year's joint meeting will help us address all these concerns to make a real difference."

Janice Elmhirst, CPS President

Program Chair Welcome

"This week, we bring together the greatest minds in plant pathology in the 'City by Nature,' Minneapolis. My advice to you is connect. Delve into the future of our science by exploring new topics addressed in posters, technical and plenary sessions. Use the meeting app to stay organized and engaged in the content. Take advantage of the many organized networking opportunities and social gatherings. I've attended APS annual meetings for more than 30 years and I still look forward to meeting friends and colleagues who connect me to my community of science."

Rick Bennett, APS Program Chair and President-Elect

Table of Contents

Advertiser Index

The American Phytopathological Society (APS) is the premier society dedicated to high-quality, innovative plant pathology research. APS is driven by a distinctive community of scientists, whose energy and commitment ensure the global advancement of this critical science. Members belong to receive cutting-edge scientific information and the best networking opportunities. Find out more at www.apsnet.org.

The Canadian Phytopathological Society (CPS) promotes research and education in plant pathology, public awareness of the importance of plant diseases, and discussion of all aspects of plant pathology in Canada and internationally.

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.

Connect with Your Colleagues Get Social—
Share Your Meeting Experience

Connect with fellow attendees in the hallways, sessions, and events and then continue the discussion online!

- Share your meeting experience on **Twitter** with #APS14
- Start a discussion with our **LinkedIn** group
- Upload videos to **www.youtube.com/plantdisease**
- Pin to the **Pinterest board** at www.pinterest.com/plantdisease
- Visit the APS **Facebook** page facebook.com/americanphytopathologicalsociety to add comments and photos.

AC Diagnostics, Inc.

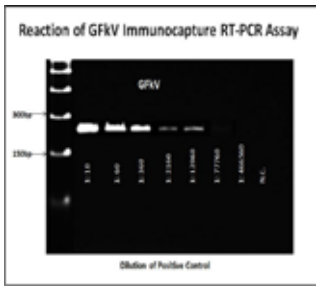
We Believe in Diagnostics!

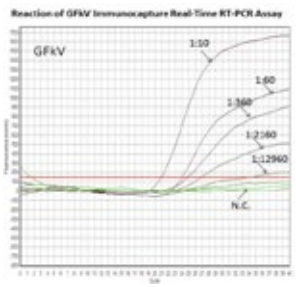
www.acdiainc.com www.nanodiainc.com

ELISA Tests for 300+ Plant Pathogens,
Food Safety & Veterinary Diseases

High Quality, Affordable Price

Immunocapture PCR Kits
Real-Time PCR Kits





Nano Products for Life Science

VISIT BOOTH #211

1131 W. Cato Springs Road, Fayetteville, AR 72701

Tel: 479-595-0320 Email: infor@acdiainc.com

App into the 2014 Meeting!

Mobile App—Better Every Year and FREE!

Make This Your Go-To App for the Meeting!

Why use the app? Same content plus more features than the program book. It is quick, easy to use, and a green effort for the environment.

Here are the best features:

- **Browse** the program schedule, exhibitor list, posters, and general information
- **Customize** your schedule and add appointments
- **Access** session information, including full abstracts
- **Add** exhibitors to your to-do list
- **Connect** with other attendees: send messages and make appointments
- **Access** poster presenters' audio preview of their poster (Internet access required)
- **Connect** with your iPad-specific version
- **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.

2014 APS•CPS Joint Meeting
August 9–13
Minneapolis, Minnesota

Registration Hours

Hall D Foyer, Convention Center

Saturday, August 9 ..... 12:00 – 6:00 p.m.
Sunday, August 10 ..... 7:00 a.m. – 6:00 p.m.
Monday, August 11..... 7:00 a.m. – 5:30 p.m.
Tuesday, August 12 ..... 7:00 a.m. – 5:30 p.m.
Wednesday, August 13..... 7:30 a.m. – 1:00 p.m.

Exhibit and Poster Hours

Hall D, Convention Center

Sunday, August 10

8:00 a.m. – 3:00 p.m.....Exhibit Set-Up
12:00 – 3:00 p.m. .....Poster Set-Up
4:00 – 6:00 p.m. .....Welcome Reception with Exhibition, Posters, and Alumni Gatherings
4:00 – 8:00 p.m. .....Poster Viewing

Monday, August 11

7:30 a.m. – 8:00 p.m..... Poster Viewing
10:00 a.m. – 6:00 p.m..... Exhibits Open
3:30 – 4:00 p.m. ..... NEW Poster Huddle Time – see page 47 for a list of topics
4:00 – 6:00 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 board where you can be found.
4:00 – 5:00 p.m. ..... Posters 1 – 328
(even-numbered poster authors present)
5:00 – 6:00 p.m. ..... Posters 329 – 652
(even-numbered poster authors present)

Tuesday, August 12

7:30 a.m. – 8:00 p.m..... Poster Viewing
10:00 a.m. – 6:00 p.m..... Exhibits Open
3:30 – 4:00 p.m. ..... NEW Poster Huddle Time – see page 47 for a list of topics
4:00 – 6:00 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.
4:00 – 5:00 p.m. ..... Posters 1–328
(odd-numbered poster authors present)
5:00 – 6:00 p.m. ..... Posters 329–652
(odd-numbered poster authors present)
6:00 – 8:00 p.m. ..... New Time! Exhibit Take-Down

Wednesday, August 13

8:00 – 10:00 a.m. ..... Poster Take-Down

Looking for Breakfast, Lunch, Beverage, or Snack?—Try Dunn Brothers Coffee Shop

Breakfast and lunch items in addition to coffee, specialty coffee drinks, beverage's and more is available daily from 7:00 a.m. to 5:00 p.m. at Dunn Brothers Coffee Shop located on the first level of the Minneapolis Convention Center.

Open Meeting Rooms

A small meeting room for 16 people is available for use during the meeting at the Minneapolis Convention Center and a meeting room for 12 people is available at the Hilton Minneapolis Hotel. To check availability, location, and to reserve a room, stop by the Registration Desk.

Speaker Ready Room

209 A, 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 9.....4:00 – 8:00 p.m.
Sunday, August 10.....7:00 a.m. – 7:00 p.m.
Monday, August 11 .....7:00 a.m. – 5:30 p.m.
Tuesday, August 12.....7:00 a.m. – 5:30 p.m.
Wednesday, August 13.....7:00 a.m. – 12:00 p.m.

Talent Connections

It's all about networking when it comes to a job or candidate talent search. This joint meeting is the perfect venue for making these critical connections. Start off by posting copies of your job or candidate information on the Job Board by the registration desk. A one-on-one opportunity is also available on Monday, August 11, during the Early Career Professionals' Social, where candidates can hear first-hand from employers about various opportunities (ticket required). Don't forget, the APS Job Center provides access to the most recent jobs and candidates year-round.

Cultivate Possibilities for Plant Pathology Through the APS Foundation

Make sure to stop by the APS Foundation booth in the registration area, and learn about the latest initiatives where your donations are creating possibilities for plant pathology! All students who donate $20 or more will be entered in a drawing for the chance to win a $500 travel grant for next year's meeting, and anyone who donates $100 or more will be entered to win a commemorative Norman Borlaug bronze medal. It's a win-win opportunity; make sure to donate during the meeting!

Support Global Awareness with a Silent Auction Bid!

A marvelous selection of items from around the world will again be available at this year's 10th Annual Silent Auction, with proceeds directed to the APS Office of International Program's Global Experience Program. Support this effort with your bids on Sunday, August 10, 12:00 – 6:00 p.m.

See What's New and On Sale in the APS PRESS Bookstore!

New turf and tomato apps have arrived just in time for summer disease scouting. Stop by and check out these peer-reviewed APS PRESS apps for your iPhone or iPad. Plus get the meeting discount on three editions new to the Compendium of Plant Disease Series—splendid updates of tomato, apple and pear, and rhododendron and azalea diseases are on display and in stock. All three now cover pests too! Another new delivery, *Biology, Detection, and Management of Plant Pathogens in Irrigation Water*, is on display and on sale. The new teaching and extension DVD, F*ive Major Fungal Diseases of Corn*, is now showing. A free web interface comes with the new edition of the manual of *Exercises in Plant Disease Epidemiology* that helps you apply the concepts in the book. If you have a book or app idea, APS PRESS wants to hear about it during the meeting and can help you publish your work and make it known to plant pathologists worldwide, so stop by and bring your ideas. Be sure to check out the new t-shirt designs and updated color choices early in the meeting for the best selection.

Photo Release

Photographs will be taken during the meeting. By registering for this meeting, you agree to allow APS and CPS 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

Minneapolis Convention Center
1301 2nd Avenue South
Minneapolis, MN 55403
612.335.6000

DoubleTree Hotel and Suites
1101 Lasalle Avenue
Minneapolis, MN 55403
612.332.6800

Hilton Minneapolis
1001 Marquette Avenue
Minneapolis MN 55403
612.376.1000

Holiday Inn Express
225 Street 11th Street
Minneapolis, MN 55403
612.341.3300

Offsite Venues

Industry & Extension Social—Down on the Mississippi
Monday, August 11, 6:30 – 9:30 p.m.
Nicollet Island Pavilion (transportation provided)
40 Power Street
Minneapolis, MN 55401
612. 253.0255

Committee for Diversity and Equality presents "Is Your Mind Set? Working with Cross Cultural Differences"
Tuesday, August 12, 6:00 – 8:00 p.m.
Mason's Restaurant Barre
528 Hennepin Avenue
Minneapolis, MN 55403
612.516.3344

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.***

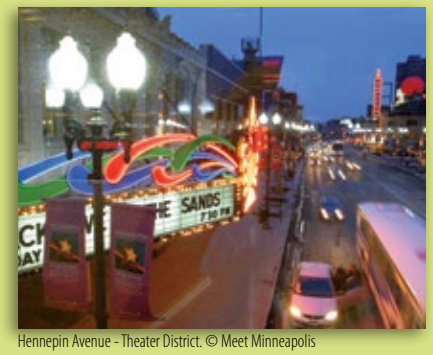
- Do not give your room number out to anyone you do not know and avoid giving out your room number in conversations where strangers may hear you talking.
- Bolt your hotel room door and only open it when you know who is on the other side. (Note: Hotel personnel wear uniforms and have identification badges. 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.

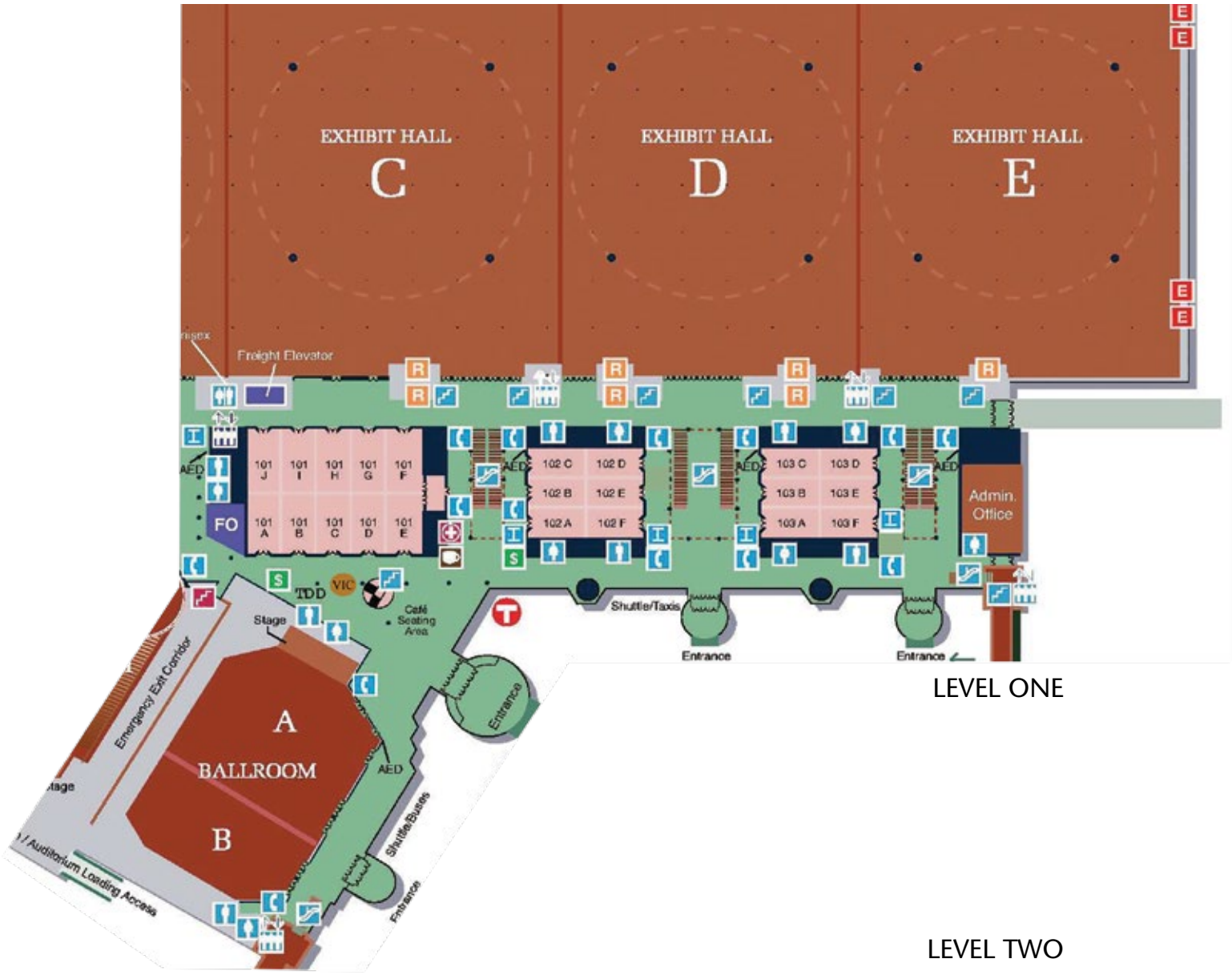
Minnehaha Falls. © Meet Minneapolis

The Frederick R. Weisman Art Museum at the University of Minnesota in Minneapolis. © Meet Minneapolis



Hennepin Avenue - Theater District. © Meet Minneapolis

Minneapolis Convention Center



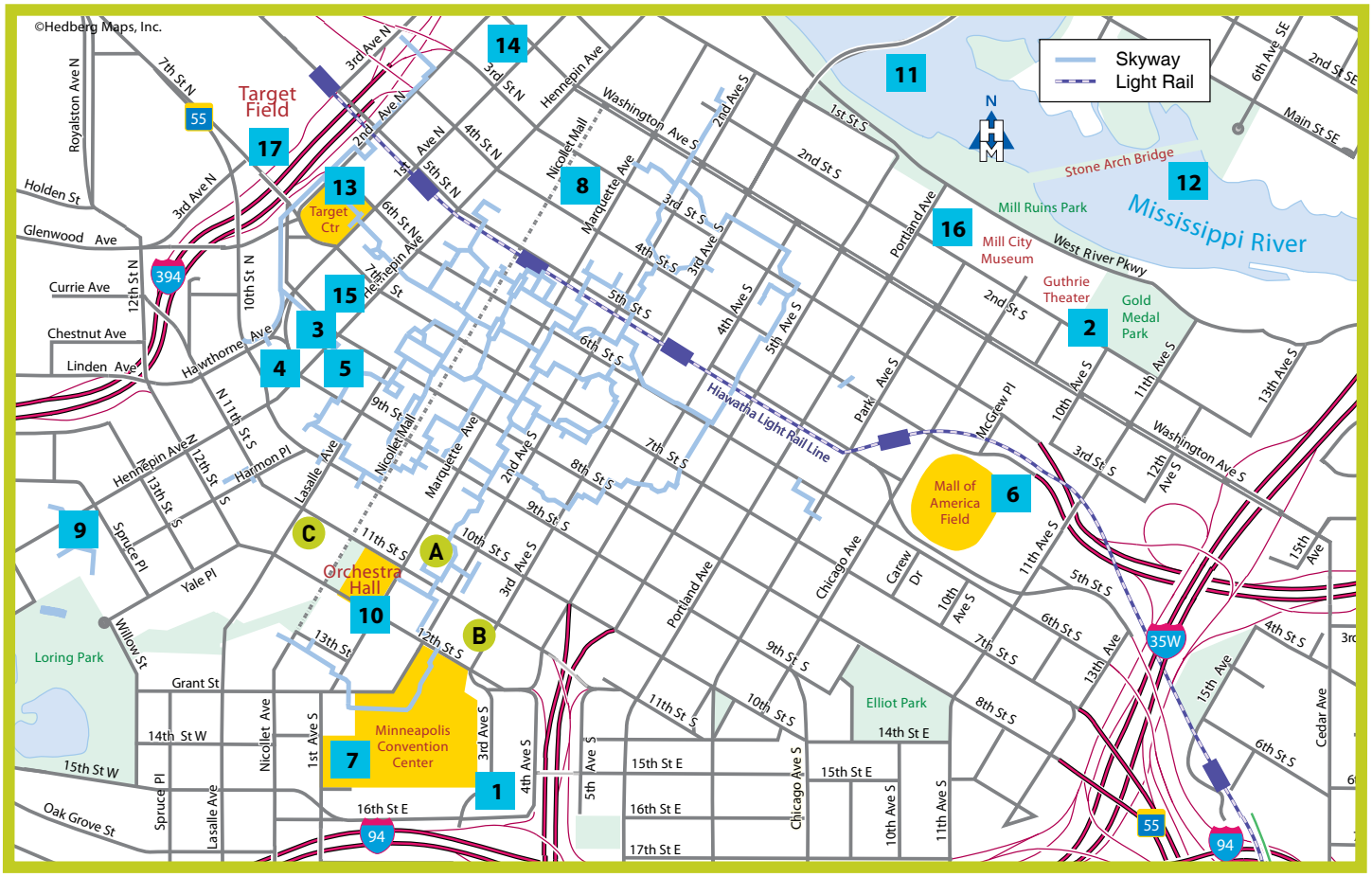
LEVEL ONE

LEVEL TWO

SECOND FLOOR

THIRD FLOOR

Downtown Minneapolis



HOTELS

A. Hilton Minneapolis
B. Holiday Inn Express Hotel & Suites Downtown Minneapolis
C. DoubleTree Suites By Hilton Minneapolis

POINTS OF INTEREST

1. Children's Theatre/Mpls Institute of Arts
2. Guthrie Theater
3. Hennepin Stages
4. Historic Orpheum Theatre
5. Historic State Theatre
6. Mall of America Field
7. Minneapolis Convention Center
8. Minneapolis Central Library
9. Minneapolis Sculpture Garden/ Walker Art Center
10. Orchestra Hall
11. Paradise Charter Cruises
12. Stone Arch Bridge
13. Target Center
14. Theatre de la Jeune Lune
15. Pantages Theatre
16. Mill City Museum

bioAPT

When healthy plants matter...

bioAPT is the industry standard for granular *Rhizobia* carriers

What can bioAPT do for you?

- Available in powdered and granular forms
- Exceptional moisture and nutrient retention
- Humic substrate minimizes planting shock
- Exceptional flow characteristics
- High granular strength (low dust)
- Long shelf life
- Neutral pH

APT

www.AmericanPeatTech.com

36203 350TH AVE • AITKIN, MN, 56431
OFFICE: 218.927.7888 // FAX: 218.927.3272

NEW APS Reaches Out with Global Connections through Live Streaming

We're connecting with members around the world with the live streaming of our Opening General Session and Plenary Sessions on the APS website. And checkout the opportunity to ask questions of our plenary speakers through Twitter, from those attending the meeting and those watching from afar.

NEW PhytoViews

Engage in facilitated conversations that explore questions/issues relevant to plant pathology as we explore all points of view. For more information, see page 19 of the Program Book.

- **Regulating Pathogens for Research: Too Much of a Good Thing?**
  Sunday, August 10, 1:00 – 2:15 p.m.; Room 103 BC, Convention Center
- **RNAi Biotechnology Applications**
  Tuesday, August 12, 2:15 – 3:30 p.m.; Room 103 BC, Convention Center

NEW Idea Cafés

Tuesday, August 12, 2:15 – 3:15 p.m.; Exhibit Hall D, Convention Center
Wednesday, August 13, 10:30 – 11:30 a.m.; Exhibit Hall D, Convention Center
Looking for 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 or interest to you! For a complete listing of table topics, see page 22 of the Program Book.

CPS 85th Annual General Meeting and Awards Presentation

Sunday, August 10, 10:00 a.m. – 12:00 p.m.; Room 102 BC, Convention Center
Reports from the outgoing board, treasurer, future meetings, Taylor and Francis, publisher of the Canadian Journal of Plant Pathology and an update on the 5-Year Strategic Plan will be presented. We will celebrate the winners of this year's CPS Awards and welcome the new Executive Board of CPS.

APS Opening General Session and Awards & Honors Ceremony

Sunday, August 10, 10:30 a.m. – 12:00 p.m.; Grand Ballroom, Hilton
Your official welcome to the meeting! Connect with friends and fellow scientists from around the world as we recognize APS members with awards and honors for their work throughout the year. Hear about accomplishments and goals for APS from your leaders, honor those who have left our ranks in the past year, and learn what is in store at this year's joint meeting.

APS Public Policy Board Open Forum on Hot Topics

Monday, August 11, 10:30 a.m. – 12:00 p.m.; Room 211 CD, Convention Center
Biotechnology for improved management of plant diseases has the potential to reduce dependency of commercial and noncommercial growers on pesticides and to enhance food security for an increasing global population. APS has long opposed regulating food, feed, and fiber products based solely on the particular technology that was used to create the varieties/cultivars. However, regulation of newly emerging approaches to crop modification, such as RNAi technology to silence expression of plant, pathogen, or insect genes, is now being discussed. Please join the APS Public Policy Board (PPB) and add to the scientific discussion during this RNAi use for biotechnology hot topic session. An open forum of experts on RNAi will kick off the discussions. A quick highlight on the latest activities for the Phytobiomes Initiative will also be discussed.

PLENARY SESSION I

Plant Health Connections – Soil Health, Plant Health, Food Security, Human Health

Monday, August 11, 1:00 – 3:00 p.m., ***Grand Ballroom, Hilton***

A healthy soil with the optimum ranges of physical, chemical, and biological properties is a prerequisite for the profitable production of healthy and safe food, feed, fiber, and biofuel crops. High yields of healthy, safe, and high-quality crops will improve farm profitability, agricultural sustainability, community life, and food security and contributes in the fight against human diseases and poverty, thus illustrating the interconnections among all these topics. Plant pathology and plant pathologists contribute directly and/or indirectly in addressing these and the other grand challenges facing agriculture and society today.

Featured Presenters:


Harold van Es

Harold van Es presents – From the Bottom Up: Farmer Tools for Creating Healthy Soil Environments

Harold van Es is a professor of soil and water management and former chair of the Department of Crop and Soil Sciences at Cornell University. He received degrees from the University of Amsterdam, Iowa State University, and North Carolina State University. He works on practical approaches to precision soil management, with current emphases on a holistic soil health management framework and a computational tool for adaptive nitrogen management. He has published over 110-peer reviewed papers and chapters, coauthored a widely read book on sustainable soil management (*Building Soils for Better Crops*), developed numerous extension articles and videos, and advised 45 graduate students. He teaches an undergraduate course in Soil Management for Sustainability and a graduate course in Space-Time Statistics. He is a fellow of both the Soil Science Society of America and the American Society of Agronomy.


Jan E. Leach

Jan E. Leach presents – Connecting the Phytobiomes and Plant Health

Jan E. Leach is a university distinguished professor at Colorado State University and an adjunct scientist at the International Rice Research Institute. Her research focuses on understanding the molecular basis of durable disease resistance, particularly in rice-pathogen interactions. Leach is a fellow and a past president of APS and currently chairs the APS Public Policy Board. She is a fellow of both the American Association for the Advancement of Science and the American Academy of Microbiology. She served as president of the International Society of Molecular Plant–Microbe Interactions and editor-in-chief of *Molecular Plant-Microbe Interactions*. She is associate editor of the *Annual Reviews of Phytopathology*. Leach has served on or chaired many advisory committees, including the U.S. Rice Genome Sequencing Project and the National Science Advisory Board for Biosecurity. Leach's earned degrees from the University of Nebraska (B.S. and M.S. in microbiology) and the University of Wisconsin (Ph.D. in plant pathology). She was a post-doctoral fellow at East Malling Research in Kent, England.


Jennifer Ann Thomson

Jennifer Ann Thomson presents – Genetically Modified Crops for Africa: Healthy Plants and Healthy Bodies *(Thomson's talk is provided through the Glenn Anderson Lectureship on World Food Security Award*)*

Jennifer Ann Thomson has a Ph.D. in microbiology from Rhodes University in South Africa. She was a post-doctoral fellow at Harvard Medical School. Thomson is now a Professor of Microbiology in the Department of Molecular and Cell Biology at University of Cape Town (UCT) in South Africa and her main current research interests are in the development of maize (corn) resistant to the African endemic maize streak virus (MSV) and tolerant to drought. Field trials of MSV resistant and drought tolerant maize lines are under way and these will be the first analyses and trials of a transgenic plant developed in Africa, for an African problem, using African plant genes. She is a Fellow of the Royal Society of South Africa and of UCT. Honors received include the L'Oreal/UNESCO prize for Women in Science and an honorary doctorate from the Sorbonne in Paris. Thomson is a regular writer and speaker internationally on the subject of genetically modified organisms, especially crops and foods derived from them. She addressed the World Economic Forum in Davos, and the United Nations as the guest of Secretary General Kofi Annan. Thomson's two books, 'Genes for Africa' and 'Seeds for the Future' are geared towards the interested layperson.

** Glenn Anderson Lectureship on World Food Security Award was established to commemorate the contributions of an outstanding, internationally recognized plant scientist toward the security of world food supply. The award sponsors lectures either at joint meetings of CPS and APS, at the International Congress of Plant Pathology, or other special events as agreed to by both the CPS and APS, as circumstances permit.*

PLENARY SESSION II


Alan Bjerga

Your Best Frenemy: Science, the Media, and Making Your Point

Tuesday, August 12, 1:00 – 2:00 p.m.;
Grand Ballrom, Hilton

Alan Bjerga - Author, *Endless Appetites: How the Commodities Casino Creates Hunger and Unrest*; Food and Agriculture Policy Reporter, *Bloomberg News*

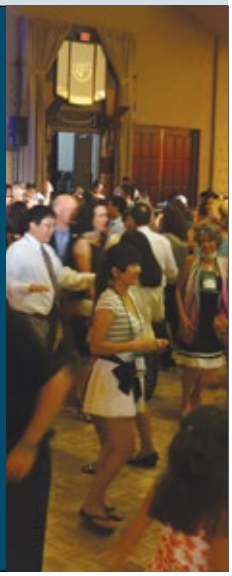
With more numerous and diverse media than ever before, engaging with journalists is no longer a choice–it's a necessity. But how can a scientist inform the public through the media without risking accuracy or integrity? Alan Bjerga, agriculture reporter for *Bloomberg News*, discusses ways scientists can better inform the public while helping journalists perform their own function of giving audiences the information they want and need. The presentation will be followed with what promises to be a lively question-and-answer session!

Alan Bjerga is the author of the book *Endless Appetites: How the Commodities Casino Creates Hunger and Unrest.* He covers agricultural policy for *Bloomberg News* and is a past president of the National Press Club and the North American Agricultural Journalists. In 2012, he joined the faculty of Georgetown University as an adjunct instructor. He is also a frequent contributor to Bloomberg Television and *Bloomberg Businessweek* magazine and has discussed food and farming on National Public Radio, the BBC and PBS Newshour, among other outlets. He has been recognized for his work on hunger and agriculture by the Society of American Business Editors and Writers, the New York Press Club, the Kansas Press Association, the North American Agricultural Journalists, and the Overseas Press Club. Bjerga grew up on a farm near the town of Motley, Minnesota. The graduate of Concordia College (Moorhead, Minnesota.) and the University of Minnesota began his career with the *St. Paul Pioneer Press* (Minnesota) and also reported for the Sioux Falls (South Dakota) *Argus Leader* and *The Wichita Eagle* (Kansas). He has competed for the title of "DC's Funniest Journalist and moonlighted as a game-show contestant, appearing on both "Jeopardy!" and "Who Wants To Be a Millionaire?"

Final Night Celebration—Camp Wanna Mingle

Wednesday, August 13, 6:30 – 9:30 p.m.;
Ballroom AB, Convention Center

No need for camping gear, but there will be plenty of time to mingle as we chow down on the best of Minnesota camp cuisine, catch up with friends and colleagues before heading home, and take in a dance or two or more with Minneapolis premier group "The Covers". We won't be under the stars, but the APS and CPS stars will be shining bright! Ticket to the event and a drink ticket are included with full registration. Guests' tickets are available for purchase at the Registration Desk.



LEADERSHIP OPPORTUNITY

Build Better Relationships – Leverage Conflict as Opportunity

Saturday, August 9; Marquette Ballroom IX, Hilton
8:30 a.m.–5:30 p.m.

Organizers: Janna Beckerman, Purdue University, West Lafayette, IN, U.S.A., and Bill Schneider, USDA ARS, Fort Detrick, MD, U.S.A.
Sponsoring Committee: APS Leadership Institute Committee
Sponsored in-part by: Monsanto

Science is a social occupation. Leaders at all levels need to build positive relationships and manage conflict in productive ways. The inability to do these things can stall or derail a career. Unfortunately, these "soft" skills do not come naturally to all people and are often overlooked in academic coursework. This session will focus on

- effective workplace behaviors and building relationships
- developing skills to positively resolve conflict in the workplace

The session will be facilitated by Sherry Harsch-Porter, Ph.D., president of The Porter Bay Group, Inc. Harsch-Porter also teaches at Washington University and is a contributing author to *The Handbook of Knowledge-Based Coaching: From Theory to Practice* and author of *Education as Possibility: Coaching for Persistence*.

SCIENTIFIC SESSIONS-AT-A-GLANCE

	SUNDAY	MONDAY
8:30 – 9:45 a.m.		**TECHNICAL SESSION:** Fungicide Efficacy • 211 B **TECHNICAL SESSION:** Interactions of Fungal Pathogens with Canola • 211 A **TECHNICAL SESSION:** Pathogen Dispersal • 102 BC
8:30 – 11:30 a.m.		**SPECIAL SESSION:** 14th I. E. Melhus Graduate Student Symposium • 205 AB **SPECIAL SESSION:** A Systems Approach for Microbe Management: From Food Safety to Plant Health • 205 CD **SPECIAL SESSION:** An Expanding Virome of Cultivated Plants: Home-grown or Imported? • 208 AB **SPECIAL SESSION:** Innovative Approaches to Control Difficult Bacterial Pathogens • 208 CD **SPECIAL SESSION:** The Complicated Lifestyles of Dothideomycete Fungi: Understanding Novel Mechanisms of Pathogenicity • 102 DE
10:15 – 11:30 a.m.		**TECHNICAL SESSION:** Chemical Control • 211 B **TECHNICAL SESSION:** Fungal-Host Interactions • 211 A **TECHNICAL SESSION:** Potato Diseases • 102 BC
LUNCH		
1:00 – 2:15 p.m.	**TECHNICAL SESSION:** Fungal Toxins • 102 BC **TECHNICAL SESSION:** Integrated Management of Vegetable Diseases • 102 DE **TECHNICAL SESSION:** Phytobacteriology • 211 A **TECHNICAL SESSION:** Resistance to Tree Pathogens • 211 B **PHYTOVIEWS:** Regulating Pathogens for Research: Too Much of a Good Thing • 103 BC	
1:00 – 4:00 p.m.	**SPECIAL SESSION:** Banned: Turfgrass Disease Control in the Age of Restrictive Pesticide Legislation • 205 CD **SPECIAL SESSION:** Extension Yesterday, Today, and Tomorrow • 208 CD **SPECIAL SESSION:** Schroth Faces of the Future: Virology • 205 AB **SPECIAL SESSION:** What's App? Using Apps and Technology in Integrated Plant Disease Management Programming • 208 AB	
2:15 – 3:30 p.m.		
2:45 – 4:00 p.m.	**TECHNICAL SESSION:** Disease Management in Field Crops • 211 A **TECHNICAL SESSION:** Fruit and Nut Crop Diseases • 102 BC **TECHNICAL SESSION:** Tree Diseases • 211 B	

TUESDAY	WEDNESDAY
TECHNICAL SESSION: Disease Resistance in Monocots • 102 BC **TECHNICAL SESSION:** Integrated Management of Disease – 1 • 211 A **TECHNICAL SESSION:** Mechanisms of Host Resistance and Susceptibility • 211 B **TECHNICAL SESSION:** Vector-Pathogen Interactions • 102 DE	**TECHNICAL SESSION:** Bacterial Virulence • 211 B **TECHNICAL SESSION:** Fungal Biology • 102 DE **TECHNICAL SESSION:** Unraveling the Basis of Rust Resistance • 102 BC
SPECIAL SESSION: Destructive Tree Diseases Associated with Ambrosia/Bark Beetles: Black Swan Events in Tree Pathology • 208 AB **SPECIAL SESSION:** Food Security: Role of Plant Pathology • 205 CD **SPECIAL SESSION:** New Products & Services • 205 AB **SPECIAL SESSION:** Understanding Phytobiomes to Improve Agricultural Productivity • 208 CD	**SPECIAL SESSION:** EPA's Endocrine Disruptor Screening Program and Its Relationship to Plant Protection Products • 205 CD **SPECIAL SESSION:** Frontiers in Biosynthesis and Management of Mycotoxins • 205 AB **SPECIAL SESSION:** Funding Opportunities for Cooperative International Research • 211 A **SPECIAL SESSION:** Interconnected Lifecycles: Multitrophic Interactions Between Plants, Pathogens and Insects • 208 AB **SPECIAL SESSION:** Potyviruses: Functional Genomics and Virus-host Interactions • 208 CD
TECHNICAL SESSION: Disease Resistance in Dicots • 102 BC **TECHNICAL SESSION:** Fungal Virulence and Genomics • 211 B **TECHNICAL SESSION:** Integrated Management of Disease -2 • 211 A **TECHNICAL SESSION:** Population Biology and Genetics • 102 DE	**TECHNICAL SESSION:** Biological Control Mechanisms • 211 B **TECHNICAL SESSION:** Biology of Oomycetes • 102 BC **TECHNICAL SESSION:** Legume Diseases • 102 DE
	TECHNICAL SESSION: Diseases of Specialty Crops • 211 A **TECHNICAL SESSION:** Epidemiology of Wheat Diseases • 102 BC **TECHNICAL SESSION:** Tropical Crops • 102 DE **TECHNICAL SESSION:** Virus-Host Interactions • 211 B
	SPECIAL SESSION: Beyond Borlaug: How the Next Generation of Plant Pathologists are Advancing the Green Revolution • 208 CD **SPECIAL SESSION:** Boxwood Blight: Collaborative Connections to Study an Emerging Disease • 205 AB **SPECIAL SESSION:** Myths and Realities of Biopesticides: Academic, Industry and Grower Perspectives • 208 AB **SPECIAL SESSION:** Revealing the Stories of the Genome Via Genotyping-by-Sequencing (GBS) • 205 CD
TECHNICAL SESSION: Bacteria-Host Interactions • 208 AB **TECHNICAL SESSION:** Fungicide Resistance • 205 CD **TECHNICAL SESSION:** Management of Nematodes • 208 CD **TECHNICAL SESSION:** Molecular and Microbial Ecology • 102 DE **SPECIAL SESSION:** Plant Pathologists of the Future: Showcasing the Top Graduate Students from APS Division Meetings • 205 AB **TECHNICAL SESSION:** Resistance Screening and Marker Development • 211 A **TECHNICAL SESSION:** Vegetable Diseases • 211 B **PHYTOVIEWS:** RNAi Biotechnology Applications • 103 BC	
	TECHNICAL SESSION: Fastidious Bacterial Pathogens • 211 B **TECHNICAL SESSION:** Pesticide Evaluation • 102 DE **TECHNICAL SESSION:** Risk Assessment • 211 A **TECHNICAL SESSION:** Virology • 102 BC

*Meetings take place in the **Minneapolis Convention Center (CC)** and the **Hilton Hotel (H)**.*

SATURDAY, AUGUST 9

Field Trips depart from the Minneapolis Hilton Hotel, 11th Street bus loading area.

7:00 a.m. – 5:00 p.m.	**Field Trip:** Ornamental	Offsite
7:30 a.m. – 4:45 p.m.	**Field Trip:** Crop Protection—From Seed to Harvest	Offsite
8:00 a.m. – 4:00 p.m.	**Field Trip:** Minnesota Fungal Foray	Offsite
8:30 a.m. – 4:30 p.m.	CPS Outgoing Board Meeting	Board Room, H
8:30 a.m. – 5:30 p.m.	**APS Leadership Institute:** Build Better Relationships – Leverage Conflict as Opportunity	Marquette IX, H
9:00 a.m. – 12:00 p.m.	**Workshop:** Analysis of Population Genetic Data in R	Marquette II, H
9:00 a.m. – 4:00 p.m.	**Field Trip:** Turfgrass Pathology Field Tour	Offsite
11:30 a.m. – 1:30 p.m.	Office of International Programs (OIP) Board Meeting	Directors Row 2, H
11:30 a.m. – 2:30 p.m.	APS PRESS Board Meeting	Directors Row 3, H
12:00 – 6:00 p.m.	Registration	Hall D Foyer, CC
1:00 – 5:00 p.m.	GDM New ARM Features Workshop	Rochester, H
1:00 – 5:00 p.m.	**Workshop:** Introduction to Bayesian Analysis in Plant Pathology	Marquette VIII, H
2:30 – 5:00 p.m.	APS Publications Board Meeting	Directors Row 3, H
3:00 – 4:30 p.m.	APS Committee Chair/Vice Chair Orientation	Marquette V, H
4:00 – 6:00 p.m.	Microbial Forensics Interest Group	Marquette II, H
4:30 – 5:30 p.m.	First Timers' Orientation	Symphony II & III, H
5:00 – 6:30 p.m.	*PDMR* Editors' Meeting	Marquette I, H
6:30 – 8:00 p.m.	**Committee Meetings**	
	• Bacteriology Committee	Marquette V, H
	• Chemical Control Committee	Room 102 DE, CC
	• Crop Loss Assessment and Risk Evaluation (CARE) Committee	Directors Row 4, H
	• Diseases of Ornamental Plants Committee	Room 102 A, CC
	• Evolutionary Genetics and Genomics Committee	Directors Row 3, H
	• Graduate Student Committee	Marquette VI, H
	• Molecular and Cellular Phytopathology Committee	Room 102 BC, CC
	• Mycology Committee	Room 102 F, CC
	• Nematology Committee	Room 103 F, CC
	• Plant Pathogen and Disease Detection Committee	Directors Row 1, H
	• Teaching Committee	Directors Row 2, H
	• Vector-Pathogen Complexes Committee	Board Room 3, H
8:00 – 9:30 p.m.	**Committee Meetings**	
	• Biotechnology Committee	Room 102 A, CC
	• Committee for Diversity and Equality	Marquette V, H
	• Diagnostics Committee	Room 102 BC, CC
	• Emerging Diseases and Pathogens Committee	Marquette IV, H
	• Forest Pathology Committee	Room 103 F, CC
	• Integrated Plant Disease Management Committee	Directors Row 3, H
	• Pathogen Resistance Committee	Directors Row 1, H
	• Phyllosphere Microbiology Committee	Room 102 DE, CC
	• Postharvest Pathology Committee	Directors Row 4, H
	• Soil Microbiology and Root Diseases Committee	Room 102 F, CC
	• Tropical Plant Pathology Committee	Directors Row 2, H

*Meetings take place in the **Minneapolis Convention Center (CC)** and the **Hilton Hotel (H).***

SUNDAY, AUGUST 10

7:00 – 9:00 a.m.	APS Education Center Editorial Board Meeting	Directors Row 3, H
7:00 – 9:00 a.m.	Vegetable Seed Industry Breakfast, *by invitation*	Marquette III-IV, H
7:00 a.m. – 6:00 p.m.	Registration	Hall D Foyer, CC
8:00 – 8:30 a.m.	Moderator Orientation	Room 102 BC, CC
8:00 – 9:00 a.m.	APS *Phytopathology* Senior Editors' Meeting	Marquette V, H
8:00 – 9:00 a.m.	APS *Plant Disease* Senior Editors' Meeting	Marquette II, H
8:00 – 10:00 a.m.	APS Awards and Honors Committee Meeting, *by invitation*	Board Room 3, H
8:00 a.m. – 3:00 p.m.	Exhibit Set-Up	Hall D, CC
8:30 – 10:00 a.m.	**Committee Meetings**	
	• Biological Control Committee	Marquette IX, H
	• Collections and Germplasm Committee	Board Room 2, H
	• Early Career Professionals Committee	Marquette VII, H
	• Epidemiology Committee	Directors Row 4, H
	• Extension Committee	Marquette VI, H
	• Host Resistance Committee	Directors Row 1, H
	• Industry Committee	Directors Row 2, H
	• Mycotoxicology Committee	Marquette I, H
	• Regulatory Plant Pathology Committee	Rochester, H
	• Seed Pathology Committee	Duluth, H
	• Turfgrass Pathology Committee	Red Wing, H
	• Virology Committee	Marquette VIII, H
9:00 – 10:00 a.m.	APS Leadership Institute Committee Meeting	Directors Row 3, H
9:00 – 10:00 a.m.	APS *Phytopathology* Editorial Board Meeting	Marquette V, H
9:00 – 10:00 a.m.	APS *Plant Disease* Editorial Board Meeting	Marquette II, H
10:00 a.m. – 12:00 p.m.	**CPS 85th Annual General Meeting and Awards Presentation**	**Room 102 BC, CC**
10:30 a.m. – 12:00 p.m.	**APS Opening General Session and Awards & Honors Ceremony**	**Minneapolis Grand Ballroom, HILTON**
12:00 – 1:00 p.m.	Lunch Break	
12:00 – 1:00 p.m.	APS/APHIS Widely Prevalent Virus Committee Meeting, *by invitation*	Room 103 F, CC
12:00 – 2:00 p.m.	APS Division Officers' Luncheon	Marquette II, H
12:00 – 3:00 p.m.	Poster Set-Up	Hall D, CC
12:00 – 6:00 p.m.	APS-OIP Silent Auction	Hall D Foyer, CC
1:00 – 2:15 p.m.	NEW **PhytoViews**–Regulating Pathogens for Research: Too Much of a Good Thing? *(see page 19 for description)*	Room 103 BC, CC
	Technical Sessions	
1:00 – 2:15 p.m.	• Fungal Toxins	Room 102 BC, CC
1:00 – 2:15 p.m.	• Integrated Management of Vegetable Diseases	Room 102 DE, CC
1:00 – 2:15 p.m.	• Phytobacteriology	Room 211 A, CC
1:00 – 2:15 p.m.	• Resistance to Tree Pathogens	Room 211 B, CC
1:00 – 3:00 p.m.	NPDN Town Hall Meeting	Marquette VI, H
	Special Sessions	
1:00 – 2:30 p.m.	• Schroth Faces of the Future: Virology	Room 205 AB, CC
1:00 – 3:45 p.m.	• Banned: Turfgrass Disease Control in the Age of Restrictive Pesticide Legislation	Room 205 CD, CC
1:00 – 3:45 p.m.	• Extension Yesterday, Today, and Tomorrow	Room 208 CD, CC
1:00 – 3:45 p.m.	• What's App? Using Apps and Technology in Integrated Plant Disease Management Programming	Room 208 AB, CC
1:30 – 2:30 p.m.	PMN Editorial Board, *by invitation*	Room 103 F, CC
2:00 – 4:00 p.m.	APS Nominations Committee Meeting	Room 209 B, CC
2:30 – 3:30 p.m.	*Plant Health Progress* Editorial Board Meeting, *by invitation*	Room 103 F, CC
	Technical Sessions	
2:45 – 4:00 p.m.	• Fruit and Nut Crop Diseases	Room 102 BC, CC
2:45 – 4:00 p.m.	• Tree Diseases	Room 211 B, CC
2:45 – 4:15 p.m.	• Disease Management in Field Crops	Room 211 A, CC
4:00 – 6:00 p.m.	APS PRESS Bookstore	Hall D, CC

4:00 – 6:00 p.m.	**Welcome Reception – Exhibition, Posters, and Alumni Gatherings** • Cornell University • Louisiana State University • Michigan State University • North Carolina State University • The Ohio State University • Oklahoma State University • Oregon State University • Penn State University • University of Arkansas • University of California, Davis • University of Florida • University of Illinois	Hall D, CC
4:00 – 8:00 p.m.	**Extended Time!** Poster Viewing	Hall D, CC
7:00 – 10:00 p.m.	Ornamental Virus Discussion Group	Marquette II, H
8:00 – 9:00 p.m.	HLB Multiagency Coordination (MAC) – Information and Planning Session	Marquette III, H
8:00 – 9:30 p.m.	National Plant Disease Recovery System (NPDRS) Meeting	Marquette V, H

NEW to APS! PHYTOVIEWS

Your opportunity to engage in facilitated conversations, in an open panel format with a moderator, as we explore all points of view on these topics of interest!

Regulating Pathogens for Research: Too Much of a Good Thing?

Sunday, August 10, 1:00 – 2:15 p.m.; Room 103 BC, Convention Center

Moderator: Mary Palm, USDA APHIS

Panelists:

- Pauline Spaine, USDA APHIS, BRS
- Shailajah Rabindrum, APHIS PPQ
- Sally Miller, The Ohio State University
- Jeff Jones, University of Florida

This session will explore questions/issues of regulatory affairs in plant pathology while considering all points of view.

RNAi Biotechnology Applications

Tuesday, August 12, 2:15 – 3:30 p.m.; Room 103 BC, Convention Center

Moderator: Burt Bluhm, University of Arkansas

Panelists:

- Mark Fuchs, Cornell University
- Zhi-Yuan Chen, Louisiana State University
- Jari Valkonen, University of Helsinki
- Anna Whitfield, Kansas State University

This session will explore the pros and cons of using RNAi technology to silence expression of plant, pathogen, or insect genes for crop modification, considering all points of view including the suitability of RNAi technology for specific applications and potential off-target effects.

MONDAY, AUGUST 11

6:30 – 8:00 a.m.	Extension Plant Pathologists' Breakfast	Room 103 DE, CC
7:00 – 10:30 a.m.	APS Public Policy Board (PPB) Meeting	Room 211 CD, CC
7:00 a.m. – 5:30 p.m.	Registration	Hall D Foyer, CC
7:30 a.m. – 8:00 p.m.	Poster Viewing	Hall D, CC
	Technical Sessions	
8:30 – 9:30 a.m.	• Fungicide Efficacy	Room 211 B, CC
8:30 – 9:45 a.m.	• Interactions of Fungal Pathogens with Canola	Room 211 A, CC
8:30 – 9:45 a.m.	• Pathogen Dispersal	Room 102 BC, CC
	Special Sessions	
8:30 – 10:45 a.m.	• 14th I. E. Melhus Graduate Student Symposium	Room 205 AB, CC
8:30 – 11:15 a.m.	• A Systems Approach for Microbe Management: From Food Safety to Plant Health	Room 205 CD, CC
8:30 – 11:15 a.m.	• Innovative Approaches to Control Difficult Bacterial Pathogens	Room 208 CD, CC
8:30 – 11:15 a.m.	• The Complicated Lifestyles of Dothideomycete Fungi: Understanding Novel Mechanisms of Pathogenicity	Room 102 DE, CC
8:30 – 11:30 a.m.	• An Expanding Virome of Cultivated Plants: Home Grown or Imported?	Room 208 AB, CC
9:00 – 11:00 a.m.	APS Associated Organizations Meeting	Room 212 AB, CC
10:00 a.m. – 5:00 p.m.	APS PRESS Bookstore	Hall D, CC
10:00 a.m. – 6:00 p.m.	Exhibits Open	Hall D, CC
	Technical Sessions	
10:15 – 11:30 a.m.	• Fungal-Host Interactions	Room 211 A, CC
10:15 – 11:30 a.m.	• Potato Diseases	Room 102 BC, CC
10:15 – 11:45 a.m.	• Chemical Control	Room 211 B, CC
10:30 a.m. – 12:00 p.m.	APS Public Policy Board Open Forum on Hot Topics	Room 211 CD, CC
11:30 a.m. – 1:00 p.m.	APS Graduate Student & Industry Lunch	Marquette IV-V, H
11:30 a.m. – 1:00 p.m.	Lunch Break	
11:30 a.m. – 1:00 p.m.	APS Past Presidents' Lunch, *by invitation*	Red Wing, H
11:30 a.m. – 1:00 p.m.	Storkan-Hanes-McCaslin Research Foundation Luncheon, *by invitation*	Directors Row 1, H
11:30 a.m. – 1:00 p.m.	Widely Prevalent Plant-Pathogenic Fungi List Working Group	Directors Row 2, H
12:00 – 1:00 p.m.	USDA, ARS Meeting *(brown bag lunch)*	Room 103 DE, CC
1:00 – 3:00 p.m.	**Plenary Session: Plant Health Connections – Soil Health, Plant Health, Food Safety, Human Health** • Harold van Es – *From the Bottom Up: Farmer Tools for Creating Healthy Soil Environments* • Jan E. Leach – *Connecting the Phytobiomes and Plant Health* • Jennifer Ann Thomson – *Genetically Modified Crops for Africa: Healthy Plants and Healthy Bodies*	**Minneapolis Grand Ballroom, HILTON**
3:30 – 4:00 p.m.	NEW **Poster Huddle Time** *(see page 47 for poster titles in each huddle)* • *Huddle #1* – How to (not?) Manage Fungicide Resistance, the QoI Example • *Huddle #2* – How Should Pathogen Detection Assays be Validated? • *Huddle #3* – What Are the Important Concepts in Cultural Control of Bacterial Pathogens? • *Huddle #4* – How has New Knowledge about Microbiomes Changed Your View of Plant Disease?	Hall D, CC
3:30 – 5:00 p.m.	APS Divisional Forum	Room 209 B, CC
4:00 – 6:00 p.m.	**Poster Viewing with Authors** *4:00 – 5:00 p.m. Posters 1 – 328 (even numbers)* *5:00 – 6:00 p.m. Posters 329– 652 (even numbers)*	Hall D, CC
4:30 – 6:00 p.m.	CADRE Meeting for APS Professional Development Resource	Room 102 A, CC
6:00 – 7:00 p.m.	Early Career Professionals' Social with Employer Networking Opportunity	Room 213 AB, CC
6:00 – 7:00 p.m.	Graduate Student Social	Room 103 DE, CC
6:00 – 7:00 p.m.	Journals Senior Editors' Reception, *by invitation*	Room 102 F, CC
6:30 – 9:30 p.m.	**Industry & Extension Social**–Down on the Mississippi *(Buses will begin loading outside the front entrance of the Convention Center at 6:15 p.m.)*	Offsite, Nicollet Island Pavilion

TUESDAY, AUGUST 12

7:00 – 8:15 a.m.	CPS Incoming Board Meeting	Room 103 F, CC
7:00 – 8:30 a.m.	APS Sustaining Associates' Breakfast, *by invitation*	Directors Row 1, H
7:00 – 9:00 a.m.	APS Annual Meeting Board Meeting	Room 102 A, CC
7:00 a.m. – 12:00 p.m.	Academic Unit Leaders' Forum Breakfast and Meeting *(formerly Department Heads' Breakfast)*	Marquette III, H
7:00 a.m. – 12:00 p.m.	APS Foundation Board Meeting, *by invitation*	Red Wing, H
7:00 a.m. – 5:30 p.m.	Registration	Hall D Foyer, CC
7:30 – 9:00 a.m.	Small Fruit Diseases Workers Discussion	Marquette IV–V, H
7:30 a.m. – 8:00 p.m.	Poster Viewing	Hall D, CC
	Technical Sessions	
8:30 – 9:45 a.m.	• Disease Resistance in Monocots	Room 102 BC, CC
8:30 – 9:45 a.m.	• Integrated Management of Disease – 1	Room 211 A, CC
8:30 – 9:45 a.m.	• Mechanisms of Host Resistance and Susceptibility	Room 211 B, CC
8:30 – 9:45 a.m.	• Vector-Pathogen Interactions	Room 102 DE, CC
	Special Sessions	
8:30 – 10:00 a.m.	• New Products & Services	Room 205 AB, CC
8:30 – 11:15 a.m.	• Destructive Tree Diseases Associated with Ambrosia/Bark Beetles: Black Swan Events in Tree Pathology	Room 208 AB, CC
8:30 – 11:15 a.m.	• Food Security: Role of Plant Pathology	Room 205 CD, CC
8:30 – 11:15 a.m.	• Understanding Phytobiomes to Improve Agricultural Productivity	Room 208 CD, CC
10:00 a.m. – 5:00 p.m.	APS PRESS Bookstore	Hall D, CC
10:00 a.m. – 6:00 p.m.	Exhibits Open	Hall D, CC
	Technical Sessions	
10:15 – 11:30 a.m.	• Disease Resistance in Dicots	Room 102 BC, CC
10:15 – 11:30 a.m.	• Fungal Virulence and Genomics	Room 211 B, CC
10:15 – 11:30 a.m.	• Integrated Management of Disease – 2	Room 211 A, CC
10:15 – 11:30 a.m.	• Population Biology and Genetics	Room 102 DE, CC
11:30 a.m. – 1:00 p.m.	Lunch Break	
11:30 a.m. – 1:00 p.m.	*Phytopathology News* Advisory Committee Meeting	Skywater Restaurant, H
12:00 – 1:00 p.m.	APHIS Widely Prevalent Bacteria Committee Meeting, *by invitation*	Room 102 A, CC
12:00 – 1:00 p.m.	Orange Rust Sugarcane Meeting *(brown bag lunch)*	Room 103 F, CC
1:00 – 2:00 p.m.	**Plenary Session – Your Best Frenemy: Science, the Media, and Making Your Point** Alan Bjerga - Author, *Endless Appetites: How the Commodities Casino Creates Hunger and Unrest*; Food and Agriculture Policy Reporter, *Bloomberg News*	**Minneapolis Grand Ballroom, HILTON**
2:15 – 3:15 p.m.	NEW **Idea Cafes** *(see page 22 for listing)*	Hall D, CC
2:15 – 3:30 p.m.	NEW **PhytoViews –** RNAi Biotechnology Applications *(see page 19 for description)*	Room 103 BC, CC
	Technical Sessions	
2:15 – 3:30 p.m.	• Bacteria-Host Interactions	Room 208 AB, CC
2:15 – 3:30 p.m.	• Fungicide Resistance	Room 205 CD, CC
2:15 – 3:30 p.m.	• Management of Nematodes	Room 208 CD, CC
2:15 – 3:30 p.m.	• Molecular and Microbial Ecology	Room 102 DE, CC
2:15 – 3:30 p.m.	• Resistance Screening and Marker Development	Room 211 A, CC
2:15 – 3:30 p.m.	• Vegetable Diseases	Room 211 B, CC
	Special Session	
2:15 – 3:45 p.m.	• Plant Pathologists of the Future: Showcasing the Top Graduate Students from APS Division Meetings	Room 205 AB, CC
2:30 – 3:30 p.m.	2018 ICPP Planning Meeting, *invitation only*	Room 103 B, CC
2:30 – 4:00 p.m.	Office of Education (OE) Board Meeting	Room 102 A, CC
2:30 – 4:00 p.m.	Office of Public Relations & Outreach (OPRO) Board Meeting	Room 103 F, CC
3:30 – 4:00 p.m.	NEW **Poster Huddle Time** *(see page 47 for posters titles in each huddle)* • *Huddle #5* – What Was the Most Important Discovery About *Phytophthora* this Year? • *Huddle #6* – Can Citrus Greening be Controlled? • *Huddle #7* – What Is Needed for Successful Mycotoxin Control? • *Huddle #8* – What Types of Remote Sensors Would Improve Crop Loss Assessments?	Hall D, CC
3:30 – 5:00 p.m.	Presidential Meeting of Plant Pathology Organizations, *by invitation*	Room 212 AB, CC

4:00 – 6:00 p.m.	**Poster Viewing with Authors** *4:00 – 5:00 p.m. Posters 1 –328 (odd numbers)* *5:00 – 6:00 p.m. Posters 329 –652 (odd numbers)*	Hall D, CC
5:30 – 7:00 p.m.	Diagnostics Working Group	Directors Row 1, H
6:00 – 8:00 p.m.	Exhibit Take-Down	Hall D, CC
6:00 – 8:00 p.m.	Committee for Diversity and Equality presents "Is Your Mind Set? Working with Cross Cultural Differences	Offsite, Mason's Restaurant
6:30 – 8:00 p.m.	Heterobasidion Root Disease Meeting	Directors Row 2, H
8:00 – 10:00 p.m.	Wheat-Mite-Virus Project	Red Wing, H

NEW Idea Cafés

Enhance your scientific content, find solutions to existing problems, discover innovated ideas in your area of research or outreach! Idea Cafés are your opportunity for 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.***

Tuesday, August 12
2:15 – 3:15 p.m.
- Applications of Genetyping-by-Sequencing
- Biocontrol of Aflatoxins
- Boxwood Blight Challenges
- Challenges in Biological Control
- Forest Health Challenges
- New and Emerging Diseases
- New Tools for Virus Detection
- Plant Growth Promotors
- Seed Transmission Associations

Wednesday, August 13
10:30 – 11:30 a.m.
- Advances in Bacteria Identification
- Disease Control in Tropical Crops
- Disease Severity Assessments
- Endophyte Biology
- Expanding Distributions of Plant Viruses
- Important Discoveries in Pathogen Detection
- Integrated Pest Management of Nematodes
- Resistance and Susceptibility to Verticillium Wilt
- Student Recruitment, Training and Education

WEDNESDAY, AUGUST 13

7:00 – 8:30 a.m.	Food Safety Interest Group	Marquette V, H
7:30 a.m. – 1:00 p.m.	Registration	Hall D Foyer, CC
8:00 – 9:30 a.m.	APS-CSPP Working Group Meeting	Room 102 A, CC
8:00 – 10:00 a.m.	Poster Take-Down	Hall D, CC
8:00 – 11:00 a.m.	APS PRESS Bookstore	Hall D, CC
	Technical Sessions	
8:30 – 9:45 a.m.	• Bacterial Virulence	Room 211 B, CC
8:30 – 9:45 a.m.	• Fungal Biology	Room 102 DE, CC
8:30 – 9:45 a.m.	• Unraveling the Basis of Rust Resistance	Room 102 BC, CC
	Special Sessions	
8:30 – 10:30 a.m.	• Funding Opportunities for Cooperative International Research	Room 211 A, CC
8:30 – 11:15 a.m.	• EPA's Endocrine Disruptor Screening Program and Its Relationship to Plant Protection Products	Room 205 CD, CC
8:30 – 11:15 a.m.	• Frontiers in Biosynthesis and Management of Mycotoxins	Room 205 AB, CC
8:30 – 11:15 a.m.	• Potyviruses: Functional Genomics and Virus-Host Interactions	Room 208 CD, CC
8:30 – 11:30 a.m.	• Interconnected Lifecycles: Multitrophic Interactions Between Plants, Pathogens, and Insects	Room 208 AB, CC
9:00 – 11:00 a.m.	Office of Industry Relations (OIR) Board Meeting	Marquette V, H
9:30 – 11:30 a.m.	APS 2015 Annual Meeting Program Planning Meeting *An opportunity to present your Special Session ideas for 2015*	Room 103 BC, CC
	Technical Sessions	
10:15 – 11:15 a.m.	• Biological Control Mechanisms	Room 211 B, CC
10:15 – 11:30 a.m.	• Legume Diseases	Room 102 DE, CC
10:15 – 11:30 a.m.	• Biology of Oomycetes	Room 102 BC, CC
10:30 –11:30 a.m.	NEW **Idea Cafés** *(see page 22 for listing)*	Hall D, CC
10:30 a.m. – 12:00 p.m.	APS Financial Advisory Committee Meeting	Room 212 AB, CC
11:30 a.m. – 1:00 p.m.	Lunch Break	
12:00 – 2:00 p.m.	APS Council Meeting	Room 212 AB, CC
	Technical Sessions	
1:00 – 2:00 p.m.	• Virus-Host Interactions	Room 211 B, CC
1:00 – 2:15 p.m.	• Tropical Crops	Room 102 DE, CC
1:00 – 2:15 p.m.	• Diseases of Specialty Crops	Room 211 A, CC
1:00 – 2:15 p.m.	• Epidemiology of Wheat Diseases	Room 102 BC, CC
	Special Sessions	
1:00 – 3:45 p.m.	• Beyond Borlaug: How the Next Generation of Plant Pathologists Are Advancing the Green Revolution	Room 208 CD, CC
1:00 – 3:45 p.m.	• Revealing the Stories of the Genome Via Genotyping-by-Sequencing (GBS)	Room 205 CD, CC
1:00 – 4:00 p.m.	• Boxwood Blight: Collaborative Connections to Study an Emerging Disease	Room 205 AB, CC
1:00 – 4:00 p.m.	• Myths and Realities of Biopesticides: Academic, Industry, and Grower Perspectives	Room 208 AB, CC
2:00 – 4:00 p.m.	APS International Society Relations Meeting	Room 102 A, CC
	Technical Sessions	
2:45 – 3:30 p.m.	• Fastidious Bacterial Pathogens	Room 211 B, CC
2:45 – 3:30 p.m.	• Risk Assessment	Room 211 A, CC
2:45 – 4:00 p.m.	• Pesticide Evaluation	Room 102 DE, CC
2:45 – 4:00 p.m.	• Virology	Room 102 BC, CC
6:30 – 9:30 p.m.	**Final Night Celebration – Camp Wanna Mingle** *We're not camping but don't miss this last chance to do a lot of mingling with your fellow colleagues and friends.*	Ballroom AB, CC

FRIDAY, AUGUST 8 – SATURDAY, AUGUST 9, 2014

Field Trips

Listed in chronological order.

Friday, August 8

Forest Health Issues of the Bluff and Coulee Country along the Upper Mississippi River

Depart 7:30 a.m. returning on Saturday, August 9 at 6:00 p.m.; Offsite

Organizers: Linda Haugen, Jennifer Juzwik, and Joseph O'Brien, USDA Forest Service, St. Paul, MN, U.S.A.; Glen Stanosz, University of Wisconsin, Madison, WI, U.S.A.

Sponsoring Committee/Sponsors: Forest Pathology, USDA Forest Service

An in-the-field opportunity to observe and discuss tree pests and diseases in scenic southern Minnesota and Wisconsin. Topics include Heterobasidion root disease in pine, black walnut and other nut tree plantation issues, American elm operational plantings and Dutch elm disease, oak wilt management, bur oak blight, emerald ash borer, and decay in high value hardwoods.

Saturday, August 9

Ornamental

7:00 a.m. – 5:00 p.m.; Offsite

Organizer: Michelle Grabowski, University of Minnesota, St. Paul, MN, U.S.A.

Sponsoring Committee/Sponsors: Diseases of Ornamental Plants, Extension; Chase Agricultural Consulting LLC; Agdia, Inc., BASF

Learn about diseases of ornamentals in both production and landscape settings. We will visit a collection of mature landscape elms with resistance to Dutch elm disease and learn about disease control in a public plant conservatory. We will visit with state regulatory staff as well as production staff to discuss how plant diseases are managed in production of annual bedding plants, herbaceous perennials and woody ornamentals. Sites include the Marjorie McNeely Conservatory at Como Park, Bailey's Nurseries, the Minneapolis Chain of Lakes and more!

Crop Protection—From Seed to Harvest

7:30 a.m. – 4:45 p.m.; Offsite

Organizers: Mohamed Khan, North Dakota State University & University of Minnesota, Fargo, ND, U.S.A.; Dean Malvick, University of Minnesota, St Paul, MN, U.S.A.

Sponsoring Committee/Sponsors: Extension, Chemical Control, Postharvest Pathology

This field trip will visit research sites to participate in hands-on activities (such as seed treatment), developing plot research, observe research on seed treatments and foliar disease control; observe nursery screening varieties to seedling diseases; possible apple breeding/orchard/vineyard; discussion on mycotoxins; corn for biofuel; field research on corn diseases etc.

Minnesota Fungal Foray

8:00 a.m. – 4:00 p.m.; Offsite

Organizer: Kirk Broders, University of New Hampshire, Durham, NH, U.S.A.

Sponsoring Committee/Sponsors: Mycology

Participant will have an opportunity to get their boots dirty searching for macro- and micro- fungi in natural settings in the Minneapolis area. This trip will guide participants to several nearby woodlands with hiking trail access to explore the fungal diversity of the upper Midwest. Novices and experts alike will return to the meeting site to examine and identify specimens and listen to advice and have informal discussion with local fungal experts.

Turfgrass Pathology

9:00 a.m. – 4:00 p.m.; Offsite

Organizers: Young-Ki Jo, Texas A&M University, College Station, TX, U.S.A.; John Inguagiato, University of Connecticut, Storrs, CT, U.S.A.

Sponsoring Committee/Sponsors: Turfgrass Pathology Committee

Financial Sponsors: BASF Corporation, Syngenta

This field tour will visit turf facilities in the Twin Cities metropolitan and its suburban areas. Tour stops will focus on disease and turf management challenges unique to this region. Likely destinations will include golf courses, athletic fields, sod farms, and the turfgrass research center at University of Minnesota.

Workshops

Listed in chronological order.

Saturday, August 9

Analysis of Population Genetic Data in R

9:00 a.m. – 12:00 p.m.; Marquette II, H

Organizers: Niklaus Grunwald, USDA ARS, Corvallis, OR, U.S.A.; Zhian Kamvar, Sydney Everhart, Oregon State University, Corvallis, OR, U.S.A.

Sponsoring Committee/Sponsors: Evolutionary Genetics and Genomics, Epidemiology

Analysis of population genetic data remains challenging. This session will focus on the kinds of analyses typically analyzed by plant pathologists. It will cover analyses of data from haploid and diploid populations with dominant or codominant marker systems applicable to a range of molecular genotyping techniques. Participants will gain hands-on experience with analysis in R using datasets provided by instructors.

Introduction to Bayesian Analysis in Plant Pathology

1:00 – 5:00 p.m.; Marquette VIII, H

Organizers: Larry Madden, The Ohio State University, Wooster, OH, U.S.A.; Asimina Mila, North Carolina State University, Raleigh, NC, U.S.A.

Sponsoring Committee/Sponsors: Epidemiology

Bayesian analysis is the statistical methodology that uses the tools of probability for updating existing knowledge with new information. Although computationally demanding, advances in computer software and hardware have made the methodology much more approachable for researchers. Participants will learn to use SAS for some basic Bayesian analyses, including the estimation of means, mean differences, and parameters of linear models. Participants need to bring a laptop with SAS 9.3 (or later) installed.

SUNDAY, AUGUST 10, 2014 – afternoon

Special Sessions listed first, followed by Oral Technical Sessions. Listed alphabetical by session title.
Find complete details on the meeting website www.apsnet.org/meetings/annual/program/pages. 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.
Meeting room key: CC = Convention Center

SPECIAL SESSIONS

Banned: Turfgrass Disease Control in the Age of Restrictive Pesticide Legislation

1:00 - 3:45 p.m.; 205 CD, CC

Organizers: John Inguagiato, University of Connecticut, Storrs, CT, U.S.A.; Lee Miller, University of Missouri, Columbia, MO, U.S.A.; Young-Ki Jo, Texas A&M, College Station, TX, U.S.A.
Section: Disease Control and Pest Management
Sponsoring Committee/Sponsor: Turfgrass Pathology

1:00 p.m. • 1-S
Canadian Pesticide Restrictions – A Cautionary History. T. YAMADA (1). (1) IPM Council of Canada, Milton, ON, Canada

1:30 p.m. • 2-S
Public perception of pesticide use and current regulatory debates in the United States. C. MCKEEL (1). (1) Golf Course Superintendents Association of America, Lawrence, KS, U.S.A.

2:00 p.m. • 3-S
Fate and risk of pesticides applied to turfgrass systems. M. CARROLL (1). (1) University of Maryland, Columbia, MD, U.S.A.

2:30 p.m. • Break

2:45 p.m. • 4-S
Alternatives ways for managing turfgrass diseases. J.M. VARGAS (1). (1) Michigan State University, East lansing, MI, U.S.A.

3:15 p.m. • 5-S
The Vineyard Club: A case study of pesticide-free turfgrass management. J. INGUAGIATO (1), J. Carlson (2). (1) Univ. of Connecticut, Storrs, CT, U.S.A.; (2) Vineyard Golf Club, Edgartown, MA, U.S.A.

Extension Yesterday, Today, and Tomorrow

1:00 - 3:45 p.m.; 208 CD, CC

Organizer: Mohamed Khan, North Dakota State University & University of Minnesota, Fargo, ND, U.S.A.
Section: Professionalism/Outreach
Sponsoring Committee/Sponsor: Extension

1:00 p.m. • 6-S
History of extension and land-grant universities. M.F. KHAN (1). (1) North Dakota State University & University of Minnesota, Fargo, ND, U.S.A.

1:30 p.m. • 7-S
Extension today: Challenges of keeping extension relevant. B.R. DURGAN (1). (1) University of Minnesota, Saint Paul, MN, U.S.A.

2:00 p.m. • 8-S
Education of future extensionists and clientele. S.A. MILLER (1). (1) The Ohio State University, Wooster, OH, U.S.A.

2:30 p.m. • Break

2:45 p.m. • 9-S
Future of extension: Challenges and opportunities. H.R. DILLARD (1). (1) University of California, Davis, CA, U.S.A.

3:15 p.m. • 10-S
Challenges of funding an evolving extension service. M.A. DRAPER (1). (1) USDA-NIFA, Washington, DC, U.S.A.

Schroth Faces of the Future: Virology

1:00 - 2:30 p.m.; 205 AB, CC

Organizers: Christopher Wallis, USDA-ARS, Parlier, CA, U.S.A.; Kimberly Cochran, University of Arkansas, Fayetteville, AR, U.S.A.
Section: Biology of Pathogens
Sponsoring Committees/Sponsors: Early Career Professionals; Virology

1:00 p.m. • 11-S
Visualizing molecular signatures of host-virus protein interactions using high resolution mass spectrometry. M.L. CILIA (1), J.E. Bruce (2), S.L. DeBlasio (1), J.D. Chavez (2), J. Mahoney (3), J. Eng (4), S.M. Gray (1). (1) USDA Agricultural Research Service, Ithaca, NY, U.S.A.; (2) University of Washington, Seattle, WA, U.S.A.; (3) Boyce Thompson Institute for Plant Reasearch, Ithaca, NY, U.S.A.; (4) University of Washington Proteomics Resource, Seattle, WA, U.S.A.

1:30 p.m. • 12-S
Identification of new and previously unreported plant viruses from North America and Ecuador: the first step towards virus disease management. D.F. QUITO-AVILA (1). (1) Centro de Investigaciones Biotecnologicas del Ecuador CIBE-ESPOL, Guayaquil, Ecuador

2:00 p.m. • 13-S
Reverse genetics and virus epidemiology: Integrating basic and applied research for disease management. T. THEKKE-VEETIL (1). (1) Department of Plant Pathology, Division of Agriculture, University of Arkansas System., Fayetteville, AR, U.S.A.

What's App? Using Apps and Technology in Integrated Plant Disease Management Programming

1:00 - 3:45 p.m.; 208 AB, CC

Organizers: Erika Saalau Rojas, Iowa State University, Ames, IA, U.S.A.; Jose Pablo Soto Arias, University of Wisconsin-Madison, Madison, WI, U.S.A.
Section: Professionalism/Outreach
Sponsoring Committees/Sponsors: Integrated Plant Disease Management; Turfgrass Pathology

1:00 p.m. • 14-S
Gene-Z and iDx: Affordable hand-held decentralized genetic testing platforms. S. HASHSHAM (1), R. Stedtfeld (1), M. Kronlein (1), E. Gulari (2), J. Tiedje (1). (1) Michigan State University, East Lansing, MI, U.S.A.; (2) University of Michigan, Ann Arbor, MI, U.S.A.

1:30 p.m. • 15-S
The Turfpath App: Crowdsourcing the path of turfgrass pests. J.E. KAMINSKI (1). (1) Penn State, University Park, PA, U.S.A.

2:00 p.m. • 16-S
Plant pathology for a song: App use in the classroom (and hitting the right notes). J. BECKERMAN (1), C. Sadof (1). (1) Purdue University, West Lafayette, IN, U.S.A.

2:30 p.m. • Break

2:45 p.m. • 17-S
Integrating grower-driven and publically held data for improved plant protection. R. GROVES (1), K. Frost (1), A. Huseth (2). (1) University of Wisconsin, Madison, WI, U.S.A.; (2) Cornell University, Ithaca, NY, U.S.A.

3:15 p.m. • 18-S
Are apps the future? D. MUELLER (1), B. Anderson (2). (1) Iowa State University, Ames, IA, U.S.A.; (2) Vox Media, Ames, IA, U.S.A.

1:00 P.M. Technical Sessions

Fungal Toxins
1:00 – 1:45 p.m.; Room 102 BC, CC
Moderators: Tracy Bruns, Iowa State University; Mary Lewis, North Carolina State University

1:00 p.m. • 1-O
Diversity of *Aspergillus* species causing aflatoxin contamination of maize and groundnuts in Zambia.P.w. KACHAPULULA (1), R. Bandyopadhyay (2), J. Akello (3), M. Mukanga (4), P.J. Cotty (5). (1) Univ of Arizona, Tucson, AZ, U.S.A.; (2) IITA Nigeria, IBADAN, Nigeria; (3) IITA ZAMBIA, LUSAKA, Zambia; (4) Zambia Agricultural Research Institute, LUSAKA, Zambia; (5) Univ of Arizona/USDA-ARS, Tucson, AZ, U.S.A.

1:15 p.m. • 2-O
Phytotoxin solanapyrone A produced by Ascochyta rabiei and Alternaria solani is nonessential for pathogenicity, but likely plays ecological roles. W. KIM (1), C. Park (1), J. Park (1), D. Gang (1), M. Xian (1), F. Dugan (1), T. Peever (1), W. Chen (1). (1) Washington State University, Pullman, WA, U.S.A.

1:30 p.m. • 3-O WITHDRAWN

1:30 p.m. • 4-O
Association between brown marmorated stink bug (Halymorpha halys) injury and mycotoxin contamination in Virginia field corn. H.L. MEHL (1), D.A. Herbert (1). (1) Virginia Tech Tidewater AREC, Suffolk, VA, U.S.A.

Integrated Management of Vegetable Diseases
1:00 – 2:15 p.m.; Room 102 DE, CC
Moderators: Emily Pfeufer, Penn State University; Yasser Shabana, Mansoura University

1:00 p.m. • 6-O
Improving the health of vegetatively-propagated crops: better integration of disease management strategies for seed produced on-farm. S. THOMAS-SHARMA (1), J. Andrade-Piedra (2), M. Carvajal Yepes (3), J. Hernandez Nopsa (1), P. Kromann (2), J. Legg (4), J. Yuen (5), G. Forbes (6), K. Garrett (1). (1) Kansas State University, Manhattan, KS, U.S.A.; (2) International Potato Center, Quito, Ecuador; (3) International Center for Tropical Agriculture, Cali, Colombia; (4) International Institute of Tropical Agriculture, Dar es Salaam, Tanzania; (5) Swedish University of Agricultural Sciences, Uppsala, Sweden; (6) International Potato Center, Beijing, China

1:15 p.m. • 7-O
Management of Phytophthora blight (Phytophthora capsici) of pepper in Illinois. M. BABADOOST (1), C. Pavon (1), S.Z. Islam (2). (1) Univ of Illinois, Urbana, IL, U.S.A.; (2) Syngenta Seeds, Inc., Naples, FL, U.S.A.

1:30 p.m. • 8-O
Managing Bacterial wilt of Tomatoes in North Carolina through Grafting with Disease Resistant Rootstocks. E.J. SILVERMAN (1), J. Driver (1), J. Kressin (1), F. Louws (1), D. Panthee (1). (1) North Carolina State Univ, Raleigh, NC, U.S.A.

1:45 p.m. • 9-O
Management of bacterial wilt of tomato with a combination of grafting and a systemic acquired resistance inducer. S. KUNWAR (1), M.L. Paret (2), J.B. Jones (1), L. Ritchie (2), J.H. Freeman (2), S.M. Olson (2). (1) Plant Pathology Department, University of Florida, Gainesville, FL, U.S.A.; (2) NFREC, University of Florida, Quincy, FL, U.S.A.

2:00 p.m. • 10-O
Identifying spinach cultivars with reduced susceptibility to Fusarium wilt. B.D. COLLINS (1), M. McDonald (1), L.J. du Toit (2), S. Westerveld (3). (1) University of Guelph, Guelph, ON, Canada; (2) Washington State University, Mt Vernon, WA, U.S.A.; (3) Ontario Ministry of Agriculture and Food, Simcoe, ON, Canada

Phytobacteriology
1:00 – 2:15 p.m.; Room 211 A, CC
Moderators: Jong Ham, Louisiana State University; Prem Prasad Kandel, Auburn University

1:00 p.m. • 11-O
Genome-wide identification of Hfq-regulated small RNAs in the fire blight pathogen Erwinia amylovora discovered virulence-regulating small RNAs. Q. ZENG (1), G.W. Sundin (1). (1) Michigan State Univ, East Lansing, MI, U.S.A.

1:15 p.m. • 12-O
An RNA-sequencing analysis implicates the presence of multiple cell-to-cell signaling pathways in the rice pathogenic bacterium Burkholderia glumae. J. HAM (1), R. Chen (1). (1) Dept. Plant Pathology and Crop Physiology, Louisiana State Univ Agric Ctr, Baton Rouge, LA, U.S.A.

1:30 p.m. • 13-O
Cyclic di-GMP regulates biofilm formation in Erwinia amylovora through cellulose biosynthesis. L.F. CASTIBLANCO (1), G.W. Sundin (1). (1) Michigan State Univ, East Lansing, MI, U.S.A.

1:45 p.m. • 14-O
Identification of new Rathayibacter species using multi-locus sequence analysis. S.J. MAUZEY (1), W.L. Schneider (2), D.G. Luster (2), M.A. McClure (3), T.D. Murray (1), B.K. Schroeder (1). (1) Department of Plant Pathology, Washington State University, Pullman, WA, U.S.A.; (2) USDA, Agricultural Research Service, Foreign Disease-Weed Science Research Unit, Ft. Detrick, MD, U.S.A.; (3) The School of Plant Sciences, University of Arizona, Tucson, AZ, U.S.A.

2:00 p.m. • 15-O
Extracellular DNases modulate biofilm formation of R. solanacearum. T. TRAN (1), M. Hawes (2), C. Allen (1). (1) University of Wisconsin-Madison, Madison, WI, U.S.A.; (2) University of Arizona, Tucson, AZ, U.S.A.

Resistance to Tree Pathogens

1:00 – 2:15 p.m.; Room 211 B, CC

Moderator: Kerik Cox, Cornell University

1:00 p.m • 16-O
Impact of white pine blister rust on resistant and previously immune cultivated Ribes and neighboring Eastern white pine in New Hampshire. I.A. MUNCK (1), P. Tanguay (2), K. Lombard (3), J. Weimer (3), S. Villani (4), K. Cox (4). (1) USDA Forest Service, Durham, NH, U.S.A.; (2) Canadian Forest Service, Quebec, QC, Canada; (3) New Hampshire Division of Forests and Lands, Concord, NH, U.S.A.; (4) Cornell University, Geneva, NY, U.S.A.

1:15 p.m. • 17-O
Searching for sources of resistance to Verticillium wilt of olive in seedlings from the genus Olea. C. TRAPERO (1), C.M. Diez (1), L. Rallo (1), F. Lopez-Escudero (1), D. Barranco (1). (1) University of Cordoba, Cordoba, Spain

1:30 p.m. • 18-O
Comparative Analysis of Populus trichocarpa Resistance to Melampsora spp. Leaf Rust Disease. J. LA MANTIA (1), J. Klapste (2), Y.A. El-Kassaby (1), S.D. Mansfield (1), C.J. Douglas (1), R.C. Hamelin (1). (1) University of British Columbia, Vancouver, BC, Canada; (2) University of British Columbia, Vancouver, BC, Canada

1:45 p.m. • 19-O
Graft and psyllid transmissions indicate resistance to '*Candidatus* Liberibacter asiaticus' is expressed in the citrus relative orange jasmine. M.E. HILF (1), D.G. Hall (2). (1) USDA ARS USHRL, Ft Pierce, FL, U.S.A.; (2) USDA ARS USHRL, Fort Pierce, FL, U.S.A.

2:00 p.m. • 20-O
In field resistance to asiatic citrus canker of Citrus spp. genotypes. W.M. Nunes (1), S.A. Carvalho (2), J. Belasque (3), A.M. GonÃ§alves-Zuliani (1), M.A. Machado (4), J. Croce Filho (5), Z. Abdo (6), C.H. BOCK (7). (1) Universidade Estadual de Maringa, Maringa, Parana, Brazil; (2) Instituto Agronomico de Campinas, Cordeiropolis, Brazil; (3) Universidade de Sao Paulo, Piracicaba, SP, Brazil; (4) Instituto Agronomico de Campinas, Cordeiropolis, SP, Brazil; (5) Agencia de Defesa Agropecuaria do Parana, Maringa, Parana, Brazil; (6) USDA, ARS, SAA, Athens, GA, U.S.A.; (7) USDA-ARS- SEFTNRL, Byron, GA, U.S.A.

2:45 P.M. Technical Sessions

Disease Management in Field Crops

2:45 – 4:15 p.m.; Room 211 A, CC

Moderators: Hung Doan, UC Davis; Eduardo Chagas Silva, Louisiana State University

2:45 p.m. • 21-O
At what age sugar beet is resistant to Rhizoctonia solani. Y. LIU (1), M.F. Khan (2). (1) North Dakota State University, Fargo, ND, U.S.A.; (2) North Dakota State University and University of Minnesota, Fargo, ND, U.S.A.

3:00 p.m. • 22-O
Variation in the reaction of hard red winter wheat cultivars to common root rot and spot blotch. N. GRAF GRACHET (1), R.M. Hunger (1), M.E. Payton (1), J. Edwards (1). (1) Oklahoma State Univ, Stillwater, OK, U.S.A.

3:15 p.m. • 23-O
Macrophomina phaseolina and Heterodera glycines reducing soybean performance through early infection. H.D. LOPEZ-NICORA (1), B.W. Diers (2), A.E. Dorrance (3), T.L. Niblack (1). (1) Ohio State University, Columbus, OH, U.S.A.; (2) University of Illinois, Urbana, IL, U.S.A.; (3) Ohio State University, Wooster, OH, U.S.A.

3:30 p.m. • 24-O
Evaluation of new non-fumigant nematicides for control of root-knot nematodes in Ontario, Canada. D.J. VAN DYK (1), K. Jordan (1), M. McDonald (1). (1) University of Guelph, Guelph, ON, Canada

3:45 p.m. • 25-O
Investigation into the mechanism of resistance to azoxystrobin in Cercospora sojina, the causal agent of frogeye leaf spot. J. STANDISH (1), M. Tomaso-Peterson (1), T.W. Allen (2), S. Sabanadzovic (1), N. Aboughanem-Sabanadzovic (3). (1) Mississippi State Univ, Mississippi State, MS, U.S.A.; (2) Delta Research and Extension Center, Stoneville, MS, U.S.A.; (3) Institute for Genomics, Biocomputing & Biotechnology, Mississippi State University, Mississippi State, MS, U.S.A.

4:00 p.m. • 26-O
Management of soybean sudden death syndrome by seed treatment with fluopyram. J. WANG (1), J. Jacobs (1), M. Chilvers (2). (1) Michigan State University, East Lansing, MI, U.S.A.; (2) Michigan State University, East Lansing, MI, U.S.A.

Fruits and Nuts Crop Diseases

2:45 – 4:00 p.m.; Room 102 BC, CC

Moderators: Sarah Strauss, University of California, Davis; Miranda Ganci, North Dakota State University

2:45 p.m. • 27-O
How many standard area diagram sets are needed for accurate disease severity assessment?. C.H. BOCK (1), M.W. Hotchkiss (1), B.W. Wood (1). (1) USDA-ARS-SEFTNRL, 21 Dunbar Road, Byron, GA, U.S.A.

3:00 p.m. • 28-O
AmplifyRP® Acceler8™ – a rapid isothermal test for plum pox virus using reverse transcription-recombinase polymerase amplification. S. ZHANG (1), P. Russell (1), N. McOwen (1), S. Bohannon (1), A. Vrient (1). (1) Agdia, Inc., Elkhart, IN, U.S.A.

3:15 p.m. • 29-O
VirFind: An Online Bioinformatics Tool for Plant Virus Detection and Discovery. T. HO (1), I.E. Tzanetakis (1). (1) University of Arkansas, Fayetteville, AR, U.S.A.

3:30 p.m. • 29A-O
A loop-mediated isothermal amplification with bacterial enrichment assay for detection of Xanthomonas fragariae in strawberry. H. WANG (1), W. Turechek (2). (1) Univ of Florida, Ft Pierce, FL, U.S.A.; (2) ARS-USDA, Fort Pierce, FL, U.S.A.

3:45 p.m. • 31-O
A new caveat for blackberry: A new badnavirus identified in diseased plants. M.S. SHAHID (1), N. Aboughanem-Sabanadzovic (2), S. Sabanadzovic (3), I.E. Tzanetakis (1). (1) Department of Plant Pathology, Division of Agriculture, University of Arkansas, Fayetteville, AR, U.S.A.; (2) Institute for Genomics, Biocomputing and Biotechnology, Mississippi State University, Mississippi State, MS, U.S.A.; (3) Department of Biochemistry, Molecular Biology, Entomology and Plant Pathology, Mississippi State University, Fayetteville, AR, U.S.A.

Tree Diseases

2:45 – 4:00 p.m.; Room 211 B, CC

Moderators: James Jacobs, USDA FS; Christian Grace, Washington State University

2:45 p.m. • 32-O
Spruce decline: *Phomopsis* spp. may be the main pathogen in the Lower Peninsula of Michigan. C.K. MCTAVISH (1), D.W. Fulbright (2), A.M. Jarosz (2). (1) Michigan State University, Rochester, MN, U.S.A.; (2) Michigan State University, East Lansing, MI, U.S.A.

3:00 p.m. • 33-O
Development of a PCR-RFLP based detection method for the oak pathogens Diplodia corticola and D. quercivora. T. DREADEN (1), J. Smith (1). (1) University of Florida, Gainesville, FL, U.S.A.

3:15 p.m. • 34-O
Use of nested PCR to detect Ceratocystis fagacearum in sapwood of diseased northern oak species. A. YANG (1), J. Juzwik (2), D. Mollov (3). (1) Department of Plant Pathology, University of Minnesota, St. Paul, MN, U.S.A.; (2) Northern Research Station, US Forest Service, St. Paul, MN, U.S.A.; (3) National Germplasm Resources Laboratory, USDA ARS, Beltsville, MD, U.S.A.

3:30 p.m. • 35-O
Rapid isothermal detection and species-specific assay of Phytophthora in plant samples using recombinase polymerase amplification. T.D. MILES (1), F.N. Martin (2), M.D. Coffey (3). (1) USDA/ARS, East Lansing, CA, U.S.A.; (2) USDA/ARS, Salinas, CA, U.S.A.; (3) University of California - Riverside, Riverside, CA, U.S.A.

3:45 p.m. • 36-O
Can antagonistic fungi reduce the growth of Cryphonectria parasitica in dual culture?. M. KOLP (1), A.M. Jarosz (1). (1) Michigan State University, East Lansing, MI, U.S.A.

Special Sessions listed first, followed by Oral Technical Sessions. Listed alphabetical by session title.
Find complete details on the meeting website www.apsnet.org/meetings/annual/program/pages. 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.
Meeting room key: CC = Convention Center

Special Sessions

14th I. E. Melhus Graduate Student Symposium: New Contributions to Epidemiology and Plant Health

8:30 - 10:30 a.m.; Room 205 AB, CC

Organizer: Forrest Nutter, Iowa State University, Ames, IA, U.S.A.
Section: Ecology and Epidemiology
Sponsoring Committees/Sponsors: Epidemiology; APS Foundation
Financial Sponsors: Monsanto Company; Syngenta; Valent USA Corporation; BASF; Agdia

8:30 a.m. • 19-S
New approaches to assess coast live oak resistance before infection by the invasive pathogen Phytophthora ramorum. A.O. CONRAD (1), L. Rodriguez-Saona (1), B. McPherson (2), D. Wood (2), P. Bonello (1). (1) The Ohio State University, Columbus, OH, U.S.A.; (2) University of California, Berkeley, Berkeley, CA, U.S.A.

9:00 a.m. • 20-S
Forecasting infection risk - a tool for late bight management.. I.M. SMALL (1), L. Joseph (2), P. Julian (3), H.S. Mayton (4), P.D. Roberts (3), D. Shtienberg (5), W.E. Fry (1). (1) Dept. Plant Pathology and Plant-Microbe Biology, Cornell University, Ithaca, NY, U.S.A.; (2) Cornell University, Ithaca, NY, U.S.A.; (3) University of Florida, Southwest Florida Research and Education Center, Immokalee, FL, U.S.A.; (4) Dept. Plant Biology and Pathology School of Environmental and Biological Sciences, Rutgers University, The State University of New Jersey, New Brunswick, NJ, U.S.A.; (5) Dept. Plant Pathology and Weed research, ARO, the Volcani Center, Bet-Dagan, Israel

9:30 a.m. • 21-S
Modes of seed infection by Clavibacter michiganensis subsp. michiganensis and population diversity in New York M.A. TANCOS (1), C.D. Smart (1). (1) Cornell University, Geneva, NY, U.S.A.

10:00 a.m. • 22-S
Staying one step ahead of a pathogen: Hop powdery mildew in the Pacific Northwest S. WOLFENBARGER (1), M.C. Twomey (1), D.M. Gadoury (2), B.J. Knaus (3), N.J. Grunwald (4), D.H. Gent (5). (1) Oregon State University, Department of Botany and Plant Pathology, Corvallis, OR, U.S.A.; (2) Cornell University, Department of Plant Pathology and Plant-Microbe Biology, Geneva, NY, U.S.A.; (3) US Department of Agriculture-Agricultural Research Service, Horticultural Crop Research Unit, Corvallis, OR, U.S.A.; (4) Oregon State University, Department of Botany and Plant Pathology, US Department of Agriculture-Agricultural Research Service, Horticultural Crop Research Unit, Corvallis, OR, U.S.A.; (5) Oregon State University, Department of Botany and Plant Pathology, US Department of Agriculture-Agricultural Research Service, Forage Seed and Cereal Research Unit, Corvallis, OR, U.S.A.

A Systems Approach for Microbe Management: From Food Safety to Plant Health

8:30 - 11:15 a.m.; Room 205 CD, CC

Organizers: Jennifer Parke, Oregon State University, Corvallis, OR, U.S.A.; Niklaus Grunwald, USDA-ARS Horticultural Crops Research Lab, Corvallis, OR, U.S.A.; Margery Daughtrey, Cornell University–LIHREC, Riverhead, NY, U.S.A.
Section: Disease Control and Pest Management
Sponsoring Committees/Sponsors: Diseases of Ornamental Plants; Food Safety Interest Group

8:30 a.m. • 23-S
Introduction: Why do we need systems approaches to manage plant diseases? N.J. GRUNWALD (1). (1) Oregon State University, Department of Botany and Plant Pathology, US Department of Agriculture-Agricultural Research Service, Horticultural Crop Research Unit, Corvallis, OR, U.S.A.

8:45 a.m. • 24-S
The Hazard Analysis Critical Control Point (HACCP) Approach. S. ILIC (1). (1) The Ohio State University, Columbus, OH, U.S.A.

9:00 a.m. • 25-S
Critical role of practical research and extension in a systems approach to microbial food safety for the produce supply-chain. T.V. SUSLOW (1), T. Suslow (1). (1) Univ of California, Davis, CA, U.S.A.

9:30 a.m. • 26-S
A systems approach for producing greenhouse tomatoes free of human pathogens and plant pathogens M. LEWIS IVEY (1), S. Ilic (2), F. Baysal-Gurel (3), J.T. LeJeune (3), S.A. Miller (3). (1) Agcenter, Louisiana State University, Baton Rouge, LA, U.S.A.; (2) The Ohio State University, Columbus, OH, U.S.A.; (3) The Ohio State University, Wooster, OH, U.S.A.

10:00 a.m. • Break

10:15 a.m. • 27-S
Bacterial rots of sweet onion in Pennsylvania: tracking sources of infection and targeting critical management points B.K. GUGINO (1), M.A. Mansfield (1), E.E. Pfeufer (1). (1) The Pennsylvania State University, University Park, PA, U.S.A.

10:45 a.m. • 28-S
A systems approach for managing Phytophthora diseases in horticultural nurseries J.L. PARKE (1). (1) Oregon State University, Corvallis, OR, U.S.A.

An Expanding Virome of Cultivated Plants: Home-Grown or Imported?

8:30 - 11:30 a.m.; Room 208 AB, CC

Organizers: Sead Sabanadzovic, Mississippi State University, Mississippi State, MS, U.S.A.; John Hammond, USDA ARS FNPRU, Beltsville, MD, U.S.A.
Section: Diseases of Plants
Sponsoring Committees/Sponsors: Virology; Plant Pathogen and Disease Detection; Diseases of Ornamental Plants; Emerging Diseases and Pathogens
Financial Sponsor: APS/APHIS Working Group on Widely Prevalent Viruses

8:30 a.m. • 29-S
Major virus diseases of Vitis, where they originated from? G.P. MARTELLI(1) (1) University Aldo Moro of Bari, Italy. G.P. MARTELLI (1), G.P. Martelli (1). (1) University Aldo Moro, Bari, Bari, Italy

9:00 a.m. • 30-S
Viruses of berry crops: Emerging, newly identified, and getting around R.R. MARTIN (1). (1) USDA-ARS Horticultural Crops Research Unit, Corvallis, OR, U.S.A.

9:30 a.m. • 31-S
Emergence, origins, and potential control points for new viruses affecting ornamental crops. J. HAMMOND (1). (1) USDA-ARS, USNA, Floral and Nursery Plants Research Unit, Beltsville, MD, U.S.A.

10:00 a.m. • Break

10:15 a.m. • 32-S
The origin and spread of viruses infecting vegetables and row crops-Lessons to be learned from past decades W. MENZEL (1). (1) Leibniz Institute DSMZ - Plant Virus Department, Braunschweig, Germany

10:45 a.m. • 33-S
With a little help from their 'friends': The worldwide emergence of geminiviruses. R. GILBERTSON (1). (1) Department of Plant Pathology University of California-Davis, Davis, CA, U.S.A.

11:15 a.m. • 34-S
Viroids: New and continuing risks to agriculture. R.W. HAMMOND (1). (1) USDA ARS MPPL, Beltsville, MD, U.S.A.

Innovative Approaches to Control Difficult Bacterial Pathogens

8:30 - 11:15 a.m.; Room 208 CD, CC

Organizers: Lindsay Triplett, Colorado State University, Fort Collins, CO, U.S.A.; Evan Johnson, University of Florida, Lake Alfred, FL, U.S.A.
Section: Biology of Pathogens
Sponsoring Committees/Sponsors: Bacteriology; Widely Prevalent Bacterial Pathogens

8:30 a.m. • 35-S
Precise engineering of plant genomes with sequence-specific nucleases D.F. VOYTAS (1). (1) University of Minnesota, St. Paul, MN, U.S.A.

9:00 a.m. • 36-S
Changing an enemy into an ally to manage citrus diseases. W.O. DAWSON (1). (1) University of Florida, Department of Plant Pathology, Citrus Research and Education Center, Lake Alfred, FL, U.S.A.

9:30 a.m. • 37-S
Candidatus Liberibacter Associated Diseases: Challenges and Opportunities. H. LIN (1). (1) USDA ARS, Parlier, CA, U.S.A.

10:00 a.m. • Break

10:15 a.m. • 38-S
Factors influencing transmission of the huanglongbing pathogen by the Asian citrus psyllid and methods for interrupting the transmission process. K. PELZ-STELINSKI (1). (1) University of Florida, Lake Alfred, FL, U.S.A.

10:45 a.m. • 39-S
Virulent bacteriophages of Xylella fastidiosa: potential biocontrol agents for Pierce's Disease. M. Das (1), T.S. Bhowmick (1), S.J. Ahern (1), R.F. Young (2), C.F. GONZALEZ (1). (1) Department of Plant Pathology and Microbiology, Texas A&M University, College Station, TX, U.S.A.; (2) Department of Biochemistry and Biophysics, Texas A&M University, College Station, TX, U.S.A.

The Complicated Lifestyles of Dothideomycete Fungi: Understanding Novel Mechanisms of Pathogenicity

8:30 - 11:15 a.m.; Room 102 DE, CC

Organizers: Ashok Chanda, Louisiana State University AgCenter, Baton Rouge, LA, U.S.A.; Burton Bluhm and Robert Hirsch, University of Arkansas, Fayetteville, AR, U.S.A.
Section: Molecular/Cellular/Plant-Microbe Interactions
Sponsoring Committee/Sponsor: Molecular and Cellular Phytopathology

8:30 a.m. • 40-S
Investigations of how the necrotrophic specialist Parastagonospora nodorum is using the dual function necrotrophic effector SnTox1 to infect wheat T.L. FRIESEN (1), Z. Liu (2), Y. Kim (2), Y. Gao (2), P.J. De Wit (3), J.D. Faris (1). (1) USDA-ARS Northern Crop Science Laboratory, Cereal Crops Research Unit, Fargo, ND, U.S.A.; (2) North Dakota State University, Fargo, ND, U.S.A.; (3) Wageningen University, Wageningen, Netherlands

9:00 a.m. • 41-S
Molecular dissection of stomatal infection in Cercospora zeae-maydis B. BLUHM (1). (1) University of Arkansas, Fayetteville, AR, U.S.A.

9:30 a.m. • 42-S
The stealth pathogenicity of Mycosphaerella graminicola (aka Zymoseptoria tritici). S.B. GOODWIN (1). (1) USDA-ARS / Purdue University, West Lafayette, IN, U.S.A.

10:00 a.m. • Break

10:15 a.m. • 43-S
Cercospora kikuchii: Detection and identification of key virulence proteins. A.K. CHANDA (1), Z. Chen (1), R.W. Schneider (1). (1) Louisiana State University AgCenter, Baton Rouge, LA, U.S.A.

10:45 a.m. • 44-S
Dothideomycete Plant Pathogens Require Specific Virulence Factors for Colonization and Host Plants Have Developed Specific R Genes for Defence. P.J. DE WIT (1), C. Mesarich (1), B. Okmen (1), A. van der Burgt (1), Y. Iida (1), E. Battaglia (1), H. Beenen (1), S. Griffiths (1), J. Collemare (1), R.E. Bradshaw (2). (1) Wageningen University, Wageningen, Netherlands; (2) Massey University, Palmerston North, New Zealand

8:30 A.M. TECHNICAL SESSIONS

Fungicide Efficacy

8:30 - 9:30 a.m.; Room 211 B, CC

Moderator: Rubella S. Goswami, DuPont

8:30 a.m. • 41-O
Efficacy assessment of Demethylation Inhibitor (DMI) fungicides against Guignardia citricarpa, the causal agent of Citrus Black Spot (CBS) N. THAPA (1), M.M. Dewdney (1). (1) Citrus Research and Education Center, University of Florida, Lake Alfred, FL, U.S.A.

8:45 a.m. • 38-O
In vitro studies of a novel fungicide against the black shank pathogen, Phytophthora nicotianae. R. BITTNER (1), A. Mila (1). (1) North Carolina State Univ, Raleigh, NC, U.S.A.

9:00 a.m. • 39-O
Baseline sensitivity of tangerine-infecting Alternaria alternata to boscalid and molecular characterization of the SDH complex. B. VEGA (1), M.M. Dewdney (1). (1) University of Florida, Lake Alfred, FL, U.S.A.

9:15 a.m. • 153-O
Use of Bacillus mycoides isolate J induced resistance in IPM programs. B.J. JACOBSEN (1), S.C. Ockey (2), H.B. Highland (3), M.B. Dimock (4). (1) Montana State Univ, Bozeman, MT, U.S.A.; (2) Certis USA, Yakima, WA, U.S.A.; (3) Certis USA, Nokomis, FL, U.S.A.; (4) Certis USA, Columbia, MD, U.S.A.

Interactions of Fungal Pathogens with Canola

8:30 a.m. - 9:45 a.m.; Room 211 A, CC

Moderators: Jorge David Salgado, Ohio State University

8:30 a.m. • 42-O
A Host-Pathogen Interaction Paradigm: Is Leptosphaeria maculans's New Races Adopting Rapidly to Canadian Canola in Western Canada? D. FERNANDO (1), S. Liban (1), X. Zhang (1), G. Peng (2), D. Cross (3). (1) Univ of Manitoba, Winnipeg, MB, Canada; (2) Agriculture and Agri-Food Canada, Saskatoon, Saskatoon, SK, Canada; (3) Agriculture and Agri-Food Canada, Melfort, Melfort, SK, Canada

8:45 a.m. • 43-O
Fighting back against blackleg: Utilization of high throughput RNA-seq to characterize the blackleg-canola pathosystem. M.G. BECKER (1), I.J. Girard (2), T. de Kievit (2), D. Fernando (2), M.F. Belmonte (2). (1) University of Manitoba, Ile Des Chenes, MB, Canada; (2) University of Manitoba, Winnipeg, MB, Canada

9:00 a.m. • 44-O
RNAseq and histological analysis of the canola – Sclerotinia pathosystem. S. MAO (1), M.F. Belmonte (1), D. Fernando (1), T. De Kievit (1). (1) University of Manitoba, Winnipeg, MB, Canada

9:15 a.m. • 45-O
Transcriptome analysis to understand host defense mechanisms in *Brassica napus - Leptosphaeria maculans* pathosystem. X. ZHANG (1), M.F. Belmonte (1), M.G. Becker (1), W. Fernando (1). (1) Univ of Manitoba, Winnipeg, MB, Canada

9:30 a.m. • 46-O
Bull's-eye: tissue processing improvements for isolating high quality RNA from laser microdissected pathogen infected cells and tissues. I.J. GIRARD (1), D. Fernando (1), M.G. Becker (1), M.F. Belmonte (1). (1) University of Manitoba, Winnipeg, MB, Canada

Pathogen Dispersal

8:30 - 9:45 a.m.; Room 102 BC, CC

Moderators: Chen Zhang, University of Wisconsin; Clive Bock, USDA ARS

8:30 a.m. • 47-O
Factors influencing Erysiphe necator ascocarp overwintering and ascospore release of in the Willamette Valley of Oregon. L. THIESSEN (1), W.F. Mahaffee (2). (1) Oregon State Univ, Corvallis, OR, U.S.A.; (2) USDA ARS, Corvallis, OR, U.S.A.

8:45 a.m. • 48-O
Decaying leaf litter supports Phytophthora ramorum and endemic Phytophthora species in streams. K. ARAM (1), D.M. Rizzo (1). (1) Univ of California, Davis, CA, U.S.A.

9:00 a.m. • 49-O
Atmospheric variations of rust spore concentrations during sugarcane growing seasons in Florida. P.C. ROTT (1), M. Kanaan (2), N. Glynn (3), W. Gibson (4), J. Haudenshield (5), M. Irey (6), C. LaBorde (7), R. Raid (1), J. Shine (8), J.C. Comstock (2). (1) University of Florida, Belle Glade, FL, U.S.A.; (2) USDA/ARS, Canal Point, FL, U.S.A.; (3) Syngenta Seeds Inc., Longmont, CO, U.S.A.; (4) BASF, Vero Beach, FL, U.S.A.; (5) USDA/ARS, Urbana, IL, U.S.A.; (6) United States Sugar Corporation, Clewiston, FL, U.S.A.; (7) Florida Crystals Corporation, South Bay, FL, U.S.A.; (8) Sugar Cane Growers Cooperative, Belle Glade, FL, U.S.A.

9:15 a.m. • 50-O
Detection of the downy mildew pathogens of spinach (Peronospora effusa) and beet (P. schachtii) using spore traps and quantitative PCR assays. S.J. KLOSTERMAN (1), A. Anchieta (1), N. McRoberts (2), S. Koike (3), K.V. Subbarao (4), H. Voglmayr (5), Y. Choi (6), M. Thines (7), F.N. Martin (1). (1) USDA ARS, Salinas, CA, U.S.A.; (2) University of California, Davis, CA, U.S.A.; (3) University of California Cooperative Extension - Monterey County, Salinas, CA, U.S.A.; (4) Univ of California, Salinas, CA, U.S.A.; (5) University of Vienna, Vienna, Austria; (6) Goethe University and Biodiversity and Climate Research Center, Frankfurt, Germany; (7) Biodiversity and Climate Research Center, Frankfurt, Germany

9:30 a.m. • 51-O
An online course "Simulation Modeling in Botanical Epidemiology and Crop Loss Analysis" in The Plant Health Instructor on the APSnet Education Center. S. Savary (1), K. Bowen (2), K.L. Stevenson (3), L. WILLOCQUET (1). (1) INRA, Castanet Tolosan Cedex, France; (2) Auburn Univ., Auburn, AL, U.S.A.; (3) Univ. Georgia, Tifton, GA, U.S.A.

10:15 A.M. Technical Sessions

Chemical Control

10:15 – 11:45 a.m.; Room 211 B, CC

Moderators: J. Brady Shaver, Clemson University; Dr. Ojo Kolawole Adekunle, Obafemi Awolowo University

10:15 a.m. • 52-O
Spatial and temporal distribution of fungicides applied to creeping bentgrass. K.R. HOCKEMEYER (1), R.X. Latin (1). (1) Purdue University, West Lafayette, IN, U.S.A.

10:30 a.m. • 53-O
The effect of spirotetramat (Movento®) against reniform nematode, Rotylenchulus reniformis, on pineapple, Ananas comosus.. P. WAISEN (1), B. Sipes (2). (1) pwaisen@hawaii.edu, Honolulu, HI, U.S.A.; (2) Univ of Hawaii At Manoa, Honolulu, HI, U.S.A.

10:45 a.m. • 54-O
Fungicide impact on in vitro germination of Puccinia horiana, the causal agent of Chrysanthemum White Rust C.L. PALMER (1), S.E. Nester (2), J.M. Revell (2), M.R. Bonde (2). (1) IR-4, Princeton, NJ, U.S.A.; (2) USDA ARS, Frederick, MD, U.S.A.

11:00 a.m. • 55-O
Development and Formulation of the Most Complimentary Fungicide Combination for Row Crops. D.N. Narvaez (1), D. NARVAEZ (1), M. Bradley (2). (1) Makhteshim Agan of North America MANA, Wildwood, MO, U.S.A.; (2) Makhteshim Agan of North America MANA, Raleigh, NC, U.S.A.

11:15 a.m. • 56-O
Evaluation of oxathiapiprolin for management of downy mildew on sunflower. R. HUMANN (1), K. Johnson (2), T. Gulya (3), S. Meyer (1), J. Jordahl (1), A. Friskop (1), M. Wunsch (4), S. Markell (1). (1) North Dakota State University, Fargo, ND, U.S.A.; (2) DuPont Field Development, Grand Forks, ND, U.S.A.; (3) USDA ARS, Fargo, ND, U.S.A.; (4) NDSU Carrington Research Extension Center, Carrington, ND, U.S.A.

(continued)

11:30 a.m. • 40-O
Trunk-injected potassium phosphites and acibenzolar-S-methyl induce SAR in apple trees allowing control of fire blight (Erwinia amylovora). S.G. AÄ†IMOVIÄ† (1), Q. Zeng (1), G.C. McGhee (1), J.C. Wise (1), G. Sundin (1). (1) Michigan State University, East Lansing, MI, U.S.A.

Fungal-Host Interactions

10:15 – 11:30 a.m.; Room 211 A, CC

Moderators: Gurcharn Brar, University of Saskatchewan; Khalid Rashid, Agric and Agri-Food Canada

10:15 a.m. • 57-O
Mechanisms of drought-induced susceptibility of Austrian pine to Diplodia pinea. P. SHERWOOD (1), C. Villari (1), P. Capretti (2), P. Bonello (1). (1) The Ohio State Univ, Columbus, OH, U.S.A.; (2) UniversitÃ degli Studi di Firenze, Firenze, Italy

10:30 a.m. • 58-O
Interactions between Fungi and Plants through Volatile Signaling: The Effects of Volatile Organic Compounds (VOCs) Emitted by Trichoderma on Plants. S. LEE (1), R. Hung (1), J.W. Bennett (1). (1) Rutgers, The State University of New Jersey, New Brunswick, NJ, U.S.A.

10:45 a.m. • 59-O
Infection and colonisation of pyrethrum leaves by Stagonosporopsis tanaceti. M.A. BHUIYAN (1), T. Groom (2), P.W. Taylor (1). (1) The University of Melbourne, Melbourne, Australia; (2) Botanical Resources Australia Pty Ltd, Tasmania, Australia

11:00 a.m. • 60-O
Transcription factor Zfp1 required for full pathogenesis in Ustilago maydis H. Cheung (1), K.L. Spence (1), B.J. SAVILLE (2). (1) Trent University, Peterborough, ON, Canada; (2) Trent University, Ennismore, ON, Canada

11:15 a.m. • 61-O
Characterization of novel Cercospora beticola effector proteins. M. EBERT (1), T. Friesen (1), G. Secor (2), M.D. Bolton (1). (1) USDA-ARS, Fargo, ND, U.S.A.; (2) North Dakota State Univ, Fargo, ND, U.S.A.

Potato Diseases

10:15 – 11:15 a.m.; Room 102 BC, CC

Moderators: Alejandra I. Huerta, University of Wisconsin; Mario Tenuta, University of Manitoba

10:15 a.m. • 62-O
Dickeya spp. associated to imported and ware potato tubers in Brazil. Y.F. Cardoza (1), V. DUARTE (2), C.A. Lopes (3). (1) Universidade Federal do Rio Grande do Sul, Porto Alegre, RS, Brazil; (2) Agronomica - Laboratorio de Diagnostico Fitossanitario, Porto Alegre, RS, Brazil; (3) EMBRAPA, BrasÃ¬lia, DF, Brazil

10:30 a.m. • 63-O
Biology of foliar and root infection of potato plants by Colletotrichum coccodes in Australia. J. CHANG (1), R.D. Boer (2), P.W. Crous (3), P.W. Taylor (1). (1) The University of Melbourne, Melbourne, Australia; (2) Department of Environment and Primary Industries, Melbourne, Australia; (3) CBS Fungal Biodiversity Centre, Utrecht, Netherlands

10:45 a.m. • 64-O WITHDRAWN

10:45 a.m. • 65-O
Biosynthesis of the virulence-associated COR-like metabolites in the potato scab pathogen *Streptomyces scabies*. D.R. BIGNELL (1), Y. Li (2), M.S. Altowairish (2). (1) Memorial University, St John's, NF, Canada; (2) Memorial University, St. John's, NF, Canada

11:00 a.m. • 66-O
Plant pathogenic *Streptomyces*: An annotated research collection. L.A. WANNER (1), L.A. Wanner (2). (1) USDA Agricultural Research Service, Beltsville, MD, U.S.A.; (2) USDA-ARS, Beltsville, MD, U.S.A.

Special Sessions listed first, followed by Oral Technical Sessions. Listed alphabetical by session title.
Find complete details on the meeting website www.apsnet.org/meetings/annual/program/pages. 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.
Meeting room key: CC = Convention Center

Special Sessions

Destructive Tree Diseases Associated with Ambrosia/ Bark Beetles: Black Swan Events in Tree Pathology

8:30 a.m. - 11:15 a.m.; Room 208 AB, CC

Organizers: Matthew Kasson, Virginia Tech, Blacksburg, VA, U.S.A.; Randy Ploetz, University of Florida, Tropical Research & Education Center, Homestead, FL, U.S.A.
Section: Diseases of Plants
Sponsoring Committees/Sponsors: Forest Pathology; Regulatory Plant Pathology; Emerging Diseases and Pathogens; Mycology; Tropical Plant Pathology; Vector-Pathogen Complexes

8:30 a.m. • 45-S
Ambrosia and bark beetle-associated tree diseases: An overview. R. PLOETZ (1). (1) University of Florida, Homestead, FL, U.S.A.

9:00 a.m. • 46-S
Pine-specific beetle-fungus symbioses in Asia that have not yet invaded the US: empirical assessment of threat. J. HULCR (1), C. Bateman (1), W. Bo (2). (1) University of Florida, Gainesville, FL, U.S.A.; (2) Chinese Academy of Sciences, Xishuangbanna, China

9:30 a.m. • 47-S
Rapid crown decline and mortality of hickory associated with numerous Ceratocystis smalleyi infections and mass attacks by the hickory bark beetle. J. JUZWIK (1), J. Park (2). (1) U.S. Forest Service, St. Paul, MN, U.S.A.; (2) Korea Forest Research Institute, Seoul, South Korea

10:00 a.m. • Break

10:15 a.m. • 48-S
New perspectives on thousand cankers disease of walnut. M.T. KASSON (1), G.J. Griffin (2), D.M. Geiser (3), E.S. O"Neal (3), J. Juzwik (4), S. Reed (5), N. Tisserat (6), R.M. Turcotte (7), D.K. Martin (7), D.D. Davis (3), K.A. Fenstermacher (3), K. O'Donnell (8). (1) West Virginia University, Morgantown, WV, U.S.A.; (2) Virginia Tech, Blacksburg, VA, U.S.A.; (3) Pennsylvania State University, University Park, PA, U.S.A.; (4) USDA Forest Service, St. Paul, MN, U.S.A.; (5) University of Missouri, Columbia, MO, U.S.A.; (6) Colorado State University, Fort Collins, CO, U.S.A.; (7) USDA Forest Service, Morgantown, WV, U.S.A.; (8) USDA ARS NCAUR, Peoria, IL, U.S.A.

10:45 a.m. • 49-S
Laurel wilt disease: An exceptional Black Swan event. J.A. SMITH (1), R.C. Ploetz (2), J. Hulcr (1), J. McCutcheon (3), T.J. Dreaden (1), M.A. Hughes (1), D. Spence (4), K. Shin (1), S. Inch (5), J. Ploetz (2), A. Campbell (6). (1) School of Forest Resources and Conservation, University of Florida, Gainesville, FL, U.S.A.; (2) Tropical Research and Education Center, University of Florida, Homestead, FL, U.S.A.; (3) University of Montana, Missoula, MT, U.S.A.; (4) Florida Native Landscapes, Palm Coast, FL, U.S.A.; (5) USDA-Agricultural Research Service, Ft. Pierce, FL, U.S.A.; (6) Department of Plant Pathology, University of Florida, Gainesville, FL, U.S.A.

Food Security: Role of Plant Pathology

8:30 - 11:15 a.m.; Room 205 CD, CC

Organizer: Clayton Hollier, Louisiana State University Agricultural Center, Baton Rouge, LA, U.S.A.
Section: Ecology and Epidemiology
Sponsoring Committees/Sponsors: Crop Loss Assessment and Risk Evaluation; Epidemiology; Integrated Plant Disease Management

8:30 a.m. • 56-S
The multiple dimensions of food security and their challenges. P.S. TENG (1). (1) National Institute of Education, Nanyang Technological University, Singapore, Singapore

9:00 a.m. • 57-S
How important are plant diseases as major causes of food insecurity? C.A. HOLLIER (1). (1) Louisiana State University Agricultural Center, Baton Rouge, LA, U.S.A.

9:30 a.m. • 58-S
Environmental interactions and multiple forcing leading to shifts and variability of crop yield losses. S. SAVARY (1). (1) INRA, Castanet Tolosan Cedex, France

10:00 a.m. • Break

10:15 a.m. • 59-S
Loss and wastage in the food supply chain caused by microbes. T.V. SUSLOW (1), E.J. Mitcham (1). (1) University of California,Davis, CA, U.S.A.

10:45 a.m. • 60-S
Development of food security through academic excellence via international cooperation. V.M. JIMENEZ (1), A. Murillo Williams (2). (1) Seed and Grain Research Center (CIGRAS). University of Costa Rica, San Pedro, Costa Rica; (2) Universidad de Costa Rica, San Pedro, Costa Rica

New Products & Services

8:30 a.m. - 10:00 a.m.; Room 205 AB, CC

Organizer: Leah L. Granke, Hilliard, OH, U.S.A.
Section: Disease Control and Pest Management
Sponsoring Committee/Sponsor: Industry

8:30 a.m. • 50-S
ARM Tablet Data Collector. STEVEN GYLLING, Gylling Data Management, Inc., Brookings, SD, U.S.A.

8:45 a.m. • 51-S
Custodia. DARIO NARVAEZ, MANA, Wildwood, MO, U.S.A.

9:00 a.m. • 52-S
Presentation to be announced. MARSHA MARTIN, DuPont Crop Protection, Newark, DE, U.S.A.

9:15 a.m. • 53-S
Cotton cultivars with new or novel host plant resistance (RKN). JERALD PATAKY, Monsanto, St. Louis, MO, U.S.A.

9:30 a.m. •54-S
New controlled environment for growing plants. RICHARD MARUSYK, Conviron, Winnipeg, MB Canada

(continued)

9:45 a.m. • 55-S
Harvesting the crop microbiome. MATHIAS TWIZEYIMANA, AgBiome, Inc., Research Triangle Park, NC, U.S.A.

Understanding Phytobiomes to Improve Agricultural Productivity

8:30 a.m. - 11:15 a.m.; Room 208 CD, CC

Organizers: Ashok Chanda, Louisiana State University AgCenter, Baton Rouge, LA, U.S.A.; Burton Bluhm and Robert Hirsch, University of Arkansas, Fayetteville, AR, U.S.A.
Section: Molecular/Cellular/Plant-Microbe Interactions
Sponsoring Committee/Sponsor: Molecular and Cellular Phytopathology

8:30 a.m. • 61-S
The phyllosphere microbiome: Responses to and impacts on plants. J.A. VORHOLT (1). (1) ETH Zurich, Zurich, Switzerland

9:00 a.m. • 62-S
How do organisms communicate (cross-kingdom communications) in the phytobiome? V. VENTURI (1). (1) International Centre for Genetic Engineering and Biotechnology, Trieste, Italy

9:30 a.m. • 63-S
Separating signal from noise in the design and analysis of host-microbial communities. E.W. TRIPLETT (1). (1) University of Florida, Gainesville, FL, U.S.A.

10:00 a.m. • Break

10:15 a.m. • 64-S
How do agricultural practices impact the animal microbiome? H.K. Allen (1), T. STANTON (1) (1) USDA/ARS/National Animal Disease Center, Ames, IA, U.S.A.

10:45 a.m. • 65-S
Phytobiome, a new view of crop productionv- an industry perspective. M. GUILHABERT-GOYA (1). (1) Bayer CropScience LP, Davis, CA, U.S.A.

8:30 A.M. Technical Sessions

Disease Resistance in Monocots

8:30 a.m. - 9:45 a.m.; Room 102 BC, CC

Moderators: Nathalia Graf Grachet, Oklahoma State University; Congli Wang, Chinese Academy of Sciences

8:30 a.m. • 67-O
Insights into molecular mechanism of blast resistance in weedy rice. Y. LIU (1), Y. Jia (1), X. Qi (2), K.M. Olsen (2), Caicedo (3), D.R. Gealy (1). (1) USDA ARS Dale Bumpers National Rice Research Center, Stuttgart, AR, U.S.A.; (2) Washington University in St. Louis, Biology department, St. Louis, MO, U.S.A.; (3) University of Massachusetts Amherst, Biology Department, Amherst, MA, U.S.A.

8:45 a.m. • 68-O
Identification of major blast resistance genes in the southern US. X. WANG (1), Y.A. Wamishe (2), T. Bianco (3), M. Lin (3), B. Valent (4). (1) Univ of Arkansas, Stuttgart, AR, U.S.A.; (2) Univ of Arkansas Coop Ext Svc, Stuttgart, AR, U.S.A.; (3) USDA ARS, Stuttgart, AR, U.S.A.; (4) Kansas State University, Manhattan, KS, U.S.A.

9:00 a.m. • 69-O
Resistance the ultimate solution for bacterial panicle blight disease of rice. Y. WAMISHE (1), Y. Jia (2), M. Rasheed (1), C. Kelsey (3), S. Belmar (3), T. Gebremariam (1). (1) Univ of Arkansas Coop Ext Svc, Stuttgart, AR, U.S.A.; (2) USDA ARS, Stuttgart, AR, U.S.A.; (3) Univ of Arkansas, Stuttgart, AR, U.S.A.

9:15 a.m. • 70-O
Breeding for root lesion nematode resistance in Montana winter wheat. D. MAY (1), A. Dyer (1), P. Bruckner (1), J. Berg (1). (1) Montana State University - Bozeman, Bozeman, MT, U.S.A.

9:30 a.m. • 71-O
Response of Fusarium thapsinum to sorghum brown midrib lines and to phenolic metabolites. D.L. FUNNELL-HARRIS (1), S.E. Sattler (1). (1) USDA ARS, Lincoln, NE, U.S.A.

Integrated Management of Disease - 1

8:30 a.m. - 9:45 a.m.; Room 211A, CC

Moderators: Bruna Forcelini, University of Florida; Sarah Pethybridge, Cornell University

8:30 a.m. • 72-O
Using geostatistics to study soil borne pathogens in Michigan potato fields. L. STEERE (1), N. Rosenzweig (1), W.W. Kirk (1), K. Baker (2). (1) Michigan State University, East Lansing, MI, U.S.A.; (2) Western Michigan University, Kalamazoo, MI, U.S.A.

8:45 a.m. • 73-O
Disease severity assessment in epidemiological studies: accuracy and reliability of visual estimates of Septoria leaf blotch (SLB) in winter wheat. M. El Jarroudi (1), L. Kouadio (2), C. Mackels (1), B. Tychon (1), P. Delfosse (3), C.H. BOCK (4). (1) Univ of Liege, Arlon, Belgium; (2) Agriculture and Agri-Food Canada | Agriculture et Agroalimentaire Canada, Lethbridge, Alberta, Canada; (3) Centre de Recherche Public - Gabriel Lippmann, Belvaux, Luxembourg; (4) USDA-ARS-SEFTNRL, Byron, GA, U.S.A.

9:00 a.m. • 74-O
Distribution, genetic diversity, and impact of fungicide resistant Cercospora sojina, the cause of frogeye leaf spot in soybean, in Tennessee. H. KELLY (1), K. Lamour (2), W.J. Jordan (1), A. Cochran (1). (1) University of Tennessee, Jackson, TN, U.S.A.; (2) University of Tennessee, Knoxville, TN, U.S.A.

9:15 a.m. • 75-O
Efficacy of Seed Treatments on Viability of Fusarium oxysporum f. sp. vasinfectum race 4 in Infected Cotton Seed. H. DOAN (1), R. Davis (2). (1) Univ of California, Davis, CA, U.S.A.; (2) University of California, Davis Department of Plant Pathology, Davis, CA, U.S.A.

9:30 a.m. • 76-O
Effect of glyphosate application on sudden death syndrome of soybean under different field conditions. Y.R. KANDEL (1), C.A. Bradley (2), K.A. Wise (3), M. Chilvers (4), A. Tenuta (5), V.M. Davis (6), P. Esker (6), D.L. Smith (6), D. Mueller (1). (1) Iowa State University, Ames, IA, U.S.A.; (2) University of Illinois, Urbana, IL, U.S.A.; (3) Purdue University, West Lafayette, IN, U.S.A.; (4) Michigan State University, East Lansing, MI, U.S.A.; (5) Ontario Ministry of Agriculture and Food, Guelph, ON, Canada; (6) University of Wisconsin-Madison, Madison, WI, U.S.A.

Mechanisms of Host Resistance and Susceptibility

8:30 a.m. - 9:45 a.m.; Room 211 B, CC

Moderators: Osman Radwan, University of Illinois; Jesson Peng Tian, University of Georgia

8:30 a.m. • 77-O
Positional cloning and characterization of Fusarium resistance genes in melon. R. PERL-TREVES (1), G. Miller (1), M. Normantovich (1), I. Kovalski (1). (1) Bar-Ilan University, Ramat Gan, Israel

8:45 a.m. • 78-O
Function, evolution, and interaction of the coupled genes responsible for the Pik-h encoded blast resistance of rice. Q. PAN (1), C. Zhai (1), W. Wu (1), Y. Zhang (1), L. Wang (1). (1) South China Agricultural University, Guangzhou, China

9:00 a.m. • 79-O
Involvement of a rice heme activator protein gene (OsHAP2E) in defense to fungal and bacterial infections. M. NISHIGUCHI (1), M.M. Alam (1), T. Tanaka (1), K. Kobayashi (1), T. Yaeno (1), N. Yamaoka (1). (1) Ehime University, Matsuyama, Japan

9:15 a.m. • 80-O
Using comparative genomics to develop a new model of understanding Verticillium wilt resistance in potato. A. MEIER (1), D. Halterman (2). (1) University of Wisconsin, Madison, Madison, WI, U.S.A.; (2) USDA/ARS, Madison, WI, U.S.A.

9:30 a.m. • 81-O
The novel Gr29D09 effector family from potato cyst nematode *Globodera rostochiensis* suppresses plant immunity to promote nematode parasitism. T.T. TRAN (1), S. Chen (1), X. Wang (2). (1) Department of Plant Pathology and Plant-Microbe Biology, Cornell University, Ithaca, NY, U.S.A.; (2) USDA-ARS, Robert W. Holley Center for Agriculture and Health, Ithaca, NY, U.S.A.

Vector-Pathogen Interactions
8:30 a.m. - 9:45 a.m.; Room 102 DE, CC
Moderators: Michelle L. Cilia, Cornell University; Bhanu Priya Donda, Washington State University

8:30 a.m. • 82-O
Effects of two rice viruses on host preference and development of their vector and non-vector insects. G. ZHOU (1), B. Ling (1), D. Xu (1), M. Zhang (1). (1) South China Agric Univ, Guangzhou, China

8:45 a.m. • 83-O
Polymyxa graminis isolates from Australia: identification in wheat roots and soil, molecular characterization and wide genetic diversity. B.A. Cox (1), H. Luo (2), R. JONES (3). (1) University of Western Australia, Crawley, Australia; (2) Department of Agriculture and Food Western Australia, South Perth, Australia; (3) Univ of Western Australia, South Perth, WA, Australia

9:00 a.m. • 84-O
Assessing the mismatch between incubation and latency for a vector-borne plant disease. L. RIMBAUD (1), A. DELAUNAY (2), S. DALLOT (2), S. BORRON (2), S. SOUBEYRAND (3), G. THEBAUD (2), E. JACQUOT (2). (1) Montpellier SupAgro - UMR BGPI, MONTPELLIER Cedex 5, France; (2) INRA - UMR BGPI, Montpellier, France; (3) INRA - UMR BioSP, Montfavet, France

9:15 a.m. • 85-O
Geographic variation in the mycangial mycoflora of *Xyleborus glabratus* in Florida. A.S. CAMPBELL (1), R.C. Ploetz (1), P.E. Kendra (2), W.S. Montgomery (2). (1) University of Florida, Homestead, FL, U.S.A.; (2) Subtropical Horticulture Research Station, USDA-ARS, Miami, FL, U.S.A.

9:30 a.m. • 86-O
Phytophagous hemipterans as vectors of *Salmonella enterica*. J. SOTO-ARIAS (1), R.L. Groves (1), J.D. Barak (1). (1) University of Wisconsin-Madison, Madison, WI, U.S.A.

10:15 A.M. Technical Sessions

Disease Resistance in Dicots
10:15 a.m. – 11:30 a.m.; Room 102 BC, CC
Moderators: Ana Cristina Fulladolsa, University of Wisconsin; Patricia Santos, Michigan State University

10:15 a.m. • 87-O
QTL mapping Fusarium wilt race 1 and race 4 resistance in an interspecific cotton cross between *Gossypium barbadense* and *G. hirsutum*. C. WANG (1), M. Ulloa (2), P.A. Roberts (3). (1) Northeast Institute of Geography and Agroecology, Chinese Academy of Sciences, Harbin, China; (2) USDA, ARS, SPA, Cropping Systems Research Laboratory Plant Stress & Germplasm Development Research, Lubbock, TX, U.S.A.; (3) University of California, Riverside, CA, U.S.A.

10:30 a.m. • 88-O
Resistance reaction of flax germplasm to fusarium wilt. V.P. EDIRISINGHE (1), H.R. Kutcher (1), H. Booker (1), K.Y. Rashid (2), S. Cloutier (3), F.M. You (2). (1) University of Saskatchewan, Saskatoon, SK, Canada; (2) Agriculture & Agri-Food Canada, Morden, MB, Canada; (3) Agriculture & Agri-Food Canada, Ottawa, ON, Canada

10:45 a.m. • 89-O
Suppression of late blight by resistant tomato cultivars. M.T. MCGRATH (1). (1) Cornell Univ, Riverhead, NY, U.S.A.

11:00 a.m. • 90-O
Resistance of a worldwide collection of resistant tomato, eggplant and pepper lines to South Asian strains of Ralstonia solanacearum. N. SUBEDI (1), S.A. Miller (2). (1) Ohio State Univ, Wooster, OH, U.S.A.; (2) The Ohio State University, Plant Pathology Department, Wooster, OH, U.S.A.

11:15 a.m. • 91-O
Field and laboratory evaluation of resistance to boxwood blight in Buxus cultivars. M. GANCI (1), K. Ivors (1), D.M. Benson (1). (1) North Carolina State Univ, Raleigh, NC, U.S.A.

Fungal Virulence and Genomics
10:15 a.m. – 11:30 a.m.; Room 211 B, CC
Moderators: Ashok Chanda, Louisiana State University; Erin Galarneau, UC Davis

10:15 a.m. • 92-O
Trichothecene mycotoxin export in Fusarium graminearum. B. Yordem (1), M.J. BOENISCH (1), K.L. Broz (2), H.C. Kistler (3). (1) University of Minnesota, St. Paul, MN, U.S.A.; (2) USDA ARS Cereal Disease Laboratory, St. Paul, MN, U.S.A.; (3) USDA ARS Cereal Disease Laboratory/ University of Minnesota, St. Paul, MN, U.S.A.

10:30 a.m. • 93-O
Whole genome sequencing and comparative genomics of multiple F. graminearum isolates. S. WALKOWIAK (1), R. Subramaniam (2), L. Wang (2), O. Rowland (1). (1) Carleton University, Ottawa, ON, Canada; (2) Agriculture and Agri-Food Canada,Ottawa, ON, Canada

10:45 a.m. • 94-O
Functional conservation and divergence of cAMP-PKA signaling pathway in cereal pathogenic Fusarium graminearum and F. verticillioides. L. GUO (1), X. Zhou (2), A. Breakspear (3), G. Zhao (1), L. Gao (1), J. Xu (2), H. Kistler (3), L. Ma (1). (1) University of Massachusetts Amherst, Amherst, MA, U.S.A.; (2) Purdue University, West Lafayette, IN, U.S.A.; (3) USDA-ARS Cereal Disease Lab, St Paul, MN, U.S.A.

(continued)

11:00 a.m. • 95-O
Characterization of mating-type (MAT) loci of Guignardia citricarpa, the citrus black spot pathogen and G. mangiferae, the ubiquitous endophyte. N. WANG (1), K. Zhang (1), J.A. Rollins (2), M.M. Dewdney (1). (1) Citrus Research and Education Center, University of Florida, Lake Alfred, FL, U.S.A.; (2) Department of Plant Pathology, University of Florida, Gainesville, FL, U.S.A.

11:15 a.m. • 96-O
Detecting the grapevine wood-canker pathogen Neofusicoccum parvum (Botryosphaeria dieback) based on host markers of infection. E.R. GALARNEAU (1), S. Czemmel (2), R. Travadon (3), G. Cramer (2), A.J. McElrone (1), K. Baumgartner (1). (1) USDA-ARS CPGRU Davis, Davis, CA, U.S.A.; (2) University of Nevada-Reno, Reno, NV, U.S.A.; (3) University of California-Davis, Davis, CA, U.S.A.

Integrated Management of Disease - 2
10:15 a.m. – 11:30 a.m.; Room 211 A, CC
Moderators: Richard Dais, USDA ARS; Margaret Lloyd, University of California, Davis

10:15 a.m. • 97-O
Effect of simultaneous water deficit stress and Meloidogyne incognita infection on cotton yield and fiber quality. R.F. DAVIS (1), H.J. Earl (2), P. Timper (1). (1) USDA ARS, Tifton, GA, U.S.A.; (2) University of Guelph, Guelph, ON, Canada

10:30 a.m. • 98-O
Effect of anaerobic soil disinfestation and vermicompost on soil-borne phytopathogenic agents under tree-crop nursery conditions. S. STRAUSS (1), D. Kluepfel (2), G. Browne (1). (1) USDA ARS, Davis, CA, U.S.A.; (2) USDA ARS CPGRU, Davis, CA, U.S.A.

10:45 a.m. • 99-O
Wheat Curl Mite Populations under Deficit Irrigation. A.R. SIMMONS (1), F. Worneh (1), S. O'Shaugnessy (2), S. Evett (2), C.M. Rush (1). (1) Texas A&M Agrilife Research, Amarillo, TX, U.S.A.; (2) USDA-ARS, Bushland, TX, U.S.A.

11:00 a.m. • 100-O
Grower perceptions of preventative practices for management of trunk diseases of grape. K. BAUMGARTNER (1), R. Travadon (2), V. Hillis (2), J. Kaplan (3), M. Cooper (2), M. Lubell (2). (1) USDA ARS, Davis, CA, U.S.A.; (2) UC Davis, Davis, CA, U.S.A.; (3) California State University, Sacramento, Sacramento, CA, U.S.A.

11:15 a.m. • 101-O
Leveraging Technologies to Deliver On-Farm Nematode Management Solutions. V.C. CONCIBIDO (1). (1) Monsanto Co, Chesterfield, MO, U.S.A.

Population Biology and Genetics
10:15 a.m. – 11:30 a.m.; Room 102 DE, CC
Moderators: Sydney E. Everhart, Oregon State University; Mary Lewis, North Carolina State University

10:15 a.m. • 102-O
Assessing the population genetic structure of Didymella bryoniae to better understand the epidemiology of gummy stem blight of cucurbits. H. LI (1), M. Brewer (1). (1) Univ of Georgia, Athens, GA, U.S.A.

10:30 a.m. • 103-O
Application of the R package poppr for analysis of population genetic data. Z.N. KAMVAR (1), J.F. Tabima (1), N.J. Grunwald (2). (1) Oregon State University, Corvallis, OR, U.S.A.; (2) USDA-ARS, Corvallis, OR, U.S.A.

10:45 a.m. • 104-O
East Meets West, the Story of Geosmithia morbida in the United States. D. HADZIABDIC (1), K.A. Nix (1), L.M. Vito (1), P.R. Merten (2), M.T. Windham (1), P.L. Lambdin (1), J.F. Grant (1), G.J. Wiggins (1), J.W. Pscheidt (3), P.A. Wadl (1), W. Cranshaw (4), R.N. Trigiano (1). (1) University of Tennessee, Knoxville, TN, U.S.A.; (2) USDA Forest Service, Forest Health Protection, Asheville, NC, U.S.A.; (3) Oregon State University, Corvallis, OR, U.S.A.; (4) Colorado State University, Fort Collins,CO, U.S.A.

11:00 a.m. • 105-O
Inferring introduction pathways of the poplar pathogen, *Mycosphaerella populorum* using a population genomic approach. M.L. SAKALIDIS (1), N. Feau (1), R.C. Hamelin (1). (1) The University of British Columbia, Vancouver, BC, Canada

11:15 a.m. • 106-O
Validating forensics tools for crop biosecurity: Simple sequence repeat typing of *Fusarium proliferatum* associated with salmon blotch of onions. I. MONCRIEF (1), C. Garzon (1), S. Marek (1), A. Gamliel (2), J. Stack (3), Y. Issac (4), J. Fletcher (1). (1) Oklahoma State Univ, Stillwater, OK, U.S.A.; (2) Inst. Agricultural Engineering ARO, The Volcani Center, Bet Dagan, U.S.A.; (3) Kansas State Univ, Manhattan, KS, U.S.A.; (4) Inst. Agricultural Engineering ARO, The Volcani Center, Bet Dagan, Israel

TUESDAY, AUGUST 12, 2014 – afternoon

Special Sessions listed first, followed by Oral Technical Sessions. Listed alphabetical by session title.
Find complete details on the meeting website www.apsnet.org/meetings/annual/program/pages. 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.
Meeting room key: CC = Convention Center

Special Sessions

Plant Pathologists of the Future: Showcasing the Top Graduate Students from APS Division Meetings
2:15 – 3:45 p.m.; Room 205 AB, CC
Organizers: Lawrence Datnoff, Louisiana State University AgCenter, Baton Rouge, LA, U.S.A.; David Rosenberger, Cornell University, Geneva, NY, U.S.A.
Section: Professionalism/Outreach
Sponsoring Committee/Sponsor: Divisional Forum

2:15 p.m. Introductions

2:30 p.m. • 66-S
North Central Division - Frankliniella occidentalis proteins that interact or respond to Tomato spotted wilt virus infection of the insect vector. I.E. BADILLO-VARGAS (1), D. Rotenberg (1), A.E. Whitfield (1). (1) Department of Plant Pathology, Kansas State University, Manhattan, KS, U.S.A.

2:45 p.m. • 67-S
Northeastern Division - A proposed new model for beech bark disease development in aftermath forests. J.A. CALE (1), S.A. Teale

(1), M.T. Johnston (2), J.D. Castello (1). (1) SUNY ESF, Syracuse, NY, U.S.A.; (2) SUNY ESF, Ranger School, Wanakena, NY, U.S.A.

3:00 p.m. • 68-S
Pacific Division -What Alternaria species cause diseases of potato in the Pacific Northwest?. L. TYMON (1), T.F. Cummings (1), T.L. Peever (1), D.A. Johnson (1). (1) Washington State University, Pullman, WA, U.S.A.

3:15 p.m. • 69-S
Potomac Division - Xanthomonas effector AvrRxo1 suppresses plant immunity by regulating the plant stomatal aperture sizes. S. WU (1), C. Zhou (1), Y. Liu (1), Q. Cheng (2), B. Zhao (1). (1) Virginia Tech, Blacksburg, VA, U.S.A.; (2) Nanjing Forestry University, Nanjing, China

3:30 p.m. • 70-S
Southern Division - Effects of infection timing on Wheat streak severity. J.A. PRICE (1), J. Gray (2), F. Workneh (2), C.M. Rush (2). (1) Texas A&M AgriLife Research, Amarillo, TX, U.S.A.; (2) Texas A&M AgriLife Research, Bushland, TX, U.S.A.

2:15 P.M. Technical Sessions

Bacteria-Host Interactions
2:15 - 3:30 p.m.; Room 208 AB, CC
Moderators: Korsi Dumenyo, Tennessee State University; Jeremy Warren, University of California, Davis

2:15 p.m. • 107-O
The impact of tissue type, growth stage and fertilizers on the community structure of cultured bacterial wheat endophytes in the Broadbalk experiment. R.R. ROBINSON (1), B.A. Fraaije (1), I.M. Clark (1), R.W. Jackson (2), P.R. Hirsch (1), T.H. Mauchline (1). (1) Rothamsted Research, Harpenden, United Kingdom; (2) University of Reading, Reading, United Kingdom

2:30 p.m. • 108-O
Chemical inducers of systemic acquired resistance in plants. M.H. EL-SHETEHY (1), C. Wang (2), S. Baby (1), K. Yu (1), A. Kachroo (1), P. Kachroo (1). (1) University of Kentucky, Lexington, KY, U.S.A.; (2) College of Agronomy and Plant Protection, Key Lab of Integrated Crop Pest Management of Shandong Province, Qingdao Agricultural University, 700 Changcheng Road, Qingdao 266109, China, Qingdao, China

2:45 p.m. • 109-O
AtNPR1 confers resistance against Xanthomonas fragariae, the causal agent of Angular Leaf Spot in strawberry. K. PEREIRA SILVA (1), A. Brunings (1), N. Peres (1), K.M. Folta (1), Z. Mou (1). (1) Univ of Florida, Gainesville, FL, U.S.A.

3:00 p.m. • 110-O
Identification of peptides that possess high binding affinities to bacterial polygalacturonases for potential control of phytopathogenic prokaryotes. J. WARREN (1), B. Kirkpatrick (1). (1) UC Davis, Davis, CA, U.S.A.

3:15 p.m. • 187-O
Characterization of Sec-Translocon dependent extracytoplasmic proteins of Candidatus Liberibacter asiaticus. S. FNU (1), N. Wang (1). (1) Univ of Florida, Lake Alfred, FL, U.S.A.

Fungicide Resistance
2:15 - 3:30 p.m.; Room 205 CD, CC
Moderators: Deena Errampalli, Agric and Agri-Food Canada; Olutoyosi Ajayi, University of Illinois

2:15 p.m. • 112-O
Evolution and spread of azole-insensitive *Zymoseptoria tritici* field isolates in the UK. B.A. FRAAIJE (1), S. Atkins (1), J. Luo (1), P. Diez de la Fuente (1), N.J. Hawkins (1). (1) Rothamsted Research, Harpenden, United Kingdom

2:30 p.m. • 113-O
Population structure and fungicide resistance profile of Botrytis spp. causing damping-off disease in stone- and pome fruit rootstock seedlings. S. KONSTANTINOU (1), G. Sarmis (1), G.S. Karaoglanidis (2). (1) Aristotelian Univ of Thessaloniki, Faculty of Agriculture, Plant Pathology Laboratory, Thessaloniki, Greece; (2) Aristotelian Univ of Thessaloniki, Thessaloniki, Greece

2:45 p.m. • 114-O
Stability of boscalid resistance and fluopyram sensitivity of *Corynespora cassiicola* strains in commercial cucumber greenhouses. H. ISHII (1). (1) Natl Inst for Agro-Environmental Sciences, Tsukuba, Japan

3:00 p.m. • 115-O
Fungicide resistance phenotypes in Botrytis cinerea populations from blueberries in California and Washington. S. SAITO (1), T. Michailides (2), C. Xiao (1). (1) USDA ARS, Parlier, CA, U.S.A.; (2) University of California-Davis, Parlier, CA, U.S.A.

3:15 p.m. • 116-O
High fungicide insensitivity and reciprocity of iprodione sensitivity in Botrytis cinerea populations from berry crops in the Pacific Northwest. J.E. ADASKAVEG (1), H. Forster (1), C. Clemens (2), S. Midboe (3). (1) Univ of California, Riverside, CA, U.S.A.; (2) Syngenta Crop Protection, Richland, WA, U.S.A.; (3) Whatcom Farmers Coop,Bellingham, WA, U.S.A.

Management of Nematodes
2:15 - 3:30 p.m.; Room 208 CD, CC
Moderators: Loretta Ortiz-Ribbing, MN Department of Agriculture; Abolfazl Hajihassani, University of Manitoba

2:15 p.m. • 117-O
Greenhouse reproduction fitness of the stem nematodes, Ditylenchus weischeri and D. dipsaci on pulse and non-pulse crops. A. HAJIHASSANI (1), M. Tenuta (1), R. Gulden (2). (1) Department of Soil Science, University of Manitoba, Winnipeg, MB, Canada; (2) Department of Plant Science, University of Manitoba, Winnipeg, MB, Canada

2:30 p.m. • 118-O
Root-knot Nematode Suppression in Tomato with Selected Organic Amendments in Comparison to Carbofuran. O.K. ADEKUNLE (1), O.K. Adekunle (2). (1) Obafemi Awolowo University, Ile-Ife., Ile-Ife, Nigeria; (2) Department of Crop Production and Protection, Obafemi Awolowo University, Ile-Ife, Nigeria

2:45 p.m. • 119-O
Integrated pest management of sting nematode (Belonolaimus longicaudatus) on bermudagrass. S. ARYAL (1), W.T. Crow (1), R. McSorley (1), R.M. Giblin-Davis (1), K.E. Kenworthy (1). (1) University of Florida, Gainesville, FL, U.S.A.

3:00 p.m. • 120-O
Development and use of root-knot nematode resistant rootstocks for managing Meloidogyne incognita in grafted watermelon. J.A. THIES (1), S. Buckner (1), R. Hassell (2), A. Levi (1). (1) USDA, ARS, Charleston, SC, U.S.A.; (2) Clemson University, Charleston, SC, U.S.A.

(continued)

3:15 p.m. • 121-O
Sugarbeets as biofuel: decline rates of California sugarbeet cyst nematode under nonhost crops. B.B. WESTERDAHL (1), E.P. Caswell-Chen (1), F.R. Kegel (2). (1) University of California, Davis, CA, U.S.A.; (2) University of California Cooperative Extension, Stockton, CA, U.S.A.

Molecular and Microbial Ecology
2:15 - 3:30 p.m.; Room 102 DE, CC

Moderators: Clayton Hollier, Louisiana State University; Michel Millican, Iowa State University

2:15 p.m. • 122-O
Genetic characterization of Aspergillus flavus soil populations in Kenya using simple sequence repeat (SSR) markers. M. ISLAM (1), K.A. Callicott (1), K.T. Meyers (2), R. Bandyopadhyay (3), C. Mutegi (4), P.J. Cotty (1). (1) USDA-ARS, Tucson, AZ, U.S.A.; (2) School of Plant Sciences, The University of Arizona, Tucson, AZ, U.S.A.; (3) International Institute of Tropical Agriculture, Ibadan, Nigeria; (4) International Institute of Tropical Agriculture, Nairobi, Kenya

2:30 p.m. • 123-O
Comparing populations of epiphytic bacteria in Pennsylvania's organic and conventional stone fruit orchards as it relates to bacterial spot management. S. BARDSLEY (1), M. Jimenez-Gasco (1). (1) Penn State Univ, University Park, PA, U.S.A.

2:45 p.m. • 124-O
Parallel sequencing and GIS-based mapping of soil bacterial diversity in Michigan potato production systems. N. ROSENZWEIG (1), L. Steere (1), K. Steinke (1), W.W. Kirk (1). (1) Michigan State Univ, East Lansing, MI, U.S.A.

3:00 p.m. • 125-O
Multilocus analysis reveals phylogenetic placement of novel ERI fungi within Magnaporthaceae and Phaeosphaeriaceae of Ascomycota. P.L. VINES (1), M. Tomaso-Peterson (1), T.W. Allen (2), F. Hoffmann (1). (1) Mississippi State Univ, Mississippi State, MS, U.S.A.; (2) Delta Research and Extension Center,Stoneville, MS, U.S.A.

3:15 p.m. • 126-O
Diversity of Diaporthe species causing wood-canker diseases of fruit and nuts crops in northern California. D. LAWRENCE (1), R. Travadon (1), K. Baumgartner (2). (1) University of California-Davis, Davis, CA, U.S.A.; (2) USDA-ARS, Davis, CA, U.S.A.

Resistance Screening and Marker Development
2:15 - 3:30 p.m.; Room 211 A, CC

Moderators: Yuba Kandel, Iowa State University; Stephen Goodwin, Purdue University

2:15 p.m. • 127-O
Screening and identification of resistance to *Leptosphaeria maculans* in *Brassica napus accessions.* S. MANSOURIPOUR (1), L. del Rio-Mendoza (1). (1) North Dakota State University, Fargo, ND, U.S.A.

2:30 p.m. • 128-O
Development of glasshouse bioassay for assessing resistance to verticillium wilt disease in potato. V.N. DHARJONO (1), N.S. Crump (2), T. Wiechel (3), P.W. Taylor (1). (1) The University of Melbourne, Parkville, Australia; (2) ViCSPA, Toolangi, Australia; (3) Department of Environment and Primary Industries, Bundoora, Australia

2:45 p.m. • 129-O
Development of a molecular marker to detect the *Potato virus Y resistance gene* Ry chc in diploid populations of potato. A.C. FULLADOLSA (1), S.H. Jansky (2), D.A. Halterman (3), A.O. Charkowski (1). (1) University of Wisconsin-Madison, Madison, WI, U.S.A.; (2) University of Wisconsin-Madison/USDA-ARS, Madison, WI, U.S.A.; (3) USDA-ARS, Madison, WI, U.S.A.

3:00 p.m. • 130-O
Common bean lines with resistance to all known races of Uromyces appendiculatus and the strains of the BCMV, BCMNV, and BGYMV viruses. M.A. PASTOR-CORRALES (1), J.A. Beaver (2), J.C. Rosas (3), T.G. Porch (4), G. Godoy-Lutz (5), E. Prophete (6). (1) USDA ARS, Beltsville, MD, U.S.A.; (2) University of Puerto Rico, San Juan, U.S.A.; (3) EAP/Zamorano, Tegucigalpa, Honduras; (4) USDA ARS SAA TARS, Mayaguez, U.S.A.; (5) University of Nebraska, Lincoln, NE, U.S.A.; (6) Service National Semencier, Port-au-Prince, Haiti

3:15 p.m. • 131-O
Phylogenetic analysis and association mapping for agronomic and quality traits in USDA pea PSP collection. P. CHENG (1), W. Holdsworth (2), Y. Ma (1), M. Mazourek (2), M. Grusak (3), C. Coyne (1), R. McGee (1). (1) Washington State Univ, Pullman, WA, U.S.A.; (2) Cornell University, Ithaca, NY, U.S.A.; (3) USDA-ARS Children's Nutrition Research Center,Houston, TX, U.S.A.

Vegetable Diseases
2:15 - 3:30 p.m.; Room 211 B, CC

Moderators: Odile Carisse, Agric and Agri-Food Canada; Alyssa Koehler, North Carolina State University

2:15 p.m. • 132-O
From research stations to seed fields: Survey, detection and identification of sweet potato viruses in North Carolina. C.V. Almeyda (1), T. Abernethy (1), J.A. Abad (2), Z. PESIC (1). (1) North Carolina State University, Raleigh, NC, U.S.A.; (2) USDA, APHIS PPQ FO PGQP, Beltsville, MD, U.S.A.

2:30 p.m. • 133-O
Occurrence of different pathotypes of Synchytrium endobioticum in Europe, and detection by molecular methods. G.C. VAN LEEUWEN (1), P.C. van Rijswick (1), B.T. van de Vossenberg (2), M. Westenberg (2). (1) NPPO the Netherlands, Wageningen, Netherlands; (2) NPPO the Netherlands, Wageningen, Netherlands

2:45 p.m. • 134-O
Molecular diagnostic tools for detection and identification of sweet potato viruses. A.S. AVELAR (1), J.K. Brown (1). (1) University of Arizona, School of Plant Sciences, Tucson, AZ, U.S.A.

3:00 p.m. • 135-O
Fungal pathogens associated with mature watermelon wilt symptoms in Korea. H. KANG (1), Y. Kim (2), B. Han (2), T. Kim (2), J. Noh (2), Y. Kim (3), C. Han (2), S. Nam (2). (1) Watermelon Research Institute, CBARES, Eumseong-gun Chungcheongbuk-do, South Korea; (2) Watermelon Research Institute, CBARES, Eumseong-gun, South Korea; (3) Enviroment-friendly Agriculture Research Division, CBARES, Cheongwon-gun, South Korea

3:15 p.m. • 136-0
Multiplex qPCR Assay for Detecting the Four Causal Agents of Bacterial Spot of Tomato. A. STRAYER (1), M.L. Paret (2), J.B. Jones (1), A. Jeyaprakash (3). (1) Department of Plant Pathology, University of Florida, Gainesville, FL, U.S.A.; (2) NFREC, University of Florida, Quincy, FL, U.S.A.; (3) Division of Plant Industry, Florida Department of Agriculture & Consumer Services, Gainesville, FL, U.S.A.

Special Sessions listed first, followed by Oral Technical Sessions. Listed alphabetical by session title.
Find complete details on the meeting website www.apsnet.org/meetings/annual/program/pages. 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.
Meeting room key: CC = Convention Center

SPECIAL SESSIONS

EPA's Endocrine Disruptor Screening Program and Its Relationship to Plant Protection Products

8:30 - 11:15 a.m.; Room 205 CD, CC

Organizers: Paul Lewis, EPA, Washington, DC, U.S.A.; Gregory Hodges, Florida Department of Agriculture and Consumer Services, Gainesville, FL, U.S.A.
Section: Disease Control and Pest Management
Sponsoring Committees/Sponsors: Regulatory Plant Pathology; Chemical Control; Industry; Public Policy Board

8:30 a.m. • 71-S
The Legislative History of the Endocrine Disruptor Screening Program. K. EVERSOLE (1). (1) Eversole Associates, Bethesda, MD, U.S.A.

9:00 a.m. • 72-S
EPA's Endocrine Disruptor Screening Program: Background and evaluation of Tier 1 results from chemical case studies. P. BROWNE (1). (1) US EPA - Office of Science Coordination and Policy, Washington, DC, U.S.A.

9:30 a.m. • 73-S
Industry perspective. B. CARROLL (1). (1) Greensboro, NC, U.S.A.

10:00 a.m. • Break

10:15 a.m. • 74-S
The Endocrine Disruptor Screening Program and a Potential Relationship to Future Plant Disease Control Efforts. P.M. BRANNEN (1), L. Fall (2). (1) University of Georgia, Athens, GA, U.S.A.; (2) University of Georgia, Byron, GA, U.S.A.

10:45 a.m. • 75-S
Endocrine disruptor screening: considerations for compound design and selection of new disease control products. C.A. PEARSON (1), D. Wolf (1), R. Lewis (2). (1) Syngenta Crop Protection, Greensboro, NC, U.S.A.; (2) Syngenta Crop Protection, Jealotts Hill, United Kingdom

Frontiers in Biosynthesis and Management of Mycotoxins

8:30 - 11:15 a.m.; Room 205 AB, CC

Organizers: Zhi-Yuan Chen, Louisiana State University Agricultural Center, Baton Rouge, LA, U.S.A.; Hillary Mehl, Virginia Tech Tidewater AREC, Suffolk, VA, U.S.A.; Ramon Jaime, School of Plant Science, USDA-ARS, The University of Arizona, Tucson, AZ, U.S.A.
Section: Biology of Pathogens
Sponsoring Committees/Sponsors: Mycotoxicology; Host Resistance; Biological Control; Molecular and Cellular Phytopathology

8:30 a.m. • 76-S
Insights into the evolution of mycotoxin biosynthesis in the fungus Fusarium. R.H. PROCTOR (1), T. Lee (2), M. Amatulli (3), S.P. McCormick (3), D.W. Brown (3), M. Busman (3), C. Maragos (3), T.J. Ward (3). (1) USDA ARS MWA NCAUR, Peoria, IL, U.S.A.; (2) National Academy of Agricultural Science, Rural Development Administration, Suwon, Korea; (3) USDA ARS NCAUR, Peoria, IL, U.S.A.

9:00 a.m. • 77-S
Genomic approaches to characterize the regulatory circuits of Aspergillus flavus controlling aflatoxin biosynthesis. G. PAYNE (1), X. Shu (1), G. OBrian (1), B. Musungu (2), M. Geisler (2), A.M. Fakhoury (3). (1) North Carolina State University, Raleigh, NC, U.S.A.; (2) Southern Illinois University, Carbondale, IL, U.S.A.; (3) Southern Illinois University, Carbondale, IL, U.S.A.

9:30 a.m. • 78-S
Genetics and next-generation sequencing in identifying marker for aflatoxin resistance in maize. M.L. WARBURTON (1), W.P. Williams (1), G. Windham (1), S. Murray (2), W. Xu (2), A. Perkins (3), J. Tang (1), L. Hawkins (1). (1) USDA ARS CHPRRU, Mississippi State, MS, U.S.A.; (2) Dept. Soil and Crop Sciences TAMU, College Station, TX, U.S.A.; (3) Computer Science and Engineering Mississippi State University, Mississippi State, MS, U.S.A.

10:00 a.m. • Break

10:15 a.m. • 79-S
Role of plant elicitor peptides and phytoalexins in enhancing maize resistance to Aspergillus flavus infection. A. HUFFAKER (1), J. Sims (1), S. Christensen (1), E.A. Schmelz (1). (1) USDA-ARS CMAVE, Gainesville, FL, U.S.A.

10:45 a.m. • 80-S
From one to many: Effective aflatoxin management in farmers' fields in West and East Africa. R. BANDYOPADHYAY (1), P.J. Cotty (2), J. Atehnkeng (1), S.E. Bonkoungou (3), K.A. Callicott (2), R. Jaime-Garcia (4), C.K. Mutegi (5), C. Probst (6), L. Senghor (7). (1) International Institute of Tropical Agriculture (IITA), Ibadan, Nigeria; (2) USDA/ARS, School of Plant Sciences, University of Arizona, Tucson, AZ, U.S.A.; (3) INERA, Bobo-Dioulasso, Burkina faso; (4) University of Arizona, School of Plant Sciences, Tucson, AZ, U.S.A.; (5) International Institute of Tropical Agriculture (IITA), Nairobi, Kenya; (6) Washington State University, Prosser, WA, U.S.A.; (7) DPV, Dakar, Senegal

Funding Opportunities for Cooperative International Research

8:30 - 10:30 a.m.; Room 211 A, CC

Organizer: John Bowman, USAID, Rockville, MD, U.S.A.; Angela Records, USAID, Rockville, MD, U.S.A.; Sue Cohen, Center for Regulatory Research, LLC, White Bear Lake, MN, U.S.A.
Section: Professionalism/Outreach
Sponsoring Committees/Sponsors: Office of International Programs; Early Career Professionals; Extension; Regulatory Plant Pathology; Tropical Plant Pathology

8:30 a.m. • 81-S
International Programs and Opportunities at NIFA. K.F. CARDWELL (1). (1) USDA, National Institute of Food and Agriculture, Washington, DC, U.S.A.

9:00 a.m. • 82-S WITHDRAWN

(continued)

9:00 a.m. • 83-S
USAID Fellowship Programs. C.K. COHEN (1). (1) US Agency for International Development, Washington, DC, U.S.A.

9:30 a.m. • 84-S
Supporting Agricultural Research in Africa. D. NIELSON (1). (1) World Bank, Washington, DC, U.S.A.

10:00 a.m. • 85-S
The Borlaug Global Rust Initiative: A Successful Cooperative International Research Community. M. ROUSE (1), S.D. Evanega (2), R. Coffman (2). (1) USDA-ARS and University of Minnesota, Saint Paul, MN, U.S.A.; (2) Cornell Univ, Highland, NY, U.S.A.

Interconnected Lifecycles: Multitrophic Interactions Between Plants, Pathogens, and Insects

8:30 - 11:30 a.m.; Room 208 AB, CC

Organizers: Dorith Rotenberg and Karen Alviar, Kansas State University, Manhattan, KS, U.S.A.; Alma Laney, University of Arkansas, Fayetteville, AR, U.S.A.
Section: Ecology and Epidemiology
Sponsoring Committees/Sponsors: Vector-Pathogen Complexes; Virology
Financial Sponsor: AgBiome, Inc.

8:30 a.m. • 86-S
Interconnected Lifecycles: Multitrophic interactions between plants, pathogens, and insects. D. ROTENBERG (1). (1) Kansas State University, Dept Plant Pathology, Manhattan, KS, U.S.A.

8:45 a.m. • 87-S
Across the spectrum: Effects of virus infections on host preference and fitness of vectors. R. SRINIVASAN (1). (1) University of Georgia, Tifton, GA, U.S.A.

9:15 a.m. • 88-S
Cucumber mosaic virus-induced changes in volatile production and plant quality: Implications for disease transmission and multitrophic interactions. K. MAUCK (1), C. De Moraes (1), M. Mescher (1). (1) ETH Zurich, Zurich, Switzerland

10:00 a.m. • Break

10:15 a.m. • 89-S
Characterizing the interaction between salt-stressed soybeans, viral infection, and vector performance. A.G. LANEY (1), K.L. Korth (1). (1) University of Arkansas, Fayetteville, AR, U.S.A.

10:30 a.m. • 90-S
Insect vectors are attracted to sub-optimal pathogen-infected plants; Can environment be manipulated to prevent vectors from finding infected trees?. L.L. STELINSKI (1). (1) University of Florida, Lake Alfred, FL, U.S.A.

11:00 a.m. • 91-S
A tale of how phytoplasma effectors alter plant-pathogen-insect interactions: It's a mad MADS world. A.M. MACLEAN (1), Z. Orlovskis (1), A. Sugio (1), H. Kingdom Gibbard (1), S.A. Hogenhout (1). (1) John Innes Centre, Norwich, United Kingdom

Potyviruses: Functional Genomics and Virus-Host Interactions

8:30 - 11:15 a.m.; Room 208 CD, CC

Organizers: Satyanarayana Tatineni, USDA-ARS, Lincoln, NE, U.S.A.; Alexander Karasev, Department of PSES, University of Idaho, Moscow, ID, U.S.A.
Section: Molecular/Cellular/Plant-Microbe Interactions
Sponsoring Committee/Sponsor: Virology

8:30 a.m. • 92-S
Interactions of HCpro and VPg of Potato virus A with eIF4E. M. Ala-Poikela (1), M. RajamÂ¤ki (1), J.P. VALKONEN (1). (1) University of Helsinki, Helsinki, Finland

9:00 a.m. • 93-S
Molecular understanding of potyvirus infection processes for the development of novel antiviral strategies. A. WANG (1). (1) Agriculture & Agri-Food Canada, London, ON, Canada

9:30 a.m. • 94-S
Multiple roles of Wheat streak mosaic virus coat protein in virus biology. S. TATINENI (1), A.J. McMechan (2), G. Hein (2). (1) USDA-ARS, Lincoln, NE, U.S.A.; (2) University of Nebraska-Lincoln, Lincoln, NE, U.S.A.

10:00 a.m. • Break

10:15 a.m. • 95-S
Interactions of Soybean mosaic virus with resistant soybean genotypes: virulence determinants and practical implications. R. HAJIMORAD (1). (1) The University of Tennessee, Dept of Entomology & Plant Pathology, Knoxville, TN, U.S.A.

10:45 a.m. • 96-S
Interactions of Bean common mosaic virus with resistance genes in common beans. A.V. KARASEV (1), X. Feng (1), A.R. Poplawsky (1). (1) University of Idaho, Moscow, ID, U.S.A.

8:30 A.M. Technical Sessions

Bacterial Virulence

8:30 - 9:45 a.m.; Room 211 B, CC

Moderators: Quan Zen, Michigan State University; Laura Fleites, University of Florida

8:30 a.m. • 137-O
The post-transcriptional regulator *rsmA/csrA*activates the T3SS in *Xanthomonas citri* by stabilizing the master regulator 5' UTR of hrpG. M. ANDRADE (1), S.C. Farah (2), N. Wang (1). (1) Department of Microbiology and Cell Science, CREC, University of Florida, Lake Alfred,FL, U.S.A.; (2) Department of Biochemistry, Institute of Chemistry, University of SÃ£o Paulo, Sao Paulo, Brazil

8:45 a.m. • 138-O
Characterization of a putative serine protease effector from *Clavibacter michiganensis*subsp *sepedonicus*in non-host interaction. Y. LU (1), N. Hatsugai (1), F. Katagiri (1), C.A. Ishimaru (1), J. Glazebrook (1). (1) University of Minnesota, Twin Cities, St Paul, MN, U.S.A.

9:00 a.m. • 139-O WITHDRAWN

9:00 a.m. • 140-O
Gene expression, proteome analysis, and validation of effectors associated with psyllid-mediated Liberibacter transmission. T.W. FISHER (1), E.V. Sheveleva (1), J.K. Brown (1). (1) Univ of Arizona, Tucson, AZ, U.S.A.

9:15 a.m. • 141-O
Comparative genomics of *Ralstonia solanacearum* strain P781 that infects Mandevilla and Dipladenia plants. A.M. BOCSANCZY (1), J.M. Yuen (1), A.J. Palmateer (2), D.J. Norman (1). (1) Univ of Florida Mid-Florida Research and Education Center, Apopka, FL, U.S.A.; (2) Univ of Florida Tropical research and Education Center, Homestead, FL, U.S.A.

9:30 a.m. • 189-O
Two phases of root loss caused by citrus huanglongbing are independent of root growth. E.G. JOHNSON (1), K.M. Gerberich (1), J. Wu (2), J.H. Graham (1). (1) University of Florida, Citrus Research and Education Center, Lake Alfred, FL, U.S.A.; (2) University of Florida, Lake Alfred, FL, U.S.A.

Fungal Biology

8:30 - 9:45 a.m.; Room 102 DE, CC

Moderator: Kimberly Webb, USDA ARS

8:30 a.m. • 142-O
Hyphal growth through soil and colonization of organic matter by Fusarium proliferatum. A. REYES GAIGE (1), J. Stack (1). (1) Department of Plant Pathology, Kansas State University, Manhattan, KS, U.S.A.

8:45 a.m. • 143-O
Vertical profile of Plasmodiophora brassicae resting spores in mineral and muck soils. T.J. CRANMER (1), B.D. Gossen (2), A. Deora (1), M. McDonald (1). (1) University of Guelph, Guelph, ON, Canada; (2) Agriculture and Agri-Food Canada, Saskatoon, SK, Canada

9:00 a.m. • 144-O
Response of Blueberry and Cranberry Fruit Rotting Fungi to Host Plant Floral Extracts. T.J. WALLER (1). (1) Rutgers University, Chatsworth, NJ, U.S.A.

9:15 a.m. • 145-O
Molecular phylogenetic relationships, haplotype diversity and aggressiveness of *Fusarium graminearum* isolates causing head blight in wheat.C. AMARASINGHE (1), D. Fernando (1), B.J. Sharanowski (2). (1) Department of Plant Science, University of Manitoba, Winnipeg, MB, Canada; (2) Department of Entomology, University of Manitoba, Winnipeg, MB, Canada

9:30 a.m. • 146-O
Seasonality of canker induction and expansion by Neofabraea perennans and Cryptosporiopsis kienholzii in apple trees. C. AGUILAR (1), M. Mazzola (2), C. Xiao (3). (1) WSU Tree Fruit Research & Extension Center, Wenatchee, WA, U.S.A.; (2) USDA-ARS Tree Fruit Research Lab, Wenatchee, WA, U.S.A.; (3) USDA-ARS, Parlier, CA, U.S.A.

Unraveling the Basis of Rust Resistance

8:30 - 9:45 a.m.; Room 102 BC, CC

Moderator: Penny Avoles Kianian, University of Minnesota

8:30 a.m. • 147-O
Dissecting the molecular complexity underlying the Sr9h stem rust resistance locus in wheat including Ug99 resistance. J. NIRMALA (1), M. Rouse (1). (1) USDA-ARS, St. Paul, MN, U.S.A.

8:45 a.m. • 148-O
Influence of cytoplasmic genomes on plant defense response. P. KIANIAN (1), F. Ghavami (2), R. Burciaga (3), S. Meinhardt (4), M. Acevedo (4), S. Kianian (5). (1) University of Minnesota, St. Paul, MN, U.S.A.; (2) BioDiagnostics, River Falls, WI, U.S.A.; (3) ARS-USDA, Byron, GA, U.S.A.; (4) North Dakota State University, Fargo, ND, U.S.A.; (5) ARS-USDA, St. Paul, MN, U.S.A.

9:00 a.m. • 149-O
Characterization of host resistance and Asian soybean rust (ASR) pathogen variability for durable resistance. P. TIAN (1), S. Smith (1). (1) Univ of Georgia, Athens, GA, U.S.A.

9:15 a.m. • 150-O
Comparative analysis of differential gene expression in response to rust pathogens. J. BRIGGS (1), J. Garbe (1), M. Rouse (2), J. Kurle (1). (1) University of Minnesota-Twin Cities, St. Paul, MN, U.S.A.; (2) USDA-ARS, St. Paul, MN, U.S.A.

9:30 a.m. • 151-O
New resistance in old places: resistance to the Ug99 race group of Puccinia graminis f. sp. tritici in intergeneric hybrids and historic germplasm. J. KIELSMEIER-COOK (1), T. Danilova (2), B. Friebe (2), M.N. Rouse (3). (1) University of Minnesota, St Paul, MN, U.S.A.; (2) Kansas State University, Manhattan, KS, U.S.A.; (3) USDA-ARS/University of Minnesota, St. Paul, MN, U.S.A.

10:15 A.M. Technical Sessions

Biological Control Mechanisms

10:15 - 11:15 a.m.; Room 211 B, CC

Moderators: David Schisler, USDA ARS; Shuchi Wu, Virginia Tech

10:15 a.m. • 152-O
Variation in response among Pythium species and isolates to Streptomyces lydicus. J. WEILAND (1). (1) USDA ARS, Corvallis, OR, U.S.A.

10:30 a.m. • 154-O
Antagonism of black rot *Xanthomonas campestris pv. campestris* in cabbage by mixtures of plant growth-promoting rhizobacteria (PGPR) strains. K. LIU (1), C. Garrett (1), J. Kloepper (1). (1) Auburn University, Auburn, AL, U.S.A.

10:45 a.m. • 155-O
Mutagenic strain development of *Trichoderma harzianum* to enhance antagonism against soil borne plant pathogens and its commercialization. A. HANNAN (1), M.J. Saleem (2), S.T. Sahi (1), K. Riaz (1). (1) Univ of Agriculture Faisalabad, Faisalabad, Pakistan; (2) Univ of the Punjab Lahore Pakistan, Lahore, Pakistan

11:00 a.m. • 156-O
Effects of temperature and leaf wetness duration on antifungal activity of *Bacillus subtilis* MBI600 for management of sheath blight in rice. L. MONCAYO (1), X. Zhou (2), L. Wilson (2), Y. Jo (1). (1) Texas A&M Univ, College Station, TX, U.S.A.; (2) Texas A&M AgriLife Research and Extension Center, Beaumont, TX, U.S.A.

Biology of Oomycetes

10:15 - 11:30 a.m.; Room 102 BC, CC

Moderators: Mohsen Tohamy; Plant Pathology Research Institute; Xiao Yang, Virginia Tech

10:15 a.m. • 157-O
Characterization of a regional population of Phytophthora nicotianae. K. MCCORKLE (1), K. Ivors (1), D. Shew (1). (1) North Carolina State University, Raleigh, NC, U.S.A.

10:30 a.m. • 158-O
Evolutionary relationships and displacements of historic and present day Phytophthora infestans. A. Saville (1), M.D. Martin (2), M. Gilbert (2), J.B. RISTAINO (1). (1) North Carolina State University, Raleigh, NC, U.S.A.; (2) Centre for GeoGenetics, Natural History Museum of Denmark, University of Copenhagen,,Copenhagen K, Denmark., Denmark

10:45 a.m. • 159-O
Acquired resistance to mefenoxam in sensitive *Phytophthora infestans* isolates. G. DANIES (1), R.A. Childers (1), K. Myers (1), Z. Fei (1), I.M. Small (1), W.E. Fry (1). (1) Cornell University, Ithaca, NY, U.S.A.

11:00 a.m. • 160-O
Comparative genomic analysis of Pseudoperonospora cubensis to elucidate the genetic basis of host specialization. A. THOMAS (1), I. Carbone (1), P. Ojiambo (1). (1) NCSU, Raleigh, NC, U.S.A.

11:15 a.m. • 161-O
Compounds from Zoospore Exudate Serve as a Signal to Promote Zoosporic Germination and Infection of *Phytophthora erythroseptica*. H. JIANG (1), J. Hao (1), K.D. Bishop (1). (1) University of Maine, Orono, ME, U.S.A.

Legume Diseases
10:15 - 11:30 a.m.; Room 102 DE, CC

Moderator: Penn Cheng, Washington State University; Abolfazl Hajihassani, University of Manitoba

10:15 a.m. • 162-O
A survey of major fungal pathogens that cause soybean seedling diseases in eight soybean-producing states. A. WARNER (1), P. O'Shea (2), R. Morgan (2), T. Behrens (2), J. Bond (1), A. Fakhoury (1). (1) Southern Illinois Univ, Carbondale, IL, U.S.A.; (2) Southern Illinois Univ Carbondale, Carbondale, IL, U.S.A.

10:30 a.m. • 163-O WITHDRAWN

10:30 a.m. • 164-O
Etiology of soybean root rot caused by Fusarium solani and its effect on root and above ground plant development. F.J. SESSOMS (1), L.K. Otto-Hanson (2), J. Lencowski (2), D.K. Malvick (2), J.E. Kurle (2). (1) Department of Plant Pathology, College of Food, Agriculture, and Natural Sciences, University of Minnesota, St Paul, MN, U.S.A.; (2) Department of Plant Pathology, College of Food, Agriculture, and Natural Sciences, University of Minnesota, St. Paul, MN, U.S.A.

10:45 a.m. • 165-O
Soybean Cultivars and Fungicide Responses to Frogeye Leaf Spot – Ten Years of Field Data. W.J. JORDAN (1), H.M. Kelly (1), M.A. Newman (1). (1) University of Tennessee, Jackson, TN, U.S.A.

11:00 a.m. • 166-O
Incidence of *Botrytis cinerea* and *Sclerotinia sclerotiorum* in seed alfalfa fields of southern Alberta. J. REICH (1), D. Johnson (1), S. Chatterton (2). (1) University of Lethbridge, Lethbridge, AB, Canada; (2) Agriculture and Agri-Food Canada, Lethbridge, AB, Canada

11:15 a.m. • 200-O
Evaluation of a quantitative (q)PCR assay as the basis for a stem rot of canola (Sclerotinia sclerotiorum) risk assessment tool. B.R. ZIESMAN (1), T.K. Turkington (2), U. Basu (1), E.J. deMilliano (3), S.E. Strelkov (1). (1) University of Alberta, Edmonton, AB, Canada; (2) Agriculture and Agri-Food Canada, Lacombe, AB, Canada; (3) Crop Production Services, Fort Saskatchewan, AB, Canada

WEDNESDAY, AUGUST 13, 2014 – afternoon

Special Sessions listed first, followed by Oral Technical Sessions. Listed alphabetical by session title.
Find complete details on the meeting website www.apsnet.org/meetings/annual/program/pages. 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.
Meeting room key: CC = Convention Center

Special Sessions

Beyond Borlaug: How the Next Generation of Plant Pathologists are Advancing the Green Revolution
1:00 - 3:45 p.m.; Room 208 CD, CC

Organizers: Alejandra Huerta and Ana Cristina Fulladolsa, University of Wisconsin-Madison, Madison, WI, U.S.A.; Elisha Allen, University of Massachusetts, Amherst, MA, U.S.A.
Section: Professionalism/Outreach
Sponsoring Committees/Sponsors: Graduate Student; Office of International Programs; Early Career Professionals

1:00 p.m. • 97-S
Capacity building of tomato farmers in Ghana: The case of IPM package. M.K. KWABENA OSEI (1), S.A. Miller (2), R.L. Gilbertson (3). (1) CSIR-Crops Research Institute, Kumasi, Ghana; (2) Ohio State University, Ohio, OH, U.S.A.; (3) UC Davis, California, Davis, CA, U.S.A.

1:30 p.m. • 98-S
A window of opportunity: Summer tomato production in Bangladesh. A.I. HUERTA (1), C. Lin (2), S. Ahmad (3), U.M. Zahir (4), M.N. Uddin (5), B. Sazib (6), J. Wang (2). (1) University of Wisconsin, Madison, WI, U.S.A.; (2) AVRDC-The World Vegetable Center, Shanhua, Taiwan; (3) AVRDC-The World Vegetable Center, Dhaka, Bangladesh; (4) AVRDC-The World Vegetable Center, Jessore, Bangladesh; (5) Bangladesh Agricultural Research Institute, Gazipur, Bangladesh; (6) Bangabandhu Sheikh Mujibur Rahman Agricultural University, Gazipur, Bangladesh

2:00 p.m. • 99-S
Seeding a participatory soil and plant health program in Morogoro, Tanzania. A.L. TESTEN (1), D.P. Mamiro (2), E.R. Mbega (3), S.A. Miller (1). (1) The Ohio State University, Wooster, OH, U.S.A.; (2) Sokoine University of Agriculture, Morogoro, Tanzania; (3) Agricultural Research Institute Ilonga, Kilosa, Tanzania

2:30 p.m. • Break

2:45 p.m. • 100-S
Mountains beyond mountains: Challenges and opportunities for managing peanut diseases in Haiti. A.M. FULMER (1), R.C. Kemerait (1), T.B. Brenneman (1). (1) University of Georgia, Tifton, GA, U.S.A.

3:15 p.m. • 101-S
Agricultural Science Capacity Building in Afghanistan: Reading Agrios in Kabul. T.C. CRESWELL (1). (1) Purdue University, West Lafayette, IN, U.S.A.

Boxwood Blight: Confronting an Emerging Disease through Collaborative Connections
1:00 - 4:00 p.m.; Room 205 AB, CC

Organizers: Cristi Palmer, IR-4, Princeton, NJ, U.S.A.; Mike Benson, North Carolina State University, Raleigh, NC, U.S.A.
Section: Diseases of Plants
Sponsoring Committees/Sponsors: Diseases of Ornamental Plants; Emerging Diseases and Pathogens

1:00 p.m. • 102-S
Boxwood blight and the dawn of a research collaboration. S.M. DOUGLAS (1), D.M. Benson (2), J.A. Crouch (3), N.L. Dart (4), M.L. Daughtrey (5), C. Hong (6), K.L. Ivors (2), J.A. LaMondia (7), R.E. Marra (1), C.L. Palmer (8), N. Shishkoff (9). (1) The Connecticut Agricultural Experiment Station, New Haven, CT, U.S.A.; (2) North Carolina State University, Raleigh, NC, U.S.A.; (3) USDA ARS, Systematic Mycology and Microbiology Laboratory, Beltsville, MD, U.S.A.; (4) Virginia Department of Agriculture and Consumer Services, Richmond, VA, U.S.A.; (5) Cornell University, LIHREC, Riverhead, NY, U.S.A.; (6) Virginia Tech Hampton Roads AREC, Virginia Beach, VA, U.S.A.; (7) The Connecticut Agricultural Experiment Station, Windsor, CT, U.S.A.; (8) IR-4 HQ, Rutgers University, Princeton, NJ, U.S.A.; (9) USDA ARS FDWSRU, Frederick, MD, U.S.A.

1:30 p.m. • 103-S
Kryptonite for boxwood blight: Management with fungicides and sanitizers. J.A. LAMONDIA (1), S.M. Douglas (2), K.L. Ivors (3), N. Shishkoff (4). (1) The Connecticut Agricultural Experiment Station, Windsor, CT, U.S.A.; (2) The Connecticut Agricultural Experiment Station, New Haven, CT, U.S.A.; (3) North Carolina State University, Raleigh, NC, U.S.A.; (4) USDA ARS FDWSRU, Frederick, MD, U.S.A.

2:00 p.m. • 104-S
Survival and detection of the boxwood blight pathogen in soil. N. Dart (1), N. SHISHKOFF (2). (1) Virginia Department of Agriculture and Consumer Services,, Richmond,VA, U.S.A.; (2) FDWSRU/ARS/USDA, Frederick, MD, U.S.A.

2:30 p.m. • Break

2:45 p.m. • 105-S
Boxwood blight: Identify, know, and conquer. J. CROUCH (1), B. Gehesquiere (2), H. Guo (3), J. Hebert (1), K. Heungens (2), M. Malapi-Wight (1), R.E. Marra (4), R. Olsen (3), M. Pooler (3), Y. Rivera (1), C. Thammina (3). (1) USDA-ARS, Systematic Mycology & Microbiology Lab, Beltsville, MD, U.S.A.; (2) Instituut voor Landbouw- en VisserijOnderzoek (ILVO), Merelbeke, Belgium; (3) U.S. National Arboretum, USDA-ARS, Beltsville, MD, U.S.A.; (4) The Connecticut Agricultural Experiment Station, New Haven, CT, U.S.A.

3:15 p.m. • 106-S
The show must go on: Boxwood and beyond. M. Ganci (1), D.M. Benson (1), J.A. LaMondia (2), K. IVORS (3). (1) North Carolina State Univ, Raleigh, NC, U.S.A.; (2) The Connecticut Agricultural Experiment Station, Windsor, CT, U.S.A.; (3) North Carolina State University, Raleigh, NC, U.S.A.

3:45 p.m. • 107-S
Boxin' the blight: The green industry perspective & discussion session. J.F. BISCHOFF (1), C.L. Palmer (2), D. Benson (3). (1) AmericanHort, Washington, DC, U.S.A.; (2) IR-4, Rutgers University, Princeton, NJ, U.S.A.; (3) North Carolina State Univ, Raleigh, NC, U.S.A.

Myths and Realities of Biopesticides: Academic, Industry, and Grower Perspectives

1:00 - 4:00 p.m.; Room 208 AB, CC

Organizer: Matthew Krause, BioWorks, Inc., Victor, NY, U.S.A.
Section: Disease Control and Pest Management
Sponsoring Committees/Sponsors: Biological Control; Soil Microbiology and Root Diseases; Industry; Regulatory Plant Pathology; Pathogen Resistance

1:00 p.m. • 108-S
Introduction to commercially available biopesticides and the biopesticide industry: History and current status. W. STONEMAN (1). (1) Biopesticide Industry Alliance, McFarland, WI, U.S.A.

1:30 p.m. • 109-S
Foliar biopesticides: Mechanisms, strengths, and limitations. S. ZHANG (1). (1) Tropical Research and Education Center, University of Florida, Homestead, FL, U.S.A.

2:00 p.m. • 110-S
Soilborne biopesticides: Mechanisms, strengths, and limitations. B. MCSPADDEN GARDENER (1). (1) The Ohio State University, Wooster, OH, U.S.A.

2:30 p.m. • Break

2:45 p.m. • 111-S
Development, marketing, support, and effective use of biopesticides in organic, sustainable, and conventional crop production. M.S. KRAUSE (1). (1) BioWorks, Inc., Victor, NY, U.S.A.

3:15 p.m. • 112-S
Optimizing use of biopesticides for successful, cost-effective plant disease management in ornamentals production. R. MCGAUGHEY (1). (1) Pioneer Gardens Inc., Deerfield, MA, U.S.A.

3:45 p.m. • 113-S
Optimizing use of biopesticides for successful, cost-effective plant disease management in greenhouse vegetable production. M. BLEDSOE (1). (1) Village Farms International, Heathrow, FL, U.S.A.

Revealing the Stories of the Genome Via Genotyping-By-Sequencing (GBS)

1:00 - 3:45 p.m.; Room 205 CD, CC

Organizers: Lance Cadle-Davidson, USDA-ARS, Geneva, NY, U.S.A.; Nicole Donofrio, University of Delaware, Newark, DE, U.S.A.
Section: Molecular/Cellular/Plant-Microbe Interactions
Sponsoring Committees/Sponsors: Evolutionary Genetics and Genomics, Molecular and Cellular Phytopathology

1:00 p.m. • 114-S
The use of GBS to improve genome assembly. J. GLAUBITZ (1), F. Lu (1), E. Buckler (2). (1) Institute for Genomic Diversity, Cornell University, Ithaca, NY, U.S.A.; (2) USDA-ARS; Institute for Genomic Diversity, Cornell University, Ithaca, NY, U.S.A.

1:30 p.m. • 115-S
Application of Genotyping-by-Sequencing for mapping disease resistance in grapevine breeding families. L. CADLE-DAVIDSON (1), P. Barba (2), Q. Sun (3), K. Hyma (3), E. Takacs (2), J. Lillis (1), C. Ledbetter (4), D. Ramming (4), B. Reisch (2). (1) USDA-ARS Grape Genetics Research Unit, Geneva, NY, U.S.A.; (2) Cornell University, Geneva, NY, U.S.A.; (3) Cornell University, Ithaca, NY, U.S.A.; (4) USDA-ARS, Parlier, CA, U.S.A.

2:00 p.m. • 116-S
RADseq: A population genomics tool to study the genetic diversity of Exobasidium sp., an emerging blueberry pathogen. J.E. STEWART (1), T. Glenn (1), M.T. Brewer (1). (1) University of Georgia, Athens, GA, U.S.A.

2:30 p.m. • Break

2:45 p.m. • 117-S
Genetic basis of quantitative virulence and the impact of recombination hotspots in Zymoseptoria tritici identified by high-throughput RAD-sequencing. D. CROLL (1), E. Stewart (1), B.A. McDonald (1). (1) ETH Zurich, Zurich, Switzerland

3:15 p.m. • 118-S
Exploring the use of genotyping-by-sequencing to characterize the forest epidemic of Phytophthora ramorum in Oregon. S.E. EVERHART (1), B.J. Knaus (2), A. Kanaskie (3), W. Sutton (1), P. Reeser (1), A.L. Dale (4), R.C. Hamelin (4), E. Hansen (1), N.J. Grunwald (5). (1) Oregon State University, Corvallis, OR, U.S.A.; (2) US Department of Agriculture-Agricultural Research Service, Horticultural Crop Research Unit, Corvallis, OR, U.S.A.; (3) Oregon Department of Forestry, Salem, OR, U.S.A.; (4) University of British Columbia, Vancouver, BC, Canada; (5) Oregon State University, Department of Botany and Plant Pathology, US Department of Agriculture-Agricultural Research Service, Horticultural Crop Research Unit, Corvallis, OR, U.S.A.

(continued)

3:30 p.m. • 119-S
Genotyping-by-Sequencing sheds new light on the biology of Verticillium dahliae. M. JIMENEZ-GASCO (1), M.G. Milgroom (2), C. Olivares-Garcia (3), R.M. Jimenez-Diaz (3). (1) The Pennsylvania State University, University Park, PA, U.S.A.; (2) Cornell University, Ithaca, NY, U.S.A.; (3) University of Cordoba, and Institute for Sustainable Agriculture, CSIC., Cordoba, Spain

1:00 P.M. Technical Sessions

Diseases of Specialty Crops
1:00 – 2:15 p.m.; Room 211 A, CC
Moderators: Fulya Baysal-Gurel, Ohio State; J. Brady Shaver, Clemson University

1:00 p.m. • 167-O
Etiology and management of stem rot diseases of Stevia. A. KOEHLER (1), H.D. Shew (1). (1) North Carolina State University, Raleigh, NC, U.S.A.

1:15 p.m. • 168-O
Detection of *Pseudoperonspora cubensis* and *P. humuli* using 5' nuclease probes, specific primers and high resolution melt curve analysis. C.F. SUMMERS (1), D.H. Gent (2), C.D. Smart (1). (1) Cornell NYSEAS, Geneva, NY, U.S.A.; (2) USDA-ARS, Corvallis, OR, U.S.A.

1:30 p.m. • 169-O
Black root rot of industrial chicory (Cichorium intybus L. var. sativum) in Chile caused by Boeremia exigua var. exigua. D.E. GRINBERGS (1), R.A. France (1). (1) INIA, Chillan, Chile

1:45 p.m. • 170-O
Prevalence and fungal isolates associated with Korogwe leaf spot disease (KLS) of sisal. O.G. MTUNG'E (1), L. Luo (1), X. Liu (1), R.B. Mabagala (2), Y. Diao (1), Y. Meng (1), J. Li (1). (1) China Agricultural University, Beijing, China; (2) Sokoine University of Agriculture, Morogoro, Tanzania

2:00 p.m. • 171-O
Evaluation of Solanum sisymbriifolium as a Potential Host for Colletotrichum coccodes and Verticillium dahliae. Z.A. FREDERICK (1), T.F. Cummings (1), D.A. Johnson (1). (1) Washington State University, Pullman, WA, U.S.A.

Epidemiology of Wheat Diseases
1:00 – 2:15 p.m.; Room 102 BC, CC
Moderator: Vinay Panwar, Agric and Agri-Food Canada

1:00 p.m. • 172-O
Effects of Climate Change on the Components of Wheat Leaf Rust Disease on Winter Wheat. A.M. MASHAHEET (1), D.S. Marshall (1), K.O. Burkey (1). (1) North Carolina State Univ, Raleigh, NC, U.S.A.

1:15 p.m. • 173-O
Networks of stored wheat: towards improving sampling and management strategies in the United States and Australia. J. HERNANDEZ NOPSA (1), G. Daglish (2), D. Hagstrum (3), J. Leslie (4), T. Phillips (3), C. Scoglio (5), S. Thomas-Sharma (4), G. Walter (6), K. Garrett (7). (1) Kansas State University and Plant Biosecurity Cooperative Research Centre (CRC), Canberra, Australia,Manhattan, KS, U.S.A.; (2) Department of Agriculture, Fisheries and Forestry, Agri-Science Queensland, Australia, and Plant Biosecurity Cooperative Research Centre (CRC), Canberra, Australia,Brisbane, Australia; (3) Department of Entomology, Kansas State University, Manhattan, KS, U.S.A.; (4) Department of Plant Pathology, Kansas State University, Manhattan, KS, U.S.A.; (5) Department of Electrical and Computer Engineering, Kansas State University, Manhattan, KS, U.S.A.; (6) School of Biological Sciences at the University of Queensland, Australia, Brisbane, Australia; (7) Department of Plant Pathology, Kansas State University, and Plant Biosecurity Cooperative Research Centre (CRC), Canberra, Australia,Manhattan, KS, U.S.A.

1:30 p.m. • 174-O
Global population genetics of the wheat leaf rust fungus *Puccinia triticina*. J. KOLMER (1), M. Ordonez (2). (1) USDA ARS, St Paul, MN, U.S.A.; (2) Pontifical University Catholica, Quito, Ecuador

1:45 p.m. • 175-O
Race structure characterization and genetic diversity analysis of *Puccinia striiformis* f. sp. *tritici* in Saskatchewan. G. Brar (1), G. BRAR (1), R. Kutcher (1), Y. Fu (2). (1) University of Saskatchewan, Saskatoon, SK, Canada; (2) Plant Gene Resources of Canada, Agriculture and Agri-Food Canada, Saskatoon Research Centre, Saskatoon, SK, Canada

2:00 p.m. • 176-O
Regional differences in genetic structure of Puccinia striiformis f. sp. tritici, the wheat stripe rust pathogen, in the U.S. revealed by SSR makers. A. WAN (1), M. Wang (1), X. Chen (2). (1) Washington State University, Pullman, WA, U.S.A.; (2) USDA ARS, Pullman, WA, U.S.A.

Tropical Crops
1:00 – 2:15 p.m.; Room 102 DE, CC
Moderator: Angela Alleyne, University of West Indies

1:00 p.m. • 177-O
Genetic diversity studies and molecular diagnostics of Cacao swollen shoot virus (CSSV). N. CHINGANDU (1), J.K. Brown (1). (1) University of Arizona, School of Plant Sciences, Tucson, AZ, U.S.A.

1:15 p.m. • 178-O WITHDRAWN

1:15 p.m. • 179-O
Genetic variability in the nucleocapsid genes of nuclear *citrus leprosis virus* reveals the presence of a distinct species of dichorhavirus. A. ROY (1), A. Stone (2), G. Otero-Colina (3), W.L. Schneider (2), J.S. Hartung (4), R.H. Brlansky (5). (1) Univ of Florida, Fort Detrick, MD, U.S.A.; (2) USDA-ARS, Fort Detrick, MD, U.S.A.; (3) Colegio de Postgraduados, Campus Montecillo, Texcoco,, Estado de Mexico, Mexico; (4) USDA-ARS, Beltsville, MD, U.S.A.; (5) University of Florida, Lake Alfred, FL, U.S.A.

1:30 p.m. • 180-O
A new Umbravirus possibly associated with papaya ringspot disease in Ecuador. D.F. Quito-Avila (1), M.A. Ibarra (1), R.A. ALVAREZ (1), R. Martin (2). (1) Centro de Investigaciones Biotecnologicas del Ecuador CIBE-ESPOL, Guayaquil, Ecuador; (2) USDA-ARS, Corvallis, OR, U.S.A.

1:45 p.m. • 181-O
Detection and identification of 'Candidatus Phytoplasma asteris'-related phytoplasma associated with a witches'broom disease of cassava in Cambodia. E. ALVAREZ (1), J.M. Pardo (2), M.J. Truke (2). (1) CIAT, Cali, Colombia; (2) CIAT, Palmira, Colombia

2:00 p.m. • 197-O
An agro-climatic approach to determine citrus postbloom fruit drop risk in the São Paulo State, Brazil. A.R. COLLETTI (1), P.C. Sentelhas (1). (1) University of SÃ£o Paulo, Piracicaba, Brazil

Virus-Host Interactions

1:00 – 2:00 p.m.; Room 211 B, CC

Moderators: Bhanu Priya Donda, Washington State University; W. A. Miller, Iowa State University

1:00 p.m. • 182-O
The link between RNA structure, factor requirement and plant viral resistance. A. RAKOTONDRAFARA (1), J. Zhang (1), R. Roberts (1), L. Mayberry (2), S. Tatineni (3), K. Browning (2). (1) University of Wisconsin-Madison, Madison, WI, U.S.A.; (2) University of Texas-Austin, Austin, TX, U.S.A.; (3) University of Nebraska-Lincoln, Lincoln, NE, U.S.A.

1:15 p.m. • 183-O
IRE1/bZIP60 mediated unfolded protein response plays an important role in TuMV infection in Arabidopsis. L. ZHANG (1), A. Wang (1). (1) Agriculture and Agri-Food Canada,London, ON, Canada

1:30 p.m. • 184-O
Global investigation of microRNAs involved in soybean innate immune response to Soybean Mosaic Virus (SMV) infection by deep sequencing. H. CHEN (1), A. Wang (1). (1) Agriculture and Agri-Food Canada,London, ON, Canada

1:45 p.m. • 185-O
Differential proteomic profiles of sugarbeet resistance genes Rz1 and Rz2 during interactions with Beet necrotic yellow vein virus. K.M. WEBB (1), W.M. Wintermantel (2), L. Hldaky (2), P. Covey (1), C.J. Broccardo (3), J.E. Prenni (3). (1) USDA ARS NPA SBRU, Fort Collins, CO, U.S.A.; (2) USDA ARS CIPRU, Salinas, CA, U.S.A.; (3) Colorado State University, Fort Collins, CO, U.S.A.

2:00 p.m. • 186-O WITHDRAWN

2:45 P.M. Technical Sessions

Fastidious Bacterial Pathogens

2:45 – 3:30 p.m.; Room 211 B, CC

Moderators: Michelle L. Cilia, Cornell University; Prem Prasad Kandel, Auburn University

2:45 p.m. • 188-O
Pyrosequencing analyses of endophytic bacterial populations in tomato leaves infected by 'Candidatus Liberibacter solanacearum'. N. CLARK (1), T. Frigulti (1), J. Bushoven (2), Z. Zheng (3), C. Wallis (4), J. Chen (5). (1) California State University, Fresno, CA, U.S.A.; (2) California State Univerisity, Fresno, CA, U.S.A.; (3) South China Agricultural University, Guangzhou, China; (4) USDA-ARS, Parlier, CA, U.S.A.; (5) USDA ARS PWA, Parlier, CA, U.S.A.

3:00 p.m. • 190-O
Potatoes tolerant of 'Candidatus Liberibacter solanacearum' infection do not undergo changes in tuber physiology associated with zebra chip disease. C. WALLIS (1), J. Munyaneza (2), R. Novy (3). (1) USDA-ARS San Joaquin Valley Agricultural Sciences Center, Parlier, CA, U.S.A.; (2) USDA-ARS Yakima Agricultural Research Laboratory, Wapato, WA, U.S.A.; (3) USDA-ARS Small Grains and Potato Germplasm Research Unit, Aberdeen, ID, U.S.A.

3:15 p.m. • 191-O
Evaluation of potential inhibitory peptides targeting the essential PhoP/Q two-component regulatory system in Xylella fastidiosa. B. PIERCE (1), B. Kirkpatrick (1). (1) UC Davis, Davis, CA, U.S.A.

Pesticide Evaluation

2:45 – 4:00 p.m.; Room 102 DE, CC

Moderator: Bimal Amaradasa, University of Nebraska

2:45 p.m. • 192-O
Sensitivity of Rhizoctonia solani to Fungicides. S.I. ARABIAT (1), M. Khan (2). (1) NDSU, Fargo, ND, U.S.A.; (2) NSDU and University of Minnesota, Fargo, ND, U.S.A.

3:00 p.m. • 193-O
Soil fumigation with metam sodium as a management tool for clubroot (*Plasmodiophora brassicae*) in Canadian canola (*Brassica napus*). K.A. ZUZAK (1), S. Hwang (2), G.D. Turnbull (2), V.P. Manolii (3), S.E. Strelkov (3). (1) University of Alberta, Sherwood Park, AB, Canada; (2) Alberta Agriculture and Rural Development, Edmonton, AB, Canada; (3) University of Alberta, Edmonton, AB, Canada

3:15 p.m. • 194-O
Evaluating the efficacy of fungicide treatments for blackleg (*Leptosphaeria maculans*) management in canola. M.C. FRASER (1), S.F. Hwang (2), G.D. Turnbull (2), H.U. Ahmed (2), W. Barton (3), S.E. Strelkov (1). (1) University of Alberta, Edmonton, AB, Canada; (2) Crop Diversification Centre North, Edmonton, AB, Canada; (3) BASF Canada, Mississauga, ON, Canada

3:30 p.m. • 195-O
Sensitivity of Rhizoctonia solani to SDHI and DMI fungicides. O. AJAYI (1), C.A. Bradley (2). (1) Univ of Illinois At Urbana-Champaign, Urbana, IL, U.S.A.; (2) Univ of Illinois, Urbana, IL, U.S.A.

3:45 p.m. • 196-O
Sudden death syndrome of soybeans caused by Fusarium virguliforme can be controlled by the Syngenta seed treatment fungicide A10466G. G. OLAYA (1), D. Ireland (2), C. Watrin (3), P. Pedersen (4). (1) Syngenta Crop Protection, Vero Beach, FL, U.S.A.; (2) Syngenta, Greensboro, NC, U.S.A.; (3) Syngenta, Basel, Switzerland; (4) Syngenta,Stanton, MN, U.S.A.

Risk Assessment

2:45 – 3:30 p.m.; Room 211 A, CC

Moderator: Denita Hadziabdic Guerry, University of Tennessee

2:45 p.m. • 199-O
Effect of Temperature and Wetness Duration on Anthracnose Fruit Rot Development on Different Strawberry Cultivars. B.B. FORCELINI (1), N. Peres (2). (1) University of Florida, Wimauma, FL, U.S.A.; (2) University of Florida, Gulf Coast Research and Education Center, Wimauma, FL, U.S.A.

3:00 p.m. • 198-O
Comparison of sampling methods for incidence of fungicide resistance. O. CARISSE (1). (1) Agric & Agri-Food Canada, St-Jean-sur-Richelieu, QC, Canada

3:15 p.m. • 201-O
Finding an optimal spatial scale for citrus health management in California. W. LUO (1), T.R. Gottwald (2). (1) Center for Integrated Pest Management, Raleigh, NC, U.S.A.; (2) USDA ARS, Fort Pierce, FL, U.S.A.

Virology

2:45 – 4:00 p.m.; Room 102 BC, CC

Moderator: Marc F. Fuchs, Cornell University

2:45 p.m. • 202-O
A new gene in the Luteoviridae essential for systemic infection. W. MILLER (1), E. Smirnova (2), A.E. Firth (3), D. Scheidecker (2), A. Rakotondrafara (4), B. Chung (3), V. Ziegler-Graff (2). (1) Iowa State Univ, Ames, IA, U.S.A.; (2) Institut de Biologie MolÃ©culaire des Plantes, Strasbourg, France; (3) University of Cambridge, Cambridge, United Kingdom; (4) University of Wisconsin, Madison, WI, U.S.A.

3:00 p.m. • 203-O
Tracking Raspberry bushy dwarf virus from pollen to systemic infection reveals RNA1 replicates in a resistant cultivar in the absence of RNA2. K.K. LANNING (1), P.P. Moore (1), R.R. Martin (2). (1) Washington State Univ, Puyallup, WA, U.S.A.; (2) USDA-ARS Horticulture Crops Research Unit, Corvallis, OR, U.S.A.

3:15 p.m. • 204-O
Additional complexity identified in Rose rosette virus, the causal agent of the homonymous disease. P. DI BELLO (1), T. Ho (1), I.E. Tzanetakis (1). (1) University of Arkansas, Fayetteville, AR, U.S.A.

3:30 p.m. • 205-O
Grapevine red blotch-associated virus is widespread in United States vineyards. B. Krenz (1), J.R. Thompson (1), H.L. McLane (1), M. FUCHS (2), K.L. Perry (1). (1) Cornell University, Ithaca, NY, U.S.A.; (2) Cornell Univ, Geneva, NY, U.S.A.

3:45 p.m. • 206-O
Spatio-temporal spread of Grapevine leafroll disease in Washington vineyards. B. DONDA (1), R. Naidu (1). (1) Washington State University, Prosser, WA, U.S.A.

Taking photographs of poster content is strictly PROHIBITED without permission of the author(s). **Poster content listed in the program is as submitted by the authors/presenter and has NOT been edited. NEW! Posters by Appointment** allow 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

Sunday, August 10
12:00 – 3:00 p.m. .....Poster Set-Up
4:30 – 8:00 p.m. .....Poster Viewing

Monday, August 11
7:30 a.m. – 8:00 p.m. .....Poster Viewing
3:30 – 4:00 p.m. ..... NEW Poster Huddle* Time
- *Huddle #1* – How to (not?) Manage Fungicide Resistance, the QoI Example
- *Huddle #2* – How Should Pathogen Detection Assays be Validated?
- *Huddle #3* – What Are the Important Concepts in Cultural Control of Bacterial Pathogens?
- *Huddle #4* – How has New Knowledge about Microbiomes Changed Your View of Plant Disease?

4:00 a.m. – 6:00 p.m. .....Poster Viewing
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.
4:00 – 5:00 p.m. Posters 1 – 328 *(even-numbered poster authors present)*
5:00 – 6:00 p.m. Posters 329 – 652 *(even-numbered poster authors present)*

Tuesday, August 12
7:30 a.m. – 6:00 p.m. .....Poster Viewing
3:30 – 4:00 p.m. ..... NEW Poster Huddle* Time
- *Huddle #5* – What Was the Most Important Discovery About Phytophthora this Year?
- *Huddle #6* – Can Citrus Greening be Controlled?
- *Huddle #7* – What Is Needed for Successful Mycotoxin Control?
- *Huddle #8* – What Types of Remote Sensors Would Improve Crop Loss Assessments?

4:00 – 6:00 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.
4:00 – 5:00 p.m. Posters 1 – 328 *(odd-numbered poster authors present)*
5:00 – 6:00 p.m. Posters 329 – 652 *(odd-numbered poster authors present)*

Wednesday, August 13
8:00 – 10:00 a.m.....Poster Take-Down

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

2014 APS–CPS Joint Meeting Poster Categories

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

Poster Categories	*Poster numbers*
Bacteriology	1–20
Mycology	21–56
Nematology	57–59
Oomycetes	60–74
Virology	75–93
Postharvest Pathology and Mycotoxins	94–106
Pathogen-Pathogen Interactions	107–114
Biological Control	115–158
Chemical Control	159–223
Cultural Control	224–238
Genetics of Resistance	239–292
Integrated Pest Management	293–321
Regulatory Plant Pathology	322–328
Crop Loss Assessment	329–335
Disease Detection and Diagnosis	336–415
New and Emerging Diseases	416–442A
Analytical and Theoretical Plant Pathology	443–446
Climate Change	447–452
Cropping Systems/Sustainability	453–455
Pathogen Dispersal	456–459
Spatiotemporal Distribution	460–478
Pathogen-Vector Interactions	479–485
Population Biology Genetics	486–503
Phyllosphere and Rhizosphere	504–523
Risk Assessment	524–530
Systematics/Evolution	531–537
Biochemistry and Cell Biology	538–551
Molecular Aspects of Effectors and Their Host Targets	552–566
Molecular Plant-Microbe Interactions	567–590
Plant Defense Responses	591–609
Proteomics/Metabolomics/Genomics	610–635
Networking	636–637
Outreach and Engagement	638–645
Professional Development	646–647
Teaching and Learning	648–652

BIOLOGY OF PATHOGENS

1-P Understanding the basis of subspecies differences among *Erwinia tracheiphila* strains.
Q. LIU (1). (1) Iowa State Univ, Ames, IA, U.S.A.

2-P Adaptation genomics of a small colony variant (SCV) in the biofilm of *Pseudomonas chlororaphis* 30-84.
D. WANG (1), C. S. Han (1), C. Lo (1), A. E. Dichosa (1), P. S. Chain (1), J. Yu (2), R. J. Dorosky (2), L. S. Pierson III (2), E. A. Pierson (2). (1) LANL, Los Alamos, NM, U.S.A.; (2) TAMU, College Station, TX, U.S.A.

3-P Characterization of the bacterial stem blight pathogen of alfalfa, *Pseudomonas syringae* pv. *syringae* ALF3.
D. SAMAC (1), D. J. Studholme (2), S. Ao (3). (1) USDA ARS, St Paul, MN, U.S.A.; (2) University of Exeter, Exeter, United Kingdom; (3) University of Minnesota, St. Paul, MN, U.S.A.

4-P Characterization of *Clavibacter michiganensis* subsp. *nebraskensis* strains from epiphytic and symptomatic infections of maize in Iowa.
J. ACHARYA (1), G. Y. Mbofung (1), A. Ahmad (1), A. E. Robertson (1). (1) Iowa State University, Ames, IA, U.S.A.

5-P Genetic diversity of *Agrobacterium vitis* from diverse geographic origins based on RAPD and *recA* gene sequence analysis.
N. KUZMANOVIC (1), E. Biondi (2), A. Bertaccini (2), A. Obradovic (1). (1) University of Belgrade, Faculty of Agriculture, Belgrade, Serbia; (2) Università di Bologna, Facoltà di Agraria, Bologna, Italy

6-P Characterization of *Pseudomonas cichorii* and *P. viridiflava* causing bacterial speck-like symptoms on tomato in Florida.
S. TIMILSINA (1), H. Adkison (2), J. B. Jones (1), G. E. Vallad (2). (1) Department of Plant Pathology, University of Florida, Gainesville, FL, U.S.A.; (2) Gulf Coast Research and Education Center, University of Florida, Wimauma, FL, U.S.A.

7-P A whole genome sequence of '*Candidatus* Liberibacter asiaticus' from Guangdong, China, where HLB was first described.
Z. ZHENG (1), X. Deng (2), J. Chen (3). (1) South China Agricultural University, Guangzhou, China; (2) South China Agricultural University, Guangzhou, China; (3) USDA ARS PWA, Parlier, U.S.A.

8-P Characterization of *Xylella fastidiosa* pear leaf scorch strain in Taiwan through whole genome sequence analyses.
C. Su (1), W. Deng (2), F. JAN (2), C. Chang (3), H. Huang (4), J. Chen (5). (1) Taiwan Agricultural Chemicals and Toxic Substances Research Institute, Taichung, Taiwan; (2) National Chung Hsing University, Taichung, Taiwan; (3) University of Georgia, Griffin, GA, U.S.A.; (4) University of South Florida, Tampa, FL, U.S.A.; (5) USDA ARS PWA, Parlier, CA, U.S.A.

9-P Complete genome sequence of *Clavibacter michiganensis* subsp. *insidiosus* R1-1.
Y. LU (1), D. A. Samac (2), C. A. Ishimaru (1), J. Glazebrook (1). (1) University of Minnesota, Twin Cities, St Paul, MN, U.S.A.; (2) USDA ARS, St Paul, MN, U.S.A.

10-P Genomic sequencing of *Rathayibacter toxicus* and the associated phage reveals potential source of toxin production.
W. SCHNEIDER (1), A. E. Sechler (2), D. J. Schneider (3), S. J. Mauzey (4), B. K. Schroeder (4), T. D. Murray (4), D. G. Luster (2). (1) USDA ARS, Fort Detrick, MD, U.S.A.; (2) USDA ARS Foreign Disease-Weed Science Research Unit, Fort Detrick, MD, U.S.A.; (3) USDA ARS, Ithaca, NY, U.S.A.; (4) Department of Plant Pathology, Washington State University, Pullman, WA, U.S.A.

11-P Draft genome sequence of *Xanthomonas citri* pv. *malvacearum* strain MSCT1 and development of pathovar specific PCR primers.
S. LU (1), K. Showmaker (1), X. Wang (1), H. Wang (1), C. Hsu (1), P. Deng (1), S. M. Baird (1), T. Allen (1), B. Golden (1), D. Peterson (1), R. Nichols (2). (1) Mississippi State Univ, Mississippi State, MS, U.S.A.; (2) Cotton Incorporated, Cary, NC, U.S.A.

12-P Differential colonization of *Solanum sisymbriifolium* by *Ralstonia solanacearum*.
M. AFROZ (1). (1) Ohio State University, OARDC, Wooster, OH, U.S.A.

13-P Time-course of zebra chip symptoms in potato tubers and correlation between sprouting and bacterial titer in seed potatoes.
J. G. LEVY (1), D. Scheuring (1), J. Koym (2), A. Ravindran (1), D. Henne (3), E. A. Pierson (1), C. J. Miller (1). (1) Texas A&M University, College Station, TX, U.S.A.; (2) Texas AgriLife Extension Service, Lubbock, TX, U.S.A.; (3) Texas A&M University, Weslaco, TX, U.S.A.

14-P The two-component response regulator BfdR links *rpf*/DSF with biofilm formation of *Xanthomonas axonopodis* pv. *citri*.
Y. Chen (1), T. HUANG (1). (1) Natl Chung-Hsing Univ, Taichung, Taiwan

15-P Biofilm formation in *Xanthomonas citri* subsp. *citri* and potential of biofilm inhibitors to control citrus canker disease.
J. LI (1), N. Wang (1). (1) University of Florida, Lake Alfred, FL, U.S.A.

16-P Microbiological examination of exopolysaccharide ooze produced by *Erwinia amylovora*.
S. SLACK (1), G. W. Sundin (1). (1) Michigan State University, East Lansing, MI, U.S.A.

17-P Effect of growth media composition on natural competence of *Xylella fastidiosa*.
P. P. KANDEL (1), L. De La Fuente (1). (1) Auburn University, Auburn, AL, U.S.A.

18-P Construction of a bioluminescent *Erwinia tracheiphila*.
C. M. VRISMAN (1), S. A. Miller (1), G. Rajashekara (1). (1) Ohio State University, OARDC, Wooster, OH, U.S.A.

19-P Role of *rpoZ* gene in regulating antibiotic synthesis and quorum sensing in *Pseudomonas fluorescens*.
H. Zhou (1), Y. Wei (1), X. ZHANG (1), J. Hao (2), X. Wu (3). (1) College of Agronomy, Inner Mongolia Agricultural University, Hohhot, China; (2) School of Food and Agriculture, University of Maine, Orono, ME, U.S.A.; (3) Department of Plant Pathology, China Agricultural University, Beijing, China

20-P Role of the NarXL regulatory system in *Ralstonia solanacearum* denitrification.
A. N. TRUCHON (1), B. L. Dalsing (1), C. Allen (1). (1) University of Wisconsin Madison, Madison, WI, U.S.A.

MYCOLOGY

21-P Characteristics of genetic variability among isolates of *Fusicladium* species from peach, almond and pecan in the USA.
C. H. BOCK (1), C. Chen (1), P. M. Brannen (2), J. E. Adaskaveg (3), M. W. Hotchkiss (1), M. Brewer (4), B. W. Wood (1). (1) USDA-ARS-SEFTNRL, Byron, GA, U.S.A.; (2) University of Georgia, Athens, GA, U.S.A.; (3) Department of Plant Pathology and Microbiology, University of California, Riverside, Riverside, CA, U.S.A.; (4) University of Georgia, Athens, GA, U.S.A.

22-P Genetic diversity of *Fusarium solani* from soybean.
P. CHITRAMPALAM (1), B. D. Nelson (1). (1) North Dakota State Univ, Fargo, ND, U.S.A.

23-P Genetic diversity of *Leptosphaeria* spp. from winter canola in Oklahoma.
C. DIAZ (1). (1) Oklahoma State University, Stillwater, OK, U.S.A.

24-P Secondary metabolite production in a newly discovered endophyte species of *Veratrum californicum*.
A. D. DENSLEY (1). (1) Brigham Young University, Provo, UT, U.S.A.

25-P WITHDRAWN

26-P Genotypic characterization of *Pyrenophora tritici-repentis* isolates from South Dakota.
S. Ali (1), S. ABDULLAH (1), J. S. Rohila (1). (1) South Dakota State Univ, Brookings, SD, U.S.A.

27-P Genetic and phenotypic variation among *Cephalosporium gramineum* isolates collected in the Pacific Northwest United States.
K. Esvelt Klos (1), J. G. Evans (2), T. D. MURRAY (3). (1) USDA-ARS Small Grains Germplasm Research Unit, Aberdeen, ID, U.S.A.; (2) Oklahoma State University, Stillwater, OK, U.S.A.; (3) Washington State Univ, Pullman, WA, U.S.A.

28-P Phylogenetic assessment of *Colletotrichum* species associated with bitter rot and Glomerella leaf spot in the northeastern U.S.
M. WALLHEAD (1), G. Broders (1), E. Beaudoin (1), C. Peralta (2), K. Broders (1). (1) University of New Hampshire, Durham, NH, U.S.A.; (2) Universidad del Tolima, Durham, NH, U.S.A.

29-P Comparative genomics in the boxwood blight system: Insights into the global diversity of the mating-type locus.
M. MALAPI-WIGHT (1), J. Hébert (2), Y. Rivera (2), E. Ismaiel (1), N. Saied (1), B. Gehesquière (3), K. Heungens (3), J. Crouch (1). (1) USDA ARS, Beltsville, MD, U.S.A.; (2) USDA ARS / Rutgers University, Beltsville, MD, U.S.A.; (3) Institute for Agricultural and Fisheries Research, Merelbeke, Belgium

30-P Host range evaluation of *Cercospora sojina*, causal agent of frogeye leaf spot of soybean.
G. ZHANG (1), U. Reuter-Carlson (1), D. K. Pedersen (1), C. A. Bradley (1). (1) University of Illinois, Urbana, IL, U.S.A.

31-P *Sclerotinia sclerotiorum* aggressiveness and oxalic acid production in soybean.
J. F. WILLBUR (1), M. Kabbage (1), D. L. Smith (1). (1) University of Wisconsin, Madison, WI, U.S.A.

32-P WITHDRAWN

33-P Characterization of foliar pathogens infecting perennial rye grass in the northeastern U.S.
F. LICHTNER (1), K. Broders (1). (1) Univ of New Hampshire, Durham, NH, U.S.A.

34-P *Colletotrichm* species associated with tree tomato and mango in Colombia.
S. RESTREPO (1), A. Rincon (1), M. Cardenas (1), P. Jimenez (2). (1) Universidad de los Andes, Bogota, Colombia; (2) Universidad Militar Nueva Granada, Bogota, Colombia

35-P Pathogenicity of *Fusarium tricinctum* on soybean under field conditions.
P. CHITRAMPALAM (1), B. D. Nelson Jr. (1). (1) North Dakota State Univ, Fargo, ND, U.S.A.

36-P Pathogenicity of *Fusarium proliferatum* on common bean in Costa Rica.
J. P. González Venegas (1), P. ESKER (1), A. Murillo Williams (1). (1) Universidad de Costa Rica, San Pedro Montes de Oca, Costa Rica

37-P Identification and aggressiveness of soybean seedborne *Fusarium* species in Kansas.
R. PEDROZO (1), J. Fenoglio (1), C. R. Little (1). (1) Kansas State University, Manhattan, KS, U.S.A.

38-P Phytotoxicity of the mycotoxin (±)-botryodiplodin (Bot) produced by *Macrophomina phaseolina* to soybean and duckweed in vitro.
H. K. ABBAS (1), W. Shier (2), T. W. Allen (3), R. E. Baird (4), N. Bellaloui (5), A. M. Butler (1). (1) USDA ARS, Biological Control of Pests Research Unit, Stoneville, MS, U.S.A.; (2) College of Pharmacy, University of Minnesota, Minneapolis, MN, U.S.A.; (3) Delta Research and Extension Center , Stoneville, MS, U.S.A.; (4) Entomology and Plant Pathology, Mississippi State University, Starkville, MS, U.S.A.; (5) USDA ARS, Crop Genetics Research Unit, Stoneville, MS, U.S.A.

39-P Influence of plant stage on resistance to anthracnose in Andean lupin (*Lupinus mutabilis* Sweet).
C. E. FALCONI (1), R. G. Visser (2), S. W. van Heusden (2). (1) Universidad de las Fuerzas Armadas, Sangolqui, Pichincha, Ecuador; (2) Wageningen University, Wageningen, Netherlands

40-P Comparison of greenhouse inoculation methods for Fusarium root rot of dry pea.
J. ODOM (1), J. Pasche (1). (1) North Dakota State Univ, Fargo, ND, U.S.A.

41-P Pathotype shifts in *Plasmodiophora brassicae* as a result of infection with mixed isolates.
T. CAO (1), V. P. Manolii (1), S. Hwang (2), S. E. Strelkov (1). (1) University of Alberta, Edmonton, AB, Canada; (2) Crop Diversification Centre North, Alberta Agriculture and Rural Development, Edmonton, AB, Canada

42-P Characterization of virulence of different pathogenicity groups of *Leptosphaeria maculans* on *Brassica napus* L.
J. FRANCESCHI (1), L. del Rio (1). (1) North Dakota State Univ, Fargo, ND, U.S.A.

43-P *Fusarium* as a seed pathogen on *Bromus tectorum*.
J. FRANKE (1), B. Geary (2), S. E. Meyer (3), S. Saunders (2), T. Poh (2). (1) Brigham Young University, West Jordan, UT, U.S.A.; (2) Brigham Young University, Provo, UT, U.S.A.; (3) USDA, Provo, UT, U.S.A.

44-P Effect of *Fusarium* species isolated from switchgrass plants and seeds on foliar disease and stand establishment.
B. H. OWNLEY (1), S. B. Collins (1), M. M. Dee (1). (1) University of Tennessee, Knoxville, TN, U.S.A.

45-P Symptomatology of crown rot of pyrethrum caused by *Sclerotinia* spp. in Tasmania, Australia.
J. B. SCOTT (1), R. Arvier (2), T. L. Pearce (1), S. Pilkington (1), S. J. Pethybridge (3), F. S. Hay (1). (1) Tasmanian Institute of Agriculture, University of Tasmania, Burnie, Australia; (2) Botanical Resources Australia–Agricultural Services Pty. Ltd., Ulverstone, Australia; (3) The New Zealand Institute for Plant & Food Research Limited, Christchurch, New Zealand

46-P Shoot infection biology of *Fusarium circinatum*: Wound-free infection and symptomless colonization.
C. L. SWETT (1), T. R. Gordon (1). (1) Univ of California Davis, Davis, CA, U.S.A.

47-P The biology of two canker-causing fungi on quaking aspen (*Populus tremuloides*).
M. DUDLEY (1), N. Tisserat (1), J. Negron (2). (1) Colorado State Univ, Fort Collins, CO, U.S.A.; (2) USDA Forest Service, Fort Collins, CO, U.S.A.

48-P Pathogenicity of fungi from walnut branch cankers and fungi isolated from ambrosia beetles colonizing stressed walnut trees.
S. Reed (1), J. ENGLISH (1), J. Juzwik (2). (1) Univ of Missouri, Columbia, MO, U.S.A.; (2) U.S. Forest Service, St. Paul, MN, U.S.A.

49-P Studies on isolation of *Elsinoe australis* the causal agent of sweet orange scab.
B. SALAS (1), E. Braswell (1), M. B. Kunta (2). (1) USDA APHIS, Edinburg, TX, U.S.A.; (2) Texas A&M University-Kingsville Citrus Center, Weslaco, TX, U.S.A.

50-P Epidemiological description of the syndromes associated with the Ceratocystis wilt of mango.
W. B. Moraes (1), A. G. SOUZA (2), L. Maffia (1), V. C. Garnica (1). (1) Departamento de Fitopatologia, Universidade Federal de Viçosa, Viçosa, Brazil; (2) EMBRAPA Milho e Sorgo, Sete Lagoas, Brazil

51-P Secretory plant cell wall degrading enzyme expression analysis and polygalacturonase modeling of *Fusarium virguliforme*.
H. CHANG (1), C. R. Yendrek (2), G. L. Hartman (3). (1) Department of Crop Sciences, University of Illinois, Urbana, IL, U.S.A.; (2) Institute for Genomic Biology, Urbana, IL, U.S.A.; (3) Department of Crop Sciences, University of Illinois; USDA–Agricultural Research Services, Urbana, IL, U.S.A.

52-P Specific expansion and functional importance of a group of histidine kinases in genus *Fusarium*.
G. DEIULIO (1), J. Goldberg (2), Q. Zeng (2), L. Guo (1), U. Shrestha (1), L. Ma (1). (1) UMass Amherst, Amherst, MA, U.S.A.; (2) Broad Institute, Cambridge, MA, U.S.A.

53-P Purification, storage, and pathogenicity assay of rice false smut fungus under controlled environmental conditions.
Y. JIA (1), R. El-Shafey (1), Z. Zhang (1). (1) USDA ARS Dale Bumpers National Rice Research Center, Stuttgart, AR, U.S.A.

54-P Food fight: Fungal foe frustration (*Fusarium verticillioides* vs. the world of xenobiotics).
S. E. GOLD (1), M. Gao (2), N. Crenshaw (3), M. Rath (2), S. Gao (2), A. E. Glenn (3). (1) USDA ARS, Athens, GA, U.S.A.; (2) Plant Pathology, University of Georgia, Athens, GA, U.S.A.; (3) USDA-ARS Toxicology and Mycotoxin Research Unit, Athens, GA, U.S.A.

55-P Quantification of fungal biomass in maize, wheat and soybean seedlings infected with wild-type and *Tri6*-deletion mutants of *Fusarium graminearum*.
T. BRUNS (1), G. Munkvold (1). (1) Iowa State University, Ames, IA, U.S.A.

56-P The genome of the wheat pathogenic fungus *Tilletia caries* encodes all the molecular components necessary for RNA interference.
S. W. MCCOTTER (1), J. L. Humann (1), D. Main (1), L. M. Carris (1), L. Castlebury (2). (1) Washington State University, Pullman, WA, U.S.A.; (2) USDA ARS, Beltsville, MD, U.S.A.

Nematology

57-P Morphological and molecular characterization of *Laimaphelenchus* sp. and *Aphelenchoides parietinus* endophytic within trees, and a new *Bursaphelenchus* from palm seeds.
L. K. CARTA (1), Z. A. Handoo (1). (1) USDA-ARS Nematology Laboratory, Beltsville, MD, U.S.A.

58-P Reproduction of *Meloidogyne arenaria* on flue-cured tobacco homozygous for *Rk1* and/or *Rk2*.
J. POLLOK (1), C. Johnson (2), J. Eisenback (3), D. Reed (2). (1) Virginia Tech Southern Piedmont AREC, & Dept. Plant Pathology, Physiology, & Weed Science, Blacksburg, VA, U.S.A.; (2) Virginia Tech Southern Piedmont AREC, Blackstone, VA, U.S.A.; (3) Virginia Tech Dept. Plant Pathology, Physiology, & Weed Science, Blacksburg, VA, U.S.A.

59-P The stem nematodes of *Ditylenchus weischeri* and *D. dipsaci* can be reared on carrot disks but not on fungal cultures.
A. HAJIHASSANI (1), M. Tenuta (1). (1) University of Manitoba, Winnipeg, MB, Canada

Oomycetes

60-P Mitochondrial genomes of *Bremia lactucae* and development of haplotype markers for population and genetic studies.
F. MARTIN (1), J. Gil (2), L. Derevnina (2), O. Ochoa (2), R. Michelmore (2). (1) USDA ARS, Salinas, CA, U.S.A.; (2) University of California, Davis, CA, U.S.A.

61-P Isolation and characterization of *Pythium litorale* from irrigation ponds used for vegetable production.
P. Ji (1), V. Parkunan (1), M. D. Purvis (1), A. PETKAR (1). (1) Univ of Georgia, Tifton, GA, U.S.A.

62-P Phenotypic and genotypic characteristics of *Phytophthora infestans*in Wisconsin in 2013.
A. SANCHEZ PEREZ (1), A. Gevens (1). (1) Univ of Wisconsin, Madison, WI, U.S.A.

63-P Effect of temperature on growth and sporulation of US-22, -23, and -24 *Phytophthora infestans* and implications for late blight epidemiology.
K. FROST (1), A. Gevens (1), A. Seidl Johnson (1), D. Rouse (1). (1) Univ of Wisconsin, Madison, WI, U.S.A.

64-P *Pythium* spp. associated with greenhouse floriculture crops in Michigan.
J. DEL CASTILLO-MÚNERA (1). (1) Michigan State University, East Lansing, MI, U.S.A.

65-P Pathogenicity of *Pythium* spp. isolated from soybean roots in North Dakota.
K. K. ZITNICK-ANDERSON (1), B. D. Nelson (1). (1) Department of Plant Pathology, North Dakota State University, Fargo, ND, U.S.A.

66-P Phytophthora root rot mortality of container-grown rabbiteye and southern highbush blueberry plants.
B. J. SMITH (1), M. Miller-Butler (1), K. J. Curry (2). (1) USDA ARS Thad Cochran Southern Horticultural Lab, Poplarville, MS, U.S.A.; (2) Dept. Biological Sciences, Univ. Southern Mississippi, Hattiesburg, MS, U.S.A.

67-P *Phytophthora* species associated with Abies root rot and their distribution in Pennsylvania.
S. KIM (1), S. Kang (2), T. N. Olson (3), E. Nikolaeva (3). (1) Pennsylvania Dept of Agriculture, Harrisburg, PA, U.S.A.; (2) Phytophthora Database, Pennsylvania State University, State College, PA, U.S.A.; (3) Pennsylvania Department of Agriculture, Harrisburg, PA, U.S.A.

68-P Characterization of *Pythium* spp. frequently found in recycled irrigation water.
C. E. LANZE (1), G. W. Moorman (2). (1) The Pennsylvania State University, State College, PA, U.S.A.; (2) The Pennsylvania State University, University Park, PA, U.S.A.

69-P Population dynamics of *Pythium* species in floricultural greenhouses in Long Island, New York.
C. D. GARZON (1), L. Sain (1), P. A. Garrido (1), I. Sanchez (2), G. Garcés (2), P. Espinosa (2), A. Medina (2), F. Proaño (2), F. Cornejo (3), M. L. Daughtrey (4). (1) Oklahoma State Univ, Stillwater, OK, U.S.A.; (2) Universidad de las Fuerzas Armadas ESPE, Sangolqui, Ecuador; (3) Pontificia Universidad Catolica del Ecuador, Quito, Ecuador; (4) Cornell University, Riverhead, NY, U.S.A.

70-P The implications of eggplant as a host in late blight epidemiology in Egypt.
S. M. El-Ganainy (1), Y. M. Ahmed (1), M. S. Soliman (1), D. E. Cooke (2), A. M. TOHAMY (1). (1) Plant Pathology Research Institute, Giza, Egypt; (2) The James Hutton Institute, Dundee, United Kingdom

71-P Pathogenicity of *Pythium* species isolated from Minnesota soybean fields on soybeans and corn.
L. RADMER (1), G. Anderson (2), D. Malvick (1), J. Kurle (2). (1) University of Minnesota, St. Paul, MN, U.S.A.; (2) University of Minnesota, St Paul, MN, U.S.A.

72-P Viability of *Phytophthora infestans* oospores from US-22, -23, and -24 clonal lineage crossings under overwintering conditions.
A. SANCHEZ PEREZ (1), A. Gevens (1). (1) Univ of Wisconsin, Madison, WI, U.S.A.

73-P Soil properties associated with the presence of *Pythium* communities in soybean roots.
K. K. ZITNICK-ANDERSON (1), J. E. Norland (2), L. del Rio (1), A. Fortuna (2), B. Nelson (1). (1) Department of Plant Pathology, North Dakota State University, Fargo, ND, U.S.A.; (2) School of Natural Resource Sciences, North Dakota State University, Fargo, ND, U.S.A.

74-P PifHDAC7, a class II histone deacetylase, is involved in sexual behavior determination of *Phytophthora infestans*.
X. WANG (1), K. Shan (1), M. Han (1), L. Guo (1). (1) China Agricultural Univ, Beijing, China

Virology

75-P Transcriptional analysis of *Banana bunchy top virus* DNA-U3.
N. Yu (1), Y. Zhang (1), J. Wang (1), P. Zhou (1), Z. Liu (1), Z. XIONG (2). (1) Institute of Tropical Bioscience and Biotechnology, Chinese Academy of Tropical Agricultural Science, Haikou, China; (2) School of Plant Sciences, University of Arizona, Tucson, AZ, U.S.A.

76-P Molecular characterization of a novel soybean-associated virus identified by high-throughput sequencing.
T. YASMIN (1), H. A. Hobbs (1), B. D. Nelson (2), L. L. Domier (3). (1) Department of Crop Sciences, University of Illinois, Urbana, IL, U.S.A.; (2) North Dakota State Univ, Fargo, ND, U.S.A.; (3) USDA ARS; Department of Crop Sciences, University of Illinois, Urbana, IL, U.S.A.

77-P A variant of *Rubus yellow net virus* with a different genomic arrangement.
A. DIAZ-LARA (1), N. J. Mosier (2), K. E. Keller (2), R. R. Martin (2). (1) Oregon State University, Corvallis, OR, U.S.A.; (2) USDA ARS Horticultural Crops Research Unit, Corvallis, OR, U.S.A.

78-P Genetic and geographic diversity of *Moroccan pepper virus*.
W. M. WINTERMANTEL (1). (1) USDA ARS, Salinas, CA, U.S.A.

79-P Molecular characterization and genetic variation of an ophiovirus associated with blueberry mosaic.
T. THEKKE-VEETIL (1), J. Polashock (2), I. M. Plesko (3), K. E. Keller (4), R. R. Martin (4), A. Schilder (5), T. Ho (1), I. E. Tzanetakis (1). (1) Department of Plant Pathology, Division of Agriculture, University of Arkansas System, Fayetteville, AR, U.S.A.; (2) Marucci Center for Blueberry and Cranberry Research & Extension, Chatsworth, NJ, U.S.A.; (3) Agricultural Institute of Slovenia, Ljubljana, Slovenia; (4) USDA-ARS, Corvallis, OR, U.S.A.; (5) Department of Plant, Soil and Microbial Sciences, Michigan State University, East Lansing, MI, U.S.A.

80-P Characterization of plant pathogenic and non-pathogenic strains of *Serratia marcescens* using rep-PCR and multilocus sequence typing.
K. BESLER (1). (1) Univ of Georgia, Athens, GA, U.S.A.

81-P The phenotypic and genetic diversities of the ordinary strain of *Potato virus Y* (PVY^{O}).
Y. LIN (1), K. Green (2), A. V. Karasev (2), S. M. Gray (3). (1) Cornell University, Ithaca, NY, U.S.A.; (2) University of Idaho, Moscow, ID, U.S.A.; (3) USDA ARS and Cornell University , Ithaca, NY, U.S.A.

82-P A novel viral satellite from cassava plants showing Cassava frogskin disease symptoms.
A. N. SOUZA (1), F. N. Silva (1), C. M. Carvalho (1). (1) Universidade Federal de Viçosa, Viçosa, Brazil

83-P Effects on bell pepper fruit yield by infection of each of three strains of *Tobacco etch virus* (TEV).
J. F. MURPHY (1). (1) Auburn University, Auburn, AL, U.S.A.

84-P Vernalization affects the reservoir capacity for perennial hosts of *Plum pox virus*.
A. Stone (1), W. SCHNEIDER (1). (1) USDA ARS, Fort Detrick, MD, U.S.A.

85-P Seed transmission of *Zucchini yellow mosaic virus* (a potyvirus) in transgenic wild gourds.
H. E. SIMMONS (1), H. R. Prendeville (2), J. P. Dunham (3), M. J. Ferrari (4), J. D. Earnest (5), D. Pilson (6), G. P. Munkvold (1), E. C. Holmes (7), A. G. Stephenson (5). (1) Iowa State Univ, Ames, IA, U.S.A.; (2) University of Nebraska, Lincoln, NE, U.S.A.; (3) University of Southern California, Los Angeles, CA, U.S.A.; (4) Pennsylvania State University, College Park, PA, U.S.A.; (5) Pennsylvania State University, University Park, PA, U.S.A.; (6) University of Nebraska, Lincoln, Lincoln, NE, U.S.A.; (7) Pennsylvania State University, University Park, PA, U.S.A.

86-P WITHDRAWN

87-P Survey on sweet potato viruses in Brazil.
A. F. MELLO (1), A. K. INOUE-NAGATA (1). (1) Brazilian Agricultural Corporation, Embrapa Vegetables, Brasília, Brazil

88-P A practical scheme of RBSDV kept in small brown planthopper and massively propagated indoors with wheat seedling as a virus source host.
C. Ren (1), Z. CHENG (1), Y. Zhou (1). (1) Institute of Plant Protection, Jiangsu Academy of Agricultural Sciences, Nanjing, China

89-P Strain-specific association of *Soybean dwarf virus* small subgenomic RNA vith virons is mediated by the 17 kDa movement protein.
T. THEKKE-VEETIL (1), N. K. McCoppin (2), L. L. Domier (2). (1) Department of Plant Pathology, Division of Agriculture, University of Arkansas, Fayetteville, AR, U.S.A.; (2) USDA ARS, Dept. Crop Sciences, University of Illinois, Urbana, IL, U.S.A.

90-P Molecular characterization of dsRNA in *Heterobasidion irregulare* and *Heterobasidion occidentale* and effects on growth and sporulation.
S. F. SHAMOUN (1), I. Kassatenko (1), C. Hammett (2), G. Sumampong (1). (1) Canadian Forest Service, Victoria, BC, Canada; (2) UBC Forest Sciences and Conservation, Vancouver, BC, Canada

91-P Prevalence and diversity of viruses infecting *Macrophomina phaseolina* in the United States.
N. ABOUGHANEM-SABANADZOVIC (1), A. Lawrence (2), T. W. Allen (3), S. Sabanadzovic (4). (1) Institute for Genomics, Biocomputing and Biotechnology, Mississippi State University, Mississippi State, MS, U.S.A.; (2) Institute for Imaging and Analytical Technologies, Mississippi State University, Mississippi State, MS, U.S.A.; (3) Delta Research and Extension Center, Mississippi State University, Stoneville, MS, U.S.A.; (4) Biochemistry, Molecular Biology, Entomology and Plant Pathology, Mississippi State University, Mississippi State, MS, U.S.A.

92-P Mycoviruses in *Rhizoctonia*-like and Southern blight fungi isolated from different hosts in Mississippi.
N. ABOUGHANEM-SABANADZOVIC (1), A. Lawrence (2), M. Tomaso-Peterson (3), A. Henn (3), S. Sabanadzovic (3). (1) Institute for Genomics, Biocomputing and Biotechnology, Mississippi State University, Mississippi State, MS, U.S.A.; (2) Institute for Imaging and Analytical Technologies, Mississippi State University, Mississippi State, MS, U.S.A.; (3) Biochemistry, Molecular Biology, Entomology and Plant Pathology, Mississippi State University, Mississippi State, MS, U.S.A.

93-P Association of a putative mycovirus with resurrection fern in Mississippi.
S. Sabanadzovic (1), A. Lawrence (2), J. Hill (1), N. ABOUGHANEM-SABANADZOVIC (3). (1) Biochemistry, Molecular Biology, Entomology and Plant Pathology, Mississippi State University, Mississippi State, MS, U.S.A.; (2) Institute for Imaging and Analytical Technologies, Mississippi State University, Mississippi State, MS, U.S.A.; (3) Institute for Genomics, Biocomputing and Biotechnology, Mississippi State University, Mississippi State, MS, U.S.A.

Postharvest Pathology and Mycotoxins

94-P Latent infection biology of *Cladosporium* species associated with brown spot, a post-harvest disease of late harvest table grapes in California.
C. L. SWETT (1), C. A. Young (1), W. D. Gubler (1). (1) Univ of California - Davis, Davis, CA, U.S.A.

95-P *Diaporthe* species identified from postharvest rot on kiwifruits during long term storage.
G. A. DIAZ (1), B. A. Latorre (1), S. Jara (1), E. Ferrada (1), P. Naranjo (1), J. Zoffoli (1). (1) Pontificia Univ Catolica de Chile, Santiago, Chile

96-P Storage rot in sugar beet: Variable response over time and with different host germplasm.
L. E. HANSON (1), J. McGrath (1), T. R. Goodwill (1), M. Shaaban (2), R. M. Beaudry (2). (1) USDA ARS, East Lansing, MI, U.S.A.; (2) Michigan State University, East Lansing, MI, U.S.A.

97-P UV-C treatment to induce disease resistance for long-term storage of carrots.
N. KOUASSI (1), R. Corcuff (1), R. Tweddell (2), D. Michaud (2), J. Arul (1). (1) Department of Food Science and Nutrition and Horticultural Research Centre, Laval University, Quebec, QC, Canada; (2) Department of Plant Biology and Horticultural Research Centre, Laval University, Quebec, QC, Canada

98-P Effect of temperature on disease progression of Rhizopus soft rot and Fusarium root rot on sweetpotato.
A. SCRUGGS (1), L. Quesada (2). (1) North Carolina State University, Cliffside, NC, U.S.A.; (2) North Carolina State University, Raleigh, NC, U.S.A.

99-P Transgenic control of aflatoxin contamination in corn through host-induced gene silencing.
Y. RARUANG (1), Q. Wei (2), B. H. Bluhm (3), R. L. Brown (2),.Bhatnagar (2), Z. Chen (1). (1) Department of Plant Pathology & Crop Physiology, Louisiana State University Agricultural Center, Baton Rouge, LA, U.S.A.; (2) Southern Regional Research Center, USDA-ARS, New Orleans, LA, U.S.A.; (3) Department of Plant Pathology, University of Arkansas, Fayetteville, AR, U.S.A.

100-P Prevalence and distribution of *Aspergillus* section Flavi in maize and groundnut fields and aflatoxin contamination in Mozambique.
J. AUGUSTO (1), J. Atehnkeng (2), J. Akello (3), P. Cotty (4), R. Bandyopadhyay (2). (1) International Institute of Tropical Agriculture (IITA), Nampula, Mozambique; (2) International Institute of Tropical Agriculture (IITA), Ibadan, Nigeria; (3) International Institute of Tropical Agriculture (IITA), Lusaka, Zambia; (4) USDA/ARS, Tucson, AZ, U.S.A.

101-P Aflatoxin in corn: Does drought tolerance contribute to decreased contamination?
K. BOWEN (1), A. Hagan (1). (1) Auburn Univ, Auburn, AL, U.S.A.

102-P Effect of light on the fumonisin production of members of the *Gibberella fujikuroi* species complex isolated from rice.
M. GULLINO (1), D. Spadaro (2), S. Matic (3), M. Gullino (4), A. Garibaldi (3). (1) University of Torino, Grugliasco (Torino), Italy; (2) Disafa, Agroinnova, University of Torino, Grugliasco (TO), Italy; (3) Agroinnova, University of Torino, Grugliasco (TO), Italy; (4) Agroinnova, Disafa, University of Torino, Grugliasco (TO), Italy

103-P Underestimation of *Fusarium* mycotoxin contamination due to "masked" mycotoxins.
H. Klink (1), J. A. Verreet (1), T. BIRR (1). (1) University of Kiel, Kiel, Germany

104-P Identification, characterization and mycotoxigenic ability of *Alternaria* spp. causing core rot of apple fruit.
S. KONSTANTINOU (1), P. Ntasiou (1), C. Myresiotis (2), E. Mourkidou (2), G. S. Karaoglanidis (3). (1) Aristotelian Univ of Thessaloniki, Faculty of Agriculture, Plant Pathology Laboratory, Thessaloniki, Greece; (2) Aristotelian Univ of Thessaloniki, Faculty of Agriculture, Laboratory of Pesticide Science, Thessaloniki, Greece; (3) Arisotelian Univ of Thessaloniki, Thessaloniki, Greece

105-P Detection and identification of four *Aspergillus* section *Nigri* species by PCR.
J. PALUMBO (1), T. O'Keeffe (1). (1) USDA ARS WRRC, Albany, CA, U.S.A.

106-P Qualitative plate assay for detection of aflatoxigencity and inhibition of aflatoxigenicity by *Aspergillus flavus*.
K. DAMANN (1), C. DeRobertis (2). (1) Louisiana State University Agricultural Center, Baton Rouge, LA, U.S.A.; (2) Louisiana State University Agricultural Center Department of Plant Pathology & Crop Physiology, Baton Rouge, LA, U.S.A.

Pathogen-Pathogen Interactions

107-P The interaction between *Phytophthora* spp. and *Candidatus* Liberibacter spp. damage to citrus fibrous roots.
J. WU (1), E. G. Johnson (1), D. B. Bright (1), J. H. Graham (1). (1) University of Florida, Citrus Research and Education Center, Lake Alfred, FL, U.S.A.

108-P WITHDRAWN

109-P Effect of soybean cyst nematode (SCN) on age-related susceptibility of soybean plants to sudden death syndrome (SDS) caused by *Fusarium virguliforme*.
N. TATALOVIC (1), L. F. Leandro (1), G. L. Tylka (1). (1) Iowa State University, Ames, IA, U.S.A.

110-P Interaction of *Bean pod mottle virus*, *Soybean mosaic virus* and reniform nematode on yields of soybean.
L. T. DUONG (1), R. B. Sikkens (1), J. F. Murphy (1), K. S. Lawrence (1). (1) Auburn Univ, Auburn, AL, U.S.A.

111-P First report of hypovirulence between a reovirus and phytoplasma 16SrIII-L associated with frogskin disease of cassava (*Manihot esculenta* Crantz).
E. ALVAREZ (1), J. M. PARDO (1). (1) CIAT, Cali, Colombia

112-P Interactive effects of *Blueberry red ringspot virus* and root damage on symptom severity, plant vigor, and yield in southern highbush blueberry.
L. WILLIFORD (1), H. Scherm (1), A. Savelle (1). (1) University of Georgia, Athens, GA, U.S.A.

113-P Antagonistic one-way interaction between *Phytophthora capsici* and *Meloidogyne incognita* on bell pepper.
A. PETKAR (1), V. Parkunan (1), P. Timper (2), P. Ji (1). (1) Univ of Georgia, Tifton, GA, U.S.A.; (2) USDA ARS, Tifton, GA, U.S.A.

114-P Interaction studies of *Pratylenchus penetrans* and *Fusarium verticillioides* on corn seedlings.
T. LUNT (1), A. MacGuidwin (1). (1) UW Madison, Madison, WI, U.S.A.

Biological Control

115-P WITHDRAWN

116-P Switchgrass extractives have potential as a value-added biopesticide against plant pathogens and foodborne pathogens.
A. BRUCE (1), B. H. Ownley (1), N. Labbe (1), K. D. Gwinn (1), D. H. D'Souza (1), N. Moustaid-Moussa (2). (1) University of Tennessee, Knoxville, TN, U.S.A.; (2) Texas Tech University, Lubbock, TX, U.S.A.

117-P Biological control of aflatoxin in corn.
M. A. WEAVER (1), H. K. Abbas (1), L. Falconer (2), T. W. Allen (2), H. Pringle (2), G. Sciumbato (2). (1) USDA ARS, Stoneville, MS, U.S.A.; (2) Mississippi State University MAFES, Stoneville, MS, U.S.A.

118-P Relationship between efficacy of biocontrol of aflatoxin in maize and genetic structure of native *Aspergillus flavus*.
M. H. LEWIS (1), I. Carbone (1), G. A. Payne (1), K. L. Bowen (2), A. K. Hagan (2), R. Kemerait (3), R. Heiniger (1), P. Ojiambo (1). (1) North Carolina State University, Raleigh, NC, U.S.A.; (2) Auburn University, Auburn, AL, U.S.A.; (3) University of Georgia, Tifton, GA, U.S.A.

119-P Characterization of fluorescent *Pseudomonas* spp. associated with roots and soil of two sorghum genotypes.
D. L. FUNNELL-HARRIS (1), S. E. Sattler (1). (1) USDA-ARS, Lincoln, NE, U.S.A.

120-P Alfalfa endophytes as novel sources of antimicrobial compounds that inhibit the growth of human and plant pathogens.
B. WASS (1), A. Jordon (1), M. Louters (1), D. A. Samac (2), D. Foster-Hartnett (1). (1) Saint Catherine University, Saint Paul, MN, U.S.A.; (2) USDA ARS, St Paul, MN, U.S.A.

121-P Biological control of Pierce's disease: Identification of the endophytic mycobiota inhabiting diseased and symptomless grapevines.
J. YANG (1), C. Roper (1), J. Borneman (1), J. Gloer (2), K. Maloney (3), P. Rolshausen (1). (1) Univ of California, Riverside, Riverside, CA, U.S.A.; (2) The Univ of Iowa, Iowa City, IA, U.S.A.; (3) Point Loma Nazarene Univ, San Diego, CA, U.S.A.

122-P Effect of biorational fungicides on *in vitro* germination of *Monilinia fructicola* conidia.
N. LALANCETTE (1), K. A. McFarland (1), J. Gager (1). (1) Rutgers University, Bridgeton, NJ, U.S.A.

123-P WITHDRAWN

124-P Suppression of pecan and peach pathogens using metabolites or broths from symbiotic bacteria obtained from the guts of entomopathogenic nematodes.
C. H. BOCK (1), D. I. Shapiro-Ilan (1), M. W. Hotchkiss (1). (1) USDA-ARS, Southeastern Fruit and Tree Nut Research Laboratory, Byron, GA, U.S.A.

125-P Disease control using Fe-enriched sheath produced by an Fe-oxidizing bacterium, *Leptothrix* sp. (I) Sheath exudate blocks fungal infection.
T. SHIRAISHI (1), K. Toyoda (2), H. Kunoh (2), J. Takada (2). (1) Research Inst for Biological Science, Okayama Pref, Kaga-gun, Japan; (2) Okayama University, Okayama, Japan

126-P Bacterial isolates for biological control of selected fungal pathogens in *Cornus florida*.
E. ROTICH (1), M. Mmbaga (2). (1) Tennesee State Univ, Nashville, TN, U.S.A.; (2) TN State Univ College of AgricHuman & Natural ci, Nashville, TN, U.S.A.

127-P Isolation and formulation of antagonistic bacteria for biological control of root rot on ginseng.
Y. KIM (1), Y. Jeon (1). (1) Andong National University, Andong, South Korea

128-P Expressed bioactivity in endosymbionts of *Prunus virginiana*.
T. B. SMART (1). (1) Brigham Young University, Provo, UT, U.S.A.

129-P Disease control using Fe-enriched sheath produced by an Fe-oxidizing bacterium, *Leptothrix* sp. (II) Effects of sheath on pathogens and plant seedlings.
K. TOYODA (1), T. Shiraishi (1), H. Kunoh (1), J. Takada (1). (1) Okayama University, Okayama, Japan

130-P Evaluation of residence, sporulation and efficacy of two formulations of the biocontrol *Aspergillus flavus* AF36 in commercial cotton fields in Arizona.
R. JAIME (1), M. Foley (2), G. Barker (1), L. Liesner (2), L. Antilla (2), R. Bandyopadhyay (3), P. J. Cotty (4). (1) Univ of Arizona, Tucson, AZ, U.S.A.; (2) Arizona Cotton Research and Protection Council, Phoenix, AZ, U.S.A.; (3) International Institute of Tropical Agriculture (IITA), Ibadan, Nigeria; (4) USDA ARS, School of Plant Sciences, Univ of Arizona, Tucson, AZ, U.S.A.

131-P Anti-microbial activity of selected botanicals against storage moulds of cocoa beans in Nigeria.
D. OLUFOLAJI (1), B. A. Ogundeji (2). (1) Dept of Applied and Env. Biology, Rivers State University of Science and Technology, Portharcourt, Nigeria; (2) Plant Pathology Unit, Cocoa Research Institute of Nigeria, Ibadan, Nigeria

132-P Effect of saponins on clubroot (*Plasmodiophora brassicae*) in canola and Shanghai pak choy.
A. Deora (1), B. D. Gossen (2), J. Dalton (1), M. MCDONALD (1). (1) University of Guelph, Guelph, ON, Canada; (2) Agriculture and Agri-Food Canada, Saskatoon, SK, Canada

133-P Screening and identification of wide-spectrum antifungal bacteria isolated from aerated compost tea.
M. KIM (1), C. Shim (1), Y. Kim (1), H. Jee (1), S. Hong (1), J. Park (1), E. Han (1), M. Lee (1), J. Yun (1). (1) National Academy of Agricultural Science, Suwon, South Korea

134-P Antagonist effect of *Trichoderma harzianum* against *Sclerotium cepivorum* and *Sclerotium rolfsii*.
L. F. CEJA-TORRES (1), E. Zuñiga-Mendoza (2). (1) Instituto POLITECNICO Nacional (CIIDIR-IPN-UNIDAD-Michoacan), Jiquilpan, Mexico; (2) CIIDIR-IPN-UNIDAD-Michoacan, Jiquilpan, Mexico

135-P Screening of biocontrol agents for protection of chile peppers plants against soil borne diseases affecting chile peppers.
S. HANSON (1), A. Garcia (1), R. Trejo (1), P. Havstad (1). (1) New Mexico State Univ, Las Cruces, NM, U.S.A.

136-P WITHDRAWN

137-P The adoptive use of biological clocks in crop protection.
O. F. OLOTUAH (1). (1) Adekunle Ajasin University, Akungba-Akoko, Ondo, Nigeria

138-P *Trichoderma* promoted growth and development of Jamaica Scotch Bonnet seedlings in the greenhouse.
L. LEE (1), C. Cotton (1), F. Hashem (1), B. Bailey (2). (1) University of Maryland Eastern Shore, Princess Anne, MD, U.S.A.; (2) Sustainable Perennial Crops Lab, USDA-ARS, Beltsville, MD, U.S.A.

139-P Biological control and plant growth promotion of *Bacillus* spp. on *Meloidogyne incognita* on cotton.
N. XIANG (1), N. Xiang (1), K. S. Lawrence (1), J. W. Kloepper (1), J. A. McInroy (1). (1) Auburn Univ, Auburn, AL, U.S.A.

140-P A new biological control agent of *Virgibacillus dokdonensis* strain1A00493 from deep sea.
D. Huang (1), N. Zheng (1), Z. Shao (2), L. S. Thomashow (3), D. M. Weller (3), P. Okubara (3), Z. Yu (1), J. ZHANG (4). (1) State Key Laboratory of Agricultural Microbiology, Wuhan, WA, China; (2) Third Institute of Oceanography of State Oceanic Administration, Xiamen, SC, China; (3) United States Department of Agriculture, Agricultural Research Service, Root Disease and Biological Control Research Unit, Pullman, WA, U.S.A.; (4) State Key Laboratory of Agricultural Microbiology and National Engineering Research Center of Microbial Pesticides, Huazhong Agricultural University, Wuhan, WA, China

141-P The biochemistry of an extract with zoosporicidal activity from late blight infected *Petunia* x *hybrida*.
M. C. BECKTELL (1), M. C. Becktell (2). (1) Colorado Mesa Univ, Grand Junciton, CO, U.S.A.; (2) Colorado Mesa Univ, Grand Junction, CO, U.S.A.

142-P Thaxtomin A did not control *Phytophthora plurivora* in beech seedlings.
S. C. BRAND (1), S. F. Pascholati (1), W. Oβwald (2), F. Fleischmann (2). (1) Luiz of Queiroz College of Agriculture - University of São Paulo, Piracicaba, Brazil; (2) Technical University of Munich, Freising, Germany

143-P Selecting individual plant growth-promoting rhizobacteria for biological control of multiple plant diseases in growth chambers.
K. LIU (1), J. W. Kloepper (1), C. Hu (1), J. A. McInroy (1). (1) Auburn University, Auburn, AL, U.S.A.

144-P Bacterial antagonists as a biological solution for control of potato late blight disease.
S. M. BOYETCHKO (1), P. Audy (2), H. Choo (1), R. Desgagnes (2), K. Sawchyn (1), K. L. Conn (3). (1) Agriculture and Agri-Food Canada, Saskatoon, SK, Canada; (2) Agriculture and Agri-Food Canada, Quebec City, QC, Canada; (3) Agriculture and Agri-Food Canada, London, ON, Canada

145-P A bio-control of *Cenchrus ciliare* by secondary metabolites of fungal pathogens.
A. HOLLINGSHEAD (1), B. Geary (1), S. Meyer (2), M. Masai (1). (1) Brigham Young University, Provo, UT, U.S.A.; (2) USDA, Provo, UT, U.S.A.

146-P Improved salinity tolerance of tomato by the interaction of halotolerant plant-growth-promoting rhizobacteria from contaminated and alkaline areas.
J. ZHANG (1), N. Zheng (1), L. Ke (1), X. Wang (1), D. M. Weller (2), L. S. Thomashow (2), Z. Yu (3). (1) State Key Laboratory of Agricultural Microbiology and National Engineering Research Center of Microbial Pesticides, Huazhong Agricultural University, Wuhan, China; (2) United States Department of Agriculture, Agricultural Research Service, Root Disease and Biological Control Research Unit, Pullman, WA, U.S.A.; (3) State Key Laboratory of Agricultural Microbiology and National Engineering Research Center of Microbial Pesticides, Huazhong Agricultural University, Wuahn, China

147-P Reduction of pathogen populations at grapevine wound sites is associated with the mechanism of biological control of crown gall by strain ARK-1.
A. KAWAGUCHI (1). (1) Okayama Pref Tech Ctr for Agric, For, Fish, Akaiwa, Japan

148-P Characterization of genes associated with antifungal activity of *Pseudomonas* sp. strain MS82 against the mushroom pathogen *Mycogone perniciosa*.
L. MA (1), X. Wang (2), P. Deng (2), S. M. Baird (2), S. Lu (2). (1) Jiangsu Academy of Agricultural Sciences, Nanjing, China; (2) Mississippi State University, Mississippi State, MS, U.S.A.

149-P Biocontrol mechanism of *Pseudomonas fluorescens* strain HN58 on sugarcane whip smut in blocking the sexual mating of *Ustilago scitaminea*.
P. XI (1), H. Deng (2), X. Sun (3), M. Li (2), W. Shen (4), L. Zhang (5), Z. Jiang (2). (1) 1. Department of Plant Pathology, South China Agricultural Univ, Guangzhou, China; 2. Department of Plant Pathology, North Dakota State Univ, ND, U.S.A.; (2) Department of Plant Pathology, South China Agricultural Univ, Guangzhou, China; (3) Department of Plant Pathology, South China Agricultural Univ, Guangdong, China; (4) College of Agriculture, South China Agricultural Univ, Guangzhou, China; (5) South China Agricultural Univ, Guangdong Province Key Laboratory of Microbial Signals and Disease Control, Guangdong, China

150-P WITHDRAWN

151-P Quantification of enzymes elicited by *Sarocladium oryzae* in relation to suppression of leaf blast severity.
R. A. Guimarães (1), V.L. SILVA-LOBO (2), M.C. Filippi (2), M.M. Barros (2), A.S. Prabhu (2). (1) Universidade Federal de Goiás, Goiânia, Brazil; (2) Embrapa Rice and Beans, Santo Antonio De Goias, Brazil

152-P *Barley stripe mosaic virus*-mediated in-planta expressed fungal sequences as an efficient gene silencing strategy for cereal rust fungi.
V. PANWAR (1). (1) Pacific Agri-food Research Centre, Agriculture and Agri-Food Canada, Summerland, BC, Canada

153-P *Chromobacterium vaccinii* as a potential biocontrol agent.
S. SOBY (1), A. Fetz (1), A. Holmberg (1). (1) Midwestern Univ, Glendale, AZ, U.S.A.

154-P *In-vivo* studies of the interactions between a GFP-transformed *Trichoderma asperellum* strain and *Phytophthora ramorum*.
W. SCHWEIGKOFLER (1), S. Sharma (1), T. L. Widmer (2), K. Suslow (1). (1) Dominican University of California, San Rafael, CA, U.S.A.; (2) USDA-ARS-FDWSRU, Fort Detrick, MD, U.S.A.

155-P Optimization of solid state fermentation and growth substrate for *Streptomyces* biocontrol inoculants.
D. C. SCHLATTER (1), L. K. Otto-Hanson (2), L. L. Kinkel (3). (1) Univ of Minnesota, St Paul, MN, U.S.A.; (2) Dept. Plant Pathology, Univ of Minnesota, Saint Paul, MN, U.S.A.; (3) Univ of Minnesota, St. Paul, MN, U.S.A.

156-P Evaluation of osmoprotectants and carriers for formulating Gram-negative biocontrol agents active against potato dry rot in storage.
D. A. SCHISLER (1), P. J. Slininger (1), N. L. Olsen (2), M. A. Shea-Andersh (1), L. K. Woodell (2). (1) USDA ARS MWA NCAUR, Peoria, IL, U.S.A.; (2) University of Idaho, Twin Falls R&E Center, Twin Falls, ID, U.S.A.

157-P Developing host-specific bioherbicides for sustainable management of *Orobanche crenata* in Egypt.
Y. M. SHABANA (1), M. El-Hawary (2), M. E. Sadek (1). (1) Mansoura Univ, El-Mansoura, Egypt; (2) Agricultural Research Center, Giza, Egypt

158-P Microsclerotia production by the mycoparasitic fungus, *Coniotyrium minitans*, in a shaken liquid culture.
N. BITSADZE (1), J. Strauss (2), H. R. Dillard (3). (1) Agricultural University of Georgia, Athens, GA, U.S.A.; (2) Cornell University, Geneva, NY, U.S.A.; (3) University of California, Davis, CA, U.S.A.

Chemical Control

159-P Development of control method for strawberry bacterial angular spot disease.
G. GANG (1), H. Cho (1), J. Kim (2), Y. Kwak (3). (1) Division of Applied Life Science, GNU, Jinju, South Korea; (2) GNU, Jinju, Korea; (3) Gyeongsang National University, Jinju, South Korea

160-P Effect of bioactive compounds on infection, growth rates and symptom expression of apple trees infected with the apple proliferation phytoplasma.
W. SCHWEIGKOFLER (1), S. Schmidt (2), S. Baric (3), M. Massenz (3), C. Kerschbamer (3). (1) Dominican Univ of California, San Rafael, CA, U.S.A.; (2) Research Centre of Agriculture and Forestry Laimburg, Auer/Ora, Italy; (3) Research Centre for Agriculture and Forestry Laimburg, Auer/Ora, Italy

161-P Therapeutic SAR-inducing branch paints aid the restoration of pear and apple tree health after fire blight infection.
K. B. JOHNSON (1), T. N. Temple (1). (1) Oregon State Univ, Corvallis, OR, U.S.A.

162-P Evaluation of foliar-applied products' effects on Goss's wilt severity on corn.
K. M. MEHL (1), K. A. Ames (1), C. A. Bradley (1). (1) University of Illinois, Urbana, IL, U.S.A.

163-P Populations dynamics of *Xanthomonas citri* pv *citri* in lesions on cankered grapefruit, leaves and twigs.
C. H. BOCK (1), A. B. Kriss (2), T. R. Gottwald (2), J. H. Graham (3), G. H. Poole (2). (1) USDA-ARS-SEFTNRL, Byron, GA, U.S.A.; (2) USDA, ARS, US Horticultural Research Laboratory, Fort Pierce, FL, U.S.A.; (3) University of Florida, Citrus Research and Education Center, Lake Alfred, FL, U.S.A.

164-P Pathogenicity and control of *Boeremia exigua* var. *exigua* causing agent of black root rot of industrial chicory (*Cichorium intybus* L. var. *sativum*).
R. A. FRANCE (1), D. E. Grinbergs (1). (1) INIA, Chillan, Chile

165-P Effects of chemical class and physical properties on the translaminar activity of fungicides.
C. J. KLITTICH (1), S. L. Ray (1). (1) Dow AgroSciences LLC, Indianapolis, IN, U.S.A.

166-P Biomass yield and rust intensity on ornamental switchgrass is impacted by fungicide selection and application interval.
A. K. HAGAN (1), K. L. Bowen (1). (1) Auburn Univ, Auburn, AL, U.S.A.

167-P Foliar use of Oso 5% SC (polyoxin D zinc salt) from Certis USA in fungicide programs to control diseases of cucurbits in the US.
B. HIGHLAND (1), M. Dimock (2), S. Ockey (3). (1) Certis USA, Nokomis, FL, U.S.A.; (2) Certis USA, Columbia, MD, U.S.A.; (3) Certis USA, Yakima, WA, U.S.A.

168-P Field and greenhouse evaluations of fungicide effects on northern leaf blight of corn.
J. D. WEEMS (1), K. A. Ames (1), C. A. Bradley (1). (1) University of Illinois, Urbana, IL, U.S.A.

169-P Screening of fungicides for the control of ripe rot on grapes caused by *Colletotrichum acutatum* and *C. gloeosporioides*.
M. NITA (1), C. Oliver (1), S. Hartley (1). (1) Virginia Tech, Winchester, VA, U.S.A.

170-P Control of speck rot in apple fruit caused by *Phacidiopycnis washingtonensis* with pre- and postharvest fungicides.
C. XIAO (1), R. J. Boal (2). (1) USDA-ARS, Parlier, CA, U.S.A.; (2) Washington State University, Tree Fruit Research and Extension Center, Wenatchee, WA, U.S.A.

171-P Alternative applications of pecan fungicides and implications for disease management.
K. BROWN (1), T. Brenneman (2). (1) University of Georgia, Baconton, GA, U.S.A.; (2) University of Georgia, Tifton, GA, U.S.A.

172-P Frogeye leaf spot management with timed fungicide applications in the Mississippi soybean production system.
T. H. WILKERSON (1), T. W. Allen (2), B. R. Golden (2), J. T. Irby (3). (1) Mississippi State Univ, Stoneville, MS, U.S.A.; (2) Mississippi State Univ, Stoneville, MS, U.S.A.; (3) Mississippi State Univ, Starkville, MS, U.S.A.

173-P Foliar fungicides for the control of leaf diseases and plant health in spring wheat.
P. GAUTAM (1). (1) North Dakota State Univ, Langdon, ND, U.S.A.

174-P Custodia®: The most complimentary fungicide combination for row crops.
D. NARVAEZ (1), M. Bradley (2). (1) Makhteshim Agan of North America MANA, Wildwood, MO, U.S.A.; (2) Makhteshim Agan of North America MANA, Raleigh, NC, U.S.A.

175-P Assessment of foliar fungicides on soybean diseases and yield advantage during 2011, 2012 and 2013 in Iowa.
S. S. NAVI (1), L. Jing (2), X. Yang (1), X. Li (1). (1) Iowa State Univ, Ames, IA, U.S.A.; (2) Inner Mongolia Agricultural University, Hohhot, China

176-P Disease response of soybean genotypes after application of resistance inducers.
M. PAWLOWSKI (1), G. L. Hartman (2). (1) Department of Crop Sciences, University of Illinois, Urbana, IL, U.S.A.; (2) Department of Crop Sciences, University of Illinois; USDA–Agricultural Research Services, Urbana, IL, U.S.A.

177-P Methyl jasmonate induces systemic resistance in grape berries against postharvest gray mould caused by *Botrytis cinerea*.
D. ERRAMPALLI (1), A. Sharon (2), P. H. Goodwin (3). (1) Agriculture and Agri-Food Canada, Vinelnad Station, ON, Canada; (2) Tel-Aviv University, Tel-Aviv, Israel; (3) University of Guelph, Guelph, ON, Canada

178-P Impact of fungicide modes of action on frogeye leaf spot.
A. M. COCHRAN (1), W. J. Jordan (1), K. Lamour (2), C. A. Bradley (3), H. M. Kelly (1). (1) University of Tennessee, Jackson, TN, U.S.A.; (2) University of Tennessee, Knoxville, TN, U.S.A.; (3) University of Illinois, Urbana, IL, U.S.A.

179-P Fungicides as a first line of defense for effective control of stem rust in hard red spring wheat.
A. ANDHIKARI (1), R. Dill-Macky (1), J. J. Wiersma (2), M. J. Smith (2). (1) Univ of Minnesota, St. Paul, MN, U.S.A.; (2) Univ of Minnesota, Crookston, MN, U.S.A.

180-P Impact of watered-in preventive DMI fungicide applications and paclobutrazol on foliar disease severity on golf putting greens.
G. L. MILLER (1), D. T. Earlywine (1). (1) Univ of Missouri, Columbia, MO, U.S.A.

181-P Fungicidal management of celery anthracnose caused by *Colletotrichum acutatum*.
R. N. RAID (1), D. Klamer (2), J. Klamer (2). (1) Univ of Florida, Belle Glade, FL, U.S.A.; (2) V. & W. Farms, Byron Center, MI, U.S.A.

182-P Polyoxin-D, a new, exempt-from-tolerance postharvest treatment for control of gray mold of fruit crops.
J. ADASKAVEG (1), H. Forster (1), Y. Luo (1), D. Cary (1). (1) Univ of California, Riverside, CA, U.S.A.

183-P Effect of timing of application of azoxystrobin and pyraclostrobin on control of blackleg of canola.
L. E. DEL RIO MENDOZA (1). (1) North Dakota State Univ, Fargo, ND, U.S.A.

184-P Control of *Colletotrichum acutatum* on infected strawberry transplants.
J. MERTELY (1), N. A. Peres (1). (1) Univ of Florida-GCREC, Wimauma, FL, U.S.A.

185-P Controlling cherry leaf spot disease in ornamental cherries in mid-Tennessee.
J. O. JOSHUA (1), M. Mmbaga (2). (1) TN State College of Agric Human & Natural Sci, Nashville, TN, U.S.A.; (2) TN State Univ School of Agric & Con Sci, Nashville, TN, U.S.A.

186-P Development of Tioxazafen as a next-generation seed treatment nematicide.
G. J. BUNKERS (1), M. S. South (1), J. Williams (1), J. McCarter (1). (1) Monsanto Company, St Louis, MO, U.S.A.

187-P Control of *Radopholus similis* in anthurium with spinosad, spirotetramat, and thiophanate-methyl.
B. SIPES (1), J. Y. Stephens (1), R. Myers (2), J. Lichty (1), K. Sewake (1). (1) Univ of Hawaii at Manoa, Honolulu, HI, U.S.A.; (2) USDA ARS, Hilo, HI, U.S.A.

188-P Use of azoxystrobin and a new formulation of abamectin for managing *Trichodorus obtusus* in a zoysiagrass stand.
J. SHAVER (1), P. Agudelo (1), S. B. Martin (2). (1) Clemson University, Clemson, SC, U.S.A.; (2) Clemson University, Florence, SC, U.S.A.

189-P Oxathiapiprolin: An effective new chemistry for control of downy mildew of basil.
J. S. Patel (1), S. ZHANG (1), M. I. Costa de Novaes (1). (1) Tropical REC-Homestead, University of Florida, Homestead, FL, U.S.A.

190-P A mineral seed treatment for control of seedling diseases of alfalfa suitable for organic production systems.
D. SAMAC (1), S. Scraber (2), J. Blosberg (2), S. Barclay (3). (1) USDA ARS, St Paul, MN, U.S.A.; (2) University of Minnesota, St. Paul, MN, U.S.A.; (3) Summit Seed Coatings, Caldwell, ID, U.S.A.

191-P Relative ability of chemical management tools to inhibit stem lesion development on pepper plants inoculated with *P. capsici*.
M. E. MATHERON (1), M. Porchas (1). (1) University of Arizona, Yuma, AZ, U.S.A.

192-P Managing black shank of tobacco with a novel fungicide in on-farm studies.
R. BITTNER (1), A. Mila (1). (1) North Carolina State Univ, Raleigh, NC, U.S.A.

193-P Residual efficacy of fungicides for impatiens downy mildew control.
S. N. SUAREZ (1), I. Maguire (1), P. Lopez (1), A. J. Palmateer (1). (1) Univ of Florida, Homestead, FL, U.S.A.

194-P Managing downy and powdery mildew in organically-grown cucurbit crops.
K. L. EVERTS (1). (1) Univ of Maryland College Park, Salisbury, MD, U.S.A.

195-P Effect of foliar fungicides on yield, quality, and disease of alfalfa for dairy production in Wisconsin.
D. SMITH (1), P. D. Esker (2), B. Jensen (1), B. Halfman (3), G. Blonde (4). (1) University of Wisconsin, Madison, WI, U.S.A.; (2) University of Costa Rica, San Jose, Costa Rica; (3) Monroe County – UW Extension, Sparta, WI, U.S.A.; (4) Waupaca County UW-Extension, Waupaca, WI, U.S.A.

196-P WITHDRAWN

197-P WITHDRAWN

198-P Risk assessment and resistance molecular mechanism of *Magnaporthe oryzae* to three DMIs.
M. Cai (1), B. Li (1), D. Lin (1), X. LIU (1). (1) China Agricultural University, Beijing, China

199-P WITHDRAWN

200-P Study on the mode of action of the novel fungicide SYP-14288 to *Phytophthora capsici*.
Z. Wang (1), X. Ni (1), P. LIU (1), C. Liu (2), X. Liu (1). (1) China Agricultural University, Beijing, China; (2) Shenyang Research Institute of Chemical Industry, Shenyang, China

201-P Characterization of new streptomycin resistant *Erwinia amylovora* strains in New York orchards.
K. BEKOSCKE (1), S. Villani (1), K. Cox (1). (1) Cornell University, Geneva, NY, U.S.A.

202-P Sensitivity of *Fusarium sambucinum* to phenylpyrrole and SDHI fungicides.
G. Secor (1), V. V. RIVERA (2), N. C. Gudmestad (3). (1) North Dakota State Univ, Fargo, ND, U.S.A.; (2) NDSU, Fargo, ND, U.S.A.; (3) NDSU, Fargo, ND, U.S.A.

203-P Sensitivity of *Fusarium* species from soybean roots to seed treatment fungicides.
D. R. CRUZ (1), D. A. Mayfield (1), Z. L. Njus (1), S. Pandey (1), M. S. Beattie (1), L. F. Leandro (1), G. P. Munkvold (1). (1) Iowa State Univ, Ames, IA, U.S.A.

204-P Effect of SHAM and azoxystrobin on germination of *Sclerotinia sclerotiorum* ascospores.
C. L. MUNOZ (1), L. E. del Rio Mendoza (1). (1) North Dakota State Univ, Fargo, ND, U.S.A.

205-P Predominance of resistance to QoI fungicides in populations of the wheat blast pathogen *Magnaporthe oryzae* from Brazil.
V. L. CASTROAGUDIN (1), J. T. Reges (2), S. C. Oliveira (3), J. L. Maciel (4), B. A. McDonald (5), P. C. Ceresini (6). (1) UNESP Univ Estadual Paulista, Ilha Solteira, Brazil; (2) UNESP Univ Estadual Paulista., Ilha Solteira, Brazil; (3) UNESP Univ Estadual Paulista, Ilha Solteira, Brazil; (4) EMBRAPA Wheat / Trigo, Passo Fundo, RS, Brazil; (5) ETH Zurich, Zurich, Switzerland; (6) UNESP Univ Estadual Paulista, Ilha Solteira, Brazil

206-P Use of loop-mediated isothermal amplification assays to detect azole-insensitive *CYP51*-overexpressing strains of *Zymoseptoria tritici*.
B. A. FRAAIJE (1). (1) Rothamsted Research, Harpenden, United Kingdom

207-P Detection of the G143A mutation associated with QoI resistance in *Cercospora sojina* using a real time TaqMan SNP assay.
E. ARNAO (1), E. Stumpf (1), A. Subedi (1), B. H. Bluhm (2), C. Bradley (3), A. Fakhoury (1). (1) Southern Illinois University, Carbondale, IL, U.S.A.; (2) University of Arkansas, Fayetteville, AR, U.S.A.; (3) University of Illinois, Urbana, IL, U.S.A.

208-P Strawberry nursery plants as a source of *Botrytis cinerea* isolates resistant to fungicides.
M. S. OLIVEIRA (1), N. A. Peres (1). (1) Univ of Florida, Wimauma, FL, U.S.A.

209-P Sensitivity to carbendazim of *Sclerotinia sclerotiorum* isolates from rapeseed in Anhui Province of China.
D. Xu (1), H. Zhang (1), Z. GAO (1). (1) Anhui Agric Univ, Hefei, China

210-P Discriminatory concentration assay to detection of low and high benzimidazole resistant isolates of *Cercospora beticola*.
N. R. TRKULJA (1), N. S. Dolovac (1), A. G. Milosavljevic (1), E. L. Pfaf-Dolovac (1). (1) Institute for Plant Protection and Environment, Belgrade, Serbia

211-P Fungicide sensitivity testing of *Cercospora beticola* from sugarbeet in the Great Lakes Region.
Q. JIANG (1), W. W. Kirk (1), N. Rosenzweig (1), P. M. Somohano (1), L. E. Hanson (2). (1) Michigan State University, East Lansing, MI, U.S.A.; (2) USDA-ARS, East Lansing, MI, U.S.A.

212-P Resistant strains of *Botrytis cinerea* to boscalid in Chilean grapevines (*Vitis vinifera*).
C. M. PIQUERAS (1), B. A. Latorre (1), R. Torres (1). (1) Pontificia Universidad Catolica de Chile, Santiago, Chile

213-P Resistance to fungicides in *Botrytis cinerea* isolates from strawberry in Ontario.
D. ERRAMPALLI (1). (1) Agriculture and Agri-Food Canada, Vineland Station, ON, Canada

214-P Resistance index of *Pseudoperonospora cubensis* to six systemic fungicides in Hebei and Shandong, China.
W. WANG (1), R. Meng (2), X. Zhang (2), X. Han (2), J. Zhao (2), Z. Ma (2), J. Cui (2). (1) Hebei Academy of Agric & Forest Sciences, Baoding, Hebei, China; (2) Plant Protection Institute, Hebei Academy of Agric & Forest Sciences, Baoding, Hebei, China

215-P Evaluation of rotational programs to extend the life of new succinate-dehydrogenase inhibitors for control of *Botrytis cinerea* in strawberry.
A. AMIRI (1), A. Zuniga (1), N. A. Peres (1). (1) University of Florida, GCREC, Wimauma, FL, U.S.A.

216-P The impact of difenoconazole application timing on the difenoconazole sensitivity of a DMI-resistant *Venturia inaequalis* population.
S. M. VILLANI (1), K. D. Cox (1), Z. A. Frederick (2). (1) Cornell Univ, Geneva, NY, U.S.A.; (2) Washington State University, Pullman, WA, U.S.A.

217-P Q_oI-insensitive powdery mildew *Erysiphe polygoni* on sugar beet—Impact, challenges and control.
M. D. Bolton (1), O. T. NEHER (2). (1) USDA–ARS, Northern Crop Science Laboratory, Fargo, ND, U.S.A.; (2) The Amalgamated Sugar Company LLC, Boise, ID, U.S.A.

218-P The effect of copper application on demethylation inhibitor (DMI) sensitivity in a DMI-resistant population of *Venturia inaequalis*.
K. COX (1), S. Villani (1), Z. Frederick (2). (1) Cornell Univ, Geneva, NY, U.S.A.; (2) Washington State University, Pullman, WA, U.S.A.

219-P Cytotoxic effects of chemical seed treatments on soybean seedlings.
F. Melnichukf (1), O. Marchenko (1), G. Fekak (2), A. XUE (2). (1) Institute of Water Problems and Land Reclamation NAA, Kiev, Ukraine; (2) Agriculture and Agri-Food Canada, Ottawa, ON, Canada

220-P Screening and characterization of hormetic responses to thiophanate-methyl in multiple *Sclerotinia homeocarpa* strains.
C. D. GARZON (1), S. Pradhan (1), V. F. Marcillo (2), N. R. Walker (1), L. Miller (3). (1) Oklahoma State Univ, Stillwater, OK, U.S.A.; (2) Universidad de las Fuerzas Armadas ESPE, Sangolqui, Ecuador; (3) University of Missouri, Columbia, MO, U.S.A.

221-P Effect of twenty percent allyl isothiocyanate EW on the control of cotton Verticillium wilt.
J. Li (1), L. HUI (1), S. Yan (1), O. Mtung'e (1), C. Yongsong (1), L. Luo (1), X. Liu (1), L. ZHENG (1). (1) China Agricultural University, Beijing, China

222-P Recovery of soil microbial communities after fumigation with time.
S. R. Dangi (1), B. D. Hanson (2), J. GERIK (3). (1) UC Davis, Parlier, CA, U.S.A.; (2) UC Davis, Davis, CA, U.S.A.; (3) USDA ARS, Parlier, CA, U.S.A.

223-P Potential for metam sodium to eradicate *Plasmodiophora brassicae* in field soils.
M. McDonald (1), B. D. GOSSEN (2), S. Hwang (3). (1) Univ of Guelph, Guelph, ON, Canada; (2) Agriculture and Agri-Food Canada , Saskatooon, SK, Canada; (3) Alberta Agriculture and Rural Development, Edmonton, AB, Canada

Cultural Control

224-P Effects of a selenium-laden soil amendment on grapevine metabolism and progression of Pierce's disease.
C. WALLIS (1), T. Centofanti (2), G. Banuelos (1). (1) USDA-ARS San Joaquin Valley Agricultural Sciences Center, Parlier, CA, U.S.A.; (2) California State University- Fresno, Center for Irrigation Technology , Fresno, CA, U.S.A.

225-P *Salmonella* contamination and persistence in tomato fields as affected by irrigation, fertilization and cultivation practices.
S. L. Rideout (1), G. GU (2), M. S. Reiter (1), J. Zheng (3), E. W. Brown (3). (1) Virginia Tech, Painter, VA, U.S.A.; (2) Virginia Tech, Ellicott City, MD, U.S.A.; (3) FDA, College Park, MD, U.S.A.

226-P Effect of molybdo-priming on the tolerance of crested wheatgrass to biotic stress caused by leaf rust.
O. N. BABENKO (1), Z. Alikulov (1). (1) L.N. Gumilyov Eurasian National University, Astana, Kazakhstan

227-P Effect of pre-sown molybdo-priming on the tolerance of wheat to leaf rust infection.
O. N. BABENKO (1), Z. Alikulov (1). (1) L.N. Gumilyov Eurasian National University, Astana, Kazakhstan

228-P Silicon improves the photosynthesis on sorghum leaves infected by *Colletotrichum sublineolum*.
R. S. RESENDE (1), C. E. Perez (1), C. A. Milagres (1), D. Rezende (1), F. A. Rodrigues (1). (1) Universidade Federal de Viçosa, Viçosa, Brazil

229-P Using wheat cultivar mixtures as a control method against Septoria tritici blotch: Experimental and modeling approaches.
C. GIGOT (1), S. Saint-Jean (2), L. Huber (3), C. de Vallavieille-Pope (4). (1) University of California, Davis, CA, U.S.A.; (2) AgroParisTech-INRA, Environnement et Grandes Cultures, Thiverval-Grignon, France; (3) INRA-AgroParisTech, Environnement et Grandes Cultures, Thiverval-Grignon, France; (4) INRA, BIOGER-CPP, Thiverval-Grignon, France

230-P Rice main-crop cutting height affects severity of narrow brown leaf spot in the ratoon crop.
X. G. ZHOU (1). (1) Texas A&M University System, AgriLife Research and Extension Center, Beaumont, TX, U.S.A.

231-P Effects of organic amendment C:N ratio on *Fusarium oxysporum* f. sp. *lycopersici* populations following anaerobic soil disinfestation.
U. SHRESTHA (1), A. Bruce (1), B. H. Ownley (1), D. M. Butler (1). (1) University of Tennessee, Knoxville, TN, U.S.A.

232-P Genotype rotation as strategy for reducing the impact of leaf anthracnose in sorghum.
F. E. LANZA (1), L. V. Cota (1), D. D. Silva (1), R. V. Costa (1), C. R. Casela (1), A. G. Souza (1). (1) EMBRAPA CNPMS, Sete Lagoas, Brazil

233-P Foliar applications of iron suppress Cercospora leaf blight and increases yield in soybean.
E. C. SILVA (1), A. K. Chanda (1), T. G. Aroca (1), C. L. Robertson (1), B. M. Ward (1), R. W. Schneider (2). (1) Louisiana State Univ, Agricultural Center, Baton Rouge, LA, U.S.A.; (2) Louisiana State Univ, Baton Rouge, LA, U.S.A.

234-P The use of calcium and manganese foliar nutrition to induce resistance to *Sclerotinia sclerotiorum*.
A. ARFAOUI (1), A. El Hadrami (2), F. Daayf (3), L. Adam (3). (1) Univ of Manitoba, Winnipeg, MB, Canada; (2) Omex Agriculture Inc., Winnipeg, MB, Canada; (3) Department of Plant Science, Winnipeg, MB, Canada

235-P The influence of nitrogen and calcium fertilizers on septoria late blight and yield of celery.
M. Tesfaendrias (1), C. Trueman (2), B. Gossen (3), A. McKeowen (1), M. MCDONALD (1). (1) University of Guelph, Guelph, ON, Canada; (2) Ridgetown Campus, University of Guelph, Ridgetown, ON, Canada; (3) Agriculture and Agri-Food Canada, Saskatoon, SK, Canada

236-P Mustard seed meal amendments for suppression of *Meloidogyne incognita* on tomato.
S. L. MEYER (1), I. A. Zasada (2), S. M. Rupprecht (3), C. R. Hooks (4), M. J. Morra (5), K. L. Everts (6). (1) USDA-ARS, Nematology Laboratory, Beltsville, MD, U.S.A.; (2) USDA-ARS Horticultural Crops Research Laboratory, Corvallis, OR, U.S.A.; (3) USDA-ARS Nematology Laboratory, Beltsville, MD, U.S.A.; (4) Department of Entomology, University of Maryland, College Park, MD, U.S.A.; (5) Division of Soil and Land Resources, University of Idaho, Moscow, ID, U.S.A.; (6) University of Maryland College Park, Salisbury, MD, U.S.A.

237-P Development of Pythium root rot on three cultivars of poinsettia inoculated at different ages.
E. LOOKABAUGH (1), B. Shew (1). (1) North Carolina State Univ, Raleigh, NC, U.S.A.

238-P WITHDRAWN

Genetics of Resistance

239-P Developing germplasm resources to identify the genetic basis of resistance to common scab in potato.
C. ALLEN (1), A. Charkowski (1), S. Jansky (2). (1) University of Wisconsin-Madison, Madison, WI, U.S.A.; (2) USDA-ARS, Madison, WI, U.S.A.

240-P Using wild relatives of potato to illustrate genetic control against the pathogenic bacteria *Pectobacterium carotovorum*.
J. LIND (1). (1) University of Wisconsin-Madison, Madison, WI, U.S.A.

241-P WITHDRAWN

242-P Developing inoculation methods for screening wheat for reaction to *Xanthomonas translucens* pv. *undulosa* (bacterial leaf streak).
J. L. STANTON (1), R. D. Curland (1), C. A. Ishimaru (1), M. J. Smith (1), R. Dill-Macky (2). (1) University of Minnesota, St. Paul, MN, U.S.A.; (2) University of Minnesota, St Paul, MN, U.S.A.

243-P Resistance of Brazilian cultivars to ratoon stunting disease measured by sugarcane leaves.
J. ALMEIDA (1), A. Urashima (1). (1) Universidade Federal de Sao Carlos, Araras, Brazil

244-P Generation of disease resistance in tomato using *Arabidopsis thaliana* defense-related genes.
J. PEREIRA (1), G. V. Minsavage (1), J. B. Jones (1), Z. Mou (1). (1) University of Florida, Gainesville, FL, U.S.A.

245-P Development of soybean with novel sources of resistance to Phomopsis seed decay.
S. LI (1), P. Chen (2), D. Walker (3), J. Rupe (2). (1) USDA ARS, Crop Genetics Research Unit, Stoneville, MS, U.S.A.; (2) University of Arkansas, Fayetteville, AR, U.S.A.; (3) USDA-ARS, Soybean/Maize Germplasm, Pathology and Genetics Research Unit and University of Illinois, Urbana, IL, U.S.A.

246-P Progress in developing two-rowed barley for resistance to spot blotch.
J. R. TUCKER (1), W. G. Legge (1), A. D. Beattie (2), W. D. Voth (2). (1) Brandon Research Centre, Agriculture and Agri-Food Canada, Brandon, MB, Canada; (2) Crop Development Centre, University of Saskatchewan, Saskatoon, SK, Canada

247-P Inheritance of powdery mildew disease resistance in *Cornus florida*.
s. KODATI (1), L. Parikh (1), M. T. Mmbaga (1). (1) TN State College of Agric Human & Natural Sci, Nashville, TN, U.S.A.

248-P Greenhouse evaluation of inoculation methods and commercial cotton cultivars in the presence of Verticillium wilt.
C. J. LAND (1), K. Lawrence (1). (1) Auburn Univ, Auburn, AL, U.S.A.

249-P Identification of resistance to *Fusarium oxysporum* f. sp. *tracheiphilum* race 2 in the U.S. core collection of cowpea (*Vigna unguiculata*).
W. WECHTER (1), C. Conrad (2), M. McMillan (1). (1) USDA-ARS, Charleston, SC, U.S.A.; (2) Clemson University, Charleston, SC, U.S.A.

250-P Genotype-isolate interactions for resistance to *Sclerotinia homoeocarpa* in seashore paspalum.
A. D. MARTINEZ-ESPINOZA (1), C. J. Steketee (1), P. Raymer (1). (1) University of Georgia, Griffin, GA, U.S.A.

251-P Distinguishing resistant from tolerant host-pathogen interactions between *Fragaria vesca* and *Verticillium dahliae*.
G. GLEESON (1), M. Wallhead (1), K. Broders (1). (1) Univ of New Hampshire, Durham, NH, U.S.A.

252-P Identification of Lr34/Yr18 gene in wheat germplasm in Kazakhstan.
G. Yessenbekova (1), A. Kokhmetova (2), A. Madenova (1), O. Amanov (1), Y. Dutbayev (1), G. KAMPITOVA (1). (1) Kazakh National Agrarian Univ, Almaty, Kazakhstan; (2) Kazakh IIstitute of Plant Biology and Biotechnology, Almaty, Kazakhstan

253-P Yield parameters and disease activity on biomass, forage, and sweet sorghum varieties in Alabama.
A. K. HAGAN (1), K. L. Bowen (1). (1) Auburn Univ, Auburn, AL, U.S.A.

254-P Resistance to *Fusarium virguliforme* in soybean cultivars Minnsoy, Noir, and recombinant inbred lines derived from a cross of Minnsoy x Noir.
J. E. KURLE (1), M. V. Milenovic (2), G. M. Anderson (1). (1) Department of Plant Pathology, University of Minnesota, St. Paul, MN, U.S.A.; (2) Department of Agronomy and Plant Genetics,University of Minnesota, St. Paul, MN, U.S.A.

255-P Selecting Minnesota American elms for resistance to Dutch elm disease.

B. W. HELD (1), R. A. Blanchette (1), C. P. Giblin (2). (1) University of Minnesota, Department of Plant Pathology, St Paul, MN, U.S.A.; (2) University of Minnesota, Department of Forest Resources, St Paul, MN, U.S.A.

256-P Inhibition of *Ophiognomonia clavigignenti-juglandacearum* by *Juglans* species bark extracts.

M. J. MOORE (1), M. E. Ostry (1), A. D. Hegeman (2), A. C. Martin (2). (1) USDA Forest Service, NRS, St. Paul, MN, U.S.A.; (2) University of Minnesota, St. Paul, MN, U.S.A.

257-P Quantification of *Septoria musiva* in infected *Populus* clones using qPCR.

N. D. ABRAHAM (1), M. Acevedo (1), P. Chitrampalam (1), J. LeBoldus (1). (1) North Dakota State Univ, Fargo, ND, U.S.A.

258-P Variation in host response to Septoria canker in a population of *Populus nigra*.

K. L. DUNNELL (1), W. Berguson (2), B. McMahon (2), J. M. LeBoldus (1). (1) North Dakota State University, Fargo, ND, U.S.A.; (2) University of Minnesota Duluth, Duluth, MN, U.S.A.

259-P A rapid foliar assay for screening butternut trees for resistance to butternut canker disease.

J. J. JACOBS (1), M. E. Ostry (2), M. J. Moore (2), C. H. Michler (3), K. E. Woeste (3). (1) USDA Forest Service, Region 3 Forest Health Protection, Albuquerque, NM, U.S.A.; (2) USDA Forest Service, Northern Research Station, St. Paul, MN, U.S.A.; (3) USDA Forest Service, Hardwood Tree Improvement and Regeneration Center, Purdue University, Dept. Forestry and Natural Resources, West Lafayette, IN, U.S.A.

260-P Identification of sources of resistance to *Fusarium* species associated with root rot in commercial field pea varieties.

K. Chittem (1), L. Porter (2), M. Wunsch (3), K. McPhee (4), R. S. GOSWAMI (5). (1) Department of Plant Pathology, North Dakota State University, Fargo, ND, U.S.A.; (2) USDA-ARS, Pullman, WA, U.S.A.; (3) NDSU Carrington Research Extension Center, Carrington, ND, U.S.A.; (4) North Dakota State University, Fargo, ND, U.S.A.; (5) DuPont Crop Protection, Newark, DE, U.S.A.

261-P Laboratory and field evaluations of potato cultivars for resistance to potato stem canker caused by *Rhizoctonia solani* AG2-1.

X. ZHANG (1), Z. Yu (2), J. Hao (3). (1) College of Agronomy, Inner Mongolia Agricultural University, Hohhot, China; (2) College of Agronomy, Inner Mongolia Agricultural University, Hohhot, China; (3) School of Food and Agriculture, University of Maine, Orono, ME, U.S.A.

262-P Reaction of global spring wheat genotypes for resistance to tan spot *Pyrenophora tritici-repentis* race 5.

S. ABDULLAH (1), S. Ali (1), P. K. Singh (2), K. Glover (1), J. S. Rohila (1). (1) South Dakota State Univ, Brookings, SD, U.S.A.; (2) CIMMYT, Mexico, Mexico

263-P Quantifying grain losses caused by leaf anthracnose in different sorghum genotypes.

A. G. SOUZA (1), L. V. Cota (1), D. D. Silva (1), F. E. Lanza (1), R. V. Costa (1), L. A. Maffia (2). (1) EMBRAPA CNPMS, Sete Lagoas, Brazil; (2) Univ Federal de Viçosa, Viçosa, Brazil

264-P Yellow rust resistant genes for winter wheat breeding in Kazakhstan.

Y. DUTBAYEV (1), M. Koishibayev (2), N. Sultanova (2). (1) Kazakh National Agrarian Univ, Almaty, Kyrgyzstan; (2) Kazakh Research Institute of Plant Protection, Almaty, Kazakhstan

265-P Characterization of race specific adult plant resistance to stripe rust in soft red winter wheat.

E. MILUS (1), D. Moon (1). (1) Univ of Arkansas, Fayetteville, AR, U.S.A.

266-P Root-knot nematodes in west Texas cotton: Reassessing an old problem.

J. E. WOODWARD (1), T. Wheeler (2), S. Fuchs (3), S. Daily (3). (1) Texas AgriLife Extension Service, Lubbock, TX, U.S.A.; (2) Texas A&M AgriLife Research, Lubbock, TX, U.S.A.; (3) Dow AgroSciences, Indianapolis, IN, U.S.A.

267-P Nematode resistance screening of upland cotton using microplots.

R. B. Sikkens (1), K. S. LAWRENCE (1). (1) Auburn Univ, Auburn, AL, U.S.A.

268-P Reaction of half sib families of *Medicago sativa* to three races of *Aphanomyces euteiches*.

A. BILGRI (1), V. Kartanos (1), D. Rouse (1). (1) UW-Madison, Madison, WI, U.S.A.

269-P WITHDRAWN

270-P Early results of *Casuarina equisetifolia* provenance trial in Guam and advances in research on its decline.

R. SCHLUB (1), K. Schlub (2), R. Brown (1), P. G. Cannon (3). (1) Univ of Guam, Mangilao, U.S.A.; (2) Private consultant, Maumee, OH, U.S.A.; (3) USDA Forest Service, Vallejo, CA, U.S.A.

271-P Evaluation of rice varieties for resistance to *Southern rice black-streaked dwarf virus* and its vector white-backed planthopper.

M. ZHANG (1), K. Zhao (1), Z. Tu (1), B. Ling (1), G. Zhou (1). (1) South China Agric Univ, Guangzhou, China

272-P Advancing our understanding of mature plant resistance to *Potato virus Y* in selected varieties towards improved seed potato certification.

C. ZHANG (1). (1) Univ of Wisconsin, Madison, WI, U.S.A.

273-P Mapping quantitative resistance loci for bacterial leaf streak disease in hard red spring wheat using an identity by descent mapping approach.

Y. R. KANDEL (1), L. E. Osborne (2), J. L. Gonzalez-Hernandez (3), K. D. Glover (3). (1) Iowa State University, Brookings, SD, U.S.A.; (2) Pioneer Hi-Bred International, Brookings , SD, U.S.A.; (3) South Dakota State University, Brookings , SD, U.S.A.

274-P Mapping bacterial wilt resistance in an F2 tomato population developed from a cross of CLN1466EA x NC84173.

E. SILVERMAN (1), F. J. Louws (1), D. Panthee (1). (1) North Carolina State Univ, Raleigh, NC, U.S.A.

275-P Molecular mapping of *YrSP*, a wheat gene for resistance to stripe rust.

J. Feng (1), M. Wang (1), X. CHEN (2). (1) Washington State University, Pullman, WA, U.S.A.; (2) USDA ARS, Pullman, WA, U.S.A.

276-P Mapping adult plant resistance to *Puccinia graminis f.sp. tritici* race Ug99 which reduces disease severity and infection response.

J. BRIGGS (1), M. Rouse (2), S. Bhavani (3), C. Hiebert (4). (1) University of Minnesota-Twin Cities, St. Paul, MN, U.S.A.; (2) USDA-ARS, St. Paul, MN, U.S.A.; (3) CYMMIT, Nairobi, Kenya; (4) Agriculture and Agri-Food Canada, Winnipeg, Canada

277-P Fine mapping of novel QTL for Fusarium head blight resistance in PI 277012.

m. ZHAO (1), S. S. Xu (2), S. Zhong (3). (1) North Dakota State University, Fargo, ND, U.S.A.; (2) United States Department of Agriculture, Fargo, ND, U.S.A.; (3) North Dakota State University, Fargo, ND, U.S.A.

278-P Identification of quantitative trait loci associated with resistance to *Pyrenophora tritici-repentis* in a doubled haploid tetraploid wheat population.

G. KARIYAWASAM (1), S. S. Xu (2), J. D. Faris (2), J. B. Rasmussen (3), Z. Liu (4). (1) Department of Plant Pathology, North Dakota State University, Fargo, ND, U.S.A.; (2) Cereal Crops Research Unit, Northern Crop Science Laboratory, USDA-ARS, Fargo, ND, U.S.A.; (3) Department of Plant Pathology, North Dakota State Univ, Fargo, ND, U.S.A.; (4) North Dakota State Univ, Fargo, ND, U.S.A.

279-P Identification of tan spot resistance loci in cultivated emmer wheat by association mapping.

Z. LIU (1), Q. Sun (2), S. S. Xu (3), S. Chao (3), J. D. Faris (3), M. Mergoum (2). (1) North Dakota State Univ, Fargo, ND, U.S.A.; (2) Department of Plant Science, North Dakota State Univ, Fargo, ND, U.S.A.; (3) Cereal Crops Research Unit, Northern Crop Science Laboratory, USDA-ARS, Fargo, ND, U.S.A.

280-P Identification of QTL for resistance to Sclerotinia stem rot in a wild perennial relative of cultivated soybean.
S. CHANG (1), C. S. Thurber (1), P. J. Brown (1), G. L. Hartman (2), L. L. Domier (2). (1) Department of Crop Sciences, University of Illinois, Urbana, IL, U.S.A.; (2) Department of Crop Sciences, University of Illinois; USDA–Agricultural Research Services, Urbana, IL, U.S.A.

281-P Identification of polymorphic SSR markers linked with powdery mildew resistance in *Cornus florida*.
L. PARIKH (1), M. Mmbaga (2), s. T. Kodati (1). (1) TN State College of Agric Human & Natural Sci, Nashville, TN, U.S.A.; (2) TN State Univ School of Agric & Con Sci, Nashville, TN, U.S.A.

282-P Linkage disequilibrium-based association mapping of red rot resistance in sugarcane.
R. SINGH (1), S. Khan (2), N. Banerjee (2), S. Kumar (2), S. Dattamajumder (2). (1) Indian Institute of Sugarcane Research (ICAR); Presently working at : Plant Genome Mapping Laboratory, University of Georgia , Lucknow, India; (2) Indian Institute of Sugarcane Research, Lucknow, India

283-P Localization of a QTL for resistance to *Phytophthora infestans* in *Solanum pennellii*.
S. PATEV (1), W. E. Fry (1). (1) Cornell University, Ithaca, NY, U.S.A.

284-P Characterization of soybean resistance to *Pythium aphanidermatum*.
K. E. URREA (1), J. C. Rupe (1), C. S. Rothrock (1), P. Chen (1). (1) University of Arkansas, Fayetteville, AR, U.S.A.

285-P Rapid evolution of the avirulence gene *AVR-Pita1* in field isolates of *Magnaporthe oryzae*.
J. LI (1), L. Lu (2), Y. Jia (3), C. Li (4). (1) Agricultural Environment and Resources Research Institute, Yunnan Academy of Agricultural Sciences, China, Kunming, China; (2) Flower Research Institute, Yunnan Academy of Agricultural Sciences, China, Kunming, China; (3) United States Department of Agriculture-Agricultural Research Service, Dale Bumpers National Rice Research Center, Stuttgart, AR, U.S.A.; (4) The Ministry of Education Key Laboratory for Agricultural Biodiversity and Pest Management, Yunnan Agricultural University, Kunming, China

286-P Physiologic races explained the recent outbreaks of orange rust disease on major sugarcane cultivars in Brazil.
A. URASHIMA (1), C. Sakuno (1), F. Piotto (2). (1) Universidade Federal de Sao Carlos, Araras, Brazil; (2) Esalq/USP, Piracicaba, Brazil

287-P WITHDRAWN

288-P Examination of race structure for *Verticillium dahliae* isolates affecting chile pepper production in New Mexico.
S. HANSON (1), M. Radionenko (1). (1) New Mexico State Univ, Las Cruces, NM, U.S.A.

289-P Pathogenetic characterization of *Magnaporthe oryzae* population in Colombia and identification of sources of resistance.
G. A. PRADO (1), C. Vallejos (1), Y. Ospina (1), G. Aricapa (1), J. Cuasquer (1), M. C. Duque (1), C. Grenier (2), G. M. Mosquera (1). (1) CIAT, Palmira, Colombia; (2) CIRAR, Palmira, Colombia

290-P Pathotype diversity in single zoospore isolates from a race 1 isolate of *Phytophthora sojae*.
R. MATTHIESEN (1), A. Robertson (1). (1) Iowa State University, Ames, IA, U.S.A.

291-P Races of *Phytophthora sojae* causing root rot of soybean in Ontario.
A. XUE (1), Y. Chen (1), G. Marchand (1), S. Zhang (2), y. Meng (1), E. Cober (1), A. Tenuta (3). (1) Agriculture and Agri-Food Canada, Ottawa, ON, Canada; (2) Soybean Research Institute, Northeast Agricultural University, Harbin, China; (3) Ontario Ministry of Agriculture, Guleph, ON, Canada

292-P Sequence analysis of the *Beet necrotic yellow vein virus* P25 pathogenicity factor in Turkey.
K. BORNEMANN (1), N. D. Kutluk Yilmaz (2), M. F. Khan (3), M. D. Bolton (4). (1) North Dakota State University, Fargo, ND, U.S.A.; (2) University of Ondokuz Mayis, Agriculture Faculty, Department of Plant Protection, Samsun, Turkey; (3) North Dakota State University and University of Minnesota, Fargo, ND, U.S.A.; (4) USDA–ARS, Fargo, ND, U.S.A.

Integrated Pest Management

293-P Citrus health management areas and associated surveys in Florida.
T. D. RILEY (1), W. Lou (2), T. R. Gottwald (3). (1) USDA, APHIS, PPQ, Orlando, FL, U.S.A.; (2) CIPM, NC State University, Ft. Pierce, FL, U.S.A.; (3) USDA, ARS, US Horticultural Research Laboratory, Ft Pierce, FL, U.S.A.

294-P Management of bacterial wilt in muskmelon with perimeter trap cropping.
F. BAYSAL-GUREL (1), M. M. Gardiner (1), C. Welty (2), M. L. Gleason (3), S. A. Miller (1). (1) The Ohio State Univ., Wooster, OH, U.S.A.; (2) The Ohio State Univ., Columbus, OH, U.S.A.; (3) Iowa State University, Ames, IA, U.S.A.

295-P Evaluation of timing of row cover removal in management of bacterial wilt and Alternaria leaf spot of muskmelon.
F. BAYSAL-GUREL (1), M. M. Gardiner (1), C. Welty (2), M. Gleason (3), S. A. Miller (1). (1) The Ohio State Univ., Wooster, OH, U.S.A.; (2) The Ohio State Univ., Columbus, OH, U.S.A.; (3) Iowa State University, Ames, IA, U.S.A.

296-P Evaluation of chemical and cultural tactics in reducing *Xanthomonas gardneri* populations and bacterial spot disease in tomato seedlings.
X. MA (1), M. Lewis Ivey (2), S. A. Miller (1). (1) Ohio State University, OARDC, Wooster, OH, U.S.A.; (2) Agcenter, Louisiana State University, Baton Rouge, LA, U.S.A.

297-P Managing Ramularia leaf spot of barley in Uruguay.
S. A. PEREYRA (1), J. P. Viera (2), N. D. Havis (3). (1) INIA - Natl Inst for Agric Research, Colonia, Uruguay; (2) FADISOL, Colonia, Uruguay; (3) SRUC-Scotland's Rural College, Edinburgh, Scotland

298-P Growth-promoting effects of microorganisms and control of bakanae disease by organic material.
G. SHIN (1), Y. Seo (1), H. Kim (1), H. Kim (1), J. Song (2). (1) JARES, Naju, South Korea; (2) NAAS, RDA, Suwon, South Korea

299-P Effect of cultivar and fungicide on *Fusarium* mycotoxins in wheat straw.
K. M. BISSONNETTE (1), K. A. Ames (1), Y. Dong (2), F. L. Kolb (1), C. A. Bradley (1). (1) University of Illinois, Urbana, IL, U.S.A.; (2) University of Minnesota, St. Paul, MN, U.S.A.

300-P Optimized infestation control and mycotoxin reduction strategies against *Fusarium* diseases of corn and wheat.
J. A. VERREET (1), T. Birr (1), H. Klink (1). (1) University of Kiel, Kiel, Germany

301-P Validation of the Gleason-Duttweiler warning system for sooty blotch and flyspeck management using a modified relative humidity threshold.
H. ROSLI (1). (1) Iowa State University, Ames, IA, U.S.A.

302-P Differential effects of compost type on strawberry plant health and productivity.
M. LLOYD (1). (1) Univ of California, Davis, CA, U.S.A.

303-P Effect of *Macrophomina phaseolina* inoculation, irrigation and cultivar on soybean yield.
M. ZACCARON (1), R. Holland (1), A. Steger (1), J. C. Rupe (1). (1) University of Arkansas, Fayetteville, AR, U.S.A.

304-P Effect of areated compost tea on the microbial diversity and control of plant disease in organic cucumber cultivation.
C. SHIM (1), M. Kim (1), Y. Kim (1), H. Jee (1), J. Yun (1), S. Hong (1), J. Park (1), E. Han (1), M. Lee (1). (1) National Academy of Agricultural Science, Suwon, South Korea

305-P Control of downy mildew of basil with fungicides and resistance inducer products under greenhouse conditions.
M. GULLINO (1), M. Gullino (2), G. Gilardi (2), A. Garibaldi (2). (1) University of Torino, Grugliasco Torino, Italy; (2) Agroinnova, University of Torino, Grugliasco (TO), Italy

306-P Suppression of Fusarium wilt in commercially grown watermelons using selected fungicides and a plant defense activator.
F. H. SANDERS (1), E. D. Beasley (2), J. Lanier (3), D. B. Langston (1). (1) Univ of Georgia, Tifton, GA, U.S.A.; (2) Univ of Georgia, Nashville, GA, U.S.A.; (3) Univ of Georgia, Cordele, GA, U.S.A.

307-P Use of composted pig manure separated solids for the control of potato early dying in Manitoba.
O. I. MOLINA (1), M. Tenuta (1), F. Daayf (1). (1) University of Manitoba, Winnipeg, MB, Canada

308-P Effect of *Rhizoctonia solani* inoculum density and sugar beet cultivar susceptibility on development of crown and root rot.
J. R. BRANTNER (1). (1) Univ of Minnesota, Crookston, MN, U.S.A.

309-P Importance of soil moisture and isolate origin on disease severity of three *Rhizoctonia solani* AG 2-2 IIIB isolates.
O. T. NEHER (1), E. J. Wenninger (2), H. Neibling (2). (1) The Amalgamated Sugar Company LLC, Boise, ID, U.S.A.; (2) University of Idaho, Kimberly, ID, U.S.A.

310-P Influence of sugar beet cultivar resistance to Cercospora leaf spot threshold-reach and disease management.
N. S. DOLOVAC (1), N. R. Trkulja (1), A. G. Milosavljevic (1), E. L. Pfaf-Dolovac (1). (1) Institute for Plant Protection and Environment, Belgrade, Serbia

311-P Capacity of compost with high content of particulate organic matter to suppress root rot disease of tomato plants.
P. A. MILLAS (1). (1) Inst de Investigaciones Agropecuarias, Chillan, Chile

312-P Evaluating the potential of anaerobic soil disinfestation for the control of Prunus replant disease.
G. T. BROWNE (1), L. S. Schmidt (1), M. T. Devengenzo (2). (1) USDA-ARS, CPGRU, Davis, CA, U.S.A.; (2) UC Davis, Davis, CA, U.S.A.

313-P Developing a bioassay to predict and characterize Prunus replant disease in California orchards.
L. S. SCHMIDT (1), M. T. Devengenzo (2), G. T. Browne (3). (1) USDA ARS CPGRU, Davis, CA, U.S.A.; (2) UC Davis, Davis, CA, U.S.A.; (3) USDA ARS, Davis, CA, U.S.A.

314-P VIPS – An open source technology platform for implementation of IPM tools, aimed at international collaboration and local adaptations.
B. NORDSKOG (1), T. Skog (1), H. Eikemo (1), H. Hole (1), A. F. Schjøll (1), J. Netland (1), N. Trandem (1), T. Rafoss (1). (1) Bioforsk Norwegian Inst of Agric & Env Res, Aas, Norway

315-P Effects of long-term corn-soybean crop sequences and nematicide treatments on corn and soybean yields.
S. CHEN (1), Y. Bao (2), Z. Grabau (1), S. Xiao (3). (1) Univ of Minnesota, Waseca, MN, U.S.A.; (2) Univ of Minnesota, St. Paul, MN, U.S.A.; (3) Fujian Agriculture and Forestry University, Fuzhou, China

316-P Potential of artichoke as a trap crop for control of the cyst nematodes *Globodera ellingtonae* and *G. pallida*.
D. Navarre (1), I. Zasada (2), L. DANDURAND (3). (1) USDA-ARS, Prosser, WA, U.S.A.; (2) USDA-ARS, Corvallis, OR, U.S.A.; (3) Univ of Idaho, Moscow, ID, U.S.A.

317-P Population dynamics of *Pythium irregulare sensu stricto* under different agronomic conditions.
H. D. WHITTINGTON (1), A. Torres-Barragan (1), J. Sun (1), J. Driver (1), F. J. Louws (1). (1) North Carolina State University, Raleigh, NC, U.S.A.

318-P Evolution and prevention of late blight caused by *Phytophthora infestans* genotype US-23.
M. Kalischuk (1), L. KAWCHUK (2), R. Peters (3), K. Al-Maghrabi (4), F. Daayf (5), M. Harding (6). (1) Lethbridge College, Lethbridge, AB, Canada; (2) AAFC, Lethbridge, AB, Canada; (3) AAFC, Charlottetown, PE, Canada; (4) AAF, Wicklow, NB, Canada; (5) University of Manitoba, Winnipeg, MB, Canada; (6) AARD, Brooks, AB, Canada

319-P Wheat curl mite and *Wheat streak mosaic virus* dynamics on green bridge hosts in Montana.
N. B. RANABHAT (1), M. E. BURROWS (1), F. D. Menalled (1), Z. J. Miller (1). (1) Montana State University, Bozeman, MT, U.S.A.

320-P Integrated disease management of sugarcane viral and bacterial diseases in Colombia.
M. Cadavid (1), J. C. Angel (1), M. L. Guzman (1), F. Angel (1), J. I. Victoria (1), C. A. ANGEL (1). (1) Colombian Sugarcane Research Center - CENICAÑA, Cali, Colombia

321-P Biocontrol formulations but not an inter-row cover crop of rye reduced *Tomato spotted wilt virus* (TSWV) incidence in pepper and tomato.
J. F. MURPHY (1), T. Morawo (1), T. Monday (1), H. Fadamiro (1), W. Foshee (1). (1) Auburn University, Auburn, AL, U.S.A.

Regulatory Plant Pathology

322-P Genome-informed identification of diagnostic sequences in non-pathogenic *Pseudomonas syringae*.
G. BUSOT (1), M. Arif (1), J. P. Stack (1). (1) Kansas State Univ, Manhattan, KS, U.S.A.

323-P Detection of quarantine pathogens with bio-layer interferometry-based BLITZ system.
R. DI (1), L. Zhao (2), L. Levy (2). (1) Rutgers Univ, New Brunswick, NJ, U.S.A.; (2) USDA-APHIS-CPHST, Beltsville, MD, U.S.A.

324-P Rust fungi: The intersection of systematics and trade.
J. DEMERS (1), M. Romberg (2), L. A. Castlebury (1). (1) USDA ARS, Beltsville, MD, U.S.A.; (2) USDA APHIS, Beltsville, MD, U.S.A.

325-P Proposal to establish a public DNA repository for plant pathogenic fungi.
P. INDERBITZIN (1), K. V. Subbarao (2). (1) Univ of California, Davis, CA, U.S.A.; (2) Univ of California, Salinas, CA, U.S.A.

326-P A proposed generic research protocol for phytosanitary treatments of regulated plant pathogens in seed.
D. A. KOMM (1). (1) USDA, Raleigh, NC, U.S.A.

327-P ChemView: Making data on chemicals publicly available.
M. Doa (1), P. LEWIS (1), S. Canavan (1), Y. Gonzalez (1). (1) Environmental Protection Agency, Washington, DC, U.S.A.

328-P Thermal inactivation of *Phytophthora ramorum* is a management option to treat infested plants, nursery equipment and soil.
W. SCHWEIGKOFLER (1), K. Kosta (2), V. Huffman (1), K. Suslow (1). (1) Dominican University of California, San Rafael, CA, U.S.A.; (2) California Department of Food and Agriculture, Sacramento, CA, U.S.A.

Crop Loss Assessment

329-P Excess bicarbonate in soil and irrigation water increases fibrous root loss and decline of huanglongbing-affected citrus trees in Florida.
J. H. GRAHAM (1), K. M. Gerberich (1), D. B. Bright (1), E. G. Johnson (1). (1) University of Florida, Citrus Research and Education Center, Lake Alfred, FL, U.S.A.

330-P The metabolism of carbohydrates in roots of cassava (*Manihot esculenta* Crantz) infected with frogskin disease.
E. Alvarez (1), J. M. Pardo (2), D. Dufour (3), J. L. Moreno (2), E. ALVAREZ (2). (1) CIAT, Cali, Colombia; (2) CIAT, Palmira, Colombia; (3) CIRAD-CIAT, Palmira, Colombia

331-P Visual rating of bacterial disease severity as a threshold to time sweet onion harvest.
E. PFEUFER (1), B. K. Gugino (1). (1) Penn State, University Park, PA, U.S.A.

332-P Red stripe caused by *Acidovirax avenae* subsp. *avenae* in Louisiana sugarcane.
M. P. GRISHAM (1), R. M. Johnson (1). (1) USDA ARS Sugarcane Research Unit, Houma, LA, U.S.A.

333-P Impact of Fusarium stalk rot and charcoal rot on yield parameters of grain sorghum.
A. Y. BANDARA (1), D. K. Weerasooriya (1), C. R. Little (1). (1) Kansas State Univ, Manhattan, KS, U.S.A.

334-P A comparison of raters and disease assessment methods for estimating disease severity for purposes of hypothesis testing.
C. H. BOCK (1), M. El Jarroudi (2), L. A. Kouadio (3), C. Mackels (4), K. Chiang (5), P. Delfosse (6). (1) USDA-ARS-SEFTNRL, Byron, GA, U.S.A.; (2) Université de Liège, Department of Environmental Sciences and Management, Arlon, Belgium; (3) Agriculture and Agri-Food Canada Lethbridge Research Centre, Lethbridge, AB, Canada; (4) Université de Liège, Department of Environmental Sciences and Management, Arlon, Belgium; (5) Division of Biometrics, Department of Agronomy, National Chung Hsing University , Taichung, Taiwan; (6) Centre de Recherche Public-Gabriel Lippmann, Environment and Agro-biotechnologies Department, Belvaux, Luxembourg

335-P Patterns of disease loss in soybean - Exploration of the soybean yield loss database in the United States.
P. D. ESKER (1), S. R. Koenning (2), J. A. Wrather (3), C. A. Bradley (4). (1) University of Costa Rica, San Jose, Costa Rica; (2) North Carolina State University, Raleigh, NC, U.S.A.; (3) University of Missouri, Portageville, MO, U.S.A.; (4) University of Illinois, Urbana, IL, U.S.A.

Disease Detection and Diagnosis

336-P Aster yellows, a potential disease epidemic in flax.
K. Y. RASHID (1). (1) Agriculture & Agri-Food Canada, Morden, MB, Canada

337-P A multi-year search for *Candidatus* Liberibacter spp. in orange jasmine plants in Texas by field surveys and multi-loci PCR assays.
M. KUNTA (1), W. Li (2), J. V. da Graça (1), L. Levy (3), C. de la Garza (1), C. C. Parra (1), M. Gonzalez (1), S. Chavez (1), E. S. Louzada (1), M. K. Nakhla (2), M. Sétamou (1). (1) Texas A&M University Kingsville, Weslaco, TX, U.S.A.; (2) USDA APHIS PPQ CPHST Beltsville Laboratory, Beltsville, MD, U.S.A.; (3) USDA APHIS PPQ CPHST, Riverdale, MD, U.S.A.

338-P Development of efficient and reliable *Candidatus* Liberibacter asiaticus detection methods in citrus.
O. VAZQUEZ (1), S. Chavez (1), M. Kunta (1), E. Braswell (2), M. L. Keremane (3), R. F. Lee (3), E. S. Louzada (1). (1) Texas A&M University Kingsville, Weslaco, TX, U.S.A.; (2) USDA APHIS, Edinburg, TX, U.S.A.; (3) USDA ARS National Clonal Germplasm Repository for Citrus & Dates, Riverside, CA, U.S.A.

339-P Evaluation of quantitative PCR for detection of *Candidatus* Liberibacter asiaticus in composite plant DNA samples.
O. J. ALABI (1), M. Kunta (2). (1) Texas AgriLife Research, Weslaco, TX, U.S.A.; (2) Texas A&M University Kingsville, Weslaco, TX, U.S.A.

340-P First detection of '*Candidatus* Phytoplasma *pyri*' from a pear tree in Nevada.
S. WANG (1), R. A. Bomberger (1), J. Rolshoven (1). (1) Nevada Department of Agriculture, Sparks, NV, U.S.A.

341-P Real-time PCR detection of the kiwi canker pathogen, *Pseudomonas syringae* pv. *actinidiae*.
J. E. RASCOE (1), M. K. Nakhla (1). (1) USDA-APHIS-PPQ-S&T, Beltsville, MD, U.S.A.

342-P Genetic variance of *Xanthomonas* spp. in *Begonia*, *Pelargonium* and poinsettia.
E. T. MEEKES (1), M. Hooftman (1), B. S. Koenen (1), J. Westerhof (1), M. J. Ebskamp (1). (1) Naktuinbouw, Roelofarendsveen, Netherlands

343-P Draft genome sequence and partial annotation of *Lonsdalea quercina* subsp. *quercina* type strain and field isolates from Colorado USA.
J. R. IBARRA CABALLERO (1), M. M. Zerillo (1), J. Snelling (2), W. Cranshaw (1), C. Boucher (1), N. A. Tisserat (1). (1) Colorado State University, Fort Collins, CO, U.S.A.; (2) Oregon State University, Corvallis, OR, U.S.A.

344-P Occurrence of copper-resistant strains of bacterial spot pathogen and presence of all four species of *Xanthomonas* in Ontario commercial tomato fields.
P. A. ABBASI (1), S. Khabbaz (2), L. Zhang (2), B. Weselowski (2). (1) Atlantic Food and Horticulture Research Centre, Agriculture and Agri-Food Canada, Kentville, NS, Canada; (2) Southern Crop Protection and Food Research Centre, Agriculture and Agri-Food Canada, London, ON, Canada

345-P Occurrence of sudden death syndrome of soybean caused by *Fusarium virguliforme* in South Dakota.
C. TANDE (1), B. Hadi (1), R. Chowdhury (1), S. Subramanian (1), E. Byamukama (1). (1) South Dakota State Univ, Brookings, SD, U.S.A.

346-P Fungi associated with Arkansas soybean seed.
K. COCHRAN (1), J. Rupe (1), R. Holland (1). (1) University of Arkansas, Fayetteville, AR, U.S.A.

347-P Identification of fungi associated with and evaluation of seedling plant reactions to root rot diseases in spring wheat of North Dakota.
S. SHRESTHA (1), S. Zhong (2). (1) NDSU, Fargo, ND, U.S.A.; (2) North Dakota State University, Fargo, ND, U.S.A.

348-P Developing a DNA-based toolkit for detection and identification of wheat rust pathogens.
P. Kesanakurti (1), S. HAMBLETON (1). (1) Agriculture and Agri-Food Canada, Ottawa, ON, Canada

349-P Taxonomy and DNA sequence variation of the rust fungi infecting four prairie grass species.
S. HAMBLETON (1), K. Temple (1), M. Liu (1). (1) Agriculture and Agri-Food Canada, Ottawa, ON, Canada

350-P WITHDRAWN

351-P Comparison of vegetation indices produced by two spectrometers: A hyperspectral assessment of *Malus domestica* leaves.
M. WALLHEAD (1), K. Broders (1). (1) University of New Hampshire, Durham, NH, U.S.A.

352-P *Botryosphaeria* spp. associated with dieback and stem canker of blackberry in Michoacán, Mexico.
J. Boyzo-Marin (1), A. REBOLLAR-ALVITER (2), H. V. Silva-Rojas (3), L. F. Ceja-Torres (4), B. Uribe-Cortés (3), R. Moncayo-Estrada (5). (1) CIIDIR-IPN, Jiquilpan, México, Morelia, Mich, Mexico; (2) Centro Regional Morelia, Univ Autonoma Chapingo, Morelia, Mich, Mexico; (3) Laboratorio de Biotecnología de Semillas, Colegio de Postgraduados , Montecillo, Texcoco, México, Mexico; (4) CIIDIR-IPN, Jiquilpan, México, Jiquilpan, Michoacan, Mexico; (5) CIIDIR-IPN, Jiquilpan, Michoacan, Mexico

353-P New detection tools for grapevine trunk pathogens in apparently healthy California vineyards.
P. T. FUJIYOSHI (1), S. Schwebs (2), T. Diaz (2), R. Travadon (3), D. P. Lawrence (3), K. Baumgartner (1). (1) USDA ARS, Davis, CA, U.S.A.; (2) Coastal Viticultural Consultants, Inc., Santa Rosa, CA, U.S.A.; (3) UC Davis, Davis, CA, U.S.A.

354-P Characterization of two novel *Didymella bryoniae* isolates from watermelon in Florida and Georgia.
B. BABU (1), Y. W. Kefialew (2), P. Li (3), X. Yang (3), S. George (4), E. Newberry (5), N. Dufault (5), J. Marois (4), M. L. Paret (4). (1) North Florida Research & Education Ctr, Quincy, FL, U.S.A.; (2) Ethiopian Institute of Agricultural Research, Gambella, Ethiopia; (3) Jiangsu Academy of Agricultural Sciences, Jiangsu, China; (4) NFREC, University of Florida, Quincy, FL, U.S.A.; (5) University of Florida, Gainsville, FL, U.S.A.

355-P Identification of *Botrytis* spp. causing blossom blight in Japanese plums and nectarines in Chile.
E. E. FERRADA (1), B. A. Latorre (1), G. A. Diaz (1), J. P. Zoffoli (1). (1) Pontificia Universidad Catolica de Chile, Santiago, Chile

356-P Identification of fungal pathogens isolated from blueberry gardens in Turkey.
C. CASTELL-MILLER (1), M. Figueroa (1), B. Steffenson (1), Z. Mert (2), A. Karakaya (3), A. Celik Oğuz (3), T. Dil (3). (1) University of Minnesota, St. Paul, MN, U.S.A.; (2) Central Research Institute for Field Crops, Ankara, Turkey; (3) Ankara University, Faculty of Agriculture, Department of Plant Protection, Ankara, Turkey

357-P First case of gray mold caused by *Botrytis ricini* (*Amphobotrys ricini*) on strawberry in United States.
A. AMIRI (1), R. B. Onofre (1), N. A. Peres (1). (1) University of Florida, Wimauma, FL, U.S.A.

358-P WITHDRAWN

359-P Molecular quantification of *Colletotrichum lindemuthianum* in dry edible pinto beans.
J. HALVORSON (1), K. Simons (1), R. Lamppa (1), J. S. Pasche (1). (1) North Dakota State University, Fargo, ND, U.S.A.

360-P Detection of *Fusarium oxysporum* f. sp. *phaseoli* in common bean seeds using magnetic capture hybridization and quantitative PCR.
M. L. ELLIS (1), M. Viana de Sousa (2), G. P. Munkvold (1). (1) Iowa State Univ, Ames, IA, U.S.A.; (2) Universidade Federal de Lavras, Lavras, Brazil

361-P Is *Cercospora kikuchii* the causal agent of Cercospora leaf blight and purple seed stain in the Gulf South?
S. ALBU (1), P. P. Price (1), V. Doyle (2), R. Schneider (1). (1) Louisiana State University Agricultural Center, Baton Rouge, LA, U.S.A.; (2) Louisiana State University, Baton Rouge, LA, U.S.A.

362-P Daylily leaf streak found on *Hemerocallis* spp. in Norway.
G. STRØMENG (1), M. Brurberg (1), E. Vike (2), V. Talgø (3). (1) Bioforsk, Ås, Norway; (2) Norwegian University of Life Sciences, Ås, Norway; (3) Bioforsk Norwegian Inst of Agric & Env Res, Aas, Norway

363-P Diseases and pests are threatening boxwood in Scandinavian landscape plantings.
V. Talgø (1), C. Magnusson (1), I. M. Thomsen (2), H. Ravn (2), G. STRØMENG (3). (1) Bioforsk Norwegian Inst of Agric & Env Res, Aas, Norway; (2) University of Copenhagen, Frederiksberg C, Denmark; (3) Bioforsk, Ås, Norway

364-P Identification, detection and quantification of *Pythium* species caused root rot of calla lily in California.
W. LI (1), S. Dangi (1), B. Hanson (2), J. Gerik (1). (1) Parlier, CA, U.S.A.; (2) UC Davis, Davis, CA, U.S.A.

365-P Identification of *Fusarium oxysporum* f. sp. *vasinfectum* races present in Alabama cotton fields.
A. SMITH (1), K. Lawrence (1), J. Hu (1). (1) Auburn University, Auburn, AL, U.S.A.

366-P Infection of biofuel switchgrass populations by two rust species in Nebraska.
G. Yuen (1), Y. MA (1), C. Jochum (1), K. Vogel (2). (1) University of Nebraska-Lincoln, Lincoln, NE, U.S.A.; (2) USDA, ARS (retired), Lincoln, NE, U.S.A.

367-P Optimization of nucleic acid extraction from field and bulk samples for sensitive direct detection of plant pests.
G. J. BILODEAU (1), G. P. Robideau (1). (1) Canadian Food Inspection Agency, Ottawa, ON, Canada

368-P Verticillium wilt, but NOT by *Verticillium dahliae*: Accurate detection and identification of other important pathogens in the genus *Verticillium*.
G. P. ROBIDEAU (1), F. N. Martin (2), G. J. Bilodeau (1). (1) Canadian Food Inspection Agency, Ottawa, ON, Canada; (2) USDA-ARS, Salinas, CA, U.S.A.

369-P Advances toward DNA-based identification and differentiation of North American *Heterobasidion* spp.
C. HAMMETT (1), S. F. Shamoun (2), I. Kassatenko (2), X. Li (3). (1) UBC Forestry Sciences and Conservation, Vancouver, BC, Canada; (2) Canadian Forestry Service, Victoria, BC, Canada; (3) Canadian Food Inspection Agency, Charlottetown, PE, Canada

370-P Fungal and insect-associated branch damage of eastern black walnut in Indiana and Tennessee.
M. E. MCDERMOTT-KUBECZKO (1), J. Juzwik (2), M. Paschen (3), W. E. Klingeman (4), M.D. Ginzel (3). (1) University of Minnesota, Minneapolis, MN, U.S.A.; (2) U.S. Forest Service, St. Paul, MN, U.S.A.; (3) Purdue University, West Lafayette, IN, U.S.A.; (4) University of Tennessee, Knoxville, TN, U.S.A.

371-P Quantification of disease severity in field and laboratory grown cassava by application of molecular markers for measuring super-elongation disease.
A. T. ALLEYNE (1), J. M. Gilkes (1). (1) The University of the West Indies, Bridgetown, Barbados

372-P Occurrence of the cassava pathogen *Sphaceloma manihoticola* in a reservoir host, Bermuda grass (*Cynodon dactylon)* in Barbados.
A. T. ALLEYNE (1), J. M. Gilkes (2). (1) Univ of the West Indies, Bridgetown, Barbados; (2) Univ of the West Indies, Cave Hill Campus, Bridgetown, Barbados

373-P Identification of *Lasiodiplodia theobromae* from novel sources in Nigeria and Mexico.
F. M. DUGAN (1), A. Osuagwu (2), E. A. Uyoh (2), E. Okpako (2), S. L. Lupien (1), T. Kisha (1). (1) USDA ARS WRPIS, Pullman, WA, U.S.A.; (2) University of Calabar, Calabar, Nigeria

374-P Assessment of *Ceratocystis fimbriata* translocation in mango plants using PCR.
G. P. CAVALCANTE (1), R. S. Brito (1), L. Maffia (1). (1) Departamento de Fitopatologia, Universidade Federal de Viçosa, Viçosa, Brazil

375-P WITHDRAWN

376-P Selective isolating of *Ceratocystis fimbriata*.
R. S. BRITO (1), G. P. Cavalcante (1), L. Maffia (1). (1) Departamento de Fitopatologia, Universidade Federal de Viçosa, Viçosa, Brazil

377-P A quantitative real-time PCR assay for detection of *Ephelis japonica*on ornamental grasses.
L. E. BOSTIC (1), D. Benson (1), K. Ivors (1). (1) North Carolina State Univ, Raleigh, NC, U.S.A.

378-P Development of a multiplex qPCR assay for quantification of *Plasmodiophora brassicae* in soil.
A. Deora (1), B. D. GOSSEN (2), S. Amirsadeghi (1), M. McDonald (1). (1) University of Guelph, Guelph, ON, Canada; (2) Agriculture and Agri-Food Canada, Saskatoon, SK, Canada

379-P Endophytic microbes of Brachiaria grasses from the native home (East Africa) and their roles in host fitness.
S. GHIMIRE (1), J. Njuguna (1), L. Kago (1), C. Mutai (1), M. Ahonsi (1). (1) International Livestock Research Institute, Nairobi, Kenya

380-P Exploration of the causal agent of citrus blight using metagenomic approaches.
Y. ZHANG (1), N. Wang (1). (1) Univ of Florida, Lake Alfred, FL, U.S.A.

381-P A survey of plant-parasitic nematodes associated with corn (*Zea mays*) in Ohio.
A. C. SIMON (1), T. L. Niblack (1), P. A. Paul (2). (1) The Ohio State University, Columbus, OH, U.S.A.; (2) The Ohio State University, Wooster, OH, U.S.A.

382-P The status of soybean cyst nematode, *Heterodera glycines*, in South Dakota.
K. ACHARYA (1), E. Byamukama (1), C. Tande (1). (1) South Dakota State Univ, Brookings, SD, U.S.A.

383-P Results of the soybean cyst nematode survey for Manitoba, Canada.
M. TENUTA (1), M. Madani (2), D. Lange (3). (1) University of Manitoba, Winnipeg, MB, Canada; (2) Department of Soil Science, University of Manitoba, Winnipeg, MB, Canada; (3) Manitoba Agriculture, Food and Rural Development, Altona, MB, Canada

384-P A new record of *Meloidogyne partityla* and an unknown species of *Punctodera* from Arkansas.

C. KHANAL (1), W. Ye (2), R. T. Robbins (1). (1) University of Arkansas, Fayetteville, AR, U.S.A.; (2) Nematode Assay Section, Agronomic Division, North Carolina Department of Agriculture & Consumer Services, Raleigh, NC, U.S.A.

385-P The pathogen and its mycotoxin effect of maize seedling blight in Hexi Corridor in China.

L. LUO (1), Y. Meng (1), M. Hu (1), C. Liang (1), O. Mtung'e (1), C. Mortensen (2), J. Li (1). (1) China Agricultural University, Beijing, China; (2) University of Copenhagen, Copenhagen, Denmark

386-P A Bayesian approach to estimation of error rates in detection of *Heterodera glycines* in processed soil samples with low egg concentrations.

O. PEREZ-HERNANDEZ (1), L. J. Giesler (1), P. E. Reyes (2). (1) Univ of Nebraska-Lincoln, Lincoln, NE, U.S.A.; (2) Kansas State University, Manhattan, KS, U.S.A.

387-P Determining the presence and identification of the stem nematode (*Ditylenchus*) on grain pea and creeping thistle in the Canadian Prairie Provinces.

M. TENUTA (1), S. Briar (2), M. Madani (2), S. Subbotin (3). (1) University of Manitoba, Winnipeg, MB, Canada; (2) Department of Soil Science, University of Manitoba, Winnipeg, MB, Canada; (3) Plant Pest Diagnostic Center, California Department of Food and Agriculture, Sacramento, CA, U.S.A.

388-P Development of diagnostic assays for rapid detection of *Phytophthora* spp. causing soybean root rot.

A. ROJAS (1), T. D. Miles (2), M. D. Coffey (3), M. Chilvers (4), F. N. Martin (5). (1) Michigan State Univ, East Lansing, MI, U.S.A.; (2) USDA/ARS, East Lansing, CA, U.S.A.; (3) University of California - Riverside, Riverside, CA, U.S.A.; (4) Michigan State Univ, East Lansing , MI, U.S.A.; (5) USDA/ARS, Salinas, CA, U.S.A.

389-P *Actnidia sp.* susceptibility to *Phytophthora*.

K. Lawrence (1), J. LUANGKHOT (1). (1) Auburn Univ, Auburn, AL, U.S.A.

390-P Development and evaluation of molecular methods for species-specific detection of *Phytophthora tentaculata*.

J. C. BIENAPFL (1), Z. Abad (1), M. K. Nakhla (1). (1) USDA-APHIS-PPQ-S&T, Beltsville, MD, U.S.A.

391-P Assessing the effect of vernalization on the detection of *Phytophthora ramorum* in native soil, potting media, and cull piles.

N. OSTERBAUER (1), S. Lane (1), A. Trippe (1), S. Navarro (1). (1) Oregon Dept of Agriculture, Salem, OR, U.S.A.

392-P First detection of *Phytophthora parasitica* from Mediterranean fan palm in the United States.

R. A. BOMBERGER (1), X. Duranovic (2), S. Wang (1). (1) Nevada Dept of Agric, Sparks, NV, U.S.A.; (2) Nevada Dept of Agriculture, Las Vegas, NV, U.S.A.

393-P Development and validation of multiplex real-time PCR and conventional PCR tests for the detection of *Phytophthora austrocedri*.

K. J. OWENS (1), Z. Abad (1), J. C. Bienapfl (1), S. Green (2), M. K. Nakhla (1). (1) USDA-APHIS-PPQ-S&T, Beltsville, MD, U.S.A.; (2) Centre for Forestry and Climate Change, Roslin, United Kingdom

394-P "Online ID Tools to *Phytophthora*: Lucid Key, Tabular Key and Sequencing Analysis." Progress and demands for accurate identification & diagnostics.

Z. ABAD (1), J. C. Bienapfl (1), Y. Balci (2), T. Burgess (3), M. Coffey (4), F. Martin (5), S. Kang (6). (1) USDA-APHIS-PPQ-S&T, Beltsville, MD, U.S.A.; (2) Plant Science and Landscape Architecture, University of Maryland, College Park, MD, U.S.A.; (3) Centre of Phytophthora at University of Murdoch, Perth, Australia; (4) World Oomycete and Phytophthora Genetic Resources and University of California, Riverside, CA, U.S.A.; (5) USDA-ARS, Salinas, CA, U.S.A.; (6) Phytophthora Database, Pennsylvania State University, State College, PA, U.S.A.

395-P Validation of a TaqMan diagnostic assay for the systematic development of *Phytophthora* genus and species specific markers.

T. D. MILES (1), F. N. Martin (1), G. J. Bilodeau (2), M. D. Coffey (3). (1) USDA/ARS, Salinas, CA, U.S.A.; (2) Canadian Food Inspection Agency, Ottawa, ON, Canada; (3) University of California - Riverside, Riverside, CA, U.S.A.

396-P Isolation of *Phytophthora megakarya* informed by developmental expression of disease lesion pattern on cocoa (*Theobroma cacao*) pod.

O. O. KOLAWOLE (1), A. A. Ogunjobi (2), E. M. Goss (3). (1) University of Florida; University of Ibadan, Nigeria; Cocoa Research Institute of Nigeria, Gainesville, FL, U.S.A.; (2) University of Ibadan, Ibadan, Nigeria; (3) University of Florida, Gainesville, FL, U.S.A.

397-P Developing genomic resources for species-specific molecular diagnostics of cucurbit downy mildew.

S. WITHERS (1), E. Gongora Castillo (2), M. J. Bowman (2), K. L. Childs (2), D. Gent (3), P. Ojiambo (1), L. Quesada-Ocampo (1). (1) North Carolina State University, Raleigh, NC, U.S.A.; (2) Michigan State University, East Lansing, MI, U.S.A.; (3) Oregon State University, Corvallis, OR, U.S.A.

398-P Development, production and validation of proficiency test panels for the PPQ NPPLAP *Plum pox virus* certification.

K. L. WILLIAMS (1), V. A. Mavrodieva (1), G. G. Dennis (2), S. S. Negi (3), L. Levy (4), R. M. DeVries (1), D. D. Picton (1), P. J. Shiel (2), M. K. Nakhla (1). (1) USDA-APHIS-PPQ-S&T, Beltsville, MD, U.S.A.; (2) USDA-APHIS-PPQ-S&T, Raleigh, NC, U.S.A.; (3) USDA-APHIS-PPQ-PHP-QPAS, Riverdale, MD, U.S.A.; (4) USDA-APHIS-PPQ-S&T, Riverdale, MD, U.S.A.

399-P Simultaneous detection and differentiation of three stone fruit viruses by a multiplex TaqMan real-time RT-PCR.

L. PU (1), G. Kinard (1), M. Bateman (2), P. Lan (1), R. Li (1). (1) USDA-ARS, Beltsville, MD, U.S.A.; (2) USDA-APHIS, Beltsville, MD, U.S.A.

400-P Novel mild strains of *Citrus tristeza virus* from California and Peru.

R. K. YOKOMI (1), S. Hajeri (2), K. Bederski (3), A. Giampetruzzi (4), G. Loconsole (4), M. Saponari (4). (1) USDA ARS PWA, Parlier, CA, U.S.A.; (2) Central California Tristeza Eradication Agency, Tulare, CA, U.S.A.; (3) Vivero Topara, Lima, Peru; (4) Istituto di Virologia Vegetale, Consiglio Nazionale delle Ricerche, Bari, Italy

401-P Symptom expression and detection of *Grapevine red blotch associated virus*.

J. MONIS (1), L. A. Miles (1). (1) Eurofins/STA Laboratories Inc, Gilroy, CA, U.S.A.

402-P Viruses of muscadines in Mississippi.

S. SABANADZOVIC (1), N. Aboughanem-Sabanadzovic (2). (1) Department of Biochemistry, Molecular Biology, Entomology and Plant Pathology, Mississippi State University, Mississippi State, MS, U.S.A.; (2) Institute for Genomics, Biocomputing and Biotechnology, Mississippi State University, Mississippi State, MS, U.S.A.

403-P Virus incidence in Texas peach orchards.

M. Giesbrecht (1), K. ONG (1). (1) Texas A&M AgriLife Extension Service, College Station, TX, U.S.A.

404-P Endornaviruses in common bean breeding lines, cultivars, landraces, and wild genotypes from the two main centers of domestication.

S. Khankhum (1), R. A. VALVERDE (1). (1) Louisiana State University Agricultural Center, Baton Rouge, LA, U.S.A.

405-P Screening for plant viruses including TMV, HVX, CMV, TSWV and INSV in ornamental and nursery crops from four states of the United States.

S. DOBHAL (1), M. Arif (2), J. Olson (3), A. Mendoza-Yerbafría (1), S. Aguilar-Moreno (1), M. Perez-Garcia (1), F. M. Ochoa-Corona (1). (1) National Institute for Microbial Forensics & Food and Agricultural Biosecurity, Department of Entomology and Plant Pathology, Oklahoma State University, Stillwater, OK, U.S.A.; (2) National Institute for Microbial Forensics & Food and Agricultural Biosecurity, Department of Entomology and Plant Pathology, Oklahoma State University, Stillwater, OK, U.S.A.; (3) Department of Entomology and Plant Pathology, Oklahoma State University, Stillwater, OK, U.S.A.

406-P Comparison of end point RT-PCR and RT-HDA using primer pairs for five viruses frequently infecting ornamental and nursery crops.
S. DOBHAL (1), M. Arif (2), J. Olson (3), F. M. Ochoa-Corona (2). (1) National Institute for Microbial Forensics & Food and Agricultural Biosecurity, Department of Entomology and Plant Pathology, Oklahoma State University, Stillwater, OK, India; (2) National Institute for Microbial Forensics & Food and Agricultural Biosecurity, Department of Entomology and Plant Pathology, Oklahoma State University, Stillwater, OK, U.S.A.; (3) Department of Entomology and Plant Pathology, Oklahoma State University, Stillwater, OK, U.S.A.

407-P Incidence and impact of dual infection by *Panicum mosaic virus* and its satellite virus in switchgrass breeding fields.
C. L. Stewart (1), C. Jochum (1), G. Y. YUEN (1), K. Vogel (2), J. D. Pyle (3), K. G. Scholthof (3). (1) University of Nebraska, Lincoln, NE, U.S.A.; (2) USDA-ARS (retired), Lincoln, NE, U.S.A.; (3) Texas A&M University, College Station, TX, U.S.A.

408-P High-throughput molecular screening tools for detection of *Tobacco rattle virus* in crude plant extracts.
L. LUTES (1), S. Zhang (1), D. Groth-Helms (1). (1) Agdia, Inc., Elkhart, IN, U.S.A.

409-P Simultaneous detection and differentiation of three sweet potato potyviruses by a multiplex TaqMan real-time RT-PCR.
P. LAN (1), F. Li (2), J. Abad (3), L. Pu (1), R. Li (1). (1) USDA-ARS, Beltsville, MD, U.S.A.; (2) Yunnan Agricultural University, Kunming, China; (3) USDA-APHIS, Beltsville, MD, U.S.A.

410-P Development of multiple molecular based assays for the improved detection of viruses, viroids and phytoplasmas infecting imported germplasm.
D. D. PICTON (1), G. W. Wei (1), K. J. Owens (1), L. Levy (2), M. K. Nakhla (1). (1) USDA-APHIS-PPQ-S&T, Beltsville, MD, U.S.A.; (2) USDA-APHIS-PPQ-S&T, Riverdale, MD, U.S.A.

411-P Determining seed transmissibility of *Sugarcane mosaic virus* and *Sugarcane yellow leaf virus* in sugarcane.
A. WASHINGTON-KEIZERWEERD (1), C. Maroon-Lango (2), M. Grisham (1). (1) USDA ARS, Houma, LA, U.S.A.; (2) USDA APHIS PPQ CPHST, Beltsville, MD, U.S.A.

412-P Development of a real-time PCR assay to detect *Sugarcane yellow leaf virus* (SCYLV) in sugarcane in Colombia.
Y. Acosta (1), M. Cadavid (1), C. Cardozo (1), J. C. Angel (1), J. I. Victoria (1), C. A. ANGEL (1). (1) Colombian Sugarcane Research Center - CENICAÑA, Cali, Colombia

413-P Reverse transcription loop-mediated isothermal amplification of *Iris yellow spot virus*.
S. SZOSTEK (1), H. Schwartz (1). (1) Colorado State University, Fort Collins, CO, U.S.A.

414-P Discovery of a new genotype of *Squash mosaic virus* through deep sequencing of small RNAs and development of a qRT-PCR for broad spectrum detection.
R. LI (1), S. Gao (2), S. Berendsen (3), Z. Fei (4), K. Ling (1). (1) USDA-Agricultural Research Service, U.S. Vegetable Laboratory, Charleston, SC, U.S.A.; (2) Boyce Thompson Institute for Plant Research, Cornell University, Ithaca, NY, U.S.A.; (3) Rijk Zwaan Breeding B.V., De Lier, Netherlands; (4) Boyce Thompson Institute for Plant Research, USDA-ARS, Robert W. Holley Center for Agriculture and Health, Cornell University, Ithaca, NY, U.S.A.

415-P Magnetic resonance imaging for detecting viral infections in potato tubers.
S. Sankaran (1), C. Brown (2), H. PAPPU (1). (1) Washington State Univ, Pullman, WA, U.S.A.; (2) USDA ARS, Prosser, WA, U.S.A.

New and Emerging Diseases

416-P Evaluation of virulence potential and host resistance to the Goss's wilt pathogen *Clavibacter michiganensis* subsp. *nebraskensis*.
R. MCNALLY (1), R. D. Curland (1), C. A. Ishimaru (1), D. K. Malvick (1). (1) University of Minnesota, St. Paul, MN, U.S.A.

417-P Characteristics of resistance to Goss's wilt of corn in Minnesota caused by *Clavibacter michiganensis* subsp. *nebraskensis* (CMN).
D. MALVICK (1), R. D. Curland (1), C. A. Ishimaru (1), C. Floyd (1), R. McNally (1). (1) Univ of Minnesota, St. Paul, MN, U.S.A.

418-P Citrus huanglongbing incidence, spread, and current situation in Texas.
M. KUNTA (1), M. Sétamou (2), E. S. Louzada (2), J. V. da Graça (2). (1) Texas A&M University-Kingsville, Weslaco, TX, U.S.A.; (2) Texas A&M University Kingsville, Weslaco, TX, U.S.A.

419-P The USDA *huanglongbing* (HLB) multiagency coordination (MAC) initiative.
M. E. PALM (1). (1) USDA APHIS PPQ PHP, Riverdale, MD, U.S.A.

420-P Pistachio bushy top syndrome; An emerging threat to the pistachio industry.
J. J. RANDALL (1), R. Stamler (2), J. Kilcrease (1), J. Randall (1). (1) New Mexico State Univ, Las Cruces, NM, U.S.A.; (2) NMSU, Las Cruces, NM, U.S.A.

421-P Incidence of bacterial decline of bentgrass in Georgia.
A. D. MARTINEZ-ESPINOZA (1), R. Alexander (1), B. Dutta (2). (1) University of Georgia, Griffin, GA, U.S.A.; (2) University of Georgia, Tifton, GA, U.S.A.

422-P A novel pathovar of *Pseudomonas coronafaciens* (pv. *morscepa* nov.), responsible for yellow bud disease in onion (*Allium cepa*).
B. DUTTA (1), R. Gitaitis (1), T. Coutinho (2), D. Langston (1). (1) University of Georgia, Tifton, GA, U.S.A.; (2) University of Pretoria, Pretoria, South Africa

423-P Drippy vine – A new disease of cucurbits.
M. MCCULLOUGH (1), C. Nischwitz (1), B. Schroeder (2), C. Dhiman (1). (1) Utah State Univ, Logan, UT, U.S.A.; (2) Washington State University, Pullman, WA, U.S.A.

424-P First report of *Fusarium proliferatum* causing root rot disease in soybean (*Glycine max*) in Canada.
S. Hwang (1), K. CHANG (1), H. U. Ahmed (1), Q. Zhou (1), S. E. Strelkov (2), R. L. Conner (3), D. McLaren (4), B. D. Gossen (5), G. D. Turnbull (1). (1) Alberta Agriculture and Rural Development, Edmonton, AB, Canada; (2) University of Alberta, Edmonton, AB, Canada; (3) Agriculture and Agri-Food Canada, Morden, MB, Canada; (4) Agriculture Canada, Brandon, MB, Canada; (5) Agriculture and Agri-Food Canada, Saskatoon, SK, Canada

425-P Evidence for host preference of *Macrophomina phaseolina* on strawberry.
F. N. MARTIN (1), R. Arias (2), S. Koike (3), C. Hogan (4). (1) USDA-ARS, Salinas, CA, U.S.A.; (2) USDA-ARS National Peanut Research Laboratory, Dawson, GA, U.S.A.; (3) University of California Cooperative Extension - Monterey County, Salinas, CA, U.S.A.; (4) USDA-ARS , Salinas, CA, U.S.A.

426-P Spatial variation analysis of *Ceratocystis manginecans* incidence in Pakistan.
R. ANJUM (1), E. M. Goss (2), I. A. Khan (3), S. T. Sahi (3), I. u. Haq (3), H. R. Ahmad (3). (1) University of Florida, Gainesville, Gainesville, FL, U.S.A.; (2) Department of Plant Pathology, University of Florida, Gainsville, FL, U.S.A.; (3) University of Agriculture, Faisalabad, Pakistan

427-P Histological studies of *Ceratocystis manginecans*-infected mango seedlings.
R. ANJUM (1), E. M. Goss (2), I. A. Khan (3), S. T. Sahi (3), I. u. Haq (3), H. Mansoor (3). (1) University of Florida, Gainesville, Gainesville, FL, U.S.A.; (2) Department of Plant Pathology, University of Florida, Gainsville, FL, U.S.A.; (3) University of Agriculture, Faisalabad, Pakistan

428-P Characterization of *Phomopsis* spp. involved in spruce decline in Michigan.

C. K. MCTAVISH (1), D. W. Fulbright (2), A. M. Jarosz (2). (1) Michigan State University, Rochester, MI, U.S.A.; (2) Michigan State University, East Lansing, MI, U.S.A.

429-P To the brink of extinction: disease, population decline and conservation efforts of the Florida torreya (*Torreya taxifolia*).

J. SMITH (1), T. Spector (2), R. Determann (3), J. Cruse-Sanders (3), R. Pruner (4), M. Friel (4), K. O'Donnell (5). (1) Univ of Florida, Gainesville, FL, U.S.A.; (2) US Fish and Wildlife Service, West Valley City, UT, U.S.A.; (3) Atlanta Botanical Garden, Atlanta, GA, U.S.A.; (4) Florida Parks Service, Panama City, FL, U.S.A.; (5) NCAUR-ARS-USDA, Peoria, IL, U.S.A.

430-P To the vector go the spoils: Identifying fungal pathogens associated with walnut twig beetle, a vector of thousand cankers disease complex.

D. A. DANIELS (1), R. J. Lord (1), P. A. Wadl (1), K. A. Nix (1), L. M. Vito (1), P. R. Merten (2), M. T. Windham (1), P. L. Lambdin (1), J. F. Grant (1), G. J. Wiggins (1), D. Hadziabdic (1). (1) University of Tennessee, Knoxville, TN, U.S.A.; (2) USDA Forest Service, Forest Health Protection, Asheville, NC, U.S.A.

431-P *Teratosphaeria pseudoeucalypti*, recently detected and seriously damaging red gum eucalypts in Uruguay.

C. A. PEREZ (1), M. J. Wingfield (2), S. Simeto (3), D. Torres-Dini (3), G. Balmelli (3). (1) Univ de la Republica, Paysandu, Uruguay; (2) FABI, University of Pretoria, Pretoria, Southwest Africa; (3) INIA, Tacuarembo, Uruguay

432-P Novel plant disease associated with protein filaments.

S. BRATSCH (1), B. E. Lockhart (1), N. Olszewski (1). (1) University of Minnesota, St. Paul, MN, U.S.A.

433-P Overview of impatiens downy mildew in Florida.

S. N. SUAREZ (1), A. J. Palmateer (2). (1) University of Florida, Homestead, FL, U.S.A.; (2) Univ of Florida, Homestead, FL, U.S.A.

434-P Genome sequencing of *Plasmopara obducens*, the causal agent of impatiens downy mildew, for microsatellite marker development.

C. SALGADO-SALAZAR (1), Y. Rivera (1), J. Crouch (1). (1) USDA-ARS, Systematic Mycology & Microbiology Lab, Beltsville, MD, U.S.A.

435-P Identification of *Tobacco streak virus* (TSV) in commercial cranberry plantings and its association with berry scarring in Wisconsin.

L. D. WELLS (1), J. J. Polashock (2), N. Vorsa (3), B. E. Lockhart (4), P. S. McManus (1). (1) University of Wisconsin, Madison, WI, U.S.A.; (2) USDA ARS, Chatsworth, NJ, U.S.A.; (3) Rutgers University, Chatsworth, NJ, U.S.A.; (4) University of Minnesota, St. Paul, MN, U.S.A.

436-P A new virus isolated from blueberry exhibiting a complete fruit drop symptom.

A. DIAZ-LARA (1), K. E. Keller (2), R. R. Martin (2). (1) Oregon State University, Corvallis, OR, U.S.A.; (2) USDA-ARS Horticultural Crops Research Unit, Corvallis, OR, U.S.A.

437-P Kudzu as a reservoir for soybean viruses.

N. Aboughanem-Sabanadzovic (1), W. Moore (2), T. W. Allen (3), A. Lawrence (4), S. SABANADZOVIC (2). (1) Institute for Genomics, Biocomputing and Biotechnology, Mississippi State University, Mississippi State, MS, U.S.A.; (2) Biochemistry, Molecular Biology, Entomology and Plant Pathology, Mississippi State University, Mississippi State, MS, U.S.A.; (3) Delta Research and Extension Center, Mississippi State University, Mississippi State, MS, U.S.A.; (4) Institute for Imaging and Analytical Technologies, Mississippi State University, Mississippi State, MS, U.S.A.

438-P *Soybean vein necrosis virus* in Mississippi.

S. SABANADZOVIC (1), R. C. Stephenson (2), N. Aboughanem-Sabanadzovic (3). (1) Department of Biochemistry, Molecular Biology, Entomology and Plant Pathology, Mississippi State University, Mississippi State, MS, U.S.A.; (2) Hancock County Extension Service, Mississippi State University, Mississippi State, MS, U.S.A.; (3) Institute for Genomics, Biocomputing and Biotechnology, Mississippi State University, Mississippi State University, MS, U.S.A.

439-P Development of endpoint RT-PCR for *Rose rosette virus* and screening of *Rosa* spp from eight states of the United States.

S. DOBHAL (1), J. Olson (2), M. Arif (3), J. A. Garcia Suarez (3), F. M. Ochoa-Corona (3). (1) National Institute for Microbial Forensics & Food and Agricultural Biosecurity, Department of Entomology and Plant Pathology, Oklahoma State University, Stillwater, OK, U.S.A.; (2) Department of Entomology and Plant Pathology, Oklahoma State University, Stillwater, OK, U.S.A.; (3) National Institute for Microbial Forensics & Food and Agricultural Biosecurity, Department of Entomology and Plant Pathology, Oklahoma State University, Stillwater, OK, U.S.A.

440-P Partial characterization of a novel emara-like virus from *Cordyline fruticosa* (L.) with ti ringspot disease.

M. MELZER (1), J. Sugano (2), J. Uchida (3), M. Kawate (3), W. Borth (3), J. Hu (3). (1) Univ of Hawaii at Manoa, Honolulu, HI, U.S.A.; (2) Univ of Hawaii, Kaneohe, HI, U.S.A.; (3) Univ of Hawaii, Honolulu, HI, U.S.A.

441-P New severe symptoms caused by *Watermelon mosaic virus* on squash and pumpkin in Utah.

C. NISCHWITZ (1), C. Dhiman (1), M. McCullough (1), B. Rhoads (1), J. Barnhill (2), M. Pace (3). (1) Utah State University, Logan, UT, U.S.A.; (2) Utah State University, Ogden, UT, U.S.A.; (3) Utah State University, Brigham City, UT, U.S.A.

442-P A filamentous phage XacF1 causes loss of virulence to *Xanthomonas axonopodis* pv *citri*, the causative agent of citrus canker disease.

A. A. AHMAD (1), A. Askora (2), T. Kawasaki (1), M. Fujie (3), T. Yamada (1). (1) Department of Molecular Biotechnology, Graduate School of Advanced Science of Matter, Hiroshima University, Higashihiroshima, Japan; (2) Department of Molecular Biotechnology, Graduate School of Advanced Science of Matter, Hiroshima University, Japan /Department of Microbiology, Faculty of Science, Zagazig University, Egypt, Higashihiroshima, Japan; (3) Department of Molecular Biotechnology, Graduate School of Advanced Science of Matter, Hiroshima University, Higashihiroshima, Japan

442A-P *Clematis chlorotic mottle virus*, a novel virus occurring in clematis in the USA.

D. MOLLOV (1), B. Lockhart (2), A. Phibbs (3), T. Creswell (4), G. Ruhl (4), E. Dorman (5), G. Kinard (1), R. Jordan (1). (1) USDA ARS, Beltsville, MD, U.S.A.; (2) University of Minnesota, St. Paul, MN, U.S.A.; (3) Wisconsin Department of Agriculture, Madison, WI, U.S.A.; (4) Purdue University, Lafayette, IN, U.S.A.; (5) Michigan Department of Agriculture, East Lansing, MI, U.S.A.

Analytical and Theoretical Plant Pathology

443-P Modeling an observed shift towards resistance in distributions of pitch canker lesion lengths on *Pinus radiata*.

G. J. REYNOLDS (1), N. McRoberts (1), T. R. Gordon (1). (1) University of California, Davis, CA, U.S.A.

444-P The effects of rater bias on hypothesis testing when using different assessment methods to estimate disease severity.

K. P. CHIANG (1), C. H. Bock (2), M. E. Jarroudi (3), P. Delfosse (4), I. Lee (1), H. Liu (1). (1) National Chung Hsing Univ, Taichung, Taiwan; (2) USDA-ARS-SEFTNRL, Byron, GA, U.S.A.; (3) Université de Liège, Department of Environmental Sciences and Management, Arlon, Belgium; (4) Centre de Recherche Public-Gabriel Lippmann, Environment and Agro-Biotechnologies Department, Belvaux, Luxembourg

445-P Modeling the progress of Ceratocystis wilt on mango through a Bayesian approach.

W. B. MORAES (1), L. Maffia (1), V. C. Garnica (1), A. G. Souza (2), F. Silva (3). (1) Departamento de Fitopatologia, Universidade Federal de Viçosa, Viçosa, Brazil; (2) EMBRAPA Milho e Sorgo, Sete Lagoas, Brazil; (3) Departamento de Estatística, Universidade Federal de Viçosa, Viçosa, Brazil

446-P An alternative route for bacterial internalization in tomato fruit.

S. L. Stahl (1), J. A. BARTZ (1), D. J. Huber (1), D. Spiceland (1), J. H. Lee (1), M. T. Elkahky (1). (1) Univ of Florida, Gainesville, FL, U.S.A.

Climate Change

447-P Increased CO_2 and temperature effects on *Fusarium oxysporum* f. sp. *lactucae* on lettuce plants grown under simulated environmental conditions.
M. GULLINO (1), I. Ferrocino (2), W. Chitarra (3), M. Pugliese (4), G. Gilardi (3), M. Gullino (2), A. Garibaldi (3). (1) University of Torino, Grugliasco Torino, Italy; (2) Agroinnova, Disafa, University of Torino, Grugliasco (TO), Italy; (3) Agroinnova, University of Torino, Grugliasco (TO), Italy; (4) Disafa, Agroinnova, University of Torino, Grugliasco (TO), Italy

448-P CO_2 and *Fusarium graminearium* chemotype effects on Fusarium head blight and mycotoxin contamination in wheat.
J. SALGADO (1), P. A. Paul (1), L. V. Madden (1). (1) Ohio State Univ, Wooster, OH, U.S.A.

449-P Climate favorability and yield losses caused by angular leaf spot of common bean in different Brazilian regions.
M. LOBO (1), F. Yoshida (2), J. T. Aguiar (2), D. S. d'Afonseca (3). (1) Embrapa Rice and Beans, Santo Antonio De Goias, Brazil; (2) Graduate Program on Agronomy, Universidade Federal de Goiás, Goiania, Brazil; (3) Informatics Institute, Universidade Federal de Goiás, Goiânia, Brazil

450-P Effects of climate changing on the development of rice diseases.
V. L. SILVA-LOBO (1), J. T. Aguiar (2), D. S. d'Afonseca (3), S. L. Lopes (4), E. Del Ponte (5), M. L. Junior (6). (1) Embrapa Rice and Beans, Santo Antonio De Goias, Brazil; (2) Graduate Program on Agronomy, Universidade Federal de Goiás, Goiânia, Brazil; (3) Informatics Institute, Universidade Federal de Goiás, Goiânia, Brazil; (4) Embrapa Rice and Beans, Goiania, Brazil; (5) Universidade Federal de Viçosa, Viçosa, Brazil; (6) Embrapa Rice and Beans, Goiânia, Brazil

451-P Pre-inoculation heat stress increases resistance to Phytophthora root rot in warm climate but not cold climate populations of *Rhododendron minus*.
S. KREBS (1), J. Wang (1), P. Bonello (2), J. Blakeslee (3). (1) The Holden Arboretum, Kirtland, OH, U.S.A.; (2) The Ohio State University, Columbus, OH, U.S.A.; (3) The Ohio State University - OARDC, Wooster, OH, U.S.A.

452-P The effect of climatic events on the growth of quaking aspen (*Populus tremuloides*).
M. DUDLEY (1), N. Tisserat (1), J. Negron (2), W. Jacobi (1). (1) Colorado State Univ, Fort Collins, CO, U.S.A.; (2) USDA Forest Service, Fort Collins, CO, U.S.A.

Crop System/Sustainability

453-P Cumulative and residual effects of potato cropping system management strategies on soilborne diseases and soil microbial communities over time.
R. P. LARKIN (1), J. M. Halloran (1). (1) USDA ARS, Orono, ME, U.S.A.

455-P Pathogen and pest responses to forest management in the southern Sierra Nevada.
A. E. HAWKINS (1), D. M. Rizzo (2). (1) University of California, Davis, Davis, CA, U.S.A.; (2) University of California, Davis, CA, U.S.A.

Ecology and Epidemiology Pathogen Dispersal

456-P Influence of resistance and surface residue on incidence of epiphytic *Clavibacter michiganensis* subsp. *nebraskensis* and Goss's leaf blight of corn.
S. K. Eggenberger (1), F. W. Nutter (1), A. E. ROBERTSON (1). (1) Iowa State Univ, Ames, IA, U.S.A.

457-P Seasonal variation in ascospore release by *Oculimacula yallundae* and *O. acuformis* in the U.S. Pacific Northwest.
D. I. VERA (1), T. D. Murray (1). (1) Washington State University, Pullman, WA, U.S.A.

458-P Validation of an ascospore prediction model for circular leaf spot disease caused by *Mycosphaerella nawae* of persimmon.
J. KWON (1), O. Choi (2), J. Park (2), H. Lee (1), B. Chung (1), T. Kim (1), S. Lee (1), H. Shin (1), Y. Kwak (2), J. Kim (2). (1) Gyeongsangnam-do Agricultural Research and Extention Services, Jinju, South Korea; (2) Gyeongsang National University, Jinju, South Korea

459-P Mating type distributions of *Microsphaeropsis tanaceti* isolated from pyrethrum fields in Tasmania, Australia.
T. L. PEARCE (1), J. B. Scott (1), S. J. Pethybridge (2), F. S. Hay (1). (1) Tasmanian Institute of Agriculture, University of Tasmania, Burnie, Australia; (2) The New Zealand Institute for Plant & Food Research Limited, Christchurch, New Zealand

Spatiotemporal Distribution

460-P Effects of cultivar resistance and biocontrol agent on spatial spread of bacterial panicle blight of rice.
X. G. ZHOU (1). (1) Texas A&M University System, AgriLife Research and Extension Center, Beaumont, TX, U.S.A.

461-P Propagation of *Xanthomonas fragariae* in strawberry nursery stock: Epidemiological analysis using both experimental and modeling approaches.
C. GIGOT (1), N. McRoberts (1), W. Turechek (2). (1) University of California, Davis, CA, U.S.A.; (2) Horticulture Researsh Laboratory, USDA-ARS, Fort Pierce, FL, U.S.A.

462-P Development and validation of standard area diagrams as assessment aids for estimating the severity of citrus canker on unripe oranges.
R. Braido (1), A. M. Gonçalves-Zuliani (2), S. A. Carvalho (3), J. Belasque (4), C. H. Bock (5), W. M. NUNES (6). (1) AMEA, Maringa, Brazil; (2) Universidade Estadual de Maringa, Maringa, Brazil; (3) Instituto Agronomico de Campinas, Cordeiropolis, Brazil; (4) Universidade de Sao Paulo, Piracicaba, SP, Brazil; (5) USDA-ARS- SEFTNRL, Byron, GA, U.S.A.; (6) Universidade Estadual de Maringa, Maringa, Parana, Brazil

463-P Occurrence of bacterial spot (*Xanthomonas cucurbitae*) in pumpkin and squash fields in the North Central Region.
Q. LIU (1), M. Babadoost (1). (1) Univ of Illinois, Urbana, IL, U.S.A.

464-P Distribution of *Rathayibacter* spp. and their nematode vectors (*Anguina spp.*) in the United States Pacific Northwest.
S. J. MAUZEY (1), W. L. Schneider (2), D. G. Luster (2), B. K. Schroeder (1), T. D. Murray (1). (1) Department of Plant Pathology, Washington State University, Pullman, WA, U.S.A.; (2) USDA, Agricultural Research Service, Foreign Disease-Weed Science Research Unit, Ft. Detrick, MD, U.S.A.

465-P Distribution of azoxystrobin resistant *Cercospora sojina* throughout soybean production fields in Mississippi.
N. BROCHARD (1), J. Standish (1), M. Tomaso-Peterson (1), T. W. Allen (2). (1) Mississippi State Univ, Mississippi State, MS, U.S.A.; (2) Delta Research and Extension Center, Stoneville, MS, U.S.A.

466-P Distribution of ectotrophic root-infecting fungi associated with declining ultradwarf bermudagrass putting greens.
P. L. VINES (1), M. Tomaso-Peterson (1), T. W. Allen (2), C. Balbalian (1), B. R. Stewart (1). (1) Mississippi State Univ, Mississippi State, MS, U.S.A.; (2) Delta Research and Extension Center , Stoneville, MS, U.S.A.

467-P Characterizing geographic footprint of *Ophiosphaerella* species causing spring dead spot of bermudagrass in Virginia.
D. MCCALL (1), E. Bush (1), J. Derr (2), A. Nichols (2). (1) Virginia Tech, Blacksburg, VA, U.S.A.; (2) Virginia Tech, Virginia Beach, VA, U.S.A.

468-P Relationship between Heterobasidion root disease severity and soil characteristics in Wisconsin red pine plantations.
K. SCANLON (1), L. Haugen (2), J. Juzwik (2). (1) Wisconsin Dept of Natl Resources, Fitchburg, WI, U.S.A.; (2) U.S. Forest Service, St. Paul, MN, U.S.A.

469-P Spatiotemporal distribution of *Thielaviopsis basicola* after a ten year cotton monoculture.
T. N. SPURLOCK (1), A. M. Greer (1), A. C. Tolbert (1), T. L. Kirkpatrick (2), C. S. Rothrock (3), S. Monfort (4). (1) University of Arkansas Division of Agriculture, Monticello, AR, U.S.A.; (2) University of Arkansas Division of Agriculture, Hope, AR, U.S.A.; (3) Univ of Arkansas, Fayetteville, AR, U.S.A.; (4) Clemson University, Blackville, SC, U.S.A.

470-P Spatio-temporal dynamics of Ceratocystis wilt of mango and association of the disease with potential vectors.
W. Bucker Moraes (1), L. MAFFIA (1), V. C. Garnica (1), A. G. Souza (2), G. R. Santos (3). (1) Departamento de Fitopatologia, Universidade Federal de Viçosa, Viçosa, Brazil; (2) EMBRAPA Milho e Sorgo, Sete Lagoas, Brazil; (3) Departamento de Estatística, Universidade Federal de Viçosa, Viçosa, Brazil

471-P Distribution and prevalence of *Sclerotinia sclerotiorum* and *S. subarctica* in Norwegian lettuce.
B. NORDSKOG (1), H. Eikemo (2), E. Gauslaa (2), V. H. Le (2), R. Warmington (3), J. Clarkson (3). (1) Bioforsk Norwegian Inst Agric & Env Res, Aas, Norway; (2) Bioforsk Norwegian Inst of Agric & Env Res, Aas, Norway; (3) Warwick Crop Centre, School of Life Sciences, Univ. of Warwick, Warwick, United Kingdom

472-P Behaviour of rust in new and in old inner leaves in conilon coffee.
M. B. SILVA (1), F. L. Partelli (1), R. Sambugaro (1), L. S. Oliari (1). (1) Universidade Federal do Espírito Santo, São Mateus, KS, Brazil

473-P Prevalent sunflower rust races in Manitoba, Canada in 2004-2013.
K. Y. RASHID (1), K. Y. Rashid (1). (1) Agric & Agri-Food Canada, Morden, MB, Canada

474-P Prevalent races of sunflower downy mildew in Manitoba, Canada 2004-2013.
K. Y. RASHID (1), K. Y. Rashid (1). (1) Agric & Agri-Food Canada, Morden, MB, Canada

475-P Regional temporal variations in potato psyllid haplotypes trapped in natural vegetation ecosystem.
L. PAETZOLD (1), A. Rashed (2), F. Workneh (1), C. M. Rush (1). (1) Texas A&M AgriLife Research, Bushland, TX, U.S.A.; (2) University of Idaho, Aberdeen R&E Center, Aberdeen, ID, U.S.A.

476-P Global crop connectivity as a risk factor for pathogen and pest invasion: The case of banana, cassava, potato, and sweetpotato.
J. HERNANDEZ NOPSA (1), Y. Xing (1), J. Andrade-Piedra (2), F. Beed (3), G. Bloome (4), M. Carvajal Yepes (5), G. Forbes (6), J. Kreuze (7), J. Kroschel (8), J. Legg (3), M. Parker (9), E. Schulte-Geldermann (9), K. A. Garrett (1). (1) Kansas State Univ, Manhattan, KS, U.S.A.; (2) International Potato Center (CIP), Quito, Ecuador; (3) International Institute of Tropical Agriculture (IITA), Dar es Salaam, Tanzania; (4) Bioversity, Kampala, Uganda; (5) International Center for Tropical Agriculture (CIAT), Cali, Colombia; (6) International Potato Center (CIP), Beijing, China; (7) International Potato Center (CIP), Lima, Peru; (8) International Potato Center / Global Crop Diversity Trust, Filderstadt, Germany; (9) International Potato Center (CIP), Nairobi , Kenya

477-P Comparison of time-related wheat streak mosaic severity assessments for plant biomass and grain yield predictive abilities.
F. WORKNEH (1), C. M. Rush (1). (1) Texas A&M AgriLife Research, Bushland, TX, U.S.A.

478-P Two begomoviral species causing yellow leaf curl disease of tomato: Distinct spatial distribution patterns in the Arabian Peninsula.
M. A. AL-SALEH (1), J. K. Brown (2), A. M. Idris (3). (1) King Saud University, Riyadh, Saudi Arabia; (2) Univ of Arizona, Tucson, AZ, U.S.A.; (3) King Abdullah University of Science and Technology, Thuwal, Saudi Arabia

Pathogen-Vector Interactions

479-P The role of lipopolysaccharide in the vector-microbe and plant-microbe interfaces of the bacterial phytopathogen, *Xylella fastidiosa*.
J. N. RAPICAVOLI (1), H. J. Shugart (2), C. M. Johnston (1), T. M. Perring (1), A. Morales-Cruz (3), D. Cantu (3), M. C. Roper (1). (1) University of California, Riverside, CA, U.S.A.; (2) University of Florida, Lake Alfred, FL, U.S.A.; (3) University of California, Davis, CA, U.S.A.

480-P Oversummering of '*Candidatus* Liberibacter solanacearum' in silverleaf nightshade, *Solanum elaeagnifolium,* in the Lower Rio Grande Valley of Texas.
M. KUNTA (1), J. Thinakaran (2), E. Pierson (3), D. Henne (2). (1) Texas A&M University Kingsville, Weslaco, TX, U.S.A.; (2) Texas AgriLife Research, Weslaco, TX, U.S.A.; (3) Texas A&M University, College Station, TX, U.S.A.

481-P Citrus leprosis and *Brevipalpus* mites in the Lower Rio Grande Valley, TX.
B. SALAS (1), E. Braswell (1), M. B. Kunta (2). (1) APHIS USDA, Edinburg, TX, U.S.A.; (2) Texas A&M University-Kingsville Citrus Center, Weslaco, TX, U.S.A.

482-P *Tospovirus*-vector interactions in Costa Rica: Establishing the research system.
M. MONTERO-ASTÚA (1), L. Garita (1), E. Vásquez-Céspedes (1), W. Villalobos (1), L. Moreira (1). (1) Universidad de Costa Rica, San Jose, Costa Rica

483-P Transmission efficiency of different *Potato virus Y* strains affecting potato from single and mixed infections.
Y. LIN (1), J. T. Ingram (2), S. M. Gray (3). (1) Cornell University, Ithaca, NY, U.S.A.; (2) USDA, ARS, Ithaca, NY, U.S.A.; (3) USDA, ARS and Cornell University, Ithaca, NY, U.S.A.

484-P Differential transmission of two strains of *Wheat streak mosaic virus* by five wheat curl mite populations.
E. N. WOSULA (1), A. J. McMechan (1), C. de Olivera (1), G. Hein (1). (1) Univ of Nebraska - Lincoln, Lincoln, NE, U.S.A.

485-P Identifying novel interacting proteins of *Maize mosaic rhabdovirus* glycoprotein using the split-ubiquitin membrane-based yeast two hybrid system.
K. BARANDOC-ALVIAR (1), D. Rotenberg (1), A. E. Whitfield (1). (1) Kansas State University, Manhattan, KS, U.S.A.

Population Biology Genetics

486-P Geographical assessment of genetic diversity within *Clavibacter michiganensis* subsp. *nebraskensis* using BOX-PCR and AFLP techniques.
C. B. Langemeier (1), S. A. SCHLUND (2), I. V. Agarkova (2), T. A. Jackson-Ziems (2), G. R. Kruger (3). (1) University of Nebraska-Lincoln, Department of Plant Pathology; Hoegemeyer Seed, Hooper, NE, U.S.A.; (2) University of Nebraska-Lincoln, Department of Plant Pathology, Lincoln, NE, U.S.A.; (3) University of Nebraska-Lincoln, Department of Agronomy and Horticulture, North Platte, NE, U.S.A.

487-P Multilocus analysis using putative fungal effectors to describe a population of *Fusarium oxysporum* from sugar beet.
K. M. WEBB (1), P. Covey (1), B. Kuwitzky (1), M. Hanson (1). (1) USDA ARS NPA SBRU, Fort Collins, CO, U.S.A.

488-P Comparative sequence-based analysis of *Fusarium proliferatum* populations from seven maize genotypes.
M. ARIF (1), G. Busot (1), F. Iriarte (1), T. Fischer (1), J. P. Stack (1). (1) Kansas State Univ, Manhattan, KS, U.S.A.

489-P Population structure of *Geosmithia morbida*, the causal agent of thousand cankers disease of walnut trees in the United States.
M. M. Zerillo (1), J. R. IBARRA CABALLERO (1), K. E. Woeste (2), A. D. Graves (3), C. Hartel (2), J. W. Pscheidt (4), J. Tonos (2), K. D. Broders (5), W. Cranshaw (1), S. J. Seybold (6), N. A. Tisserat (1). (1) Colorado State University, Fort Collins, CO, U.S.A.; (2) Purdue University, West Lafayette, IN, U.S.A.; (3) USDA Forest Service, Albuquerque, NM, U.S.A.; (4) Oregon State University, Corvallis, OR, U.S.A.; (5) University of New Hampshire, Durham, NH, U.S.A.; (6) USDA Forest Service, Davis, CA, U.S.A.

490-P Stripe rust epidemics of wheat and barley and races of *Puccinia striiformis* identified in the United States in 2013.
A. WAN (1), X. Chen (2). (1) Washington State University, Pullman, WA, U.S.A.; (2) USDA ARS, Pullman, WA, U.S.A.

491-P Population genetic structure of the rice brown spot pathogen *Bipolaris oryzae* in Iran.
A. AHMADPOUR (1), M. Javan-Nikkhah (2), M. Naghavi (3), F. Padasht Dehkaei (4), Y. Leng (1), K. Puri (1), C. Castell-Miller (5), S. Zhong (1). (1) Department of Plant Pathology, North Dakota State University, Fargo, ND, U.S.A.; (2) Department of Plant Protection, University College of Agriculture and Natural Resources, University of Tehran, Karaj, ND, Iran; (3) Department of Biotechnology, University College of Agriculture and Natural Resources, University of Tehran, Karaj, ND, Iran; (4) Rice Research Institute of Iran, Rasht, ND, Iran; (5) Department of Plant Pathology, University of Minnesota, St Paul, MN, U.S.A.

492-P Amplification of genomic DNA of *Puccinia striiformis* f. sp. *tritici* from urediospores for population genetic analysis.
R. ZHANG (1), B. M. Wu (1), Z. Ma (1). (1) China Agricultural University, Beijing, China

493-P The population biology of the *Colletotrichum truncatum* from chili peppers in China.
Y. DIAO (1), C. Zhang (1), P. Liu (1), O. G. Mtung'e (1), X. Liu (1). (1) Department of Plant Pathology, College of Agriculture and Biotechnology, China Agricultural University, Beijing, China

494-P Population genetic analysis indicates genetic diversity of *F. virguliforme* within and between sampling locations.
J. WANG (1), J. Jacobs (1), A. Rojas (1), M. Chilvers (1). (1) Michigan State Univ, East Lansing, MI, U.S.A.

495-P Genotypic and phenotypic variation in *Puccinia striiformis* f. sp. *tritici* population in western Canada.
G. BRAR (1), G. Brar (1), R. Kutcher (1), Y. Fu (2). (1) University of Saskatchewan, Saskatoon, SK, Canada; (2) Plant Gene Resources of Canada, Agriculture and Agri-Food Canada, Saskatoon Research Centre, Saskatoon, SK, Canada

496-P Use of custom GoldenGate SNP assay to analyze global populations of *Puccinia graminis* f. sp. *tritici*.
J. L. JOHNSON (1), L. J. Szabo (2), Y. Jin (1), P. Olivera (1), M. Newcomb (1). (1) USDA-ARS, St. Paul, MN, U.S.A.; (2) USDA ARS, St. Paul, MN, U.S.A.

497-P Virulence phenotypes and genetic differentiation of *Puccinia triticina*, the wheat leaf rust pathogen, in Ethiopia.
A. FOX (1), K. Xiao (2), M. Acevedo (3), J. Kolmer (2). (1) USDA ARS, St Paul, MN, U.S.A.; (2) USDA, St Paul, MN, U.S.A.; (3) North Dakota State Univ., Fargo, ND, U.S.A.

498-P Design and evaluation of microsatellites from whole-genome transcript sequences in *Phytophthora capsici*.
C. H. PARADA ROJAS (1), L. M. Quesada-Ocampo (1). (1) Department of Plant Pathology, North Carolina State University, Raleigh, NC, U.S.A.

499-P *In silico* identification and analysis of microsatellite location and frequency in downy mildew transcriptomes.
E. C. WALLACE (1). (1) North Carolina State Univ, Raleigh, NC, U.S.A.

500-P Temporal changes in *Pseudoperonospora cubensis* field populations in MI cucumber.
R. P. NAEGELE (1), J. Kurjan (1), L. M. Quesada-Ocampo (2), M. K. Hausbeck (1). (1) Michigan State University, East Lansing, MI, U.S.A.; (2) North Carolina State University, Raleigh, NC, U.S.A.

501-P Characterization of genetic structure in Mexico populations of *Phytophthora infestans* using single sequence repeats.
J. WANG (1), M. Larsen (2), R. Gregorio-Cipriano (3), G. Rodríguez-Alvarado (3), N. J. Grunwald (4), S.P. Fernandez-Pavia (3), E. M. Goss (1). (1) University of Florida, Gainesville, FL, U.S.A.; (2) US Department of Agriculture-Agricultural Research Service, Corvallis, OR, U.S.A.; (3) Universidad Michoacana de San Nicolas de Hidalgo, IIAF, Morelia, Mexico; (4) Oregon State University, Department of Botany and Plant Pathology, US Department of Agriculture-Agricultural Research Service, Horticultural Crop Research Unit, Corvallis, OR, U.S.A.

502-P Next generation sequencing of *Plasmopara halstedii* emergent race 734 causing downy mildew on sunflower and black-eyed Susan.
Y. RIVERA (1), C. Salgado-Salazar (1), T. J. Gulya (2), N. Saied (3), J. Crouch (3). (1) USDA-ARS Systematic Mycology and Microbiology Laboratory & Rutgers University, Beltsville, MD, U.S.A.; (2) USDA-ARS Northern Crop Sciences Laboratory, Fargo, ND, U.S.A.; (3) USDA-ARS Systematic Mycology and Microbiology Laboratory, Beltsville, MD, U.S.A.

503-P Global analysis of population structure, spatial and temporal dynamics of genetic diversity of *Iris yellow spot virus* (*Tospovirus*: *Bunyaviridae*).
R. SHANMUGIAH (1), R. Iftikhar (1), S. Bag (1), M. Ashfaq (2), H. Pappu (1). (1) Washington State Univ, Pullman, WA, U.S.A.; (2) University of Guelph, Guelph, AB, Canada

PHYLLOSPHERE AND RHIZOSPHERE

504-P Dynamics of *Pseudomonas savastanoi* populations in galls and on leaves of olive in California.
E. J. FICHTNER (1), G. Kasun (2), C. DeBuse (3), W. H. Krueger (4). (1) UC ANR, Tulare, CA, U.S.A.; (2) Portland State University, Portland, OR, U.S.A.; (3) USDA ARS, Davis, CA, U.S.A.; (4) UC ANR, Orland, CA, U.S.A.

505-P Exploration of phyllosphere fungal communities of *Quercus macrocarpa* using network analysis.
R. POUDEL (1), A. Jumpponen (1), K. Garrett (1). (1) Kansas State Univ, Manhattan, KS, U.S.A.

506-P Diversity of foliar *Phytophthora* species on *Rhododendron* in Oregon nurseries.
B. J. KNAUS (1), V. J. Fieland (2), N. J. Grunwald (1). (1) USDA-ARS, Corvallis, OR, U.S.A.; (2) Oregon State University, Corvallis, OR, U.S.A.

507-P Phyllosphere envirosphere.
A. OTTESEN (1), J. White (1), S. Gorham (1), E. Reed (1), M. Newell (2), E. Burrows (1), M. Mahovic (1), E. Brown (1). (1) FDA CFSAN, College Park, MD, U.S.A.; (2) Wye Research and Education Center, Univ of Maryland, Queenstown, MD, U.S.A.

508-P WITHDRAWN

509-P Effects of carbon amendments on pathogen-inhibitory soil Streptomycetes.
L. FELICE (1), R. Dill-Macky (1), L. L. Kinkel (1). (1) University of Minnesota, St. Paul, MN, U.S.A.

510-P Prevalence and characterization of culturable acetoin-producing rhizobacteria in organic no-till vegetable production.
E. BIETILA (1), A. Charkowski (1), E. Silva (1). (1) UW Madison, Madison, WI, U.S.A.

511-P Variation in pathogen suppression among indigenous soil *Streptomyces* from natural and agricultural habitats.
L. OTTO-HANSON (1), M. Dedrick (1), L. Kinkel (1). (1) Univ of Minnesota, St Paul, MN, U.S.A.

512-P Variation in *Streptomyces* densities and inhibitory capacities from diverse natural habitats in New Zealand.
J. ANDERSON (1), D. Schlatter (1), L. Otto-Hanson (1), L. Kinkel (1). (1) University of Minnesota, Saint Paul, MN, U.S.A.

513-P Capacity of Chilean Andisol soils to induce the phenomenon of take-all decline associated with presence of 2,4-DAPG producing *Pseudomonas* spp.
E. A. MOYA-ELIZONDO (1), N. Brellenthin (1), N. L. Arismendi (1), H. A. Doussoulin (2). (1) Universidad de Concepcion, Chillan, Chile; (2) Universidad Austral de Chile, Valdivia, Chile

514-P WITHDRAWN

515-P *Fusarium* community structure and carbon metabolism phenotypes respond to grassland plant community richness and plant host.
N. LEBLANC (1), A. Essarioui (1), L. L. Kinkel (1), H. C. Kistler (2). (1) University of Minnesota, St. Paul, MN, U.S.A.; (2) USDA ARS Cereal Disease Laboratory/ University of Minnesota, St. Paul, MN, U.S.A.

516-P Role of fungi and oomycetes in marsh wetland seed bank viability.
E. CROCKER (1), E. Nelson (1). (1) Cornell University, Ithaca, NY, U.S.A.

517-P Soil microbial networks in organic and conventional tomato: Comparing long-term and transient communities by soil RNA.
K. A. GARRETT (1), L. Gomez-Montano (1), A. Jumpponen (1), M. Kennelly (1). (1) Kansas State Univ, Manhattan, KS, U.S.A.

518-P Comparison of soil bacterial communities from fields treated with anaerobic soil disinfestation located on Florida's east to west coast.
J. C. HONG (1), K. J. Martin (2), N. Kokalis-Burelle (1), D. Butler (3), E. N. Rosskopf (1). (1) USDA-ARS, Fort Pierce, FL, U.S.A.; (2) William Paterson University, Wayne, NJ, U.S.A.; (3) University of Tennessee, Knoxville, TN, U.S.A.

519-P Plant host and community diversity impact the dynamics of resource use by soil *Streptomyces*.
A. Essarioui (1), N. LEBLANC (1), H. C. Kistler (2), L. Kinkel (1). (1) University of Minnesota, St Paul, MN, U.S.A.; (2) USDA/University of Minnesota, St Paul, MN, U.S.A.

520-P Investigating the soil microbiome of two native shrubs with plant growth promoting activity in an intercropping system with millet in Senegal.
S. DEBENPORT (1), R. Bayala (2), K. Assigbetse (2), L. Chapuis-Lardy (2), R. P. Dick (3), B. McSpadden Gardener (4). (1) The Ohio State University, Ballwin, MO, U.S.A.; (2) IRD, Institut de Recherche pour le Developpement, Dakar, Senegal; (3) The Ohio State University, Columbus, OH, U.S.A.; (4) The Ohio State University, Wooster, OH, U.S.A.

521-P Impacts of crop rotation on disease-suppressive *Trichoderma* and *Streptomyces* densities.
N. ALTIER (1), A. Villar (2), P. Vaz Jauri (3), L. K. Kinkel (4), C. A. Perez (2). (1) INIA Las Brujas, Canelones, Uruguay; (2) Departamento Proteccion Vegetal, EEMAC, Facultad Agronomia, Universidad de la Republica, Uruguay, Paysandu, Uruguay; (3) INIA Las Brujas, Rincon del Colorado, Uruguay; (4) University of Minnesota, Saint Paul, MN, U.S.A.

522-P Comparison of soil microbial community between organically and conventionally managed golf courses using pyrosequencing-based metagenomics.
E. ALLAN (1), D. Manter (2), G. Jung (1). (1) University of Massachusetts Amherst, Amherst, MA, U.S.A.; (2) USDA Agricultural Research Service, Fort Collins, CO, U.S.A.

523-P Microbial community structure in the *Poa annua* rhizosphere is affected by nitrogen and potassium.
L. BEIRN (1), C. J. Schmid (1), J. W. Hempfling (1), J. A. Murphy (1), B. B. Clarke (1), J. Crouch (2). (1) Rutgers Univ, New Brunswick, NJ, U.S.A.; (2) USDA-ARS, Systematic Mycology & Microbiology Lab, Beltsville, MD, U.S.A.

Risk Assessment

524-P Factors dictating outcomes of competition between two morphotypes of *Aspergillus flavus*: *In vitro* versus *in vivo* observations.
P. SINGH (1), P. J. Cotty (2). (1) Univ of Arizona, Tucson, AZ, U.S.A.; (2) University of Arizona/ ARS-USDA, Tucson, AZ, U.S.A.

525-P Effects of temperature and moisture on infection of wheat by *Puccinia triticina* under field conditions in Kansas.
B. S. GRABOW (1), E. D. De Wolf (1). (1) Kansas State University, Manhattan, KS, U.S.A.

526-P Combined influence of airborne inoculum concentration and weather on incidence of raspberry gray mould.
O. CARISSE (1), A. Lefebvre (2), D. Tremblay (1). (1) Agric and AgriFood Canada, St-Jean-sur-Richelieu, QC, Canada; (2) Agric and AgriFood Canada, St-Jean-sur-Richelieu, QC, Canada

527-P Longevity of *Uromyces transversalis* urediniospores under various environmental conditions.
M. R. BONDE (1), S. E. Nester (2), C. L. Palmer (3), J. M. Revell (4). (1) USDA ARS, Frederick, MD, U.S.A.; (2) USDA-ARS, FDWSRU, Frederick, MD, U.S.A.; (3) IR-4, Rutgers University, Princeton, NJ, U.S.A.; (4) Hood College, Frederick, MD, U.S.A.

528-P Susceptibility of crown buds to *Podosphaera macularis* and its association with perennation of the hop powdery mildew fungus.
D. H. GENT (1), G. Grove (2), M. E. Nelson (2), C. Probst (2), M. Twomey (3), S. Wolfenbarger (3). (1) USDA ARS NFSPRC, Corvallis, OR, U.S.A.; (2) Washington State University Irrigated Agriculture Research and Extension Center, Prosser, WA, U.S.A.; (3) Oregon State University Department of Botany and Plant Pathology, Corvallis, OR, U.S.A.

529-P Use of pre-plant soil concentrations of root knot nematode DNA as a predictor of potato tuber damage.
S. J. PETHYBRIDGE (1), F. S. Hay (2), S. J. Jones (2), K. Ophel-Keller (3). (1) The New Zealand Institute for Plant & Food Research Limited, Christchurch, New Zealand; (2) Tasmanian Institute of Agriculture, University of Tasmania, Burnie, Australia; (3) South Australian Research and Development Institute, Adelaide, Australia

530-P *Bremia lactucae* infection efficiency under field conditions is modulated by leaf wetness duration and temperature.
M. LAMINE FALL (1), C. Beaulieu (1), H. Van Der Heyden (2), O. Carisse (3). (1) University of Sherbrooke, Sherbrooke, QC, Canada; (2) Compagnie de Recherche Phytodata Inc, Sherrington, QC, Canada; (3) Agric & Agri-Food Canada, St-Jean-sur-Richelieu, QC, Canada

Systematics/Evolution

531-P WITHDRAWN

532-P WITHDRAWN

533-P The origins of emerging populations of the Brachiaria collar rot pathogen (*Rhizoctonia solani* AG-1 IA) from Brazilian Amazon and Colombian Llanos.
P. C. CERESINI (1), E. Chavarro Mesa (2), L. M. Ramos Molina (3), M. Zala (4), B. A. McDonald (4). (1) UNESP Univ Estadual Paulista, Ilha Solteira, Brazil; (2) UNESP Univ Estadual Paulista, Jaboticabal, Brazil; (3) UNESP Univ Estadual Paulista, Jaboticabal, Brazil; (4) ETH Zurich, Zurich, Switzerland

534-P Species recognition and evolutionary history of *Phytophthora infestans* in South America.
S. RESTREPO (1), M. Mideros (1), M. Cardenas (1), S. Cañas-Duarte (1), D. Botero (1), L. Gonzalez (1), D. Riano-Pachon (2). (1) Universidad de Los Andes, Bogota, Colombia; (2) Laboratorio Nacional de Ciencia e Tecnologia do Bioetanol (CTBE), Centro Nacional de Pesquisa em Energia e Materiais (CNPEM), Campinas, Brazil

535-P New insights into the systematics of *Pythium* Pringsheim.
C. F. SPIES (1), A. W. de Cock (2), S. L. Glockling (3), C. Chen (4), C. A. Lévesque (1). (1) Agriculture and Agri-Food Canada, Ottawa, ON, Canada; (2) Centraalbureau voor Schimmelcultures, Utrecht, Netherlands; (3) Eastbourne, United Kingdom; (4) National Chung Hsing University, Taichung, Taiwan

536-P Multilocus phylogeny of the *Pythium irregulare* complex.
C. D. GARZON (1), P. A. Garrido (1), J. E. Weiland (2), F. J. Flores (1), M. Herrero (3), G. W. Moorman (4), M. L. Daughtrey (5), A. Levesque (6). (1) Oklahoma State Univ, Stillwater, OK, U.S.A.; (2) USDA ARS, Corvallis, OR, U.S.A.; (3) Bioforsk, As, Norway; (4) Pennsylvania State University, University Park, PA, U.S.A.; (5) Cornell University, Riverhead, NY, U.S.A.; (6) Agriculture and Agri-Food Canada, Ottawa, Canada

537-P Constructing a new phylogeny for the genus *Phytophthora*.
X. YANG (1), B. Tyler (2), C. Hong (3). (1) Virginia Tech, Virginia Beach, VA, U.S.A.; (2) Oregon State University, Corvallis, OR, U.S.A.; (3) Virginia Tech Hampton Roads AREC, Virginia Beach, VA, U.S.A.

Biochemistry and Cell Biology

538-P Siderophore-mediated iron uptake is essential for full virulence in the bacterial phytopathogen, *Pantoea stewartii* subsp. *stewartii*.
L. BURBANK (1), C. Roper (1). (1) Univ of California, Riverside, Riverside, CA, U.S.A.

539-P *Pseudomonas syringae* benefits from host-derived carnitine during spermosphere colonization.
M. MILLICAN (1), A. Klein (1), Y. Lee (1), G. A. Beattie (1). (1) Iowa State University, Ames, IA, U.S.A.

540-P Characterization of basal resistance of sour orange (*Citrus aurantium*) against *Xanthomonas citri* subsp. *citri* and '*Candidatus* Liberibacter asiaticus'.
M. PITINO (1), M. Pitino (2), Y. Duan (2). (1) USDA ARS, Fort Pierce, FL, U.S.A.; (2) USDA, Fort Pierce, FL, U.S.A.

541-P Potential role of oxalic acid in pathogenicity of *Sclerotinia homoeocarpa* on creeping bentgrass and various model hosts.
R. RIOUX (1). (1) NewLeaf Symbiotics, St. Louis, MO, U.S.A.

542-P Cytokinin levels correlate with virulence in *Ustilago maydis* dikaryon and solopathogenic strain infections.
E. N. MORRISON (1), R. Emery (1), B. J. Saville (1). (1) Trent University, Peterborough, ON, Canada

543-P Identification of two 6-methoxyflavonoid phytoanticipins from *Prunus maackii*.
L. J. KANISZEWSKI (1), R. Hammerschmidt (1). (1) Michigan State Univ, East Lansing, MI, U.S.A.

544-P Association between fumonisin B1 production, maize colonization and glucanase activity suppression in *Fusarium verticillioides*.
J. PLASENCIA (1), E. Galeana-Sanchez (2), D. Sanchez-Rangel (2). (1) Univ Nacional Autonoma de Mexico, Mexico DF, Mexico; (2) UNAM, Mexico City, Mexico

545-P Resistance in mango against infection by *Ceratocystis fimbriata*.
L. ARAUJO (1), W. M. Bispo (1), I. S. Cacique (1), W. R. Moreira (1), F. A. Rodrigues (1). (1) Vicosa Federal Univ, Vicosa, Brazil

546-P Transformation of *Fusarium secorum*, a novel pathogen causing Fusarium yellowing decline of sugar beet.
Z. BIAN (1), G. Secor (1), M. D. Bolton (2). (1) North Dakota State Univ, Fargo, ND, U.S.A.; (2) USDA-ARS, Fargo, ND, U.S.A.

547-P Cellular localization of proteins involved in trichothecene biosynthesis in *Fusarium graminearum*.
K. L. BROZ (1), H. C. Kistler (2). (1) USDA ARS Cereal Disease Laboratory, St. Paul, MN, U.S.A.; (2) USDA ARS Cereal Disease Laboratory/ University of Minnesota, St. Paul, MN, U.S.A.

548-P Mcg1, a NDT80/PhoG protein, controls completion of tumour maturation, teliospore development and meiosis in *Ustilago maydis*.
C. DOYLE (1), H. Cheung (1), K. L. Spence (1), B. J. Saville (1). (1) Trent University, Peterborough, ON, Canada

549-P Characterization of apoptotic-like cell death players in *Aspergillus nidulans*.
M. BREUNIG (1), S. Jain (1), M. Kabbage (1). (1) University of Wisconsin-Madison, Madison, WI, U.S.A.

550-P Calcium plays a key role in mediating the *RMc1(blb)* resistance response against *Meloidogyne chitwoodi* in potato.
A. A. ELLING (1), L. J. Davies (1), C. R. Brown (2). (1) Department of Plant Pathology, Washington State University, Pullman, WA, U.S.A.; (2) USDA-ARS, Prosser, WA, U.S.A.

551-P Eicosapolyenoic fatty acids induce expression of 9-oxylipin pathway genes and resistance in tomato to *Phytophthora capsici*.
S. M. ROBINSON (1), K. Dehesh (1), R. M. Bostock (1). (1) University of California, Davis, CA, U.S.A.

Molecular Aspects of Effectors and Their Host Targets

552-P Integration host factors are required for sigma 54-dependent *hrpL* gene expression and virulence in *Erwinia amylovora*.
J. LEE (1), V. Ancona (2), Y. Zhao (2). (1) University of Illinois at Urban-Champaign, Urbana, IL, U.S.A.; (2) Univ of Illinois, Urbana, IL, U.S.A.

553-P A Sec-dependent periplasmic protein VrpA is required for efficient secretion of type III secretion system and virulence in *Xanthomonas citri*.
X. ZHOU (1), N. Wang (1). (1) Univ of Florida, Lake Alfred, FL, U.S.A.

554-P Regulation of a *Ca. Liberibacter asiaticus* prophage late gene promoter by extracts of citrus and periwinkle leaves, and Asian citrus psyllid.
M. JAIN (1), L. A. Fleites (1), D. W. Gabriel (1). (1) Univ of Florida, Gainesville, FL, U.S.A.

555-P A novel rice resistance phenotype to *Xanthomonas oryzae* TAL effectors does not require the effector transcriptional activation domain.
L. TRIPLETT (1), V. Verdier (2), M. Alexander (3), S. Cohen (1), J. Craven (1), A. Bogdanove (3), J. Leach (1). (1) Colorado State Univ, Fort Collins, CO, U.S.A.; (2) IRD, Montpelier, France; (3) Cornell University, Ithaca, NY, U.S.A.

556-P The bacterial alarmone ppGpp serves as a global signal to regulate type III secretion system and other virulence factors in plant pathogenic bacteria.
T. CHATNAPARAT (1), V. Ancona (1), Y. Zhao (1). (1) Univ of Illinois, Urbana, IL, U.S.A.

557-P Identification and characterization of unique genes encoding non-ribosomal peptide synthetases in the cereal fungal pathogen *Bipolaris sorokiniana*.
Y. LENG (1), S. Zhong (1). (1) North Dakota State University, Fargo, ND, U.S.A.

558-P Site-directed mutagenesis and immunolocalization of SnTox1, a necrotrophic effector produced by the wheat pathogen *Parastagonospora nodorum*.
Y. KIM (1), Z. Liu (1), J. D. Faris (2), T. L. Friesen (2). (1) North Dakota State University, Fargo, ND, U.S.A.; (2) USDA-ARS, Northern Crop Science Laboratory, Cereal Crops Research Unit, Fargo, ND, U.S.A.

559-P Identification and cloning of *avr4* gene from *Cercospora kikuchii*.
J. REZENDE (1), Z. Chen (1). (1) Louisiana State Univ, Baton Rouge, LA, U.S.A.

560-P Polymorphic *avr* genes in isolates of two races of *Passalora fulva* from Argentina.
P. A. BALATTI (1), R. Medina (1), C. Rollan (1), S. M. Lopez (2), E. M. Franco (1), M. C. Saparrat (3), B. L. Ronco (1). (1) Centro de Investigaciones de Fitopatologia Facultad de Ciencias Agrarias y Forestales Universidad Nacional de La Plata, La Plata, Argentina; (2) Facultad de cienciasAgrarias y Forestales, La Plata, Argentina; (3) INFIVE-CONICET Facultad de Ciencias Agrarias y Forestales, Universidad Nacional de La Plata, La Plata, Argentina

561-P Manipulation of chromatin configuration for suppression of host immunity by zinc finger effectors (MoZFEs) of rice blast pathogen.
Y. CHEN (1), Y. Chen (2), W. Liu (2), Y. Yang (2). (1) Penn State, Harrisburg, PA, U.S.A.; (2) Penn State, State College, PA, U.S.A.

562-P Using RNAseq to identify candidate effectors in the Septoria canker-poplar pathosystem.
J. M. LEBOLDUS (1), K. L. Dunnell (1), R. S. Brueggeman (1). (1) North Dakota State University, Fargo, ND, U.S.A.

563-P Identification and characterization of the SnTox6-*Snn6* interaction in the *Parastagonospora nodorum* - wheat pathosystem.
Y. GAO (1), J. D. Faris (2), Z. Liu (1), S. S. Xu (2), T. L. Friesen (2). (1) Department of Plant Pathology, North Dakota State University, Fargo, ND, U.S.A.; (2) USDA-ARS, Northern Crop Science Laboratory, Cereal Crops Research Unit, Fargo, ND, U.S.A.

564-P Structural and functional diversity of CLAVATA3/ESR (CLE)-like genes from *Globodera* nematode species.
S. CHEN (1), P. Lang (1), X. Wang (2). (1) Department of Plant Pathology and Plant-Microbe Biology, Cornell University, Ithaca, NY, U.S.A.; (2) USDA-ARS, Robert W. Holley Center for Agriculture and Health, Ithaca, NY, U.S.A.

565-P Differential expression of effector genes and proteomic profiles distinguish highly and weakly aggressive isolates of the late blight pathogen.
M. R. Islam (1), H. Alkher (1), C. Rampitsch (2), M. Bezzahou (1), C. Godee (1), A. Dakouri (1), L. R. Adam (1), F. DAAYF (1). (1) Univ of Manitoba, Winnipeg, MB, Canada; (2) Cereal Research Centre,Agriculture and Agrifood Canada, Winnipeg, MB, Canada

Molecular Plant-Microbe Interaction

567-P Plant-induced gene expression in a rice endophyte belonging to the group of plant beneficial *Burkholderia*.
B. G. COUTINHO (1), V. Venturi (1). (1) ICGEB, Trieste, Italy

568-P Identification of host-microbe interaction factors in the soft rot pathogen, *Pectobacterium carotovorum*, using supervised machine learning.
I. RUBIO (1), B. Ma (1), A. O. Charkowski (1), N. T. Perna (1). (1) University of Wisconsin-Madison, Madison, WI, U.S.A.

569-P Functional analysis of CfaR, a PAS-LuxR family regulator of COR-like metabolite production in the common scab pathogen *Streptomyces scabies*.
Z. CHENG (1), D. R. Bignell (1). (1) Memorial University of Newfoundland, St. John's, NF, Canada

570-P Characterization of an RTX-like toxin in virulence of *Pantoea stewartii* subsp. *stewartii*.
K. M. WILLIAMS (1), M. Roper (1), L. Burbank (1), S. von Bodman (2). (1) University of California-Riverside, Riverside, CA, U.S.A.; (2) National Science Foundation , Arlington, VA, U.S.A.

571-P Inactivation of *rsmD* of the soft rotting *Pectobacterium atrosepticum* leads to overproduction of exoenzymes and hypervirulence.
K. DUMENYO (1), C. M. Kersey (2), B. Hageman (1). (1) Tennessee State Univ, Nashville, TN, U.S.A.; (2) Department of Biological, Physical, and Human Sciences, Freed Hardeman University, Henderson, TN, U.S.A.

572-P Impact of cyclic lipopeptide of *Bacillus* sp. for disease suppression against *Fusarium* soil-borne disease.
K. YOKOTA (1). (1) Tokyo University of Agriculture, Tokyo, Japan

573-P Molecular study of the sucrose non-fermenting protein kinase 1 gene in the canola blackleg pathogen *Leptosphaeria maculans*.
J. FENG (1), H. Zhang (2), S. Hwang (1), S. E. Strelkov (3). (1) Alberta Agriculture and Rural Development, Edmonton, AB, Canada; (2) The Institute of Vegetables and Flowers, Chinese Academy of Agricultural Sciences, Beijing, AB, China; (3) University of Alberta, Edmonton, AB, Canada

574-P WITHDRAWN

575-P *FvSNF1*, the protein kinase gene in *Fusarium virguliforme*, is required for cell wall-degrading enzyme expression and virulence on soybean.
K. T. ISLAM (1), J. Bond (1), A. M. Fakhoury (1). (1) Southern Illinois University, Carbondale, IL, U.S.A.

576-P GATA-dependent nitrogen acquisition strategies promote rice infection by the blast fungus *Magnaporthe oryzae*.
M. R. MARROQUIN-GUZMAN (1), R. A. Wilson (1). (1) Univ of Nebraska, Lincoln, NE, U.S.A.

577-P Functional analysis of potential pathogenicity determinants in *Verticillium dahliae*.
X. ZHU (1), M. R. Islam (1), L. Adam (1), F. Daayf (1). (1) Univ of Manitoba, Winnipeg, MB, Canada

578-P WITHDRAWN

579-P Study on the CR811 gene present exclusively in pathotype 5 of the canola clubroot pathogen *Plasmodiophora brassicae*.
H. ZHANG (1), J. Feng (2), S. Hwang (2), S. E. Strelkov (3). (1) The Institute of Vegetables and Flowers, Chinese Academy of Agricultural Sciences, Beijing, AB, China; (2) Alberta Agriculture and Rural Development, Edmonton, AB, Canada; (3) University of Alberta, Edmonton, AB, Canada

580-P Regulation of the mevalonate pathway by symbiotic receptor-like kinases and its role in early symbiotic signaling.
M. VENKATESHWARAN (1), D. Jayaraman (2), B. K. Riely (3), E. Larrainzar (3), D. R. Cook (3), J. Ane (2). (1) School of Agriculture, University of Wisconsin-Platteville, Platteville, WI, U.S.A.; (2) Department of Agronomy, University of Wisconsin-Madison, Madison, WI, U.S.A.; (3) Department of Plant Pathology, University of California-Davis, Davis, CA, U.S.A.

581-P Root-knot nematode parasitism suppresses host gene silencing.
E. WALSH (1), C. G. Taylor (1). (1) Ohio State Univ, Wooster, OH, U.S.A.

582-P WITHDRAWN

583-P The melon *Prv* gene conferring PRSV resistance is a member of a TIR-NBS-LRR gene pair expressing multiple splice variants.
A. AMITZUR (1), M. Normantovich (1), I. Kovalski (1), R. Perl-Treves (1). (1) Bar-Ilan University, Ramat Gan, Israel

584-P Context dependency of mutation in P3 of *Soybean mosaic virus* required for gain of virulence on *Rsv4*-genotype soybeans.
M. HAJIMORAD (1), Y. Wang (1), B. Khatabi (1). (1) University of Tennessee, Department of Entomology & Plant Pathology, Knoxville, TN, U.S.A.

585-P Screening of *Pineapple mealy bug wilt associated virus* (PMWaVs) genome for suppressors of gene silencing.
K. K. DEY (1), W. Borth (2), M. Melzer (2), J. Hu (2), M. Wang (3). (1) University of Hawaii at Manoa, Honolulu, HI, U.S.A.; (2) University of Hawaii, Honolulu, HI, U.S.A.; (3) Hawaii Agricultural Research Center, Honolulu, HI, U.S.A.

586-P A single amino acid substitution in the movement protein alters the mechanical transmissibility of *Tomato leaf curl New Delhi Begomovirus*.
Y. Zheng (1), C. Lee (1), Y. Lin (1), C. Chan (1), F. JAN (1). (1) Department of Plant Pathology, National Chung Hsing University, Taichung, Taiwan

587-P WITHDRAWN

588-P Interaction between *Cassava brown streak virus* VPg and cassava eIF4Es.
Z. XIONG (1), S. Shi (1), M. Mandel (1), T. Amuge (2), M. Ferguson (2), P. Zhang (3), S. Rounsley (4). (1) School of Plant Sciences, University of Arizona, Tucson, AZ, U.S.A.; (2) International Institute of Tropical Agriculture, Nairobi, Kenya; (3) Institute of Plant Physiology and Ecology, Chinese Academy of Sciences, Shanghai, China; (4) Dow Agrosciences, Indianapolis, IN, U.S.A.

580-P WITHDRAWN

590-P Functional analysis of *Cowpea mild mottle virus* triple gene block protein 1 and cysteine-rich protein as potential RNA-silencing suppressors.
S. L. CARVALHO (1), D. F. Milanesi (1), C. M. Carvalho (1). (1) Universidade Federal de Vicosa, Vicosa, Brazil

Plant Defense Responses

591-P *Ralstonia solanacearum* degrades the key plant immune signal, salicylic acid, during tomato infection.
T. M. LOWE (1), J. M. Jacobs (2), F. Ailloud (3), C. Allen (1). (1) Univ of Wisconsin, Madison, WI, U.S.A.; (2) IRD, Montpellier, France; (3) CIRAD, Reunion Island, France

592-P Plant ferredoxin-like protein enhances disease resistance against bacterial soft rot through intensifying PAMP-triggered immunity.
Y. LIN (1), Y. Su (2), C. Hong (2). (1) National Pingtung University of Science and Technology, Pingtung, Taiwan; (2) Department of Plant Medicine, National Pingtung University of Science and Technology, Pingtung, Taiwan

593-P A feedback regulatory loop between G3P, DIR1 and AZI1 mediates azelaic-acid-induced systemic immunity.
J. M. SOARES (1), K. Yu (1), M. K. Mandal (1), A. Kachroo (1), P. Kachroo (1). (1) University of Kentucky, Lexington, KY, U.S.A.

594-P WITHDRAWN

595-P Understanding genome-wide defense response gene regulation to improve crop disease resistance.
B. TONNESSEN (1), J. E. Leach (1). (1) Colorado State Univ, Fort Collins, CO, U.S.A.

596-P Characterization of resistance genes to rice blast fungus *Magnaporthe oryzae* in a "green revolution" rice variety.
Y. LIU (1), Y. Jia (2), X. Qi (3), K. M. Olsen (3), A. Caicedo (4). (1) USDA-Agricultural Research Service Dale Bumpers National Rice Research Center, Stuttgart, AR, U.S.A.; (2) USDA Agricultural Research Service Dale Bumpers National Rice Research Center, Stuttgart, AR, U.S.A.; (3) Washington University in St. Louis, Biology Department, St. Louis, MO, U.S.A.; (4) University of Massachusetts Amherst, Biology Department, Amherst, MA, U.S.A.

597-P Unraveling stem rust resistance in *Brachypodium distachyon*.
M. FIGUEROA (1), C. Castell-Miller (1), S. Gordon (2), D. F. Garvin (3), S. Filichkin (4), S. Alderman (5), J. Vogel (2), T. Mockler (6), W. Pfender (5). (1) University of Minnesota, St. Paul, MN, U.S.A.; (2) USDA, ARS, PWA, WRRC-GGD, Albany, CA, U.S.A.; (3) USDA ARS, St. Paul, MN, U.S.A.; (4) Oregon State University, Corvallis, OR, U.S.A.; (5) USDA ARS Forage Seed and Cereal Research, Corvallis, OR, U.S.A.; (6) Donald Danforth Plant Science Center, St. Louis, MO, U.S.A.

598-P The role of soybean NADPH oxidases in resistance to Sclerotinia stem rot.
A. RANJAN (1), D. L. Smith (1), M. Kabbage (1). (1) University of Wisconsin Madison, Madison, WI, U.S.A.

599-P Molecular strategies employed by pea cultivars during the interaction with white mold *Sclerotinia sclerotiorum*.
P. C. FERREIRA DOS SANTOS (1), X. Zhuang (1), C. Foster (1), A. Rojas (1), J. Wang (1), K. McPhee (2), T. E. Coram (3), M. Chilvers (1). (1) Michigan State University, East Lansing, MI, U.S.A.; (2) North Dakota State Univ, Fargo, ND, U.S.A.; (3) Dow AgroSciences LLC, Indianapolis, IN, U.S.A.

600-P Defense responses induced by acibenzolar-S-methyl in cape gooseberry (*Physalis peruviana*) against *Fusarium oxysporum*.
M. X. RODRIGUEZ-BOCANEGRA (1), I. M. Ramos-Pena (1), C. E. Carvajal-Arias (1), J. S. Montana-Lara (1), P. Jimenez (2), S. Restrepo (3). (1) Pontificia Universidad Javeriana, Bogota, Colombia; (2) Universidad Militar Nueva Granada, Bogota, Colombia; (3) Universidad de los Andes, Bogota, Colombia

601-P Photosynthetic performance and carbohydrate metabolism of mango cultivars with different levels of resistance to *Ceratocystis fimbriata* infection.
W. M. BISPO (1), L. Araujo (1), R. T. Avila (1), F. M. DaMatta (1), F.A. Rodrigues (1). (1) Universidade Federal de Vicosa, Vicosa, Brazil

602-P Pathogen-induced alterations in the antioxidative system of mango cultivars with different levels of resistance to *Ceratocystis fimbriata* infection.
F. A. RODRIGUES (1), W. M. Bispo (1), L. Araujo (1), M. B. Cardona (1), I. S. Cacique (1), F. M. DaMatta (1). (1) Universidade Federal de Vicosa, Vicosa, Brazil

603-P Identification of defense-related genes in buffalograss associated with *Curvularia inaequalis* infection using high throughput sequencing.
B. S. AMARADASA (1), K. Amundsen (1). (1) University of Nebraska-Lincoln, Lincoln, NE, U.S.A.

604-P Analyzing the role of constitutive XEGIP expression on limiting potato late blight, caused by *Phytophthora infestans*.
R. JONES (1). (1) USDA ARS, Beltsville, MD, U.S.A.

606-P Modification of seed germination and induction of defense response of plants through cold atmospheric plasma technology.
S. CHO (1), Y. Lee (1), Y. Jeon (2). (1) Andong National University, Andong, Korea; (2) Andong National University, Gyeongbuk, Korea

607-P Host-dependent symptom development as affected by *Tomato bushy stunt virus* encoded silencing suppressor.
A. AKBASSOVA (1), G. Mukiyanova (1), M. Sutula (1), M. Pozo (2), R. Omarov (1). (1) L.N. Gumilyov Eurasian National University, Astana, Kazakhstan; (2) Estacion Experimental del Zaidin (CSIC), Granada, Spain

608-P Effects of gene silencing suppressors on *Potato virus X* (PVX) and *Potato leafroll virus* (PLRV) infection in two *Nicotiana* species.
H. JU (1), P. Phat (1), G. Youn (1). (1) Chonbuk Natl Univ, Jeonju-city Chonbuk, South Korea

609-P Double-stranded RNA-binding protein 4 is required for resistance signaling against viral and bacterial pathogens.
G. LIM (1), S. Zhu (1), K. Yu (1), A. Kachroo (2), P. Kachroo (1). (1) Department of Plant Pathology, University of Kentucky, Lexington, KY, U.S.A.; (2) Department of Plant Pathology, University of Kentucky, Lexington, KY, U.S.A.

Proteomics/Metabolomics/Genomics

610-P *tepR*: A new *luxO*-type regulatory gene of the rice pathogenic bacterium, *Burkholderia glumae*.
S. OSTI (1), I. K. Barphagha (1), J. Ham (2). (1) Louisiana State University Agricultural Center, Baton Rouge, LA, U.S.A.; (2) Louisiana State University, Baton Rouge, LA, U.S.A.

611-P Genome-wide identification of molecular markers for partial resistance of rice to bacterial panicle blight using high-throughput sequencing data.
B. K. SHRESTHA (1), H. S. Karki (2), J. Ham (1). (1) Louisiana State University Agricultural Center, Baton Rouge, LA, U.S.A.; (2) Purdue University, West Lafayette, IN, U.S.A.

612-P Potato psyllid and Asian citrus psyllid acquisition patterns, in relation to gene expression profiles.
J. K. BROWN (1), T. Fisher (1). (1) Univ of Arizona, Tucson, AZ, U.S.A.

613-P Evaluation of a metagenomics approach for the early detection of *Salmonella* in cilantro.
K. G. JARVIS (1), C. J. Grim (2), J. J. Beaubrun (1), L. Ewing (1), K. Dudley (1), A. Ottesen (1), C. Wang (3), J. Pettengill (3), E. Brown (3), D. Hanes (1). (1) FDA, Laurel, MD, U.S.A.; (2) Oak Ridge Institute for Science and Technology, Oak Ridge, TN, U.S.A.; (3) FDA, College Park, MD, U.S.A.

614-P Functional characterization of the holin and endolysin of '*Candidatus* Liberibacter asiaticus' bacteriophage SC1 and validation of a late gene promoter.
L. A. FLEITES (1), S. Zhang (2), M. Jain (1), D. W. Gabriel (1). (1) Univ of Florida, Gainesville, FL, U.S.A.; (2) Integrated Plant Genetics, Gainesville, FL, U.S.A.

615-P Molecular characterization of genes regulating conidiogenesis and metabolism in *Fusarium graminearum*.
H. A. OSUNGA BUYU (1), R. L. Hirsch (1), Z. O. Bilton (1), A. B. Lum (1), C. M. Rivera (1), J. E. Flaherty (1). (1) Coker College, Hartsville, SC, U.S.A.

616-P Identification and characterization of genes regulating conidiogenesis in the maize pathogen *Fusarium graminearum*.
R. L. HIRSCH (1), A. N. Thompkins (1), S. L. Atkinson (1), J. E. Flaherty (1). (1) Coker College, Hartsville, SC, U.S.A.

617-P Gene clusters *FDB1* and *FDB2* in *Fusarium verticillioides* were acquired through multiple horizontal gene transfer events.
J. E. Stewart (1), Z. Abdo (2), A. E. GLENN (3). (1) University of Georgia, Department of Plant Pathology, Athens, GA, U.S.A.; (2) USDA, ARS, South Atlantic Area, Athens, GA, U.S.A.; (3) USDA, ARS, Toxicology & Mycotoxin Res. Unit, Athens, GA, U.S.A.

618-P Gene regulatory networks for resistance in maize to ear rots and to aflatoxin accumulation.
B. MUSUNGU (1), G. O'brien (2), R. Brown (3), D. Bhatnagar (3), G. Payne (2), M. Geisler (1), A. M. Fakhoury (1). (1) Southern Illinois University, Carbondale, IL, U.S.A.; (2) North Carolina State University, Raleigh, NC, U.S.A.; (3) USDA, New Orleans, LA, U.S.A.

619-P Assembly and annotation of the wildrice transcriptome challenged by *Cochliobolus miyabeanus*, the fungal brown spot pathogen.
C. CASTEL-MILLER (1), J. Gutierrez-Gonzalez (2), M. Figueroa (1), D. F. Garvin (2), D. A. Samac (2). (1) University of Minnesota, St. Paul, MN, U.S.A.; (2) USDA ARS, St. Paul, MN, U.S.A.

620-P Host-induced gene silencing of *Puccinia triticina* genes shows enhanced resistance to leaf rust disease in transgenic wheat plants.
V. PANWAR (1), M. Jordan (2), B. McCallum (2), P. Fobert (1), G. Bakkeren (3). (1) Plant Biotechnology Institute, National Research Council Canada, Saskatoon, SK, Canada; (2) Cereal Research Centre, Agriculture and Agri-Food Canada, Winnipeg, MB, Canada; (3) Pacific Agri-Food Research Centre, Agriculture and Agri-Food Canada, Summerland, BC, Canada

621-P Dry edible bean exhibits variation in metabolic and hormone profiles associated with partial resistance to white mold, *Sclerotinia sclerotiorum*.
F. M. ROBISON (1), H. F. Schwartz (1), A. L. Heuberger (1), J. E. Prenni (1), M. A. Brick (1). (1) Colorado State University, Fort Collins, CO, U.S.A.

622-P Transcriptomic profiling of soybean-*Fusarium virguliforme* interactions suggests a role of the pathogen and its toxins during the disease development.
O. RADWAN (1). (1) University of Illinois at Urbana-Champaign, Urbana, IL, U.S.A.

623-P Silencing of a phosphopantetheinyl transferasegene (*SsPpt1*) affects multiple developmental pathways and pathogenicity in *Sclerotinia sclerotiorum*.
Z. GAO (1), X. Li (1), H. Zhang (1), Y. Pan (1). (1) Anhui Agric Univ, Hefei, China

624-P Characterization of dry bean transcriptome in response to soybean cyst nematode infection.
S. JAIN (1), K. Chittem (1), J. Richards (1), R. Brueggeman (1), B. Nelson (1). (1) Department of Plant Pathology, North Dakota State University, Fargo, ND, U.S.A.

625-P Genomic and transcriptional profile analysis of pectin methylesterase-coding genes of *Phytophthora sojae*.
M. OSPINA-GIRALDO (1), B. Horowitz (1). (1) Lafayette College, Easton, PA, U.S.A.

626-P Transcriptome analysis of spinach differential cultivars for downy mildew pathogens.
C. FENG (1), B. Bluhm (1), J. Tipton (1). (1) Univ of Arkansas, Fayetteville, AR, U.S.A.

627-P Drought-responsive protein profiles reveal diverse defense pathways in corn kernels under field drought stress.
L. Yang (1), T. Jiang (2), B. Scully (3), D. Lee (4), R. Kemerait (1), S. Chen (5), B. GUO (3). (1) University of Georgia, Department of Plant Pathology, Tifton, GA, U.S.A.; (2) Northeast Forestry University, Key Laboratory of Forest Tree Genetic Improvement and Biotechnology of Ministry of Education, Harbin, China; (3) USDA-ARS, Crop Protection and Management Research Unit, Tifton, GA, U.S.A.; (4) University of Georgia, Department of Crop and Soil Sciences, Tifton, GA, U.S.A.; (5) University of Florida, Department of Biology, Genetics Institute, and Plant Molecular & Cellular Biology Program, Gainesville, FL, U.S.A.

628-P Characterization of virus-derived siRNAs from RBSDV-resistant and susceptible rice genotypes by deep sequencing.
Z. y. JUN (1), L. Ying (2). (1) Institute of Plant Protection, Jiangsu Academy of Agricultural Sciences, Nanjing, China; (2) Jiangsu Academy of Agricultural Sciences, Nanjing, China

629-P Deep sequencing reveals *Cotton leaf curl Gezira* helper virus and sub-viral DNAs in weed, ornamental, and cultivated crops throughout Arabia.
A. IDRIS (1), M. A. Al-Saleh (2), J. K. Brown (3). (1) King Abdullah University of Science and Technology, Thuwal, Saudi Arabia; (2) King Saud University, Riyadh, Saudi Arabia; (3) University of Arizona, School of Plant Sciences, Tucson, AZ, U.S.A.

630-P Identification of interacting regions of the movement protein and nucleocapsid protein of two distinct tospoviruses.
D. Tripathi (1), G. Raikhy (1), H. PAPPU (1). (1) Washington State Univ, Pullman, WA, U.S.A.

631-P Three dimensional structural prediction of the silencing suppressor protein coded by *Tomato spotted wilt virus* (*Tospovirus:Bunyaviridae*).
H. PAPPU (1), Y. Zhai (1), B. Adhikari (2), J. Cheng (2). (1) Washington State Univ, Pullman, WA, U.S.A.; (2) Univeristy of Missouri, Columbia, MO, U.S.A.

632-P Interaction map of *Tomato spotted wilt virus*-specific small RNAs and the tomato transcriptome.
R. SHANMUGIAH (1), N. Mitter (2), H. Pappu (1). (1) Washington State Univ, Pullman, WA, U.S.A.; (2) University of Queensland, St. Lucia, Australia

633-P Plant miRNAome and soybean-infecting *Begomovirus* genomes: Identification of innate plant small RNAs in antiviral resistance.
R. SHANMUGIAH (1), H. Pappu (1). (1) Washington State Univ, Pullman, WA, U.S.A.

634-P Comparative analysis of virus-specific small RNA profiles of three biologically distinct strains of *Potato virus Y.*
H. PAPPU (1), K. Naveed (1), N. Mitter (2), A. Harper (1), A. Dhingra (1). (1) Washington State Univ, Pullman, WA, U.S.A.; (2) University of Queensland, St. Lucia, Australia

635-P Molecular characterization of genomic components of *Potato mop-top virus* from Washington State.
R. SHANMUGIAH (1), G. Raikhy (1), C. Brown (2), H. Pappu (1). (1) Washington State Univ, Pullman, WA, U.S.A.; (2) USDA ARS, Prosser, WA, U.S.A.

Networking

636-P Pennsylvania Ag Resource Centers: A joint initiative between Penn State University and the Pennsylvania Department of Agriculture.
S. R. MAY (1). (1) Penn State Univ, University Park, PA, U.S.A.

Outreach and Engagement

637-P WITHDRAWN

638-P Participatory evaluation of potato varieties on organic farms: opportunities for education and research.
R. K. GENGER (1), D. I. Rouse (1), R. L. Groves (1), S. H. Jansky (2), A. O. Charkowskvi (1). (1) University of Wisconsin-Madison, Madison, WI, U.S.A.; (2) University of Wisconsin-Madison/USDA-ARS, Madison, WI, U.S.A.

639-P Surveying high tunnel tomato growers in Wisconsin to identify extension and disease control needs.
K. CLEVELAND (1), A. Gevens (1). (1) Univ of Wisconsin, Madison, WI, U.S.A.

640-P Expert elicitation: a complement to traditional experimental data.
S. THOMAS-SHARMA (1), G. Forbes (2), K. Garrett (1). (1) Kansas State Univ, Manhattan, KS, U.S.A.; (2) International Potato Center, Beijing, China

641-P Workshop on plant disease identification and management strategies for smallholder farms in Haiti.
L. C. DANDURAND (1), G. R. Knudsen (1). (1) University of Idaho, Moscow, ID, U.S.A.

642-P Case studies of high school student success from plant pathology based extension program.
L. SANTAMARIA (1), A. Bernert (2), A. Schauer (3). (1) Oregon State Univ, Aurora, OR, U.S.A.; (2) Oregon State University, Corvallis, OR, U.S.A.; (3) West Linn - Wilsonville School District, Wilsonville, OR, U.S.A.

643-P Plant pathology based framework for novel high school student outreach program.
A. BERNERT (1), L. Santamaria (2), A. Schauer (3). (1) Oregon State Univ, Corvallis, OR, U.S.A.; (2) Oregon State Univ, Aurora, OR, U.S.A.; (3) CREST Program Coordinator West Linn - Wilsonville School District, Wilsonville, OR, U.S.A.

644-P Student recruitment in plant pathology: Filling the gaps to connect to prospective students.
M. M. LEWANDOWSKI (1), S. D. Williams (1), T. K. Mitchell (1), A. E. Dorrance (2), T. L. Niblack (1), D. N. Alvis (1), R. D. Capouya (1), K. S. McGlone (1), B. K. Mowery (1), B. D. Weaver (1). (1) Ohio State University, Columbus, OH, U.S.A.; (2) Ohio State University, Wooster, OH, U.S.A.

645-P Training and education to increase early NPDN detections of high-consequence threats.
R. L. MCCARTHY (1), R. W. Hoenisch (2), S. D. Stocks (3), G. K. Douce (4), J. J. Dombroskie (1), J. Allen (5), R. M. Bostock (2), J. B. Jones (3), M. Fuchs (6). (1) Cornell University, Ithaca, NY, U.S.A.; (2) University of California, Davis, CA, U.S.A.; (3) University of Florida, Gainesville, FL, U.S.A.; (4) University of Georgia, Tifton, GA, U.S.A.; (5) University of Connecticut , Storrs, CT, U.S.A.; (6) Cornell University, Geneva, NY, U.S.A.

Professional Development

646-P Internship opportunities at Monsanto.
S. A. ROSENBERGER (1). (1) Monsanto Vegetable Seeds, Woodland, CA, U.S.A.

Teaching and Learning

648-P Sentinel Plant Network members in the Northeast and Mid-Atlantic Regions use smartphone app for early detection of invasive diseases and insects.
D. L. CLEMENT (1), M. K. Malinoski (1), C. T. Bargeron (2), R. L. McCarthy (3). (1) University of Maryland, Ellicott City, MD, U.S.A.; (2) The University of Georgia, Tifton, GA, U.S.A.; (3) Cornell University, Ithaca, NY, U.S.A.

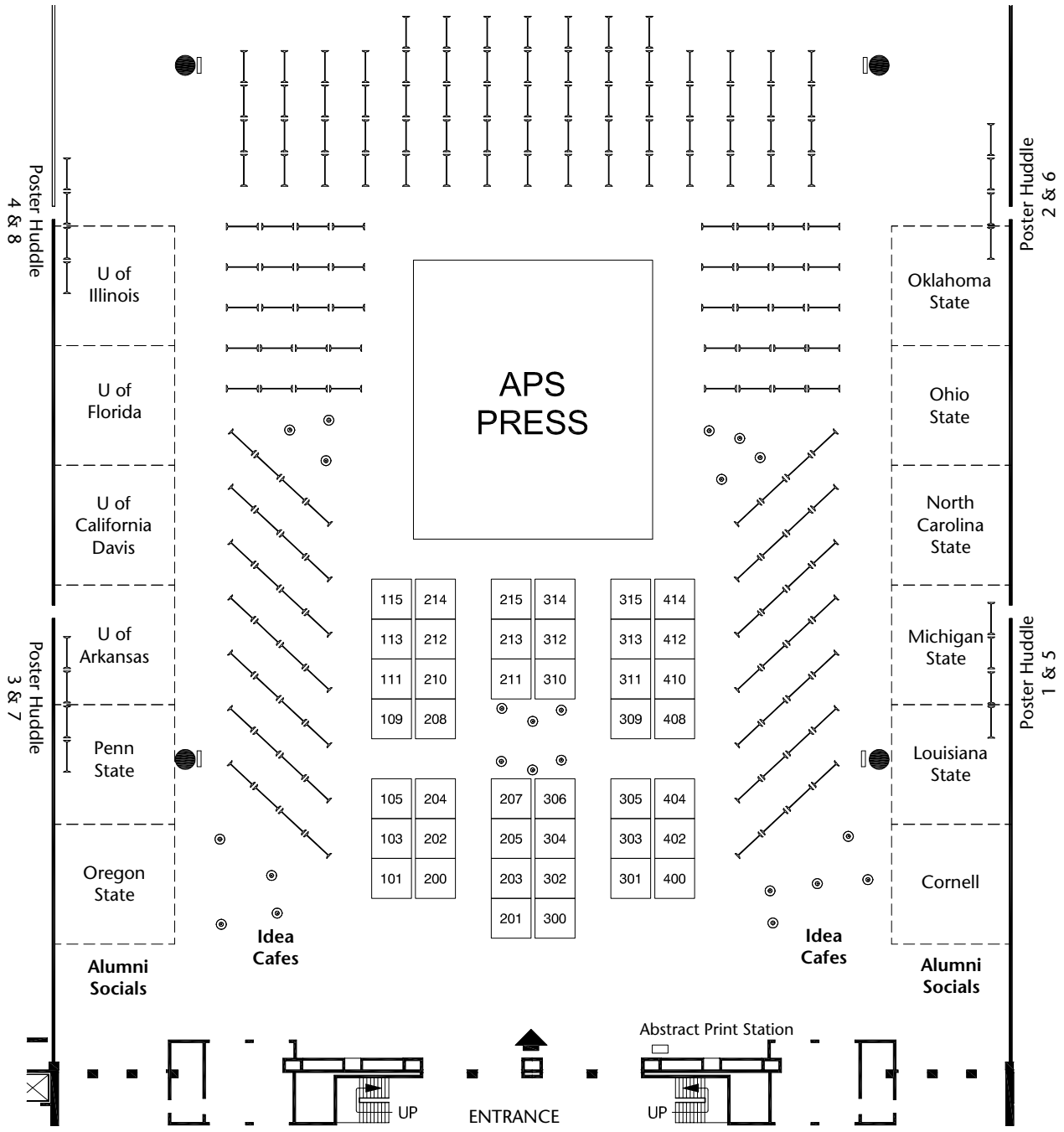
649-P Student perception of peer review for written and oral exercises as a feature of student learning style and multiple intelligences.
L. M. ORTIZ-RIBBING (1), D. C. Zlesak (2), S. L. Maki (2). (1) Minnesota Dept of Agriculture, St Paul, MN, U.S.A.; (2) University of Wisconsin-River Falls, River Falls, WI, U.S.A.

650-P Framework to align plant pathology curricula and training to phytopathology workforce needs.
S. N. SIVAKUMAR (1), S. Sivakumar (1). (1) Michigan State University, East Lansing, MI, U.S.A.

651-P Applied practicums bring real-world experience to students enrolled in Turfgrass Diseases, a split-level course taught at Mississippi State University.
M. TOMASO-PETERSON (1). (1) Mississippi State Univ, Mississippi State, MS, U.S.A.

652-P Using effectors of *Phytophthora infestans* to teach pathogenesis: Our attempt to provide a more comprehensive education.
V. KARTANOS (1), D. A. Halterman (2), M. Hayslett (1), D. Rouse (1). (1) University of Wisconsin-Madison, Madison, WI, U.S.A.; (2) USDA-ARS, Madison, WI, U.S.A.

Exhibit Hall Floor Plan–Hall D



Exhibitor list in numerical order of assigned booth numbers.

103	Neogen Corporation
105	University of Minnesota Department of Plant Pathology
109	APS Office of Public Relations and Outreach (OPRO)
111	Advanced Biological Marketing, Inc.
201/300	Agdia Inc.
202	Dow AgroSciences LLC
203	Dino-Lite Scopes (BigC)
204	Biopesticide Industry Alliance
205	Gylling Data Management Inc.
207	Conviron
208	PropTera, LLC
210	Taylor & Francis
211	AC Diagnostics, Inc.
212	Conversations with Council
213	ADAMA
215/314	*Phyto* Technology Laboratories
301/400	DuPont Crop Protection
302	BioChambers
303	American Peat Technology (APT)
304	MO BIO Laboratories, Inc.
305	CABI/CSIRO
306	Spectrum Technologies Inc.
309	UNL Doctor of Plant Health
310	APS Public Policy Board (PPB)
311/313	USDA-APHIS-BRS
312	2015 APS Annual Meeting – Pasadena, California
402	Percival Scientific, Inc.
404	BIOREBA AG/Eurofins STA Laboratories Inc.
408	Monsanto BioAg
410	APS Diagnostics Committee

Exhibitors are listed as of June 11, 2014. Floor plan can also be found on the meeting mobile app.
THANK YOU to all our 2014 exhibitors for being part of this joint meeting! Exhibitor list in alphabetical order with descriptions..

312 **2015 APS Annual Meeting – Pasadena, California**
Check out the location for the 2015 APS Annual Meeting and learn more about all there is to do in Pasadena and the surrounding area for one of the representatives from the Pasadena Convention and Visitors Bureau.

211 **AC Diagnostics, Inc.** ***Sustaining Associate***
1131 W. Cato Springs Road, Fayetteville, AR 72701;
Phone: +1.479.595.0320 or +1.479.251.1960;
Fax: +1.479.251.1791; Web: www.acdiainc.com or www.nanodiainc.com
ACD, Inc., a leading diagnostic company, provides high-quality diagnostic products with affordable rates. ACD, Inc. offers ELISA reagents/kits and immuno-capture PCR kits for testing more than 300 of plant pathogens. We also provide testing services, contract research for customer requirements, and a new division of nanotechnology products.

213 **ADAMA** ***Sustaining Associate***
3120 Highwoods Blvd., Suite 100, Raleigh, NC 27604;
Phone: +1.919.256.9300 or 1.866.406.6262;
Web: www.adama.com
ADAMA is a leading global manufacturer and distributor of crop protection solutions. The company supplies efficient solutions to farmers across the full farming value-chain. In 2013, the company ranked seventh worldwide within the agro-chemicals industry. ADAMA is characterized by its farmer-centric approach to product development and services, and observance of strict standards of environmental protection and quality control.

111 **Advanced Biological Marketing, Inc.**
375 Bonnewitz Avenue, P.O. Box 222, Van Wert, OH 45891; Phone: 1.877.617.2461; Fax: 4192324664;
Web: www.abm1st.com
ABM strives to lead the agricultural biologicals industry with products that improve farm productivity while positively interacting with the environment. Emphasis on land productivity now includes crop production, institutional sanitation and environmental waste management solutions. ABM promotes education, innovative research and strong marketing expertise in these emerging markets worldwide.

201/300 **Agdia Inc.** ***Sustaining Associate***
52642 County Road 1, Elkhart, IN 46514;
Phone: +1.574.264.2615 or 1.800.622.4342;
Fax: +1.574.206.9360; Web: www.agdia.com
Agdia, Inc. is the leading provider of diagnostic test kits for plant pathogens and transgenic traits. Our comprehensive range of testing solutions includes ELISA, ImmunoStrip, molecular diagnostics and a full service testing services laboratory. The Agdia team looks forward to meeting with you to learn more about your diagnostic needs.

303 **American Peat Technology (APT)** ***Sustaining Associate***
36203 350th Avenue, Aitkin, MN 56431;
Phone: +1.218.927.1888; Fax: +1.218.927.6496;
Web: americanpeattech.com
American Peat Technology (APT) is the leader in the manufacturing of microbial carriers using reed sedge peat. APT is the leading supplier of media for the rhizobia/soybean inoculant industry. Product is available in granular and powdered forms, has superior shelf life, and has proven to be an excellent microbe carrier.

109 **APS Office of Public Relations and Outreach (OPRO)**
3340 Pilot Knob Road, St. Paul, MN 55121;
Phone: +1.651.454.7250; Fax: +1.651.454.0766;
Web: www.apsnet.org/members/outreach/opro
OPRO's mission is to demonstrate the value of plant pathology to society and provide resources for members to use in outreach efforts. Find out how you can share the plant pathology message; stop by the OPRO booth at the annual meeting.

310 **APS Public Policy Board (PPB)**
3340 Pilot Knob Road, St. Paul, MN 55121;
Phone: +1.651.454.7250; Fax: +1.651.454.0766;
Web: www.apsnet.org/members/outreach/ppb
PPB provides scientific input on public policy issues to policy makers and agency personnel; advocates for increased funding for agricultural research, extension, and education; and works with other scientific organizations and coalitions to increase the awareness of the science of plant pathology. Stop by the PPB booth to learn more about the exciting new advocacy target - the "Phytobiomes Initiative" and how you can become involved!

410 **APS Diagnostics Committee**
3340 Pilot Knob Road, St. Paul, MN 55121;
Phone: +1.651.454.7250; Fax: +1.651.454.0766;
Web: www.apsnet.org
The mission of the APS Diagnostics Committee is to encourage networking and discussion among our members, to facilitate learning related to diagnostics, and to increase visibility of diagnostics within the profession of plant pathology and APS. Stop by our booth and test your plant disease knowledge with Diagnostics Jeopardy.

302 **BioChambers** ***Sustaining Associate***
477 Jarvis Avenue, Winnipeg, MB, Canada R2W 3A8;
Phone: +1.204.589.8900; Fax: 204-582-1024;
Web: www.biochambers.com
BioChambers manufactures a wide variety of growth chambers that range in size from small reach-ins providing 8ft2 of growth area to large walk-ins with over 400ft2. Incorporated into each chamber is our easy to use VNET Controller allowing for control of key environmental conditions. You are invited to stop by our booth to pick up our latest information.

204 **Biopesticide Industry Alliance**
P.O. Box 465, 4729 Dale-Curtin Drive, McFarland, WI 53558; Phone: +1.608.268.3632 or +1.202.536.4602; Web: www.biopesticideindustryalliance.org
The Biopesticide Industry Alliance (BPIA) is dedicated to fostering adoption of biopesticide technology through increased awareness about their effectiveness and full range of benefits to a progressive pest management program. • Microbial biopesticides are products derived from various microscopic organisms and/or the metabolites they produce. • Biochemical biopesticides are naturally occurring or synthetically derived compounds that are similar to their naturally occurring counterparts.

404 **BIOREBA AG/Eurofins STA Laboratories Inc.** ***Sustaining Associate***
1821 Vista View Drive, Longmont, CO 80504; Phone: +1.303.651.6417 or +1.408.846.9964; Fax: +1.303.772.4003; Web: www.eurofinsus.com/stalabs/products-services-bioreba-ag.html
Eurofins STA Laboratories and BIOREBA AG are partners in providing agrodiagnostic products and services for results you can trust. Eurofins STA Laboratories, a leading independent diagnostic laboratory, is the exclusive distributor of BIOREBA products in the United States. Eurofins STA offers effective seed quality, plant pathogen diagnosis, and disease eradication services for agricultural industries. BIOREBA's R&D laboratory develops and produces reagents and complete ready-to-use kits for the detection of plant pathogens.

305 **CABI/CSIRO**
22883 Quicksilver Drive, Sterling, VA 20166; Phone: +1.703.887.6133; Fax: +1.703.661.1547; Web: www.styluspub.com
CABI is a not-for-profit international organization that improves people's lives by providing information and applying scientific expertise to solve problems in agriculture and the environment. CSIRO PUBLISHING operates as an independent science and technology publisher, covering a wide range of scientific disciplines, including agriculture, the plant and animal sciences, and environmental management.

212 **Conversations with Council**
3340 Pilot Knob Road, St. Paul, MN 55121; Phone: +1.651.454.7250; Fax: +1.651.454.0766; Web: www.apsnet.org/members/directories/Pages/Council.aspx
"Conversations with Council" is a unique and interactive opportunity for members to take a few minutes to chat with various members of the APS Council while at the meeting. This year's focus topic is on APS journals, please stop by the booth and share your perspectives and ideas for advancing all of our society journals.

207 **Conviron** ***Sustaining Associate***
590 Berry Street, Winnipeg, MB, Canada R3H 0R9; Phone: +1.204.786.6451 or 1.800.363.6451; Fax: +1.204.786.7736; Web: www.conviron.com
Conviron is a global supplier of controlled environment systems for plant science research. We offer an extensive product portfolio of single and multi-tier chambers and rooms as well as research greenhouses, much of which is customized to a client's specific requirements. To help ensure project success, we also offer specialized services from early-stage engineering and design through to installation, project commissioning and on-going maintenance and support.

203 **Dino-Lite Scopes (BigC)**
20655 S Western Av, Suite 116, Torrance, CA 90501; Phone: 1.310.618.9990; Web: www.dinolite.us
Dino-Lite portable digital microscopes and eyepiece cameras provide high-quality microscopy video interfacing to PC and MAC with clear and steady imaging. Most models provide 10x-200x along with a multitude of software features. The included DinoCapture software makes it easy to take snapshots, record videos, manipulate images, save and email discoveries.

202 **Dow AgroSciences LLC** ***Sustaining Associate***
9330 Zionsville Road, Indianapolis, IN 46268-1054; Phone: +1.317.337.1000; Web: www.dowagro.com
Dow AgroSciences combines the power of science and technology with the "human element" to discover and develop agricultural solutions for a more sustainable world. We are committed to increase crop productivity through higher yields, better varieties, and targeted pest management by developing innovative chemical and biotechnology solutions to meet the food, feed, and fiber needs of the world.

301/400 **DuPont Crop Protection** ***Sustaining Associate***
P.O. Box 30, Newark, DE, 19714; Phone: +1.302.366.5704; Web: www.dupont.com
DuPont Crop Protection combines global innovation with local collaboration to provide sustainable tools for insect, nematode, weed and disease control. We help growers improve the quality, yield, and profitability of their crops, while minimizing the environmental impact. By working together, we can find ways to improve the sustainability of the world's food supply.

205 **Gylling Data Management Inc.** ***Sustaining Associate***
405 Martin Boulevard, Brookings, SD 57006; Phone: +1.605.692.4021; Web: www.gdmdata.com
Providing research management software since 1982. Tablet Data Collector: enter and analyze assessments, take plot pictures, and record trial GPS locations. ARM: establish, manage, analyze, and report information for crop experiments including field and greenhouse protocols and trials. ST: summarize and report a trial series across locations and/or years; links with Trial Database to select trials based on information in any trial data entry field.

304 **MO BIO Laboratories, Inc.**
2746 Loker Avenue West, Carlsbad, CA 92010; Phone: +1.760.929.9911; Fax: +1.760.929.0109; Web: www.mobio.com
MO BIO Laboratories, Inc. is a global leader in solutions for nucleic acid purification, offering innovative tools for research in plant biology. Our patented Inhibitor Removal Technology® ensures isolation of high quality, inhibitor-free nucleic acids from even the toughest plant samples, removing phenolics, polysaccharides and other PCR inhibiting substances.

408 **Monsanto BioAg**
12320 Cutten Road, Houston, TX 77066;
Phone: +1.281.580.1643;
Web: www.bioag.novozymes.com

103 **Neogen Corporation**
944 Nandino Blvd., Lexington, KY 40511;
Phone: 1.800.477.8201 or +1.859.254.1221;
Web: www.neogen.com
Neogen Corporation is a global leader in developing, manufacturing, and supplying innovative and reliable diagnostic products to detect a wide range of plant pathogens. We offer tests for more than 150 different viral, bacterial, and fungal plant pathogens in a wide range of formats.

402 **Percival Scientific, Inc.** ***Sustaining Associate***
505 Research Drive, Perry, IA 50220;
Phone: 1.800.695.2743; Fax: +1.515.465.9464;
Web: www.percival-scientific.com
Percival Scientific, in business for over 125 years, sets the standard of excellence for the environmental control industry. Percival offers a complete line of customized plant growth chambers, Arabidopsis chambers, plant tissue culture chambers, incubators and environmental control rooms to match your research and budget needs.

215/314 ***Phyto*Technology Laboratories**
P.O. Box 12205, Shawnee Mission, KS 66282;
Phone: +1.913.341.5343; Fax: +913.341.5442;
Web: www.phytotechlab.com
*Phyto*Technology Laboratories is a global supplier of microbiological media, biochemicals, plant tissue culture media, and laboratory supplies for the plant pathology, plant molecular biology, and plant science markets. Visit our booth for more details and information about our products and company. For unmatched quality and service, choose *Phyto*Technology Laboratories.

208 **PropTera, LLC** ***Sustaining Associate***
106 A Industrial Dr., Waxahachie, TX 75165;
Phone: +1.972.937.9595; Web: www.proptera.com
Proptera LLC, markets and sells Zonix Biofungicide made with rhamnolipids. Rhamnolipids have been found highly effective for the control of Oomycetes in organic agriculture and when used in rotation with conventional pesticides to reduce resistance. Their powerful surfactant properties also provide the grower added benefits when used in tank mixes.

306 **Spectrum Technologies Inc.** ***Sustaining Associate***
3600 Thayer Ct., Aurora, IL 60504;
Phone: 1.800.248.8873; Fax: +1.815.436.4460;
Web: www.specmeters.com
Spectrum Technologies, Inc. offers affordable devices to measure nutrient levels, soil qualities, light, weather, and other factors affecting plant growth. Our WatchDog weather stations and data loggers make it easy to record weather events and conditions. Over 15,000 customers count on Spectrum's easy-to-use, dependable technology for their growing needs.

210 **Taylor & Francis**
4 Park Square, Milton Park, Oxford, OX14 4RN United Kingdom; Phone: +0207 017 6178;
Web: www.tandfonline.com
Taylor & Francis publishes a growing, wide-ranging and high calibre journals portfolio in Plant Sciences. Our journals are edited by some of the most prominent academics in their fields. We are partnered with an array of the world's leading societies to publish cutting-edge, high quality research across the spectrum of Plant Sciences.

105 **University of Minnesota Department of Plant Pathology**
495 Borlaug Hall, 1991 Upper Buford Circle, St. Paul, MN 55108; Phone: +1.612.625.8200
The University of Minnesota Department of Plant Pathology has been a leader and partner in plant health for 107 years. We are delighted to welcome APS and CPS to beautiful Minnesota! Stop by to find out about our Department, degree programs, and the Stakman-Borlaug Center for Sustainable Plant Health.

309 **UNL Doctor of Plant Health**
279E Plant Sciences Hall, P.O. Box 830933, Lincoln, NE 68583-0933; Phone: +1.402.472.3365 or +1.402.472.3345; Fax: +1.402.472.3300;
Web: www.dph.unl.edu
The D.P.H. degree is a doctoral level professional degree, parallel in concept to the D.V.M. except with a focus on maintaining and managing plant health. The D.P.H. program is a comprehensive program with flexibility to meet an individual's educational goals. Program features include: Interdisciplinary curriculum in all areas that affect plant growth and production (entomology, plant pathology, plant sciences, soil science, weed science); Comprehensive diagnostic training; Internship experiences to enhance skills; Elective credits to customize training; Enhance leadership and professional skills. Experiential learning through required internships (local, national or international) provides opportunity to develop skills in integrated problem solving and developing management systems.

311/313 **USDA-APHIS-BRS**
4700 River Road-Unit 98, Riverdale, MD 20737; Phone: +1.301.851.3924; Web: www.aphis.usda.gov
The USDA's Animal and Plant Health Inspection Service protects the health and value of America's agricultural and natural resources. Within APHIS, Plant Protection and Quarantine protects against risks associated with the entry, establishment, or spread of agricultural pests and diseases, and Biotechnology Regulatory Services regulates certain genetically-engineered organisms by, among other things, evaluating their potential plant pest risks.

Congratulations to the 2014 APS Foundation Awardees

The following 62 individuals received awards from the APS Foundation, totaling $38,000 given in 2014. Special thanks to all of the APS Foundation donors for making this support possible. The awardees will be recognized at the APS-CPS Joint Meeting during the Opening General Session. Be sure to stop by the Foundation's booth to create new possibilities for plant pathology!

Books for the World Award

Raul Allende Molar, Research Center for Food and Development, Mexico
Kylie Ireland, Laos Provincial Agriculture and Forestry Organization
Maria Eugenia Ordoñez, Pontificia Universidad Católica del Ecuador
Clemence Tauya, Plant Quarantine Services Institute, Republic of Zimbabwe

Browning Plant Medicine and Health Travel Award

Haley Oser, University of Nebraska

French-Monar Latin American Award

Jorge Caicedo, University of Puerto Rico, Mayaguez Campus
Juan Boyzo Marin, CIIDIR IPN Michoacan

Lucy Hastings de Gutierrez Award for Excellence in Teaching Award

Joseph-Alexander Verreet, University of Kiel

Frank L. Howard Undergraduate Fellowship

Nicholas Machado, University of Florida

International Travel Award

Abdul Hannan, University of Agriculture Faisalabad

JANE International Research Award

Renuka Attanayake, University of Kelaniya

JANE International Service Award

Valerie Verdier, Colorado State University

Noel T. Keen Award for Research Excellence in Molecular Plant Pathology

Pradeep Kachroo, University of Kentucky

Don and Judy Mathre Education Endowment Award

Kevin Cope, University of Wisconsin
Ana Fulladolsa, University of Wisconsin
Alejandra I. Huerta, University of Wisconsin
Jose Pablo Soto-Arias, University of Wisconsin

Don and Judy Mathre Student Educational Award

Jeannette Rapicavoli, University of California, Riverside
Jose Pablo Soto-Arias, University of Wisconsin

14th I.E. Melhus Graduate Student Symposium

Anna O. Conrad, The Ohio State University
Ian M. Small, Cornell University
Matthew Tancos, Cornell University
Sierra Wolfenbarger, Oregon State University

Schroth Faces of the Future Early Career Professionals Symposium

Michelle Cilia, USDA ARS
Diego Quito-Avila, Prometeo, CIBE-ESPOL
Thanuja Thekke Veetil, University of Arkansas

Raymond J. Tarleton Student Fellowship

Ana Fulladolsa, University of Wisconsin

Student Travel Awards

Robert W. Fulton Student Travel Award
Christina Allen, University of Wisconsin

Forest Pathology Named Student Travel Award
Kamyar Aram, University of California

Zahir Eyal Student Travel Award
Ananda Y. Bandara, Kansas State University

William Moller Named Student Travel Award
Luisa F. Castiblanco, Michigan State University

Caribbean Division Student Travel Award
Eduardo Chagas Ferreira Da Silva, Louisiana State University

Stephen A. Johnston Student Travel Award
Giovanna Danies, Cornell University

Malcolm and Catherine Quigley Student Travel Award
Johanna Del Castillo Munera, Michigan State University

Richard Gabrielson Student Travel Award
Hung Kim Doan, University of California

John S. Niederhauser Student Travel Award
Mohamed H. El-Shetehy, University of Kentucky

Jose and Silvia Amador Student Travel Award
Ana C. Fulladolsa Palma, University of Wisconsin

John F. Schafer Student Travel Award and The Harry E. Wheeler Named Student Travel Award
Abolfazl Hajihassani, University of Manitoba

Malcolm C. Shurtleff Student Travel Award
Kazi T. Islam, Southern Illinois University

Tsune Kosuge Student Travel Award
Jae Hoon Lee, University of Illinois at Urbana-Champaign

Efrat Gamliel-Atinsky Student Travel Award
Haoxi Li, University of Georgia

Myron K. Brakke Student Travel Award
Gah-hyun Lim, University of Kentucky

Elsie J. and Robert Aycock Student Travel Award
Emma Lookabaugh, North Carolina State University

C. Lee Campbell Student Travel Award
Kestrel L. McCorkle, North Carolina State University

Kenneth F. Baker and R. James Cook Student Travel Award
Sean W. McCotter, Washington State University

H.J. Dubin Student Travel Award in honor of the Peace Corps
Luis P. Moncayo, Texas A&M University

Albert Paulus Student Travel Award
Michelle Oliveira, University of Florida

Joseph M. Ogawa Named Student Travel Award and The Eugene S. Saari Named Student Travel Award
Rodrigo Pedrozo, Kansas State University

Don E. Mathre Student Travel Award
Juliana Pereira, University of Florida

Luis Sequeira Student Travel Award
Brittany Pierce, University of California

Raymond G. Grogan Student Travel Award
Gregory J. Reynolds, University of California

H. David Thurston Student Travel Award
Juliana M. Soares, University of Kentucky

Eddie Echandi Student Travel Award
Jose Pablo Soto-Arias, University of Wisconsin

Arthur Kelman Student Travel Award
Anna Thomas, North Carolina State University

J. Artie and Arra Browning Student Travel Award
Peng Tian, University of Georgia

John F. Fulkerson Student Travel Award
Sujan Timilsina, University of Florida

Roger C. Pearson Student Travel Award
Tien T. Tran, Cornell University

Janell M. Stevens Johnk Student Travel Award
Phillip L. Vines, Mississippi State University

Gustaaf A. and Ineke C. M. de Zoeten Student Travel Award
Emma C. Wallace, North Carolina State University

Kenneth and Betty Barker Student Travel Award and The Dennis Hall Named Student Travel Award
Ellie Walsh, The Ohio State University

Stuart D. Lyda Named Student Travel Award and The Larry W. Moore Named Student Travel Award
Jie Wang, Michigan State University

Virology Student Travel Award
Lindsay Wells, University of Wisconsin

Donald E. Munnecke Student Travel Award
Kayla Williams, University of California, Riverside

Thank you

Meeting Program Planning Committee

APS Annual Meeting Program Chair ..... Rick Bennett, *University of Arkansas, U.S.A.*

APS Annual Meeting Program Vice Chair ..... Sally Miller, *The Ohio State University, U.S.A.*

CPS Program Chair ..... Deena Errampalli, *Agriculture and Agri-Food Canada*

APS Annual Meeting Board

Director ..... Amy Charkowski, *University of Wisconsin, U.S.A.*

Field Trip/Workshop Chair ..... Jerry Weiland, *USDA ARS, U.S.A.*

APS Section Chairs ..... Janna Beckerman, *Purdue University, U.S.A.*
Paul Esker, *Universidad de Costa Rica, Costa Rica*
Aaron Hert, *Helena Research, U.S.A.*
Peter Ojiambo, *North Carolina State University, U.S.A.*
Naidu Rayapati, *Washington State University, U.S.A.*
Jeffrey A. Rollins, *University of Florida, U.S.A.*

APS Elected and Appointed Officers, Representatives, and Committees for 2014

These listings reflect current appointments as of May 1, 2014. For up-to-date listings following the joint meeting, please refer to APS*net.*

APS Council
President: G. S. Abawi
President-Elect: A. R. Bennett
Vice President: S. A. Miller
Immediate Past President: M. J. Boehm
Internal Communications Officer: D. M. Gadoury
Treasurer: S. A. Slack
Senior Councilor-at-Large: J. B. Jones
Intermediate Councilor-at-Large: M. E. Palm
Junior Councilor-at-Large: E. C. Tedford
Divisional Councilor: L. E. Datnoff
Publications Councilor: N. J. Grunwald
Executive Vice President: A. L. Hope

Academic Unit Leader Forum (AULF): *Chair:* T. J. Baum. *Associate Chair:* J. M. Bradeen

Annual Meetings Board (AMB): *Director:* A. O. Charkowski. *Program Chair:* A. R. Bennett. *Vice Chair:* S. A. Miller. *Section Chair-Diseases of Plants:* J. L. Beckerman. *Section Chair-Epidemiology/Ecology/Environmental Biology:* P. Esker. *Section Chair-Plant Disease Management:* A. P. Hert. *Section Chair-Professionalism and Outreach:* P. Sande Ojiambo. *Section Chair-Biology of Pathogens:* N. A. Rayapati. *Section Chair-Molecular/Cellular/Plant Microbe Interactions:* J. A. Rollins. *Workshops Chair:* J. E. Weiland

Awards and Honors Committee: *Chair:* B. S. Valent. *Immediate Past Chair:* S. B. Goodwin. *Vice Chair:* S. A. Tolin. *Member:* R. L. Gilbertson, G. P. Munkvold, D. Shew, T. J. Wolpert

Career Advancement/Development Resources and Education (CADRE): Chair: C. M. Wallis. Vice Chair. N. A. Ward-Gauthier. Members: K. Cochran, J. C. Hong, A. Jogi, L. D. Thiessen, H. M. Young Kelly

Divisional Forum: *Divisional Councilor:* L. E. Datnoff. *Chair:* D. A. Rosenberger. *Caribbean Rep:* R. D. French-Monar. *NorthCentral Rep:* T. A. Jackson-Ziems. *Pacific Rep:* J. W. Pscheidt. *Potomac Rep:* D. P. Roberts. *Southern Rep:* K. W. Seebold

Financial Advisory Committee (FAC): *Chair:* S. A. Slack. *Member:* G. S. Abawi, A. R. Bennett, S. A. Miller, M. E. Palm, T. C. Paulitz, D. G. Schmale

Foundation Board: *Chair:* R. D. Martyn. *Treasurer (ex officio non-voting):* S. A. Slack. *Member:* M. N. Cline, R. J. Cook, W. E. Dolezal, L. J. du Toit, B. J. Jacobsen, T. D. Murray, A. H. Tally. *Ex-Officio (non-voting):* A. I. Huerta

APS Historian: P. D. Peterson

International Society Relations Committee (ISRC): *Chair:* J. K. Brown. *Member:* J. E. Bowman, R. D. French-Monar, Y. Jia, J. H. McBeath, *Society Representatives:* Y. Jo, Y. M. Shabana, V. M. Verdier. e*x-Officio (non-voting):* S. A. Miller

International Task Force: *Chair:* S. A. Miller. *Member:* F. D. Beed, J. K. Brown, K. Ong, A. R. Records

Leadership Institute Committee: *Chair:* J. L. Beckerman. *Past Chair:* W. Schneider. *Member:* M. A. Draper, T. J. Hughes, E. S. Oyarzabal, E. C. Tedford, N. A. Ward-Gauthier, J. E. Weiland

Nominations Committee: *Chair:* L. V. Madden. *Member:* C. Cowger, D. H. Gent, R. S. Goswami, T. K. Mitchell, D. P. Roberts, A. H. Tally, S. Thomas, *Council Liaison - Ex Officio:* J. B. Jones

Office of Education (OE): *Director:* T. K. Mitchell. *Immediate Past Director:* S. E. Gold. *Member:* C. T. Bull, M. C. Hayslett, A. I. Huerta, A. M. Poleatewich, M. Roca, D. Shew, E. C. Tedford, R. R. Walcott. *Ex-Officio (non-voting):* M. L. Elliott, *Ex-Officio (non-voting):* K. L. Stevenson

Office of Industry Relations (OIR): *Director:* C. A. Gallup. *Immediate Past Director:* B. D. Olson. *Member:* A. Cochran, L. Fought, G. L. Hartman, P. T. Himmel, G. J. Holmes, D. G. Ouimette, S. Parker, C. T. Schiller, R. W. Schneider, V. Spadafora, J. E. Steffel, R. Van Haren. *Sustaining Associates Chair:* R. S. Goswami

Office of International Programs (OIP): *Director:* M. A. Pastor-Corrales. *Immediate Past Director:* S. A. Miller. *Members:* J. E. Bowman, S. D. Cohen, A. C. Fayad, R. D. French-Monar, M. Marie Kennelly, S. Li, M. D. Ospina-Giraldo, A. R. Records

Office of Public Relations and Outreach (OPRO): *Director:* M. L. Elliott. *Member:* D. J. Collins, T. Durham, E. W. Honeycutt, A. B. Kriss, J. Q. Liu, K. Ong, K. A. Peter, L. Santamaria, *Ex-Officio, APSnet Feature Editor:* L. E. Hanson. *Ex-Officio Voting:* M. J. Boehm, J. E. Leach

Phytopathology News Advisory Committee: *Editor-in-Chief:* D. J. Jardine. *Members:* M. E. Burrows, J. C. Rupe

Publications Board: *Chair:* N. J. Grunwald. *Member:* J. Glazebrook, M. L. Gleason, D. J. Jardine, C. L. Palmer, T. C. Paulitz, P. D. Roberts, K. W. Seebold, K. L. Stevenson, G. W. Sundin

Public Policy Board (PPB): *Chair:* J. E. Leach. *Members:* G. S. Abawi, J. D. Barak, A. R. Bennett, N. B. Carroll, E. A. Grabau, K. McCluskey, S. A. Miller, D. G. Ouimette, A. R. Records. *Ex-Officio Voting:* M. L. Elliott. *Interns:* J. C. Bienapfl. L. Felice. L. Odom, Y. Rivera. *DC Representative:* K. A. Eversole

EDITORIAL BOARD

APS PRESS: *Editor-in-Chief*: T. C. Paulitz. *Associate Editor-in-Chief*: D. M. Eastburn. *Acquisitions Editor*: M. Benson. *Acquisitions Editor*: C. C. Mundt. *Senior Editors*: C. Allen, C. A. Clark, F. M. Dugan, T. R. Gordon, R. W. Hammond, R. M. Harveson, M. K. Hausbeck, J. B. Ristaino. *Member*: E. Walsh. *Ex-Officio (non-voting)*: S. A. Slack

Education Center-Plant Health Instructor: *Editor-in-Chief*: K. L. Stevenson. *Senior Editors*: M. C. Becktell, K. L. Bowen, P. D. Brune, J. W. Buck, T. A. Evans, E. L. Little, C. R. Little, W. Uddin, R. L. Wick. *Feature Editor*: L. E. Hanson. *Associate Editors*: L. F. S. Leandro, L. Santamaria, J. Xu

MPMI: *Editor-in-Chief*: J. Glazebrook. *Senior Editors*: G. A. Beattie, J. P. Carr, D. Desveaux, B. Ding, J. M. Harris, S. Kang, B. N. Kunkel, M. Lorito, J. M. McDowell, T. P. Nuernberger, U. Paszkowski, S. Robatzek, D. Roby, K. Shirasu, G. Smant. *Associate Editors*: J. Boch, A. Brachmann, V. Brault, T. M. Burch-Smith, T. Canto, J. Chang, N. Clay, G. Laurel Coaker, J. Daros, N. M. Donofrio, T. Eulgem, B. Favery, H. Guo, I. Kaloshian, B. Keller, B. Kemmerling, J. H. J. Leveau, D. Mackey, C. Masuta, M. Melotto, P. Mergaert, M. Goellner Mitchum, R. Musetti, E. J. Patriarca, E. A. Pierson, F. Qu, P. Reymond, S. Schornack, P. Schweizer, B. P. H. J. Thomma, V. Truniger, R. Van Der Hoorn, S. A. Whitham, R. A. Wilson, L. Zhang, X. Zhou, C. Zipfel

***Phytopathology*:** *Editor-in-Chief*: G. W. Sundin. *Senior Editors*: P. J. Balint-Kurti, T. J. Baum, J. L. Beckerman, M. T. Brandl, O. Carisse, W. H. Elmer, K. L. Everts, M. Fuchs, K. L. Ivors, R. W. Jackson, S. J. Klosterman, M. G. Redinbaugh, K. V. Subbarao, L. J. Szabo, F. Van Den Bosch, C. Yang, Y. Zhao. *Associate Editors*: T. W. Allen, S. Burdman, F. M. Cazorla, P. Chaverri, N. M. Donofrio, A. Elling, Y. He, T. J. Hughes, P. Inderbitzin, R. L. Jordan, W. Ma, W. F. Mahaffee, S. X. Mideros Mora, N. Mitter, W. Shim, M. R. Sudarshana, N. Wang, A. E. Whitfield, B. Wu, M. Wubben\

***Plant Disease*:** *Editor-in-Chief*: M. L. Gleason. *Senior Editors*: M. E. Burrows *Senior Editors*: K. D. Cox, A. E. Dorrance, L. J. du Toit, D. H. Gent, E. M. Hansen, C. Hong, A. V. Karasev, M. Marie Kennelly, G. W. Moorman, T. D. Murray, S. C. Nelson, P. A. Paul, N. Peres, A. E. Robertson, I. E. Tzanetakis, R. R. Walcott, N. Wang, K. A. Wise, I. A. Zasada. *Feature Editors*: S. C. Nelson. *Disease Notes Assigning Editors*: A. Eskalen, C. D. Garzon. *Associate Editors*: T. W. Allen, M. D. Bolton, C. A. Bradley, F. E. Brooks, T. Caffi, M. I. Chilvers, K. Dumenyo, J. K. S. Dung, A. J. Gevens, B. K. Gugino, T. L. Harp, P. Ji, L. F. S. Leandro, V. I. Maliogka, A. McLeod, Z. Mersha, M. M. Moyer, N. Nitzan, L. E. Osborne, M. Putnam, M. Roper, D. L. Smith, A. Stensvand, T. Tarnowski, J. Urbez Torres, N. Wang, K. D. Waxman, J. E. Weiland, A. E. Whitfield

***Plant Disease Management Reports*:** *Editor-in-Chief*: K. W. Seebold. *Senior Editor:* R. C. Kemerait. *Section Editors*: T. W. Allen, D. R. Cooley, M. A. Draper, A. Eskalen, A. J. Gevens, J. R. Glass, L. L. Granke, J. C. Inguagiato, M. F. R. Khan, A. Mengistu, L. Miller, D. G. Ouimette, M. Rahman, S. L. Rideout, H. J. Scheck, M. Tomaso-Peterson, G. E. Vallad, N. A. Ward-Gauthier, K. A. Wise, J. E. Woodward, C. A. Wyenandt, S. Zhou. *Assigning Editors*: K. D. Cox, A. Henn, T. A. Jackson-Ziems, C. S. Johnson, C. S. Kousik, D. B. Langston, C. Y. Warfield

***Plant Health Progress*:** *Editor-in-Chief*: P. D. Roberts. *Senior Editors:* M. A. Draper, B. K. Gugino, C. S. Kousik, J. C. Palumbo, R. Singh, J. E. Woodward. *Associate Editors*: N. L. Dart, N. S. Dufault, M. L. Paret, K. C. Steddom, J. L. Williams-Woodward.

APS DIVISION OFFICERS

Caribbean Division: *President:* A. J. Palmateer. *Vice President:* H. Victoria Silva-Rojas. *Past President:* J. K. Brown. *Secretary-Treasurer:* C. Estevez De Jensen. *Divisional Forum Rep:* R. D. French-Monar

North Central Division: *President:* A. J. Gevens. *Immediate Past President:* J. P. Stack. *Secretary-Treasurer:* C. A. Bradley. *Divisional Forum Rep:* T. A. Jackson-Ziems

Northeastern Division: *President:* D. C. Thompson. *Vice President:* F. J. Ferrandino. *Immediate Past President:* C. A. Wyenandt. *Secretary-Treasurer:* S. B. Johnson. *Divisional Forum Rep:* D. A. Rosenberger

Pacific Division: *President:* J. K. Brown. *President-Elect:* J. M. Marshall. *Past President:* T. J. Michailides. *Secretary-Treasurer:* S. Sanogo. *Divisional Forum Rep:* J. W. Pscheidt

Potomac Division: *President:* N. M. Donofrio. *Vice President:* J. Crouch. *Immediate Past President:* B. Zhao. *Secretary-Treasurer:* M. Nita. *Divisional Forum Rep:* D. P. Roberts

Southern Division: *President:* T. W. Allen. *President-Elect:* N. A. Ward-Gauthier. *Vice President:* K. Ong. *Past President:* J. E. Woodward. *Secretary-Treasurer:* G. E. Vallad. *Divisional Forum Rep:* K. W. Seebold

APS GENERAL POLICTY COMMITTEES

Collections and Germplasm: *Chair:* R. P. Naegele. *Immediate Past Chair:* K. M. Webb. *Vice Chair:* W. E. Dolezal. *Members:* G. Ali. N. G. Barnaby, F. M. Dugan, D. Ellis, B. J. Goates, J. Green, S. N. Jeffers, S. Kang, S. Li, I. T. Malchev, K. McCluskey, U. K. Melcher, J. E. Schoelz, A. Subedi

Committee for Diversity and Equality: *Chair:* R. Melanson. *Immediate Past Chair:* N. A. Ward-Gauthier. *Vice Chair:* K. D. Gwinn. *Members:* S. Ali, C. W. Bacon, J. M. Bradeen, P. R. Brown, C. T. Bull, M. C. Carrillo, A. K. Chanda, K. Cochran, D. J. Collins, R. Curland, A. C. Fayad, D. G. Fernando, K. Fiedler, L. Frederick, R. S. Goswami, M. A. Grabowski, M. C. Hayslett, D. M. Hinton, J. C. Hong, C. A. Ishimaru, D. A. Kluepfel, M. M. Lewandowski, S. Li, R. Li, L. Ma, R. L. Melnick-Lippart, J. Mercier, B. H. Ownley, H. R. Pappu, J. S. Rezende, S. L. Roberson, E. N. Rosskopf, M. Sales, B. K. Shrestha, S. Thomas, D. L. Thomas, A. L. Vu, C. M. Wallis, M. Warr, A. Wen, Y. Xia

Early Career Professionals: *Chair:* K. Cochran. *Immediate Past Chair:* C. M. Wallis. *Vice Chair:* P. Wallace. *Members:* A. Adetutu Ajayi, O. J. Alabi, M. Arif, R. Bulluck, P. Cheng, K. Chittem, B. Donda, O. W. Ernest, P. Gautam, C. T. Gee, T. J. Hughes, J. M. Jacobs, S. Jarugula, Y. A. Jeff-Agboola, A. C. Kaye, S. G. Kunjeti, Y. Liang, S. Mittal, I. A. Munck, O. T. Neher, J. S. Patel, R. Rioux, S. L. Roberson, S. Rogers, H. Sudini, L. C. Walker, N. A. Ward-Gauthier, E. L. Warnstrom, J. E. Weiland, H. M. Young Kelly

Extension: *Chair:* M. F. R. Khan. *Immediate Past Chair:* A. J. Gevens. *Vice Chair:* S. G. Markell. *Members:* T. W. Allen, C. J. Balbalian, M. E. Burrows, E. Campoverde, R. Chen, H. R. Dillard, D. A. Doll, M. A. Draper, N. S. Dufault, K. L. Everts, T. R. Faske, M. Helen Ferguson, A. J. Friskop, R. K. Gill, M. A. Grabowski,B. K. Gugino,R. M. Harveson, J. Carol Himmelstein, C. A. Hollier,. A. Huerta Arredondo, T. A. Jackson-Ziems, D. J. Jardine, B. S. Kennedy, Y. Liang, D. K. Malvick, S. A. McBride, M. T. McGrath, R. Melanson, M. M. Moyer, E. Ncube, O. T. Neher, K. Ong, E. E. Pfeufer, M. Rahman, S. L. Rideout, L. Ma Rodriguez-Salamanca, G. E. Ruhl, L. Santamaria, G. L. Schuster, K. W. Seebold, A. C. Seidl, P. Sharma, R. Singh, D. L. Smith, N. J. Taylor, L. D. Thiessen, N. A. Ward-Gauthier, J. E. Woodward,C. A. Wyenandt, H. M. Young Kelly

Graduate Student: *Chair:* A. I. Huerta. *Immediate Past Chair:* A. L. Vu. *Vice Chair:* E. B. Allan. *Members:* R. T. Al-Khafaji, E. Arcibal, K. L. Arnold, M. Avellaneda, D. L. Baucom, L. A. Beirn, L. E. Bostic, C. Burkle, R. P. Chauhan, K. Choi, A. N. Cianchetta, A. O. Conrad, C. I. Diaz, B. Donda, M. Helen Ferguson, K. Fiedler, F. J. Flores, A. C. Fulladolsa, J. E. Fultz, M. Ganiger, V. L. Gaskins, D. Gautam, S. Gebben, R. K. Gill, S. S. Hewavitharana, L. A. Hinkel, B. Horowitz, I. A. Huerta Arredondo, A. Koehler, S. M. Koenig, G. Kwan, F. J. Lichtner, E. Lookabaugh, H. D. Lopez Nicora, A. Leumas Loyd, C. Lyons, S. C. Marine, M. R. Marroquin-Guzman, S. J. Mauzey, D. May, T. McCann, K. L. McCorkle, L. Mehra, A. F. Payne, B. Pierce, A. Pomerantz, I. L. Power, M. Pun, J. Rapicavoli, M. Raza, R. Rioux, F. Rotich, K. Schweri, A. C. Seidl, I. M. Small, A. M. Smith, J. E. Smith, R. R. Sweany, N. Tatalovic, A. L. Testen, L. D. Thiessen, T. Minh Tran, E. Walsh, B. Ward, J. Wrren, N. V. S. Yadav, X. Yang

Industry: *Chair:* D. A. McDuffee. *Immediate Past Chair:* G. H. Musson. *Vice Chair:* R. S. Goswami. *Members:* B. Aglave, S. Anas, D. T. Beadle, M. W. Bredehoeft, C. Burkle, N. Carroll, R. P. Chauhan, P. B. de Sa Snow, R. R. Dhawan, B. Donda, O. W. Ernest, J. M. Koczan, P. J. Kuhn, D. Morissette, B. D. Olson, L. E. Osborne, D. Singh, V. Philip Thomas, M. Twizeyimana, L. C. Walker

Regulatory Plant Pathology: *Chair:* G. Hodges. *Immediate Past Chair:* C. N. Marasas. *Vice Chair:* S. Rabindran. *Members:* J. A. Abad , Z. Abad , T. N. Boratynski, L. G. Brown, R. Bulluck, C. Burkle, C. Mian Cai, S. D. Cohen, S. Inch, K. L. Kosta, K. W. Kromroy, Y. Liang, P. A. Nolan, M. E. Palm, J. S. Patel, S. Rizvi, S. A. Rosenberger, T. S. Schubert, S. Francis Shamoun, P. Spaine, W. S. K. Sueno, S. Thomas, A. Tohamy, R. A. Welliver, H. Xu, A. Zarafi

Teaching: *Chair:* B. Spakes Richter. *Immediate Past Chair:* K. D. Gwinn. *Vice Chair:* A. M. Poleatewich. *Members:* A. Y. Bandara, A. B. Baudoin, D. M. Eastburn, C. A. Gallup, C. T. Gee, Q. Jiang, S. Lu, F. M. Ochoa-Corona, M. D. Ospina-Giraldo, B. H. Ownley, D. I. Rouse, G. L. Schuster, P. Sharma, B. S. Sipes, M. Skaria, E. Walsh, J. E. Woodward

APS SUBJECT MATTER COMMITTEES

Bacteriology: *Chair:* S. Lu. *Immediate Past Chair:* L. De La Fuente. *Vice Chair:* J. Ham. *Members:* A. Oyegoke Adesemoye, T. B. Adhikari, N. Akula, V. Ancona, J. D. Barak, K. Bastas, C. T. Bull, M. Caldera Dominguez, A. O. Charkowski , J. Clifford, L. F. Cruz, M. M. Dewdney, S. Dossa, Y. Duan, B. Dutta, O. W. Ernest, L. A. Fleites,

D. C. Gross, G. Hao, L. Hao, G. Hiddink, X. Hu, Q. Huang, J. M. Jacobs, N. Jalan, T. Jardini, M. Jibrin, K. L. Johnson, E. G. Johnson, G. Kwan, J. H. LaForest, D. K. Lakshman, J. Li, H. Lin, E. L. Little, F. J. Louws, S. Lu, O. V. Mavrodi, R. Ryan Nally, R. Melanson, A. Milling, P. Mowery, F. Navarrete, M. Ortiz-Lytle, J. Palumbo, B. Pierce, L. S. Pierson, N. Potnis, S. Rabindran, J. Rapicavoli, M. Roper, F. Samiksha, B. K. Scholz-Schroeder, B. K. Shrestha, S. Soby, J. Soto-Arias, M. Tancos, F. Uddin, M. C. Vernaiz, A. K. Vidaver, N. Wang, J. Wang, J. Warren, Q. Yan, X. Ying, Q. Zeng, Y. Zhao, X. Zhou

Biological Control: *Chair:* S. Zhang. *Immediate Past Chair:* M. S. Krause. *Vice Chair:* L. del Rio. *Members:* A. Oyegoke Adesemoye, J. Aguilar, P. A. Backman, A. Y. Bandara, N. Bitsadze, A. Blacutt, M. W. Bredehoeft, W. L. Bruckart, M. Luisa Burgos-garay, S. A. Conaway, M. Diaz-Arias, E. M. Goyette, J. Hu, T. W. Ingram, B. J. Jacobsen, G. B. Jagdale, Y. A. Jeff-Agboola, X. Jin, R. P. Kaiser, D. K. Lakshman, S. Li, X. Li, S. Li, Y. Li, B. Lin, C. Lu, L. Ma, P. Ma, Y. Ma, M. J. McGrath, R. L. Melnick-Lippart, X. Mo, V. Parkunan, A. M. Poleatewich, I. S. Qandah, M. Rahman, D. A. Schisler, A. C. Seidl, P. Sharma, D. Singh, F. Smith, V. O. Stockwell, W. F. Stoneman, C. F. Summers, A. L. Testen, A. Tohamy, M. Twizeyimana, F. Uddin, M. A. Weaver, D. M. Weller, Y. Wu, Y. Xia, M. Xue, A. Zarafi, X. Zhou, X. Zhou

Biotechnology: *Chair:* S. Soby. *Vice Chair:* E. A. Grabau. *Members:* A. Adetutu Ajayi, M. D. Bellizzi, A. Campbell, N. Champouret, P. Chen, P. B. de Sa Snow, R. R. Dhawan, P. Di Bello, T. M. Gonzalez, S. Jarugula, A. C. Kaye, C. Khang, M. Klepadlo, D. K. Lakshman, T. McCann, H. G. Nunez-Palenius, M. Orazaly, G. Karina Orquera, V. Hugo Otsubo, J. S. Rezende, K. Schweri, S. Srinivasachary, L. R. Triplett, M. Leizer Zaccaron, L. Zeng

Chemical Control: *Chair:* W. Chen. *Immediate Past Chair:* D. C. Thompson. *Vice Chair:* S. L. Rideout. *Members:* S. G. Acimovic, J. E. Adaskaveg, S. Anas, K. Bastas, D. T. Beadle, R. S. Bounds, P. M. Brannen, T. B. Brenneman, A. Cochran, D. L. D'Angelo, M. Diaz-Arias, H. C. Forster, C. D. Garzon, P. Gautam, R. S. Goswami, L. L. Granke, D. Griffin, T. W. Ingram, R. C. Kemerait, N. I. Khan, M. F. R. Khan, Y. Kim, P. I. Lewis, H. Morton, M. Nita, B. D. Olson, J. S. Patel, I. S. Qandah, M. Rahman, L. Santamaria, R. W. Schneider, G. L. Schuster, V. Spadafora, A. H. Tally, L. W. Timmer, G. E. Vallad, A. Wan

Crop Loss Assessment and Risk Evaluation (CLARE): *Chair:* C. H. Bock. *Immediate Past Chair:* S. J. Pethybridge. *Vice Chair:* A. Ficke. *Members:* K. L. Bowen, T. Caffi, P. Esker, D. H. Gent, C. A. Hollier, A. B. Kriss, I. T. Malchev, F. W. Nutter, P. V. Oudemans, C. S. Thomas, W. W. Turechek

Diagnostics: *Chair:* R. Singh. *Immediate Past Chair:* P. B. de Sa Snow. *Vice Chair:* K. L. Snover-Clift. *Members:* Z. Abad, S. Akinbade, M. Arif, F. M. Assis Filho, B. Bagewadi, N. B. Bajet, C. J. Balbalian, F. Baysal-Gurel, J. W. Beale, J. C. Bienapfl, T. D. Blunt, J. Bonkowski, A. Brakta, N. J. Brazee, A. L. Briggs, J. M. Byrne, M. Caldera Dominguez, J. L. Chaky, D. L. Clement, T. C. Creswell, D. Dailey O'Brien, J. Daniels, S. M. Dobesh, S. M. Douglas, M. A. Draper, M. Dutta, M. J. Ebskamp, F. Fahmeed, E. Fernquist, A. Fessehaie, R. L. Gilbertson, L. Harrison, S. A. Heuchelin, A. Coleen Hodges, E. W. Honeycutt, G. P. Hoyos, G. B. Jagdale, D. Jones, B. S. Kennedy, S. Kim, S. T. Koike, R. Kubota, J. H. LaForest, J. S. Lamborn, C. Lapaire Harmon, E. LeVeen, L. Levy, S. Li, Y. Li, M. F. Licha, S. J. Long, E. Lookabaugh, I. T. Malchev, C. N. Marasas, V. A. Mavrodieva, S. R. May, S. A. McBride, M. E. McConnell, T. A. Mekuria, Z. Mersha, D. D. Miller, D. Morissette, D. Myhaver, M. K. Nakhla, P. R. Northover, F. M. Ochoa-Corona, J. Olson, J. L. O'Mara, K. Ong, M. E. Palm, D. Park, A. Phibbs, A. Pomerantz, M. Putnam, K. Quello, M. Rahman, K. K. Rane, M. G. Redinbaugh, L. Ma Rodriguez-Salamanca, G. E. Ruhl, A. N. Ryan, E. Saalau Rojas, R. Salati, M. Serdani, C. A. Smith, K. L. Snover-Clift, M. R. Sudarshana, N. J. Taylor, A. M. Vitoreli, A. Vrient, I. Wagara, P. Wallace, J. Wang, M. Williamson, J. Q. Xia, K. A. Zeller, S. Zhang

Diseases of Ornamental Plants: *Chair:* J. S. Lamborn. *Immediate Past Chair:* K. Ong. *Vice Chair:* A. R. Chase Zemke. *Members:* S. M. Adams, R. Bulluck, M. Gullino, J. L. Hall, R. W. Hammond, C. Hong, K. L. Ivors, M. S. Krause, C. R. Krause, A. G. Laney, C. N. Marasas, D. Myhaver, A. J. Palmateer, C. L. Palmer, K. K. Rane, N. A. Rechcigl, G. E. Ruhl, C. A. Smith, K. C. Steddom, N. J. Taylor, D. L. Thomas, J. C. Trolinger, L. C. Walker, N. A. Ward-Gauthier, X. Yang, S. Zhang

Emerging Diseases and Pathogens: *Chair:* J. E. Fajardo. *Members:* A. M. Alvarez, A. Bennett, P. H. Berger, M. A. Bhatti, M. R. Bonde, R. M. Bostock, K. O. Britton, J. K. Brown, R. Bulluck, W. Chen, V. D. Damsteegt, J. Fletcher, D. R. Fravel, E. M. Goss, N. Grunwald, J. Hammond, J. S. Hartung, D. M. Huber, C. A. Ishimaru, G. Kuldau, C. Levesque, L. Levy, L. V. Madden, C. W. Magill, R. R. Martin, D. C. McGee, K. A. McGuire, F. W. Nutter, M. E. Palm, N. W. Schaad, J. L. Sherwood, K. L. Smith, J. P. Stack, E. L. Stromberg, A. H. Tally, C. S. Thomas, S. A. Tolin, A. T. Tschanz, A. K. Vidaver, W. M. Wintermantel, G. C. Wisler, X. Yang

Epidemiology: *Chair:* D. H. Gent. *Immediate Past Chair:* M. Nita. *Vice Chair:* A. B. Kriss. *Members:* D. J. Anco, R. Choudhury, D. L. D'Angelo, A. S. Dias, P. Esker, A. Ficke, P. Gautam, N. Grunwald, L. Harrison, N. Fernandez Magculia, L. Mehra, A. Mengistu, Z. Mersha, F. W. Nutter, P. A. Paul, M. Raza, S. S. Savary, D. Sharma Poudyal, I. M. Small, S. Thomas, L. Willocquet, H. M. Young Kelly

Evolutionary Genetics and Genomics: *Chair:* L. E. Cadle-Davidson. *Immediate Past Chair:* M. Jimenez-Gasco. *Vice Chair:* J. Byrd Hebert. *Members:* M. T. Brewer, X. Chen, G. Danies, A. T. Dyer, S. E. Everhart, E. M. Goss, J. Green, N. Grunwald, L. Guo, J. C. Hong, S. J. Klosterman, D. K. Lakshman, S. Li, L. Ma, F. N. Martin, B. Shuai, J. Slot, J. Stewart, J. Wang, S. Zhong

Forest Pathology: *Chair:* I. A. Munck. *Immediate Past Chair:* M. T. Kasson. *Vice Chair:* J. Stewart. *Members:* S. M. Adams, C. J. Balbalian, Y. Balci, S. J. Frankel, L. M. Haugen, E. W. Honeycutt, J. Juzwik, M. Kim, N. B. Klopfenstein, G. Laflamme, D. D. Miller, J. G. O'Brien, E. S. O'Neal, A. K. Pathan, J. D. Pokorny, A. L. Ross-Davis, D. R. Smith, P. Spaine, G. R. Stanosz, C. L. Swett

Host Resistance: *Chair:* M. Acevedo. *Immediate Past Chair:* P. Kachroo *Members:* T. B. Adhikari, G. Ali, S. An, K. Bastas, M. C. Carrillo, P. Cheng, R. R. Dhawan, S. Dossa, F. Francis, M. Ganiger, C. T. Gee, R. K. Gill, M. Govindarajulu, A. Gunadi, G. Hao, Y. Jia, H. S. Karki, B. Kemp, D. Kumar, D. K. Lakshman, S. Li, C. Lyons, R. P. Naegele, H. G. Nunez-Palenius, J. S. Rezende, J. C. Rupe, B. K. Shrestha, B. Shuai, S. Srinivasachary, Y. Sun, J. A. Thies, C. M. Wallis, H. Wang, W. Wechter, Y. Yang, L. Zeng, S. Zhong

Integrated Plant Disease Management: *Chair:* C. A. Hollier. *Immediate Past Chair:* M. L. Paret. *Vice Chair:* N. S. Dufault. *Members:* N. Abou-Zeid, T. B. Adhikari, S. Ali, O. Batuman, D. T. Beadle, K. A. Bekoscke, C. H. Bock, C. Burkle, E. Z. Byamukama, T. Caffi, A. S. Dias, T. R. Faske, A. C. Fayad, P. Gautam, D. H. Gent, D. Gramaje, M. W. Hotchkiss, K. Kaur, C. S. Kousik, M. S. Krause, J. H. McBeath, Z. Mersha, H. Morton, O. T. Neher, H. G. Nunez-Palenius, M. Ortiz-Lytle, V. Parkunan, J. S. Patel, A. F. Payne, F. Peduto Hand, M. Raza, P. E. Rolshausen, E. Saalau Rojas, G. L. Schuster, D. Shantharaj, P. Sharma, J. Soto-Arias, L. D. Thiessen, A. Tohamy, S. Zhang

Molecular and Cellular Phytopathology: *Chair:* B. H. Bluhm. *Immediate Past Chair:* S. M. Marek. *Vice Chair:* W. Shim. *Members:* G. Ali, R. T. Al-Khafaji, A. Y. Bandara, K. Birla, J. M. Bradeen, A. Brakta, A. K. Chanda, Y. O. Chen, Z. Chen, R. Chen, P. Cheng, N. M. Donofrio, F. Fahmeed, J. C. Fountain, F. Francis, V. L. Gaskins, M. Gillespie, D. A. Halterman, R. Hernandez-Martinez/CICESE, R. L. Hirsch, Y. Jia, M. Jibrin, C. Khang, S. G. Kunjeti, Z. Liu, S. Marisa Mathioni, A. Mendoza-Mendoza, T. K. Mitchell, J. J. Polashock, J. S. Rezende, S. M. Roberts, P. Sharma, L. R. Velazquez-Liano, G. Wang, J. Warren, K. M. Webb, Y. Yang, W. Yu, L. Zeng, H. Zhang, W. Zheng, S. Zhong

Mycology: *Chair:* K. D. Broders. *Immediate Past Chair:* F. M. Dugan. *Vice Chair:* S. E. Everhart. *Members:* Z. Abad, S. S. Arcibal, R. G. Bhat, W. L. Bruckart, T. E. Chase, A. M. Cochran, F. M. Dugan, Z. Fan, D. L. Funnell-Harris, T. G. Garcia, A. J. Gevens, N.P. Hegde, P. Ji, Q. Jiang, Y. Jo, S. A. Jordan, H. Kistler, J. E. Kurle, D. K. Lakshman, S. Lee, S. M. Marek, K. Maruthachalam, I. R. Moncrief, E. Nyaga Njambere, M. E. Palm, R. C. Ploetz, B. M. Pryor, K. Rappaport, A. Rojas, M. Skaria, C. M. Stiles, A. Subedi, C. L. Swett, A. M. Vitoreli, K. M. Webb, J. Xu, H. M. Young Kelly, A. Zarafi, S. Zhong

Mycotoxicology: *Chair:* Z. Chen. *Immediate Past Chair:* R. Jaime. *Vice Chair:* H. L. Mehl. *Members:* H. K. Abbas, N. Azarmanesh, C. W. Bacon, J. E. Bowman, D. Budakov, P. J. Cotty, K. E. Damann, A. M. Fakhoury, J. C. Fountain, T. G. Garcia, A. E. Glenn, D. M. Hinton, P. Horevaj, Y. A. Jeff-Agboola, P. W. Kachapulula, G. Kuldau, W. Li, T. J. Michailides, E. Ncube, A. Ortega-Beltran, J. Palumbo, G. A. Payne, G. Rodriguez-Alvarado, P. E. Rolshausen, M. Schwager, W. Shim, J. E. Smith, A. Subedi, R. R. Sweany, B. Ward

Nematology: *Chair:* G. L. Tylka. *Immediate Past Chair:* R. Y. Myers. *Vice Chair:* V. C. Concibido. *Members:* G. S. Abawi, B. Aglave, P. A. Agudelo, M. A. Bhatti, G. W. Bird, R. Bulluck, C. Mian Cai, L. C. Dandurand, M. de Vos, A. Elling, G. B. Jagdale, K. Jindapunnapat, B. H. Kandouh,

F. Kaplan, N. I. Khan, J. H. LaForest , X. Li, A. E. MacGuidwin, S. P. Marahatta, S. L. Meyer, T. L. Niblack, S. Rabindran, P. A. Roberts, B. S. Sipes, V. Philip Thomas, E. Walsh

Pathogen Resistance: *Chair:* T. W. Allen. *Immediate Past Chair:* M. M. Dewdney. *Vice Chair:* K. D. Cox. *Members:* S. Ali, S. Anas, M. Avellaneda, E. Chagas Ferreira Da Silva, X. Chen, W. Chen, M. de Vos, D. Fernandez-Ortuno, P. Gautam, C. T. Gee, M. Govindarajulu, Q. Jiang, D. Liberti, M. T. McGrath, T. J. Michailides, H. K. Ngugi, P. Sande Ojiambo, G. Olaya, B. D. Olson, J. S. Rezende, C. L. Robertson, S. A. Rosenberger, D. I. Rouse, L. Santamaria, G. Schnabel, J. R. Standish, J. M. Stein, K. L. Stevenson, M. Tomaso-Peterson, B. Vega, A. Wan, B. Ward, F. P. Wong, C. A. Wyenandt, H. M. Young Kelly, H. L. Ypema

Phyllosphere Microbiology: *Chair:* J. H. Graham. *Immediate Past Chair:* S. D. Cohen. *Vice Chair:* C. L. Swett. *Members:* M. Obaigboruen Ahonsi, S. Albu, P. J. Balint-Kurti, J. D. Barak, S. J. Bardsley, R. Choudhury, J. Carol Himmelstein, J. J. Jacobs, W. F. Mahaffee, U. K. Melcher, N. Potnis, D. Shantharaj, V. O. Stockwell, M. Toome, N. A. Ward-Gauthier

Plant Pathogen and Disease Detection: *Chair:* N. A. Rayapati. *Immediate Past Chair:* S. Sabanadzovic. *Vice Chair:* T. C. Creswell. *Members:* S. Ali, A. T. Alleyne, F. M. Assis Filho, N. G. Barnaby, G. Bilodeau, H. M. Bowman, A. L. Briggs, S. E. Brown, S. Costanzo, J. Crouch, M. J. Ebskamp, F. Fahmeed, E. Fernquist, A. Fessehaie, J. Hammond, R. W. Hammond, T. Ho, G. P. Hoyos, S. Inch, D. Jones, J. S. Lamborn, N. Fernandez Magculia, I. T. Malchev, V. A. Mavrodieva, K. A. McGuire, J. L. Menert, D. Myhaver, M. K. Nakhla, M. Orcutt, D. Park, J. S. Patel, A. Pomerantz, K. Quello, A. T. Saad, M. Sales, T. S. Schubert, P. Sharma, P. J. Shiel, D. Singh, P. Sudarshana, W. S. K. Sueno, A. Tohamy, I. E. Tzanetakis, A. Urashima, P. Wallace, R. A. Welliver, H. Xu, S. Zhang

Postharvest Pathology: *Chair:* Y. Kim. *Immediate Past Chair:* W. M. Jurick II. *Vice Chair:* K. A. Peter. *Members:* J. E. Adaskaveg, A. Adetutu Ajayi, J. A. Bartz, R. S. Bounds, K. Fiedler, H. C. Forster, V. L. Gaskins, D. Helmer, W. J. Janisiewicz, T. Liu, D. Macarisin, S. Mittal, D. C. Ross, M. Skaria, D. C. Thompson, B. A. Valiente V, C. Xiao, M. Yaghmour

Seed Pathology: *Chair:* S. Thomas. *Immediate Past Chair:* G. P. Munkvold. *Vice Chair:* R. R. Walcott. *Members:* T. A. S Aveling, N. B. Bajet, K. Bastas, P. R. Brown, W. Chen, A. Cochran, M. Diaz-Arias, W. E. Dolezal, B. Dutta, A. Fessehaie, P. T. Himmel, U. C. Kodira, A. Kurtz, S. Li, M. J. McGrath, J. Mercier, M. Mezzalama, D. Morissette, D. Myhaver, E. Ncube, D. Park, S. Parker, R. Pedrozo, I. S. Qandah, R. N. Raid, J. C. Rupe, C. M. Sandlin, G. Sanjeev, L. M. Shepherd, C. M. Vera Cruz, M. C. Vernaiz, E. Vivoda, S. L. Walker, W. L. Wiebe, R. Wilterdink, H. L. Ypema

Soil Microbiology and Root Diseases: *Chair:* L. E. Hanson. *Immediate Past Chair:* K. D. Broders. *Vice Chair:* A. M. Poleatewich. *Members:* H. Susilo Addy, B. Aglave, A. C. Alcala, R. N. Attanayake, G. T. Browne, R. Bulluck, A. M. Fakhoury, J. E. Fultz, D. L. Funnell-Harris, M. Govindarajulu, N. P. Hegde, K. T. Islam, P. Ji, E. G. Johnson, M. T. Kasson, J. E. Kurle, F. J. Louws, K. L. McCorkle, M. J. McGrath, A. Mendoza-Mendoza, M. Orcutt, M. E. Palm, T. C. Paulitz, A. Rojas, A. L. Ross-Davis, J. C. Rupe, L. Shirley Schmidt, A. C. Seidl, A. Y. Srour, M. J. Stulberg, V. Philip Thomas, A. Tohamy, Y. Tsai, F. Uddin, G. E. Vallad, J. Wang, M. Antonina Weckert, J. E. Weiland, A. Westphal

Tropical Plant Pathology: *Chair:* R. C. Kemerait. *Immediate Past Chair:* O. J. Alabi. *Members:* A. T. Alleyne, C. A. Angel, M. Avellaneda, E. Z. Byamukama, C. Mian Cai, M. C. Carrillo, C. R. Cumagun, L. C. Dandurand, S. Dossa, S. Inch, M. Jibrin, R. P. Kaiser, G. R. Knudsen, R. F. Lee, S. Marisa Mathioni, M. T. Mmbaga, F. Rodrigues, T. M. Smith, A. H. Sparks, A. H. van Bruggen

Turfgrass Pathology: *Chair:* J. C. Inguagiato. *Immediate Past Chair:* G. L. Miller. *Vice Chair:* Y. Jo. *Members:* B. Aynardi, L. A. Beirn, J. Benelli, M. J. Boehm, D. Cottrill, J. Crouch, F. J. Flores, M. Giese, P. R. Giordano, G. Jung, J. E. Kaminski, R. J. Keese, P. L. Koch, R. Latin, D. S. McCall, W. D. McClellan, E. Nyaga Njambere, A. F. Payne, A. I. Putman, R. Rioux, J. A. Roberts, C. T. Schiller, M. Tomaso-Peterson, L. P. Tredway, A. Tronsmo, M. Usoltseva, J. M. Vargas, P. L. Vines, N. R. Walker, R. L. Wick

Vector-Pathogen Complexes: *Chair:* A. E. Whitfield. *Immediate Past Chair:* S. W. Mullis. *Vice Chair:* D. Rotenberg. *Members:* J. A. Achata Bottger, S. T. Adkins, R. P. P. Almeida, K. B. Alviar, E. A. Ammar, S. Andreason, E. A. Backus, P. H. Berger, J. K. Brown, S. E. Brown, A. Campbell, M. Cilia, R. Creamer, M. de Vos, A. Diaz Lara, A. C. Fulladolsa, T. L. German, F. E. Gildow, S. M. Gray, D. Hadziabdic, C. Hernandez-Zepeda, M. T. Kasson, G. G. Kennedy, A. G. Laney, R. F. Lee, J. Levy, R. R. Martin, H. Mellinger, T. Nusayr, J. Price, J. Rapicavoli, A. Ravindran, N. A. Rayapati, M. G. Redinbaugh, W. Schneider, V. Sengoda Gounder, J. Soto-Arias, R. Srinivasan, C. Stafford, L. R. Stewart, A. Stobbe, I. E. Tzanetakis, D. E. Ullman, N. Wang, A. C. Wayadande, S. E. Webb, C. G. Webster, A. E. Whitfield, W. M. Wintermantel, E. N. Wosula, R. K. Yokomi, Y. Zhao, J. Zhou

Virology: *Chair:* S. Tatineni. *Immediate Past Chair:* J. A. Abad. *Vice Chair:* Z. Xiong. *Members:* J. A. Achata Bottger, S. T. Adkins, C. V. Almeyda, E. J. Anderson, C. A. Angel, B. Bagewadi, O. Batuman, A. Brakta, S. A. Bratsch, A. L. Briggs, J. K. Brown, R. P. Chauhan, G. M. Chewachong, M. Cilia, F. M. Cisneros, R. Creamer, C. M. Deom, A. Diaz Lara, H. Kim Doan, A. C. Fayad, M. Fereidouni, E. Fernquist, T. L. German, R. L. Gilbertson, S. M. Gray, J. Hammond, R. W. Hammond, S. F. Hanson, F. Herrera, T. Ho, R. L. Jordan, A. V. Karasev, S. Khankhum, J. H. LaForest, A. G. Laney, R. T. Lartey, L. Levy, R. Li, K. Ling, C. Lyons, C. J. Maroon-Lango, R. R. Martin, N. Mehle, U. K. Melcher, M. J. Melzer, D. S. Mollov, S. W. Mullis, H. R. Pappu, S. Poojari, J. Price, W. Qiu, D. F. Quito-Avila, S. Rabindran, N. A. Rayapati, M. G. Redinbaugh, A. Rodriguez, S. Sabanadzovic, M. Sales, W. Schneider, J. E. Schoelz, L. R. Stewart, A. Stobbe, M. R. Sudarshana, T. Thekke Veetil, D. Tripathi, I. E. Tzanetakis, D. E. Ullman, D. V. Villamor, W. M. Wintermantel, E. N. Wosula, H. Xu, S. Zhang, J. Zhou

OFFICERS OF THE CANADIAN PHYTOPATHOLOGICAL SOCIETY (2013–2014)

Janice Elmhirst, *President*
Deena Errampalli, *President-Elect*
Brent McCallum, *Vice-President*
Fouad Daayf, *Past-President*
Gayle Jesperson, *Secretary*
Kenneth Conn, *Treasurer*
Vikram Bisht, *Membership Secretary*
Zamir Punja, *Journal Editor*
Curt McCartney, *Senior Director*
Larry Kawchuk, *Junior Director*

APS HEADQUARTERS STAFF

Executive Vice President
Amy Hope

Annual Meetings/Continuing Education
Betty Ford, *Director*
Lyssa Campbell
Lisa Johnson
Sue Stein
Rhonda Wilkie

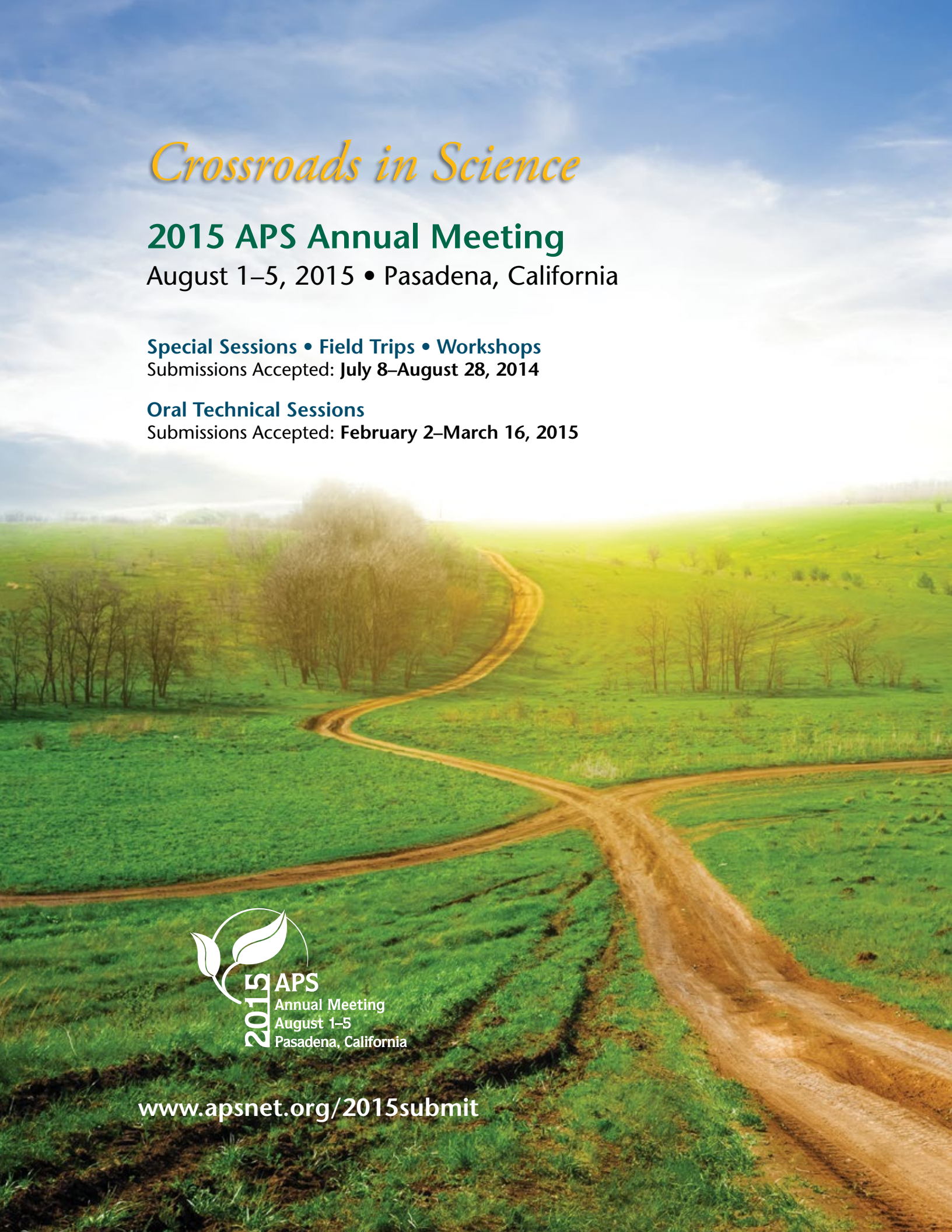
Finance/Accounting
Kim Davis, *Director*
Kim Flanegan
Kris Benjamin
Kathy Guderjahn
Julie Mulligan

Operations/Membership & Communications
Michelle Bjerkness, *Director*
Michele Kaplan
Lauren McGinty
Holly Pinkerton
Cindy Scheller

Publications
Greg Grahek, *Director*
Kristen Barlage
Phillip Bogdan
Carol Duling
Karen Ek
Patti Ek
Sue Figueroa
Susan Freese
Kurt Gegenhuber
Linda Gold
Luca Rescigno
Sue Stuessy
Kristin Wilbur
Dawn Wuest

Technology/Process Management
Erik Uner, *Director*
Joel Berg
Rick Christensen
Iva Greenlee
Dave Hendrickson
Denise Kessler
Cheryl Kruchten
Jeff Marler
An Nguyen
Carol Pagel
Connie Pagel
Todd Quiram
Brian Simdars
Robyn Truhler
Karol Vannelli
Agnes Walker

2014 APS–CPS Author Index


Crossroads in Science
2015 APS Annual Meeting
August 1–5, 2015 • Pasadena, California
Special Sessions • Field Trips • Workshops
Submissions Accepted: July 8–August 28, 2014
Oral Technical Sessions
Submissions Accepted: February 2–March 16, 2015
2015 APS
Annual Meeting
August 1–5
Pasadena, California
www.apsnet.org/2015submit

AmplifyRP® Discovery Kits

VISIT US AT BOOTH #201/300

& Discover

What AmplifyRP® Can Do For You!

- Isothermal DNA or RNA Amplification - *20 MINUTES OR LESS*
- Crude Sample Extractions - *NO DNA OR RNA PURIFICATIONS*
- Open Platform - *DESIGN YOUR OWN PRIMERS & PROBES*
- Available in two detection formats, Acceler8 (Lateral Flow) and XRT (Fluorescence)

Extract... Amplify... Detect... ***in minutes!***

AmplifyRP® Acceler8™

Lateral flow end-point detection

AmplifyRP® XRT

Real-time fluorescent detection

agdia®

www.agdia.com/AmplifyRP