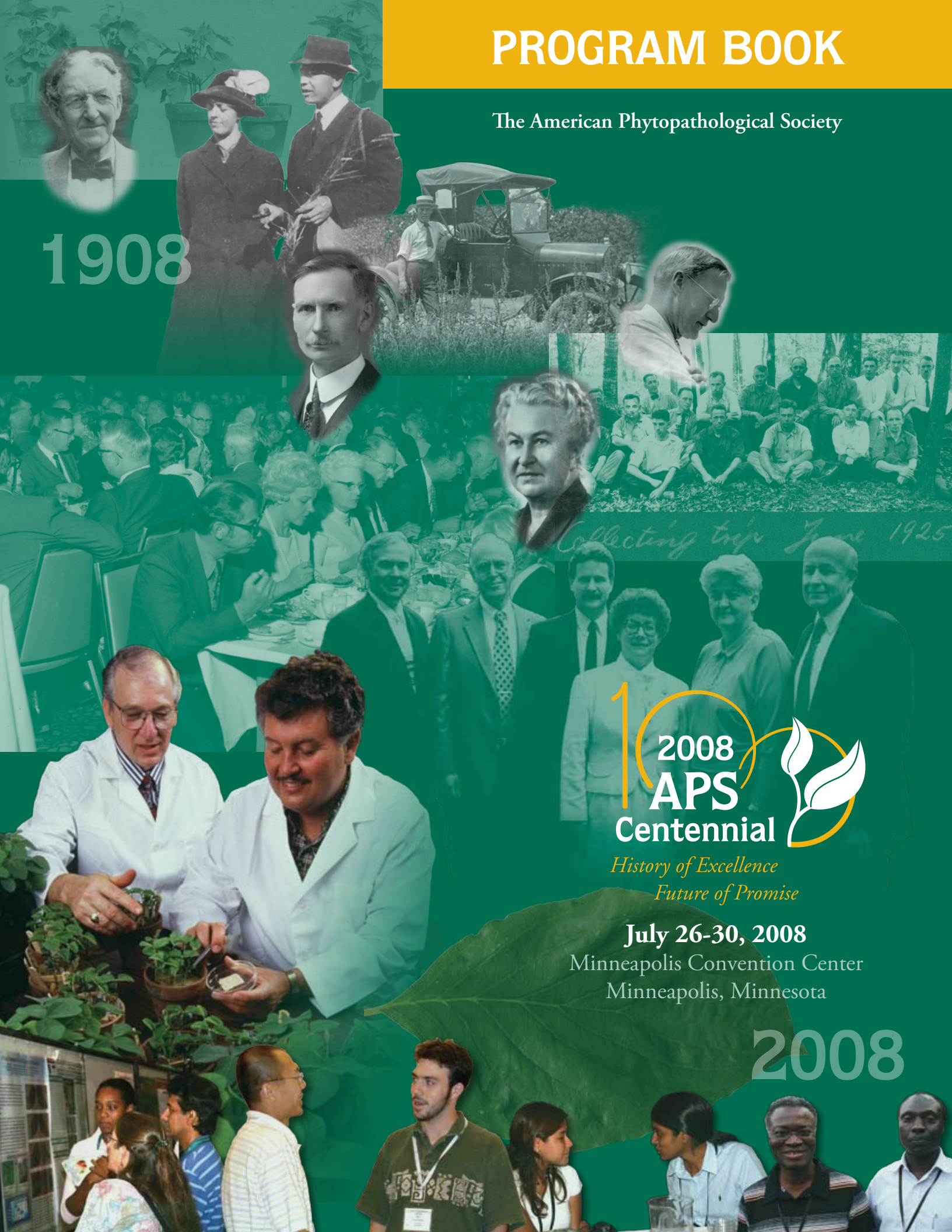


PROGRAM BOOK

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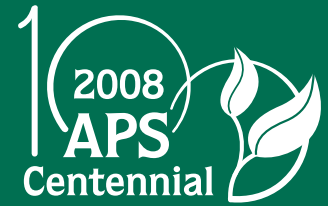
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Welcome to the APS CENTENNIAL MEETING!



We are thrilled to be here in Minneapolis-St. Paul to celebrate The American Phytopathological Society and honored to have a record number of past APS presidents and leaders here to help us commemorate our Centennial.

The 2008 APS Centennial Meeting highlights the key developments and discoveries of our first 100 years and offers a dynamic look into the future of our science. You will have many remarkable opportunities over the next several days to participate in technical, societal, and social activities. We encourage you to take full advantage of your time here. Get involved on every level – attend social gatherings and networking events, visit historical and commemorative displays, meet the new generation of plant pathologists and researchers at the technical program, and participate in active and lively discussion with world-renowned scientists from our past, present, and future.

This year's program highlights historical and celebratory Centennial sessions with an expanded plenary session and a closing plenary luncheon featuring special guest speaker Dr. Lowell Catlett's highly entertaining take on *Tomorrow's Agriculture – Six Trends You Can't Afford to Miss!* In addition, an informative technical program features symposia, over 350 oral and poster presentations, special flash-and-dash presentations, and time with poster authors for discussion. There are more abstracts than last year, plus 27 special sessions covering today's most interesting and relevant topics, including aflatoxins; biocontrol in organic crops; education, technology, and international collaboration in plant pathology; food security; new products and services; and much more.

I would be remiss if I did not thank everyone for their contributions and willingness to work together in order to mark the occasion of APS's first 100 years with this memorable tribute. Special kudos go to the Centennial Planning Committee, the many volunteers who donated to the historical pieces, and the Scientific Program Board (SPB) for their tireless efforts in forging all of the contributions into a program.

Finally, this annual meeting represents a unique opportunity for us to come together, to share the work we are all doing individually and around the world, to learn from each other in a stimulating and challenging environment, and *to celebrate all that went on before we were here*. We are extremely proud of what we've become and the potential that exists for plant pathology thanks to the contributions of APS and its members.

James Moyer
APS 2008 Program Chair and President-Elect

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Special thanks to the following sponsors who have generously contributed to help make the APS Centennial Celebration a truly spectacular event.

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*Additional thanks to the initial Centennial sponsors, who ensured special Centennial projects were made possible by their early contributions.

Make the Most of your Centennial Meeting Experience

Welcome to the APS meeting of the century! Hundreds of experts, past APS leaders, world-renowned plant pathologists, and up-and-coming researchers are here in Minneapolis right now to celebrate, reminisce, teach, learn, socialize, and commemorate this historic event.

Now that you've arrived, we encourage you to make the most of your Centennial Meeting experience by taking advantage of this year's outstanding speakers, posters, field trips, exhibition, unique gatherings, and networking opportunities.

Get to know your colleagues and become engaged in a celebration of the diversity and international growth of this profession.

Learn about our history not just from our historical and commemorative displays, but from the unique number of past APS presidents and leaders that surround you on this special occasion.

Join hundreds of plant pathologists from around the world in their discussion of the latest research in the field of plant pathology.

Meet world-renowned scientists in a variety of fields who are here to address national and global issues related to agriculture and the ways in which plant pathology is profoundly influenced by societal, institutional, environmental, and technological changes.



Examine the newest research at the over 950 technical oral and poster presentations. As technologies and applications push the envelope, the next generation of researchers will rise to the occasion and the evolution of our discipline will continue for another 100 years.

Enjoy your time in Minneapolis-St. Paul at the headquarters home of The American Phytopathological Society. The Mall of America, world renowned theater, music, and galleries are all in arm's reach.



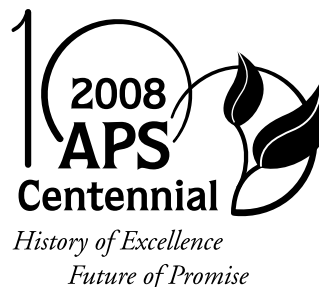


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GENERAL INFORMATION

Registration

Main Lobby, Convention Center

Registration is located in the Minneapolis Convention Center Main Lobby. Full registration includes access to the Opening Centennial Celebration, plenary sessions, special sessions, technical sessions, posters, exhibits, Tuesday night's "Party Through the Decades", and the APS Closing Plenary Luncheon.

Registration Hours

Saturday, July 26	2:00 – 7:00 p.m.
Sunday, July 27	7:00 a.m. – 7:00 p.m.
Monday, July 28	7:00 a.m. – 5:00 p.m.
Tuesday, July 29	7:00 a.m. – 5:00 p.m.
Wednesday, July 30	7:00 – 11:00 a.m.

Exhibition Hours

Exhibit Hall C

Sunday, July 27	6:00 – 8:00 p.m.
Monday, July 28	9:00 a.m. – 6:00 p.m.
Tuesday, July 29	8:00 a.m. – 3:00 p.m.

APS PRESS Hours

Exhibit Hall C

Sunday, July 27	6:00 – 8:00 p.m.
Monday, July 28	9:00 a.m. – 6:00 p.m.
Tuesday, July 29	8:00 a.m. – 5:00 p.m.
Wednesday, July 30	8:00 – 11:00 a.m.

Abstracts and Program Books

Abstracts and program books are available at the Registration Desk. APS abstracts are also published in the supplement to the June issue of *Phytopathology*.

Technical Posters and Flash-and-Dash

More than 750 poster presentations feature the latest in scientific research. All poster authors will be present at their posters for discussion on selected days throughout the program.

Introduced in 2007, Flash-and-Dash poster presentations return in 2008 with triple the number of presentations compared with last year. Flash-and-Dash poster authors will present their individual posters in the form of a five-minute, three-slide talk. Poster viewing with these authors follows in the exhibit hall. Check the daily program schedule for presentation times and topics.

Virtual Flash-and-Dash

Launching APS into its next century, a selected group of Flash-and-Dash presentations have gone virtual as part of the Centennial celebration. Voice-overlaid PowerPoint presentations of ten Flash-and-Dash poster presentations were made in advance and are available during and after the Centennial meeting. These presentations will run outside Exhibit Hall C during the meeting and are available on the annual meeting website at <http://meeting.apsnet.org>.

Poster Viewing and Flash-and-Dash Hours

Exhibit Hall C

Sunday, July 27

10:00 a.m. – 2:00 p.m.	Poster Set-up
6:00 – 8:00 p.m.	Poster Viewing Open

Monday, July 28

7:30 a.m. – 7:00 p.m.	Poster Viewing Open
1:00 – 2:00 p.m.	Flash-and-Dash Presentations
2:00 – 3:00 p.m.	Flash-and-Dash Authors Present at Posters

Tuesday, July 29

7:30 a.m. – 5:30 p.m.	Poster Viewing Open
8:00 – 9:00 a.m.	Poster Authors Present—even numbered posters
10:00 – 11:00 a.m.	Flash-and-Dash Presentations
11:00 a.m. – 12:00 p.m.	Flash-and-Dash Presentation Authors Present at Posters
1:00 – 1:50 p.m.	Flash-and-Dash Presentations
1:50 – 2:45 p.m.	Flash-and-Dash Authors Present at Posters

Wednesday, July 30

8:00 – 9:00 a.m.	Poster Viewing Open
8:00 – 9:00 a.m.	Poster Authors Present—odd numbered posters
9:00 – 11:00 a.m.	Poster Take-Down

2008 Centennial Meeting Proceedings CD

This searchable CD will provide a record of the posters and presentations you visited as well as those you didn't have time to view. Citable abstracts of each presentation are included. This CD may be ordered at the APS PRESS Bookstore in Exhibit Hall C. If you have pre-ordered the CD when you registered, a receipt ticket is included with your registration packet. The 2008 Centennial Meeting Proceedings CD will ship approximately 6 to 10 weeks after the meeting. If you are delivering your presentation to be included in the 2008 Centennial Proceedings CD, please drop it off at the APS PRESS Bookstore.

Job Placement Service

206 AB

Interested in connecting with potential employers or employees during the meeting? APS offers complimentary use of the onsite Job Placement Service to employers and job candidates during the meetings.

Job Placement Service Hours:

Saturday, July 26	1:00 – 4:00 p.m.
Sunday, July 27	9:00 a.m. – 4:00 p.m.
Monday, July 28	9:00 a.m. – 4:00 p.m.
Tuesday, July 29	9:00 a.m. – 4:00 p.m.

See What's New at the APS PRESS Bookstore!

Visit the bookstore and discover new books, teaching videos, image collections, and T-shirts. Save on everything APS PRESS offers including the new edition of *Compendium of Onion and Garlic Diseases and Pests*, *Phytophthora: Identifying Species by Morphology and DNA Fingerprints*, *Fungi in the Ancient World*, *Pioneering Women in Plant Pathology*, *Assess 2.0 Image Analysis Software for Plant Disease Quantification*, and the new *Virus Image Collection and Teaching Resource*. Present your book idea to representatives from the APS PRESS editorial board and learn more about how you can publish your passion with APS PRESS! Stop by and see PLANT MANAGEMENT NETWORK's new educational webcasts featuring Focus on Soybean and other important topics. Don't forget to purchase a Centennial T-shirt before they're gone! Plus, don't miss the "APS T-shirts Through Time" Centennial display featuring a full collection of past APS Annual Meeting T-shirts.

Receive a FREE APS Hand Lens at the APS PRESS Bookstore

Set up a custom saved search in *Phytopathology*, *Plant Disease*, or *MPMI* Online during the Centennial Meeting and receive a FREE APS Hand Lens! Visit the journals area at the APS PRESS Bookstore during the bookstore hours to receive a FREE APS Hand Lens and get help from APS staff to set up your custom alerts for all the new research published in APS journals online that matches your interest areas. Available while supplies last!

APS Welcome Booth

Exhibit Hall C

APS invites you to stop by the APS Welcome booth, located at the entrance of the exhibit hall, for many fun activities. Quiz



yourself on APS history and be rewarded, share your favorite APS memories by signing the Centennial Meeting Scrapbook, add your plant pathology predictions to the time capsule, and receive special Centennial gifts. Membership staff will be on hand to answer questions and provide information about the many resources APS has to offer you.

Open Meeting Rooms

APS has small meeting rooms available for use throughout the meeting. To check availability and location and to reserve a meeting time, stop by the Registration Desk.

Getting Around in Minneapolis

The Minneapolis Convention Center and hotels are all located within easy walking distance of each other and of most major downtown attractions, including dining and nightlife. Cabs are available from the convention center and hotels. In addition, Minneapolis's public transportation system is easily accessible and can take you directly from downtown to the Mall of America or the Minneapolis-St. Paul Airport via light rail. Stop by the information desk at the Convention Center for more information.

Media


Members of the media seeking interviews onsite should contact APS staff member Michelle Bjerckness at the Registration Desk. Media kits and current press releases will also be available at registration.

Photo Release

Photographs will be taken at the APS Centennial Meeting. By registering for this meeting, you agree to allow APS to use your photo in any of their publications or websites.


Dress

The official dress of the meeting is business casual.



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Safety Tips

- Do not travel alone – stay in groups and travel in well-lit areas. Remove name badges when outside the hotels and 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 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 or sodas. Someone may enter when you are not looking.
- Know where the stairs are located in case of 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 Hotel 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 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.

Emergency Information

Medical emergencies should be communicated to an APS staff member at the Registration Desk or an employee of the hotel where you are staying. In your hotel dial 0 for operator or phone the local emergency response team by dialing 911 and give your exact location. At the Minneapolis Convention Center, use any house phone and dial "0" during an emergency. An Emergency Medical Technician (EMT) will be available during show hours at the Convention Center. Dialing "0" instead of 911 at the Convention Center is the quickest way to receive assistance.

The hospital facility located closest to the meeting facilities:

Hennepin County Medical Center (HCMC)

701 Park Avenue
Minneapolis, MN 55415
+1.612.873.3000

Meeting Facilities

Minneapolis Convention Center

1301 Second Avenue South
Minneapolis, MN 55403
Telephone: 612.335.6000

Hilton Hotel

1001 Marquette Avenue South
Minneapolis, MN 55403-2440
Telephone: 612. 376.1000

DoubleTree Guest Suites

1101 LaSalle Avenue
Minneapolis, MN 55403
Telephone: 612. 332.6800

Holiday Inn Express Hotel & Suites

225 South 11th Street
Minneapolis, MN 55403
Telephone: 612. 341.3300

Millennium Hotel Minneapolis

1313 Nicollet Mall
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Crowne Plaza Hotel

618 Second Avenue South
Minneapolis, MN 55402
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Downtown Minneapolis

With APS Hotels

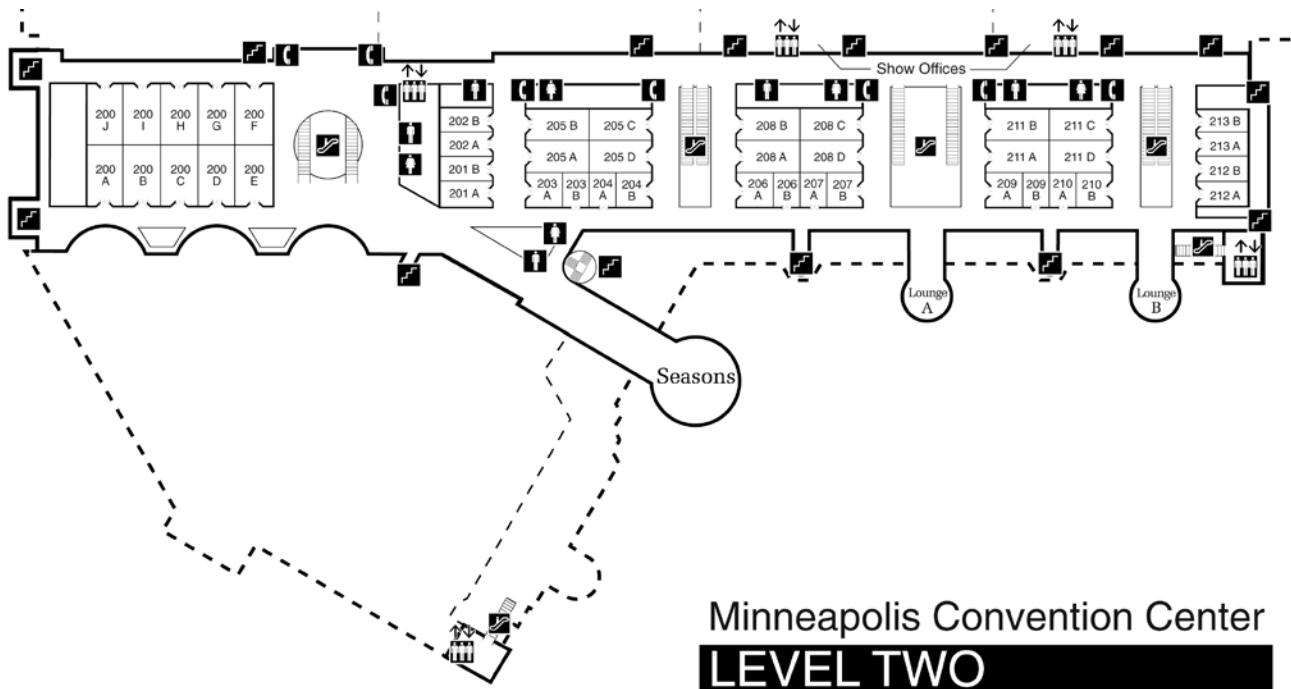
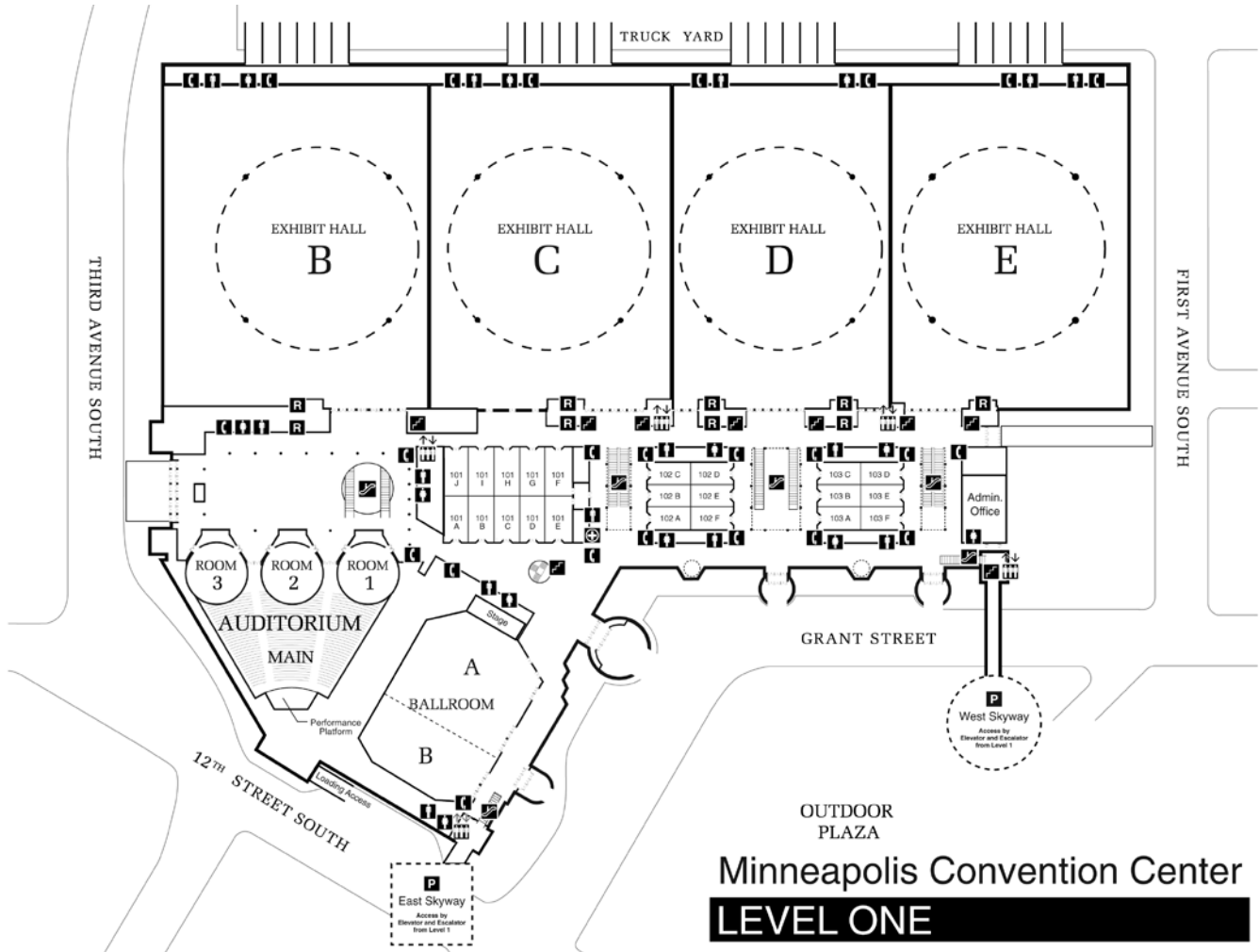


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Participating Hotels

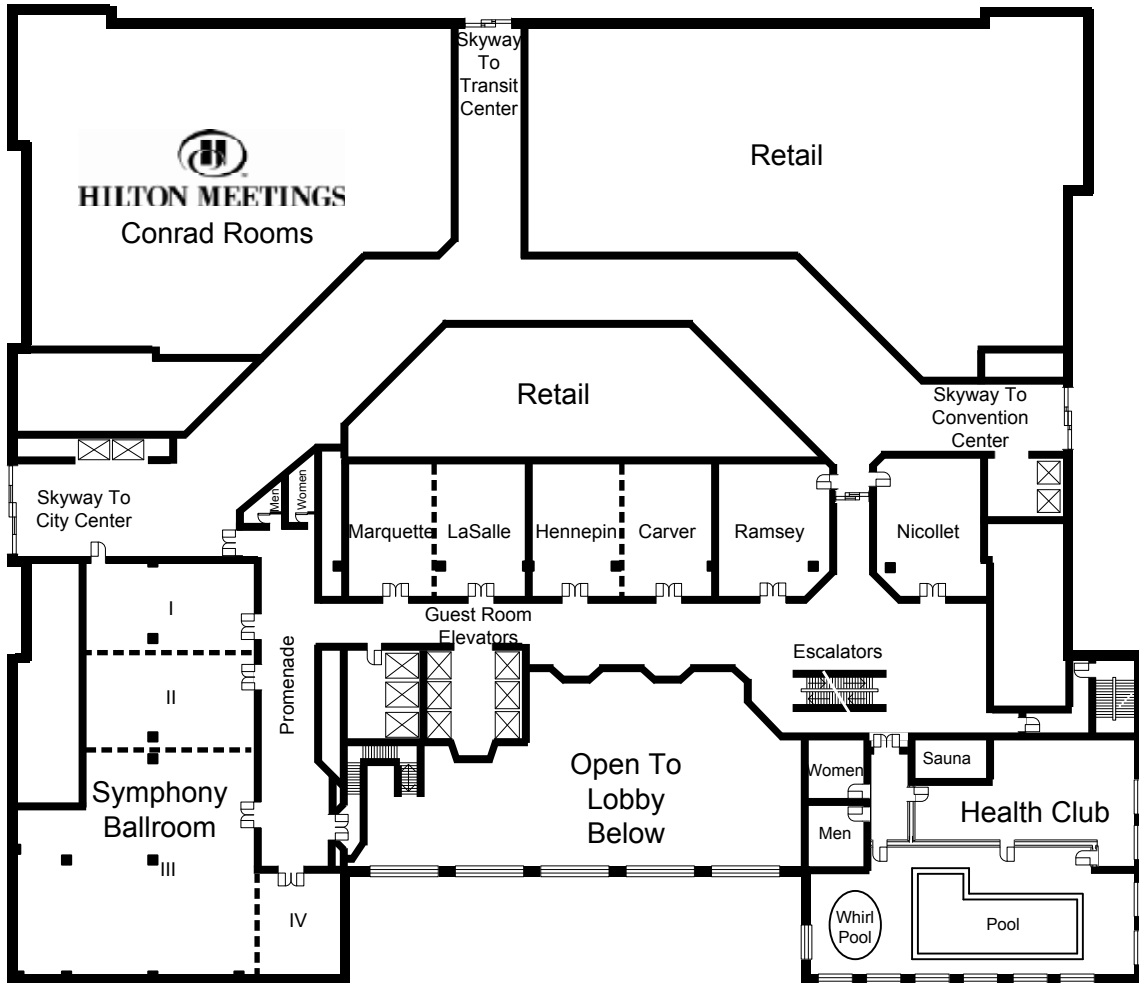
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- C. Doubletree Guest Suites
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- E. Millennium Hotel

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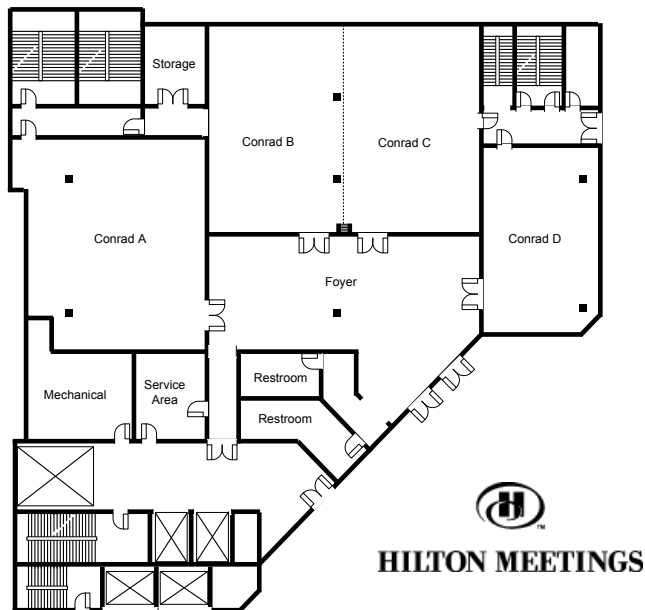


Hilton Hotel

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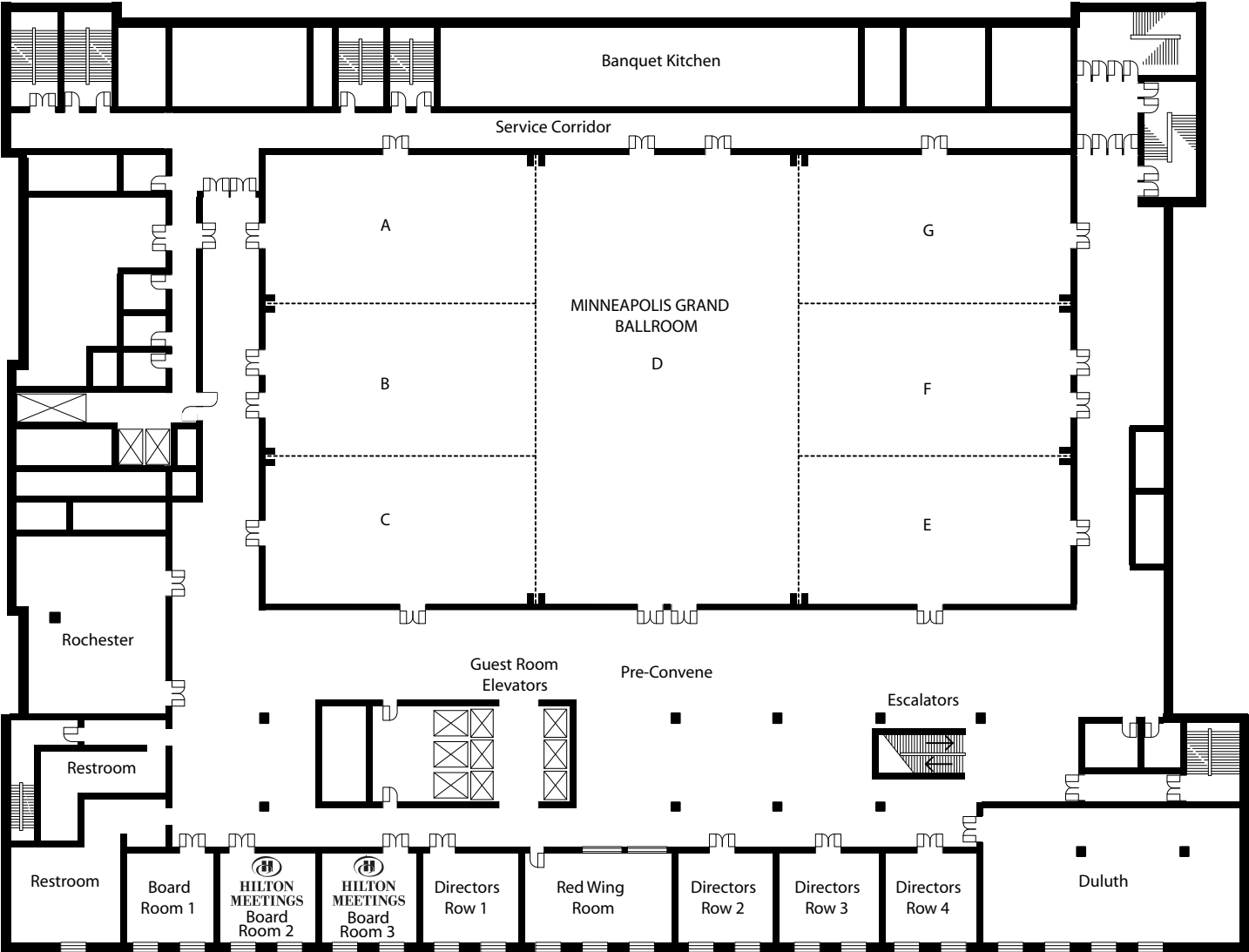


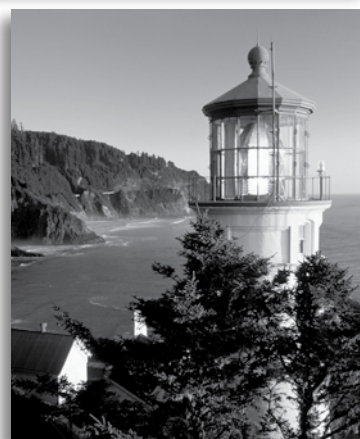
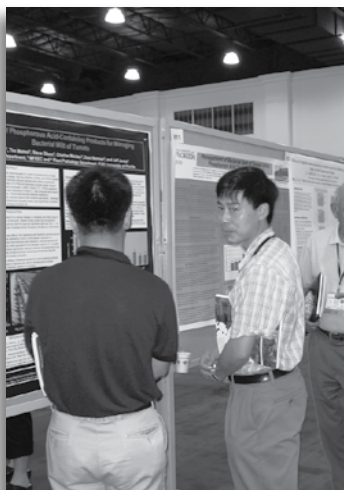
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Hilton Hotel

MEETING FACILITIES - THIRD FLOOR





Portland Photos Courtesy of the Portland Oregon Visitors Association

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PROGRAM

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See daily schedule for flash-and-dash presentations.

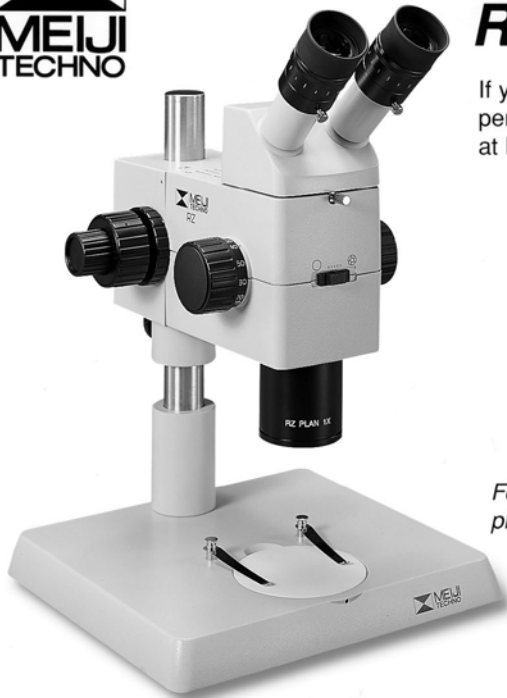
PROGRAM

	Biology of Plant Pathogens	Diseases of Plants	Epidemiology/ Ecology/ Environmental Biology
Sunday Afternoon		<p>SPECIAL SESSIONS Detection, Identification, and Diagnostics: Advancing One Sample at a Time 1:00-2:45 p.m.; 200 DE</p> <p>Faces of the Future in Mycology: A Look to the Future 1:00-3:00 p.m.; 200 FG</p> <p>TECHNICAL SESSION Diseases of Plants - Ornamental 1:00-3:00 p.m.; 208 AB</p>	<p>SPECIAL SESSIONS Impact of Plant Virus Epidemiology: Past, Present, and Future 1:00-3:00 p.m.; 205 AB</p> <p>Potential Impacts of Climate Change on Diseases in Natural Ecosystems: Using History to Predict the Future 1:00-2:45 p.m.; 200 ABC</p> <p>TECHNICAL SESSIONS Epidemiology 1:00-3:00 p.m.; 211 AB</p> <p>Population Genetics 1:00-2:45 p.m.; 211 CD</p>
Monday Morning	<p>SPECIAL SESSION An Evolving Culture Collection System to Meet Modern Research Needs 8:00-9:30 a.m.; 200 ABC</p> <p>TECHNICAL SESSION Fungal Biology & Genomics 8:00-9:30 a.m.; 200 HIJ</p>	<p>SPECIAL SESSION A Century of Turfgrass Pathology: Then, Now, & The Future 8:00-9:30 a.m.; 205 AB</p> <p>TECHNICAL SESSIONS Detection 8:00-9:15 a.m.; 208 CD</p> <p>Nematology 8:00-9:30 a.m.; 211 CD</p>	<p>TECHNICAL SESSION Spatial & Temporal Patterns of Disease 8:00-9:30 a.m.; 205 CD</p>
Monday Afternoon		<p>SPECIAL SESSION If We Had Known Then What We Know Now: Reflections on Catastrophic Tree Diseases 1:00-3:00 p.m.; 205 CD</p>	<p>SPECIAL SESSIONS Epidemiology and Food Security: Historically Linked, Future of Promise 1:00-3:00 p.m.; 200 ABC</p> <p>Harnessing Emerging Molecular and Statistical Technologies for Analysis of Soilborne Pathosystems 1:00-3:00 p.m.; 205 AB</p>
Tuesday Morning	<p>TECHNICAL SESSION Fungal: Diversity 9:00 a.m.-12:00 p.m.; 208 AB</p>		<p>SPECIAL SESSIONS 8th Melhus Graduate Student Symposium: Forty-Five Years After Van Der Plank, New Visions for the Future of Plant Disease Epidemiology 9:00-11:45 a.m.; 205 CD</p> <p>Plant-Associated Bacteria in Their Natural Habitat 9:00 a.m.-12:00 p.m.; 200 ABC</p>
Tuesday Afternoon	<p>SPECIAL SESSION Assembling the Fungal Tree of Life: From Linnaeus to Deep Hypha and Beyond 1:00-4:00 p.m.; 200 HIJ</p> <p>TECHNICAL SESSION Bacteria Pathogens 1:00-2:30 p.m.; 200 ABC</p>		
Wednesday Morning	<p>SPECIAL SESSIONS Aflatoxins, the Toxins that Redefined Plant Disease 9:00-11:30 a.m.; 205 CD</p> <p>Down in the Dirt with Phytopathogenic <i>Verticillium</i>: Genetic and Molecular Tales of a Vascular Fungus 9:00-11:30 a.m.; 200 DE</p>	<p>TECHNICAL SESSIONS Diseases of Plants – Fruits, Nuts, & Vegetables 9:00-11:30 a.m.; 205 AB</p> <p>Forest Pathology 9:00-11:30 a.m.; 211 CD</p>	<p>TECHNICAL SESSION Phyllosphere/Rhizosphere Microbiology & Ecology 9:00-11:30 a.m.; 200 HIJ</p>

Molecular/ Cellular/ Plant Microbe Interactions	Plant Disease Management	Professionalism/ Service/Outreach
<p>TECHNICAL SESSIONS Bactria: Molecular, Cellular Biology 1:00-3:00 p.m.; 205 CD</p> <p>Fungal: Molecular, Cellular, Biology 1:00-3:00 p.m.; 200 HIJ</p>	<p>TECHNICAL SESSION Host Resistance - Plants 1:00-3:00 p.m.; 208 CD</p>	
<p>SPECIAL SESSION Protein Modifications During Host/Pathogen Interactions 8:00-9:30 a.m.; 200 FG</p> <p>TECHNICAL SESSION Host Resistance - Molecular 8:00-9:30 a.m.; 208 AB</p>	<p>TECHNICAL SESSION Integrated Pest Management 8:00-9:30 a.m.; 211 AB</p>	
<p>TECHNICAL SESSION Bacteria: Molecular, Cellular Biology II 1:00-3:00 p.m.; 200 HIJ</p> <p>SPECIAL SESSIONS Fungi: Molecular, Cellular Biology II 1:00-3:00 p.m.; 200 DE</p> <p>Bacterial Type III Secretion Systems: From Enigmatic <i>avr</i> and <i>hrp</i> Genes to Type III Effector-Mediated Suppression of Plant Immunity 3:15-6:15 p.m.; 208 CD</p>	<p>SPECIAL SESSION <i>Phytophthora</i>: A Global Problem with Continued and Historical Importance 1:00-3:00 p.m.; 208 AB</p> <p>TECHNICAL SESSION Chemical Control 1:00-3:00 p.m.; 200 FG</p>	
<p>SPECIAL SESSION Fungal Genomics Enters the Post-Genome Era 9:00-11:30 a.m.; 205 AB</p> <p>TECHNICAL SESSION Viruses: Molecular, Cellular Biology 9:00 a.m.-12:00 p.m.; 200 FG</p>	<p>TECHNICAL SESSION Disease Management: Biological Control 9:00 a.m.-12:00 p.m.; 200 HIJ</p>	<p>SPECIAL SESSION Building International Bridges in a Flat World 9:00-11:30 a.m.; 200 DE</p>
<p>SPECIAL SESSION Advances in Plant Pathology in China 1:00-2:30 p.m.; 200 DE</p>	<p>SPECIAL SESSIONS Balancing Natural and Augmentative Biocontrol in Organic Cropping Systems 1:00-2:30 p.m.; 205 AB</p> <p>Citrus Canker: A Case Study in Regulatory Plant Pathology; Past, Present, and Future 1:00-2:30 p.m.; 205 CD</p> <p>New Products and Services 1:00-2:30 p.m. 208 AB</p>	<p>SPECIAL SESSION Teaching Plant Pathology: Ideas and Tools for Today's Classrooms 1:00-2:30 p.m.; 200 FG</p>
<p>SPECIAL SESSIONS Plant Virology: Impact on Science and Society 9:00-11:30 a.m.; 208 CD</p> <p>Resistance Genes – Past, Present, and Future 9:00-11:30 a.m.; 211 AB</p> <p>TECHNICAL SESSION Molecular Detection & Characterization 9:00-10:15 a.m.; 200 FG</p>	<p>SPECIAL SESSIONS From Field to Fork: Historical Perspective and Future Promise of Postharvest Decay Management 9:00-11:30 a.m.; 208 AB</p> <p>What Was, Is, and Could Be: Contributions of Industry and Partners to Plant Disease 9:00-11:30 a.m.; 200 ABC</p>	



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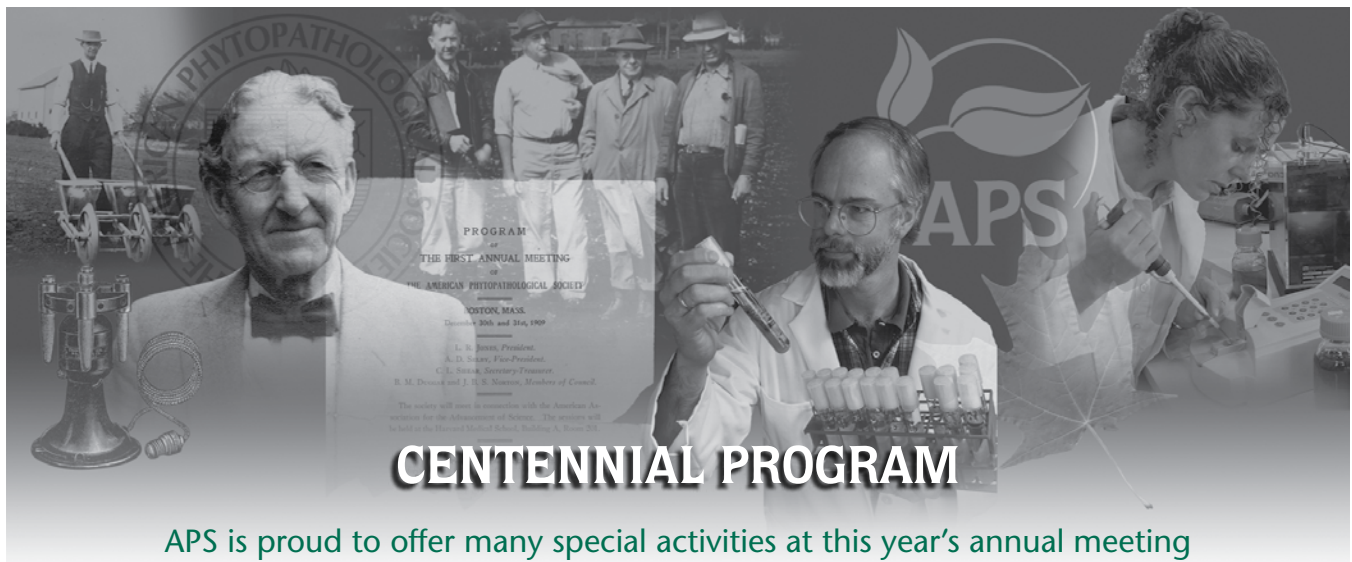
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Best Source for Plant Pathology Jobs & Candidates

Now's your chance to land your perfect plant pathology job or find the best candidates in plant pathology. The APS Job Placement Service has always been a great way to bring job seekers and employers in the plant health field together. Stop by the APS Placement Service in Room 206AB during the meeting, where you'll be able to search for available positions/candidates online through the same *APSnet* system you use year-round. Use the simple web forms to leave messages regarding the employers or candidates you want to connect with during the meeting.

No time during the meeting... browse the same information year round at www.apsnet.org/careers/.

www.apsnet.org/careers/



CENTENNIAL PROGRAM

APS is proud to offer many special activities at this year's annual meeting in honor of our Centennial.

Centennial Sessions

100 Years of The American Phytopathological Society

Sunday, July 27 • 3:15 – 5:45 p.m. • Auditorium

Over the past 100 years, APS has grown into a relevant and responsive leader in the field of plant pathology and has remained that way through a commitment to high standards and revolutionary leaders. Speakers will address the evolution of APS as a professional scientific society; the growth of APS as a publisher of journals and books; the role of APS in public service and education; APS leadership/cooperation in international agriculture and programs; and APS leadership in plant pathology within the life sciences.

Plant Pathology in 1908/2008

Monday, July 28 • 8:00 – 9:00 a.m. • 200 DE

Plant pathology has come a long way in the century since APS was founded. Presentations from 1908 on phyto bacteriology and chestnut blight will be followed by 2008 updates on these two topics to illustrate the progress of our science in the last 100 years. All speakers will be plant pathologists and presentations will be in 1908 costumes and with lantern slides!

Optimizing Opportunities for Everyone in Plant Pathology

Monday, July 28 • 3:15 – 6:15 p.m. • Auditorium

It is more important than ever for our discipline to ensure opportunities for everyone and APS is taking steps to ensure that diversity is both valued and rewarded. Be a part of the discussion as well-known speakers address the history of women in plant pathology; how the quality of science benefits from diversity; and the impact of international scientists on scientific productivity.

The Future of Plant Pathology

Tuesday, July 29 • 2:45 – 5:45 p.m. • Auditorium

The field of plant pathology is pushing forward with new and exciting technologies and applications. Powerful genomics and bioinformatics tools are enabling researchers to examine interactions among entire microbial communities, and new high-power computing capabilities are mining and comparing genomes and proteomes of plant pathogens and their hosts.

Remote-sensing devices are being used to monitor plant disease epidemics across a wide range of temporal and spatial scales, and online databases are linking living plant pathogen culture collections to publicly available morphological and sequence data. Global food markets are demanding a reliable production of safe food and feed, and regulatory networks are poised to rapidly detect and respond to immediate threats of high-risk plant pathogens. A new “wired” generation of students needs to be engaged in the classroom. Attracting and retaining these individuals as agricultural professionals is a crucial discussion that must be explored in order to ensure the future of our discipline.

Centennial Displays

Historical Displays • Main Lobby, Convention Center

Stop by and examine the antique tools of our discipline in this special historical display. See evidence of the evolution of our scientific journals that have been such an important and prominent part of the history of APS and our discipline. Reminisce while you view the antique instruments in this exhibit. In addition to the historic instruments that you may or may not recognize in the display, there is a collection of mystery tools that will challenge your imagination. Take the challenge and see how many of the mystery items you can identify! Stop at the APS PRESS area in Exhibit Hall C for a look at “APS T-shirts Through Time” Centennial display featuring a full collection of past APS Annual Meeting T-shirts.

Centennial Timeline • Main Lobby, Convention Center

This incredible timeline of major discoveries, pioneers, epidemics, and historic events in the evolution of APS is not to be missed! Many members have taken time to remember the unique milestones and major events that have helped to shape APS and its impact on plant pathology, making this timeline both a personal account of our history and an important indicator of how key discoveries led to the work we are doing today. The timeline provides a sense of pride and accomplishment for all society members and is especially informative for younger members and students.

Pioneering Plant Pathologists Display • Second Floor, Convention Center

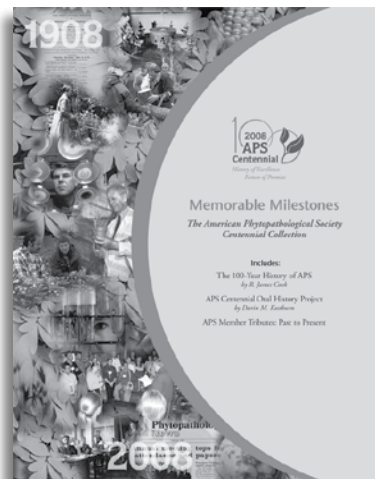
Walk through this exhibit and meet the pioneers of plant pathology, the individuals who have had a tremendous impact on the work you do today. Designed as a promenade, this display spans the second floor of the Convention Center. You are invited to stroll through the exhibit to meet a century's worth of innovators: the researchers and the writers, the illustrators and the innovators, the inventors and the teachers who blazed the path that created the field of plant pathology as we know it. Ever wonder who did the earliest research on chestnut smut, or who developed the first rust-resistant flax? Who authored the first plant pathology textbook? Who has received the prestigious APS Award of Distinction across the years? Now is your chance to find out.

Plant Pathology Featured at the Science Museum of Minnesota • St. Paul, Minnesota

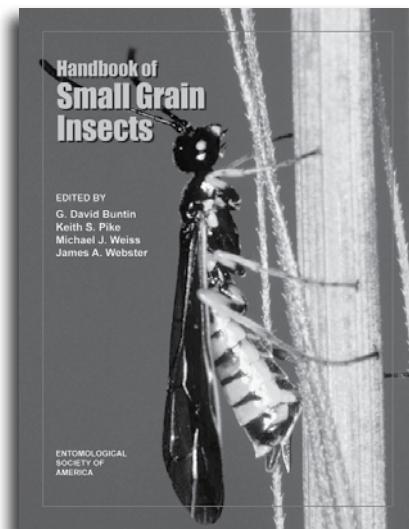
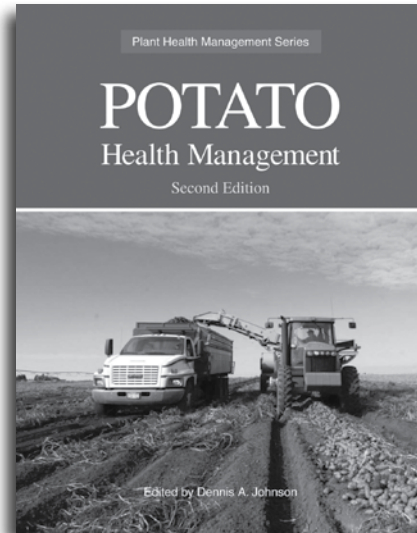
The Science Museum of Minnesota is a premier science museum and a key attraction in St. Paul, hosting more than one million visitors per year. As part of the APS Centennial, a display on plant pathology entitled "Plants Get Sick, Too" has been unveiled at the museum. The major themes of the display introduce visitors to plant diseases and their impact on human society and natural habitats and highlight the role that plant pathologists play in understanding and managing plant diseases. Members will be on hand at the exhibit during the meeting to assist with this important outreach effort. Attendees are welcome. The cost for taxi transportation to this off-site location is approximately \$12-15.

Commemorative Collection

All APS Centennial Meeting attendees are receiving a special commemorative bound collection, *Memorable Milestones*, at registration. This keepsake highlights APS's vision and commitment from 1908-2008 represented through The 100-Year History of APS written by Jim Cook, APS Oral History DVDs coordinated by Darin Eastburn, and APS member tribute including listings of key leaders and members from the past to present.



NEW & ON SALE!



ON SALE at the APS PRESS Bookstore located in Exhibit Hall C.

- Sunday, July 27 6 p.m. – 8 p.m.
- Monday, July 28 9 a.m. – 6 p.m.
- Tuesday, July 29 8 a.m. – 5 p.m.
- Wednesday, July 30 8 a.m. – 11 a.m.

Buy at the meeting and SAVE 20% Plus FREE Shipping!
(If you buy 4 or more APS PRESS Titles)



#10-08



The Centennial Meeting features an expanded version of our traditional plenary session.

Plenary Sessions

Eight renowned speakers address the importance of agriculture and an efficient and secure food system in improving global public health. These topics are extremely relevant in today's global society and this diverse gathering of industry leaders will cover many new and exciting approaches in our discipline.

“Agriculture, Food Security, and Public Health: Global Issues – Global Solutions”

For global health initiatives to be successful in the long term, there needs to be a secure and affordable safe food and water system in place. All the medicines in the world can't cure starvation. Agriculture is about producing food, feed, and fiber. Many factors will impact agriculture in the future, including such things as global climate change, the loss in plant, animal, and microbe genetic diversity (biodiversity), and the ever-increasing demand for water. On the other hand, many scientific breakthroughs in areas such as transgenic disease, pest-resistant and stress-resistant plants, transgenic and conventional biofortified food crops, and plant-derived pharmaceuticals will potentially have huge positive impacts on food production and public health. While these have great potential to help alleviate much of the global food and public health crisis, sadly, many may not be adopted because of the political structure in place in countries around the world. Governmental policies also may restrict and actually impede further research into many critical areas of science. These are monumental issues to be sure, but not insurmountable. They are global issues and they will require global solutions.

Opening Plenary Session

Sunday, July 27 • 8:30 a.m. – 12:00 p.m. • Auditorium



8:30-8:45a.m.

Ray Martyn

Professor, Department of Botany and Plant Pathology, Purdue University, and APS President.

“Welcome and Introduction – When Agriculture Fails”

Agriculture is one of the world's great success stories. Our ability to grow food and fiber to feed, clothe and shelter almost

7 billion people is nothing short of remarkable. However, starvation and malnutrition is still rampant throughout much of the world. Global agriculture and, in fact, humanity itself, faces many new challenges. The increasing decline in the planet's rich biodiversity is looming large. Global climate change will negatively impact agriculture in many ways and the conflict between water for agriculture and water for public health and sanitation continues to get worse in many areas of the world. These are global issues and they will require global solutions. If the developed world is intent upon improving the public health of hundreds of millions, even billions of people, a revitalization of, and support for, agriculture must be a vital 'first step' in the process. What we do as agricultural scientists is paramount and a big piece of the solution. When agriculture fails, humanity fails. This special Centennial Plenary Session entitled “Agriculture, Food Security, and Public Health: Global Issues – Global Solutions” will address the issues discussed above.



8:45-9:15 a.m.

Peter Raven

President, Missouri Botanical Garden and the Engelmann Professor of Botany, Washington University in St. Louis; U.S. National Academy of Sciences, 1977; past-president, A.A.A.S., 2002; and U.S. President's Council of Advisors on Science and Technology (Carter administration).

“Biodiversity and Agriculture”

Since the origin of crop agriculture and animal domestication starting approximately 10,500 years ago, there has been a steady erosion of biodiversity throughout the world with some 11% of the land surface devoted to crop agriculture and another 20% to pasture on natural lands, most of it unsustainable. Natural biodiversity has decreased markedly in the face of the spread of this intensive land use. Crop diversity, in contrast, first expanded and is now decreasing in the face of commercial-scale agriculture. Where should we be aiming to preserve biodiversity for the future?



9:20-9:50 a.m.

Chris Field

Director, Department of Global Ecology, Carnegie Institution for Science and Professor of Biology, Stanford University; U.S. National Academy of Sciences, 2001; lead author for the North America Chapter of the 2007 Intergovernmental Panel on

Climate Change, Fourth Assessment Report, Working Group II, “Impacts, Adaptation and Vulnerability”; editorial board, *Proceedings of the National Academy of Sciences*; and co-recipient of the 2007 Nobel Peace Prize, Intergovernmental Panel on Climate Change.

“Agriculture in a Changing Environment”

Agriculture is potentially sensitive to many dimensions of climate change, through both direct and indirect drivers. Responses to warming and altered precipitation, the best understood responses, create some winners and some losers, with the fraction of losers expanding with increasing warming. Indirect responses, from altered pests, weeds, disease, competition for irrigation water, or competition with other land uses, are less well understood, but will likely be as important, in many settings, as the responses to the direct effects. Rapidly increasing demand for biomass energy as an offset to fossil fuels adds further complications to the future of agriculture for food.



9:55-10:25 a.m.

Shiney Varghese

Senior Policy Analyst, Institute for Agriculture and Trade Policy; project leader on Global Water Policy; co-chair, Freshwater Caucus at the United Nations Commission on Sustainable Development; and visiting fellow, Agrarian Studies Program, Yale

University (1997-98).

“The Global Water Crisis: Balancing Water for Agriculture and Public Health”

Access to clean drinking water and sanitation is a basic need and a human right. Unfortunately, half world’s population does not have access to sanitation; more than one in six people still lack reliable access to drinking water. This has led to a severe public health crisis. The problem is particularly acute in the developing world, where more than 70 percent of water withdrawal is used for irrigation purposes. In addition irrigated agriculture and the dominant model of food production contribute substantially to soil and water contamination. In short, the current model of irrigated agriculture negatively affects public health in myriads of ways. The challenge we have is that of ensuring a synergy between drinking water and sanitation needs on the one hand and food production systems on the other. This presentation will explore both the way in which current food production systems worsen the water crisis and the possibility of creating food production systems that are sustainable, meet the needs of the water poor, help maintain the environmental health, and contribute toward improving the public health.



10:30-11:00 a.m.

Rob Horsch

Senior Program Officer, Science and Technology, Bill & Melinda Gates Foundation; Former Vice President for International Development Partnerships, Monsanto Co; U.S. National Medal of Technology Award, 1998; and founding co-

editor, *The Plant Cell* and *Plant Biotechnology*.

“Revitalizing Support for, and Impact of, Plant and Agriculture Sciences”

After decades of decline, real food prices are rising, spurred dramatically upward by a perfect storm of increased demand, limitations on supply, and a need to conserve land, water, and energy to prevent even greater impacts on the environment. The good news is that we have unprecedented scientific and economic capacity to improve the efficiency and productivity of agriculture - if we reverse the long decline in investment in agricultural science, technology, and development, and focus more deliberately on useful, beneficial outcomes. The Bill & Melinda Gates Foundation has launched a major effort to support agricultural development, including agricultural science and technology, but the need far surpasses the resources of a single foundation. We must achieve a global commitment to innovation that is proportionate to the great needs and opportunities for improving agriculture. And we must ensure that the fruits of those investments reach all the world’s farmers in appropriate and effective ways.



11:05-11:35 a.m.

Florence Wambugu

Chief Executive Officer, Africa Harvest Biotech Foundation International; book author, *Modifying Africa: How Biotechnology Can Benefit the Poor and Hungry*; American Biographical Institute “Woman of the Year”; United Nations Hunger Task Force;

and Private Sector Committee of CGIAR and Vice Chair of African Biotechnology Stakeholders Forum.

“The Role of the Africa Biofortified Sorghum (ABS) Project in Tackling Micronutrient Deficiency”

The UN estimates that globally one in three persons suffers from deficiencies in micronutrients. Iron deficiency is responsible for 100,000 maternal deaths in childbirth each year, while vitamin A deficiency causes hundreds of thousands of children to go blind annually. Dr. Wambugu will address how the Africa Biofortified Sorghum Project, funded by the Bill & Melinda Gates Foundation (\$18.7 million), is tackling some of these challenges. *Co-sponsored by the Canadian Phytopathological Society and the American Phytopathological Society “Glenn Anderson Lectureship for World Food Security”.*

Second Plenary Session

Monday, July 28 • 9:40 a.m. – 12:00 p.m. • Auditorium

9:40-10:00 a.m.

Ray Martyn

“Welcome and Introduction”

Professor, Department of Botany and Plant Pathology, Purdue University, and APS President.



10:00-10:30 a.m.

Charles Arntzen

Regent's Professor and F.E. Nelson Presidential Chair, Arizona State University; U.S. National Academy of Sciences, 1983; former president and CEO, Boyce Thompson Institute; U.S. President's Council of Advisors on Science and

Technology (2001-present); and past-president, American Society of Plant Biologists (1985-86).

“Biopharming and Plant-Derived Pharmaceuticals”

Although plants have been used for millennia as sources of medicinal products, it is only in the last decade that the tools of genetic engineering have been applied to plants to create a new biomanufacturing system for pharmaceutical products. Protein drugs, such as monoclonal antibodies, subunit vaccines, and human enzymes are examples of new products that can be produced in plants. The status of plant biotechnology used for pharmaceutical expression in plants, lead products in the pipeline, and relevant regulatory processes to ensure safety and efficacy of these products will be reviewed.



10:35-11:05 a.m.

Roger Beachy

President and Director, The Donald Danforth Plant Science Center, St. Louis; U.S. National Academy of Sciences, 1997; Wolf Prize in Agriculture, 2001; and editorial board, *Proceedings of the National Academy of Sciences*.

“Plant Biotechnology and Agriculture: Is There a Role for Public Sector Scientists?”

Plant virus infections can occur in most crop plants and in some cases are controlled by specific or non-specific host genes that confer resistance or tolerance. In cases where genes for host resistance are not identified, a variety of transgenic approaches have been demonstrated to be effective in conferring virus resistance. This lecture will explore the role of selected transgenic technologies in virus disease resistance and the potential to reduce virus diseases and enhance crop yields.



11:10-11:40 a.m.

Gilbert Omenn

Director, Center for Computational Medicine and Biology and Professor of Internal Medicine, Genetics and Public Health, University of Michigan; former CEO, University of Michigan Health System, and Dean, University of Washington

School of Public Health & Community Medicine; past-president, A.A.A.S. 2006; and Associate Director, Office of Science and Technology Policy (Carter administration).

“The Interface of Science and Policy: The Crucial Roles of Food and Health in Economic Development”

Improved health for the entire population, especially those in deep poverty and/or disenfranchised subpopulations, is an imperative in every country for individuals to learn, to contribute to economic growth, and to make decisions that help control population numbers. The eight U.N. Millennium Development Goals for 2015 are based on credible science and feasible technology, broad political agreement with financial commitments in 2001, and an overall integrated strategy, complemented by health and agricultural initiatives from the Bill & Melinda Gates Foundation and others. Nevertheless, at this midpoint to 2015, there is a chasm between good science and lofty goals, on the one hand, and real progress, especially in sub-Saharan Africa, Latin America, the Middle East, and North Africa. The main challenges are poor governance, extreme poverty, growing inequalities even within prosperous countries, and policy neglect, compounded by inadequate global investment.

Virtual Flash-and-Dash Poster Presentations

Saturday – Wednesday • Entrance to Exhibit Hall C

Launching into the next century of APS, a selected group of Flash-and-Dash presentations will go virtual as part of the Centennial celebration. Voice-overlaid PowerPoint presentations of ten Flash-and-Dash poster presentations were made in advance and are available during and after the Centennial meeting. These presentations will run outside Exhibit Hall C during the meeting and are available on the annual meeting website at <http://meeting.apsnet.org>.

Party Through the Decades – Closing Final Night Celebration

Tuesday, July 29 • 7:30 p.m. – 10:30 p.m. • Ballroom AB

What Centennial celebration would be complete without a final night party? Immediately following the Awards and Honors Ceremony, enjoy a complete buffet and beverages and celebrate the APS Centennial with a commemorative toast and birthday cake. Dance through the decades with the popular Minneapolis-based group Belladiva, as they take you through the boogie woogie days of the 30s and 40s to the rocking 90s.

Closing Plenary and Luncheon with Special Guest Speaker Lowell Catlett

Wednesday, July 30 • 11:45 a.m. – 2:00 p.m. • Ballroom AB
President Ray Martyn will give an APS activities update and then pass the gavel to 2008-2009 President James Moyer at the Presidential Ceremony. All food and beverages for this important luncheon are included in your registration, so be sure not to miss it!



Special guest speaker Dr. Lowell Catlett will present his take on *Tomorrow's Agriculture – Six Trends You Can't Afford to Miss!*. Dr. Catlett is a highly entertaining and dynamic speaker whose presentation is sure to be a meeting highlight. As a Regent's Professor of Economics, Agriculture and Genetic Engineering at New Mexico State University and a recipient of the university's highest award to a professor, the Westhafer Award, Dr. Catlett is an internationally recognized economist and expert on the future of technology and agriculture. *Pre-registration and ticket are required.*

The advertisement features a background of a leaf's vein structure. On the left, there are images of strawberries and a large leaf. On the right, there is a pile of blueberries. The text is overlaid on this background.

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*ADGEN would like
to Congratulate
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THE QUEEN'S AWARD
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2007

DAILY MEETING SCHEDULE AND HIGHLIGHTS

Registration, exhibits, and sessions take place at the Minneapolis Convention Center unless otherwise noted by the room name or number.

Minneapolis Convention Center – all room numbers beginning with 2 are located on the second floor.

Friday, July 25

7:30 – 10:00 a.m.	APS Council Meeting	Conrad A – Hilton
7:30 a.m. departs	Field Trip: Forest Pathology (<i>through Saturday, July 26</i>)	
10:00 a.m. – 5:00 p.m.	APS Leadership Forum, <i>by invitation</i>	Hennepin/Carver – Hilton

Friday Highlights

Field Trip

Forest Pathology – two-day trip

7:30 a.m. • July 25 departure – 6:00 p.m. July 26 return

Sponsoring Committee: Forest Pathology

Organizer: Joe O'Brien, USDA Forest Services, St. Paul, MN

Urban and rural forest tree disease problems will be presented and discussed as participants visit the TRE (Teaching, Research and Extension) Nursery at the University of Minnesota and make stops between Minneapolis/St. Paul and Cloquet, MN. An al fresco evening barbecue and program at the Cloquet Forestry Center cap off the day. Logging history and more tree diseases will be highlighted during the return trip via the St. Croix River Valley. Highlighted diseases include white pine blister rust, Diplodia shoot blight, butternut canker, and ash yellows/decline. A boat excursion on the St. Croix River completes the trip.

Saturday, July 26

7:00 a.m. – 5:00 p.m.	Field Trip: Ornamental Horticulture Crop Field Trip	
8:00 a.m. – 12:00 p.m.	APS Council Meeting	Conrad A – Hilton
10:00 a.m. – 12:00 p.m.	<i>Phytopathology</i> Editorial Board, <i>by invitation</i>	Marquette – Hilton
10:00 a.m. – 12:00 p.m.	<i>Plant Disease</i> Editorial Board, <i>by invitation</i>	LaSalle – Hilton
11:00 a.m. – 3:00 p.m.	Field Trip: University of Minnesota Plant Pathology Legacy Tour	University of Minnesota, St. Paul Campus
12:00 – 3:30 p.m.	APS PRESS Board Meeting	Duluth – Hilton
1:00 – 5:00 p.m.	Office of International Programs (OIP) Board Meeting	203 AB
1:00 – 4:00 p.m.	APS Placement	206 AB
1:00 – 5:00 p.m.	Workshop: Fighting <i>Phytophthora</i> : How to Detect, Investigate, and Manage <i>Phytophthora</i>	205 AB
	Workshop: Finding Grant Opportunities and Writing the Successful Grant Proposal	205 CD
	Workshop: Introductory Workshop on Use of Genomics and Bioinformatics for the Development of Diagnostic Markers	208 AB
	Workshop: Novel Molecular Assays for Seed Health: Dead or Alive?	208 CD
	Workshop: Statistical Refresher for Journal Editors, <i>by invitation</i>	200 E
	Workshop: Statistical Workshop for Microarray Data Analysis	200 D
1:00 – 5:00 p.m.	North American Fungicide Resistance Action Committee	Ramsey – Hilton
1:30 – 3:00 p.m.	Advisory Committee on Threatening Plant Diseases	202 AB
2:00 – 7:00 p.m.	Registration	Main Lobby
3:00 – 4:00 p.m.	Committee Chair/Vice Chair Orientation	Rochester – Hilton
3:00 – 4:00 p.m.	Scientific Program Board (SPB)/Section Chairs Meeting	Board Room 3 – Hilton
3:30 – 6:00 p.m.	Publications Board Meeting	Nicollet – Hilton
4:00 – 5:00 p.m.	Program Planning Orientation	Rochester – Hilton
4:00 – 6:00 p.m.	Plant Pathologists Forensics Interest Group Meeting, <i>by invitation</i>	Duluth – Hilton
4:30 – 5:30 p.m.	First Timers' Orientation	200 FG

DAILY MEETING SCHEDULE AND HIGHLIGHTS

5:30 – 7:00 p.m.	<p>Committee Meetings</p> <ul style="list-style-type: none">• <i>Awards and Honors Committee (invitation only)</i>• <i>Bacteriology Committee</i>• <i>Chemical Control Committee</i>• <i>Collections and Germplasm Committee</i>• <i>Crop Loss Assessment & Risk Evaluation Committee</i>• <i>Diseases of Ornamental Plants Committee</i>• <i>Emerging Pathogens and Diseases Special Committee (invitation only)</i>• <i>Environmental Quality and Plant Health Committee</i>• <i>Extension Committee</i>• <i>Future Education in Plant Pathology Ad-Hoc Committee (invitation only)</i>• <i>Genetics Committee</i>• <i>Molecular and Cellular Phytopathology Committee</i>• <i>Placement Committee</i>• <i>Plant Pathogen and Disease Detection Committee</i>• <i>Teaching Committee</i>	<p>Hennepin – Hilton LaSalle – Hilton Board Room 1 – Hilton Director's Row 3 – Hilton Marquette – Hilton Carver – Hilton Ramsey – Hilton Board Room 3 – Hilton Conrad A – Hilton Rochester – Hilton</p> <p>Director's Row 4 – Hilton Conrad B – Hilton Director's Row 1 – Hilton Conrad C – Hilton Conrad D – Hilton</p>
7:00 – 8:30 p.m.	<p>Committee Meetings</p> <ul style="list-style-type: none">• <i>Biotechnology Committee</i>• <i>Diagnostics Committee</i>• <i>Integrated Plant Disease Management Committee</i>• <i>Joint Committee of Women in Plant Pathology and Cultural Diversity</i>• <i>Mycology Committee</i>• <i>Pathogens Resistance Committee</i>• <i>Postharvest Pathology Committee</i>• <i>Profession of Plant Pathology Ad-Hoc Committee (invitation only)</i>• <i>Regulatory Plant Pathology Committee</i>• <i>Tropical Plant Pathology Committee</i>	<p>Director's Row 1 – Hilton Hennepin – Hilton Board Room 3 – Hilton LaSalle – Hilton Marquette – Hilton Director's Row 3 – Hilton Board Room 1 – Hilton Carver – Hilton Ramsey – Hilton Director's Row 4 – Hilton</p>
8:30 – 10:00 p.m.	<p>Committee Meetings</p> <ul style="list-style-type: none">• <i>Biological Control Committee</i>• <i>Epidemiology Committee</i>• <i>Forest Pathology Committee</i>• <i>Graduate Student Committee</i>• <i>Host Resistance Committee</i>• <i>Industry Committee</i>• <i>Mycotoxicology Committee</i>• <i>Nematology Committee</i>• <i>Phyllosphere Microbiology Committee</i>• <i>Plant Disease Management Reports (PDMR) Board (invitation only)</i>• <i>Seed Pathology Committee</i>• <i>Soil Microbiology and Root Diseases Committee</i>• <i>Turfgrass Pathology Committee</i>• <i>Virology Committee</i>	<p>Hennepin – Hilton Director's Row 1 – Hilton LaSalle – Hilton Director's Row 4 – Hilton Marquette – Hilton Carver – Hilton Conrad A – Hilton Board Room 3 – Hilton Board Room 1 – Hilton Conrad B – Hilton Rochester – Hilton Conrad C – Hilton Director's Row 3 – Hilton Conrad D – Hilton</p>

Saturday Highlights

Field Trips

Ornamental and Horticultural Crops

7:00 a.m. – 5:00 p.m.

Sponsoring Committees: Extension, OPRO

Organizer: Michelle Grabowski, University of Minnesota, Andover, MN

This field trip introduces APS members to disease management for ornamental and other horticultural crops in Minnesota. The tour includes visits to horticultural businesses including plant nurseries and cut flower facilities where attendees will learn about disease management issues specific to each location and regulations related to importing plant material. A visit to the University of Minnesota Horticultural Research Center provides an update on the latest in plant pathology research of horticultural crops, including experiments on black spot of roses and diseases of other woody ornamentals, studies of *Ribes* spp. and resistance to white pine blister rust, and management of grape and apple diseases.

In the afternoon, the tour group joins local Minnesota plant pathologists and master gardeners at the University of Minnesota Landscape Arboretum, 1,000 acres of natural and landscaped gardens dedicated to education and research. Following lunch, time is available to explore the grounds and participate in “Meet the Plant Doctor”, an APS public outreach event, including a plant pathology educational fair, plant pathology-themed tours of the gardens, a short lecture series, and a question & answer session to allow Minnesota’s gardeners to interact with the plant pathologists.

University of Minnesota Plant Pathology Legacy Tour

11:00 a.m. – 3:00 p.m.

Sponsor: University of Minnesota, Plant Pathology Department

Enjoy lunch and tour the Saint Paul campus of the University of Minnesota (U of M), home to the Department of Plant Pathology. The tour will include Borlaug Hall, one of four buildings named after renowned plant pathologists from the U of M. Visit the site where E.C. Stakman held court over the infamous “Thursday Night Seminar.” Additional stops will include the Plant and Microbial Genome Institute, new plant growth facilities, Biodale (one-stop shopping for molecular biologists), and research field sites.

Workshops

Fighting *Phytophthora*: How to Detect, Investigate, and Manage *Phytophthora*

1:00 – 5:00 p.m. • 205 AB

Sponsoring Committee: Diagnostics

Organizers: Kelly Ivors, North Carolina State University, Fletcher; Seogchan Kang, The Pennsylvania State University, University Park

Presentations and demonstrations will be given by researchers and extension specialists working on various aspects of diagnosis and management of *Phytophthora* diseases on a broad range of hosts. Topics include protocols for identification of *Phytophthora* species; methods for *Phytophthora* isolation from various substrates; long-term storage of *Phytophthora* cultures; *Phytophthora* inoculum preparation and plant bioassays; conducting fungicide and alternative management trials on *Phytophthora*; and navigating the online *Phytophthora* Database.

Finding Grant Opportunities and Writing the Successful Grant Proposal

1:00 – 5:00 p.m. • 205 CD

Sponsoring Committee: Early Career Professionals

Organizer: David Schmale, Virginia Polytechnic Institute and State University, Blacksburg

This workshop provides an overview of some of the major funding programs in plant pathology. Learn how to navigate search engines for grant opportunities and construct a successful grant proposal. This workshop is appropriate for early career professionals and graduate students.



A Silent Auction to Make History

This year’s Office of International Program’s (OIP) Silent Auction is sure to be historic! Join your colleagues on Sunday and take home unique cultural and vintage items. Place a bid during the Opening Centennial Celebration on **Sunday, July 27, from 6:00 – 8:00 p.m.** Be sure to check out all the fun and exotic items and don’t limit your bidding to just one piece. With each winning bid you take home a wonderful item and support the building of international relationships.

Special thanks to all of the volunteers, donors, bidders, and sponsors who made this year’s Silent Auction possible. Funds raised support the Global Experience program, designed to help young plant pathologists work with scientists and extension personnel in developing countries in training and outreach efforts. A call for proposals will be released soon, watch *Phytopathology News* for details.

After three years, nearly \$10,000 has already been raised—your support is helping make a positive difference in the world!



DAILY MEETING SCHEDULE AND HIGHLIGHTS

Saturday Highlights (continued)

Introductory Workshop on Use of Genomics and Bioinformatics for the Development of Diagnostic Markers

1:00 – 5:00 p.m. • 208 AB

Organizers: C. Robin Buell, Michigan State University, East Lansing; Ned Tisserat, Colorado State University, Fort Collins; John Hamilton, Michigan State University, East Lansing

Participants will receive basic training in genomics, bioinformatics, and development of genomic-based diagnostic markers. Participants will also be shown tools and resources available through the USDA-funded Comprehensive Phytopathogen Genome Resource (<http://cpgr.tigr.org>). The workshop includes lectures and “hands-on” computer labs. **Participants must bring their own laptops with wireless connection capabilities.**

Novel Molecular Assays for Seed Health: Dead or Alive?

1:00 – 5:00 p.m. • 208 CD

Sponsoring Committee: Seed Pathology

Organizer: Ron Walcott, University of Georgia, Athens

Presentations and hands-on workshop demonstrating novel assays for seed health, including magnetic capture hybridization, real time-PCR (MCH-PCR), and use of ethidium monoazide for differentiating DNA of viable vs. nonviable pathogen cells.

Statistical Refresher for Editors

1:00 – 5:00 p.m. • 200 E

Available statistical methods and tools have increased at a rapid rate during the last decade, and the plethora of approaches to data analysis often makes it difficult for senior editors and reviewers to assess whether authors of submitted journal manuscripts have used the most appropriate statistical techniques. This workshop will provide APS journal editorial boards an update and refresher on recent developments and changes in statistical tools and methods.

Statistical Workshop for Microarray Data Analysis

1:00 – 5:00 p.m. • 200 D

Sponsoring Committee: Epidemiology

Organizer: Karen Garrett, Kansas State University, Manhattan

This workshop will bring APS researchers into a new arena, providing a much needed set of tools to handle an experimental and data collection process that bridges fields from epidemiology to molecular biology and beyond.

Orientation Sessions

APS Committee Chair/Vice-Chair Orientation

3:00 – 4:00 p.m. • Rochester – Hilton

All current APS committee chairs/vice-chairs should attend this important orientation session, which will provide an overview of the opportunities available to enhance committee efforts. APS Past President Jan Leach, Senior Councilor-at-Large Wayne Wilcox, and Intermediate Councilor-at-Large Gary Moorman will lead discussions highlighting recent APS initiatives, processes for taking action on committee issues, and procedural logistics for chairs and vice-chairs. Packets with committee rosters and the Committee Annual Report Form will be provided for each chair. APS Committee Chairs not able to attend should make sure to have a replacement attend.

APS Program Planning Orientation

4:00 – 5:00 p.m. • Rochester – Hilton


Join the Annual Meeting Program Planning Committee to learn what steps are needed to host a special session in 2009 and beyond. This session will discuss how to submit an application and how the planning process works. For more information contact Barb Christ at ebf@psu.edu

First Timers' Orientation

4:30 – 5:30 p.m. • 200 FG

Join the next generation of plant pathologists as we begin the next 100 years! First-time meeting attendees will have the opportunity to meet their colleagues and learn more about the organization in an informal setting. You'll hear helpful hints and suggestions from key leaders within APS on how to make the most of your meeting experience.

Sunday plenary, centennial, technical, and special session descriptions, presenters, and times found on pages 33-38.

7:00 – 9:00 a.m.	APSnet Education Center Editorial Board Meeting	203 AB
7:00 – 9:00 a.m.	Vegetable Extension & Research Plant Pathologists Breakfast, <i>by invitation</i>	Marquette/LaSalle – Hilton
7:00 a.m. – 7:00 p.m.	Registration	Main Lobby
7:45 – 8:15 a.m.	Moderator Orientation	205 AB
8:00 a.m. – 3:00 p.m.	Exhibitor Set-up	Exhibit Hall C
8:30 a.m. – 12:00 p.m.	Opening Plenary Session: “Agriculture, Food Security and Public Health: Global Issues – Global Solutions”	Auditorium
8:30 – 8:45 a.m.	Ray Martyn – Introduction “When Agriculture Fails”	
8:45 – 9:15 a.m.	Peter Raven – “Biodiversity and Agriculture”	
9:20 – 9:50 a.m.	Chris Field – “Agriculture in a Changing Environment”	
9:55 – 10:25 a.m.	Shiney Varghese – “The Global Water Crisis: Balancing Water for Agriculture and Public Health”	
10:30 – 11:00 a.m.	Rob Horsch – “Revitalizing Support For, and Impact of, Plant and Agriculture Sciences”	
11:05 – 11:35 a.m.	Florence Wambugu – “The Role of the Africa Biofortified Sorghum (ABS) Project in Tackling Micronutrient Deficiency”	
11:35 a.m. – 12:00 p.m.	Questions	
9:00 a.m. – 12:00 p.m.	Ornamental Virus Discussion Group	Hennepin/Carver – Hilton
9:00 a.m. – 4:00 p.m.	APS Placement	206 AB
10:00 a.m. – 2:00 p.m.	Poster Set-up	Exhibit Hall C
12:00 – 1:00 p.m.	Lunch break	
	<i>Concession service available from 11:30 a.m. – 1:30 p.m.</i>	
12:00 – 2:30 p.m.	PMN Strategic Planning Meeting, <i>by invitation</i>	209 AB
12:15 – 1:30 p.m.	Journals Senior Editors Luncheon, <i>by invitation</i>	201 AB
12:15 – 2:00 p.m.	Division Officers Luncheon, <i>by invitation</i>	210 AB
12:15 – 2:00 p.m.	Foundation Luncheon, <i>by invitation</i>	Seasons Rotunda
12:30 – 3:00 p.m.	Office of Electronic Communication (OEC) Board Meeting	207 AB
	Oral Technical Sessions	
1:00 – 2:45 p.m.	• Populations Genetics	211 CD
1:00 – 3:00 p.m.	• Bacteria: Molecular, Cellular Biology	205 CD
1:00 – 3:00 p.m.	• Diseases of Plants – Ornamental	208 AB
1:00 – 3:00 p.m.	• Epidemiology	211 AB
1:00 – 3:00 p.m.	• Fungal: Molecular, Cellular Biology	200 HIJ
1:00 – 3:00 p.m.	• Host Resistance – Plants	208 CD
	Special Sessions	
1:00 – 2:45 p.m.	• Detection, Identification, and Diagnostics: Advancing the Science One Sample at a Time	200 DE
1:00 – 2:45 p.m.	• Potential Impacts of Climate Change on Diseases in Natural Ecosystems: Using History to Predict the Future	200 ABC
1:00 – 3:00 p.m.	• Faces of the Future in Mycology: A Look to the Future	200 FG
1:00 – 3:00 p.m.	• Impact of Plant Virus Epidemiology: Past, Present, and Future	205 AB
2:30 – 3:00 p.m.	<i>Plant Health Progress</i> Editorial Board Meeting, <i>by invitation</i>	209 AB
3:15 – 5:45 p.m.	 Centennial Special Session – 100 Years of The American Phytopathological Society	Auditorium
4:00 – 5:30 p.m.	Diagnostic Working Group	Marquette/LaSalle – Hilton
6:00 – 8:00 p.m.	APS-OIP Silent Auction: Connecting Knowledge with a Growing World	Exhibit Hall C
6:00 – 8:00 p.m.	APS PRESS Bookstore	Exhibit Hall C
6:00 – 8:00 p.m.	Opening Centennial Celebration – with Exhibition and University Alumni Socials	Exhibit Hall C
	<i>Cornell University</i>	<i>University of California – Davis</i>
	<i>Michigan State University</i>	<i>University of Florida</i>
	<i>Midwest States – Illinois, Iowa, Purdue</i>	<i>University of Georgia</i>
	<i>North Carolina State University</i>	<i>University of Hawaii</i>
	<i>Ohio State University</i>	<i>University of Kentucky</i>
	<i>Old West Trails</i>	<i>University of Minnesota</i>
	<i>Penn State</i>	<i>University of Wisconsin</i>
	<i>Texas A & M</i>	<i>Washington State University</i>

DAILY MEETING SCHEDULE AND HIGHLIGHTS

7:30 – 10:00 p.m. Industry & Extension Social Mill City Museum
(buses will begin loading at the front entrance to the Convention Center at 7:00 p.m. with departure at 7:15 p.m.)

Sunday Highlights

Vegetable Extension & Research Plant Pathologists Breakfast

7:00 – 9:00 a.m. • Marquette/LaSalle – Hilton

This annual event is sponsored by the vegetable seed industry for the purpose of sharing ideas and discussing issues of relevance in the industry. This year's speakers will present a retrospective of vegetable extension and seed health. *Invitation is required.*

Plenary Session: “Agriculture, Food Security, and Public Health: Global Issues – Global Solutions”

8:30 a.m. – 12:00 p.m. • Auditorium

See page 16 for a full description of these presentations.

Centennial Special Session: 100 Years of The American Phytopathological Society

3:15-5:45 p.m. • Auditorium

See page 38 for a full description of this session.

Opening Centennial Celebration with Exhibition and University Alumni Socials

6:00 – 8:00 p.m. • Exhibit Hall C

Visit with old friends, catch up with colleagues, and meet the new generation of plant pathologists as you set your Centennial meeting experience in motion at the Opening Centennial Celebration and Exhibition. Mix, mingle, visit the exhibits, and bid on APS-OIP Silent Auction items while enjoying food and drinks. Make sure to look for your fellow alumni at designated areas within the reception. *This reception is included in the registration fee.*

APS-OIP Silent Auction: Connecting Knowledge with a Growing World

6:00 – 8:00 p.m. • Exhibit Hall C

The Office of International Program's Silent Auction offers the chance to bid on and take home unique cultural items from around the world. Join your colleagues during the fourth year of this exciting event and help build international relationships by supporting OIP's global experience. Bidding closes at 8:00 p.m.

Industry & Extension Social

7:30 – 10:00 p.m. • Mill City Museum


7:00 p.m. Bus loading, front entrance Convention Center

7:30 p.m. Bus departures


This is your unique opportunity to visit with colleagues and industry representatives at one of Minneapolis's must-see architectural highlights – the Mill City Museum. The museum is built within the ruins of the Washburn A Mill – a National Historic Landmark – and sits on the scenic banks of the Mississippi River in Minneapolis's historic and trendy warehouse district. A dessert reception and tour of the museum is included. *Advanced registration and ticket are required. Buses will return attendees to the Hilton Hotel at the end of the event.*

Monday, July 28

Monday plenary, centennial, technical, and special session descriptions, presenters, and times found on pages 38-49.

6:30 – 8:00 a.m.	Extension Plant Pathologists Breakfast	Salon E – Hilton
7:00 – 8:00 a.m.	Centennial Planning Committee, <i>by invitation</i>	210 AB
7:00 – 9:45 a.m.	Public Policy Board Meeting	212 AB
7:00 a.m. – 5:00 p.m.	Registration	Main Lobby
7:30 a.m. – 7:00 p.m.	Poster Viewing	Exhibit Hall C
8:00 – 9:00 a.m.	 Centennial Special Session – Plant Pathology in 1908/2008	200 DE
	Oral Technical Sessions	
8:00 – 9:30 a.m.	• Detection	208 CD
8:00 – 9:30 a.m.	• Fungal Biology & Genomics	200 HIJ
8:00 – 9:30 a.m.	• Host Resistance – Molecular	208 AB
8:00 – 9:30 a.m.	• Integrated Pest Management	211 AB
8:00 – 9:30 a.m.	• Nematology	211 CD
8:00 – 9:30 a.m.	• Spatial & Temporal Patterns of Disease	205 CD
	Special Sessions	
8:00 – 9:30 a.m.	• A Century of Turfgrass Pathology, Then, Now & The Future	205 AB
8:00 – 9:30 a.m.	• An Evolving Culture Collection System to Meet Modern Research Needs	200 ABC
8:00 – 9:30 a.m.	• Protein Modifications During Host/Pathogen Interactions	200 FG
8:00 – 12:00 p.m.	USDA-CSREES Plant Biosecurity Program	Marquette/LaSalle – Hilton
9:00 a.m. – 4:00 p.m.	APS Placement	206 AB
9:00 a.m. – 6:00 p.m.	APS PRESS Bookstore	Exhibit Hall C
9:00 a.m. – 6:00 p.m.	Exhibits Open	Exhibit Hall C
9:40 a.m. – 12:00 p.m.	Plenary Session: “Agriculture, Food Security, and Public Health: Global Issues – Global Solutions”	Auditorium
	9:45 – 10:00 a.m. Ray Martyn – Introduction	
	10:00 – 10:30 a.m. Charles Arntzen – “Biopharming and Plant-Derived Pharmaceuticals”	
	10:35 – 11:05 a.m. Roger Beachy – “Plant Biotechnology and Agriculture: Is there a Role for Public Sector Scientists?”	
	11:10 – 11:40 a.m. Gilbert Omenn – “The Interface of Science and Policy: The Crucial Roles of Food and Health in Economic Development”	
	11:40 a.m. – 12:00 p.m. Questions	
11:30 a.m. – 1:30 p.m.	Widely Prevalent Fungi Working Group	209 AB
11:30 a.m. – 1:00 p.m.	Publish Your Passion: APS PRESS Author Open House	Exhibit Hall C
12:00 – 1:00 p.m.	Graduate Student & Industry Lunch	102 AB/EF
12:00 – 1:00 p.m.	Storkan Hanes McCaslin Research Foundation Annual Luncheon	201 AB
12:00 – 1:00 p.m.	Lunch Break	
	<i>Concession service available from 11:30 a.m. – 1:30 p.m.</i>	
12:00 – 1:30 p.m.	Past Presidents Luncheon	Lounge A
	Flash-and-Dash Poster Presentation Sessions	
1:00 – 1:45 p.m.	• Diseases of Fruits, Nuts, & Vegetables	211 CD
1:00 – 1:45 p.m.	• Viruses	211 AB
1:00 – 1:50 p.m.	• Fungal Molecular	208 CD
1:00 – 3:00 p.m.	Affiliates Meeting	207 AB
	Oral Technical Sessions	
1:00 – 3:00 p.m.	• Bacteria: Molecular, Cellular Biology II	200 HIJ
1:00 – 3:00 p.m.	• Chemical Control	200 FG
1:00 – 3:00 p.m.	• Fungi: Molecular, Cellular Biology II	200 DE
	Special Sessions	
1:00 – 3:00 p.m.	• Epidemiology and Food Security: Historically Linked, Future of Promise	200 ABC
1:00 – 3:00 p.m.	• Harnessing Emerging Molecular and Statistical Technologies for Analysis of Soilborne Pathosystems	205 AB
1:00 – 3:00 p.m.	• If We Had Known Then What We Know Now: Reflections on Catastrophic Tree Diseases	205 CD
1:00 – 3:00 p.m.	• <i>Phytophthora</i> : A Global Problem with Continued and Historical Importance	208 AB
1:00 – 3:00 p.m.	Turfgrass Pathology Working Group	213 AB
1:30 – 3:00 p.m.	National Plant Diagnostic Network Town Meeting	Hennepin/Carver - Hilton
2:00 – 3:00 p.m.	Flash-and-Dash Poster Authors Present at Posters	Exhibit Hall C
2:00 – 3:30 p.m.	Office of Industry Relations (OIR) Board Meeting	210 AB

DAILY MEETING SCHEDULE AND HIGHLIGHTS

2:30 – 3:30 p.m.	SPDN Working Group	202 AB
3:15 – 6:15 p.m.	 Centennial Special Session – Optimizing Opportunities for Everyone in Plant Pathology Special Session	Auditorium
3:15 – 6:15 p.m.	• Bacterial Type III Secretion Systems: From Enigmatic <i>avr</i> and <i>hrp</i> Genes to Type III Effector-Mediated Suppression of Plant Immunity	208 CD
5:30 – 6:30 p.m.	ARS Social	Lounge B
5:30 – 8:30 p.m.	Emeritus Social, <i>by invitation</i> (<i>buses will begin loading at the front entrance of the Convention Center at 4:45 p.m. with departure at 5:00 p.m.</i>)	APS Headquarters
6:30 – 8:30 p.m.	Early Career Professionals Social	Symphony III - Hilton
6:30 – 8:30 p.m.	Graduate Student Social	Seasons Rotunda
6:30 – 8:30 p.m.	Joint Committee of Women in Plant Pathology and Cultural Diversity Social	Lounge A

Monday Highlights

Extension Plant Pathologists Breakfast

6:30 – 8:00 a.m. • Salon E – Hilton

Join fellow extension professionals for breakfast while contributing to the exchange of new information in extension plant pathology. *Pre-registration is required.*



Centennial Special Session: Plant Pathology in 1908/2008

8:00 – 9:00 p.m.; 200 DE

See page 42 for a full description of this session.

Plenary Session: “Agriculture, Food Security, and Public Health: Global Issues – Global Solutions”

9:40 a.m. – 12:00 p.m. • Auditorium

See page 16 for a full description of these presentations.

Graduate Student/Industry Lunch

12:00 – 1:00 p.m. • 102 AB/EF

Students! Connect with industry representatives from a variety of companies by attending the APS Industry Committee-sponsored luncheon. Network and learn about job opportunities available in the industry. *This event is complimentary for graduate students. Both graduate students and industry members must pre-register and have a ticket for this event.*



Centennial Special Session: Optimizing Opportunities for Everyone in Plant Pathology

3:15–6:15 p.m. • Auditorium

See page 48 for a full description of this session.

Early Career Professionals Social

6:30 – 8:30 p.m. • Symphony III - Hilton

Connections are critical for the growth of your career. This social provides the unique opportunity for you to meet other plant pathologists in a career stage similar to yours. Refocused this year, the APS Early Career Professionals Committee will kick off the social by providing an opportunity for you to learn about the committee initiatives and suggest ideas for future consideration. Light refreshments and snacks will be provided. *The social is complimentary. Pre-registration and ticket are required.*

Graduate Student Social

6:30 – 8:30 p.m. • Seasons Rotunda

Graduate students, make plans to meet with your plant pathology colleagues in an informal and relaxed environment at this year's Centennial meeting. Hors d'oeuvres and beverages will be served. This event is complimentary and is limited to graduate and undergraduate students only. *Pre-registration and ticket are required.*


Joint Committee of Women in Plant Pathology and Cultural Diversity Social

6:30 – 8:30 p.m. • Lounge A

Are you interested in advancing issues related to women and cultural diversity in plant pathology? To celebrate diversity in a global setting for the Centennial meeting, wear traditional attire of your home country or one of your favorite countries. This event is open to all meeting attendees. Hors d'oeuvres and beverages will be served and raffle prizes will be drawn. *Sponsored in part by Chemtura Corporation. Pre-registration and ticket are required for this event.*

Tuesday, July 29

Tuesday centennial, technical, and special session descriptions, presenters and times found on pages 49-58

7:00 – 8:30 a.m.	Sustaining Associates Breakfast, <i>by invitation</i>	201 AB
7:00 – 9:00 a.m.	Department Heads Breakfast	212 AB
7:00 – 9:00 a.m.	Scientific Programs Board (SPB) Meeting	203 AB
7:00 – 9:00 a.m.	Small Fruit Diseases Working Breakfast	213 AB
7:00 a.m. – 12:00 p.m.	Foundation Board Meeting, <i>by invitation</i>	209 AB
7:00 a.m. – 5:00 p.m.	Registration	Main Lobby
7:30 a.m. – 5:30 p.m.	Posters Open	Exhibit Hall C
8:00 – 9:00 a.m.	Poster Authors Present – even numbered posters	Exhibit Hall C
8:00 a.m. – 3:00 p.m.	Exhibits Open	Exhibit Hall C
8:00 a.m. – 5:00 p.m.	APS PRESS Bookstore	Exhibit Hall C
	Oral Technical Sessions	
9:00 a.m. – 12:00 p.m.	• Disease Management: Biological Control	200 HIJ
9:00 a.m. – 12:00 p.m.	• Fungal: Diversity	208 AB
9:00 a.m. – 12:00 p.m.	• Viruses: Molecular, Cellular Biology	200 FG
	Special Sessions	
9:00 a.m. – 11:30 p.m.	• Building International Bridges in a Flat World	200 DE
9:00 a.m. – 11:30 p.m.	• Fungal Genomics Enters the Post-Genome Era	205 AB
9:00 a.m. – 11:45 p.m.	• 8 th Melhus Graduate Student Symposium: Forty-Five Years After Van Der Plank, New Visions for the Future of Plant Disease Epidemiology	205 CD
9:00 a.m. – 12:00 p.m.	• Plant-Associated Bacteria in Their Natural Habitat	200 ABC
9:00 a.m. – 4:00 p.m.	APS Placement	206 AB
9:30 – 11:00 a.m.	APS-ISF Codification Ad-Hoc Committee Meeting	210 AB
	Flash-and-Dash Poster Presentation Sessions	
10:00 – 10:25 a.m.	• Professional	211 CD
10:00 – 10:45 a.m.	• Host Resistance/IPM	211 AB
10:00 – 10:50 a.m.	• Epidemiology	208 CD
11:00 a.m. – 12:00 p.m.	Flash-and-Dash Poster Authors Present at Posters	Exhibit Hall C
11:30 a.m. – 1:00 p.m.	<i>Phytopathology News</i> Advisory Committee	207 AB
12:00 – 1:00 p.m.	Lunch Break <i>Concession service available from 11:30 a.m. – 1:30 p.m.</i>	
12:30 – 1:30 p.m.	APS PRESS Book Signing Event	Exhibit Hall C
	Flash-and-Dash Poster Presentations	
1:00 – 1:35 p.m.	• Fungal Ecology	211 AB
1:00 – 1:40 p.m.	• Bacteria Molecular	208 CD
1:00 – 1:40 p.m.	• Detection	211 CD
	Oral Technical Sessions	
1:00 – 2:30 p.m.	• Bacteria Pathogens	200 ABC
	Special Sessions	
1:00 – 2:30 p.m.	• Balancing Natural and Augmentative Biocontrol in Organic Cropping Systems	205 AB
1:00 – 2:30 p.m.	• Citrus Canker: A Case Study in Regulatory Plant Pathology; Past, Present and Future	205 CD
1:00 – 2:30 p.m.	• New Products and Services	208 AB
1:00 – 2:30 p.m.	• Teaching Plant Pathology: Ideas and Tools for Today's Classrooms	200 FG
1:00 – 2:30 p.m.	• Advances in Plant Pathology in China	200 DE
1:00 – 4:00 p.m.	• Assembling the Fungal Tree of Life: From Linnaeus to Deep Hypha and Beyond	200 HIJ
1:00 – 2:30 p.m.	2009 Annual Meeting Program Planning	212 AB
1:00 – 2:45 p.m.	Office of Public Relations & Outreach (OPRO) Board Meeting	203 AB
1:50 – 2:45 p.m.	Flash-and-Dash Poster Authors Present at Posters	Exhibit Hall C
2:45 – 5:45 p.m.	 Centennial Special Session - The Future of Plant Pathology	Auditorium
3:00 – 8:00 p.m.	Exhibit Take Down	Exhibit Hall C
6:30 – 7:30 p.m.	Awards & Honors Ceremony	Auditorium
7:30 – 10:30 p.m.	Party Through the Decades – Final Night Centennial Celebration	Ballroom AB

DAILY MEETING SCHEDULE AND HIGHLIGHTS

Tuesday Highlights

Department Heads Breakfast

7:00 – 9:00 a.m. • 212 AB

Heads of plant pathology or related departments are invited to get together and discuss issues affecting universities around the country. *Ticket purchase required.*



Centennial Special Session: The Future of Plant Pathology

2:45-5:45 p.m. • Auditorium

See page 58 for a full description of this session.

Awards & Honors Ceremony

6:30-7:30 p.m. • Auditorium

Join us as we honor the many extraordinary individuals and organizations that have made and continue to make important contributions to both our science and our society.

Party Through the Decades – Final Night Centennial Celebration

7:30 p.m. – 10:30 p.m. • Ballroom AB

What Centennial celebration would be complete without a final night party? Immediately following the Awards & Honors Ceremony, enjoy a complete buffet and beverages and celebrate the APS Centennial with a commemorative toast and birthday cake. Dance through the decades with the popular Minneapolis-based group Belladiva as they take you through the boogie woogie days of the 30s and 40s to the rocking 90s.

Wednesday, July 30

Wednesday technical and special session descriptions, presenters, and times found on pages 59-65.

7:00 – 11:00 a.m.	Registration	Main Lobby
8:00 – 9:00 a.m.	Poster Authors Present – odd numbered posters	Exhibit Hall C
8:00 – 11:00 a.m.	APS PRESS Bookstore	Exhibit Hall C
9:00 – 10:00 a.m.	APS Caribbean Division Meeting	201 AB
9:00 – 11:00 a.m.	Poster Take-Down	Exhibit Hall C
	Oral Technical Sessions	
9:00 – 10:30 a.m.	• Molecular Detection & Characterization	200 FG
9:00 – 11:30 a.m.	• Diseases of Plants – Fruits, Nuts, & Vegetables	205 AB
9:00 – 11:30 a.m.	• Forest Pathology	211 CD
9:00 – 11:30 a.m.	• Phyllosphere/Rhizosphere Microbiology & Ecology	200 HIJ
	Special Sessions	
9:00 – 11:30 a.m.	• Aflatoxins, the Toxins that Redefined Plant Disease	205 CD
9:00 – 11:30 a.m.	• Down in the Dirt with Phytopathogenic <i>Verticillium</i> : Genetic and Molecular Tales of a Vascular Fungus	200 DE
9:00 – 11:30 a.m.	• From Field to Fork: Historical Perspectives and Future Promise of Postharvest Decay Management	208 AB
9:00 – 11:30 a.m.	• Plant Virology: Impact on Science and Society	208 CD
9:00 – 11:30 a.m.	• Resistance Genes - Past, Present, and Future	211 AB
9:00 – 11:30 a.m.	• What Was, Is, and Could Be, Contributions of Industry and Partners to Plant Disease Management	200 ABC
10:00 – 11:00 a.m.	APS North Central Division Business Meeting	201 AB
10:30 – 11:30 a.m.	Assess 2.0 Image Analysis Demonstration	200 FG
11:45 a.m. – 2:00 p.m.	Closing Plenary Luncheon and Presidential Ceremony featuring Keynote Speaker Lowell Catlett presenting: <i>Tomorrow's Agriculture – Six Trends You Can't Afford to Miss!</i>	Ballroom AB

Wednesday Highlights

Assess 2.0 Image Analysis Demonstration

10:30-11:30 a.m. • 200 FG

Learn how to use this powerful new desktop plant pathology software from the product's developer, Lakhdar Lamari, from the University of Manitoba's Plant Science Department. Everyone attending the session will receive a Centennial Special Discount coupon for the ASSESS 2.0 software. This exciting new edition will be released during the APS Centennial Celebration and is light-years ahead of the original *ASSESS*! The **ASSESS 2.0** special session offers a short review of concepts and issues encountered in automated plant disease assessment, a live demonstration including measurement of leaf area, foliar disease (% leaf damage), ground cover, root length, object (lesions, seeds, etc.) counting, sizing, and characterization, followed by a short question-and-answer period.

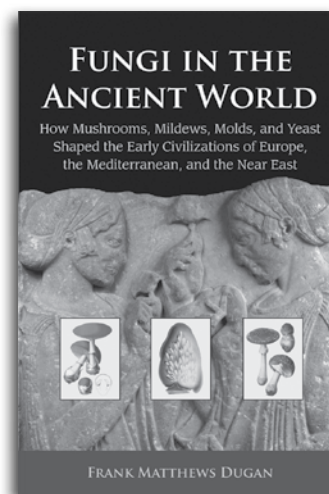
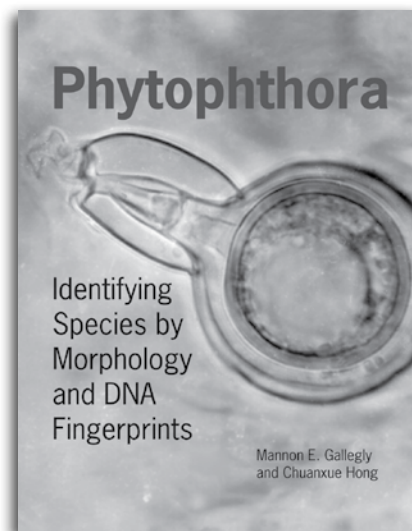
Closing Plenary Luncheon with Special Guest Speaker Lowell Catlett

11:45 a.m. – 2:00 p.m. • Ballroom AB

President Ray Martyn will give an APS activities update and then pass the gavel to 2008-2009 President James Moyer at the Presidential Ceremony. All food and beverages for this important luncheon are included in your registration, so be sure not to miss it! *Pre-registration and ticket are required.*

Special guest speaker Dr. Lowell Catlett will present his take on *Tomorrow's Agriculture - Six Trends You Can't Afford to Miss!* Dr. Catlett is a highly entertaining and dynamic speaker whose presentation is sure to be a meeting highlight. As a Regent's Professor of Economics, Agriculture and Genetic Engineering at New Mexico State University and a recipient of the university's highest award to a professor, the Westhafer Award, Dr. Catlett is an internationally recognized economist and expert on the future of technology and agriculture.

NEW & ON SALE!



**ON SALE at the APS PRESS Bookstore
located in Exhibit Hall C.**

Sunday, July 27 6 p.m. – 8 p.m.

Monday, July 28 9 a.m. – 6 p.m.

Tuesday, July 29 8 a.m. – 5 p.m.

Wednesday, July 30 8 a.m. – 11 a.m.

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APS in Action

Visit the APS Office of Industry Relations (OIR), Office of International Programs (OIP), Office of Public Relations and Outreach (OPRO), and Public Policy Board (PPB) booths in the exhibit hall to learn about the many exciting activities these board and offices have accomplished this year.

Materials from each of the APS Offices and Boards will be on display and representatives from each group will be on hand to talk about current initiatives and provide information on how you can get involved.

Make sure to stop by the OPRO booth to pick up your free Centennial Meeting postcards! APS will mail the postcards for you if you drop them off in the mailbox provided.

OPRO

OIR · OIP · PPB

SESSIONS – Sunday Plenary & Afternoon, Special

Sunday Morning Plenary Session

Listed in order of presentation.

“Agriculture, Food Security and Public Health: Global Issues – Global Solutions”

8:30 a.m. – 12:00 p.m. * Auditorium

- 8:30 a.m. PL-1. When agriculture fails. Ray D. Martyn Ph.D. Professor of Plant Pathology and APS President, Purdue University, West Lafayette, IN, U.S.A.
- 8:45 a.m. PL-2. Biodiversity and agriculture. Peter S. Raven, Ph.D. President, Missouri Botanical Garden and Engelmann Professor of Botany, Washington University in St. Louis, MO, U.S.A.
- 9:20 a.m. PL-3. Agriculture in a changing environment. Chris Field, Ph.D. Director, Department of Global Ecology, Carnegie Institute for Science and Professor, Stanford University, Palo Alto, CA, U.S.A.
- 9:55 a.m. PL-4. The global water crisis: Balancing water for agriculture and public health. Shiney Varghese, Senior Policy Analyst, Institute for Agriculture and Trade Policy, Minneapolis, MN, U.S.A.
- 10:30 a.m. PL-5. Revitalizing support for, and impact of, plant and agricultural sciences. Rob Horsch, Ph.D. Senior Program Officer, Science and Technology, The Bill & Melinda Gates Foundation, Seattle, WA, U.S.A.
- 11:05 a.m. PL-6. The role of the Africa Biofortified Sorghum (ABS) project in tackling micronutrient deficiency. Florence Wambugu, Ph.D. CEO, Africa Harvest Biotech Foundation International, Nyrobo, Africa. *This presentation is partially sponsored by The APS/CPS Glenn Anderson Lectureship on World Food Security.*

Sunday Afternoon Special Sessions

Listed in alphabetical order by title.

Detection, Identification, and Diagnostics: Advancing the Science One Sample at a Time

1:00 – 2:45 p.m. * 200 DE

Section: Disease of Plants

Organizer: Carrie Harmon, University of Florida, Gainesville, FL

Moderators: Philip Berger, USDA-APHIS-PPQ-CPHST, Raleigh, NC; Carrie Harmon, University of Florida, Gainesville, FL

Sponsoring Committees: Diagnostics, Mycology, Virology, Nematology, Extension, Plant Pathogen and Disease Detection, and Turfgrass

Early plant pathologists rode the train, drove early automobiles, and even rode horses to reach farmers' fields, where they spent weeks at a time away from the office helping

farmers solve crop disease problems. Just as transportation methods have improved so have techniques and tools to diagnose ever-emerging plant diseases. The symposium will look back at the pioneering days of plant pathology and look ahead to the future, where tricorders might someday be used to diagnose plant diseases.

- 1:00 p.m. S-1. An historical perspective on plant disease diagnosis. G. W. HUDLER (1). (1) Cornell University, Ithaca, NY, U.S.A.
- 1:30 p.m. S-2. Fungal ID through the years. M. E. PALM (1). (1) USDA/APHIS/PPQ, Beltsville, MD, U.S.A.
- 1:45 p.m. S-3. Plant virus ID – The first 100 years. C. SUTULA (1). (1) Agdia, Inc., Elkhart, IN, U.S.A.
- 2:00 p.m. S-4. Bacterial plant pathogens: Traversing a century of change. A. M. ALVAREZ (1). (1) University of Hawaii, Honolulu, HI, U.S.A.
- 2:15 p.m. S-5. Plant disease diagnostics and forensic science. N. BARNABY (1), A. Giusti (1), B. Budowle (1). (1) FBI Laboratory, Quantico, VA, U.S.A.

Faces of the Future in Mycology—A Look to the Future

1:00 – 3:00 p.m. * 200 FG

Section: Disease of Plants

Organizers: Brenda Schroeder, Washington State University, Pullman, WA; David Schmale, Virginia Polytechnic Institute and State University, Blacksburg, VA

Moderator: David Schmale, Virginia Polytechnic Institute and State University, Blacksburg, VA

Sponsoring Committees: Early Career Professionals, Mycology Committee, and the Scientific Program Board

The Early Career Professionals Committee, the Scientific Programs Board, and the Mycology Committee are sponsoring the second “Faces of the Future” in Plant Pathology Symposium at the 2008 American Phytopathological Society's Centennial Meeting in Minneapolis, MN. This effort is designed to acknowledge the “up and comers” in an area of plant pathology research. The chosen speakers will be asked to present their research in a special session in which they will have the opportunity to present their current work and speculate on the future directions of their discipline. The 2008 symposium will be entitled “Faces of the Future” in Mycology—A Look to the Future.

- 1:00 p.m. S-6. Current challenges in fungal systematics: Defining natural groups in the Ascomycota. P. CHAVERRI (1). (1) Howard University, Washington, D.C., U.S.A.
- 1:30 p.m. S-7. Genomic and proteomic approaches for dissecting host – pathogen interactions. T. K. MITCHELL (1). (1) The Ohio State University, Columbus, OH, U.S.A.
- 2:00 p.m. S-8. Occurrence, aggressiveness, somatic growth and reproduction of phenylamide-resistant and -sensitive oomycete pathogens. L. D. PORTER (1). (1) USDA-ARS, Prosser, WA, U.S.A.

SESSIONS – Sunday Afternoon, Special & Technical

- 2:30 p.m. S-9. Application of real-time PCR for the study of *Pythium* and *Rhizoctonia* ecology. K. L. SCHROEDER (1). (1) USDA-ARS, Root Disease & Biological Control Research Unit, Pullman, WA, U.S.A.

Impact of Plant Virus Epidemiology: Past, Present, and Future

1:00 – 3:00 p.m. * 205 AB

Section: Epidemiology/Ecology/Environmental Biology

Organizers: Sarah Pethybridge, University of Tasmania, Burnie, Tasmania, Australia; Anna Whitfield, Kansas State University, Manhattan, KS; Forrest Nutter, Iowa State University, Ames, IA

Moderators: Forest Nutter, Iowa State University, Ames, IA; William W. Turechek, USDA-ARS-USHRL Subtropical Plant Pathology, Fort Pierce, FL, U.S.A.; Anna Whitfield, Kansas State University, Manhattan, KS

Sponsoring Committees: Crop Loss Assessment and Risk Evaluation; Epidemiology and Virology

- 1:00 p.m. S-10. Plant Virus Epidemiology: The Equilibrium Concept. J. M. THRESH (1). (1) Natural Resources Institute, University of Greenwich, Chatham Maritime, UK
- 1:30 p.m. S-11. Modelling transmission: Disentangling the ecological trinity of plant host, virus and vector. M. JEGER (1). (1) Imperial College London, Wye, Ashford, UK
- 2:00 p.m. S-12. The emerging discipline of plant virus ecology. C. MALMSTROM (1), U. Melcher (2). (1) Michigan State University, East Lansing, MI, U.S.A., (2) Oklahoma State University, Stillwater, OK, U.S.A.
- 2:30 p.m. S-13. Modeling yield loss based on time of virus detection: A geostatistical quadrat-based approach. F. W. NUTTER, Jr. (1). and E. Byamukama (1). (1) Iowa State University, Ames, IA, U.S.A.
- 2:45 p.m. S-14. A case study: Significance, epidemiology, and management of hop viruses. W. W. TURECHEK (2), S. J. Pethybridge (1), and L. V. Madden (3). (1) Tasmanian Institute of Agricultural Research (TIAR), University of Tasmania, Cradle Coast Campus Burnie, Tasmania, Australia; (2) USDA-ARS-USHRL Subtropical Plant Pathology, Fort Pierce, FL, U.S.A.; (3) The Ohio State University/OARDC, Wooster, OH, U.S.A.

Potential Impacts of Climate Change on Diseases in Natural Ecosystems: Using History to Predict the Future

1:00 – 2:45 p.m. * 200 ABC

Section: Epidemiology/Ecology/Environmental Biology

Organizers: Ned Klopfenstein, USDA Forest Service, Moscow, ID; Bryce Richardson, USDA Forest Service-RMRS, Moscow, ID

Moderators: Ned Klopfenstein, USDA Forest Service, Moscow, ID; Bryce Richardson, USDA Forest Service-RMRS, Moscow, ID; Jennifer Juzwik, USDA FS, St. Paul, MN

Sponsoring Committees: Forest Pathology

- 1:00 p.m. S-15. Overview: Current state of knowledge and information needs for predicting impacts for climate change on forest disease. J. JUZWIK (1). (1) USDA FS, St. Paul, MN, U.S.A.
- 1:15 p.m. S-16. Increased severity of alder canker expected with climate change in Alaska: can hosts adjust physiology to compensate for disease? J. ROHRSCHEY (1). (1) University of Alaska, Fairbanks, AK, U.S.A.
- 1:30 p.m. S-17. Toward determining the influence of climate change on *Armillaria* root disease in western North America. M-S. KIM (1), N. B. Klopfenstein (1), B. A. Richardson (1), J. W. Hanna (1), G. I. McDonald (1). (1) USDA Forest Service-RMRS, Moscow, ID, U.S.A.
- 1:45 p.m. S-18. Climate change and plant disease in tallgrass prairie. K. GARRETT (1). (1) Kansas State University, Manhattan, KS, U.S.A.
- 2:00 p.m. S-19. Genetic responses to climate change: Comparisons between quantitative and molecular genetics in western white pine. B. A. RICHARDSON (1), G. Rehfeldt (1), M-S. Kim (1). (1) USDA Forest Service-RMRS, Moscow, ID, U.S.A.

Sunday Afternoon Technical Sessions

Listed in alphabetical order by title.

Bacteria: Molecular, Cellular Biology

1:00 – 3:00 p.m. * 205 CD

Section: Molecular / Cellular Plant–Microbe Interactions

Moderators: Davis W. Cheng, USDA ARS, Parlier, CA; Zarir E. Vaghchhipawala, Samuel Roberts Noble Foundation, Ardmore, OK

- 1:00 p.m. O-1. Transcriptional regulation of grape cytochrome P450 gene expression in response to *Xylella fastidiosa*. D. W. CHENG (2), H. Lin (2), A. M. Walker (1), D. C. Stenger (2), E. L. Civerolo (2). (1) Department of Viticulture and Enology, University of California, Davis, CA, U.S.A., (2) USDA-ARS-SJVARC, Parlier, CA, U.S.A.

- 1:15 p.m. O-2. Cross comparison of soybean gene expression upon infection by pathogens and the symbiont *Bradyrhizobium japonicum*. O. E. RADWAN (2), O. Zernova (2), V. V. Lozovaya (2), S. J. Clough (1). (1) Dept. of Crop Sciences, USDA-ARS Soybean/Maize Germplasm, Pathology and Genetics Research Unit, University of IL, Urbana, IL, U.S.A., (2) Dept. of Crop Sciences, University of Illinois, Urbana, IL, U.S.A.
- 1:30 p.m. O-3. Identification of NLS signals and a DNA binding domain in the host specificity determinants HsvG and HsvB of the gall-forming *Pantoea agglomerans*. D. M. WEINTHAL (3), S. Manulis-Sasson (1), G. Nissan (3), T. Tzfira (2), G. Sessa (3), S. Barash (3). (1) A.R.O. The Volcani Center for Agricultural Research, (2) Developmental Biology, The University of Michigan, Ann Arbor, MI, U.S.A., (3) Tel-Aviv University, Tel-Aviv, Israel
- 1:45 p.m. O-4. *hrpW* is a critical virulence factor of *Xanthomonas citri* ssp. *citri*. J. F. FIGUEIREDO (2), J. B. Jones (2), J. H. Graham (3), F. F. White (1). (1) Kansas State University, Manhattan, KS U.S.A., (2) University of Florida, Gainesville, FL U.S.A., (3) University of Florida, Lake Alfred, FL U.S.A.
- 2:00 p.m. O-5. Molecular characterization of virulence and pathogenicity determinants in *Xanthomonas axonopodis* pv. *manihotis*. L. F. CASTIBLANCO (3), C. A. Trujillo (3), N. C. Alfonso (3), C. Lopez (2), B. Szurek (1), V. Verdier (1), S. Restrepo (3), A. J. Bernal (3). (1) IRD, Montpellier, France, (2) Universidad Nacional, Bogota, Colombia, (3) Universidad de Los Andes, Bogota, Colombia
- 2:15 p.m. O-6. The non-ribosomal peptide synthetase TxtB from plant-pathogenic *Streptomyces* uses 4-nitrotryptophan as a substrate for thaxtomin biosynthesis. E. G. JOHNSON (1), S. B. Krasnoff (5), D. R. Bignell (3), W. Chung (4), R. J. Parry (2), R. Loria (3), D. M. Gibson (5). (1) Citrus Research and Education Center, University of Florida, Lake Alfred, FL, U.S.A., (2) Department of Chemistry, Rice University, Houston, TX, U.S.A., (3) Department of Plant Pathology, Cornell University, Ithaca, NY, U.S.A., (4) Seed Improvement & Propagation Station, Hsinshu Taichung, Taiwan, R.O.C, (5) USDA Agricultural Research Service, U.S. Plant, Soil, and Nutrition Laboratory, Ithaca, NY, U.S.A.
- 2:30 p.m. O-7. Characterization of *bruI*, an *expI*-like autoinducer synthase gene, in *Brenneria rubrifaciens*, the causal agent of deep bark canker on walnut. A. E. MCCLEAN (1), B. A. Duerkop (2), E. Greenberg (2), D. A. Kluepfel (1). (1) USDA, ARS, Crops Pathology Genetics Research Unit, Davis, CA, U.S.A., (2) University of Washington, Department of Microbiology, Seattle, WA, U.S.A.
- 2:45 p.m. O-8. Survey of plant non-homologous end joining (NHEJ) pathway components for role in *Agrobacterium* T-DNA integration. Z. E. VAGHCHHIPAWALA (1), K. Mysore (1). (1) The Samuel Roberts Noble Foundation
- Diseases of Plants – Ornamental**
1:00 – 3:00 p.m. * 208 AB
Section: Diseases of Plants
- 1:00 p.m. O-9. Fraser fir, a new host of *Phytophthora capsici*. L. M. QUESADA OCAMPO (1), D. W. Fulbright (1), M. K. Hausbeck (1). (1) Michigan State University, East Lansing, MI, U.S.A.
- 1:15 p.m. O-10. Development of a rapid method to screen hosta cultivars for resistance to hosta petiole rot caused by *Sclerotium rolfsii* var. *delphinii* based on application of oxalic acid. Z. XU (1), M. L. Gleason (1), D. Mueller (1). (1) Department of Plant Pathology, Iowa State University, Ames, IA, U.S.A.
- 1:30 p.m. O-11. Population dynamics and dispersal gradient of *Aphelenchoides fragariae* in ornamental nurseries. L. M. KOHL (1), C. Y. Warfield (2), M. Benson (1). (1) North Carolina State University, (2) University of California-ANR
- 1:45 p.m. O-12. Effect of fungus gnat *Bradysia impatiens* (Diptera: Sciaridae) feeding on subsequent *Pythium aphanidermatum* infection of geranium seedlings (*Pelargonium × hortorum*). S. E. ARNOLD (1), E. B. Nelson (2), J. P. Sanderson (1), M. L. Daughtrey (2), S. P. Wraight (3). (1) Cornell University, Department of Entomology, Ithaca, NY, U.S.A., (2) Cornell University, Department of Plant Pathology, Ithaca, NY, U.S.A., (3) USDA-ARS, Robert W. Holley Center for Agriculture & Health, Ithaca, NY, U.S.A.
- 2:00 p.m. O-13. Characterization of Abutilon yellow mosaic virus, a tobamovirus occurring in flowering maple (*Abutilon × hybrida*). C. V. ALMEYDA-BECERRA (1), B. E. Lockhart (1). (1) University of Minnesota, U.S.A.
- 2:15 p.m. O-14. Incidence and diversity caulimoviruses in wild dahlia species from the Mexican highlands and the cultivated dahlias in the U.S. S. EID (2), K. Druffel (2), D. Saar, (1), H. Pappu (2). (1) Murray State University, Murray, KY, U.S.A., (2) Washington State University, Pullman, WA, U.S.A.
- 2:30 p.m. O-15. Thiophanate methyl-resistant *Colletotrichum cereale* isolates exhibiting amino acid substitutions in the beta-tubulin 2 gene. J. R. YOUNG (1), M. T. Peterson (1), F. P. Wong (2), K. de la Cerda (2). (1) Mississippi State University, Mississippi State, MS, U.S.A., (2) University of California, Riverside, Riverside, CA, U.S.A.
- 2:45 p.m. O-16. Resistance screening of *Festuca arundinacea* to both *Rhizoctonia solani* and *Rhizoctonia zeae* using digital image analysis. V. R. SYKES (2), B. J. Horvath (2), S. E. Warnke (1). (1) USDA, (2) Virginia Tech

SESSIONS – Sunday Afternoon, Technical

Epidemiology

1:00 – 3:00 p.m. * 211 AB

Section: Epidemiology / Ecology / Environmental Biology

- 1:00 p.m. O-17. Patterns of *Phakopsora pachyrhizi* spore deposition detected in North America rain and their use to calibrate IAMS soybean rust forecasts in 2007. C. W. BARNES (2), L. J. Szabo (2), S. A. Isard (5), A. Ariatti (5), A. U. Tenuta (4), S. Hambleton (1), R. Tropiano (1), V. C. Bowersox (3), R. Claybrooke (3), C. Lehmann (3). (1) Agriculture and Agri-Food Canada, Ottawa, Ontario, Canada, (2) CDL, USDA-ARS, University of Minnesota, St. Paul, MN, U.S.A., (3) NADP, Illinois State Water Survey, Champaign, IL, U.S.A., (4) Ontario Ministry of Agriculture, Food and Rural Affairs, Ridgetown, Ontario, Canada, (5) Penn State University, University Park, PA, U.S.A.
- 1:15 p.m. O-18. Epidemiology of *Phytophthora capsici* in water. L. L. GRANKE (1), M. Hausbeck (1). (1) Michigan State University, Plant Pathology
- 1:30 p.m. O-19. Seasonal fluctuations in *Cronartium ribicola* on *Ribes* related to rainfall. M. NEWCOMB (1), D. I. Rouse (1). (1) Department of Plant Pathology, University of Wisconsin-Madison, Madison, WI
- 1:45 p.m. O-20. Characterization of mango malformation disease and the interaction between the pathogen *Fusarium mangiferae* and the mango bud mite *Aceria mangifera*. E. GAMLIEL-ATINSKY (2), E. Palevsky (1), A. Szejnberg (3), D. Shtienberg (2), M. Maymon (2), S. Freeman (2). (1) Department of Entomology, Newe-Ya'ar Research Center, ARO, Ramat Yishay 30095, Israel, (2) Department of Plant Pathology, Agricultural Research Organization (ARO), The Volcani Center, Bet Dagan 50250, Israel, (3) Plant Pathology and Microbiology, The Hebrew University of Jerusalem, Israel
- 2:00 p.m. O-21. Role of fimbrial and afimbrial adhesins and gum production on *Xylella fastidiosa* insect transmission. N. KILLINY (1), R. Almeida (1). (1) Department of Environment Science, Policy and Management, University of California, Berkeley, U.S.A.
- 2:15 p.m. O-22. Development of potato black dot from seed-tuber born inoculum. J. INGRAM (1), D. Johnson (1). (1) Washington State University
- 2:30 p.m. O-23. Yield of soybean inoculated with two genotypes of the brown stem rot causal agent, *Phialophora gregata* f. sp. *Sojae*. T. J. HUGHES (1), N. C. Koval (1), C. R. Grau (1). (1) University of Wisconsin-Madison, Madison, WI, U.S.A.

Fungal: Molecular, Cellular Biology

1:00 – 3:00 p.m. * 200 HIJ

Section: Molecular / Cellular Plant-Microbe Interactions

Moderator: Daniele Liberti, PhD. Agric & Agri-Food Canada, London, ON, Canada

- 1:00 p.m. O-25. Development of transformation and RNA-mediated gene silencing systems for functional genomics of *Cochliobolus sativus*. Y. LENG (2), C. Wu (1), J. Rasmussen (2), S. Zhong (2). (1) Department of Microbiology, University of Hawaii at Manoa, Honolulu, HI, U.S.A., (2) Department of Plant Pathology, North Dakota State University, Fargo, ND, U.S.A.
- 1:15 p.m. O-26. *veA* and *laeA* interactions in *Aspergillus flavus*. S. AMAIKE (1), J. Bok (1), N. P. Keller (1). (1) University of Wisconsin-Madison, Madison, WI, U.S.A.
- 1:30 p.m. O-27. A functional genomics approach for characterization of pathogenicity from the necrotrophic phytopathogen *Sclerotinia sclerotiorum*. D. LIBERTI (1), K. F. Dobinson (1). (1) Agriculture and Agri-Food Canada, London, Ontario, Canada
- 1:45 p.m. O-28. Signaling and interactions between plants and phytopathogenic Peronosporomycetes. M. T. ISLAM (1), A. Tiedemann (1). (1) Division of Plant Pathology and Plant Protection, Georg-August-Universitaet Goettingen, Goettingen, Germany
- 2:00 p.m. O-29. Gene expression profiling of the infection of yellow potato (*Solanum phureja*) by *Phytophthora infestans*. R. SIERRA (1), A. Vargas (1), A. Bernal (1), S. Restrepo (1). (1) Universidad de los Andes, Bogota D.C., Colombia
- 2:15 p.m. O-30. Genetic and genomic approaches to understand *Phymatotrichopsis* (cotton) root rot of alfalfa. S. UPPALAPATI (3), H. Lee (3), S. M. Marek (1), J. Nakashima (3), M. K. Sledge (2), R. A. Dixon (3), K. S. Mysore (3). (1) Department of Entomology and Plant Pathology; Oklahoma State University, U.S.A., (2) Lipscomb University, U.S.A., (3) Plant Biology Division, The Samuel Roberts Noble Foundation
- 2:30 p.m. O-31. Functional analyses of *Aspergillus flavus* genes expressed during pathogenesis of maize. A. L. DOLEZAL (1), C. P. Woloshuk (2), G. A. Payne (1). (1) North Carolina State University, Dept. Plant Pathology, Raleigh, NC, U.S.A., (2) Purdue University, Dept. Botany and Plant Pathology, West Lafayette, IN, U.S.A.
- 2:45 p.m. O-32. Blast Interfacial Complex, a novel in planta structure that accumulates effector proteins of rice blast fungus *Magnaporthe oryzae*. C. KHANG (3), R. Berruyer (5), S. Park (1), P. Kankanala (3), K. Czymmek (2), S. Kang (4), B. Valent (3). (1) Department of Agricultural Biotechnology, Center for Fungal Genetic Resources, Seoul

National University, Seoul, Korea, (2) Department of Biological Sciences, University of Delaware, Newark, DE, U.S.A., (3) Department of Plant Pathology, Kansas State University, Manhattan, KS, U.S.A., (4) Department of Plant Pathology, The Pennsylvania State University, University Park, PA, U.S.A., (5) UMR BGPI, AGRO.M-CIRAD-INRA, Montpellier, France

Host Resistance-Plants

1:00 – 3:00 p.m. * 208 CD

Section: Plant Disease Management

- 1:00 p.m. O-33. Discovery of new sources of resistance to *Moniliophthora perniciosa*, the witches' broom pathogen of *Theobroma cacao* in near isogenic lines of tomato. J. MARELLI (5), B. Masseret (4), V. Petiard (3), S. Tanksley (1), S. Grandillo (2), S. Maximova (5), S. Kang (5), M. Guiltinan (5). (1) Cornell University, Ithaca, NY, U.S.A., (2) Institute of Plant Genetics, Portici, Italy, (3) Nature Source Genetics, Ithaca, NY, U.S.A., (4) Nestle R&D Centre, Tours, France, (5) The Pennsylvania State University, University Park, PA, U.S.A.
- 1:15 p.m. O-34. Reaction of wild watermelon germplasm to southern root-knot nematode in South Carolina. J. J. ARISS (2), J. A. Thies (2), C. S. Kousik (2), R. L. Hassell (1). (1) Coastal Research and Education Center, Clemson University, Charleston, SC, U.S.A., (2) U.S. Vegetable Laboratory, USDA-ARS, Charleston, SC, U.S.A.
- 1:30 p.m. O-35. Characterizing resistance to infection by the root pathogen *Armillaria mellea* in tolerant and susceptible grapevine rootstocks. R. BHAT (1), K. Baumgartner (2), P. Fujiiyoshi (2). (1) Department of Plant Pathology, University of California, Davis, CA, U.S.A., (2) USDA-ARS, Davis, CA, U.S.A.
- 1:45 p.m. O-36. Genetics of resistance to *Diplocarpon rosae* in tetraploid roses. V. M. WHITAKER (1), S. C. Hokanson (1). (1) University of Minnesota, Dept. of Horticultural Science, St. Paul, MN, U.S.A.
- 2:00 p.m. O-37. Effect of isolate, environment and a defeated R-gene (R_{Pi-ber}) on quantitative resistance of potato to late blight. G. RAUSCHER (4), H. Mayton (3), M. Bonierbale (1), I. Simko (6), C. Smart (2), N. Grunwald (5), W. Fry (3). (1) Centro Internacional de la Papa, Lima, Peru, (2) Cornell University, Geneva, NY, U.S.A. (3) Cornell University, Ithaca, NY, U.S.A. (4) Cornell University, Ithaca, NY / USDA-ARS, Salinas, CA, U.S.A., (5) USDA-ARS, Corvallis, OR, U.S.A., (6) USDA-ARS, Salinas, CA, U.S.A.
- 2:15 p.m. O-38. Identification of pathogen-responsive proteins from soybean leaves during interaction of soybean and *Phakopsora pachyrhizi* using proteomics. S. PARK (1), Z. Chen (1), A. Chanda (1), N. Hazard (1). (1) Department of Plant Pathology and Crop Physiology, Louisiana

- State University Agricultural Center, Baton Rouge, LA, U.S.A.
- 2:30 p.m. O-39. Post inoculation moisture and deoxynivalenol production by *Fusarium graminearum* in wheat. P. GAUTAM (1), R. Dill-Macky (1). (1) Department of Plant Pathology, University of Minnesota, St. Paul, MN, U.S.A.
- 2:45 p.m. O-40. Resistance of maize land races from Mexico to aflatoxin contamination. A. ORTEGA-BELTRAN (1), A. Ortega-Corona (2), M. Guerrero-Herrera (2), V. A. Vidal-Martinez (3), P. J. Cotty (4). (1) Dept. of Plant Sciences, University of Arizona, Tucson, AZ, U.S.A., (2) SAGARPA-INIFAP-CIANO, Cd. Obregon, Sonora, Mexico, (3) SAGARPA-INIFAP-CIANO, Santian Ixcuintla, Nayarit, Mexico, (4) USDA-ARS, Dept. of Plant Sciences, University of Arizona, Tucson, AZ, U.S.A.

Populations Genetics

1:00 – 2:45 p.m. * 211 CD

Section: Epidemiology / Ecology / Environmental Biology

Moderator: Katherine R. Whitten Buxton, North Carolina State University, Raleigh, NC

- 1:00 p.m. O-41. Population structure of *Colletotrichum* species associated with ripe rot of grapes. K. R. WHITTEN BUXTON (1), T. B. Sutton (1). (1) North Carolina State University, Raleigh, NC, U.S.A.
- 1:15 p.m. O-42. Population genetic data analysis of *Tomato spotted wilt virus* on peanut in North Carolina and Virginia. A. C. KAYE (1), G. G. Kennedy (1), B. B. Shew (1), M. A. Cubeta (1), J. W. Moyer (1). (1) North Carolina State University, U.S.A.
- 1:30 p.m. O-43. Diversity of a disease resistance gene homolog in natural populations of *Andropogon gerardii* (Poaceae) is correlated with precipitation. M. N. ROUSE (1), A. A. Saleh (1), K. H. Keeler (3), S. E. Travers (2), S. H. Hulbert (4), K. A. Garrett (1). (1) Kansas State University, Manhattan, KS, U.S.A., (2) North Dakota State University, Fargo, ND, U.S.A., (3) University of Nebraska, Lincoln, NE, U.S.A., (4) Washington State University, Pullman, WA, U.S.A.
- 1:45 p.m. O-44. Ancient isolation and independent evolution of the three clonal lineages of the sudden oak death pathogen *Phytophthora ramorum*. E. M. GOSS (1), N. J. Grunwald (1). (1) USDA ARS
- 2:00 p.m. O-45. Understanding differential virulence within *Fusarium virguliforme* using multiloci fingerprint analyses. G. C. MBOFUNG (1), T. C. Harrington (1), J. Steimel (1), X. Yang (1), S. S. Navi (1), L. F. Leandro (1). (1) Iowa State University, U.S.A.
- 2:15 p.m. O-46. The distribution of mating type and sexual status in Chinese rice blast populations. J. ZENG (1), S. Feng (1), L. Wang (1), F. Lin (1), J. Cai (1), Q. Pan (1). (1) College of Natural Resources

SESSIONS – Sunday Afternoon, Centennial

2:30 p.m. & Environment, South China Agricultural University, Guangzhou, China
 O-47. Genetic variability within *Grapevine fanleaf virus* isolates in a naturally infected California vineyard. J. E. OLIVER (1), M. Fuchs (1). (1) Department of Plant Pathology and Plant-Microbe Biology, Cornell University, NYSAES, Geneva, NY, U.S.A.

Sunday Afternoon Centennial Session

100 Years of The American Phytopathological Society

3:15 – 5:45 p.m. * Auditorium

Section: Professionalism/Service/Outreach

Organizer/Moderator: R. James Cook, Washington State University, Pullman, WA

Sponsoring Committee: Centennial Planning Committee

This special session includes several speakers addressing the evolution of APS as a professional scientific society; the growth of APS as a publisher of journals and books; the role of APS in public service and education; APS leadership/cooperation in international agriculture and programs; and APS leadership in plant pathology within the life sciences.

- 3:15 p.m. C-1. Staging a centennial: Milestones in the development of The American Phytopathological Society. P. D. PETERSON (1), K.-B. G. Scholthof (2). (1) Department of Entomology, Soils, and Plant Sciences, Clemson University, Florence, SC, U.S.A.; (2) Department of Plant Pathology and Microbiology, Texas A&M University, College Station, TX, U.S.A.
- 3:45 p.m. C-2. The growth of APS as a publisher of plant pathology literature. J. D. MACDONALD (1). (1) Department of Plant Pathology, University of California, Davis, CA, U.S.A.
- 4:15 p.m. C-3. The American Phytopathological Society: Public service and outreach. J. FLETCHER (1). (1) Department of Entomology & Plant Pathology, Oklahoma State University, Stillwater, OK, U.S.A.
- 4:45 p.m. C-4. APS leadership and participation in international agriculture. C. C. MUNDT (1). (1) Dept. of Botany & Plant Pathology, Oregon State University, Corvallis, OR, U.S.A.
- 5:15 p.m. C-5. Contributions of plant pathology to the life sciences in the past 100 years. R. J. COOK (1). (1) Department of Plant Pathology, Washington State University, Pullman, WA, U.S.A.

Author Open House

Monday 11:30 a.m. to 1:00 p.m.
 APS PRESS Bookstore
 (Located in the Exhibit Hall C)

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#14-08

Monday Morning Plenary Session

Listed in order of presentation.

“Agriculture, Food Security and Public Health: Global Issues – Global Solutions”

9:40 a.m. – 12:00 p.m. * Auditorium

- 9:45 a.m. Introduction: When agriculture fails. Ray D. Martyn Ph.D. Professor of Plant Pathology and APS President, Purdue University, West Lafayette, IN, U.S.A.
- 10:00 a.m. PL-7. Biopharming and plant-derived pharmaceuticals. Charles Arntzen, Ph.D. Regent's Professor and F.E. Nelson Presidential Chair, The Biodesign Institute at Arizona State University, Tempe, AZ, U.S.A.
- 10:35 a.m. PL-8. Plant biotechnology and agriculture: Is there a role for public sector scientists? Roger N. Beachy, Ph.D. President and Director, The Donald Danforth Plant Science Center, St. Louis, MO, U.S.A.
- 11:10 a.m. PL-9. The interface of science and policy: The crucial roles of food and health in economic development. Gilbert S. Omenn, M.D., Ph.D. Director, Center for Computational Medicine and Biology and Professor of Internal Medicine, Genetics and Public Health, University of Michigan, Ann Arbor, MI, U.S.A.

Monday Morning Special Sessions

Listed in alphabetical order by title.

A Century of Turfgrass Pathology, Then, Now, & The Future

8:00 – 9:30 a.m. * 205 AB

Section: Disease of Plants

Organizer: Joseph Vargas, Michigan State University, East Lansing, MI

Moderator: Henry Wetzel, Jacklin Seed, Post Falls, ID

Sponsoring Committees: Turfgrass Pathology

Financial Sponsors: Bayer Environmental Science; Syngenta Professional Products

The symposium will provide an overview of the accomplishments of academic contributions to turfgrass pathology. Overview of the past, current research topics, and generate ideas for future research as a discipline.

- 8:00 a.m. S-20. History of the turfgrass pathologist and contributions from the beginning to 1980. J. M. VARGAS Jr. (1). (1) Michigan State University, East Lansing, MI, U.S.A.
- 8:30 a.m. S-21. Turfgrass pathology from 1980 to today. B. B. CLARKE (1). (1) Rutgers University, New Brunswick, NJ, U.S.A.
- 9:00 a.m. S-22. What does the future hold for turfgrass pathology? L. TREDWAY (1). (1) North Carolina State University, Raleigh, NC, U.S.A.

An Evolving Culture Collection System to Meet Modern Research Needs

8:00 – 9:30 a.m. * 200 ABC

Section: Biology of Pathogens

Organizers: Weidong Chen, USDA-ARS, Pullman, WA, Xianming Chen, USDA-ARS, Pullman, WA

Moderators: Weidong Chen, USDA-ARS, Pullman, WA, Shuxian Li, USDA-ARS

Sponsoring Committees: Collections and Germplasm, Mycology

Collections of plant pathogens have played important roles in the advancement of plant pathology and biology in general, and our culture collection system has evolved with changing research needs. Despite that, the collection system of plant pathogens in the nation as a whole is fragmented and lacks of good organization. Now our culture collection system is at a critical juncture. As stewards of many phytopathogen collections are at or near retirement, the future of those culture collections is uncertain. This symposium will examine the history of our culture collection system, discuss potential solutions to the current problems, and explore the prospects of having a national plant pathogen collection system.

- 8:00 a.m. S-23. Cereal rust urediniospore collections, history and future needs. A. ROELFS (1). (1) Formerly Cereal Disease Lab, USDA-ARS, St. Paul, MN, U.S.A.
- 8:30 a.m. S-24. Microbial germplasm in seed banks and clonal repositories. F. DUGAN (1). (1) USDA-ARS, Pullman, WA, U.S.A.
- 8:45 a.m. S-25. Unique features of maintaining collections of fastidious pathogens. J. CHEN (1). (1) USDA-ARS, Parlier, CA, U.S.A.
- 9:00 a.m. S-26. Prospects and pre-requirements of having a national plant pathogen collection system. R. BENNETT (1). (1) National Program Leader, USDA-ARS, Beltsville, MD, U.S.A.

Protein Modifications During Host/Pathogen Interactions

8:00 – 9:30 a.m. * 200 FG

Section: Molecular/Cellular Plant Microbe Interactions

Organizers: Dennis Halterman, USDA-ARS/University of Wisconsin-Madison, Madison, WI; Guo-Liang Wang, Ohio State University, Columbus, OH

Moderator: Dennis Halterman, USDA-ARS/University of Wisconsin-Madison, Madison, WI

Sponsoring Committees: Biochemistry, Physiology, and Molecular Biology, and Host Resistance

This symposium will cover the role of post-translational modifications in host/pathogen interactions. Protein modifications such as phosphorylation, ubiquitination, and ADP-ribosylation are now being studied intensively for their role in proper signaling during disease resistance responses. Recent results discussed in this growing area of research will expose attendees to what will be an important future scientific focus of molecular plant-microbe interactions.

SESSIONS – Monday Morning, Technical

- 8:00 a.m. S-27. Functional conservation of the U-box/ARM E3 ligase SPL11- mediated cell death and defense pathway in rice and Arabidopsis. G.-L. WANG (1). (1) Ohio State University, Columbus, OH, U.S.A.
- 8:30 a.m. S-28. Molecular and cellular characterization of the Arabidopsis SON1 F-box factor. B. ST-PIERRE (1). (1) University of Vermont, Burlington, VT, U.S.A.
- 9:00 a.m. S-29. ADP-ribosylation and host-pathogen interactions. L. ADAMS-PHILLIPS (1). (1) University of Wisconsin, Madison, WI, U.S.A.

Fungal Biology & Genomics

8:00 – 9:30 a.m. * 200 HIJ

Section: Biology of Plant Pathogens

- 8:00 a.m. O-53. Influence of quinic acid catabolism on the production of the plant growth regulator phenylacetic acid by *Rhizoctonia solani* AG-3. F. E. BARTZ (3), D. A. Danehower (2), S. Tavantzis (1), M. A. Cubeta (3). (1) Department of Biological Sciences, The University of Maine, Orono, ME, U.S.A., (2) Department of Crop Science, North Carolina State University, Raleigh, NC, U.S.A., (3) Department of Plant Pathology, North Carolina State University, Raleigh, NC, U.S.A.
- 8:15 a.m. O-54. Novel cool-season grass endophytes with unique defensive properties by protoplast fusion. H. LI (1), K. D. Craven (1). (1) The Samuel Roberts Noble Foundation, Ardmore, OK, U.S.A.
- 8:30 a.m. O-55. *Phakopsora pachyrhizi* (Florida isolate) urediniospore adhesion to soybean leaves. M. VELEZ-CLIMENT (1), S. Isard (1), D. Luster (2). (1) Pennsylvania State University, Plant Pathology Department, University Park, PA, U.S.A., (2) USDA, ARS, FDWSRU, Ft. Detrick, MD, U.S.A.
- 8:45 a.m. O-56. Quorum sensing operates in *Phytophthora nicotianae*. P. KONG (1), C. Hong (1). (1) Virginia Tech, U.S.A.
- 9:00 a.m. O-57. Soil microbial communities among different cropping sequences and their effect on the occurrence of peanut soilborne pathogens. H. SUDINI (1), R. N. Huettel (1), C. Arias (2), K. L. Bowen (1). (1) Dept. of Entomology and Plant Pathology, Auburn University, AL, U.S.A., (2) Dept. of Fisheries and Allied Aquaculture, Auburn University, AL, U.S.A.
- 9:15 a.m. O-58. Evidence for geographic isolation and distinct patterns of recombination in the aflatoxin gene cluster of *Aspergillus flavus*. G. G. MOORE (3), B. W. Horn (6), J. L. Elliott (3), K. Hell (5), S. N. Chulze (1), G. Wright (4), M. K. Naik (2), I. Carbone (3). (1) Departamento de Microbiologia e Inmunologia, Universidad Nacional de Rio Cuarto, Cordoba, Argentina, (2) Department of Plant Pathology, College of Agriculture, Karnataka, India, (3) Department of Plant Pathology, North Carolina State University, Raleigh, NC U.S.A., (4) Department of Primary Industries, Queensland, Kingaroy, Australia, (5) International Institute of Tropical Agriculture, Cotonou, Republic of Benin, (6) National Peanut Research Laboratory, Agricultural Research Service, U.S. Department of Agriculture, Dawson, GA U.S.A.

Monday Morning Technical Sessions

Listed in alphabetical order by title.

Detection

8:00 – 9:15 a.m. * 208 CD

Section: Diseases of Plants

- 8:00 a.m. O-48. Detection and discrimination of *Pratylenchus neglectus* and *P. thornei* in DNA extracts from soil. G. YAN (1), R. W. Smiley (1), P. A. Okubara (2). (1) Oregon State University, Columbia Basin Agricultural Research Center, P.O. Box 370, Pendleton, OR 97801, U.S.A., (2) USDA, Root Disease and Biological Control Research Unit, Pullman, WA, U.S.A.
- 8:15 a.m. O-49. Multiplex PCR method for the detection of *African cassava mosaic virus* and *East African cassava mosaic Cameroon virus* in cassava. O. J. ALABI (1), L. P. Kumar (2), R. A. Naidu (1). (1) Department of Plant Pathology, Washington State University, Irrigated Agric. Research and Extn. Center, Prosser, WA, U.S.A., (2) International Institute of Tropical Agriculture, Ibadan, Nigeria
- 8:30 a.m. O-50. A quantitative PCR assay for *Macrophomina phaseolina*. J. MA (2), J. S. Haudenschild (2), C. B. Hill (2), G. L. Hartman (1). (1) USDA-ARS, Urbana, IL, U.S.A., (2) University of Illinois, Urbana-Champaign, IL, U.S.A.
- 8:45 a.m. O-51. Bacteriophage-mediated detection of *Ralstonia solanacearum*. K. KUTIN (1), D. Borthakur (1), A. M. Alvarez (1), D. M. Jenkins (1). (1) University of Hawaii, U.S.A.
- 9:00 a.m. O-52. Detection of trichothecene mycotoxins and ergosterol within wheat florets using gas chromatography with electron capture detection. K. T. WILLYERD (2), D. D. Archibald (2), K. Boroczky (2), E. D. De Wolf (1), G. A. Kuldau (2). (1) Kansas State, Manhattan, KS, U.S.A., (2) Penn State, University Park, PA, U.S.A.
- 9:15 a.m. O-52.2. Microscopic characterization of the pathogenic phase of *Phialophora gregata* in soybean stems. A. E. IMPULLITTI (1), D. K. Malvick (1). (1) University of Minnesota, St. Paul, MN, U.S.A.

Host Resistance-Molecular

8:00 – 9:30 a.m. * 208 AB

Section: Molecular / Cellular Plant–Microbe Interactions

Moderator: Maria Andrea Ortega, Ohio State University, Columbus, OH

- 8:00 a.m. O-59. Resource development for efficient mapping of disease resistance traits in *Solanum*. H. S. MANN (1), E. A. Quirin (1), L. Gao (1), R. Aversano (3), M. Iorizzo (2), D. Carputo (3), J. M. Bradeen (1). (1) University of Minnesota, Department of Plant Pathology, St. Paul, MN, U.S.A., (2) University of Minnesota, St. Paul, MN, U.S.A. and University of Naples “Federico II”, Portici, Italy, (3) University of Naples “Federico II”, Portici, Italy
- 8:15 a.m. O-60. Development of molecular markers for fine mapping of the *Rps8* gene locus in soybean. M. A. ORTEGA (3), D. M. Tucker (1), G. Pfeifer (6), W. Pipatpongpinoy (3), S. Berry (3), D. Hyten (4), P. Cregan (4), R. Shoemaker (5), S. St. Martin (2), M. Maroof (1), A. E. Dorrance (3). (1) Crop and Soil Environmental Science Dept., Virginia Tech, Blacksburg, VA U.S.A., (2) The Ohio State University, Columbus, OH U.S.A., (3) The Ohio State University, OARDC, Wooster, OH U.S.A., (4) USDA-ARS, Beltsville, MD U.S.A., (5) USDA-ARS, Corn Insects and Crop Genetics Research, Iowa State University, Ames, IA U.S.A., (6) USDA-ARS, Iowa State University, Ames, IA U.S.A.
- 8:30 a.m. O-61. Identification of quantitative trait loci (QTLs) responsible for sheath blight resistance in rice using recombinant inbred line population of Lemont/Jasmine 85. G. LIU (4), Y. Jia (3), F. J. Correa-Victoria (1), A. McClung (3), J. C. Correll (2). (1) CIAT, (2) Department of Plant Pathology, University of Arkansas, Fayetteville, AR U.S.A., (3) USDA-ARS Dale Bumpers National Rice Research Center, (4) University of Arkansas, Rice Research and Extension Center, Stuttgart, AR U.S.A.
- 8:45 a.m. O-62. Structural and functional analysis of the rice blast fungus avirulence gene *AVR-Pita*. Y. DAI (1), Y. Jia (2), X. Wang (5), Y. Wang (4), F. N. Lee (3), J. C. Correll (1). (1) Department of Plant Pathology, University of Arkansas, Fayetteville, AR U.S.A., (2) USDA-ARS Dale Bumpers National Rice Research Center, (3) University of Arkansas, Rice Research and Extension Center, Stuttgart, AR U.S.A., (4) Zhejiang Academy for Agricultural Science, P. R. China, (5) Zhejiang University, PR China
- 9:00 a.m. O-63. Novel reporter based constructs to study the evolution rate of LRR regions of plant resistance genes. P. KATHIRIA (1), Y. Yao (1), I. Kovalchuk (1). (1) University of Lethbridge, Lethbridge, Canada
- 9:15 a.m. O-64. Sequence polymorphisms confer differential allele regulation of germin-like protein gene family members associated with rice blast QTL. R. M. DAVIDSON (1), P. Manosalva

- (3), C. Vera Cruz (2), H. Leung (2), J. E. Leach (1). (1) Colorado State University, Fort Collins, CO, U.S.A., (2) International Rice Research Institute, Manila, Philippines, (3) Kansas State University, Manhattan, KS, U.S.A., Colorado State University, Fort Collins, CO, U.S.A.

Integrated Pest Management

8:00 – 9:30 a.m. * 211 AB

Section: Plant Disease Management

- 8:00 a.m. O-65. High tunnels and grafting for disease management in organic tomato production. C. L. RIVARD (2), F. J. Louws (2), M. M. Peet (1), S. O’Connell (1). (1) North Carolina State University, Dept. of Horticulture, Raleigh, NC, U.S.A., (2) North Carolina State University, Dept. of Plant Pathology, Raleigh, NC, U.S.A.
- 8:15 a.m. O-66. Impact of preceding crops on incidence and severity of diseases in canola. B. M. Jenks (1), S. A. MAZUREK (1), G. P. Willoughby (1). (1) North Dakota State University - North Central Research Extension Center, Minot, ND U.S.A.
- 8:30 a.m. O-67. Comparative effect of aqueous plant extracts in the control of storage fungi. C. ONYEANI (1), S. Osunlaja (1), O. Oworu (1), A. Joda (1). (1) Dept. of Crop Production & Protection, Olabisi Onabanjo University, Ago-Iwoye, Ogun State, Nigeria
- 8:45 a.m. O-68. The effect of packingline impacts on susceptibility of sweetpotatoes (*Ipomoea batatas*) to *Rhizopus stolonifer*. B. A. EDMUNDS (1), G. J. Holmes (1). (1) North Carolina State University, Raleigh, NC, U.S.A.
- 9:00 a.m. O-69. Disease management in production of certified seed potatoes by organic practices. R. K. GENGER (1), D. I. Rouse (1), A. O. Charkowski (1). (1) Department of Plant Pathology, University of Wisconsin-Madison, Madison, WI, U.S.A.
- 9:15 a.m. O-70. Monitoring management of huanglongbing disease of citrus in Brazil. K. L. MANJUNATH (4), R. Harakava (3), C. Ramadugu (5), P. Yamamoto (2), S. Halbert (1), R. F. Lee (4). (1) DPI, Gainesville, FL, U.S.A., (2) Fundecitrus, Sao Paulo, Brazil, (3) Instituto Biologico, Sao Paulo, Brazil, (4) USDA-ARS, Riverside, CA, U.S.A., (5) University of California, Riverside, CA, U.S.A.

Nematology

8:00 – 9:30 a.m. * 211 CD

Section: Diseases of Plants

- 8:00 a.m. O-71. Population dynamics and spatial distribution of *Rotylenchulus reniformis* upon introduction into a cotton field. S. R. MOORE (1), K. S. Lawrence (1), F. J. Arriaga (2), E. van Santen (1), C. H. Burmester (1). (1) Auburn University, Auburn, AL, U.S.A., (2) USDA-ARS, Auburn, AL, U.S.A.

SESSIONS – Monday Morning, Technical & Centennial

- 8:15 a.m. O-72. Host influence on the fatty acid profiles of selected plant-parasitic nematodes. N. S. SEKORA (1), K. K. Lawrence (1), E. van Santen (1), J. A. McNroy (1). (1) Auburn University, Auburn, AL, U.S.A.
- 8:30 a.m. O-73. Isolation and identification of fungi associated with reniform nematode *Rotylenchulus reniformis*. J. D. CASTILLO (1), K. Lawrence (1), G. Morgan Jones (1). (1) Auburn University, Auburn, AL, U.S.A.
- 8:45 a.m. O-74. Establishing model of nematodes as bioindicators for river pollution. W. CHEN (1), P. Chen (1), T. Tsay (1). (1) Dept. Plant Pathology, National Chung-Hsing University, Taichung, Taiwan
- 9:00 a.m. O-75. Towards identification of the *Rbg4* gene for resistance to the soybean cyst nematode. X. LIU (2), S. Liu (1), K. Meksem (1), M. Mitchum (2). (1) Southern Illinois University, U.S.A., (2) University of Missouri, U.S.A.
- 9:15 a.m. O-76. Root growth response to application and overexpression of *Heterodera glycines* CLE peptides. A. REPLOGLE (2), J. Wang (2), X. Wang (3), E. L. Davis (1), M. G. Mitchum (2). (1) Department of Plant Pathology, North Carolina State University, Raleigh, NC, U.S.A., (2) Division of Plant Sciences and Bond Life Sciences Center, University of Missouri, Columbia, MO, U.S.A., (3) USDA-ARS, Biological IPM Research Unit and Dept. of Plant Pathology and Plant-Microbe Biology, Cornell University, Ithaca, NY, U.S.A.

Spatial & Temporal Patterns of Disease

8:00 – 9:30 a.m. * 205 CD

Section: Epidemiology / Ecology / Environmental Biology

Moderator: Lu Liu, Iowa State University, Ames, IA

- 8:00 a.m. O-77. A geographic information systems (GIS) analysis of soybean rust distribution at the field level. P. E. MUMMA (1), R. W. Schneider (1), L. Wang (1). (1) Louisiana State University, Baton Rouge, LA, U.S.A.
- 8:15 a.m. O-78. Occurrence of American Soybean Rust *Phakopsora meibomia* in legumes in Puerto Rico. B. VEGA (1), C. Estevez de Jensen (1). (1) University of Puerto Rico, Crop Protection Department, Mayagüez, Puerto Rico
- 8:30 a.m. O-79. Within-field spatial and temporal analysis of *Bean pod mottle virus* in Iowa. E. BYAMUKAMA (1), A. Robertson (1), D. Nordman (1), F. W. Nutter Jr. (1). (1) Iowa State University, U.S.A.
- 8:45 a.m. O-80. Quantifying the temporal and spatial spread of *Pantoea stewartii* in sweet corn. L. LIU (1), F. W. Nutter Jr. (1). (1) Iowa State University, U.S.A.
- 9:00 a.m. O-81. Spatial distribution of *Sclerotinia sclerotiorum* ascospores and its relation to sclerotinia stem rot of canola. I. S. QANDAH (1), L. E. Del Rio (1). (1) North Dakota State University, Fargo, ND, U.S.A.
- 9:15 a.m. O-82. Comparison of the prevalence and incidence of *Soybean mosaic virus* in Iowa soybean fields during 2005 to 2007. X. LU (1), A. M. Robertson (1), E. Byamukama (1), F. W. Nutter Jr. (1). (1) Iowa State University, Ames, IA, U.S.A.
- 8:00 a.m. C-6. Chestnut talk. S. ANAGNOSTAKIS (1) as F. PATTERSON (2). (1) The Connecticut Agric Experiment Station, New Haven, CT, U.S.A.; (2) Bureau of Plant Industry, USDA, Washington, DC, U.S.A.
- 8:15 a.m. C-7. Recent advances in research and management of chestnut blight on American chestnut. G. GRIFFIN (1). (1) Dept. of Plant Pathology, Physiology, and Weed Science, Virginia Polytechnic Institute and State University, U.S.A.
- 8:30 a.m. C-8. *Bacillus phytophthorus* Appel. G. H. LACY (1) as E. F. SMITH (2). (1) Dept. of Plant Pathology, Physiology and Weed Science, Virginia Polytechnic Institute & State University, Blacksburg, VA, U.S.A.; (2) Department of Agriculture, Washington, DC, U.S.A.
- 8:45 a.m. C-9. Bacterial systematics has changed from an intuitive process to a more objective approach. J. B. JONES (1). (1) Plant Pathology Department, University of Florida, Gainesville FL, U.S.A.

Monday Morning Centennial Session

Plant Pathology in 1908/2008

8:00 – 9:00 a.m. * 200 DE

Section: Professionalism/Service/Outreach

Organizer/Moderator: Erik Stromberg, VPI & State University, Blacksburg, VA

Sponsoring Committee: Centennial Planning Committee

Plant pathology has come a long way in the century since APS was founded. Presentations from 1908 on phyto bacteriology and chestnut blight will be followed by 2008 updates on these two topics to illustrate the progress of our science in the last 100 years. All speakers will be plant pathologists - come enjoy presentations in 1908 costumes and with lantern slides!

Monday Afternoon Special Sessions

Listed in alphabetical order by title.

Epidemiology and Food Security: Historically Linked, Future of Promise

1:00 – 3:00 p.m. * 200 ABC

Section: Epidemiology/Ecology/Environmental Biology
Organizers/Moderators: Serge Savary, International Rice Research Inst., Metro Manila, Philippines; Pierce A. Paul, Ohio State Univ, Wooster, OH

Sponsoring Committees: Epidemiology, Crop Loss Assessment and Risk Evaluation

Epidemiology has been inherently linked with food security. As the world's population continues to grow, agricultural researchers will be faced with the important goal of meeting the world's food demand. Epidemiology is one of the areas that can help contribute to addressing this issue. In order to continue to improve food security, epidemiologists need to provide adequate measures of agrosystem (and ecosystems) performance, in relation with plant health. Also, epidemiologists need to provide accurate, if not precise, measurements of the efficiency and costs of management that have many dimensions and units. Finally, epidemiologists need to be able to generate scenarios for overall management and thresholds for actions in complex, nonlinear systems. This special session will examine the historical context of food security and the role of epidemiology, highlight the current state of how epidemiological research contributes to food security, and discuss the future needs for epidemiologists to continue to contribute to food security.

- 1:00 p.m. S-30. The 'Continental Famine' of Europe, 1846/7; Causes and consequences. J. C. ZADOKS (1). (1) Emeritus Professor of Plant Pathology, Amsterdam, The Netherlands
- 1:30 p.m. S-31. Linking plant diseases and their economic consequences in a global setting. P. G. PARDEY (1), and S. Wood (2). (1) Intl Science and Technology Practice and Policy Ctr (InSTePP), University of Minnesota, St. Paul, MN, U.S.A.; (2) IFPRI, Washington, U.S.A.
- 2:00 p.m. S-32. Plant disease epidemics and crop yield. L. V. MADDEN (1). (1) Dept. of Plant Pathology, Ohio State University, Wooster, OH, U.S.A.
- 2:30 p.m. S-33. Strategic decisions for plant health management in a changing agriculture. S. SAVARY (1), P. Esker (2), and N. McRoberts (3). (1) IRRI, Los Baños, Philippines; (2) University of Wisconsin, Madison, WI, U.S.A.; (3) Scottish Agricultural College, Edinburgh, UK

Harnessing Emerging Molecular and Statistical Technologies for Analysis of Soilborne Pathosystems

1:00 -3:00 p.m. * 205 AB

Section: Epidemiology/Ecology/Environmental Biology
Organizers/Moderators: Zahi Atallah, USDA-ARS, University of California-Davis, Davis, CA, Greg Browne, USDA-ARS, University of California-Davis, Davis, CA
Sponsoring Committees: Soil Microbiology and Root Diseases

Many new and rapidly changing technologies are available for characterizing microbial communities in soil. Molecular biology advances now allow for the detection and characterization of a myriad of soil microbes, including those considered nonculturable. New statistical approaches permit a quantitative examination of soil microbial communities. However, optimization of these emerging technologies and a comprehensive understanding of their limitations tend to be elusive. We propose to organize a symposium highlighting effective utilization of emerging molecular and statistical methodologies for examining soil microbial communities. The speakers will focus on practical challenges, such as 1) selecting the most effective and appropriate methodologies to examine various types of microbial communities mediating or influencing soilborne diseases; 2) selecting appropriate experimental designs, sampling methods, and sample sizes; and 3) understanding and dealing with limitations of the methodologies.

- 1:00 p.m. S-34. Apples and antibiotics: Metagenomic discovery of antibiotic resistance genes in orchard soil. J. HANDELSMAN (1). (1) University of Wisconsin, Madison, WI, U.S.A.
- 1:30 p.m. S-35. When to stop. Sampling challenges in estimating and comparing communities. M. CLAYTON (1). (1) University of Wisconsin, Madison, WI, U.S.A.
- 2:00 p.m. S-36. Identifying microorganisms involved in specific pathogen suppression in soil. J. BORNEMAN (1). (1) University of California, Riverside, CA, U.S.A.
- 2:30 p.m. S-37. Coalescent approaches to determine the source of emerging, host-specialized pathogen populations. P. CERISINI (1), and B. MCDONALD (1). (1) Plant Pathology/Inst of Integrative Biology, Zurich, Switzerland

If We Had Known Then What We Know Now: Reflections on Catastrophic Tree Diseases

1:00 – 3:00 p.m. * 205 CD

Section: Disease of Plants

Organizer: George W. Hudler, Cornell University, Ithaca, NY
Moderators: George W. Hudler, Cornell University, Ithaca, NY, Jennifer Juzwik, USDA FS, St. Paul, MN

Sponsoring Committees: Forest Pathology

The establishment and spread of non-native, invasive forest pathogens in the US during the 20th century have changed forest composition, structure, and function in rural and urban landscapes. Because recovery from an invasive pathogen is typically an extremely long-term process, it is especially critical to incorporate lessons from previous invasions by diverse pathogens. Case studies covering historical perspectives on what was done to contain, prevent spread, and mitigate each disease through the century will be presented. This symposium will focus on lessons learned from historical pathogen invasions to improve our response to current and future threats.

- 1:00 p.m. S-42. Oak wilt; did our response match the threat? D. APPEL (1). (1) Texas A&M University, College Station, TX, U.S.A.

SESSIONS – Monday Afternoon, Special & Technical

- 1:30 p.m. S-43. A century of responses to *Cronartium ribicola*: Have we made the right choices? P. ZAMBINO (1). (1) USDA Forest Service, Southern California Shared Service Area, San Bernardino, CA, U.S.A.
- 2:00 p.m. S-44. Invasion, innovation, exploitation and coexistence: the birth and maturation of a pathosystem. T. GORDON (1). (1) University of California, Davis, CA, U.S.A.
- 2:30 p.m. S-45. *Phytophthora* - A day late and a dollar short. E. HANSEN (1). (1) Oregon State University, Corvallis, OR, U.S.A.

Phytophthora: A Global Problem with Continued and Historical Importance

1:00 – 3:00 p.m. * 208 AB

Section: Plant Disease Management

Organizers/Moderators: Mohammad Babadoost, University of Illinois, Urbana, IL, Niklaus Grunwald, USDA-ARS, Oregon State University, Corvallis, OR

Sponsoring Committees: Office of International Program

Late blight of potato occurred in Europe during 1844-46, causing heavy crop losses, which resulted in the famous Irish famine. In the past 160 years, more than 80 *Phytophthora* species have been described. Today, virtually every crop is affected by one or more *Phytophthora* species. The science of plant pathology was borne after describing *Phytophthora infestans*, the causal agent of late blight of potato. This symposium will focus on reviewing the historical significance of *Phytophthora* pathogens and will evaluate current and future outlook for management of important *Phytophthora* diseases.

- 1:00 p.m. S-38. A historical review of *Phytophthora* diseases. E. HANSEN (1). (1) Department of Botany and Plant Pathology, Oregon State University, Corvallis, OR, U.S.A.
- 1:30 p.m. S-39. Late blight of potato: Past, present, and future. N. J. GRUNWALD (1). (1) USDA-ARS, Oregon State University, Corvallis, OR, U.S.A.
- 2:00 p.m. S-40. *Phytophthora capsici*: A growing threat to vegetable industries. M. BABADOOST (1). (1) University of Illinois, Urbana, IL, U.S.A.
- 2:30 p.m. S-41. Oak death epidemics by *Phytophthora ramorum*. D. M. RIZZO (1). (1) University of California, Davis, CA, U.S.A.

Bacterial Type III Secretion Systems: From Enigmatic *avr* and *hrp* Genes to Type III Effector-Mediated Suppression of Plant Immunity

3:15 – 6:15 p.m. * 208 CD

Section: Molecular/Cellular Plant Microbe Interactions

Organizers/Moderators: Jim Alfano, University of Nebraska, Lincoln, NE, Mary Beth Mudgett, Stanford University, Stanford, CA

Sponsoring Committees: Bacteriology, Biochemistry, Physiology, and Molecular Biology; Genetics; and Graduate Student.

Financial Sponsors: Monsanto, Pioneer

This session will provide history on important discoveries on the type III protein secretion system and recent progress on bacterial type III effectors and their targets inside plant cells. Two talks will provide historical perspectives on *avr* and *hrp* genes as well as introduce our current state of knowledge. We now know that the vast majority of bacterial *avr* genes encode type III effectors and *hrp* genes encode a type III protein secretion system that injects type III effectors into plant cells. These perspective talks will highlight how *avr* genes and *hrp* genes were independently discovered and how it was discovered that type III effectors, many of which are encoded by *avr* genes, were injected into plant cells by the *Hrp* type III protein secretion system encoded by *hrp* genes. The other talks will focus on more recent advances in our understanding of the activities of specific type III effectors and their plant targets/cofactors and how the majority of type III effectors are apparently targeting the plant innate immune system. Highlighting the important molecular and biochemical advances made in the past 20 years, this session will provide insight to both the achievements and challenges that lie ahead in the study of bacterial pathogenesis and will provide a breadth of information fitting of a session held at the Centennial APS meeting.

- 3:15 p.m. S-46. From the discovery of avirulence proteins to effector-dependent inhibition of plant signal transduction. B. STASKAWICZ (1). (1) University of California, Berkeley, CA, USA
- 3:45 p.m. S-47. Learning about bacterial suppression of PAMP-triggered innate immunity from studying type III effectors AvrPto, HopM1, and AvrE1. S. Y. HE (1). (1) Michigan State University, East Lansing, MI, USA
- 4:15 p.m. S-48. Impact of *Xanthomonas AvrBsT* effector action on signaling and immunity in Arabidopsis. M. B. MUDGETT (1). (1) Stanford University, Stanford, CA, USA
- 4:45 p.m. S-49. Discovery of the *Hrp* system, a door to the inner world of bacterial virulence. A. COLLMER (1). (1) Cornell University, Ithaca, NY, USA
- 5:15 p.m. S-50. Bacterial effector activation: Investigating the significance of cyclophilin-induced protein folding. G. COAKER (1). (1) University of California, Davis, CA, USA
- 5:45 p.m. S-51. The molecular basis of plant immunity suppression by the *Pseudomonas syringae* type III effector HopU1. J. ALFANO (1). (1) University of Nebraska, Lincoln, NE, USA

Monday Afternoon Technical Sessions

Listed in alphabetical order by title.

Bacteria: Molecular, Cellular Biology II

1:00 – 3:00 p.m. * 200 HIJ

Section: Molecular / Cellular Plant–Microbe Interactions

Moderators: Zomary Flores, University of Wisconsin, Madison, WI; Keri Wang, Samuel Roberts Noble Foundation, Ardmore, OK

- 1:00 p.m. O-83. OxyR, a regulator of the hydrogen peroxide stress response in *Ralstonia solanacearum* is necessary for full virulence on tomato plants. Z. FLORES-CRUZ (1), C. Allen (1). (1) University of Wisconsin-Madison, Madison, WI, U.S.A.
- 1:15 p.m. O-84. Functional characterization of the *harpin binding protein 1* gene in apple in relation to oxidative stress and fire blight resistance. D. K. SINGH (2), S. N. Maximova (1), T. W. McNellis (2). (1) The Department of Horticulture, Pennsylvania State University, University Park, PA, U.S.A., (2) The Department of Plant Pathology, Pennsylvania State University, University Park, PA, U.S.A.
- 1:30 p.m. O-85. Membrane associated stigmasterol plays an important role in plant innate immunity. K. WANG (2), C. Ryu (1), L. Kang (2), S. Muthappa (2), K. S. Mysore (2). (1) Korea Research Institute of Bioscience and Biotechnology, Yuseong, Daejeon, South Korea, (2) Samuel Roberts Noble Foundation, Ardmore, OK, U.S.A.
- 1:45 p.m. O-86. How do plants defend themselves against bacterial wilt? Response of resistant and susceptible tomato plants to infection by *Ralstonia solanacearum*. A. MILLING (1), C. Allen (1). (1) University of Wisconsin, Department of Plant Pathology, Madison, WI U.S.A.
- 2:00 p.m. O-87. Whole genome response of *Agrobacterium* to Acetosyringone: A phenolic inducer. A. ANAND (1), Z. Vaghchhipawala (1), Y. Tang (1), K. Mysore (1). (1) Samuel Roberts Noble Foundation, Ardmore, OK, U.S.A.
- 2:15 p.m. O-88. Fine-scale kinetic changes in *Arabidopsis thaliana* physiology during the hypersensitive response suggest a two-layered defense strategy that prevents bacterial invasion and halts infection. B. C. FREEMAN (1), G. A. Beattie (1). (1) Iowa State University, Ames, IA, U.S.A.
- 2:30 p.m. O-89. Biological differences among *Pectobacterium* species. M. MARQUEZ-VILLAVICENCIO (1), J. Glasner (2), N. Perna (2), A. Charkowski (1). (1) Department of Plant Pathology, University of Wisconsin - Madison, WI, U.S.A., (2) Genome Center of Wisconsin, University of Wisconsin - Madison, WI, U.S.A.
- 2:45 p.m. O-90. Impact of plant activators and copper on bacterial speck and host response in field-grown tomatoes. M. A. BORSICK HERMAN (1), H. W. Lange (1), S. L. Davidson (2), C. D. Smart

- (1). (1) Cornell University, Geneva, NY, U.S.A., (2) Hobart and William Smith Colleges, Geneva, NY, U.S.A.

Chemical Control

1:00 – 3:00 p.m. * 200 FG

Section: Plant Disease Management

- 1:00 p.m. O-91. The impact of Prohexadione-calcium and Paclobutrazol on the vascular tissue of apple. M. J. MCGRATH (1), J. M. Koczan (1), G. W. Sundin (1). (1) Michigan State University, East Lansing, MI U.S.A.
- 1:15 p.m. O-92. Baseline sensitivity of *Fusicladium effusum* to azoxystrobin and *in vitro* toxicity of the alternative oxidase inhibitor, salicylhydroxamic acid (SHAM). M. SEYRAN (1), K. L. Stevenson (1), T. B. Breneman (1). (1) Department of Plant Pathology, University of Georgia, Coastal Plain Experiment Station, Tifton U.S.A.
- 1:30 p.m. O-93. Molecular characterization of *Alternaria alternata* field isolates highly resistant to the carboxamide fungicide boscalid. H. F. AVENOT (3), A. Sellam (2), D. Morgan (3), G. Karaoglanidis (1), T. J. Michailides (3). (1) Aristotelian University of Thessaloniki, Thessaloniki, Greece, (2) Biotechnology Research Institute, Montreal, Canada, (3) University of California Davis, Kearney Agricultural Center, Parlier, CA, U.S.A.
- 1:45 p.m. O-94. Monitoring resistance in *Monilinia fructicola* populations in the southeastern United States for enhanced brown rot control in peach. A. AMIRI (1), P. Brannen (2), G. Schnabel (1). (1) Clemson University, Clemson, SC, U.S.A., (2) University of Georgia, Athens, GA, U.S.A.
- 2:00 p.m. O-95. Dynamics of *Sclerotinia homoeocarpa* populations to curative applications of specific-site fungicides. J. BAN (2), Y. Jo (1), P. Koch (3), G. Jung (2). (1) Department of Plant Pathology & Microbiology, College Station, TX, U.S.A., (2) University of Massachusetts, Amherst, MA, U.S.A., (3) University of Wisconsin, Madison, WI, U.S.A.
- 2:15 p.m. O-96. Effects of cultivars, inoculation timing, and Fusarium head blight intensity on deoxynivalenol accumulation in winter wheat. J. HERNANDEZ NOPSA (1), S. N. Wegulo (1). (1) University of Nebraska-Lincoln, Lincoln, NE, U.S.A.
- 2:30 p.m. O-97. Effect of germicidal light on seed-borne *Fusarium* and sweet corn seedling vigor. N. MILLER (1), C. M. Ocamb (1). (1) Oregon State University, U.S.A.
- 2:45 p.m. O-98. Comparison of strobilurin type fungicides to control soybean seedling pathogens. M. L. ELLIS (1), K. D. Broders (1), A. E. Dorrance (1). (1) The Ohio State University, OARDC, Wooster, OH, U.S.A.

SESSIONS – Monday Afternoon, Technical & Flash-and-Dash

Fungi: Molecular, Cellular Biology II

1:00 – 3:00 p.m. * 200 DE

Section: Molecular / Cellular Plant–Microbe Interactions

Moderator: Xiquan Gao, Texas A&M Univ, Plant Pathology and Microbiology, College Station, TX

- 1:00 p.m. O-99. Oxylipins act as quorum sensing signals and cell density regulators in *Aspergillus* spp.. S. HOROWITZ BROWN (2), R. Zarnowski (1), J. B. Scott (2), W. C. Sharpee (2), N. P. Keller (2). (1) Department of Medical Microbiology and Immunology, UW Madison, U.S.A., (2) Department of Plant Pathology, UW Madison, U.S.A.
- 1:15 p.m. O-100. Ammonia secretion and ambient pH as virulence regulators of *Colletotrichum gloeosporioides* pathogenic on avocado fruits. I. MIYARA (2), H. Shafran (1), A. Sherman (1), D. Prusky (2). (1) Department of Genomics, Agricultural Research Organization, the Volcani Center, Bet Dagan, Israel, (2) Department of Postharvest Science, Agricultural Research Organization, the Volcani Center, Bet Dagan, Israel
- 1:30 p.m. O-101. The role of anastomosis in the sexual development of *Epichloë* endophytes. N. D. CHARLTON (1), K. D. Craven (1). (1) The Samuel Roberts Noble Foundation, Ardmore, OK, U.S.A.
- 1:45 p.m. O-102. Introduction of the mycorrhizal fungus *Sebacina vermifera* into elite switchgrass (*Panicum virgatum* L.) cultivars for potential enhancement of biomass and productivity. S. R. GHIMIRE (1), K. D. Craven (1). (1) The Samuel Roberts Noble Foundation, Ardmore, OK, U.S.A.
- 2:00 p.m. O-103. Maize lipoxygenase ZmLOX3-mediated pathway suppresses seed colonization, production of spores and mycotoxins by *Aspergilli* spp.. X. GAO (1), T. Isakeit (1), M. Brodhagen (3), N. P. Keller (2), M. V. Kolomiets (1). (1) Texas A&M University, College Station, TX, U.S.A., (2) University of Wisconsin-Madison, Madison, WI, U.S.A., (3) Western Washington University, Bellingham, WA, U.S.A.
- 2:15 p.m. O-104. Identification of plant defense signaling components induced in response to fungal elicitor EIX. S. MUTHAPPA (2), C. Ryu (2), M. Sharfman (1), A. Avni (1), K. S. Mysore (2). (1) Department of Plant Sciences, Tel Aviv University, Tel Aviv, Israel, (2) Noble Foundation, Ardmore, OK, U.S.A.
- 2:30 p.m. O-105. Ethylene pathway and disease resistance in rice are negatively regulated by a stress-responsive MAP kinase. Y. Yang (1), T. A. Bailey (2), J. Chen (1), E. E. HELLIWELL (1), X. Zhou (2). (1) Department of Plant Pathology, Pennsylvania State University, University Park, PA, U.S.A., (2) Department of Plant Pathology, University of Arkansas, Fayetteville, AR, U.S.A.

- 2:45 p.m. O-106. Defense genes and pathways in Fusarium crown rot susceptible and partially-resistant Australian wheat seedlings responding to *Fusarium culmorum* infection. J. E. PETRISKO (1), J. M. Windes (1). (1) University of Idaho, U.S.A.

Monday Afternoon Flash-and-Dash

Fungal Molecular

1:00 – 1:50 p.m. * 208 CD

Moderator: Amy Charkowski, University of Wisconsin, Madison, WI

- 1:00 p.m. P-453 Functional and structural characterization of cerato-platanin proteins in *Moniliophthora perniciosa*, the cause of Witches' Broom disease in cacao. O. G. CABRERA (1), G. Zapparoli (1), F. J. Medrano (1), R. A. Tiburcio (1), G. G. Lacerda (1), G. G. Pereira (1). (1) UNICAMP, Campinas, São Paulo, Brazil
- 1:05 p.m. P-493 Towards the elimination of ergot alkaloid biosynthesis genes in *Neotyphodium coenophialum*. S. FLOREA (1), C. Machado (1), D. Panaccione (2), C. Schardl (1). (1) University of Kentucky, Department of Plant Pathology, Lexington, KY, U.S.A., (2) West Virginia University, Division of Plant and Soil Sciences, Morgantown, WV, U.S.A.
- 1:10 p.m. P-505 Biosynthesis of loline alkaloids in fungal endophytes. J. R. FAULKNER (1), M. J. Spiering (1), R. B. Grossman (1), C. L. Schardl (1). (1) University of Kentucky, Lexington, KY, U.S.A.
- 1:15 p.m. P-508 The blast resistance gene Pi37 encodes an NBS-LRR protein and is a member of a resistance gene cluster on rice chromosome 1. F. LIN (1), S. Chen (1), Z. Que (1), L. Wang (1), X. Liu (1), Q. Pan (1). (1) College of Natural Resources & Environment, South China Agricultural University, Guangzhou, China
- 1:20 p.m. P-509 The role of Glycerol metabolism in the Arabidopsis-*Colletotrichum higginsianum* interaction. B. CHANDA (2), S. Venugopal (2), S. Kulshrestha (2), Q. Gao (2), D. Navarre (1), B. Downie (2), A. Kachroo (2), L. Vaillancourt (2), P. Kachroo (2). (1) U.S. Department of Agriculture–Agricultural Research Service, Washington State University, Prosser, WA, U.S.A., (2) University of Kentucky, Lexington, KY, U.S.A.
- 1:25 p.m. P-501 Global gene expression analysis of *Magnaporthe oryzae* under stress conditions. S. M. MATHIONI (2), C. Rizzo (1), N. M. Donofrio (2). (1) Agilent Technologies, (2) University of Delaware
- 1:30 p.m. P-502 Allele mining for genes associated with partial resistance to *Phytophthora sojae* in soybean. H. WANG (3), S. Berry (3), S. K. St. Martin

(2), L. Zhou (4), K. Krampis (4), D. Tucker (1), Y. Mao (4), I. Hoeschele (4), M. Maroof (1), B. Tyler (4), A. E. Dorrance (3). (1) Crop and Soil Environmental Science, Virginia Tech, Blacksburg, VA, U.S.A., (2) The Ohio State University, Columbus, OH, U.S.A., (3) The Ohio State University, OARDC, Wooster, OH, U.S.A., (4) Virginia Bioinformatics Institute, Virginia Tech, Blacksburg, VA, U.S.A.

- 1:35 p.m. P-503 Proteomic analysis of potato late blight resistance mediated by the *RB* resistance gene. G. Barrett-Wilt (2), E. Huttlin (1), A. Harms (2), M. Sussman (1), D. HALTERMAN (3). (1) UW Biotechnology Center Mass Spectrometry/ Proteomics, Department of Biochemistry, University of Wisconsin-Madison, U.S.A., (2) UW Biotechnology Center Mass Spectrometry/ Proteomics, University of Wisconsin-Madison, U.S.A., (3) Vegetable Crops Research Unit, USDA-ARS, University of Wisconsin-Madison, U.S.A.
- 1:40 p.m. P-504 Towards uncovering the secretion mechanism of effector proteins during biotrophic invasion by the blast fungus *Magnaporthe oryzae*. M. C. GIRALDO (2), G. Mosquera (1), B. Valent (2). (1) Bioag Sci & Pest Mgmt, Colorado State University, (2) Kansas State University, Manhattan, KS, U.S.A.
- 1:45 p.m. P-526 The putative ion channel DMII localizes to the nuclear envelope and regulates nuclear calcium spiking during early symbiotic signaling. M. VENKATESHWARAN (3), B. K. Riely (5), E. Peiter (1), M. Otegui (4), J. Sun (6), A. B. Heckmann (6), G. Lounnon (3), A. Edwards (6), G. Freshour (2), M. G. Hahn (2), D. Sanders (1), G. D. Oldroyd (6), A. J. Downie (6), D. R. Cook (5), J. Ane (3). (1) Biology Department, University of York, York, United Kingdom, (2) Complex Carbohydrate Research Center, University of Georgia, Athens, GA, U.S.A., (3) Department of Agronomy, University of Wisconsin, Madison, WI, U.S.A., (4) Department of Botany, University of Wisconsin, Madison, WI, U.S.A., (5) Department of Plant Pathology, University of California, Davis, CA, U.S.A., (6) John Innes Centre, Norwich Research Park, Norwich, United Kingdom

Viruses

1:00 – 1:45 p.m. * 211 AB

Moderator: Michael J. Boehm, Ohio State University, Columbus, OH

- 1:00 p.m. P-540 Phloem limitation of potato leafroll virus is an asset not a liability. K. PETER (1), P. Palukaitis (3), F. Gildow (2), S. Gray (4). (1) Cornell University, Ithaca, NY, U.S.A., (2) Pennsylvania State University, (3) Scottish Crop Research Institute, (4) USDA, ARS, Ithaca, NY, U.S.A.
- 1:05 p.m. P-541 Construction of a virus-induced gene silencing (VIGS) vector for cotton using *Cotton*

leaf crumple virus and a fragment of the cotton phytoene desaturase gene. A. M. IDRIS (2), B. Ktenz (3), J. R. Tuttle (1), H. Jeske (3), D. Robertson (1), J. K. Brown (2). (1) Department of Plant Biology, North Carolina University, NC, U.S.A., (2) Department of Plant Sciences, University of Arizona, Tucson, AZ, U.S.A., (3) Universitaet Stuttgart, Biologisches Institut, Stuttgart, Germany

- 1:10 p.m. P-537 In planta expression of a soluble recombinant form of the GN glycoprotein (GN-S) of *Tomato spotted wilt virus* (TSWV) and assessment of its interaction with western flower thrips (WFT) gut. I. E. BADILLO-VARGAS (1). (1) University of Wisconsin, Madison, WI, U.S.A.
- 1:15 p.m. P-87 Identification of plant reservoirs and genome characterization of Squash vein yellowing virus, causal agent of viral watermelon vine decline in Florida. S. ADKINS (2), W. Li (5), M. E. Hilf (2), W. W. Turechek (2), C. S. Kousik (3), C. A. Baker (1), S. E. Webb (4). (1) Florida Department of Agriculture and Consumer Services, Division of Plant Industry, Gainesville, FL, U.S.A., (2) USDA-ARS, U.S. Horticultural Research Laboratory, Fort Pierce, FL, U.S.A., (3) USDA-ARS, U.S. Vegetable Laboratory, Charleston, SC, U.S.A., (4) University of Florida, Department of Entomology and Nematology, Gainesville, FL, U.S.A., (5) University of Florida, Lake Alfred, FL, U.S.A.
- 1:20 p.m. P-520 Sequence comparisons between *Hosta virus X* isolates and differential infection of hosta cultivars. C. DE LA TORRE (1), D. Lewandowski (1). (1) Department of Plant Pathology, The Ohio State University, Columbus, OH, U.S.A.
- 1:25 p.m. P-88 New tombusviruses isolated from waters draining forest stands in New Zealand. S. S. MUKHERJEE (3), T. J. Lough (1), D. H. Hopcroft (2), M. R. Woodford (3), J. D. Castello (3). (1) Genesis Research and Development Corporation Ltd., Auckland, New Zealand, (2) Massey University, Palmerston North, New Zealand, (3) SUNY College of Environmental Science and Forestry, Syracuse, NY, U.S.A.
- 1:30 p.m. P-90 Genome-wide pyrosequencing analysis of a *Citrus tristeza virus* (CTV) complex revealed large-scale recombination throughout the viral genome. Z. XIONG (2), Z. Weng (2), Y. Yu (2), S. Gowda (1), X. Liu (2), D. W. Galbraith (2), R. A. Wing (2), W. O. Dawson (1). (1) Citrus Research and Education Center, University of Florida, Lake Alfred, FL, U.S.A., (2) Department of Plant Sciences, University of Arizona, Tucson, AZ, U.S.A.
- 1:35 p.m. P-203 Distribution of two cucurbits-infecting poleroviruses in China. Q. SHANG (1), H. Xiang (2), C. Han (2), D. Li (2), J. Yu (2). (1) Beijing University of Agriculture, China Agricultural University, Beijing, China, (2) China Agricultural University, Beijing, China
- 1:40 p.m. P-99 Two viruses are associated with Carnation

SESSIONS – Monday Afternoon, Flash-and-Dash & Centennial

necrotic fleck disease. A. V. KARASEV (3), V. V. Dolja (1), M. A. Guaragna (2), R. Jordan (2). (1) Oregon State University, (2) USDA-ARS, (3) University of Idaho

Diseases Fruits, Nuts & Vegetables

1:00 – 1:45 p.m. * 211 CD

Moderator: Albert K. Culbreath, University of Georgia, Tifton, GA

- 1:00 p.m. P-184 A novel marafivirus from *Rubus* spp. S. SABANADZOVIC (1), N. Abou Ghanem-Sabanadzovic (1). (1) Department of Entomology and Plant Pathology, Mississippi State University, Mississippi State, MS, U.S.A.
- 1:05 p.m. P-205 Big vein disease (BVD) of lettuce: Studies to measure its incidence, variation for symptom expression and role of the antioxidant system in the course of the disease. I. ROSALES (1). C. Araya (1), L. Roman (1), E. Peña (1), R. Mora (1), E. Salazar (1), A. Aljaro (1). (1) Instituto de Investigaciones Agropecuarias (Inia), Plant Breeding and Biotechnology Department, Santiago, Rm, Chile
- 1:10 p.m. P-207 Impact of Potato virus Y on long term storage of potato. R. L. GROVES (2), A. O. Charkowski (2), A. J. Bussan (2), S. M. Gray (1). (1) Cornell University, (2) University of Wisconsin
- 1:15 p.m. P-663 Effect of apple scab fungicide programs on colonization and survival of *Botryosphaeria* spp. in mummified apple fruitlets in NY. N. L. RUSSO (1), D. A. Rosenberger (2), K. D. Cox (1). (1) Department of Plant Pathology and Plant-Microbe Biology, Cornell University, Geneva, NY, U.S.A., (2) Department of Plant Pathology and Plant-Microbe Biology, Cornell University, Highland, NY, U.S.A.
- 1:20 p.m. P-675 Management of whitefly-transmitted viral watermelon vine decline in Florida. C. S. KOUSIK (1), S. T. Adkins (2), W. W. Turechek (2), P. D. Roberts (3). (1) U.S. Vegetable Laboratory, USDA-ARS, Charleston, SC, U.S.A., (2) USHRL, USDA-ARS, Ft. Pierce, FL, U.S.A., (3) University of Florida/IFAS, SWFREC, Immokalee, FL, U.S.A.
- 1:25 p.m. P-627 Invasion and management of coffee leaf rust in high altitude coffee plantations in Kenya. G. KAIRU (1). (1) Coffee Research Foundation, Ruiru, Kenya
- 1:30 p.m. P-686 Efficacy of control methods on black rot caused by *Xanthomonas campestris* pv. *campestris* in greenhouse transplant production. H. W. LANGE (1), C. D. Smart (1). (1) Cornell University
- 1:35 p.m. P-153 Efficacy of fungicides against *Fusarium graminearum* isolates associated with soybean seedling diseases in Ohio. M. L. ELLIS (1), K. D. Broders (1), P. A. Paul (1), A. E. Dorrance (1). (1)

The Ohio State University, OARDC, Wooster, OH, U.S.A.

- 1:40 p.m. P-46 A new *Pseudocercospora* species causing a serious leaf spotting and blight on *Passiflora setacea*. A. C. Dianese (2), A. M. Costa (2), J. C. DIANESE (1). (1) Departamento de Fitopatologia, Universidade de Brasília, Brasília, Brazil, (2) Embrapa Cerrados, Brasília, Distrito Federal, Brazil

Monday Afternoon Centennial Session

Optimizing Opportunities for Everyone in Plant Pathology

3:15 – 6:15 p.m. * Auditorium

Section: Professionalism/Service/Outreach

Organizer: Carolee Bull, USDA-ARS, Salinas, CA

Moderator: Julius E. Farardo, Chemtura Corporation, Middlebury, CT

Sponsoring Committees: Joint Committee of Women & Cultural Diversity in Plant Pathology Committee, Centennial Planning Committee

This special session is designed to explore programs that cultivate women and minorities in sciences and their impact on plant pathology. One talk will discuss how these programs can benefit all scientists. Additionally, experts will present the history of women in plant pathology and the current status and experiences of women and minorities in plant pathology and science in general. A lively discussion will follow.

- 3:15 p.m. C-10. Status of women, minorities and other groups in APS: View of a past-president. A. VIDAVER (1). (1) University of Nebraska-Lincoln, Lincoln, NE, U.S.A.
- 3:45 p.m. C-11. Major contributions of early women plant pathologists to our science: Strategies, struggles, and success. J. RISTAINO (1). (1) North Carolina State University, U.S.A..
- 4:15 p.m. C-12. Enabling everyone to reach their full potential - lessons learnt from progressing gender diversity. T. LAWRENCE (1). (1) Opportunity Now, UK
- 4:45 p.m. C-13. A minority plant pathologist: Reflections and suggestions. L. FREDERICK (1). (1) Howard University, Washington, DC, U.S.A.
- 5:15 p.m. Discussion

Tuesday Morning Special Sessions

Listed in alphabetical order by title.

Building International Bridges in a Flat World

9:00 – 11:30 a.m. * 200 DE

Section: Professionalism/Service/Outreach

Organizer: Lee Calvert, CIAT, CALI, Colombia

Moderator: Ronald H. Brlansky, Univ. of Florida- Citrus Research and Education Center, Lake Alfred, FL

Sponsoring Committees: Tropical Plant Pathology, Graduate Student, and Virology

Globalization and information technologies are making the world flatter. Speakers from around the world will present advanced research and discuss how education, technology, and international collaboration are impacting plant pathology in their region. Some of the challenges and opportunities will be discussed. Looking forward, the speakers will present their vision of how building international bridges will contribute to greener and more productive agricultural systems.

- 9:00 a.m. S-52. Adapting to a flat world. L. CALVERT (1). (1) CIAT, Cali, Colombia
- 9:30 a.m. S-53. Plant pathology in Latin America; Building bridges throughout the world. O. A. MORENO-VALENZUELA (1), and M. Juanqui-Valencia (1). (1) UBBMP-CICY, Merida, Yucatan, Mexico
- 10:00 a.m. S-54. Plant pathology in a changing world. Y.-L. PENG (1), and L. Guo (2). (1) President Chinese Society for Plant Pathology, Prof. Department of Plant Pathology, China Agricultural University, Beijing, China; (2) Feng Feng, the National Science Foundation of China, Beijing, China
- 10:30 a.m. S-55. Biosciences research and capacity building in east and central Africa. S. KELEMU (1). (1) Research Director, BecA-ILRI Platform, Intl Livestock Research Inst, Nairobi, Kenya
- 11:00 a.m. S-56. Building bridges for international agricultural research: Reflections on experiences past, present, and future. R. J. NELSON (1). (1) Program Director, The McKnight Foundation Collaborative Crop Research Program and Associate Professor, Plant Pathology & Plant-Microbe Biology and Plant Breeding & Genetics, Cornell University, U.S.A.

Fungal Genomics Enters the Post-Genome Era

9:00 – 11:30 a.m. * 205 AB

Section: Molecular/Cellular Plant Microbe Interactions

Organizers: Thomas Mitchell, Ohio State University, Columbus, OH; Christopher Lawrence, Virginia Bioinformatics Institute/Virginia Tech, Blacksburg, VA

Moderator: Thomas Mitchell, Ohio State University, Columbus, OH

Sponsoring Committees: Mycology

Well over 50 fungal genomes have been sequenced and annotated to date, including those of many plant-pathogenic fungi. Because of this plethora of genome sequence information across many fungal taxa, we are now in a position

to not only more fully address and investigate pathogenicity mechanisms in fungi using functional approaches but also to look at pathogenicity from an evolutionary perspective. We are proposing a symposium that highlights the most recent developments/advances in the fungal genomics field related to advances in dissection of pathogenicity. We plan to invite internationally acclaimed speakers in this exciting area of molecular plant pathology to discuss the current status of their respective projects. One particular area of interest is the use of new sequencing platforms and technologies for these projects and the advantages and disadvantages associated with each approach, including bioinformatics-related issues. Lastly, one other area of interest is the use of high-throughput functional approaches coupled with genome sequence information for identification of pathogenicity determinants in fungi.

- 9:00 a.m. S-57. A Killer Sequence: Genomics of the Necrotrophic Fungal Pathogen *Sclerotinia sclerotiorum*. M. DICKMAN (1), C. Cuomo (1), L. Kohn (1), J. Rollins (1). (1) Institute for Plant Genomics and Biotechnology, Texas A&M University, College Station, TX, U.S.A.
- 9:30 a.m. S-58. Alternaria Functional Genomics. C. LAWRENCE (1). (1) Virginia Bioinformatics Institute/Virginia Tech, Blacksburg, VA, U.S.A.
- 10:00 a.m. S-59. The genome of *Blumeria graminis*: a systems approach to the biology of powdery mildews. P. SPANU (1). (1) Department of Life Sciences, Imperial College London, London, UK
- 10:30 a.m. S-60. Oomycete Genomics. B. M. TYLER (1). (1) Virginia Bioinformatics Institute, Virginia Polytechnic Institute, Blacksburg, VA, U.S.A.
- 11:00 a.m. S-61. Magnaporthe oryzae genomics. R. DEAN (1). (1) North Carolina State University, Raleigh, NC, U.S.A.

8th Melhus Graduate Student Symposium: Forty-Five Years After Van Der Plank, New Visions for the Future of Plant Disease Epidemiology

9:00 – 11:45 a.m. * 205 CD

Section: Epidemiology/Ecology/Environmental Biology

Organizers: Forrest W. Nutter Jr., Iowa State University, Ames, IA, Sarah Pethybridge, University of Tasmania, Burnie, Tasmania, Australia

Moderator: Forrest W. Nutter Jr., Iowa State University, Ames, IA

Sponsoring Committees: Epidemiology

In 2008, the Melhus Graduate Student Symposium will be hosted by the Epidemiology Committee. With the Centennial Celebration, it is also the 45th anniversary of the publishing of Van Der Plank's seminal book, *Plant Diseases: Epidemic and Control*. This symposium will link the historical significance of that publication with the future of plant disease epidemiology, as presented by graduate student members.

- 9:00 a.m. Introduction to the 8th I.E. Melhus Graduate Student Symposium. F. W. NUTTER, Jr., Iowa State University, Ames, IA, U.S.A.
- 9:15 a.m. S-62. The Role of the APS Foundation in Recognizing Future Leaders of the Society. A.

SESSIONS – Tuesday Morning, Special & Technical

- 9:30 a.m. CHASE (1). (1) APS Foundation
S-63. Quantification of temporal and spatial dynamics of bean pod mottle virus at different spatial scales. E. BYAMUKAMA (1), A. Robertson (1), F. W. Nutter, Jr. (1). (1) Iowa State University, Ames, IA, U.S.A.
- 10:00 a.m. S-64. Role of hairy nightshade *Solanum sarrachoides* (Sendtner) in the transmission of Potato virus Y (PVY) strains by aphids and study of different PVY strains reaction on *Solanum tuberosum* (Linnaeus). F. A. CERVANTES (1), and J. M. Alvarez (1). (1) University of Idaho, Aberdeen, ID, U.S.A.
- 10:30 a.m. S-65. New perspectives on the epidemiology of citrus stubborn disease in California orchards. A. F. S. MELLO (1), R. K. Yokomi (2), U. Melcher (1), J. C. Chen (2), E. Civerolo (2), A. Wayadande (1), and J. Fletcher (1). (1) Oklahoma State University, Stillwater, OK, U.S.A.; (2) USDA, ARS, Parlier, CA, U.S.A.
- 11:00 a.m. S-66. Development of an advisory system for grapevine powdery mildew in eastern North America: A reassessment of epidemic progress. M. MOYER (1), D. M. Gadoury (1), W. F. Wilcox (1), and R. C. Seem (1). (1) Cornell University, N.Y. State Agric. Exp. Stn., Geneva, NY U.S.A.
- 11:30 a.m. Closing comments. F. W. NUTTER, Jr., Iowa State University, Ames, IA, U.S.A.
- 10:00 a.m. of Oxford, Oxford, UK; (2) Department of Statistics, University of Oxford, Oxford, UK
S-69. *Pseudomonas syringae*: Partner and actor in the natural cycle of water. C. E. MORRIS (1). (1) INRA UR 407 Pathologie Végétale, Montfavet, France
- 10:30 a.m. S-70. Pseudomonas gene expression during growth in the rhizosphere. E. T. GONZALEZ (1), D. A. Kluepfel (1), W. P. Wechter (2). (1) USDA ARS Crops Pathology and Genetics Research Unit, Davis, CA, U.S.A.; (2) USDA ARS Charleston Vegetable Laboratory, Charleston, SC, U.S.A.
- 11:00 a.m. S-71. Life on the leaf: How bacteria survive during vegetable production. C. D. SMART (1), H.W. Lange (1), M.A.B. Herman (1), H.C. Hoch (1). (1) Department of Plant Pathology and Plant-Microbe Biology, Cornell University, Geneva, NY, U.S.A.
- 11:30 a.m. S-72. Streptomyces from the dark side: Mechanisms and emergence of pathogenicity. R. LORIA (1), D. Bignell (1), J. Huguet (1), E. Johnson (1), M. Joshi (1), S. Moll (1), R. Seipke (1). (1) Cornell University, Ithaca, NY, U.S.A.

Plant-Associated Bacteria in Their Natural Habitat

9:00 a.m. – 12:00 p.m. * 200 ABC

Section: Epidemiology/Ecology/Environmental Biology

Organizers/Moderators: Caitilyn Allen, University of Wisconsin-Madison, Madison, WI; Vicky Toussaint, Agriculture and Agri-Food Canada, Saint-Jean-sur-Richelieu, Québec, Canada

Sponsoring Committees: Bacteriology

This symposium will highlight exciting research about plant-pathogenic and symbiotic bacteria studied in ecologically relevant contexts (i.e., on natural hosts, outdoors, on economic crops, etc.). Invited speakers will show how modern tools have revealed the biological secrets of diverse bacterial species that associate with plants. In keeping with the centennial theme, we will open the symposium with a historical presentation connecting the biological questions that occupied plant bacteriologists in the first decade of the twentieth century with those that we focus on today.

- 9:00 a.m. S-67. A century of phytobacteriology: Old and new questions about bacterial wilt. C. ALLEN (1). (1) Department of Plant Pathology, University of Wisconsin-Madison, Madison, WI, U.S.A.
- 9:30 a.m. S-68. Acid, metal, and punk bacteria: Adaptation of *Pseudomonas syringae* to growth in plants. G. M. PRESTON (1), A. Rico (1), H. Fones (1), R. Jones (1), A. Smith (1), A. Mithani (2), J. Hein (2). (1) Department of Plant Sciences, University

Tuesday Morning Technical Sessions

Listed in alphabetical order by title.

Disease Management: Biological Control

9:00 a.m. – 12:00 p.m. * 200 HIJ

Section: Plant Disease Management

- 9:00 a.m. O-107. Selective accumulation of *Trichoderma* spp. in soils suppressive to radish damping-off disease. J. MGHALU (2), M. Kubota (1), M. Hyakumachi (1). (1) Gifu University, Gifu, Japan, (2) Pwani University College, Kilifi, Kenya
- 9:15 a.m. O-108. Efficacy of biological and other novel seed treatments suitable for use in organic peanut production systems. S. J. RUARK (1), B. B. Shew (1). (1) North Carolina State University, Raleigh, NC, U.S.A.
- 9:30 a.m. O-109. The root endophytic fungus *Piriformospora indica* accelerates host plant development and primes plants for disease resistance. F. WALLER (1), A. Molitor (1), S. Pfiffi (1), B. Achatz (1), K. Kogel (1). (1) Institute of Phytopathology, Justus-Liebig-University Giessen, Heinrich-Buff-Ring 26-35, D-35392 Giessen, Germany
- 9:45 a.m. O-110. *Bacillus* spp. to manage seed-borne *Colletotrichum gossypii* var. *cephalosporioides* damping-off. F. H. MEDEIROS (3), R. M. Souza (4), H. M. Ferro (4), F. C. Medeiros (3), A. W. Pomella (1), J. C. Machado (4), H. Santos Neto (4), D. A. Soares (4), E. Zanotto (4), P. W. Pare

- (2). (1) Sementes Farropilha, Patos de Minas, MG, Brazil, (2) Texas Tech University, Lubbock, TX, U.S.A., (3) Texas Tech University, Lubbock, TX, U.S.A. / UFPA, Lavras, MG, Brazil, (4) UFPA, Lavras, MG, Brazil
- 10:00 a.m. O-111. Endospore-forming bacterial endophytes of cacao: Ecology and biological control of witches' broom. R. L. MELNICK (3), C. Suárez (1), D. I. Vera (1), B. A. Bailey (2), P. A. Backman (3). (1) Instituto Nacional de Investigaciones Agropecuarias, Estación Experimental Tropical Pichilingue, Quevedo, Los Rios, Ecuador, (2) SPCL, USDA-ARS, Beltsville, MD, U.S.A., (3) The Pennsylvania State University, University Park, PA, U.S.A.
- 10:15 a.m. O-112. Sequence-directed isolation of novel bacteria contributing to soil-borne disease suppression. M. BENITEZ (1), B. B. McSpadden Gardener (1). (1) The Ohio State University, OARDC, Wooster, OH, U.S.A.
- 10:30 a.m. BREAK
- 10:45 a.m. O-113. *Pythium oligandrum* biocontrol: Influence on fungal populations' dynamics and plant resistance. J. VALLANCE (1), G. Le Floch (1), F. Déniel (1), P. Rey (2). (1) Laboratoire Universitaire de Biodiversité et Ecologie Microbienne (EA3882), Plouzané, France, (2) UMR Santé Végétale, ENITAB, Bordeaux, France
- 11:00 a.m. O-114. Role of G protein in *Coniothyrium minitans* during directional growth towards exudates of *Sclerotinia sclerotiorum* and *S. minor*. P. CHITRAMPALAM (1), B. M. Pryor (1). (1) University of Arizona, Tucson, AZ, U.S.A.
- 11:15 a.m. O-115. Development of biologically-based management strategies for postharvest disease control on apples. A. M. POLEATEWICH (1), P. A. Backman (1), J. Travis (1). (1) Penn State University, University Park, PA
- 11:30 a.m. O-116. Using remote sensing to evaluate the efficacy of inoculative biocontrol. S. CHAUDHARY (1), A. Davelos Baines (1), K. Summy (1), C. R. Little (2). (1) Department of Biology, The University of Texas – Pan American, Edinburg, TX, U.S.A., (2) Department of Plant Pathology, Kansas State University, Manhattan, KS, U.S.A.
- 11:45 a.m. O-117. A tolerant relative protects tomato against a virulent *Verticillium*. H. O. SHITTU (1), R. N. Nazar (1), J. E. Robb (1). (1) University of Guelph, Guelph, Ontario, Canada
- 9:15 a.m. O-119. Population biology of *Verticillium dahliae* isolates from lettuce in the Salinas Valley of California. Z. K. ATALLAH (2), K. Maruthachalam (2), R. J. Hayes (1), S. J. Klosterman (1), K. V. Subbarao (2). (1) USDA-ARS, Salinas, CA, U.S.A., (2) University of California-Davis, Salinas, CA, U.S.A.
- 9:30 a.m. O-120. Genetic structure of populations of the tobacco blue mold pathogen, *Peronospora tabacina* in North America, Central America and the Caribbean and Europe. M. BLANCO-MENESES (1), I. Carbone (1), K. Ivors (1), J. B. Ristaino (1). (1) North Carolina State University, U.S.A.
- 9:45 a.m. O-121. Lack of genetic differentiation between *Puccinia triticina* collections from North and South America. M. E. ORDONEZ (1), J. A. Kolmer (1). (1) ARS-Cereal Disease Laboratory
- 10:00 a.m. O-122. Host specificity and population structure of *Aspergillus* section *Flavi* in sugarcane production areas in the Rio Grande Valley of Texas. N. P. GARBER (1), P. J. Cotty (2). (1) The University of Arizona, Tucson, AZ, U.S.A., (2) USDA-ARS, The University of Arizona, Tucson, AZ, U.S.A.
- 10:15 a.m. O-123. Phylogenetics and population biology of a monophyletic group within the *F. solani* species complex that is widely associated with human infections. D. P. SHORT (2), N. Zhang (1), K. O'Donnell (3), D. Geiser (2). (1) Department of Plant Pathology, Cornell University, Geneva, NY, U.S.A., (2) Department of Plant Pathology, Penn State University, University Park, PA, U.S.A., (3) Microbial Genomics and Bioprocessing Research Unit, Agricultural Research Service, USDA, Peoria, IL, U.S.A.
- 10:30 a.m. BREAK
- 10:45 a.m. O-124. Phylogenetic analysis of the ITS1 and ITS2 rDNA regions of Lycoperdaceae associated with fairy rings on golf putting greens. G. L. MILLER (1), L. P. Tredway (1). (1) North Carolina State University, U.S.A.
- 11:00 a.m. O-125. High diversity of *Botryosphaeria* species from almond band and canopy cankers in California. P. INDERBITZIN (1), T. J. Michailides (1). (1) UC Davis, Kearney Ag Center, Parlier, CA, U.S.A.
- 11:15 a.m. O-126. Taxonomic complexity of powdery mildew pathogens found on lentil and pea in the U.S. Pacific Northwest. R. P. ATTANAYAKE (3), D. Glawe (4), K. McPhee (1), F. Dugan (1), W. Chen (2). (1) USDA ARS, Pullman, WA, U.S.A., (2) USDA ARS, Washington State University, (3) Washington State University, Pullman, WA, U.S.A., (4) Washington State University, and University of Washington, Seattle, WA, U.S.A.
- 11:30 a.m. O-127. Analysis of molecular variability among the isolates of *Verticillium dahliae* from diverse host species based on fluorescence-based amplified fragment length polymorphism. M. KARUNAKARAN (2), G. E. Vallad (3), Z. K.

Fungal: Diversity

9:00 a.m. – 12:00 p.m. * 208 AB

Section: Biology of Plant Pathogens

- 9:00 a.m. O-118. Investigating sources of genetic variability of *Phytophthora nicotianae*, the causal agent of black shank of tobacco in NC. C. A. GALLUP (1), K. L. Ivors (1), H. Shew (1). (1) North Carolina State University, Plant Pathology, Raleigh, NC, U.S.A.

SESSIONS – Tuesday Morning, Technical & Flash-and-Dash

- Atallah (2), S. J. Klosterman (1), M. R. Davis (2), K. V. Subbarao (2). (1) USDA-ARS, Salinas, CA, U.S.A., (2) University of California, Davis, CA, U.S.A., (3) University of Florida, Wimauma, FL, U.S.A.
- 11:45 a.m. O-128. Recovery and functional analysis of six contiguous genes that may affect parasitic fitness in the Dutch elm disease fungus *Ophiostoma novo-ulmi*. K. V. PLOURDE (1), V. Jacobi (1), L. Bernier (1). (1) Laval University CEF, Quebec, Canada

Viruses: Molecular, Cellular Biology

9:00 a.m. – 12:00 p.m. * 200 FG

Section: Molecular / Cellular Plant–Microbe Interactions

Moderator: Chunqua (Chris) Zhang; Iowa State University, Ames, IA

- 9:00 a.m. O-129. Biological effects of tombusvirus P19 and P22 proteins agroinfiltrated in *Nicotiana* species. C. A. ANGEL (2), Y. Hsieh (1), J. E. Scholz (2). (1) Department of Plant Pathology and Microbiology, Texas A&M University, College Station, TX, U.S.A., (2) Division of Plant Sciences, University of Missouri, Columbia, MO, U.S.A.
- 9:15 a.m. O-130. Characterization of a RNAi associated anti-viral ribonuclease in *Nicotiana benthamiana*. J. J. CIOMPERLIK (1), R. T. Omarov (1), H. B. Scholthof (1). (1) Texas A&M University, College Station, TX, U.S.A.
- 9:30 a.m. O-131. Analysis of infectious clones of Oilseed rape mosaic virus (ORMV) in plants. C. ZHANG (1), V. C. Torney (1), C. Yang (1), S. A. Whitham (1). (1) Iowa State University, Ames, IA, U.S.A.
- 9:45 a.m. O-132. Host impact on foreign gene integrity in a virus vector. B. L. SEABERG (1), Y. Hsieh (1), H. B. Scholthof (1). (1) Texas A&M University, College Station, TX, U.S.A.
- 10:00 a.m. O-133. Sugarcane mosaic virus HC-Pro specifically interacts with maize chloroplast precursor of ferredoxin-5. Y. CHENG (3), Z. Liu (1), J. Xu (2), T. Zhou (1), Z. Fan (1). (1) Department of Plant Pathology, China Agriculture University, (2) Department of Plant Science and Technology, Beijing Agricultural College, (3) Department of Pomology, China Agriculture University
- 10:15 a.m. O-134. Induction of necessary host factors, the ribosomal proteins, by plant viruses. C. YANG (1), S. Whitham (1). (1) Department of Plant Pathology, Iowa State University, Ames, IA, U.S.A.
- 10:30 a.m. BREAK
- 10:45 a.m. O-135. Nuclear import of *Maize fine streak virus* proteins in *Drosophila* S2 cells. F. M. CISNEROS (2), C. Tsai (3), E. Ammar (2), M. G. Redinbaugh (2), S. A. Hogenhout (1). (1)

John Innes Centre, U.K., (2) The Ohio State University, U.S.A., (3) University of California, Berkeley, U.S.A.

- 11:00 a.m. O-136. Transgenic expression of an inducible *Beet curly top virus* C4 gene leads to prolific cell division and abnormal apical development in *Arabidopsis thaliana*. K. MILLS LUJAN (1), C. M. Deom (1). (1) Department of Plant Pathology, University of Georgia, Athens, GA, U.S.A.
- 11:15 a.m. O-137. Virus-induced gene silencing of soybean rust resistance genes in *Glycine tomentella*. A. PADMANABAN (2), S. Chang (1), S. Rosales-Mendoza (1), G. L. Hartman (1), S. S. Korban (1), S. Ghabrial (2). (1) University of Illinois, Urbana, IL U.S.A., (2) University of Kentucky, Lexington, KY U.S.A.
- 11:30 a.m. O-138. Ectopic expression of pepper potyvirus resistance gene pvr1-2 confers potato virus Y resistance in potato. K. PEREZ (1). (1) Cornell University, Ithaca, NY, U.S.A.
- 11:45 a.m. O-139. TIP is required for basal resistance but not for HRT-mediated hypersensitive response or resistance to Turnip crinkle virus in *Arabidopsis*. R. JEONG (2), A. C. Chandra-Shekhara (2), A. Kachroo (2), D. Klessig (1), P. Kachroo (2). (1) Boyce Thompson Institute, Cornell, Tower Road, Ithaca, NY, U.S.A., (2) University of Kentucky, Lexington, KY, U.S.A.

Tuesday Morning Flash-and-Dash

Epidemiology

10:00 – 10:50 a.m. * 208 CD

Moderator: Amy Charkowski, University of Wisconsin, Madison, WI

- 10:00 a.m. P-307 Reservoir hosts of *Xylella fastidiosa*, causal agent of Pierce's disease of grapevines, in North Carolina. L. E. FLOYD (1), T. B. Sutton (1). (1) North Carolina State University, Raleigh, NC, U.S.A.
- 10:05 a.m. P-335 Consequences of tillage intensity on population densities of *Heterodera glycyines* and severity of sudden death syndrome in corn-soybean sequence. A. WESTPHAL (2), H. Mehl (2), A. Seyb (2), T. J. Vyn (1). (1) Department of Agronomy, Purdue University, West Lafayette, IN, U.S.A., (2) Department of Botany and Plant Pathology, Purdue University, West Lafayette, IN, U.S.A.
- 10:10 a.m. P-366 Study of the genetic diversity of *Phytophthora infestans* isolates from the Northern Andean region using seven genic regions. A. ROJAS (3), R. Sierra (3), A. Gonzalez (3), A. Vargas (3), M. Cárdenas (3), A. Grajales (3), C. Salazar (3), M. Marín (1), G. Fermin Munoz (4),

- L. E. Lagos (2), A. Bernal (3), S. Restrepo (3).
(1) Universidad Nacional, Medellín, Antioquia, Colombia, (2) Universidad de Nariño, Pasto, Nariño, Colombia, (3) Universidad de los Andes, Bogotá D.C., Colombia, (4) Universidad de los Andes, La Hechicera, Merida, Venezuela
- 10:15 a.m. P-384 Host range of *Phakopsora pachyrhizi*, the causal agent of soybean rust. T. L. SLAMINKO (2), G. L. Hartman (1). (1) USDA-ARS, Urbana, IL, U.S.A., (2) University of Illinois, Urbana-Champaign, IL, U.S.A.
- 10:20 a.m. P-324 Characteristics of whitefly transmission of Squash vein yellowing virus. S. E. WEBB (3), S. Adkins (2), C. A. Baker (1). (1) Florida Department of Agriculture and Consumer Services, Division of Plant Industry, Gainesville, FL, U.S.A., (2) USDA-ARS, U.S. Horticultural Research Laboratory, Fort Pierce, FL, U.S.A., (3) University of Florida, Entomology and Nematology, Gainesville, FL, U.S.A.
- 10:25 a.m. P-284 *Streptomyces scabies* populations in a single field are not clonal and shift from year to year. L. A. WANNER (1). (1) USDA-ARS, Beltsville, MD, U.S.A.
- 10:30 a.m. P-285 How cool temperatures affect the incidence and population growth of *Erwinia amylovora* on the apple stigma. M. M. DEWDNEY (4), R. C. Seem (2), W. Kim (3), A. M. Svircev (1), H. S. Aldwinckle (2). (1) AAFC, Vineland Station, ON, Canada, (2) Cornell University, Geneva, NY, U.S.A., (3) Norgen Biotek Corp, Thorold, ON, Canada, (4) University of Florida, Lake Alfred, FL, U.S.A.
- 10:35 a.m. P-321 Use of mechanistic simulation models to predict disease intensity of Fusarium head blight and deoxynivalenol concentration. M. NITA (1), E. De Wolf (1), L. Madden (5), P. Paul (5), G. Shaner (3), T. Adhikari (2), S. Ali (2), J. Stein (4), L. Osborn (4), S. Wegulo (6). (1) Kansas State University, Manhattan, KS, U.S.A., (2) North Dakota State University, Fargo, ND, U.S.A., (3) Purdue University, West Lafayette, IN, U.S.A., (4) South Dakota State University, Brookings, SD, U.S.A., (5) The Ohio State University, Wooster, OH, U.S.A., (6) University of Nebraska - Lincoln, Lincoln, NE, U.S.A.
- 10:40 a.m. P-290 ELISA and PCR survey for *Cercospora beticola* in field soils from three Upper Midwest States of the United States. R. T. LARTEY (1), T. Caesar-TonThat (1), S. Hanson (1), R. G. Evans (1). (1) USDA/ARS
- 10:45 a.m. P-291 Development of models for improved prediction of stripe rust epidemics in the U.S. Pacific Northwest. D. SHARMA-POUDYAL (1), X. Chen (2). (1) Department of Plant Pathology, Washington State University, Pullman, WA, U.S.A., (2) USDA-ARS and Department of Plant Pathology, Washington State University, Pullman, WA, U.S.A.
- Host Resistance/ IPM**
10:00 – 10:45 a.m. * 211 AB
Moderator: Albert K. Culbreath, University of Georgia, Tifton, GA
- 10:00 a.m. P-591 Isolation and characterization of soil bacteria capable of detoxifying the mycotoxin deoxynivalenol (DON). M. R. ISLAM (2), J. He (2), P. P. Pauls (1), T. Zhou (2). (1) Department of Plant Agriculture, University of Guelph, Guelph, Ontario, Canada, (2) Guelph Food Research Center, AAFC, Guelph, Ontario, Canada
- 10:05 a.m. P-708 Variations in induced resistance response among cultivated tobacco types. V. PARKUNAN (2), C. S. Johnson (2), J. D. Eisenback (1), S. A. Tolin (1), J. Pattison (2). (1) Virginia Tech, Plant Pathology, Physiology, and Weed Science, Blacksburg, VA, U.S.A., (2) Virginia Tech, Southern Piedmont AREC, Blackstone, VA, U.S.A.
- 10:10 a.m. P-713 Evaluation of sources of soybean rust resistance using detached leaves. C. PAUL (2), G. L. Hartman (1), (1) USDA-ARS, Urbana, IL, U.S.A., (2) University of Illinois, Urbana-Champaign, IL, U.S.A.
- 10:15 a.m. P-725 Molecular evolutionary analysis of resistance gene eIF4E and creation of novel resistance alleles in potato. J. R. CAVATORTA (1), K. W. Perez (1), M. Jahn (2), S. Gray (1). (1) Cornell University, Ithaca, NY, U.S.A., (2) University of Wisconsin, Madison, WI, U.S.A.
- 10:20 a.m. P-545 Inoculation by antagonistic bacteria of slow-filtration unit for soilless cultures: Consequences on microbial communities colonizing the nutrient solutions. D. Renault (3), F. Deniel (3), S. Maurice (3), J. Godon (1), G. Barbier (3), P. REY (2). (1) INRA, Laboratoire de Biotechnologie de l'Environnement, Narbonne, France, (2) INRA, UMR 1065 Santé Végétale, Université de Bordeaux, ENITAB, Gradignan, France, (3) Laboratoire de Biodiversité et Ecologie Microbienne, ESMISAB, Université de Bretagne Occidentale, Plouzané, France
- 10:25 a.m. P-569 Polysaccharide benefits dry storage survival of the biocontrol agent *Pseudomonas fluorescens* S11:P:12 effective against several maladies of stored potatoes. P. J. SLININGER (1), C. A. Dunlap (1), D. A. Schisler (1). (1) National Center for Agricultural Utilization Research, Peoria, IL, U.S.A.
- 10:30 a.m. P-587 Evaluation of alternative fungicides for organic apple production in Vermont. M. L. CROMWELL (1), L. P. Berkett (1), T. Ashikaga (1), H. M. Darby (1), T. L. Bradshaw (1), S. L. Kingsley-Richards (1). (1) University of Vermont, Burlington, VT, U.S.A.
- 10:35 a.m. P-746 Integrated management strategies for bacterial wilt on cucumbers. E. HERNANDEZ (1), P. A. Backman (1), S. J. Fleischer (1). (1) Penn State University, University Park, PA, U.S.A.

SESSIONS – Tuesday, Flash-and-Dash & Special

- 10:40 a.m. P-756 A holistic approach to control potato late blight in organic production system in Parana, Brazil. N. NAZARENO (2), A. S. Pereira (1), C. B. Medeiros (1). (1) Embrapa, Pelotas, RS, Brazil, (2) IAPAR, Curitiba, PR, Brazil

Professional

10:00 – 10:25 a.m. * 211 CD

Moderator: Michael J. Boehm, Ohio State University, Columbus, OH

- 10:00 a.m. P-763 New Pest Advisory Group: Assessing exotic plant pathogens and pests recently introduced or imminently threatening the United States. K. A. SCHWARTZBURG (1), K. E. Colpetzer (1), B. M. Spears (1). (1) USDA APHIS PPQ Center for Plant Health Science and Technology (CPHST), Raleigh, NC, U.S.A.
- 10:05 a.m. P-784 Does our teaching impact the affective domain of our students? C. J. D'ARCY (1), D. M. Eastburn (1). (1) University of Illinois, Urbana, IL, U.S.A.
- 10:10 a.m. P-785 "Taking it home" – a project to assess student use of class material. D. M. EASTBURN (1), C. J. D'Arcy (1). (1) University of Illinois, Urbana, IL, U.S.A.
- 10:15 a.m. P-775 Developing a fungicide resistance management guide for vegetable crops grown in the mid-Atlantic region. C. A. WYENANDT (4), K. L. Everts (3), R. L. Mulrooney (1), S. L. Rideout (2), N. L. Maxwell (4). (1) Dept. of Plant & Soil Sciences, University of Delaware, Newark, DE, U.S.A., (2) Dept. of Plant Pathology, Physiology and Weed Sciences, Virginia Polytechnic Inst., ESAREC, Painter, VA, U.S.A., (3) Dept. of Plant Sciences & Landscape Architecture, University of Maryland, Lower Eastern Shore Res. & Ed. Center, Salisbury, MD, U.S.A., (4) Rutgers University, New Jersey Agricultural Experiment Station, Bridgeton, NJ, U.S.A.
- 10:20 a.m. P-111 A summary of diagnostics conducted by the USDA-APHIS-PPQ Molecular Diagnostic Laboratory. P. SUDARSHANA (2), R. Shukla (2), G. Abad (2), B. R. Olson (1), M. Palm (2). (1) Oklahoma State University, Stillwater, OK, U.S.A., (2) USDA-APHIS-PPQ, Beltsville, MD, U.S.A.

Tuesday Afternoon Special Sessions

Assembling the Fungal Tree of Life: From Linnaeus to Deep Hypha and Beyond

1:00 – 4:00 p.m. * 200 HIJ

Section: Biology of Pathogens

Organizer/Moderator: Carol Stiles, University of Florida, Gainesville, FL

Sponsoring Committees: Mycology, Teaching, Diagnostics, Early Career Professionals

Invited speakers will include mycological systematists from the Deep Hypha Research Coordination Network who are involved in "Assembling the Fungal Tree of Life" (AFTOL). The resulting phylogeny will have a major impact on future textbooks and research, as well as plant pathology, because resolving the phylogenetic relationships among fungi provides information about biology and management of fungal plant diseases.

- 1:00 p.m. S-73. Fungal phylogeny: It takes a community. M. BLACKWELL (1). (1) Louisiana State University, Baton Rouge, LA, U.S.A.
- 1:30 p.m. S-74. Importance of subcellular structure in fungal phylogeny. D. MCLAUGHLIN (1). (1) University of Minnesota, St. Paul, MN, U.S.A.
- 2:00 p.m. S-75. The Ascomycota. C. SCHOCH (1), B. Robbertse (1), and J. W. Spatafora (1). (1) Oregon State University, Corvallis, OR, U.S.A.
- 2:30 p.m. S-76. The Basidiomycota. M. C. AIME (1). (1) Louisiana State University, Baton Rouge, LA, U.S.A.
- 3:00 p.m. S-77. The Oomycota. C.A. LÉVESQUE (1), A.W.A.M. de Cock (2), G. Robideau (1), N. Desaulniers (1), K. Bala (1). (1) Agriculture and Agri-Food Canada, Ottawa, ON, Canada; (2) Centraalbureau voor Schimmelcultures, Utrecht, The Netherlands
- 3:30 p.m. Future impact of phylogeny for plant disease management, panel

Balancing Natural and Augmentative Biocontrol in Organic Cropping Systems

1:00 – 2:30 p.m. * 205 AB

Section: Plant Disease Management

Organizer/Moderator: Brian McSpadden Gardener, The Ohio State University-OARDC, Wooster, OH

Sponsoring Committees: Biological Control

A moderated open-forum discussion session (not a symposium). Moderator and participants will address questions such as: To what extent do organic farmers currently depend on cover crops, composts, and green manures to enhance natural biocontrol? What fraction of organic growers are turning to biopesticidal inoculants? Under what circumstances are inoculants and other augmentative biocontrol strategies being used? Can we define the conditions under which natural biocontrol processes must be augmented

by inoculation to optimize production efficiency and/or enhance food quality? And, how does reliance on natural and augmentative biocontrols vary by crop, regions, and internationally?

1:00 p.m. Open-Forum Discussion. B. MCSPADDEN GARDENER (1). (1) The Ohio State University-OARDC, Wooster, OH, U.S.A.

Citrus Canker: A Case Study in Regulatory Plant Pathology; Past, Present, and Future

1:00 – 2:30 p.m. * 205 CD

Section: Plant Disease Management

Organizer/Moderator: Timothy D. Riley, USDA-APHIS-PPQ, Orlando, FL

Sponsoring Committees: Regulatory Plant Pathology

The symposium will focus on the complete cycle of plant health regulations for a quarantined plant pathogen using citrus canker as an example. The events which occurred during the eradication program in Florida will be addressed, including science and risk assessment issues, legislative process, industry involvement, and disease management. The symposium will also consider the changing trend in establishing future programs which incorporate a larger industry involvement in addressing pest management practices.

1:00 p.m. S-78. The changing face of regulatory plant pathology. N. K. OSTERBAUER (1). (1) Oregon Dept of Agric, Salem, OR, U.S.A.

1:15 p.m. S-79. Historical overview of the citrus canker eradication program. T. S. SCHUBERT (1). (1) Florida Dept of Agric & Con Serv., Gainesville, FL, U.S.A.

1:30 p.m. S-80. Science-based regulatory decisions. T. R. GOTTWALD (1). (1) USDA ARS USHRL, Ft. Pierce, FL, U.S.A.

1:45 p.m. S-81. Best management practices post eradication. J. GRAHAM (1). (1) UF IFAS CREC, Lake Alfred, FL, U.S.A.

2:00 p.m. S-82. Impact of the citrus canker eradication program's regulatory decisions on the Florida citrus industry. D. RICHEY (1). (1) Riverfront Packing Co. LLC, Vero Beach, FL, U.S.A.

2:15 p.m. S-83. Future challenges in regulatory plant pathology and health management programs. P. J. GOMES (1). (1) USDA APHIS PPQ-EDP, Raleigh, NC, U.S.A.

New Products and Services

1:00 – 2:30 p.m. * 208 AB

Section: Plant Disease Management

Organizer/Moderator: Aaron Hert, Syngenta Crop Protection, Vero Beach, FL

Sponsoring Committees: Industry

This session provides a forum for highlighting new products and services that are in the pipeline or are now offered to growers and researchers to aid in managing or understanding plant diseases.

1:00 p.m. Welcome

1:00 p.m. S-84. Syngenta: Inspire Super for gummy stem blight control. A. HERT (1). (1) Syngenta Crop Protection, Vero Beach, FL, U.S.A.

1:10 p.m. S-85. BASF: Update on seed treatments. H. YPEMA (1). (1) BASF Corporation, Research Triangle Park, NC, U.S.A.

1:20 p.m. S-86. BASF Fungicides Update: Registrations and label changes. T. BARDINELLI (1). (1) BASF Corporation, Durham, NC, U.S.A.

1:30 p.m. S-87. EnviroLogix: QualiPlate™, Innovation in ELISA Detection of Lettuce Mosaic Virus, plus QualiStix™, 1st LFD Detection of this new pathogen, Tomato Apex Necrosis Virus. K. MCGUIRE (1). (1) EnviroLogix Inc., Portland, ME, U.S.A.

1:45 p.m. S-88. Presidio: A new Oomycete fungicide, with a unique mode of action, for use in vegetables, grapes and turfgrass. J. A. PAWLAK (1). (1) Valent U.S.A. Corp., Lansing, MI, U.S.A.

1:55 p.m. S-89. Dupont Fungicides Update: Punch 3.3 EC and DPX-LEM17. M. J. MARTIN (1). (1) DuPont Crop Protection, Columbus, OH, U.S.A.

2:10 p.m. S-90. Spectrum Technologies: New spectrum light meters. C. TURSKI (1). (1) Spectrum Technologies, Plainfield, IL, U.S.A.

2:20 p.m. S-91. Update: Revisions to the Pesticide Periodic table. B. OLSON (1). (1) Dow Agrosciences, Indianapolis, IN, U.S.A.

Teaching Plant Pathology: Ideas and Tools for Today's Classrooms

1:00 – 2:30 p.m. * 200 FG

Section: Professionalism/Service/Outreach

Organizers/Moderators: Courtney Gallup, North Carolina State University, Raleigh, NC; Katherine Whitten Buxton, North Carolina State University, Raleigh, NC

Sponsoring Committees: Graduate Student, and Teaching

Universities are investigating novel teaching and learning models and new technologies to successfully influence students in today's changing culture. This symposium will explore effective teaching tools that heighten student academic engagement and attract a broader audience into the discipline. Active and problem-based learning techniques maintain interest and relevance throughout a course. Furthermore, well-placed technologies and web resources enhance understanding in a traditional classroom, reach nontraditional students, and provide a means to encompass more material within a departmental curriculum. In order to assess their effectiveness, teachers must be able to critically evaluate strategies to determine the effects on student learning and outcome. This symposium offers insight to these topics and explores ideas and tools that may enhance a plant pathology classroom.

1:00 p.m. S-92. Looking in, reaching out: Mainstream microbes. G. W. HUDLER (1). (1) Cornell University, Plant Pathology, Ithaca, NY, U.S.A.

1:30 p.m. S-93. Utilizing technology to enhance teaching effectiveness and shape new curricula. H. D.

SESSIONS – Tuesday Afternoon, Special, Technical & Flash-and-Dash

- SHEW (1), C.A. Gallup (1), and A.T. Robertson (2). (1) North Carolina State University, Plant Pathology, Raleigh, NC, U.S.A.; (2) North Carolina State University, DELTA, Raleigh, NC, U.S.A.
- 2:00 p.m. S-94. New approaches for teaching: Focusing on learning outcomes. D. M. EASTBURN (1). (1) University of Illinois, Crop Science, Urbana, IL, U.S.A.

Advances in Plant Pathology in China

1:00 – 2:30 p.m. *200 DE

Section: Molecular/Cellular Plant Microbe Interactions

Organizer: Chenggui Han, China Agricultural Univ, Beijing, China

Moderators: Jan E. Leach, Colorado State University, Fort Collins, CO

Sponsoring Committees: Chinese Society for Plant Pathology and APS

As part of the collaborations with the Chinese Society of Plant pathology, they organized a special session at the Centennial meeting.

- 1:00 p.m. S-95. Genome-wide identification of genes controlling hyphal growth of *Magnaporthe oryzae*. Y. L. PENG (1). (1) China Agricultural University, Beijing, China
- 1:30 p.m. S-96. Begomoviruses and their satellite in China. X. P. ZHOU (1). (1) Zhejiang University, Hangzhou, China
- 2:00 p.m. S-97. The pathogenomic studies of *Xanthomonas campestris* pathovar *campestris* by construction and analyses of a genome-wide mutant library. Y. Q. HE (1), B. L. Jiang (1), D. J. Tang (1), G. T. Lu (1), X. X. Liang (1), and J.X. Feng (1). (1) Guangxi University, Nanning, China

Tuesday Afternoon Technical Session

Listed in alphabetical order by title.

Bacteria Pathogens

1:00 – 2:30 p.m. *200 ABC

Section: Biology of Plant Pathogens

- 1:00 p.m. O-140. Evaluation of the genetic structure of *Xylella fastidiosa* populations collected from almond orchards in California. S. THAMMIRAJU (3), K. Daane (2), R. Groves (4), H. Lin (1), M. Sisterson (1). (1) USDA-ARS, Parlier, CA, U.S.A., (2) University of California, Berkeley, CA, U.S.A., (3) University of California, Berkeley/USDA, CA, U.S.A., (4) University of Wisconsin, Madison, WI, U.S.A.
- 1:15 p.m. O-141. Localization of *Acidovorax avenae* subsp.

citrulli (Aac), the bacterial fruit blotch pathogen in naturally infested watermelon seed. B. DUTTA (1), L. L. Genzlinger (1), R. R. Walcott (1). (1) University of Georgia, Athens

- 1:30 p.m. O-142. Enhancement of pathogenicity of *Burkholderia andropogonis* isolated from citrus by pthA or pthB from *Xanthomonas citri*. G. D. REBELLO (1), D. W. Gabriel (1). (1) University of Florida, Gainesville, FL, U.S.A.
- 1:45 p.m. O-143. Environmental factors affecting twitching motility, biofilm development, and aggregation by *Xylella fastidiosa*. L. DE LA FUENTE (1), P. Zaini (1), L. Cursino (1), H. Lin (2), T. Burr (1), H. Hoch (1). (1) NYSAES, Cornell University, Geneva, NY, U.S.A., (2) San Joaquin Valley Agricultural Science Center, USDA-ARS, Parlier, CA, U.S.A.
- 2:00 p.m. O-144. Comparative Phylogenomics and Multi-gene cluster analyses of the Citrus Huanglongbing (HLB)-associated bacterium *Candidatus Liberibacter*. H. DODDAPANENI (4), H. Liao (1), H. Lin (3), X. Bai (1), X. Zhao (2), E. L. Civerolo (3). (1) Guangxi Academy of Agricultural Sciences, P.R. China, (2) Guilin Citrus Research Institute, Guilin, P.R. China, (3) SJVASC, USDA-ARS, Parlier, CA, U.S.A., (4) UC Davis/USDA-ARS, Parlier, CA, U.S.A.
- 2:15 p.m. O-145. Epistatic and quantitative resistance loci against philippine bacterial blight races 6 and 9 for resistance breeding and crop management. J. D. REY (2), C. M. Vera Cruz (2), M. S. Mendioro (1), D. J. Mackill (2), A. A. Barrion (1), J. Xu (2), Z. Li (2). (1) IBS, UPLB, Philippines, (2) IRRI, Makati City, Philippines

Tuesday Afternoon Flash-and-Dash

Bacteria Molecular

1:00 – 1:40 p.m. *208 CD

Moderator: Amy Charkowski, University of Wisconsin, Madison, WI

- 1:00 p.m. P-506 Application of subtractive suppression hybridization in studying differentially expressed genes between pathotypes of *Ascochyta rabiei*. D. White (2), W. CHEN (1). (1) USDA ARS, Washington State University, (2) Washington State University, Pullman, WA, U.S.A.
- 1:05 p.m. P-436 Using the universal language of Gene Ontology to annotate gene products involved in the interactions between microbes and their hosts. C. W. COLLMER (8), T. Torto-Alalibo (7), M. Lindeberg (1), M. Chibucos (7), M. Gwinn-Giglio (5), B. Biehl (6), A. Ireland (2), J. Lomax (2), D. Bird (4), A. Collmer (1), R. Dean (4), J. Glasner (6), L. Hannick (3), T. Mitchell (4), N. Perna (6), J. Setubal (7), O. White (5), B.

- M. Tyler (7). (1) Cornell University, Ithaca, NY, U.S.A., (2) European Bioinformatics Institute, Hinxton, UK, (3) J. Craig Venter Institute, Rockville, MD, U.S.A., (4) North Carolina State University, Raleigh, NC, U.S.A., (5) University of Maryland School of Medicine, Baltimore, MD, U.S.A., (6) University of Wisconsin, Madison, WI, U.S.A., (7) Virginia Bioinformatics Institute, Virginia Tech, Blacksburg, VA, U.S.A., (8) Wells College, Aurora, NY, U.S.A.
- 1:10 p.m. P-437 Identifying differences in gene expression between Race 1 and Race 3 strains of *Ralstonia solanacearum* during bacterial wilt disease development at warm and cool temperatures. J. M. JACOBS (1), F. Meng (1), C. Allen (1). (1) University of Wisconsin, Department of Plant Pathology, 1630 Linden Dr., Madison, WI, U.S.A.
- 1:15 p.m. P-76 Variations of whole genome sequences of *Xylella fastidiosa* strains within the same pathotype. J. CHEN (2), G. Xie (1), S. Han (1), E. Civerolo (2). (1) Los Alamos National Laboratory, Los Alamos, NM, U.S.A., (2) USDA-ARS, Parlier, CA, U.S.A.
- 1:20 p.m. P-439 The virulence mechanisms of *Xylella fastidiosa* in xylem fluid of citrus and grapevines. X. SHI (2), J. Bi (1), N. Toscano (1), D. Cooksey (2). (1) Department of Entomology, University of California, Riverside, CA, U.S.A., (2) Department of Plant Pathology and Microbiology, University of California, Riverside, CA, U.S.A.
- 1:25 p.m. P-440 Differentiation of *Xylella fastidiosa* subspecies *piercei* isolates from a Texas vineyard into strain groups utilizing simple sequence repeat markers. C. P. TORRES (1), D. N. Appel (1), L. Morano (2). (1) Texas A&M University, Department of Plant Pathology and Microbiology, College Station, TX, U.S.A., (2) University of Houston-Downtown, Department of Natural Science, Houston, TX, U.S.A.
- 1:30 p.m. P-441 A horizontally acquired cellulose synthase operon in *Dickeya dadantii* contributes to biofilm formation and attachment to plants. C. E. JAHN (1), J. Apodaca (2), N. T. Perna (2), A. O. Charkowski (1). (1) Department of Plant Pathology, University of Wisconsin-Madison, Madison, WI, U.S.A., (2) Genome Center of Wisconsin, University of Wisconsin-Madison, Madison, WI, U.S.A.
- 1:35 p.m. P-438 Genomics of secondary metabolite production by *Pseudomonas fluorescens* Pf-5. J. E. LOPER (3), I. Paulsen (1), D. Bruck (3), M. Pechy-Tarr (5), M. Maurhofer (2), C. Keel (5), H. Gross (4). (1) Macquarie University, Sydney, Australia, (2) Swiss Federal Institute of Technology, Zurich, Switzerland, (3) USDA-ARS, Corvallis, OR, U.S.A., (4) University of Bonn, Bonn, Germany, (5) University of Lausanne, Lausanne, Switzerland

Fungal Ecology

1:00 – 1:35 p.m. *211 AB

Moderator: Michael J. Boehm, Ohio State University, Columbus, OH

- 1:00 p.m. P-35 Phylogeography and sequence diversity of genetic lineages of the grapevine powdery mildew fungus, *Erysiphe (Uncinula) necator*, in North America, Europe, and Australia. M. T. BREWER (1), M. G. Milgroom (1). (1) Dept. of Plant Pathology and Plant-Microbe Biology, Cornell University, Ithaca, NY, U.S.A.
- 1:05 p.m. P-55 Assessing *Pythium* population dynamics from different soil regions in Ohio. K. D. BRODERS (1), M. Wallhead (1), P. A. Paul (1), P. E. Lipps (1), A. E. Dorrance (1). (1) The Ohio State University, OARDC, Wooster, OH, U.S.A.
- 1:10 p.m. P-496 The novel *Cladosporium fulvum* effector Ecp6 contains lysine motifs that may act as carbohydrate-binding modules. R. DE JONGE (1), M. D. Bolton (1), H. van Esse (1), B. Thomma (1). (1) Wageningen University and Research Centre, Laboratory of Phytopathology, Wageningen, The Netherlands
- 1:15 p.m. P-61 Viability of *Phytophthora ramorum* after passage through slugs. J. L. PARKE (1), A. Oguchi (2), E. J. Fichtner (2), D. M. Rizzo (2). (1) Oregon State University, Corvallis, OR, U.S.A., (2) University of California-Davis, Davis, CA, U.S.A.
- 1:20 p.m. P-31 Fusarium comparative genomics. L. MA (1). (1) The Broad Institute of Harvard and MIT
- 1:25 p.m. P-63 Sporulation on plant roots by *Phytophthora ramorum*. N. SHISHKOFF (1). (1) USDA/ARS/FDWSRU
- 1:30 p.m. P-26 An approach to restore sexuality in *Fusarium oxysporum*. S. Imai (1), T. Teraoka (1), T. ARIE (1). (1) Tokyo University of Agriculture and Technology (TUAT), Tokyo, Japan

Detection

1:00 – 1:40 p.m. *211 CD

Moderator: Albert K. Culbreath, University of Georgia, Tifton, GA

- 1:00 p.m. P-108 A rapid diagnostic tool for detecting benzimidazole resistance in *Cercospora beticola*, the causal agent of Cercospora leaf spot in sugarbeet. J. O. OBUYA (2), L. E. Hanson (1), W. L. Stump (2), G. D. Franc (2). (1) USDA-ARS SBRU, Michigan State University, East Lansing, U.S.A., (2) University of Wyoming, Laramie, WY, U.S.A.
- 1:05 p.m. P-113 Occurrence of a whitefly transmitted *Carlavirus* in soybean in Puerto Rico. J. V. RODRIGUES (1), D. Viteri (1), C. Estévez de Jensen (1), E. W. Kitajima (2). (1) University of Puerto Rico, Department of Crop Protection, Mayaguez, Puerto Rico, (2) University of Sao Paulo, Piracicaba, SP, Brazil

SESSIONS – Tuesday Afternoon, Flash-and-Dash & Centennial

- 1:10 p.m. P-115 A PCR-based assay for detection of *Puccinia horiana* on chrysanthemums. K. F. PEDLEY (1). (1) USDA Agricultural Research Service, FDWSRU, Ft. Detrick, MD, U.S.A.
- 1:15 p.m. P-117 Use of protein arrays for rapid and sensitive diagnostics of grapevine diseases. A. FABRITIUS (1), L. Dubrovsky (1), L. Kumagai (1), M. Trinh (1), A. Turnquist (1), Y. Zong (2). (1) Agri-Analysis LLC, Davis, CA, U.S.A., (2) Full Moon Biosystems Inc., Sunnyvale, CA, U.S.A.
- 1:20 p.m. P-75 Molecular characterization of a group 16SIII phytoplasma associated with decline of China-treeE (*Melia azedarach* L.) in Brazil. V. DUARTE (2), E. G. Silva (1), I. R. Hass (1), I. Bedendo (1), E. W. Kitajima (1). (1) ESALQ, Piracicaba, SP, Brazil, (2) UFRGS, Porto Alegre, RS, Brazil
- 1:25 p.m. P-658 Sensitivity of ELISA and RT-PCR in detection of *Tomato ringspot virus* in apple cultivars. W. MSIKITA (1), T. Kell (1), R. Welliver (1). (1) Pennsylvania Department of Agriculture, Harrisburg, PA, U.S.A.
- 1:30 p.m. P-566 Development of real-time quantitative assay for rapid detection of *Gliocladium roseum* 67-1, an effective biocontrol agent, in soil. M. Tao (1), S. LI (1), Y. Zhang (1). (1) Soilborne Diseases Laboratory, Inst. of Plant Protection, Chinese Acad. of Agr. Sci., Beijing, China
- 1:35 p.m. P-659 Quantitative real-time PCR to differentiate infection levels of *Aspergillus flavus* in maize. S. X. MIDEROS (1), W. P. Williams (2), R. J. Nelson (1). (1) Department of Plant Pathology and Plant-Microbe Biology, Cornell University, Ithaca, NY, U.S.A., (2) USDA-ARS Corn Host Plant Resistance Research Unit, Mississippi State, MS, U.S.A.
- 2:45 p.m. Introduction
- 3:00 p.m. C-14. Phalanx or traitors? -- Signaling in microbial communities and host health. J. HANDELSMAN (1). (1) Departments of Bacteriology and Plant Pathology, University of Wisconsin-Madison, Madison, WI, U.S.A.
- 3:30 p.m. C-15. Comparative functional genomics of plant pathogens in the coming century. B. M. TYLER (1). (1) Virginia Bioinformatics Institute and Department of Plant Pathology, Physiology and Weed Science, Virginia Polytechnic Institute and State University, Blacksburg, VA, U.S.A.
- 4:00 p.m. C-16. Chanting the mantra: Culture collections in the age of the 'ome. D. M. GEISER (1). (1) Department of Plant Pathology, The Pennsylvania State University, University Park, PA, U.S.A.
- 4:30 p.m. C-17. Educating the next generation of plant pathologists. G. W. HUDLER (1). (1) Department of Plant Pathology and Plant-Microbe Biology, Cornell University, Ithaca, NY, U.S.A.
- 5:00 p.m. Discussion

Tuesday Afternoon Centennial Session

The Future of Plant Pathology

2:45 – 5:45 p.m. * Auditorium

Section: Professionalism/Service/Outreach

Organizer/Moderator: David Schmale, VPI SU, Blacksburg, VA

Sponsoring Committees: Centennial Planning Committee

The field of plant pathology is pushing forward with new and exciting technologies and applications. Powerful genomics and bioinformatics tools are enabling researchers to examine interactions among entire microbial communities, and new high-power computing capabilities are mining and comparing genomes and proteomes of plant pathogens and their hosts. Online databases are linking living plant pathogen culture collections to publicly available morphological and sequence data. A new 'wired' generation of students needs to be amused

and entertained in the classroom, and we must find unique ways to attract and retain these individuals as agricultural professionals.

Special Centennial Session on the New ASSESS 2.0!

ASSESS 2.0 Image Analysis Software for Plant Disease Quantification



The era of user independence in disease measurement technology has arrived! Learn what the new ASSESS 2.0 version has to offer and experience a live demonstration. PLUS... anyone attending the session will receive a **Centennial Special Discount** coupon for the ASSESS 2.0 software.



Attend the ASSESS 2.0 Special Session
Wednesday, 10:30 a.m. -11:30 a.m.,
Room 200 FG

Wednesday Morning Special Sessions

Listed in alphabetical order by title.

Aflatoxins, the Toxins that Redefined Plant Disease

9:00 – 11:30 a.m. * 205 CD

Section: Biology of Pathogens

Organizers: Gary Payne, North Carolina State University, Raleigh, NC; Peter Cotty, USDA/ARS, University of Arizona, Tucson, AZ

Moderator: Charles Woloshuk, Purdue University, West Lafayette, IN

Sponsoring Committees: Mycotoxicology

Although the toxicity of diseased plants to humans has been recognized for hundreds of years, aflatoxin contamination remains the best-described example of this link. Research on this toxin ushered in the modern era of mycotoxicology, and aflatoxin remains the best-described mycotoxin. It has been 50 years since aflatoxin was shown to be the cause of the mysterious Turkey X disease. It is now recognized as one of the most potent naturally occurring carcinogens known, and it continues to affect human and animal health and international trade. The impact of aflatoxins on human populations in both Asia and Africa is well documented. This symposium will commemorate the near 50 years of research on aflatoxin and will highlight its toxicity and importance to developing countries, its well-characterized biosynthetic pathway, and recent information gleaned from the genome sequence and available DNA microarrays. Also covered will be a phylogenetic analysis of the aflatoxin-producing species of *Aspergillus* and the successful use of biocontrol techniques to control this disease.

- 9:00 a.m. S-98. Significant features in the history of aflatoxins. J. RICHARD (1). (1) Consultant to Romer Labs, Union, MO, U.S.A.
- 9:30 a.m. S-99. Epidemiological studies linking aflatoxin with human carcinomas throughout the world. J. GROOPMAN (1). (1) Bloomberg School of Public Health, Baltimore, MD, U.S.A.
- 10:00 a.m. S-100. Hierarchical levels integrating genetic and biochemical regulation of aflatoxin synthesis. N. KELLER (1). (1) University of Wisconsin, Madison, WI, U.S.A.
- 10:30 a.m. S-101. Genomics, pathogenicity, and ecology of *Aspergillus flavus*. G. PAYNE (1). (1) North Carolina State University, Raleigh, NC, U.S.A.
- 11:00 a.m. S-102. Strategies to reduce aflatoxin contamination. P. COTTY (1). (1) USDA ARS, University of Arizona, Tucson, AZ, U.S.A.

Visit the APS Welcome Booth in the Exhibit Hall



APS invites you to stop by the APS Welcome booth, located at the entrance of the exhibit hall, for many fun activities, including:

- Do you know your APS history? Drop off your completed centennial quiz (included in your registration packet) and you'll receive a fun prize and be entered into a drawing for a \$100 Visa gift card!
- Share your favorite APS memories by signing the Centennial Meeting Scrapbook
- Add your predictions on what plant pathology will be like in the future by dropping off your completed time capsule questionnaire (in registration packet)
- Receive special Centennial gifts

Membership staff will be on hand to answer questions and provide information about the many resources APS has to offer you. We'll see you there!

WEDNESDAY

SESSIONS – Wednesday Morning, Special

Down in the Dirt with Phytopathogenic *Verticillium*: Genetic and Molecular Tales of a Vascular Fungus

9:00 – 11:30 a.m. * 200 DE

Section: Biology of Pathogens

Organizers: Paola Veronese, North Carolina State University, Raleigh, NC; Katherine Dobinson, Agriculture & Agri-Food Canada, London, Ontario, Canada; Steve Klosterman, USDA ARS, Salinas, CA

Moderator: Jane Robb, University of Guelph, Guelph, ON, Canada

Sponsoring Committees: Genetics

Verticillium spp. are globally distributed, broad-host-range fungal pathogens causing vascular diseases for which new effective disease control measures need to be developed. The symposium will start with a historical perspective of the importance of this extremely diverse group of plant pathogens and the work carried out to date. The symposium will continue with discussions of contemporary work on the molecular genetics of fungal growth, development and pathogenicity as well as host defense mechanisms. Finally, the symposium will conclude with a discussion of future directions for *Verticillium* research that includes presentation of *Verticillium* genome sequencing progress and how these new findings may collectively lead to better understanding and control of these significant plant pathogens.

- 9:00 a.m. S-103. Significance and Life History of Phytopathogenic Species of *Verticillium*. R. C. ROWE (1). (1) Ohio State University, Wooster, OH, U.S.A.
- 9:30 a.m. S-104. The molecular road from differentiation of *Verticillium* isolates to analysis of growth and development. K. F. DOBINSON (1). (1) Agriculture & Agri-Food Canada, London, ON, Canada
- 10:00 a.m. S-105. Arabidopsis-*Verticillium* spp. interaction as a model disease system. P. VERONESE (1). (1) North Carolina State University, Raleigh, NC, U.S.A.
- 10:30 a.m. S-106. Functional analysis of tomato responses to *Verticillium dahliae*. B. THOMMA (1), U. Ellendorff (1), P. van Esse (1), R. de Jonge (1), G. van den Berg (1), K. Yadeta (1), S. Rehman (1), and E. Fradin (1). (1) Wageningen University, Wageningen, The Netherlands
- 11:00 a.m. S-107. *Verticillium* comparative genomics: understanding pathogenicity and diversity. S. KLOSTERMAN (1), P. Veronese (2), K. F. Dobinson (3), K. Subbarao (4), D. I. Heiman (5), S. Young (5), C. D. Kodira (5), L. Alvarado (5), J. Galagan (5), B. Birren (5), C. Cuomo (5), A. Anchieta (1), S. Kang (6), S. E. Gold (7), and L.-J. Ma (5). (1) USDA-ARS, U.S.A., (2) North Carolina State University, U.S.A. (3) Agriculture and Agri-Food Canada, Canada (4) University of California Davis, U.S.A. (5) Broad Institute of MIT and Harvard, U.S.A. (6) Penn State University, U.S.A. (7) University of Georgia, U.S.A.

From Field to Fork: Historical Perspectives and Future Promise of Postharvest Decay Management

9:00 – 11:30 a.m. * 208 AB

Section: Plant Disease Management

Organizers: Jim Adaskaveg, University of California, Riverside, CA; Eric Tedford, Syngenta Crop Protection, Greensboro, NC; Gerald J. Holmes, North Carolina State Univ, Raleigh, NC

Moderators: Jim Adaskaveg, University of California, Riverside, CA; Eric Tedford, Syngenta Crop Protection, Greensboro, NC

Sponsoring Committees: Postharvest Pathology, and Industry

A historical review and an outlook into the future of integrated postharvest decay management, including sanitation, biocontrol, fungicide, and modified-environment treatments.

- 9:00 a.m. S-108. History of postharvest decay management. J. A. BARTZ (1). (1) University of Florida, Gainesville, FL U.S.A.
- 9:30 a.m. S-109. Consumer demands and fruit quality. C. TONG (1). (1) University of Minnesota, St. Paul, MN, U.S.A.
- 10:00 a.m. S-110. Sanitation and food safety over the years. T. V. SUSLOW (1). (1) University of California, Davis, CA, U.S.A.
- 10:30 a.m. S-111. New fungicides and resistant management strategies. J. ADASKAVEG (1). (1) University of California, Riverside, CA, U.S.A.
- 11:00 a.m. S-112. Biological control. W. JANISIEWICZ (1). (1) USDA ARS AFRS, Kearneysville, WV, U.S.A.

Plant Virology: Impact on Science and Society

9:00 – 11:30 a.m. * 208 CD

Section: Molecular/Cellular Plant Microbe Interactions

Organizer/Moderator: Alexander Karasev, University of Idaho, Moscow, ID

Sponsoring Committees: Virology

Plant virology had a profound effect on the development of life science disciplines in the past 100 years. From virus purification to crystallization, to identification of the genetic material, to development of methods of detection, to elucidation of mechanisms of interaction with the host. It is important to understand that virology as an integral part of plant pathology made a seminal contribution to the development of modern human society. Myron Brakke was a visionary scientist who advanced plant virology, and molecular biology as a whole. He introduced a concept of gradient fractionation and successfully used it to discover divided genomes in plant viruses. He was a member of the National Academy. This symposium will be devoted to Myron Brakke and focused on impact the plant virology had on science and society in the 20th century, and by extension on its modern role.

- 9:00 a.m. S-113. Clearing the Clouds of Mystery: Myron K. Brakke (1923-2007). K.-B. SCHOLTHOF (1). (1) Dept. Plant Pathology and Microbiology, Texas A&M University, College Station, TX, U.S.A.
- 9:30 a.m. S-114. Plant virology in the 20th century. B.D. HARRISON (1). (1) Scottish Crop Research Institute, Invergowrie, Dundee, UK
- 10:00 a.m. S-115. Plant virus structure by X-ray diffraction and electron microscopy. G. STUBBS (1), S. Baumgarten (1), W. Bian (1), A. Kendall (1), M. McDonald (1), and S. Ghabrial (1). (1) Vanderbilt University, Nashville, TN, U.S.A.
- 10:30 a.m. S-116. The beginnings of immunochemistry at the intersection of early plant virus research. P. H. BERGER (1), P. J. Shiel (1). (1) USDA-APHIS-PPQ Center for Plant Health Science and Technology, Raleigh, NC, U.S.A.
- 11:00 a.m. S-117. Virus movement and its spreading impact on plant biological research. R. S. NELSON (1). (1) Samuel Roberts Noble Foundation, Inc., Ardmore, OK, U.S.A.
- 10:00 a.m. S-120. Global efforts to combat cereal rusts. R. WARD (1). (1) Global Rust Initiative, CIMMYT, Texcoco, Mexico
- 10:30 a.m. S-121. Next generation genetic analysis of plant pathogen interactions. K. S. CALDWELL (1), L. McHale (1), H. van Leuwen (1), O. Ochoa (1), T. Wroblewski (1), A. Kozik (1), M.-J. Truco (1), and R. W. Michelmore (1). (1) The Genome Center and Department of Plant Sciences, University of California in Davis, Davis, CA, U.S.A.
- 11:00 a.m. S-122. History of excellence and future promise of host resistance. B. VALENT (1). (1) Kansas State University, Manhattan, KS, U.S.A.

Resistance Genes—Past, Present, and Future

9:00 – 11:30 a.m. * 211 AB

Section: Molecular/Cellular Plant Microbe Interactions

Organizers: Thomas Mitchell, The Ohio State University, Columbus, OH; Yulin Jia, USDA – ARS; Dale Bumpers Natl Rice Res Ctr, Stuggart, AR; Gary Vallad, University of Florida, Plant Pathology, GCREC, Wimauma, FL; Baozhu Guo, USDA-ARS, Tifton, GA; Xixuan Jin, USDA ARS, Soneville, MS; Zhi-Yuan Chen, Louisiana State University, Baton Rouge, LA; Silvina Giammaria, Estación Experimental Agroindustrial “Obispo Colombres”, Las Talitas, Tucumán, Argentina; Alemu Mengistu, USDA ARS, Jackson, TN

Moderators: Yulin Jia, USDA – ARS; Dale Bumpers Natl Rice Res Ctr, Stuggart, AR, Thomas Mitchell, The Ohio State University, Columbus, OH

Sponsoring Committees: Biochemistry, Physiology, Molecular Biology and Host Resistance, Genetics and Collections& Germplasm

This session will explore the history, current technological advances, and future challenges of resistance gene discovery and effective deployment. We will present the history through current understanding of resistant gene modes of action and evolution as it pertains to crop protection.

- 9:00 a.m. S-118. The Role of Plant Resistance Genes in Activating Defense Responses at the Host-Pathogen Interface. S. XIAO (1). (1) Center for Biosystems Research, University of Maryland Biotechnology Institute, U.S.A.
- 9:30 a.m. S-119. Identification and utilization of resistance to soybean rust. D. R. WALKER (1), R. L. Nelson (1), G. L. Hartman (1), B. Buckley (2), S. Moore (3), R. W. Schneider (4), D. Weaver (5), E. Shipe (6), J. Mueller (7), and H. R. Boerma (8). (1) USDA-ARS, Soybean/Maize Germplasm, Pathology and Genetics Unit, Urbana, IL U.S.A.; (2) Louisiana State University AgCenter, Bossier

What Was, Is, and Could Be, Contributions of Industry and Partners to Plant Disease Management

9:00 – 11:30 a.m. * 200 ABC

Section: Plant Disease Management

Organizer: David Thompson, IR-4 Project, Rutgers University, Princeton, NJ

Moderator: Vince Morton, Viva Inc., Greensboro, NC

Sponsoring Committees: Industry, Chemical Control

Highlights and anecdotes in the development of disease management tools in the past, present, and future. The symposium will be accompanied by a timeline poster with drop-down stories and detail. The poster will be accompanied by an electronic version

- 9:00 a.m. S-123. Introduction and the early years. V. MORTON (1). (1) Viva Inc., Greensboro, NC, U.S.A.
- 9:15 a.m. S-124. EBDCs. J. OLLINGER (1). (1) Ollinger Consulting, Philadelphia, PA, U.S.A.
- 9:30 a.m. S-125. Benzimidazoles. C. DELP (1). (1) Retired, Tampa, FL, U.S.A.
- 9:45 a.m. S-126. Triazoles. B. GOODWINE (1). (1) Janssen Pharmaceuticals Inc., Titusville, NJ, U.S.A.
- 10:00 a.m. S-127. Strobilurins. J. FRANK (1). (1) Retired, Temecula, CA, U.S.A.
- 10:15 a.m. S-128. Regulatory. J. L. ANDERSEN (1). (1) Environmental Protection Agency, Washington, DC, U.S.A.
- 10:30 a.m. S-129. IR-4 project. J. BARON (1). (1) Rutgers University Princeton, NJ, U.S.A.
- 10:45 a.m. S-130. The Future. R. BOUNDS (1). (1) Syngenta Crop Protection, Greensboro, NC, U.S.A.
- 11:00 a.m. Opportunity to share other contributions with audience

SESSIONS – Wednesday Morning, Technical

Wednesday Morning Technical Sessions

Listed in alphabetical order by title.

Diseases of Plants-Fruits, Nuts, & Vegetables

9:00 – 11:30 a.m. * 205 AB

Section: Diseases of Plants

Moderator: Tara L. Barrett Tarnowski, University of Florida, TREC, Homestead, FL

- 9:00 a.m. O-146. Virtual lesions caused by copper-based fungicides impair photosynthesis in tart cherry. B. R. GRUBER (2), E. L. Kruger (1), P. S. McManus (2). (1) Department of Forest and Wildlife Ecology, University of Wisconsin - Madison, Madison, WI, U.S.A., (2) Department of Plant Pathology, University of Wisconsin - Madison, Madison, WI, U.S.A.
- 9:15 a.m. O-147. Mango anthracnose in south Florida: Assessing the respective roles of *Colletotrichum gloeosporioides* and *C. acutatum*. T. L. TARNOWSKI (1), R. C. Ploetz (1). (1) University of Florida, Homestead, FL, U.S.A.
- 9:30 a.m. O-148. Impact of sunlight and its components on severity of grapevine powdery mildew. C. N. AUSTIN (1), A. N. Lakso (2), R. C. Seem (1), D. G. Reigel (1), D. M. Gadoury (1), W. F. Wilcox (1). (1) Cornell University, Department of Plant Pathology and Plant-Microbe Biology NYSAES, Geneva, NY, U.S.A., (2) Horticultural Science NYSAES, Geneva, NY, U.S.A.
- 9:45 a.m. O-149. Efficacy of fungicides for suppressing *Cylindrocladium* stem and root rot of blueberry in Georgia. J. C. HARALSON (1), P. M. Brannen (1), H. W. Scherm (1), S. Nesmith (1). (1) University of Georgia, Athens, GA, U.S.A.
- 10:00 a.m. O-150. Increased severity of fungal foliar diseases on sweet corn infected with maize dwarf mosaic. M. D. MEYER (1), J. K. Pataky (1). (1) University of Illinois, U.S.A.
- 10:15 a.m. O-151. Molecular identification of viruses that infect *Panax notoginseng* in China. Z. TAO (1), Z. Yan (1), L. Song (1), H. Li (1), Z. Fan (1). (1) Dept. Plant Pathology, China Agricultural University, Beijing, China
- 10:30 a.m. O-152. A new phytoplasm associated disease of chile peppers. J. J. RANDALL (2), P. Bosland (1), S. F. Hanson (2). (1) Department of Plant and Environmental Science, NMSU, Las Cruces, NM, U.S.A., (2) EPPWS, New Mexico State University, Las Cruces, NM, U.S.A.
- 10:45 a.m. O-153. *Phytophthora erythroseptica*, isolate sensitivity to metalaxyl and disease control in potato in New York and Pennsylvania. H. M. GRIFFITHS (1), T. A. Zitter (1), K. L. Deahl (3), D. E. Halseth (2). (1) Dept. Plant Pathology and Plant Microbe-Biology, Cornell University,

Ithaca, NY, U.S.A., (2) Dept. of Horticulture, Cornell University, Ithaca, NY, U.S.A., (3) Vegetable Laboratory, BARC-West, Beltsville, MD, U.S.A.

- 11:00 a.m. O-154. The occurrence of a distinct variant of *Grapevine fanleaf virus* in Washington State vineyards. T. A. MEKURIA (1), R. R. Martin (2), R. A. Naidu (1). (1) Department of Plant Pathology, Washington State University, Irrigated Agriculture Research and Extension Center, Prosser, WA, U.S.A. (2) USDA-ARS Horticultural Crops Research Laboratory, Corvallis, OR, U.S.A.
- 11:15 a.m. O-155. Transmission of *Grapevine leafroll-associated virus 3* by the vine mealybug (*Planococcus ficus*). C. TSAI (1), J. Chau (1), L. Fernandez (1), D. Bosco (2), K. M. Daane (1), R. P. Rodrigo (1). (1) University of California, Berkeley, U.S.A. (2) Università degli Studi di Torino, Italy

Forest Pathology

9:00 – 11:30 a.m. * 211 CD

Section: Diseases of Plants

- 9:00 a.m. O-156. Are terpenes involved in Austrian pine (*Pinus nigra*) resistance to the fungal pathogen *Diplodia pinea*?. C. M. WALLIS (2), P. Bonello (1). (1) Ohio State University, Columbus, OH, U.S.A. (2) University of Northern British Columbia, Prince George, BC, Canada
- 9:15 a.m. O-157. Response of selected woody species to inoculation with *Phytophthora citricola* and *P. cactorum* from European beech using multiple inoculation methods. A. H. NELSON (1), J. E. Weiland (2), G. W. Hudler (1). (1) Department of Plant Pathology and Plant Microbe Biology, Cornell University, Ithaca, NY, U.S.A., (2) USDA ARS, Corvallis, OR, U.S.A.
- 9:30 a.m. O-158. Wood modifications by brown rot fungi may offer competitive advantage for their own cellulases. J. P. TEWALT (1), J. S. Schilling (1). (1) University of Minnesota, St. Paul, MN, U.S.A.
- 9:45 a.m. O-159. Wood-rot disease on cherry trees along Koganei Cherry Street, a national cultural property. J. SHIMIZU (2), K. Fukuda (2), Y. Hayashi (1). (1) Forest Development Technological Institute (retired), Iidabashi, Chiyoda-ku, Tokyo, Japan, (2) Institute of Natural Environmental Studies, the University of Tokyo, Kashiwa-shi, Chiba, Japan
- 10:00 a.m. O-160. An epidemic of Septoria canker on *Populus balsamifera* in northern Alberta. J. M. LEBOLDUS (2), P. V. Blenis (2), B. R. Thomas (1). (1) Alberta-Pacific Forest Industries Inc., Boyle, Alberta, Canada, (2) University of Alberta, Edmonton, Alberta, Canada
- 10:15 a.m. O-161. Long-term effects of fuel reduction treatments on the incidence of *Phytophthora*

spp. in soil of a hardwood forest in the southern Appalachian Mountains. I. M. MCLAUGHLIN (1), S. N. Jeffers (1), T. A. Waldrop (2). (1) Clemson University, Clemson, SC, U.S.A., (2) U.S. Forest Service, Southern Research Station, Clemson, SC, U.S.A.

- 10:30 a.m. O-162. Fungal pathogens (mis-) identification: A case study with DNA barcodes on *Melampsora* rusts of white and aspen poplars. N. Feau (2), M. Allaire (2), A. VIALLE (3), P. Tanguay (2), D. L. Joly (3), P. Frey (1), R. C. Hamelin (2). (1) Institut National de la Recherche Agronomique, Centre de Recherches de Nancy, Champenoux, France, (2) Laurentian Forestry Centre, Canadian Forest Service, Natural Resources Canada, Sainte-Foy, QC, Canada, (3) Université Laval, Quebec, QC, Canada
- 10:45 a.m. O-163. Diseases of introduced *Eucalyptus* and native Myrtaceae in Uruguay: New cases of host jumping. C. A. PEREZ (1), M. J. Wingfield (2), B. Slippers (2), N. A. Altier (3), S. Simeto (3), R. A. Blanchette (1). (1) Department of Plant Pathology, University of Minnesota, St. Paul, MN, U.S.A., (2) Forestry and Agricultural Biotechnology Institute (FABI), University of Pretoria, Pretoria, South Africa, (3) Instituto Nacional de Investigación Agropecuaria (INIA), Canelones, Uruguay
- 11:00 a.m. O-164. Ecophysiological factors mitigating *in planta* survival of *P. ramorum* in California bay laurel. M. V. DILEO (1), R. M. Bostock (1), D. M. Rizzo (1). (1) UC Davis, Department of Plant Pathology, U.S.A.
- 11:15 a.m. O-165. Linking models of resource-based tradeoffs in trees: An assessment of growth, defense, carbon allocation patterns, and potential ectomycorrhizal regulation in paper birch. N. M. KLECZEWSKI (1), P. Bonello (1). (1) The Ohio State University, U.S.A.

Molecular Detection & Characterization

9:00 – 10:15 a.m. * 200 FG

Section: Molecular / Cellular Plant–Microbe Interactions

Moderator: Rio Stamler, New Mexico State University, Las Cruces, NM

- 9:00 a.m. O-166. A real-time PCR assay for the detection of *Pasteuria nishizawae* in soil. N. ATIBALENTJA (2), M. Babadoost (2), G. R. Noel (1). (1) USDA-ARS, Urbana, IL, U.S.A., (2) University of Illinois, Urbana, IL, U.S.A.
- 9:15 a.m. O-167. Genetic characterization of *Acidovorax avenae* subsp. *citrulli* using amplified fragment length polymorphism (AFLP). A. WEN (2), A. Mangravita-Novo (1), D. L. Hopkins (1), D. J. Norman (1). (1) Univ. Florida, Mid-Florida REC, Apopka, FL U.S.A., (2) Univ. Florida, North Florida REC, Quincy, FL U.S.A.



“It is our opinion that an American Phytopathological Society placed upon a broad and generous foundation, may be of invaluable aid in promoting the future development of this important and rapidly growing subject in America, and that its influence may be made of international importance.”

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Embracing this vision of the APS founders, the last century of APS members have left an invaluable legacy. As active APS members you contribute to the continuation of this legacy. APS would not be what it is today without the contributions of its membership. The ideas, time and expertise provided by APS members have shaped this organization into what it is today.

Sincere thanks to all members for their contributions to APS and the science of plant pathology!

SESSIONS – Wednesday Morning, Technical

- 9:30 a.m. O-168. Evaluation of multiple-locus variable number tandem repeat analysis for typing of *Pseudomonas syringae*. C. M. BAKER (1), C. L. Bender (1), U. K. Melcher (1), J. A. Fletcher (1). (1) Oklahoma State University, Stillwater, OK, U.S.A.
- 9:45 a.m. O-169. Novel diagnostic protocol for obtaining high quality sequence from individual *Meloidogyne* spp. juveniles. R. A. STAMLER (1), J. Trojan (1), S. H. Thomas (1), S. F. Hanson (1). (1) NMSU, Las Cruces, NM, U.S.A.
- 10:00 a.m. O-170. Molecular identification of pathotypes of *Plasmodiophora brassicae*, causal agent of clubroot of crucifers, from Canada. T. CAO (1), S. Xue (1), S. E. Strelkov (1). (1) University of Alberta, Edmonton, AB, Canada
- 9:15 a.m. O-172. Plant diversity effects on microbial diversity and pathogen suppression. M. G. BAKKER (1). (1) University of Minnesota, U.S.A.
- 9:30 a.m. O-173. Molecular approaches for taxa discovery in plant-associated soil microbial communities. N. ROSENZWEIG (1), J. Kang (1), L. L. Kinkel (1), J. M. Bradeen (1). (1) Department of Plant Pathology, University of Minnesota, St. Paul, MN, U.S.A.
- 9:45 a.m. O-174. Cellulase activity and microbiology of cultural systems for Phytophthora root rot control in Fraser fir. B. S. RICHTER (2), D. M. Benson (2), K. L. Ivors (1). (1) NC State University, Fletcher, NC, U.S.A., (2) NC State University, Raleigh, NC, U.S.A.
- 10:00 a.m. O-175. Spatio-temporal dynamics of black leaf mold (*Pseudocercospora fuligena*) across the tomato canopy in natural and artificial epidemics under protected cultivation in Thailand. Z. MERSHA (1), B. Hau (2). (1) Leibniz Universitaet Hannover, Germany (2) Leibniz Universitaet Hannover, Institute of Plant Disease and Plant Protection, Herrenhauser Str. 2, 30419, Hannover, Germany

Phyllosphere/Rhizosphere Microbiology & Ecology

9:00 – 11:30 a.m. * 200 HIJ

Section: Epidemiology / Ecology / Environmental Biology

Moderator: Nicholas S. Dufault, Penn State University, University Park, PA

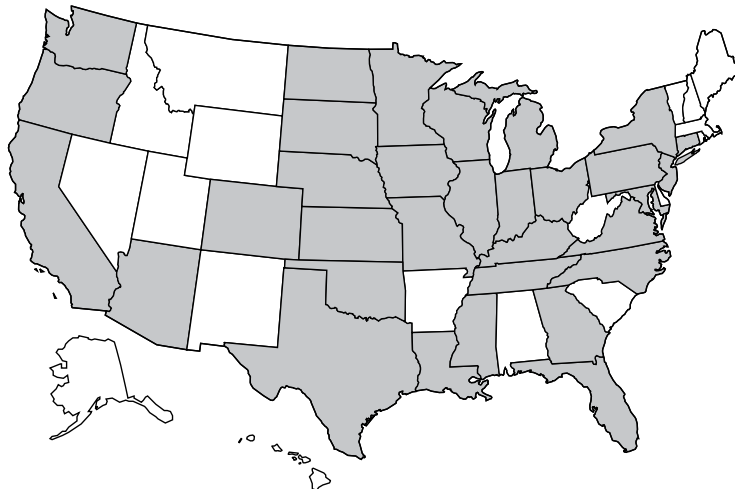
- 9:00 a.m. O-171. Quantification of *F. virguliforme* in field soil using TaqMan real-time polymerase chain reaction. G. Mbofung (1), A. FESSEHAIE (1), L. Leandro (1). (1) Iowa State University, U.S.A.



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- 10:15 a.m. O-176. Assessment of bacteria from apple leaves by culture-dependent and culture-independent methods. E. YASHIRO (1), R. Spear (1), K. Clinton-Cirocco (1), P. McManus (1). (1) University of Wisconsin - Madison, Madison, WI, U.S.A.
- 10:30 a.m. O-177. Modification of seed exudates by seed-colonizing microbes from vermicompost alters pre-infection behavior of *Pythium aphanidermatum* zoospores. A. H. JACK (1), E. B. Nelson (1). (1) Cornell University, Department of Plant Pathology and Plant Microbe Biology, Ithaca, NY, U.S.A.
- 10:45 a.m. O-178. The removal of *Phakopsora pachyrhizi* urediniospores from soybean leaves by rainfall. N. S. DUFAULT (2), S. A. Isard (2), J. J. Marois (1), D. L. Wright (1). (1) NFREC, University of Florida, Quincy, FL, U.S.A., (2) Penn State University, University Park, PA, U.S.A.
- 11:00 a.m. O-179. Variability in competitive ability among *Aspergillus flavus* vegetative compatibility groups during maize infection. H. L. MEHL (1), P. J. Cotty (1). (1) USDA-ARS, Dept. Plant Sciences, University of Arizona, Tucson, AZ, U.S.A.
- 11:15 a.m. O-180. Root rot fungi succession during Cassava (*Manihot esculenta*. Crantz) tuberous root development in different ecological zones of Nigeria. S. O. AIGBE (1), S. U. Remison (1), R. Bandyopadhyay (2). (1) Department of Crop Science, Ambrose Alli University, Ekpoma, Nigeria, (2) IITA, Ibadan, Nigeria

Congratulations to the 2008 APS Awardees



APS is pleased to honor the following individuals who have made significant contributions to the science of plant pathology. The awards will be presented during the APS Awards & Honors Ceremony on Tuesday,

July 29 from 6:30-7:30 p.m. in the Auditorium. Biographies for each of the awardees will be provided in the Ceremony brochure and are posted at <http://www.apsnet.org/members/awards/2008.asp>.

APS Fellows

John Andrews, University of Wisconsin-Madison
 Claude Fauquet, ILTAB
 Deborah Fravel, USDA-ARS
 Dean Gabriel, University of Florida-Gainesville
 David Gadoury, Cornell University
 Stephen Goodwin, USDA-ARS
 Brad Hillman, Rutgers University
 Charles Rush, Texas A&M Agriculture Experiment Station
 Jonathan Walton, Michigan State University
 Michael Wingfield, University of Pretoria
 Shyi-Dong Yeh, National Chung Hsing University
 Thomas Zitter, Cornell University

Distinguished Service Award

James MacDonald, University of California-Davis

Excellence in Extension

Mary Hausbeck, Michigan State University

Excellence in Industry

Chris Becker, BAAR Scientific LLC

Excellence in Teaching

Mike Boehm, Ohio State University

International Service Award

Randy Ploetz, University of Florida

Ruth Allen Award

Peter Nagy, University of Kentucky

William Bright Hewitt and Maybelle Ellen Ball Hewitt Award

Pierce Paul, Ohio State University

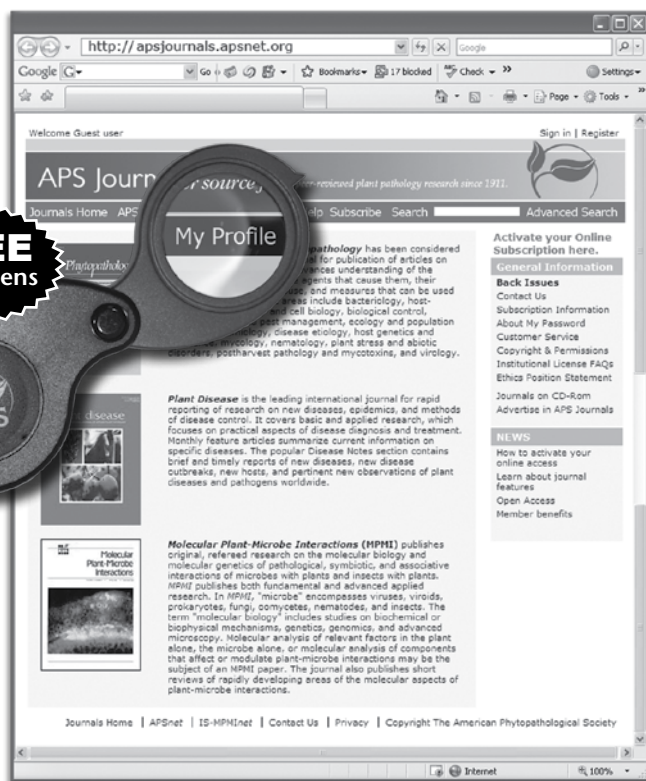
Noel T. Keen Award for Research in Molecular Plant Pathology

Brett Tyler, Virginia Bioinformatics Institute

Syngenta Award

Seogchan Kang, Penn State University

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APS PRESS Bookstore Hours

Sun, July 27	6:00–8:00 p.m.
Mon, July 28	9:00 a.m.–6:00 p.m.
Tues, July 29	8:00 a.m.–5:00 p.m.
Wed, July 30	8:00 a.m.– noon

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Gratitude

Congratulations Dr. Artie Browning on your Distinguished Service to Agriculture Award from the National Alliance of Independent Crop Consultants.

It is our great honor to tip our hats in recognition to you, Dr. J. Artie Browning, and your wife Arra. Together your commitment to our industry has paved the way for innovation and thoughtful vision. We are forever grateful.

With a career that has spanned half a century, we recognize you for your leadership with organizations like Texas A & M University, Iowa State, the Rockefeller Foundation, the American Phytopathological Society, and our own NAICC's Foundation. Your vision and inspiration in promoting the excellent Doctor of Plant Medicine Program now offered at the University of Florida is a major milestone of accomplishment for our Foundation.

We have learned from you. We are, in a word, grateful.



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POSTER SCHEDULE AND POSTER TITLES BY CATEGORY

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Poster Viewing and Flash-and-Dash Hours

Sunday, July 27

10:00 a.m. – 2:00 p.m. Poster Set-up
6:00 – 8:00 p.m. Poster Viewing Open

Monday, July 28

7:30 a.m. – 7:00 p.m. Poster Viewing Open
1:00 – 2:00 p.m. Flash-and-Dash Presentations
2:00 – 3:00 p.m. Flash-and-Dash Authors Present at Posters

Tuesday, July 29

7:30 a.m. – 5:30 p.m. Poster Viewing Open
8:00 – 9:00 a.m. Poster Authors Present—even numbered posters
10:00 – 11:00 a.m. Flash-and-Dash Presentations
11:00 a.m. – 12:00 p.m. Flash-and-Dash Authors Present at Posters
1:00 – 1:50 p.m. Flash-and-Dash Presentations
1:50 – 2:45 p.m. Flash-and-Dash Authors Present at Posters

Wednesday, July 30

8:00 – 9:00 a.m. Poster Viewing Open
8:00 – 9:00 a.m. Poster Authors Present—odd numbered posters
9:00 – 11:00 a.m. Poster Take-Down

Presentation Categories

Biology of Plant Pathogens:

Bacteria (Posters 1-17)
Flyspeck and Sooty Blotch (Posters 18-25)
Fusarium (Posters 26-33)
Mycology: Population Genetics and Diversity (Posters 34-51)
Nematodes (Posters 52-53)
Oomycete Biology (Posters 54-63)
Phytoplasmata and Other Fastidious Prokaryotes (Posters 64-76)
Post-Harvest Mycology (Posters 77-85)
Virology (Posters 86-101)

Diseases of Plants:

Crop Loss Assessment (Posters 102-106)
Disease Detection and Diagnosis (Posters 107-151)
Diseases of Cereal, Field, and Fiber Crops (Posters 152-182)
Diseases of Fruits, Nuts, and Vegetables (Posters 183-225)
Diseases of Ornamentals and Turfgrass (Posters 226-257)
Forest Pathology (Posters 258-279)
Systematics/Evolution/Ecology (Posters 280-282)

Epidemiology:

Bacteria: Diseases (Posters 283-289)
Field/Turf/Forestry (Posters 290-302)
Fruit/Vegetable/Ornamental (Posters 303-318)
Fusarium Head Blight (Posters 319-322)
Pathogen-Vector Interactions (Posters 323-330)
Phyllosphere/Rhizosphere (Posters 331-347)
Phytophthora/Pythium (Posters 348-358)
Population Genetics (Posters 359-383)
Soybean/Soybean Rust (Posters 384-390)

Molecular/Cellular Plant–Microbe Interactions:

Bacteria: Genetics/Molecular Biology/Cell Biology (Posters 391-441)
Biological Control (Posters 442-444)
Diseases of Vegetables (Poster 445)
Fungi: Genetics/Molecular Biology/Cell Biology (Posters 446-509)
Host Resistance (Posters 510-521)
Nematodes: Genetics/Molecular Biology/Cell Biology (Posters 522-524)
Phyllosphere/Rhizosphere (Posters 525-526)
Systematics/Evolution (Poster 527)
Viruses: Genetics/Molecular Biology/Cell Biology (Posters 528-542)

Plant Disease Management:

Biocontrol (Posters 543-610)
Chemical Control (Posters 611-653)
Disease Diagnostic and Detection (Posters 654-659)
Diseases of Cereal, Field, and Fiber Crops (Posters 660-662)
Diseases of Fruits and Nuts (Posters 663-670)
Diseases of Ornamentals (Posters 671-672)
Diseases of Turfgrass (Posters 673-674)
Diseases of Vegetables (Posters 675-686)
Forest Pathology (Posters 687-689)
Host Resistance (Posters 690-719)
Host Resistance/Molecular Genetics (Posters 720-730)
Integrated Pest Management (Posters 731-760)
Regulatory (Posters 761-766)
Seed Pathology (Posters 767-774)

Professionalism/Service/Outreach:

Extension Posters (Posters 775-777)
History of the Profession Poster (Poster 778)
Regulatory Poster (Poster 779)
Teaching Posters (Posters 780-786)

Biology of Plant Pathogens

Bacteria


- P-1 Relationships of bacterial strains causing heart rot of pineapple to *Dickeya* species based on 16S-23S intergenic spacer and *dnaA* sequences. G. Marrero (1), K. Schneider (1), A. ALVAREZ (2). (1) University of Hawaii Manoa, Dept. of Molecular Biosciences and Bioengineering, Honolulu, HI, U.S.A., (2) University of Hawaii Manoa, Dept. of Plant and Environmental Protection Sciences, Honolulu, HI, U.S.A.
- P-2 Emerging of new species of *Pseudomonas in sensu stricto* affecting beans in Mexico. H. V. SILVA-ROJAS (1), L. X. Zelaya-Molina (2), E. Valadez-Moctezuma (2), L. Cordova-Tellez (1). (1) Colegio de Postgraduados, Texcoco, Edo. de Mexico, Mexico, (2) Universidad Autonoma Chapingo, Texcoco, Edo. de Mexico, Mexico
- P-3 Characterization of a new strain of *Streptomyces* causing symptoms associated with potato common scab from Michigan soil. S. DURAIRAJ (2), J. Yin (2), R. Hammerschmidt (2), W. W. Kirk (2), D. Douches (1), J. Hao (2). (1) Department of Crop and Soil Sciences, Michigan State University, E. Lansing, MI, U.S.A., (2) Department of Plant Pathology, Michigan State University, E. Lansing, MI, U.S.A.
- P-4 Characterization of population dynamics and diversity of *Ralstonia solanacearum* populations isolated from flue-cured tobacco in North Carolina. M. L. KATAWCZIK (1), A. Mila (1). (1) North Carolina State University, Raleigh, NC, U.S.A.
- P-5 Characterization and differentiation of *Erwinia amylovora* strains from Iran. M. MOHAMMADI (2), K. Geider (1). (1) Julius Kuhn Institute (JKI), Dossenheim, Germany, (2) University of Tehran, Dept. of Plant Pathology, Karaj, Iran
- P-6 Evaluation of *Agrobacterium tumefaciens* genetic diversity in CA walnut growing regions and resistance to the biocontrol agent, *Agrobacterium rhizogenes* K84. E. T. GONZALEZ (1), M. Maccree (1), M. Zaid (1), D. A. Kluepfel (1). (1) USDA, ARS, Crops Pathology/Genetics Research Unit, Davis, CA, U.S.A.
- P-7 Organisms associated with internally discolored horseradish roots. J. YU (1), M. Babadoost (1). (1) Department of Crop Sciences, University of Illinois, Urbana, IL, U.S.A.
- P-8 Gammabacteria associated to leaf chlorotic strikes in maize crop during seed production in Mexico. L. X. ZELAYA-MOLINA (2), H. V. Silva-Rojas (1), L. Cordova-Tellez (1), E. Valadez-Moctezuma (2), P. D. Esker (3). (1) Colegio de Postgraduados, Texcoco, Edo. de Mexico, Mexico, (2) Universidad Autonoma Chapingo, Texcoco, Edo. de Mexico, Mexico, (3) University of Wisconsin-Madison, Madison, WI, U.S.A.
- P-9 DNA markers for identification of the bacterial phytopathogens *Clavibacter*, *Erwinia*, *Ralstonia*, and *Xanthomonas*. K. L. SCHNEIDER (1), A. M. Alvarez (2), G. G. Presting (1). (1) Molecular Biosciences and Bioengineering, University of Hawaii Manoa, Honolulu, HI, U.S.A., (2) Plant and Environmental Protection Sciences, University of Hawaii Manoa, Honolulu, HI, U.S.A.
- P-10 More Texas *Xylella fastidiosa* isolates colonized *Helianthus annuus* and *Iva annua* than *Ambrosia trifida* var. *texana* and *Vitis vinifera* 'Chardonnay'. M. BLACK (1), A. Sanchez (1), J. Davis (1), J. Kamas (1), P. Adams (1). (1) Texas AgriLife Extension Service
- P-11 Antiserum development from an outer membrane protein (*omp*) of *Candidatus Liberibacter asiaticus*. S. DONNUA (1), N. Thaveechai (1), A. Paradoruwat (1), S. Chowpongpan (1), E. Schuenzel (2), N. Schaad (2). (1) Kasetsart University, Bangkok, Thailand, (2) USDA, Ft. Detrick, MD, U.S.A.
- P-12 Limited cultivation of *Candidatus Liberibacter asiaticus*, suspected causal agent of Huanglongbing of citrus. E. L. Schuenzel (2), A. Sechler (2), H. HU (1), P. Cooke (3), E. Postnikova (2), A. Stone (2), W. Schneider (2), V. Damsteegt (2), N. W. Schaad (2). (1) Chongqing University, Chongqing, China, (2) USDA, Ft. Detrick, MD, U.S.A., (3) USDA, Wyndmoor, PA, U.S.A.
- P-13 Preliminary report on the genome project of *Candidatus Liberibacter asiaticus*. E. L. SCHUENZEL (2), A. Sechler (2), T. Brettin (1), C. Detter (1), M. Wolinsky (1), G. Gupta (1), N. W. Schaad (2). (1) Los Alamos National Laboratories, Los Alamos, NM, U.S.A., (2) USDA, Ft. Detrick, MD, U.S.A.
- P-14 Pathogenic characterization of strains of the B and C group of *Xanthomonas axonopodis* in citrus. A. M. Gochez (1), M. A. RYBAK (1), B. I. Canteros (1). (1) INTA-BID 1728/ OC-AR PICTO 12956, EEA INTA, Bella Vista, Corrientes, Argentina
- P-15 Evidence for pathogenesis-related activity by *Erwinia amylovora* during the epiphytic phase on pear and apple flowers. K. B. JOHNSON (1), T. L. Sawyer (1), V. O. Stockwell (1), T. N. Temple (1). (1) Oregon State University, Corvallis, OR, U.S.A.
- P-16 Effect of regulatory genes on the production of volatiles by *Pseudomonas chlororaphis* PA23 and identification of antifungal antibiotics of *Bacillus* species using polymerase chain reaction and MALDI-TOF mass spectrometry. S. N. Athukorala (3), D. FERNANDO (3), K. Rashid (1), T. de Kievit (2). (1) Agriculture and Agri-Food Canada, Manitoba, Canada, (2) Dept. of Microbiology, University of Manitoba, Winnipeg, MB, Canada, (3) Dept. of Plant Science, University of Manitoba, Winnipeg, MB, Canada
- P-17 Interactions with hosts at cool temperature, not cold tolerance, explain the unique epidemiology of

Ralstonia solanacearum Race 3 biovar 2. F. MENG (1), A. Milling (1), C. Allen (1). (1) Dept. Plant Pathology, UW-Madison, Madison, WI, U.S.A.


Flyspeck and Sooty Blotch

- P-18 Characterization of sooty blotch and flyspeck fungi on pawpaw (*Asimina triloba*), a newly discovered reservoir host. K. Hemnani (1), P. O'Malley (1), B. Tanovic (2), J. Batzer (1), M. GLEASON (1). (1) Department of Plant Pathology, Iowa State University, Ames, IA, U.S.A., (2) Pesticide & Environment Research Institute, Zemun-Belgrade, Serbia
- P-19 Diversity of sooty blotch and flyspeck fungi from Serbia and Montenegro. M. Ivanovic (3), J. Latinovic (1), N. Latinovic (1), J. C. Batzer (2), K. Hemnani (2), M. L. GLEASON (2). (1) Biotechnical Institute, University of Montenegro, Podgorica, Montenegro, (2) Department of Plant Pathology, Iowa State University, Ames, IA, U.S.A., (3) University of Belgrade-Zemun, Belgrade, Serbia
- P-20 First report of *Dissoconium mali* associated with flyspeck signs on persimmon. G. Sun (2), H. Li (2), R. Zhang (2), M. L. GLEASON (1). (1) Iowa State University, Ames, IA, U.S.A., (2) Northwest A&F University, Yangling, Shaanxi, China
- P-21 First report of *Aureobasidium pullulans* causing sooty blotch on apple fruit in China. G. Sun (2), X. R. Zhai (2), R. Zhang (2), M. L. GLEASON (1). (1) Iowa State University, Ames, IA, U.S.A., (2) Northwest A&F University, Yangling, Shaanxi, China
- P-22 Delineation of fungal species within the genus *Pseudocercospora* in the sooty blotch and flyspeck complex. N. TATALOVIC (1), J. Batzer (1), M. Diaz (1), M. L. Gleason (1). (1) Iowa State University, Ames, IA, U.S.A.
- P-23 Diversity of fungi causing flyspeck-like signs on apple in China. G. Sun (1), R. Zhang (1), H. Li (1), M. L. GLEASON (2). (1) College of Plant Protection Northwest A&F University, Yangling, Shaanxi, China, (2) Department of Plant Pathology, Iowa State University, Ames, IA, U.S.A.
- P-24 Withdrawn
- P-25 Phenology of sooty blotch and flyspeck fungi on apples in Iowa. A. J. Sisson (2), J. C. Batzer (2), K. B. Waxman (1), K. Hemnani (2), M. L. Gleason (2). (1) Cornell University, Ithaca, NY, U.S.A., (2) Iowa State University, Ames, IA, U.S.A.


Fusarium

- P-26  An approach to restore sexuality in *Fusarium oxysporum*. S. Imai (1), T. Teraoka (1), T. ARIE (1). (1) Tokyo University of Agriculture and Technology (TUAT), Tokyo, Japan
- P-27 Unraveling the mechanism of ascospore discharge in *Fusarium graminearum*. B. Cavinder (1), H. Hallen (1), F. TRAIL (1). (1) Michigan State University, East Lansing, MI, U.S.A.
- P-28 Temperature and light effects on growth and sporulation of isolates of *Fusarium virguliforme*. P.

DELGADO (1), G. Mbofung (1), L. Leandro (1). (1) Iowa State University

- P-29 The importance of *Fusarium* and *Pythium* species in seed decay and root rot on soybean. M. V. AVANZATO (1), J. C. Rupe (1), C. S. Rothrock (1). (1) University of Arkansas
- P-30 How different are the two model *Fusarium* graminearum strains PH-1 and Gz3639 from one another? S. BEC (1), L. J. Vaillancourt (1), D. Van Sanford (2). (1) Department of Plant Pathology, University of Kentucky, Lexington, KY, U.S.A., (2) Department of Plant and Soil Sciences, University of Kentucky, Lexington, KY, U.S.A.
- P-31  *Fusarium* comparative genomics. L. MA (1). (1) The Broad Institute of Harvard and MIT
- P-32 Presence and distribution of deoxynivalenol in potato tubers inoculated with *Fusarium graminearum*. J. A. DELGADO (1), P. B. Schwarz (2), J. Gillespie (2), V. Rivera-Varas (1), G. A. Secor (1). (1) Department of Plant Pathology, North Dakota State University, Fargo, ND, U.S.A., (2) Department of Plant Sciences, North Dakota State University, Fargo, ND, U.S.A.
- P-33 Detoxification of *Fusarium* mycotoxins by microorganisms from fish digesta. S. Guan (1), J. He (1), C. Young (1), H. Zhu (1), T. ZHOU (1). (1) Agriculture Canada, Guelph Food Research Center, Guelph, Ontario, Canada

Mycology: Population Genetics and Diversity


- P-34 Powdery mildews recently observed in Italy on ornamental plants. M. GULLINO (1), D. Bertetti (1), A. Garibaldi (1). (1) AGROINNOVA - University of Torino, Grugliasco (TO), Italy
- P-35  Phylogeography and sequence diversity of genetic lineages of the grapevine powdery mildew fungus, *Erysiphe (Uncinula) necator*, in North America, Europe, and Australia. M. T. BREWER (1), M. G. Milgroom (1). (1) Dept. of Plant Pathology and Plant-Microbe Biology, Cornell University, Ithaca, NY, U.S.A.
- P-36 Reassessment of the taxonomic classification of the cranberry pathogen *Phylospora vaccinii*. J. J. POLASHOCK (3), P. V. Oudemans (1), J. Crouch (2). (1) Rutgers University, Chatsworth, NJ, U.S.A., (2) Rutgers University, New Brunswick, NJ, U.S.A., (3) USDA-ARS, Chatsworth, NJ, U.S.A.
- P-37 Genetic diversity of *Sclerotinia sclerotiorum* from various crops from the U.S. Pacific Northwest. W. CHEN (2), L. Porter (1), D. Johnson (3). (1) USDA ARS, Prosser, WA, U.S.A., (2) USDA ARS, Washington State University, (3) Washington State University
- P-38 Genetic diversity in *Sclerotium rolfsii* infecting sugar beet in Mediterranean environments. E. REMESAL (3), B. B. Landa (3), R. M. Jimenez-Diaz (2), M. M. Jimenez-Gasco (1), J. A. Navas-Cortes (3). (1) Department of Plant Pathology, The Pennsylvania State University, University Park, PA, U.S.A., (2)

- Instituto de Agricultura Sostenible, CSIC and ETSIAM, Universidad de Córdoba, Córdoba, SPAIN, (3) Instituto de Agricultura Sostenible, CSIC, Córdoba, Spain
- P-39  DNA sequence evidence of the need for revision of taxonomic placement of plant-pathogenic *Sclerotium* species. Z. XU (1), M. L. Gleason (1), J. C. Batzer (1), T. C. Harrington (1). (1) Department of Plant Pathology, Iowa State University, Ames, IA, U.S.A.
- P-40 Characterization of *Geotrichum candidum* causing sour rot of peaches and nectarines in California. M. A. YAGHMOUR (1), P. Inderbitzin (1), R. M. Bostock (1), T. J. Michailides (1). (1) University of California-Davis, Davis, Ca, U.S.A.
- P-41 The race of *Albugo candida* causing disease on perennial pepperweed, *Lepidium latifolium* in Colorado. M. J. SULLIVAN (1), R. T. Zink (1). (1) USDA-APHIS-PPQ-CPHST
- P-42 Identification of anthracnose fungi by heteroduplex mobility assay and heteroduplex pattern. T. HUANG (2), Y. Yeh (1), D. Tzeng (2). (1) Bureau of Animal and Plant Health Inspection and Quarantine, Council of Agriculture, Executive Yuan, Taipei, Taiwan, (2) Department of Plant Pathology, National Chung-Hsing University, Taichung, Taiwan
- P-43 The worldwide occurrence of the anther-smut fungus *Microbotryum* on species of the Caryophyllaceae as assessed from herbarium surveys. J. MENA-ALI (1). (1) Dept. of Biology, Amherst College
- P-44 Incidence and diversity of dsRNA in a Korean population of the chestnut blight fungus, *Cryphonectria parasitica*. S. PARK (4), J. Kim (4), H. Chung (4), J. Lim (1), B. Kwon (4), K. Lee (4), J. Kim (4), M. Kim (3), B. Cha (1), S. Lee (3), K. Kim (3), Y. Lee (2), M. Yang (4), D. Kim (4). (1) Department of Agricultural Biology, Chungbuk National University, Cheongju, Chungbuk, Korea, (2) Department of Herbal Medicine, Hoseo University, Asan, Chungnam, Korea, (3) Division of Forest Insect and Diseases, Korea Forest Research Institute, Seoul, Korea, (4) Institute of Molecular Biology and Genetics, Research Center of Bioactive Materials, Chonbuk National University, Jeonju, Cho
- P-45 Genetic structure of North American populations of *Phoma sclerotoides*, causal agent of brown root rot of alfalfa. M. J. WUNSCH (1), G. C. Bergstrom (1). (1) Department of Plant Pathology and Plant-Microbe Biology, Cornell University, Ithaca, NY, U.S.A.
- P-46  A new *Pseudocercospora* species causing a serious leaf spotting and blight on *Passiflora setacea*. A. C. Dianese (2), A. M. Costa (2), J. C. DIANESE (1). (1) Departamento de Fitopatologia, Universidade de Brasília, Brasília, Brazil, (2) Embrapa Cerrados, Brasília, Distrito Federal, Brazil
- P-47 Trunk diseases on grapevine caused by fungi in Baja California, Mexico. R. HERNANDEZ-MARTINEZ (1), C. Valenzuela-Solano (2), O. Candolfi-Arballo (1), J. A. Plata-Caudillo (1). (1) CICESE, Ensenada, Baja California, Mexico, (2) INIFAP, Campo Experimental Costa de Ensenada. Ensenada, Baja California, Mexico
- P-48 Aggressive strains of the wheat yellow rust fungus spread world-wide. M. HOVMØLLER (1), A. H. Yahyaoui (2), E. A. Milus (3), A. F. Justesen (1). (1) Aarhus University, Faculty of Agricultural Sciences, Denmark, (2) International Center for Agricultural Development in the Dry Areas, Aleppo, Syria, (3) University of Arkansas, Department of Plant Pathology, Fayetteville, AR, U.S.A.
- P-49 Analysis of the *Pythium ultimum* transcriptome. F. Cheung (3), J. Lang (2), J. Hamilton (4), J. Leach (2), A. Lévesque (1), N. Tisserat (2), C. BUELL (4). (1) Agriculture and Agri-Food, Canada, (2) Colorado State University, Ft. Collins, CO, U.S.A., (3) J Craig Venter Institute, Rockville, MD, U.S.A., (4) Michigan State University, East Lansing, MI, U.S.A.
- P-50 Massively parallel sequencing of small RNAs from the rice blast fungus, *Magnaporthe grisea*. C. C. NUNES (2), M. Gowda (2), F. Chen (1), S. Meng (2), D. Brown (2), T. K. Mitchell (3), R. A. Dean (2). (1) US DOE Joint Genome Institute, Walnut Creek, CA, U.S.A., (2) North Carolina State University, Raleigh, NC, U.S.A., (3) The Ohio State University, Columbus, OH, U.S.A.
- P-51 Identification of the mating type locus in the *Fusarium oxysporum* species complex associated to chickpea in Mexico. E. VALADEZ-MOCTEZUMA (2), A. Lopez-Lopez (2), L. X. Zelaya-Molina (2), H. V. Silva-Rojas (1). (1) Colegio de Postgraduados, Texcoco, Edo. de Mexico, Mexico, (2) Universidad Autonoma Chapingo, Texcoco, Edo. de Mexico, Mexico
- ### Nematodes
- P-52 Chemotactic effects of endophyte-infected tall fescue root extracts against *Pratylenchus scribneri*. A. A. BACETTY (1), M. E. Snook (2), C. W. Bacon (2). (1) The University of Georgia, Department of Plant Pathology, Athens, GA, U.S.A., (2) Toxicology and Mycotoxin Research Unit, USDA, ARS, Russell Research Center, Athens, GA, U.S.A.
- P-53 Nematode communities and their relationships to soilborne pathogens in peanuts. K. N. CONNER (1), R. N. Huettel (1). (1) Auburn University, Auburn, AL, U.S.A.
- ### Oomycete Biology
- P-54 Chemical growth inhibition as phenotypic markers for matching isolates of *Pythium* within species. M. BURGOS (1), G. W. Moorman (1). (1) Dept. of Plant Pathology, The Pennsylvania State University, University Park, PA, U.S.A.
- P-55  Assessing *Pythium* population dynamics from different soil regions in Ohio. K. D. BRODERS (1), M. Wallhead (1), P. A. Paul (1), P. E. Lipps (1),



- A. E. Dorrance (1). (1) The Ohio State University, OARDC, Wooster, OH, U.S.A.
- P-56 Understanding the genetic diversity of *Phytophthora cinnamomi* Rands using a multi-locus sequence based approach. M. A. MANSFIELD (1), M. Coffey (2), M. Peiman (2), D. M. Geiser (1), S. Kang (1). (1) The Pennsylvania State University, Dept. Plant Pathology, University Park, PA, U.S.A., (2) University of California Riverside, Dept. Plant Pathology, Riverside, CA, U.S.A.
- P-57 Comparing New Zealand and United Kingdom isolates of *Phytophthora kernoviae*. T. L. WIDMER (1). (1) USDA, ARS, FDWSRU, Fort Detrick, MD, U.S.A.
- P-58 *Phytophthora* genomics: Identifying new markers for population-level studies. J. E. BLAIR (1). (1) Amherst College, Amherst, MA, U.S.A.
- P-59 *Phytophthora irrigata* and *Phytophthora hydropathica*, two new species from irrigation water at ornamental plant nurseries. C. HONG (3), M. Gallegly (4), P. Richardson (3), P. Kong (3), G. Moorman (1), J. Lea-Cox (2), D. Ross (2). (1) The Penn State, (2) University of Maryland, (3) Virginia Tech, (4) West Virginia University
- P-60 *Phytophthora melonis*, *P. drechsleri* and *P. sinensis* from cucurbits. H. H. HO (1), M. E. Gallegly (2), C. X. Hong (3). (1) Department of Biology, State University of New York, New Paltz, NY, U.S.A., (2) Department of Plant and Soil Sciences, West Virginia University, Morgantown, WV, U.S.A., (3) Hampton Roads Agricultural Research and Extension Center, Virginia Tech, Virginia Beach, VA, U.S.A.
- P-61  Viability of *Phytophthora ramorum* after passage through slugs. J. L. PARKE (1), A. Oguchi (2), E. J. Fichtner (2), D. M. Rizzo (2). (1) Oregon State University, Corvallis, OR, U.S.A., (2) University of California-Davis, Davis, CA, U.S.A.
- P-62 Modification of culture medium for growth and sporulation of *Phytophthora infestans* (Mont.) de Bary. J. SOPEE (1), (1) Kasetsart University
- P-63  Sporulation on plant roots by *Phytophthora ramorum*. N. SHISHKOFF (1). (1) USDA/ARS/FDWSRU
- P-66 Dynamic genome architecture and the emergence of the phytoplasma clade. R. E. DAVIS (2), R. Jomantiene (1), Y. Zhao (2), W. Wei (2). (1) Institute of Botany, Vilnius, Lithuania, (2) Molecular Plant Pathology Laboratory, Agricultural Research Service-USDA, Beltsville, MD, U.S.A.
- P-67 Detection of multiple strains of the aster yellows phytoplasma in Wisconsin carrot fields. K. E. FROST (2), C. L. Groves (1), R. L. Groves (1). (1) Department of Entomology, Russell Laboratories, University of Wisconsin, Madison, WI, U.S.A., (2) Department of Plant Pathology, Russell Laboratories, University of Wisconsin, Madison, WI, U.S.A.
- P-68 A newly emerging potato disease associated with 16SrIII phytoplasmas in Montana. I. LEE (1), K. D. Bottner (1), M. Sun (2). (1) Molecular Plant Pathology Lab., USDA-ARS, Beltsville, MD, U.S.A., (2) Potato Lab., Montana State University Extension Service, Bozeman, MT, U.S.A.
- P-69 Citrus stubborn symptom severity and *Spiroplasma citri* location within the tree canopy. A. S. MELLO (2), R. K. Yokomi (1), M. Payton (2), J. Fletcher (2). (1) ARS-USDA, Parlier, CA, U.S.A., (2) Oklahoma State University, Stillwater, OK, U.S.A.
- P-70 *Xylella fastidiosa* isolates from mulberry harbor a 25 kilobase pair plasmid with extensive sequence identity to a plasmid from *Verminephrobacter eiseniae*. D. STENGER (1), J. Chen (1). (1) USDA-ARS, Parlier, CA, U.S.A.
- P-71 Withdrawn
- P-72 Identification of a chemosensory signal transduction system in *Xylella fastidiosa* associated with twitching motility and biofilm formation. L. Cursino (1), Y. Li (1), L. De La Fuente (1), C. Galvani (1), P. A. ZAINI (1), P. Mowery (2), H. C. Hoch (1), T. J. Burr (1). (1) Cornell University, Geneva, NY, U.S.A., (2) Hobart and William Smith Colleges, Geneva, NY, U.S.A.
- P-73 In planta distribution and quantification of Asiatic strain of citrus Huanglongbing pathogen. U. S. SAGARAM (1), S. Tatineni (1), J. Kim (1), N. Wang (2). (1) Citrus Research and Education Center, (2) Citrus Research and Education Center/Department of Microbiology and Cell Science University of Florida
- P-74 Detection of phytoplasma and *Candidatus Liberibacter asiaticus* in citrus showing Huanglongbing (yellow shoot disease) symptoms in Guangdong, P. R. China. J. CHEN (2), X. Deng (1), S. Liu (1), X. Pu (1), H. Li (1), E. Civerolo (2). (1) South China Agricultural University, Guangzhou, China, (2) USDA-ARS, Parlier, CA, U.S.A.
- P-75  Molecular characterization of a group 16SIII phytoplasma associated with decline of China-treeE (*Melia azedarach* L.) in Brazil. V. DUARTE (2), E. G. Silva (1), I. R. Hass (1), I. Bedendo (1), E. W. Kitajima (1). (1) ESALQ, Piracicaba, SP, Brazil, (2) UFRGS, Porto Alegre, RS, Brazil

Phytoplasmas and Other Fastidious Prokaryotes


- P-64 Simple sequence repeats and their potential roles in regulation of contingency genes in phytoplasma genomes. W. WEI (2), X. Shi (2), R. E. Davis (2), D. L. Nuss (1), Y. Zhao (2). (1) Center for Biosystems Research, University of Maryland Biotechnology Institute, Rockville, MD, U.S.A., (2) Molecular Plant Pathology Laboratory, Agricultural Research Service-USDA, Beltsville, MD, U.S.A.
- P-65 Recurrent phage attacks and subsequent recombination events shaped phytoplasma genome architecture. W. WEI (2), R. E. Davis (2), R. Jomantiene (1), Y. Zhao (2). (1) Institute of Botany, Vilnius, Lithuania, (2) Molecular Plant Pathology Laboratory, Agricultural Research Service-USDA, Beltsville, MD, U.S.A.


- P-76  Variations of whole genome sequences of *Xylella fastidiosa* strains within the same pathotype. J. CHEN (2), G. Xie (1), S. Han (1), E. Civerolo (2). (1) Los Alamos National Laboratory, Los Alamos, NM, U.S.A., (2) USDA-ARS, Parlier, CA, U.S.A.

Post-Harvest Mycology

- P-77 Monitoring of ochratoxin-producing *Aspergillus carbonarius* in grapevine using molecular markers. M. GULLINO (1), A. Lorè (1), K. Muthusamy (1), D. Spadaro (1), A. Garibaldi (1). (1) AGROINNOVA - University of Torino, Grugliasco (TO), Italy
- P-78 Isolation, purification and biochemical characterization of a polygalacturonase produced by *Penicillium solitum* in 'Golden Delicious' apple (*Malus domestica* Borkh). W. M. JURICK, II (3), I. Vico (2), J. L. McEvoy (3), W. Janisiewicz (1), W. S. Conway (3). (1) Appalachian Fruit Research Station, ARS-USDA, Kearneysville, WV, U.S.A., (2) Institute for Plant and Food Protection, Faculty of Agriculture, University of Belgrade, Serbia, (3) Produce Quality and Safety Lab, ARS-USDA, Beltsville, MD, U.S.A.
- P-79 Ochratoxigenic *Aspergillus* species associated to grapevine in Chile. G. A. Diaz (1), R. TORRES (1), M. A. Vega (2), B. A. Latorre (1). (1) Facultad de Agronomía, Pontificia Universidad Católica de Chile, Santiago, Chile, (2) Facultad de Farmacia, Universidad de Concepcion, Concepcion, Chile
- P-80 Withdrawn
- P-81 Withdrawn
- P-82 Functional characterization of heterotrimeric G protein regulators in *Fusarium verticillioides*. M. MUKHERJEE (1), W. Shim (1). (1) Dept. Plant Pathology & Microbiology, Texas A&M University, College Station, TX, U.S.A.
- P-83 Identification, pathogenicity and fungicide resistance of fungal contaminants on apple storage room surfaces. P. L. SHOLBERG (1), S. Stokes (1), K. Pohl (1), D. O'Gorman (1). (1) Agriculture and Agri-Food Canada, Pacific Agri-Food Research Centre, Summerland, British Columbia, Canada
- P-84 Aflatoxins and fumonisins enhanced by corn infected with common smut. H. K. ABBAS (1), R. M. Zablutowicz (3), C. A. Abel (2), H. Bruns (1). (1) USDA-ARS, CG&PRU, Stoneville, MS, U.S.A., (2) USDA-ARS, SIMU, Stoneville, MS, U.S.A., (3) USDA-ARS, SWSRU, Stoneville, MS, U.S.A.
- P-85 Fungal species colonizing ethanol fermentation co-products. C. WEBER (2), C. Engelbrecht (1), G. Munkvold (2). (1) Iowa State University, Dept. of Plant Pathology, Ames, IA, U.S.A., (2) Iowa State University, Seed Science Center, Ames, IA, U.S.A.
- P-88  New tombusviruses isolated from waters draining forest stands in New Zealand. S. S. MUKHERJEE (3), T. J. Lough (1), D. H. Hopcroft (2), M. R. Woodford (3), J. D. Castello (3). (1) Genesis Research and Development Corporation Ltd., Auckland, New Zealand, (2) Massey University, Palmerston North, New Zealand, (3) SUNY College of Environmental Science and Forestry, Syracuse, NY, U.S.A.
- P-89 Genome organization and nucleotide sequences of *Pelargonium ringspot*, *Pelargonium line pattern*, and *Elderberry latent viruses*, distinct new species within *Tombusviridae*. R. JORDAN (2), G. Kinard (1), M. Guaragna (2). (1) National Germplasm Resources Lab, USDA-ARS, Beltsville, MD, U.S.A., (2) U.S. National Arboretum, Floral & Nursery Plants Research, USDA-ARS, Beltsville, MD, U.S.A.
- P-90  Genome-wide pyrosequencing analysis of a *Citrus tristeza virus* (CTV) complex revealed large-scale recombination throughout the viral genome. Z. XIONG (2), Z. Weng (2), Y. Yu (2), S. Gowda (1), X. Liu (2), D. W. Galbraith (2), R. A. Wing (2), W. O. Dawson (1). (1) Citrus Research and Education Center, University of Florida, Lake Alfred, FL, U.S.A., (2) Department of Plant Sciences, University of Arizona, Tucson, AZ, U.S.A.
- P-91 Developing and validating a greenhouse bioassay for Potato tuber necrotic ringspot disease (PTNRD) associated with Potato virus Y. J. L. WHITWORTH (2), S. M. Gray (3), A. Karasev (4), J. H. Lorenzen (1). (1) CGIAR, Kampala, Uganda, (2) USDA-ARS, Aberdeen, ID, U.S.A., (3) USDA-ARS, Ithaca, NY, U.S.A., (4) University of Idaho, Moscow, ID, U.S.A.
- P-92 Emerging diversity in Potato virus Y poses new challenges for the U.S. potato industry. S. GRAY (4), A. Karasev (5), J. Lorenzen (2), J. Whitworth (3), P. Nolte (5), K. Perry (1). (1) Cornell University, (2) IITA, Uganda, (3) USDA, ARS, Aberdeen, ID, U.S.A., (4) USDA, ARS, Ithaca, NY, U.S.A., (5) University of Idaho
- P-93 A begomovirus and suite of satellites associated with the leaf curl diseases of tomato and tobacco from Yemen are evolutionarily most closely related to begomoviruses from the Nile Basin. J. K. Brown (2), N. M. Abdullah (1), A. M. IDRIS (2). (1) Department of Plant Protection, Sana'a University,

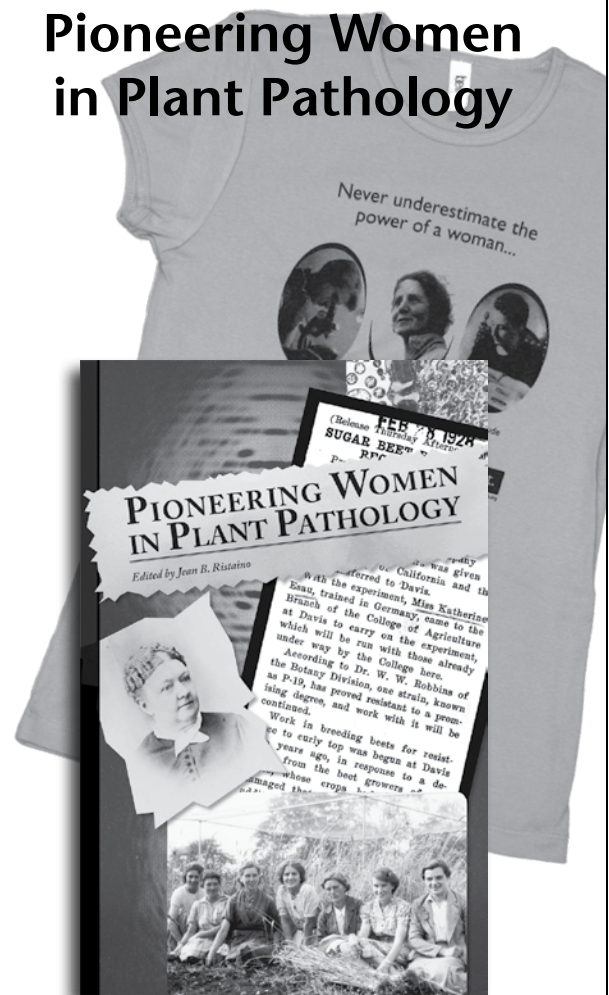
Virology

- P-86 Distribution of curtoviruses in weeds in southern New Mexico. R. CREAMER (1). (1) New Mexico State University, Las Cruces, NM, U.S.A.
- P-87  Identification of plant reservoirs and genome

- Sana'a, Yemen, (2) Department of Plant Sciences, University of Arizona, Tucson, AZ, U.S.A.
- P-94 Molecular variability of *Grapevine leafroll-associated virus-1* in the Pacific Northwest vineyards. K. Gandhi (1), T. A. Mekuria (1), R. R. Martin (2), R. A. NAIDU (1). (1) Department of Plant Pathology, Washington State University, Prosser, WA, U.S.A., (2) USDA-ARS Horticulture Crops Research Lab, Corvallis, OR, U.S.A.
- P-95 Evolutionary and molecular population genetic analysis of *Impatiens necrotic spot virus* (INSV). E. J. PARKS (1), J. Speck (1), J. Abad (2), I. Carbone (1), J. W. Moyer (1). (1) North Carolina State University, Raleigh, NC, U.S.A., (2) USDA-APHIS-PPQ-PHP-PSPI, Beltsville, MD, U.S.A.
- P-96 A new virus species causing a disease of Japanese holly fern (*Cyrtomium falcatum*). R. A. VALVERDE (2), S. Sabanadzovic (1). (1) Dept. of Entomology and Plant Pathology, Mississippi State University, Mississippi State, MS, U.S.A., (2) Dept. of Plant Pathology and Crop Physiology, Louisiana State University Agricultural Center, Baton Rouge, LA, U.S.A.
- P-97 Silicon: Virus friend or foe? W. L. ZELLNER (1), S. M. Leisner (1). (1) University of Toledo
- P-98 Infectious clones of *Alternanthera mosaic virus* inducing distinct symptoms aid identification of symptom determinants. H. Lim (2), A. Vaira (1), M. D. Reinsel (2), H. Bae (2), J. HAMMOND (3). (1) USDA-ARS - and - CNR, IVV, Torino, Italy, (2) USDA-ARS, Beltsville, MD, U.S.A., (3) USDA-ARS, USNA, FNPRU, Beltsville, MD, U.S.A.
- P-99  Two viruses are associated with Carnation necrotic fleck disease. A. V. KARASEV (3), V. V. Dolja (1), M. A. Guaragna (2), R. Jordan (2). (1) Oregon State University, (2) USDA-ARS, (3) University of Idaho
- P-100 Molecular characterization of a Chinese sugar beet-infecting isolate of Beet western yellows virus. C. HAN (1). (1) China Agricultural University
- P-101 Genetic diversity of *Citrus tristeza virus* isolates spreading in Central California. R. K. YOKOMI (2), M. Polek (1), M. Saponari (2). (1) CDEA/CCTEA, Tulare, CA, U.S.A., (2) USDA, ARS, SJVASC, Parlier, CA, U.S.A.

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Diseases of Plants

Crop Loss Assessment


- P-102 Relationship between huanglongbing severity and reduction of yield in 'Valência' orange. R. B. Bassanezi (1), L. AMORIM (2), L. H. Montesino (1), M. C. Gasparoto (2), A. Bergamin-Filho (2). (1) Fundecitrus, Araraquara, SP, Brazil, (2) USP-ESALQ, Piracicaba, SP, Brazil
- P-103 Characteristics of multi-rater estimates of citrus canker severity. C. H. BOCK (5), P. E. Parker (2), A. Z. Cook (3), T. Riley (4), T. R. Gottwald (1). (1) USDA, Ft. Pierce, FL, U.S.A., (2) USDA-APHIS-PDDML, Edinburg, TX, U.S.A., (3) USDA-APHIS-PPQ, Edinburg, TX, U.S.A., (4) USDA-APHIS-PPQ, FL, U.S.A., (5) University of Florida, Ft. Pierce, FL, U.S.A.
- P-104 Disadvantages of the Horsfall-Barratt scale for estimating severity of citrus canker. C. H. BOCK (3), T. R. Gottwald (1), A. Z. Cook (2), P. E. Parker (2). (1) USDA, Ft. Pierce, FL, U.S.A., (2) USDA-APHIS-PPQ, Edinburg, TX, U.S.A., (3) University of Florida, Ft. Pierce, FL, U.S.A.
- P-105 Evaluation of visual and optical sorting of *Fusarium* damaged kernels in winter wheat. S. N. WEGULO (2), F. E. Dowell (1). (1) USDA-ARS, Manhattan, KS, U.S.A., (2) University of Nebraska-Lincoln, NE, U.S.A.
- P-106 Relating yield loss to tan spot severity in winter wheat. S. N. WEGULO (1), J. A. Breathnach (1). (1) University of Nebraska-Lincoln, Lincoln, NE, U.S.A.
- P-107 Identification of species of *Botryosphaeria*, *Pestalotiopsis* and *Phomopsis* in blueberry in Chile. J. G. Espinoza (1), E. X. Briceno (1), B. A. LATORRE (1). (1) Facultad de Agronomía, Pontificia Universidad Católica de Chile, Santiago, Chile
- P-108  A rapid diagnostic tool for detecting benzimidazole resistance in *Cercospora beticola*, the causal agent of Cercospora leaf spot in sugarbeet. J. O. OBUYA (2), L. E. Hanson (1), W. L. Stump (2), G. D. Franc (2). (1) USDA-ARS SBRU, Michigan State University, East Lansing, U.S.A., (2) University of Wyoming, Laramie, WY, U.S.A.
- P-109 Identification of potential plant pathogens from prematurely killed corn stalks in Wisconsin – 2007. J. C. JIRAK (1), P. D. Esker (1). (1) University of Wisconsin, Madison, WI, U.S.A.
- P-110 Status of viruses causing symptoms in pumpkin and watermelon in Puerto Rico. J. V. RODRIGUES (2), L. Wessel-Beaver (1). (1) University of Puerto Rico, Department of Agronomy & Soils, Mayaguez, Puerto Rico, (2) University of Puerto Rico, Department of Crop Protection, Mayaguez, Puerto Rico
- P-111  A summary of diagnostics conducted by the USDA-APHIS-PPQ Molecular Diagnostic Laboratory. P. SUDARSHANA (2), R. Shukla (2), G. Abad (2), B. R. Olson (1), M. Palm (2). (1) Oklahoma State University, Stillwater, OK, U.S.A., (2) USDA-APHIS-PPQ, Beltsville, MD, U.S.A.
- P-112 Detection of an unknown virus in potato seedlings grown from true seed introduced from South America. J. A. ABAD (1), C. Loschinkohl (1), M. Smither (1). (1) USDA APHIS PPQ PHP PSPI PGQP, Beltsville, MD, U.S.A.
- P-113  Occurrence of a whitefly transmitted *Carlavirus* in soybean in Puerto Rico. J. V. RODRIGUES (1), D. Viteri (1), C. Estévez de Jensen (1), E. W. Kitajima (2). (1) University of Puerto Rico, Department of Crop Protection, Mayaguez, Puerto Rico, (2) University of Sao Paulo, Piracicaba, SP, Brazil
- P-114 Two plant pathogenic *Pseudomonas* species causing new diseases of spaghetti squash in Quebec. V. TOUSSAINT (1), M. Cadieux (1), M. Ciotola (1), C. E. Morris (2). (1) Agriculture and Agri-Food Canada, HRDC, St-Jean-sur-Richelieu, QC, Canada, (2) INRA, UR407, Montfavet, France
- P-115  A PCR-based assay for detection of *Puccinia horiana* on chrysanthemums. K. F. PEDLEY (1). (1) USDA Agricultural Research Service, FDWSRU, Ft. Detrick, MD, U.S.A.
- P-116 Specific immunodetection of *Phytophthora ramorum* and *P. kernoviae*. B. Schoedel (1), F. J. AVILA (1). (1) Agdia Inc., Elkhart, IN, U.S.A.
- P-117  Use of protein arrays for rapid and sensitive diagnostics of grapevine diseases. A. FABRITIUS (1), L. Dubrovsky (1), L. Kumagai (1), M. Trinh (1), A. Turnquist (1), Y. Zong (2). (1) Agri-Analysis LLC, Davis, CA, U.S.A., (2) Full Moon Biosystems Inc., Sunnyvale, CA, U.S.A.
- P-118 A mathematical model for Carlavirus disease incidence on experimental soybean plots in Puerto Rico. D. M. VITERI (1), L. Gordillo (2), C. Estevez de Jensen (1). (1) University of Puerto Rico, Crop Protection Department, Mayagüez, Puerto Rico, (2) University of Puerto Rico, Department of Mathematics, Mayagüez, Puerto Rico
- P-119 Specific polyclonal antibodies prepared against recombinant coat protein of Pelargonium zonate spot virus and immunodetection. A. GULATI-SAKHUJA (1), H. Liu (1). (1) USDA-ARS, Salinas, CA, U.S.A.
- P-120 A comparison of Standard and High-fidelity PCR in the detection of *Pseudocercospora odontoglossi* from *Cattleya* orchids. R. A. CATING (1), M. A. Hoy (1), A. J. Palmateer (1). (1) University of Florida
- P-121 Assessing the detection efficiency of the different sources of primary inoculum of rice sheath blight (*Rhizoctonia solani* Kühn) in the soil at different flooding durations using mungbean seedling – based tests. N. P. CASTILLA (1), S. Savary (1). (1) International Rice Research Institute, Philippines
- P-122 First report of *Monilinia laxa* causing brown rot on peaches in Brazil. D. C. Souza (2), A. C. Fazza (1), L. A. Camargo (1), L. M. Mio (3), S. S. Angeli (1), L. AMORIM (1). (1) ESALQ-USP, Piracicaba, SP,




- Brazil, (2) Ministério da Agricultura, São Paulo, SP, Brazil, (3) UFPR, Curitiba, PR, Brazil
- P-123 Rapid assay for the on-site detection of potato pathogens. T. Oberhänsli (1), D. Altenbach (1), P. Munch (1), K. Maier (1), W. BITTERLIN (1). (1) BIOREBA AG, Reinach, Switzerland
- P-124 Investigating the threat of *Phytophthora ramorum* to Ireland: The current situation. J. BRENNAN (3), D. Cummins (3), S. Kearney (3), J. Choiseul (3), G. Cahalane (1), S. Nolan (2). (1) Forest Service, Department of Agriculture, Fisheries & Food, Dublin, Ireland, (2) Horticulture & Plant Health Division, DAFF, Maynooth, Co. Kildare, Ireland, (3) Plant Health Laboratory, Backweston Campus, Department of Agriculture, Fisheries & Food, Celbridge, Co. Kildare, Ireland
- P-125 Comparison of ELISA, PCR, and a new TaqMan real-time PCR test for *Clavibacter michiganense* subsp. *sepedonicus*. D. J. GERHARDT (1), A. Phibbs (2), A. O. Charkowski (1). (1) University of Wisconsin-Madison, Madison, WI, U.S.A., (2) Wisconsin Department of Agriculture, Trade and Consumer Protection, Madison, WI, U.S.A.
- P-126 Serological detection of *Sweet potato leaf curl virus*. D. L. GUTIERREZ (1), P. Lotrakul (2), N. Murai (1), R. A. Valverde (1). (1) Dept. of Plant Pathology and Crop Physiology, Louisiana State University Agricultural Center, Baton Rouge, LA, U.S.A., (2) Dept. of Botany, Faculty of Science, Chulalongkorn University, Bangkok, Thailand
- P-127 First detection of the cereal cyst nematode *Heterodera filipjevi* in North America. G. YAN (1), R. M. Smiley (1). (1) Oregon State University, Columbia Basin Agricultural Research Center, P.O. Box 370, Pendleton, OR, U.S.A.
- P-128 Comparison of techniques used for the detection of *Plum pox virus* when using different source material and sampling time. N. FIORE (2), C. Araya (1), A. Zamorano (2), F. Gonzalez (2), R. Mora (1), I. Rosales (1). (1) Instituto de Investigaciones Agropecuarias (INIA), Santiago de Chile, Chile, (2) Universidad de Chile, Facultad de Ciencias Agronómicas, Santiago de Chile, Chile
- P-129 Challenges in the management of plant diseases in the Northern Mariana Islands. D. NANDWANI (1), J. Tenorio (1). (1) Northern Marianas College
- P-130 Detection of *Ralstonia solanacearum* race 4 in field samples using a combination of serological and molecular assays. M. L. PARET (1), R. Kubota (1), D. M. Jenkins (1), A. M. Alvarez (1). (1) University of Hawaii at Manoa, HI, U.S.A.
- P-131 A multipathogen detection array for virus, viroid, fungal, and oomycete pathogens of solanaceous crops. K. L. PERRY (2), B. O. Agindotan (2), N. Zhang (1), C. Smart (1). (1) Cornell University, Geneva, NY, U.S.A., (2) Cornell University, Ithaca, NY, U.S.A.
- P-132 Detection and identification of *Fusarium* species in field pea roots. F. M. MATHEW (2), T. Barasubiyé (1), S. G. Markell (2), R. S. Goswami (2). (1) Agriculture and Agri-Food Canada, Ottawa, ON, Canada, (2) Dept. Plant Pathology, North Dakota State University, Fargo, ND, U.S.A.
- P-133 Efficiency of endoparasitic nematode extraction from corn roots. J. L. BEHN (1), A. E. MacGuidwin (2), T. A. Jackson (1). (1) University of Nebraska-Lincoln, Lincoln, NE, U.S.A., (2) University of Wisconsin-Madison, Madison, WI, U.S.A.
- P-134 A reliable and inexpensive method of nucleic acid extraction for the PCR-based detection of diverse plant pathogens. R. Li (2), R. MOCK (2), Q. Huang (2), J. Abad (1), J. Hartung (2), G. Kinard (2). (1) USDA-APHIS, Beltsville, MD, U.S.A., (2) USDA-ARS, Beltsville, MD, U.S.A.
- P-135 Synthetic internal control sequences to increase negative call veracity in multiplexed, quantitative PCR assays for *Phakopsora pachyrhizi*. J. S. HAUDENSHIELD (2), G. L. Hartman (1). (1) USDA-ARS, Urbana, IL, U.S.A., (2) University of Illinois, Urbana-Champaign, IL, U.S.A.
- P-136 Soybean rust incidence and the response of soybeans to fungicides in Virginia 2007. P. Phipps (1), E. STROMBERG (2), S. Rideout (3), D. Holshouser (1). (1) Virginia Polytechnic Institute & State University, Suffolk, VA, U.S.A., (2) Virginia Polytechnic Institute & State University, Blacksburg, VA, U.S.A., (3) Virginia Polytechnic Institute & State University, Painter, VA, U.S.A.
- P-137 Development of a molecular marker for specific detection of *Fusarium oxysporum* f. sp. *cubense*, a causing agent of banana wilts disease. P. CHANG (1), Y. Lin (1), J. Chang (1), E. Liu (1), C. Chao (2), J. Huang (1). (1) Department of Plant Pathology, National Chung Hsing University, Taichung City, Taiwan, Republic of China, (2) Division of Banana Cultivation and Post-harvest Physiology, Taiwan Banana Research Institute, Pingtung, Taiwan, Republic of China
- P-138 Detection and differentiation of Potato Cyst Nematode (PCN) and morphologically similar species with the NanoChip technology. Z. LIU (1), M. K. Nakhla (1), L. Levy (1). (1) USDA APHIS PPQ CPHST, Beltsville, MD, U.S.A.
- P-139 Development of real-time PCR for the detection of exotic potyviruses infecting imported plant germplasm. M. K. NAKHLA (1), K. J. Owens (1), W. Li (1), L. Levy (1). (1) USDA APHIS PPQ CPHST, Beltsville, MD, U.S.A.
- P-140 Isolation and evaluation of a new race of anthracnose on dry bean cultivars in North Dakota. R. S. LAMPPA (1), R. S. Goswami (1). (1) North Dakota State University, Dept. of Plant Pathology, Fargo, ND, U.S.A.
- P-141 Survey of huanglongbing (HLB) and citrus canker in the Rio Grande Valley. B. SALAS (1), P. Parker (1). (1) USDA APHIS, Edinburg, TX, U.S.A.
- P-142 Development of real-time PCR for the detection and identification of potato cyst nematode. M. K. NAKHLA (1), K. J. Owens (1), W. Li (1), L. Carta (3), A. Skantar (2), L. Levy (1). (1) USDA APHIS PPQ CPHST, Beltsville, MD, U.S.A., (2) USDA ARS Molecular Plant Pathology Laboratory,

- Beltsville, MD, U.S.A., (3) USDA ARS Nematology Laboratory, Beltsville, MD, U.S.A.
- P-143 Phytophthora species associated with silver maple bleeding canker in northern Nevada. S. WANG (2), L. Lyles (1), S. Garneni (2), W. J. Carlos (3), P. McKie (2). (1) Certified Arborist, Reno, NV, U.S.A., (2) Nevada Department of Agriculture, Reno, NV, U.S.A., (3) University of Nevada, Reno, NV, U.S.A.
- P-144 Nested PCR is essential for the detection of extremely low titer of *Candidatus Liberibacter asiaticus* from citrus and its vector psyllid *Diaphorina citri*. L. Benyon (1), L. Zhou (2), A. Weathersbee (2), Y. DUAN (2). (1) Dept. of Plant Pathology, University of Florida, Gainesville, FL, U.S.A., (2) USDA, ARS, USHRL, Fort Pierce, FL, U.S.A.
- P-145 Seed transmission of *Candidatus Liberibacter asiaticus* in periwinkle and dodder resulted in low bacterial titer and very mild disease in periwinkle. L. Zhou (2), Y. DUAN (2), D. Gabriel (1), T. R. Gottwald (2). (1) Dept. of Plant Pathology, University of Florida, Gainesville, FL, U.S.A., (2) USDA, ARS, USHRL, Fort Pierce, FL, U.S.A.
- P-146 A unique disease phenotype- 'yellow shoot without blotchy mottle' was associated with a low titer of *Candidatus Liberibacter asiaticus* in Florida. Y. DUAN (2), L. Zhou (2), D. Gabriel (1), A. Weathersbee (2), T. R. Gottwald (2). (1) Dept. of Plant Pathology, University of Florida, Gainesville, FL, U.S.A., (2) USDA, ARS, USHRL, Ft. Pierce, FL, U.S.A.
- P-147 First report of *Phytophthora hedraiaandra* in Pennsylvania. S. KIM (1), E. V. Nikolaeva (2), S. Park (2), S. Kang (2). (1) PA Dept. of Agriculture, Harrisburg, PA, U.S.A., (2) Penn State, University Park, PA, U.S.A.
- P-148 Use of conserved genomic regions in a PCR-based assay for the detection of members of the genus *Caulimovirus*. H. PAPPU (1), K. Druffel (1). (1) Washington State University, Pullman, WA, U.S.A.
- P-149 Physic nut diseases. N. VISARATHANONTH (1), L. Manoch (1). (1) Dept. of Plant Pathology, Kasetsart University, Bangkok, Thailand
- P-150 Application of loop-mediated isothermal amplification method (LAMP) for detection of the bacterial wilt pathogen *Ralstonia solanacearum* in environmental samples. R. KUBOTA (1), M. L. Paret (1), A. M. Alvarez (1), D. M. Jenkins (1). (1) University of Hawaii at Manoa, Honolulu, HI, U.S.A.
- P-151 Strand-specific real-time RT-PCR quantitation of Maize fine streak virus genomic and positive-sense RNAs using high temperature reverse transcription. D. K. WILLIS (2), T. L. German (1). (1) Department of Entomology, UW-Madison, Madison, WI, U.S.A., (2) USDA-ARS Vegetable Crops Reserach Unit, Department of Plant Pathology, UW-Madison, Madison, WI, U.S.A.
- Diseases of Cereal, Field, and Fiber Crops**
- P-152 Prevalence of frogeye leaf spot caused by *Cercospora sojina* in Ohio. C. CRUZ (1), A. E. Dorrance (1). (1) The Ohio State University, OARDC, Wooster, OH, U.S.A.
- P-153  Efficacy of fungicides against *Fusarium graminearum* isolates associated with soybean seedling diseases in Ohio. M. L. ELLIS (1), K. D. Broders (1), P. A. Paul (1), A. E. Dorrance (1). (1) The Ohio State University, OARDC, Wooster, OH, U.S.A.
- P-154 Virulent races of *Puccinia striiformis* identified in the United States in 2007. X. CHEN (2), A. Wan (1), K. Richardson (2). (1) Department of Plant Pathology, Washington State University, Pullman, WA, U.S.A., (2) USDA-ARS and Department of Plant Pathology, Washington State University, Pullman, WA, U.S.A.
- P-155 Effects of soybean cyst nematode on growth of pinto bean. S. POROMARTO (1), B. D. Nelson (1). (1) Dept. Plant Pathology, NDSU, Fargo, ND, U.S.A.
- P-156 Results of a survey of viruses found in peanuts in Georgia. C. NISCHWITZ (1), S. Mullis (1), R. Gitaitis (1). (1) Department of Plant Pathology, Coastal Plain Experiment Station, University of Georgia, Tifton, GA, U.S.A.
- P-157 *Bacillus* seed and boll rot of cotton: Symptoms and transmission by *Hemiptera*. A. A. BELL (1). (1) USDA-ARS, College Station, TX, U.S.A.
- P-158 Molecular characterization of Wheat Eqlid mosaic virus. M. Rastegar (1), K. IZADPANA (1), M. Masumi (1), M. Siampour (1), A. Zare (1), A. Afsharifar (1). (1) Shiraz University, Shiraz, Iran
- P-159 Widespread occurrence and molecular characterization of barley dwarf geminivirus in Iran. A. Behjatnia (1), A. Afsharifar (1), V. Tahan (1), V. Amid Motlagh (1), O. Eini Gandomani (2), A. Niazi (1), K. IZADPANA (1). (1) Shiraz University, (2) Zanjan University
- P-160 Tissue-specific colonization of sorghum caryopses by grain mold fungi. D. N. Butler (1), L. W. Noll (1), C. R. LITTLE (1). (1) Kansas State University, Manhattan, KS, U.S.A.
- P-161 Evaluating tetrazolium staining of sorghum caryopses as a screen for grain mold resistance. D. N. Butler (1), L. W. Noll (1), C. R. LITTLE (1). (1) Kansas State University, Manhattan, KS, U.S.A.
- P-162 Study of the progression of a cotton seed and boll bacterial infection resulting from vectoring of the phytopathogen by the southern green stink bug (*Nezara viridula* L.). E. G. MEDRANO (1), J. F. Esquivel (1), A. A. Bell (1). (1) USDA-ARS, College Station, TX, U.S.A.
- P-163 Frequency of *Fusarium* species associated with soybean roots in Iowa. M. M. DIAZ-ARIAS (2), L. Leandro (1), G. P. Munkvold (2). (1) Iowa State University, Dept. of Plant Pathology, Ames, IA, U.S.A., (2) Iowa State University, Seed Science Center, Ames, IA, U.S.A.

- P-164 Telia of the Asian soybean rust fungus on kudzu: Implications for overwintering in Texas. Y. JO (1), T. Isakeit (1). (1) Texas A&M University, College Station, TX, U.S.A.
- P-165 Race characterization of *Pseudomonas savastanoi* pv. *glycinea* in Illinois. S. P. SIEGEL (1), Y. F. Zhao (1), C. A. Bradley (1). (1) Department of Crop Sciences, University of Illinois, Urbana, IL, U.S.A.
- P-166 Incidence of virus infections in soybean in Illinois in 2006 and 2007. L. L. DOMIER (2), H. A. Hobbs (1), G. L. Hartman (2). (1) Department of Crop Sciences, University of Illinois, Urbana, IL, U.S.A., (2) USDA-ARS, Dept. Crop Sci., University of IL, Urbana, IL, U.S.A.
- P-167 Intraspecific group of *Rhizoctonia solani* AG 2-2 and rotation crop affect sugar beet. J. BRANTNER (1), C. Windels (1). (1) University of Minnesota, NW Res & Outreach Ctr., Crookston, MN, U.S.A.
- P-168 Correlation of ear rot incidence with insect damage in Bt corn hybrids. K. N. BRAUER (1), R. J. Wright (1), T. A. Jackson (1). (1) University of Nebraska-Lincoln, Lincoln, NE, U.S.A.
- P-169 Increased aggressiveness of *Puccinia striiformis* f. sp. *tritici* at least partially explains recent stripe rust epidemics. E. A. MILUS (3), K. Kristensen (2), M. S. Hovmoller (1). (1) University of Aarhus, Flakkebjerg, Denmark, (2) University of Aarhus, Foulum, Denmark, (3) University of Arkansas, Fayetteville, AR, U.S.A.
- P-170 Intermediate infection types on differential lines cause discrepancies in race identification of *Puccinia striiformis* f. sp. *tritici* isolates. E. A. MILUS (2), S. G. Markell (1). (1) North Dakota State University, Fargo, ND, U.S.A., (2) University of Arkansas, Fayetteville, AR, U.S.A.
- P-171 Withdrawn
- P-172 Mixed infection of *Alfalfa mosaic virus* and *Soybean mosaic virus* in soybeans results in disease synergism. M. MALAPI-NELSON (1), B. Ownley (1), K. Gwinn (1), M. Hajimorad (1). (1) Dept. of Entomology and Plant Pathology, The University of Tennessee, Knoxville, TN, U.S.A.
- P-173 Pre-emergence damping-off of soybean caused by *Fusarium solani*. B. D. NELSON (1). (1) Dept. Plant Pathology, NDSU, Fargo, ND, U.S.A.
- P-174 Quantification of *Tilletia indica* teliospores in sori of commercially harvested wheat grains. B. J. GOATES (1). (1) USDA-ARS, Aberdeen, ID, U.S.A.
- P-175 Interactive effect of arbuscular mycorrhizal fungi, soybean cyst nematode, and soil pH on iron-deficiency chlorosis and growth of soybean. M. Sun (1), S. CHEN (1), J. E. Kurle (1), J. Zhou (1). (1) University of Minnesota, St. Paul, MN, U.S.A.
- P-176 Identification and evaluation of *Fusarium* species associated with root disease of soybean in Minnesota. J. C. BIENAPFL (1), J. A. Percich (1), D. K. Malvick (1). (1) University of Minnesota, Department of Plant Pathology, St. Paul, MN, U.S.A.
- P-177 Can rotational crops, weeds, and native plants support *Fusarium virguliforme* populations in the absence of soybeans? T. M. KOLANDER (1), J. E. Kurle (1), D. K. Malvick (1). (1) University of Minnesota, Department of Plant Pathology, St. Paul, MN, U.S.A.
- P-178 Withdrawn
- P-179 Enzymatic response of cotton plants to the pathogen, *Verticillium dahliae*. J. J. TASHPULATOV (1), T. G. Gulyamova (1), D. M. Ruzieva (1), A. M. Kerbalaeva (1), S. M. Nasmetova (1), R. S. Sattarova (1), S. M. Khodjibaeva (1), R. Stipanovic (2). (1) Institute of Microbiology, Tashkent, Uzbekistan. (2) USDA-ARS, Southern Plains Agricultural Research Center, College Station, TX, U.S.A.
- P-180 Pathogenic variation in *Pyrenophora tritici-repentis* from Arkansas and evaluation of wheat genotypes for resistance to multiple races of *P. tritici-repentis*. S. ALI (1), E. Milus (2), T. B. Adhikari (1). (1) North Dakota State University, Fargo, ND, U.S.A., (2) University of Arkansas, Fayetteville, AR, U.S.A.
- P-181 Description of the infection of *Phakopsora meibomiaae* in legume hosts. B. VEGA (1), C. Estevez de Jensen (1). (1) University of Puerto Rico, Crop Protection Department, Mayagüez, Puerto Rico
- P-182 Effect of water potential on sclerotial production by *Sclerotinia sclerotiorum* in a culture medium. H. MELOUK (1). (1) USDA-ARS, ENTO & PLP, OK State University, Stillwater, OK, U.S.A.

Diseases of Fruits, Nuts, and Vegetables

- P-183 Causes and prevention of Chinese chestnut rotten fruit disease. Y. WEI (1), Q. Shang (1), L. Qin (1), S. Liu (1), Z. Liu (1). (1) Beijing University of Agriculture, Beijing, China
- P-184  A novel marafivirus from *Rubus* spp. S. SABANADZOVIC (1), N. Abou Ghanem-Sabanadzovic (1). (1) Department of Entomology and Plant Pathology, Mississippi State University, Mississippi State, MS, U.S.A.
- P-185 *Pseudocercospora angolensis*, the cause of fruit and leaf spot disease of citrus in Zimbabwe. M. C. PRETORIUS (2), P. W. Crouse (1), G. Holtz (3). (1) Centraalbureau voor Schimmelcultures, 3584 CT Utrecht, The Netherlands, (2) Citrus Research International, Nelspruit, Mpumalanga, South Africa, (3) Department of Plant Pathology, University of Stellenbosch, Matieland, South Africa
- P-186 Assessment of foliar and root diseases of banana and plantain in Georgia. D. KONÉ (1), P. Ji (1), E. G. Fonsah (1), A. S. Csinos (1). (1) University of Georgia, Tifton, GA, U.S.A.
- P-187 Tropical Race 4 of *Fusarium oxysporum* f. sp. *cubense* causing new Panama wilt epidemics in Cavendish varieties in the Philippines. A. B. MOLINA (1), E. G. Fabregar (4), V. Sinohin (1), G. Fourie (3), A. Viljoen (2). (1) Bioersity International-Philippines, Los Banos, Philippines, (2) Department of Plant Pathology, University of Stellenbosch, South Africa, (3) FABI, University of Pretoria, South Africa, (4) Lapanday Foods Corporation, Davao Philippines
- P-188 Development of black spot symptoms in fruits of Nova tangerine. M. A. RYBAK (2), B. I. Canteros (2), M. G. Cabrera (1). (1) Facultad de Ciencias

- Agrarias de la Universidad Nacional del Nordeste, Corrientes, Argentina, (2) INTA-BID 1728 OC/AR PICTO 12956 EEA INTA, Bella Vista, Corrientes, Argentina
- P-189 Seventy years of screening for resistance to grape downy mildew – without consensus. L. CADLE-DAVIDSON (1). (1) USDA-ARS, Grape Genetics Research Unit, Geneva, NY, U.S.A.
- P-190 Occurrence of copper resistance in *Xanthomonas axonopodis* pv. *citri* in Argentina. B. I. Canteros (1), M. RYBAK (1), A. Gochez (1), P. Velazquez (3), M. Rivadeneira (5), M. Mitidieri (4), S. Garran (2), L. Zequeira (1). (1) INTA, EEA Bella Vista, Ctes., Argentina, (2) INTA, EEA Concordia, Entre Rios, Argentina, (3) INTA, EEA Famailla, Tucuman, Argentina, (4) INTA, EEA San Pedro, Buenos Aires, Argentina, (5) INTA, EEA Yuto, Jujuy, Argentina
- P-191 Assessment of fruit resistance to anthracnose in mango cultivars in south Florida. T. L. TARNOWSKI (1), R. C. Ploetz (1). (1) University of Florida, Homestead, FL, U.S.A.
- P-192 Studies in sour orange and C-22 rootstocks challenged with the nematode, *Tylenchulus semipenitrans* and the fungus, *Phytophthora parasitica*. V. P. Reddy (1), M. Kunta (1), J. V. Da Graca (1), S. Nelson (2), M. SKARIA (1). (1) Texas A&M University-Kingsville Citrus Center, Weslaco, TX, U.S.A., (2) Texas A&M University-Kingsville, Kingsville, TX, U.S.A.
- P-193 Infection of pomegranate by *Alternaria* spp. causing black heart. T. MICHAILIDES (2), D. Morgan (2), M. Quist (1), H. Reyes (2). (1) Paramount Farming Company, Lost Hills, CA, U.S.A., (2) University of California-Davis, Kearney Agricultural Center, Parlier, CA, U.S.A.
- P-194 Penetration process of pathogen and comparison of stomatal structure between susceptible and resistant varieties to grapevine leaf spot. J. PARK (1), K. Han (1), Y. Han (1), S. Lee (1), S. Cheong (1). (1) Horticultural Environment Div., National Horticultural Research Institute, RDA, Suwon, Korea
- P-195 Seasonal release of ascospores by *Erysiphe necator*. M. M. MOYER (1), D. M. Gadoury (1), W. F. Wilcox (1), R. C. Seem (1). (1) Dept. of Plant Pathology & Plant-Microbe Biology, NYSAES, Cornell University, Geneva, NY, U.S.A.
- P-196 Fungal diseases on *Vaccinium meridionale* in Colombia. C. Calderón (1), C. Socha (1), P. JIMÉNEZ (1). (1) Universidad Militar Nueva Granada, Bogota D.C., Colombia
- P-197 Late winter climatic conditions influence ascospore production and release in *Venturia inaequalis*. V. PHILION (3), A. Stensvand (1), H. Eikemo (1), D. M. Gadoury (2). (1) Bioforsk Norwegian Inst of Agric & Env Res, Aas, Norway, (2) Cornell University, New York State Agricultural Experiment Station, Geneva, NY, U.S.A., (3) IRDA, Mont-Saint-Bruno, Québec, Canada
- P-198 Strawberry virus survey in the United States and Canada. R. R. MARTIN (2), I. E. Tzanetakis (1). (1) Dept. of Plant Pathology, University of Arkansas, Fayetteville, AR, U.S.A., (2) USDA-ARS Horticultural Crops Research Lab, Corvallis, OR, U.S.A.
- P-199 Evaluation of resistance to *Phytophthora megasperma* in rootstocks for species of *Prunus*. L. S. SCHMIDT (1), G. T. Browne (1). (1) USDA-ARS, Davis, CA, U.S.A.
- P-200 Responses of almond trees and rhizosphere fungi to novel pre-plant soil fumigation treatments for control of *Prunus* replant disease. G. T. BROWNE (3), L. S. Schmidt (3), B. A. Holtz (1), D. A. Doll (2), S. K. Upadhyaya (4), B. D. Lampinen (4). (1) UCCE, Madera, CA, U.S.A., (2) UCCE, Merced, CA, U.S.A., (3) USDA-ARS, Davis, CA, U.S.A., (4) University of California, Davis, CA, U.S.A.
- P-201 Evaluation of disease models for timing fungicide applications for control of anthracnose fruit rot of strawberry. S. J. MacKenzie (1), C. Moyer (1), J. Mangandi (1), T. Hasing (1), N. Proano (1), N. A. PERES (1). (1) University of Florida, Wimauma, FL, U.S.A.
- P-202 Natural co-infection of chile pepper and tall morning glory by *Verticillium dahliae* and root-knot nematode. S. SANOGO (2), S. Thomas (2), J. Scroeder (2), M. Clary (1). (1) Border Foods, In, Deming, NM, U.S.A., (2) New Mexico State University, Las Cruces, NM, U.S.A.
- P-203  Distribution of two cucurbits-infecting poleroviruses in China. Q. SHANG (1), H. Xiang (2), C. Han (2), D. Li (2), J. Yu (2). (1) Beijing University of Agriculture, China Agricultural University, Beijing, China, (2) China Agricultural University, Beijing, China
- P-204 Identification of phytoplasmas affecting greenhouse tomatoes in North America. S. Y. ELATEEK (1), M. L. Lewis Ivey (1), S. A. Miller (1). (1) Department of Plant Pathology, Ohio State University, OARDC, Wooster, OH, U.S.A.
- P-205  Big vein disease (BVD) of lettuce: Studies to measure its incidence, variation for symptom expression and role of the antioxidant system in the course of the disease. I. ROSALES (1). C. Araya (1), L. Roman (1), E. Peña (1), R. Mora (1), E. Salazar (1), A. Aljaro (1). (1) Instituto de Investigaciones Agropecuarias (Inia), Plant Breeding and Biotechnology Department, Santiago, Rm, Chile
- P-206 Grafting – A tool for managing root-knot nematodes in watermelon? J. A. THIES (2), J. J. Ariss (2), C. S. Kousik (2), R. L. Hassell (1). (1) Clemson University, Coastal Research and Education Center, Charleston, SC, U.S.A., (2) U.S. Vegetable Laboratory, USDA, ARS, Charleston, SC, U.S.A.
- P-207  Impact of Potato virus Y on long term storage of potato. R. L. GROVES (2), A. O. Charkowski (2), A. J. Bussan (2), S. M. Gray (1). (1) Cornell University, (2) University of Wisconsin

- P-208 Mature watermelon vine decline is associated with *Rhizopycnis vagum*. A. WESTPHAL (2), L. Xing (2), S. B. Goodwin (3), D. S. Egel (1). (1) Department of Botany and Plant Pathology, Purdue University, Vincennes, IN, U.S.A., (2) Department of Botany and Plant Pathology, Purdue University, West Lafayette, IN, U.S.A., (3) USDA-ARS, Department of Botany and Plant Pathology, Purdue University, West Lafayette, IN, U.S.A.
- P-209 Begomovirus infecting tomato crops in the north of Chile. I. ROSALES (3), G. Sepulveda-Chavera (2), M. Rojas-Jara (2), C. Sandoval (1). (1) Departamento de Producción Agrícola, Facultad de Ciencias Agrarias, Universidad de Talca, Talca, Chile, (2) Departamento de Recursos Ambientales, Facultad de Ciencias Agronómicas, Universidad de Tarapacá, Arica, Chile, (3) Instituto de Investigaciones Agropecuarias (Inia), Plant Breeding and Biotechnology Department, Santiago, Rm, Chile
- P-210 Watermelon vine decline in southwest Puerto Rico. C. ESTEVEZ DE JENSEN (1), J. V. Rodrigues (2), L. Polanco (1). (1) University of Puerto Rico, Crop Protection Department, Mayagüez, Puerto Rico, (2) University of Puerto Rico, Crop Protection Department, Rio Piedras, Puerto Rico
- P-211 Analysis of survey data for the incidence of white mold in snap bean. D. A. SHAH (1), H. R. Dillard (1). (1) NYSAES, Geneva, NY, U.S.A.
- P-212 Associations between *Cucumber mosaic virus* incidence and aphid dispersal activity in snap bean in New York. D. A. SHAH (1), B. A. Nault (1), H. R. Dillard (1). (1) NYSAES, Geneva, NY, U.S.A.
- P-213 Development of a rapid pathogenicity assay for *Verticillium dahliae* using early flowering lettuce. S. J. KLOSTERMAN (1), R. J. Hayes (1). (1) USDA-ARS, Salinas, CA, U.S.A.
- P-214 Big vein disease of lettuce: Relationship between symptom intensity and viral RNA accumulation. C. Araya (1), L. Roman (1), E. Peña (1), R. Mora (1), I. ROSALES (1). (1) Instituto de Investigaciones Agropecuarias (Inia), Plant Breeding and Biotechnology Department, Santiago, Chile
- P-215 Carrot cavity spot incidence and severity as affected by pigmentation and weather. M. MCDONALD (2), K. Vander Kooi (2), M. T. Tesfaendrias (2), P. Simon (1). (1) USDA, ARS and University of Wisconsin, Madison, WI, U.S.A., (2) University of Guelph, Guelph, ON, Canada
- P-216 *Cucumber mosaic virus* (CMV)-induced symptoms in bell pepper (*Capsicum annuum* L.). J. MASIRI (1), R. R. Dute (1), J. F. Murphy (1). (1) Auburn University, AL, U.S.A.
- P-217 Survey of viral diseases of tomato in the southern region of Puerto Rico. N. Crespo (1), L. I. RIVERA (1), A. L. Gonzalez (1). (1) UPR-RUM, Mayaguez, Puerto Rico, U.S.A.
- P-218 Rapid detection of *Pythium sulcatum* and *P. violae* in soil and cavity spot lesions of carrots. S. LIVINGSTON (1), M. Davis (1). (1) UC Davis, Davis, CA, U.S.A.
- P-219 Distribution and variability of a new chile pepper infecting phytoplasma. J. J. RANDALL (1), S. F. Hanson (1). (1) EPPWS, New Mexico State University, Las Cruces, NM, U.S.A.
- P-220 Development of an improved real-time PCR system for broad-spectrum detection of diverse *Didymella bryoniae* genotypes. K. LING (4), W. P. Wechter (4), B. M. Somai (3), R. R. Walcott (2), A. P. Keinath (1). (1) Coastal Research & Education Center, Clemson University, Charleston, SC, U.S.A., (2) Department of Plant Pathology, The University of Georgia, Athens, GA, U.S.A., (3) Nelson Mandela Metropolitan University, South Africa, (4) USDA-ARS, U.S. Vegetable Laboratory, Charleston, SC, U.S.A.
- P-221 Characterization of Tomato yellow blotch virus, a new tymovirus occurring in greenhouse-grown tomatoes in Minnesota. C. V. ALMEYDA-BECERRA (1), B. E. Lockhart (1). (1) University of Minnesota, U.S.A.
- P-222 Comparative analysis of infection of broccoli and cauliflower by a GFP-tagged *Verticillium dahliae* isolate. S. NJOROGGE (2), S. Park (1), S. Kang (1), K. Subbarao (2). (1) Department of Plant Pathology, Pennsylvania State University, (2) Department of Plant Pathology, University of California, Davis, CA, U.S.A.
- P-223 Response of native potatoes from the Venezuelan Andes to the infection by *Phytophthora infestans*. K. BOSCAN (1), A. Briceño (1), G. A. Fermin (1). (1) Universidad de Los Andes, Merida, Merida, Venezuela
- P-224 *Colletotrichum fragariae* is a pathogen on hosts other than strawberry. S. J. MacKenzie (1), J. C. MERTELY (1), T. E. Seijo (1), N. A. Peres (1). (1) University of Florida, Wimauma, FL, U.S.A.
- P-225 The status of powdery scab disease on potatoes in Egypt. A. TOHAMY (1). (1) Plant Pathology Research Institute, Giza, Egypt

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- P-226 Characterization of *Phytophthora* in North Carolina greenhouse ornamentals. H. A. OLSON (1), M. Benson (1). (1) North Carolina State University, Raleigh, NC, U.S.A.
- P-227 Detection and identification of an umbravirus from *Ageratina altissima*. S. SABANADZOVIC (1), N. Abou Ghanem-Sabanadzovic (1). (1) Department of Entomology and Plant Pathology, Mississippi State University, Mississippi State, MS, U.S.A.
- P-228 Water quality dynamics in irrigation runoff retention basins and its practical implications for plant health management. C. HONG (3), P. Richardson (3), S. Ghimire (3), P. Kong (3), G. Moorman (1), J. Lea-Cox (2), D. Ross (2). (1) The Penn State, (2) University of Maryland, (3) Virginia Tech
- P-229 Cultural techniques for growth and sporulation of *Pseudocercospora dendrobii* isolated from *Dendrobium* orchids. R. A. CATING (1), C. M. Stiles (1), A. J. Palmateer (1). (1) University of Florida

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- P-230 Occurrence of *Dickeya chrysanthemi* (*Erwinia chrysanthemi*) on *Vanda* orchids in Florida. R. A. CATING (1), J. C. Hong (1), A. J. Palmateer (1), C. M. Stiles (1), E. R. Dickstein (1). (1) University of Florida
- P-231 Aggressiveness of *Phytophthora cactorum* and *Phytophthora citricola* isolates on European beech and lilac. J. E. WEILAND (2), A. H. Nelson (1), G. W. Hudler (1). (1) Department of Plant Pathology and Plant-Microbe Biology, Cornell University, Ithaca, NY, U.S.A., (2) USDA ARS, Corvallis, OR, U.S.A.
- P-232 Association of *Seuratia millardetii* (Myriangiales) with a false sooty mold disorder of *Camellia* species. I. M. Gillis (1), D. A. GLAWE (2). (1) University of Washington, Seattle, WA, U.S.A., (2) Washington State Univ./Univ. Washington, Seattle, WA, U.S.A.
- P-233 The influence of phosphorus concentration on the development of Pythium root rot disease of seedling geranium. M. OMER (1), J. Locke (1), J. Frantz (1), C. Krause (1). (1) USDA-ARS
- P-234 Occurrence in the U.S. of tar spot, caused by *Diatractium cordianum*, on orange Geiger, *Cordia sebestena*. A. J. PALMATEER (1), J. M. Perez-Martinez (1), R. A. Cating (1), R. C. Ploetz (1). (1) University of Florida, Homestead, FL, U.S.A.
- P-235 Pathogenicity testing of *Agrobacterium tumefaciens* and *Rhodococcus fascians* isolates on micropropagated plants. M. L. MILLER (1), M. L. Putnam (1). (1) Oregon State University, Corvallis, OR, U.S.A.
- P-236 A new disease of *Syzygium paniculatum* (Myrtaceae). R. C. PLOETZ (1), J. M. Perez-Martinez (1). A. J. Palmateer (1). (1) University of Florida, Homestead, FL, U.S.A.
- P-237 Leaf spot on Tigergrass caused by *Exserohilum rostratum* in Florida. A. M. BRUNINGS (1), L. E. Datnoff (1), A. J. Palmateer (4), J. C. Locke (2), J. M. Frantz (2), C. R. Krause (3). (1) Department of Plant Pathology, Gainesville, FL, U.S.A., (2) USDA-ARS, Toledo, OH, U.S.A., (3) USDA-ARS, Wooster, OH, U.S.A., (4) University of Florida, Homestead, FL, U.S.A.
- P-238 A systems approach for managing *Phytophthora* diseases in production nurseries. J. L. PARKE (1), N. Grunwald (2), C. Lewis (1), V. Fieland (2). (1) Oregon State University, Corvallis, OR, U.S.A., (2) USDA-ARS Horticultural Crops Research Laboratory, Corvallis, OR, U.S.A.
- P-239 Detection of *Agrobacterium tumefaciens* in soil. E. MEEKES (2), R. Butôt (2), S. Lieten (1), B. Geurkink (1), I. Dinkla (1). (1) Bioclear, Groningen, the Netherlands, (2) Naktuinbouw, Roelofarendsveen, the Netherlands
- P-240 The pathogenicity and phylogeny of *Fusarium oxysporum* isolates on *Coreopsis verticillata* 'Moonbeam'. W. H. ELMER (3), M. M. Jimenez-Gasco (2), M. L. Daughtrey (1). (1) Cornell University, (2) Pennsylvania State University, (3) The CT Agr. Exp. Sta.
- P-241 Further characterization of the toti-like virus causing yellow leafspot of spiraea, and its occurrence in diseased aspen in Minnesota. B. E. LOCKHART (1). (1) University of Minnesota
- P-242 Condensed nucleoprotein helices containing circular ssDNA may represent a novel type of plant virus. B. E. LOCKHART (1). (1) University of Minnesota
- P-243 Identification of a previously undescribed flexivirus causing island chlorosis of hackberry in Minnesota. B. E. LOCKHART (1). (1) University of Minnesota
- P-244 An undescribed dsRNA virus from Rhododendron. S. SABANADZOVIC (1), N. Abou Ghanem-Sabanadzovic (1), D. L. Gutierrez (2), R. A. Valverde (2). (1) Department of Entomology and Plant Pathology, Mississippi State University, Mississippi State, MS, U.S.A., (2) Department of Plant Pathology and Crop Physiology, Louisiana State University AgCenter, Baton Rouge, LA, U.S.A.
- P-245 New and emerging virus threats for nursery and ornamental crops in the Pacific Northwest. H. PAPPU (2), K. Eastwell (1), K. Druffel (2). (1) Washington State University, IAREC, Prosser, WA, U.S.A., (2) Washington State University, Pullman, WA, U.S.A.
- P-246 Detection of *Puccinia pelargonii-zonalis* on greenhouse grown geraniums using a real-time PCR assay. E. A. SCOCCO (1), J. Buck (2), R. Walcott (1). (1) University of Georgia, Department of Plant Pathology, Athens, GA, U.S.A., (2) University of Georgia, Department of Plant Pathology, Griffin, GA, U.S.A.
- P-247 Impact of episodic root stress on the susceptibility of *Rhododendron* sp. and *Viburnum tinus* to *Phytophthora ramorum*. T. V. ROUBTSOVA (1), R. M. Bostock (1). (1) University of California, Davis, Dept. Plant Pathology, Davis, CA, U.S.A.
- P-248 Characterization of Verbena virus Y, a new component in the complex causing necrosis in verbena 'Taylortown Red'. I. E. TZANETAKIS (1), S. Cleveland (1), J. Kraus (1), M. L. Putnam (1), R. R. Martin (2). (1) Department of Botany and Plant Pathology, Oregon State University, Corvallis, OR, U.S.A., (2) USDA-ARS Horticultural Crops Research Lab, Corvallis, OR, U.S.A.
- P-249 Effect of nitrogen fertilization on colonization of anthurium leaves by *Xanthomonas axonopodis* pv. *dieffenbachiae*. M. Schwiertz (1), G. D. PECKHAM (2), A. M. Alvarez (2). (1) HS Mannheim University of Applied Sciences, Mannheim, Germany, (2) University of Hawaii, Honolulu, HI, U.S.A.
- P-250 Effect of nozzle type and water volume on dollar spot control in creeping bentgrass. M. M. KENNELLY (1), R. Wolf (1). (1) Kansas State University, Manhattan, KS, U.S.A.
- P-251 Seasonal activity of leaf spot pathogens of bermudagrass. M. TOMASO-PETERSON (1), J. Young (1). (1) Mississippi State University, Mississippi State, MS, U.S.A.

- P-252 Impact of temperature on virulence of *Pythium volutum* toward creeping bentgrass. J. P. KERNES (2), L. P. Tredway (1). (1) NCSU, Dept. of Plant Pathology, (2) University of Wisconsin-Madison, Dept. of Plant Pathology, Madison, WI, U.S.A.
- P-253 Alfalfa common leaf spot pathogen and its effects on related enzymatic activity of the host plant. J. Wang (1), L. ZHOU (1). (1) China Agricultural University
- P-254 Inhibition of mycelial growth of a plant pathogenic fungus by electricity. Y. JO (1), E. Kim (2), G. Jung (2), B. Kim (2). (1) Texas A&M University, College Station, TX, U.S.A., (2) University of Massachusetts, Amherst, MA, U.S.A.
- P-255 The effect of nitrogen, sulfur and fungicide applications on the severity of necrotic ring spot of Kentucky bluegrass. N. Brandt (1), A. Koski (1), N. TISSERAT (1). (1) Colorado State University
- P-256 Landscape-scale biogeography of *Sclerotinia homoeocarpa* causing turfgrass dollar spot disease across New Jersey and the New York/Philadelphia metropolitan region. L. A. BEIRN (1), B. B. Clarke (1), J. Crouch (1). (1) Rutgers University, New Brunswick, NJ, U.S.A.
- P-257 Evaluation of transgenic *Ophiosphaerella herpotricha* expressing green and red fluorescent proteins in turf-type bermudagrass. O. C. CAASI (2), N. R. Walker (2), S. M. Marek (2), T. K. Mitchell (1). (1) Ohio State University, Columbus, OH, U.S.A., (2) Oklahoma State University, Stillwater, OK, U.S.A.
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- P-258 Differences in constitutive and induced expression of two phenolic compounds in coast live oaks susceptible and resistant to infection by *Phytophthora ramorum*. A. M. NAGLE (2), M. Garbelotto (1), P. Bonello (2). (1) Dept. of Environmental Science, Policy, & Management, University of California, Berkeley, CA, U.S.A., (2) Dept. of Plant Pathology, The Ohio State University, Columbus, OH, U.S.A.
- P-259 Survival and histopathology of eastern white pine seedlings from controlled crosses infected with *Cronartium ribicola*. J. J. JACOBS (1), T. A. Burnes (1), J. A. Smith (2), C. Sweeney (3), A. J. David (4), R. A. Blanchette (1). (1) Department of Plant Pathology, University of Minnesota, St. Paul, MN, U.S.A., (2) School of Forest Resources and Conservation, University of Florida, Gainesville, FL, U.S.A., (3) U.S. Forest Service - Oconto River Seed Orchard, White Lake, WI, U.S.A., (4) University of Minnesota, North Central Research and Outreach Center, Grand Rapids, MN, U.S.A.
- P-260 Fungi associated with frequently prescribed burns of longleaf pine roots. P. SPAINE (1), W. Orosina (1), M. Sword-Sayer (1), S. Sung (1), J. Haywood (1), D. Leduc (1). (1) USDA Forest Service
- P-261 Longevity of inoculum production by *Diplodia pinea* on red pine cones. I. A. MUNCK (1), G. R. Stanosz (1). (1) Department of Plant Pathology, University of Wisconsin-Madison, WI, U.S.A.
- P-262 Distribution of *Diplodia pinea* and *D. scrobiculata* in red and jack pine forests of Minnesota. J. S. ALBERS (2), D. R. Smith (1), G. R. Stanosz (1). (1) Department of Plant Pathology, University of Wisconsin-Madison, WI, U.S.A., (2) Division of Forestry, Minnesota Department of Natural Resources, Grand Rapids, MN, U.S.A.
- P-263 Response of *Alnus tenuifolia* to inoculation with *Valsa melanodiscus*. G. R. STANOSZ (3), L. M. Trummer (5), J. K. Rohrs-Richey (1), G. C. Adams (2), J. T. Worrall (4). (1) Department of Biology and Institute of Arctic Biology, University of Alaska Fairbanks, AK, U.S.A., (2) Department of Plant Pathology, Michigan State University, East Lansing, MI, U.S.A., (3) Department of Plant Pathology, University of Wisconsin-Madison, WI, U.S.A., (4) USDA Forest Service, Forest Health Management, Gunnison, CO, U.S.A., (5) USDA Forest Service, Forest Health Protection, Anchorage, AK, U.S.A.
- P-264 Sudden aspen decline in southwest Colorado. J. J. WORRALL (1), R. A. Mask (1), T. Eager (1), L. Egeland (1), W. D. Shepperd (2). (1) USDA Forest Service, Gunnison, CO, U.S.A., (2) USDA Forest Service, Rocky Mountain Research Station (retired), Fort Collins, CO, U.S.A.
- P-265 Susceptibility of six eastern Canadian forest species to *Phytophthora ramorum*. A. Jinek (4), M. Simard (4), S. C. Brière (1), A. K. Watson (3), R. J. TWEDDELL (2), D. Rioux (4). (1) Canadian Food Inspection Agency, Ottawa, ON, Canada, (2) Centre de recherche en horticulture, Université Laval, Québec, QC, Canada, (3) Department of Plant Science, McGill University, St-Anne-de-Bellevue, QC, Canada, (4) Natural Resources Canada, Laurentian Forestry Center, Québec, QC, Canada
- P-266 New host associations and potential overwintering strategies of *Melampsora* species on poplar and willow in North America. L. L. MOUNT (1), J. A. Smith (1), R. A. Blanchette (2). (1) University of Florida, Gainesville, FL, U.S.A., (2) University of Minnesota, St. Paul, MN, U.S.A.
- P-267 Development of a real-time PCR assay for detection of the *Raffaelea* species causing Laurel wilt disease. T. J. DREADEN (2), J. A. Smith (2), A. E. Mayfield (1). (1) Florida DACS Division of Forestry, Gainesville, FL, U.S.A., (2) University of Florida, Gainesville, FL, U.S.A.
- P-268 Resistance of *Pinus contorta* and *P. sylvestris* to *Gremmeniella abietina* (European race) in Sweden. A. Bernhold (1), P. Hansson (1), D. Rioux (2), M. Simard (2), G. LAFLAMME (2). (1) Department of Forest Ecology and Management, Swedish University of Agricultural Sciences (SLU), Umeå, Sweden, (2) Natural Resources Canada, Canadian Forest Service, Laurentian Forestry Centre, Quebec (QC), Canada
- P-269 Bitternut hickory stem cankers and bark necrosis resulting from inoculations with *Ceratocystis* spp. and *Fusarium solani*. J. JUZWIK (3), L. Haugen (2), J. Park (1). (1) Dept. of Plant Pathology, University of Minnesota, St. Paul, MN, U.S.A., (2) NA State & Private Forestry, U.S. Forest Service, St. Paul, MN,

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- U.S.A., (3) Northern Research Station, U.S. Forest Service, St. Paul, MN, U.S.A.
- P-270 Incidence of bacterial wetwood in southern bottomland hardwood logs and lumber. A. D. WILSON (1). (1) USDA Forest Service, Southern Hardwoods Lab, Stoneville, MS, U.S.A.
- P-271 Population studies of a newly introduced species of *Raffaelea* causing laurel wilt disease in the southeastern United States. M. A. HUGHES (3), J. A. Smith (4), A. E. Mayfield (1), R. Ploetz (5), S. W. Fraedrich (2), T. J. Dreaden (4). (1) Florida Department of Agriculture and Consumer Services, Division of Forestry, Gainesville, FL, U.S.A., (2) USDA Forest Service, Southern Research Station, Athens, GA, U.S.A., (3) University of Florida, Department of Plant Pathology, Gainesville, FL, U.S.A., (4) University of Florida, School of Forest Resources and Conservation, Gainesville, FL, U.S.A., (5) University of Florida, Tropical Research and Education Center, Homestead, FL, U.S.A.
- P-272 Death and recovery of fire damaged fine roots in a 35-year-old longleaf pine stand. W. J. OTROSINA (1), C. H. Walkinshaw (1). (1) USDA Forest Service, Athens, GA, U.S.A.
- P-273 Decay fungi affecting historic structures in Antarctica. B. W. HELD (3), B. E. Arenz (3), J. A. Jurgens (3), R. L. Farrell (1), S. M. Duncan (2), R. A. Blanchette (3). (1) Department of Biological Sciences, University of Waikato, Hamilton, New Zealand, (2) Department of Bioproducts and Biosystems Engineering, University of Minnesota, St. Paul, MN, U.S.A., (3) Department of Plant Pathology, University of Minnesota, St. Paul, MN, U.S.A.
- P-274 Root infections of *Phytophthora ramorum* and *Phytophthora kernoviae* in UK woodlands. E. J. FICHTNER (2), D. M. Rizzo (2), S. Kirk (1), A. Whybrow (1), J. Webber (1). (1) Forest Research, Farnham, Surrey, UK, (2) UC Davis, Davis, CA, U.S.A.
- P-275 Symptoms and signs of *Stigmina lautii* on spruce needles in North Dakota. J. A. WALLA (1), K. M. Kinzer (1). (1) Department of Plant Pathology, North Dakota State University, Fargo, ND, U.S.A.
- P-276 *Stigmina lautii* appears to have replaced *Rhizosphaera kalkhoffii* on spruce in North Dakota. K. M. KINZER (1), J. A. Walla (1). (1) Department of Plant Pathology, North Dakota State University, Fargo, ND, U.S.A.
- P-277 Preventing spread of the oak wilt pathogen in an operational disease control program. J. Juzwik (4), J. O'BRIEN (2), C. Evenson (5), P. Castillo (3), G. Mahal (1). (1) Dept. of Forest Resources, University of Minnesota, St. Paul, MN, U.S.A., (2) NA State & Private Forestry, U.S. Forest Service, St. Paul, MN, U.S.A., (3) Northern Research Station, U.S. Forest Service, Mt. Pleasant, MI, U.S.A., (4) Northern Research Station, U.S. Forest Service, St. Paul, MN, U.S.A., (5) Three Rivers Park District, Plymouth, MN, U.S.A.
- P-278 Current research results of *Puccinia psidii*, the guava rust, in Hawaii. J. Y. UCHIDA (1). (1) University of Hawaii, Honolulu, HI, U.S.A.
- P-279 Historical look at aspen management and genetic improvement for Hypoxylon canker resistance. N. A. ANDERSON (2), M. E. Ostry (1). (1) USDA Forest Service, St. Paul, MN, U.S.A., (2) University of Minnesota, St. Paul, MN, U.S.A.

Systematics/Evolution/Ecology

- P-280 Fungal trunk pathogens associated with grapevine decline in Iran. H. Mohammadi (2), J. Armengol (1), Z. BANIHASHEMI (2). (1) Instituto Agroforestal Mediterraneo, Universidad Politecnica de Valencia, Valencia, Spain, (2) Department of Plant Protection, College of Agriculture, Shiraz University, Shiraz, Iran
- P-281 *Gazania* new host of *Oidiopsis taurica* in Corrientes and Resistencia gardens, in Argentina. M. G. Cabrera (1), R. E. Alvarez (1), M. A. RYBAK (2). (1) Facultad de Ciencias Agrarias, Universidad Nacional del Nordeste, Corrientes, Argentina, (2) INTA, Bella Vista, Corrientes, Argentina
- P-282 First report of *Colletotrichum acutatum* causing ripe rot of grape in China. G. Sun (2), J. Cui (2), R. Zhang (2), M. L. GLEASON (1). (1) Iowa State University, Ames, IA, U.S.A., (2) Northwest A&F University, Yangling, Shaanxi, China








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Epidemiology

Bacteria: Diseases

- P-283 Quantifying and comparing the aggressiveness of *Pantoea stewartii* isolates under different temperatures. L. LIU (1), C. C. Block (1), F. W. Nutter Jr. (1). (1) Iowa State University, Ames, IA, U.S.A.
- P-284  *Streptomyces scabies* populations in a single field are not clonal and shift from year to year. L. A. WANNER (1). (1) USDA-ARS, Beltsville, MD, U.S.A.
- P-285  How cool temperatures affect the incidence and population growth of *Erwinia amylovora* on the apple stigma. M. M. DEWDNEY (4), R. C. Seem (2), W. Kim (3), A. M. Svircev (1), H. S. Aldwinckle (2). (1) AAFC, Vineland Station, ON, Canada, (2) Cornell University, Geneva, NY, U.S.A., (3) Norgen Biotek Corp, Thorold, ON, Canada, (4) University of Florida, Lake Alfred, FL, U.S.A.
- P-286 Microscopic surveillance of fluorescently tagged O157:H7 in spinach plants. R. MITRA (2), A. C. Wayadande (2), S. Lehman (2), P. Cuesta (1), S. E. Gilliland (1), J. Fletcher (2). (1) FAPC/Dept. Animal Science, Oklahoma State University, Stillwater, OK, U.S.A., (2) National Institute of Microbial Forensics, Food and Agriculture Biosecurity, Oklahoma State University, Stillwater, OK, U.S.A.
- P-287 Withdrawn
- P-288 Burkholderia communities in soils with long-term tillage, no-tillage and successional systems. B. LIU (1), F. Louws (1). (1) Department of Plant Pathology, North Carolina State University
- P-289 Field crop residue and other potential inoculum sources for the bacterial spot pathogen in Ontario. D. A. CUPPELS (1), T. Ainsworth (1), A. Ruggi (1). (1) Agriculture and Agri-Food Canada, London, Ontario, Canada
- Field/Turf/Forestry**
- P-290  ELISA and PCR survey for *Cercospora beticola* in field soils from three Upper Midwest States of the United States. R. T. LARTEY (1), T. Caesar-TonThat (1), S. Hanson (1), R. G. Evans (1). (1) USDA/ARS
- P-291  Development of models for improved prediction of stripe rust epidemics in the U.S. Pacific Northwest. D. SHARMA-POUDYAL (1), X. Chen (2). (1) Department of Plant Pathology, Washington State University, Pullman, WA, U.S.A., (2) USDA-ARS and Department of Plant Pathology, Washington State University, Pullman, WA, U.S.A.
- P-292 *Tilletia indica*: Resiliency of allantoid sporidia and its relationship to wheat infection. G. L. PETERSON (1), D. L. Glenn (1). (1) USDA ARS NAA, Fort Detrick, MD, U.S.A.
- P-293 Integrating GPS, GIS and geostatistics for risk assessment of *Bean pod mottle virus* in Iowa. E. BYAMUKAMA (1), A. Robertson (1), F. W. Nutter Jr. (1). (1) Iowa State University, Ames, IA, U.S.A.
- P-294 Spatial and temporal progression of Tomato spotted wilt in flue-cured tobacco in North Carolina. K. Cherry (1), M. MILA (1). (1) NC State University, Raleigh, NC, U.S.A.
- P-295 Effects of environmental conditions and sunflower growth stage on Phomopsis infection and severity. S. A. PEREYRA (1), A. Fassio (1), S. Stewart (1), M. Rodriguez (1). (1) INIA - Natl Inst for Agric Research, Colonia, Uruguay
- P-296 Surveys of wheat viruses in the Texas Panhandle. F. WORKNEH (1), D. C. Jones (1), G. B. Heidel (1), J. A. Price (1), C. M. Rush (1). (1) Texas AgriLife Research, Amarillo, TX, U.S.A.
- P-297 Effect of water potentials on sclerotial germination of *Macrophomina phaseolina* and predisposition of sorghum to charcoal rot. Z. BANIHASHEMI (1), A. Goudarzi (2), (1) Shiraz University, Shiraz, Iran, (2) Student
- P-298 The effects of temperature and leaf wetness duration on the development of gray leaf spot in kikuyugrass turf. J. KERN (1), W. Uddin (1), F. Wong (2). (1) The Pennsylvania State University, (2) University of California-Riverside, Riverside, CA, U.S.A.
- P-299 Regression-based modeling of dollar spot epidemics in creeping bentgrass. D. L. SMITH (1), N. R. Walker (1). (1) Oklahoma State University
- P-300  Controlling dollar spot: Climatic conditions and the timing of fungicide applications. J. L. KOENIG (1), L. V. Madden (1), T. E. Hicks (1), M. J. Boehm (1). (1) The Ohio State University Plant Pathology Department, Columbus, OH, U.S.A.
- P-301 First report of the *Eucalyptus* pathogen *Neofusicoccum eucalyptorum* on non-*Eucalyptus* hosts and preliminary estimation of its variability in Uruguay. C. A. PEREZ (1), M. J. Wingfield (2), B. Slippers (2), N. A. Altier (3), S. Simeto (3), R. A. Blanchette (1). (1) Department of Plant Pathology, University of Minnesota, St. Paul, MN, U.S.A., (2) Forestry and Agricultural Biotechnology Institute (FABI), University of Pretoria, Pretoria, South Africa, (3) Instituto Nacional de Investigación Agropecuaria (INIA), Canelones, Uruguay
- P-302 Disease impacts in red pine managed to increase stand complexity. M. E. OSTRY (1), M. Moore (1). (1) USDA Forest Service, St. Paul, MN, U.S.A.
- Fruit/Vegetable/Ornamental**
- P-303 Occurrence of *Zucchini yellow mosaic virus* and *Cucumber green mottle mosaic virus* on cucumber (*Cucumis sativus* L.) in plastic house in Korea. J. LEE (1), D. Kim (1), Y. Ryu (1), S. Park (1), K. Choi (1), J. Yoon (1), K. Lee (2). (1) Gyeongbuk Agricultural Technology Administration, Daegu, Korea, (2) School of Applied Biosciences, Kyungpook National University, Daegu, Korea

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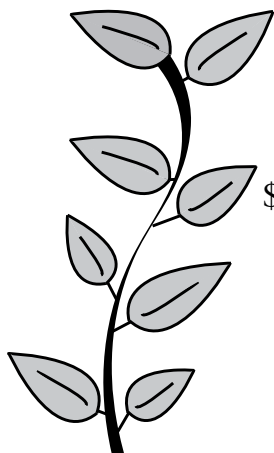
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- P-304  Biology and epidemiology of *Colletotrichum* species associated with ripe rot of grapes. K. R. WHITTEN BUXTON (1), T. B. Sutton (1). (1) North Carolina State University, Raleigh, NC, U.S.A.
- P-305 Epidemiological significance of *C. gloeosporioides* infestation of nursery plants on crown rot of strawberry. M. RAHMAN (1), F. Louws (1). (1) NC State University, Raleigh, NC, U.S.A.
- P-306 Powdery mildew of onion caused by *Leveillula taurica* and the possible epidemiological role of alternative hosts in Idaho and Oregon. R. SAMPANGI (1). (1) University of Idaho
- P-307  Reservoir hosts of *Xylella fastidiosa*, causal agent of Pierce's disease of grapevines, in North Carolina. L. E. FLOYD (1), T. B. Sutton (1). (1) North Carolina State University, Raleigh, NC, U.S.A.
- P-308 Aerial content and viability of *Monilinia fructigena* conidia in relation to brown rot development and weather factors in environmentally-benign apple production system. I. J. HOLB (1). (1) University of Debrecen, Centre of Agricultural Sciences, Debrecen, Hungary
- P-309 Dispersal of *Xanthomonas citri* subsp. *citri* bacteria downwind from harvested, infected fruit. P. E. PARKER (1), C. H. Bock (3), A. Z. Cook (1), T. R. Gottwald (2). (1) USDA-APHIS-PPQ, Edinburg, TX, U.S.A., (2) USDA-ARS-USHRL, Ft. Pierce, FL, U.S.A., (3) USDA-ARS/University of Florida, Ft. Pierce, FL, U.S.A.
- P-310 Automating the assessment of citrus canker symptoms with image analysis. A. Z. Cook (1), C. H. BOCK (3), P. E. Parker (1), T. R. Gottwald (2). (1) USDA-APHIS-PPQ, Edinburg, TX, U.S.A., (2) USDA-ARS, Ft. Pierce, FL, U.S.A., (3) USDA-ARS/University of FL, Ft. Pierce, FL, U.S.A.
- P-311 Patterns of multi-virus infections in Florida watermelon. W. W. TURECHEK (1), S. Adkins (1), C. S. Kousik (2), P. A. Stansly (3), P. D. Roberts (3). (1) USDA-ARS, Horticultural Research Lab, Fort Pierce, FL, U.S.A., (2) USDA-ARS, U.S. Vegetable Lab, Charleston, SC, U.S.A., (3) University of Florida, SWFREC, Immokalee, FL, U.S.A.
- P-312 Effect of the infection times by *Zucchini yellow mosaic virus* on the yield and growth in cucumber. S. KO (2), M. Kim (2), M. Cho (2), Y. Lee (1), H. Choi (1), G. Lim (2). (1) Plant Pathology Division, National Institute of Agricultural Science and Technology, Suwon, Korea, (2) Vegetable Experiment Station, Jeonnam Agricultural Research and Extension Services, Kurye, Jeonnam, Korea
- P-313 Geographical diversity of the grapevine pathogen *Eutypa lata* in North American vineyards. P. ROLSHAUSEN (4), K. Baumgartner (5), S. Bergemann (1), P. Fujiyoshi (5), D. Gubler (3), W. Wilcox (2). (1) Department of Biology, Middle Tennessee State University, Murfreesboro, TN, U.S.A., (2) Department of Plant Pathology, Cornell University, Geneva, NY, U.S.A., (3) Department of Plant Pathology, University of California, Davis, U.S.A., (4) Department of Plant Science, University of Connecticut, Storrs, U.S.A., (5) USDA-ARS, Davis, CA, U.S.A.
- P-314 Effects of host resistance and shading density on the disease severity of hydrangea leaf spot. Y. LI (2), M. T. Windham (1), R. N. Trigiano (1), A. S. Windham (2), S. M. Reed (3), J. M. Spiers (4), T. A. Rinehart (4). (1) Dept. of Entomology and Plant Pathology, University of Tennessee, Knoxville, TN, U.S.A., (2) Soil, Plant and Pest Center, University of Tennessee, Knoxville, TN, U.S.A., (3) USDA/ARS Floral & Nursery Plants Research Unit, McMinnville, TN, U.S.A., (4) USDA/ARS Thad Cochran Horticultural Research Laboratory, Poplarville, MS, U.S.A.
- P-315 Effect of thrips (Thysanoptera: Thripidae) damage in the severity of purple blotch disease of onion caused by *Alternaria* sp. under tropical conditions. M. FELICIANO (1), L. I. Rivera-Vargas (1), I. Cabrera (1). (1) University of Puerto Rico
- P-316 Development of *Enterobacter cloacae* on onion plants, and effect of post-harvest curing temperature on development of Enterobacter bulb decay. B. K. SCHROEDER (1), E. Thyren (1), J. L. Sires (1), L. J. du Toit (1). (1) Washington State University
- P-317 Why do arbuscular mycorrhizal fungi form hyphal platoons? G. NASIM (1), R. Bajwa (1). (1) University of the Punjab, Lahore, Pakistan
- P-318 Modeling and visualization of *Alternaria*. E. Spriggs (1), J. Schlecht (1), K. Barnard (1), B. M. PRYOR (1). (1) University of Arizona, Tucson, AZ, U.S.A.

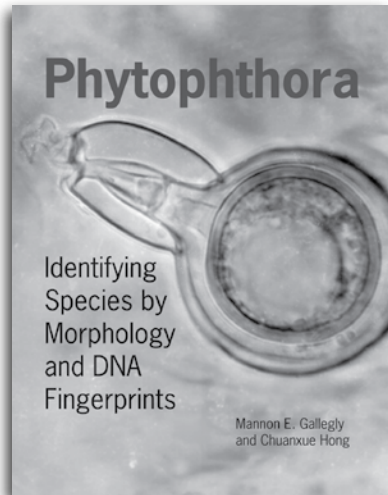
Fusarium Head Blight

- P-319  Decline in viability of *Gibberella zeae* ascospores after exposure to the solar radiation. M. NITA (1), E. De Wolf (1), S. Isard (2). (1) Kansas State University, Manhattan, KS, U.S.A., (2) Pennsylvania State University, University Park, PA, U.S.A.
- P-320 Genetic characterization of predominantly nivalenol-producing populations belonging to the *Fusarium graminearum* species complex from the Southern U.S. L. R. GALE (1), S. A. Harrison (2), E. A. Milus (3), K. O'Donnell (5), T. J. Ward (5), H. Kistler (4). (1) Dept. Plant Pathology, University of Minnesota, St. Paul, MN, U.S.A., (2) Dept. of Agronomy, Louisiana State University, Baton Rouge, LA, U.S.A., (3) Dept. of Plant Pathology, University of Arkansas, Fayetteville, AR, U.S.A., (4) USDA, ARS, Cereal Disease Laboratory, St. Paul, MN, U.S.A., (5) USDA, ARS, National Center for Agricultural Utilization Research Laboratory, Peoria, IL, U.S.A.
- P-321  Use of mechanistic simulation models to predict disease intensity of Fusarium head blight and deoxynivalenol concentration. M. NITA (1), E. De Wolf (1), L. Madden (5), P. Paul (5), G. Shaner (3), T. Adhikari (2), S. Ali (2), J. Stein (4), L. Osborn (4), S. Wegulo (6). (1) Kansas State University,

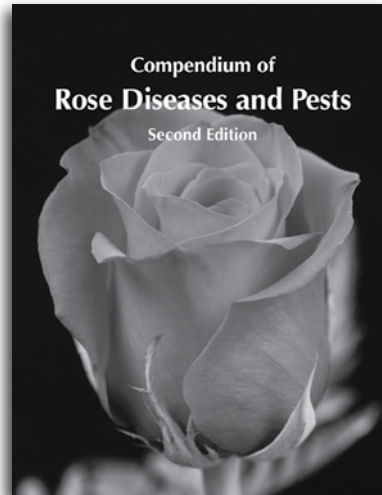
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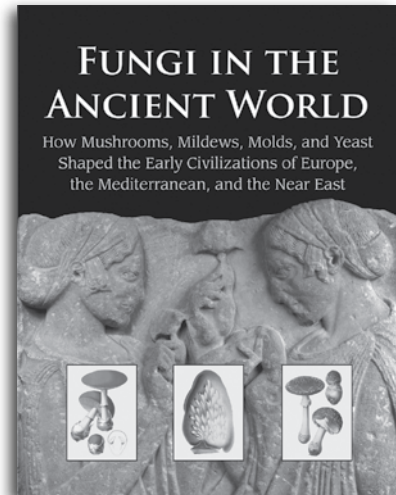
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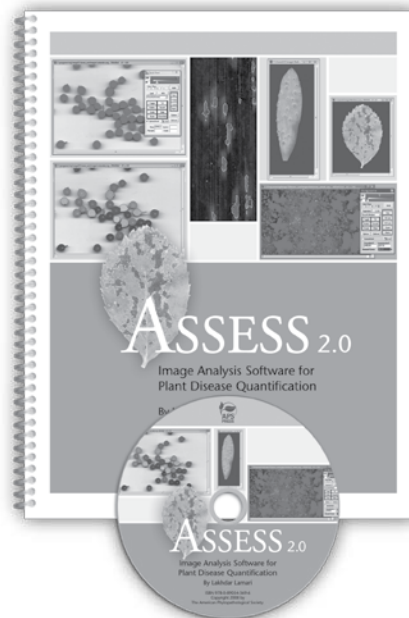
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- P-322 Fusarium head blight severity and deoxynivalenol accumulation in wheat spike tissues as a function of *Gibberella zeae* inoculum density. J. M. STEIN (1), L. Osborne (1), K. Glover (1). (1) Plant Science Dept., South Dakota State University, Brookings, SD, U.S.A.
- ### Pathogen-Vector Interactions
- P-323 Analysis of Cyclophilin involvement in CYDV-RPV transmission by *Schizaphis graminum*. C. TAMBORINDEGUY (1), S. Gray (2). (1) Cornell University, Ithaca, NY, U.S.A., (2) USDA-ARS, Cornell University, Ithaca, NY, U.S.A.
- P-324  Characteristics of whitefly transmission of Squash vein yellowing virus. S. E. WEBB (3), S. Adkins (2), C. A. Baker (1). (1) Florida Department of Agriculture and Consumer Services, Division of Plant Industry, Gainesville, FL, U.S.A., (2) USDA-ARS, U.S. Horticultural Research Laboratory, Fort Pierce, FL, U.S.A., (3) University of Florida, Entomology and Nematology, Gainesville, FL, U.S.A.
- P-325 Ophiostomataceae associated with the exotic bark beetle, *Hylurgus ligniperda* (Coleoptera: Scolytidae), in California. S. KIM (3), T. C. Harrington (3), M. L. Flint (2), D. Liu (2), J. C. Lee (2), S. J. Seybold (1). (1) Chemical Ecology of Forest Insects, Pacific Southwest Research Station, USDA Forest Service, Davis, CA, U.S.A., (2) Department of Entomology, University of California, Davis, CA, U.S.A., (3) Department of Plant Pathology, Iowa State University, Ames, IA, U.S.A.
- P-326 Characterization of a *Pantoea stewartii* TTSS gene required for persistence in its flea beetle vector. V. R. CORREA (3), D. R. Majerczak (5), E. Ammar (2), M. Merighi (5), D. L. Coplin (5), R. C. Pratt (3), M. G. Redinbaugh (4), S. A. Hogenhout (1). (1) Dept. of Entomology, OARDC/The Ohio State University, U.S.A. & Dept. of Disease and Stress Biology, John Innes Centre, Norwich, UK, (2) Dept. of Entomology, OARDC/The Ohio State University, U.S.A., (3) Dept. of Horticulture and Crop Science, OARDC/The Ohio State University, U.S.A., (4) Dept. of Plant Pathology, OARDC/The Ohio State University & USDA, ARS Corn and Soybean Research, Wooster, OH, U.S.A., (5) Dept. of Plant Pathology, OARDC/The Ohio State University, U.S.A.
- P-327 Susceptibility of peaches (cv. Chimarrita) at different ages to *Monilinia fructicola* infection. L. L. MAY-DE MIO (3), L. Amorim (1), F. Fayad (2). (1) ESALQ/ USP, Piracicaba, São Paulo, Brazil, (2) UFPR, Curitiba, Paraná, Brazil, (3) Universidade Federal do Paraná, Curitiba, Paraná, Brazil
- P-328 Assessment of the role of alfalfa in the spread of *Xylella fastidiosa* in California. M. SISTERTON (1), K. Daane (2), S. Thammiraju (2), R. Groves (3). (1) USDA-ARS, Parlier, CA, U.S.A., (2) University of California, Berkeley, CA, U.S.A., (3) University of Wisconsin, Madison, WI, U.S.A.
- P-329 Quantitative analysis of tomato spotted wilt virus (TSWV) titer in *Frankliniella occidentalis* and its association with frequency of transmission. D. ROTENBERG (3), N. K. Krishna Kumar (4) A. E. Whitfield (3), M. Montero-Astúa (3), D. K. Willis (5), T. L. German (2), D. E. Ullman (1). (1) Department of Entomology, University of California, Davis, CA, U.S.A., (2) Department of Entomology, University of Wisconsin, Madison, WI, U.S.A., (3) Department of Plant Pathology, Kansas State University, Manhattan, KS, U.S.A., (4) Indian Institute of Horticultural Research, Bangalore, India, (5) United States Department of Agriculture, Vegetable Crops Research Unit, Madison, WI, U.S.A.
- P-330 Navel orangeworm (*Amyelois transitella*) as a vector of *Aspergillus flavus* on almonds. J. D. PALUMBO (1), N. E. Mahoney (1), D. M. Light (1). (1) USDA, ARS, Albany, CA, U.S.A.
- ### Phyllosphere/Rhizosphere
- P-331 Window of opportunity for root infection leading to foliar symptoms of soybean sudden death syndrome. C. GONGORA-CANUL (1), L. Leandro (1). (1) Iowa State University
- P-332 Effect of sorghum seedlings of different genotypes, and previous crop, on soil microorganism populations. D. L. FUNNELL (1), J. F. Pedersen (1), D. B. Marx (2). (1) USDA-ARS, Lincoln, NE, U.S.A., (2) University of Nebraska, Lincoln, NE, U.S.A.
- P-333 Classification of naturally occurring endophytes of switchgrass (*Panicum virgatum*). J. D. BELL (1), K. D. Craven (1). (1) The Samuel Roberts Noble Foundation, Inc., Ardmore, OK, U.S.A.
- P-334 DNA based detection of *Epichloë/Neotyphodium* endophytes from host grasses with combined use of FTA card and genera/species specific PCR primers. K. SUGAWARA (1), C. Schardl (2), I. Okabe (1), T. Tsukiboshi (1). (1) National Institute of Livestock and Grassland Science, (2) University of Kentucky
- P-335  Consequences of tillage intensity on population densities of *Heterodera glycyines* and severity of sudden death syndrome in corn-soybean sequence. A. WESTPHAL (2), H. Mehl (2), A. Seyb (2), T. J. Vyn (1). (1) Department of Agronomy, Purdue University, West Lafayette, IN, U.S.A., (2) Department of Botany and Plant Pathology, Purdue University, West Lafayette, IN, U.S.A.
- P-336 Effects of static and variable storage temperatures on the survival and growth of *Escherichia coli* O157:H7 on prewashed bagged lettuce. M. R. SUDARSHANA (2), S. Bandyopadhyay (2), C. Rosa (2), T. V. Suslow (1), L. J. Harris (2). (1) Department of Plant Sciences, University of California, Davis, CA, U.S.A.,

- (2) Western Institute for Food Safety and Security, University of California, Davis, CA, U.S.A.
- P-337 Influence of temperature on the development of the heart rot disease of the agave *Agave tequilana* Weber Var. Azul. J. MARTINEZ-RAMIREZ (2), P. Posos-Ponce (2), F. Bernache-Pérez (1), S. Mena-Munguía (2), L. Rendón-Salcido (2), J. Vázquez-Navarro (2), J. Santillán-Santana (2). (1) Estudiante graduado Departamento de Producción Agrícola, CUCBA, Universidad de Guadalajara, Zapopan, Jalisco, México, (2) Profesor Departamento de Producción Agrícola, CUCBA, Universidad de Guadalajara, Zapopan, Jalisco, México
- P-338 What are we waiting for? Lunar crop science: The final frontier. C. H. WALKINSHAW (1). (1) USDA Forest Service, Pineville, LA, U.S.A.
- P-339 Velvetleaf sensitivity to IAA and rhizobacteria that produce IAA-like compounds. H. Brubaker (1), R. ZDOR (1). (1) Andrews University
- P-340 Role of cyclic lipopeptide surfactants in bacterial defense against protozoan predation. M. MAZZOLA (1), J. M. Raaijmakers (2). (1) USDA-ARS, (2) Wageningen University, Wageningen, the Netherlands
- P-341 Influence of carbon source amendments on population density, resource use, and antibiotic phenotypes of soilborne *Streptomyces*. D. C. SCHLATTER (4), A. Fubuh (1), K. Xiao (2), D. Hernandez (3), S. Hobbie (4), L. L. Kinkel (4). (1) Fort Valley State University, Fort Valley, GA, U.S.A., (2) USDA-ARS Cereal Disease Lab, St. Paul, MN, U.S.A., (3) University of California, Santa Cruz, Santa Cruz, CA, U.S.A., (4) University of Minnesota, St. Paul, MN, U.S.A.
- P-342 Species of *Fusarium* associated with the rhizosphere-soil of *Arundo donax* in Laredo-Texas. B. SALAS (1), D. Flores (1), P. Parker (1). (1) USDA APHIS, Edinburg, TX, U.S.A.
- P-343 Withdrawn
- P-344 The effects of grapevine rootstock cultivar and crop phenology on the culturable bacteria community of rhizosphere soil and endo-rhizosphere in a California vineyard. S. R. PARKER (1), D. A. Kluepfel (1). (1) USDA, ARS, Crops Pathology Genetics Research Unit, Davis, CA, U.S.A.
- P-345 *Fusarium* and *Rhizoctonia* species associated with root rots of dry beans in North Dakota and Minnesota. A. GAMBHIR (1), R. S. Lamppa (1), J. B. Rasmussen (1), R. S. Goswami (1). (1) North Dakota State University, Dept. of Plant Pathology, Fargo, ND, U.S.A.
- P-346 Post-fumigation horizontal and vertical recolonization of soil by *Verticillium dahliae*. B. M. WU (1), S. T. Koike (1), G. E. Vallad (2), K. V. Subbarao (1). (1) UC Davis, Salinas CA, U.S.A., (2) University of Florida, Wimauma, FL, U.S.A.
- P-347 Characterization of the rhizosphere bacterial community associated with *Prunus* replant disease in California. D. A. DOLL (2), L. S. Schmidt (1), D. A. Kluepfel (1), G. T. Browne (1). (1) USDA, ARS, Crops Pathology Genetics Research Unit, Davis, CA, U.S.A., (2) University of California Cooperative Extension, Merced, CA, U.S.A.


Phytophthoral/Pythium

- P-348 Effect of soil physical properties on incidence of corn and soybean damping-off caused by *Pythium* spp. K. D. BRODERS (1), M. Wallhead (1), G. Austin (1), P. A. Paul (1), P. E. Lipps (1), A. E. Dorrance (1). (1) The Ohio State University, OARDC, Wooster, OH, U.S.A.
- P-349 Identifying *Phytophthora* species isolated from stream baits in North Carolina. K. L. IVORS (1), M. D. Greene (1). (1) Dept. of Plant Pathology, North Carolina State University, Fletcher, NC, U.S.A.
- P-350 A survey for Phytophthora diseases in mid-Tennessee nurseries: Identification and characterization. L. SANTAMARIA (1), M. T. Mmbaga (1). (1) Tennessee State University, Otis Floyd Nursery Research Center, McMinnville, TN, U.S.A.
- P-351 Zoospore responses to environmental pH of seven *Phytophthora* species commonly isolated from irrigation reservoirs at ornamental plant nurseries. P. KONG (3), G. Moorman (1), J. Lea-Cox (2), D. Ross (2), S. Umesha (3), P. Richardson (3), C. Hong (3). (1) The Penn State, (2) University of Maryland, (3) Virginia Tech
- P-352 Characterization of seed-colonizing bacterial communities associated with the suppression of Pythium damping-off in a municipal biosolids compost. M. Chen (1), C. McGuire (1), E. B. NELSON (1). (1) Department of Plant Pathology and Plant-Microbe Biology, Cornell University, Ithaca, NY, U.S.A.
- P-353 Differential interference with fatty acid degradation and *Pythium ultimum* sporangium activation by seed exudate sugars explains biocontrol failure of *Enterobacter cloacae*. S. Windstam (1), E. B. NELSON (1). (1) Department of Plant Pathology and Plant-Microbe Biology, Cornell University, Ithaca, NY, U.S.A.
- P-354 Influence of chile pepper heat level on root and fruit infection by *Phytophthora capsici*. S. SANOGO (2), M. Tahboub (3), P. W. Bosland (2), L. Murray (1). (1) Kansas State University, (2) New Mexico State University, (3) Texas A&M
- P-355 Regional predictions of potato late blight risk in a GIS incorporating disease resistance profiles, climate change, and risk neighborhoods. A. H. SPARKS (2), R. Raymundo (1), R. Simon (1), G. Forbes (1), K. Garrett (2). (1) International Potato Center (CIP), Lima, Peru, (2) Kansas State University, Manhattan, KS, U.S.A.

- P-356 Enhancing potato system sustainability: Microclimate, early blight and late blight potential. M. OLANYA (1), C. W. Honeycutt (1), R. P. Larkin (1), T. S. Griffin (1), Z. He (1), J. Halloran (1). (1) USDA-ARS, NEPSWL, Orono, ME, U.S.A.
- P-357 Carbon competition as a mechanism of *Pythium* damping-off suppression in a municipal biosolids compost. M. Chen (1), E. B. NELSON (1). (1) Department of Plant Pathology and Plant-Microbe Biology, Cornell University, Ithaca, NY, U.S.A.
- P-358 Characterization of *Pythium* communities in soils from conventional tillage, no-tillage and successional systems. B. LIU (1), F. Louws (1). (1) Department of Plant Pathology, NCSU
- ### Population Genetics
- P-359 Genotypic diversity of *Phytophthora ramorum* in U.S. nurseries. N. J. GRUNWALD (1), M. Larsen (1), E. M. Goss (1). (1) USDA ARS
- P-360 Gene flow of *Phytophthora infestans* between organic and conventional potato field in Southern Flevoland, The Netherlands. C. HU (1), F. Govers (2), J. Ristaino (1). (1) NCSU, Raleigh, NC, U.S.A., (2) Wageningen University, Wageningen, The Netherlands
- P-361 Variation in population density and diversity of *Phytophthora* species in streams within a forest watershed. J. HWANG (1), S. W. Oak (2), S. N. Jeffers (1). (1) Dept. of ESPS, Clemson University, Clemson, SC, U.S.A., (2) USDA Forest Service, Southern Region, FHP, Asheville, NC, U.S.A.
- P-362 Population structure of wheat powdery mildew in the eastern U.S. R. PARKS (3), I. Carbone (2), J. Murphy (1), C. Cowger (3). (1) North Carolina State University Crop Science, Raleigh, NC, U.S.A., (2) North Carolina State University Plant Pathology, Raleigh, NC, U.S.A., (3) USDA-ARS, North Carolina State University Plant Pathology, Raleigh, NC, U.S.A.
- P-363 Pathogenic and genotypic analysis among Iranian isolates of *Macrophomina phaseolina*. N. ALLAGHEBANDZADEH (2), S. Rezaee (2), B. Mahmoudi (1), H. Zamani Zadeh (2). (1) Sugar Beet Seed Institute, Karaj, Tehran, Iran, (2) Science and Research Branch, Islamic Azad University, Tehran, Tehran, Iran
- P-364 Genotypic analysis among Iranian isolates of *Cercospora beticola*. M. SAFFARIAN ABBAS ZADEH (1), S. Abbasi (2), B. Mahmoudi (3), R. Farokhi Nejad (1). (1) Chamran University, Ahvaz, Khozestan, Iran, (2) Razi University, Kermanshah, Kermanshah, Iran, (3) Sugar Beet Seed Institute, Karaj, Tehran, Iran
- P-365 Development of microsatellite markers for *Fusarium oxysporum* f. sp. *lycopersici* and *Fusarium oxysporum* f. sp. *radicis-lycopersici*. C. HUANG (1), P. D. Roberts (2), L. E. Datnoff (1). (1) University of Florida, Gainesville, FL, U.S.A., (2) University of Florida, SWFREC, Immokalee, FL, U.S.A.
- P-366  Study of the genetic diversity of *Phytophthora infestans* isolates from the Northern Andean region using seven genic regions. A. ROJAS (3), R. Sierra (3), A. Gonzalez (3), A. Vargas (3), M. Cárdenas (3), A. Grajales (3), C. Salazar (3), M. Marín (1), G. Fermin Munoz (4), L. E. Lagos (2), A. Bernal (3), S. Restrepo (3). (1) Universidad Nacional, Medellín, Antioquia, Colombia, (2) Universidad de Nariño, Pasto, Nariño, Colombia, (3) Universidad de los Andes, Bogotá D.C., Colombia, (4) Universidad de los Andes, La Hechicera, Merida, Venezuela
- P-367 Molecular characterization of tomato plant-associated fungal communities after introduction of the antagonistic agent *Pythium oligandrum* in the rhizosphere. J. VALLANCE (1), J. Jany (1), F. Déniel (1), P. Rey (2). (1) Laboratoire Universitaire de Biodiversité et Ecologie Microbienne (EA3882), Plouzané, France, (2) UMR Santé Végétale, ENITAB, Bordeaux, France
- P-368 Determination of the population structure of *Rhizoctonia oryzae-sativae* from paddy rice fields in California by microsatellite analysis. P. CHAIJUCKAM (1), C. A. Greer (2), R. Davis (1). (1) Department of Plant Pathology, University of California, Davis, CA, U.S.A., (2) UC Cooperative Extension, 142 Garden Highway, Suite A, Yuba City, CA, U.S.A.
- P-369 Diversity of *Rhizoctonia* species in eastern Washington as determined by AFLP analysis. K. L. SCHROEDER (2), R. C. Flanagan (1), T. C. Paulitz (2). (1) School of Molecular Biosciences, Washington State University, Pullman, WA, U.S.A., (2) USDA-ARS, Pullman, WA, U.S.A.
- P-370 A region-wide analysis of genetic diversity in *Verticillium dahliae* infecting olive in Andalusia, southern Spain. R. M. JIMENEZ-DIAZ (3), C. Olivares (3), J. A. Navas-Cortes (1), B. B. Landa (1), M. Jimenez-Gasco (2). (1) CSIC, Cordoba, Spain, (2) The Pennsylvania State University, University Park, PA, U.S.A., (3) University of Cordoba, Cordoba, Spain
- P-371 Comparing the genetic diversity of *cucumber mosaic virus* (CMV) in snap bean and pepper: Implications for locally specific inoculums. S. NOURI (1), T. German (1), R. Groves (1). (1) University of Wisconsin-Madison, Madison, WI, U.S.A.
- P-372 Assessing population structure of the most prevalent North American races of *Puccinia graminis* f. sp. *tritici* using molecular markers. S. M. STOXEN (2), L. J. Szabo (1). (1) USDA-ARS Cereal Disease Laboratory, St. Paul, MN, U.S.A., (2) University of Minnesota, St. Paul, MN, U.S.A.
- P-373 Application of mycelial compatibility grouping in studying intra-field spread of *Sclerotinia trifoliorum* in a chickpea field. E. N. NJAMBERE (3), W. Chen (1), C. Frate (2), S. Temple (2). (1) USDA ARS, Pullman, WA, U.S.A., (2) University of California, Davis, CA, U.S.A., (3) Washington State University, Pullman, WA, U.S.A.

- P-374 Does movement of *Colletotrichum cereale* from natural grasses and cereal crops promote turfgrass anthracnose disease? J. CROUCH (1), B. B. Clarke (1), B. I. Hillman (1). (1) Rutgers University, New Brunswick, NJ, U.S.A.
- P-375 Diversity and distribution of *Ceratobasidium* and *Thanatephorus*: What orchid mycorrhizal fungi can tell us. P. BAYMAN (2), A. Porras-Alfaro (1), J. Otero (3). (1) Biology Department, University of New Mexico, (2) Departamento de Biología, Universidad de Puerto Rico - Río Piedras, (3) Departamento de Ciencias Biológicas, Universidad Nacional de Colombia-Palmira
- P-376 Detection of a pathogen shift among the pectolytic bacterial pathogens of potato in Washington state. B. K. SCHROEDER (2), M. Such (2), J. L. Sires (2), L. D. Porter (1), D. A. Johnson (2). (1) USDA, The Vegetable and Forage Crop Research Unit, Prosser, WA, U.S.A., (2) Washington State University, Pullman, WA, U.S.A.
- P-377 Development and characterization of expressed sequence tag (EST)-derived microsatellite markers for the wheat stem rust fungus, *Puccinia graminis* f. sp. *tritici*. S. ZHONG (1), Y. Leng (1), T. Friesen (2), J. Faris (2), L. Szabo (3). (1) Department of Plant Pathology, North Dakota State University, Fargo, ND, U.S.A., (2) USDA-ARS Cereal Crops Research Unit, Northern Crop Science Laboratory, Fargo, ND, U.S.A., (3) USDA-ARS, Cereal Disease Laboratory, University of Minnesota, St. Paul, MN, U.S.A.
- P-378 Sunflower rust races in Manitoba, Canada. K. RASHID (1). (1) Agriculture and Agri-Food Canada, Morden, MB, Canada
- P-379 The distribution and epidemiology of *Phragmidium violaceum* (blackberry rust) in the western United States. W. MAHAFFEE (2), K. Johnson (1), T. Neil (2), C. Finn (2). (1) Dept. Botany & Plant Pathology, Oregon State University, (2) USDA-ARS Hort. Crops Research Lab
- P-380 New polymorphic markers for analysis of genetic diversity in *Verticillium dahliae* populations. M. JIMENEZ-GASCO (1), M. Berbegal (2), J. Yanez (1), C. Garzon (4), J. Armengol (2), R. M. Jimenez-Diaz (3). (1) The Pennsylvania State University, University Park, PA, U.S.A., (2) Universidad Politécnica de Valencia, Valencia, Spain, (3) University of Cordoba, Cordoba, Spain, (4) Wooster College, Wooster, OH, U.S.A.
- P-381 Characterization and genetic relationships of *Verticillium dahliae* populations in Lebanon. I. El Rassi (1), K. Bou Azza (1), A. T. SAAD (1), L. Hanna (1), L. Geagea (2). (1) American University of Beirut, Beirut, Lebanon, (2) Universite St Esprit, Kaslik, Lebanon
- P-382 The global genetic structure of *Pyrenophora tritici-repentis* populations. T. B. ADHIKARI (1), S. Ali (1), M. Myrfield (1), R. R. Burlakoti (1). (1) North Dakota State University, Fargo, ND, U.S.A.
- P-383 Identification of powdery mildews anamorphs (Order Erysiphales) from Puerto Rico. D. Torres (1), L. I. RIVERA-VARGAS (1). (1) University of Puerto Rico

Soybean/Soybean Rust

- P-384  Host range of *Phakopsora pachyrhizi*, the causal agent of soybean rust. T. L. SLAMINKO (2), G. L. Hartman (1). (1) USDA-ARS, Urbana, IL, U.S.A., (2) University of Illinois, Urbana-Champaign, IL, U.S.A.
- P-385 Soybean root colonization by two *Fusarium* species is determined by soil moisture. P. W. MEYER (1), J. L. Colburn (1), J. E. Kurlle (1). (1) University of Minnesota, Department of Plant Pathology, St. Paul, MN, U.S.A.
- P-386 Monitoring atmospheric transport of soybean rust spores into Minnesota. D. Malvick (1), C. FLOYD (1), S. Krupa (1), J. E. Kurlle (1). (1) University of Minnesota, Department of Plant Pathology, St. Paul, MN, U.S.A.
- P-387 Quantification of damages caused by the Asian soybean rust (causal agent *Phakopsora pachyrhizi*) based in soybean (*Glycine max*) physiological components. J. SCHMIDT (2), W. C. Jesus (1), P. A. Paul (3), F. R. do Vale (2). (1) Federal University of Espirito Santo, Alegre, Espirito Santo, Brazil, (2) Federal University of Viçosa, Viçosa, Minas Gerais, Brazil, (3) The Ohio State University, Wooster, OH, U.S.A.
- P-388 Urediospore germination and infection of *Phakopsora pachyrhizi* on soybean under light. X. LI (1), X. Yang (1). (1) Iowa State University, Ames, IA, U.S.A.
- P-389 Regional predictive modeling and the occurrence of soybean rust caused by *Phakopsora pachyrhizi* in Iowa in 2007. X. LI (1), S. Navi (1), X. Yang (1). (1) Iowa State University, Ames, IA, U.S.A.
- P-390 Quantification and comparison of components of aggressiveness of isolates of *Diaporthe phaseolorum* var. *caulivora* collected in Iowa soybean fields. X. LU (1), A. M. Robertson (1), F. W. Nutter Jr. (1). (1) Iowa State University, Ames, IA, U.S.A.

Molecular/Cellular Plant–Microbe Interactions

Bacteria: Genetics/Molecular Biology/Cell Biology

- P-391 Expression profiling analyses of *Xanthomonas oryzae* pv. *oryzae* mediated by the RaxR response regulator required for AvrXa21 activity. M. SRIARIYANUN (1). (1) University of California, Davis, CA, U.S.A.
- P-392 Microscopy and microarray analyses of host response of sweet orange (*Citrus sinensis*) to *Candidatus* Liberibacter asiaticus infection. J. KIM (1), U. S. Sagaram (1), J. K. Burns (1), N. Wang (1). (1) Citrus Research and Education Center, University of Florida, Lake Alfred, FL, U.S.A.
- P-393 Characterization of the *rpoN* global regulatory gene of *Pseudomonas syringae* pv. *syringae* B728a and its impact on the plant-pathogen interaction. A. LORGE (1), D. Gross (1). (1) Texas A&M University, College Station, TX, U.S.A.
- P-394 Analysis of genes involved in biofilm formation of *Erwinia amylovora*: Implications in pathogenesis. J. M. KOCZAN (1), G. W. Sundin (1). (1) Michigan State University, East Lansing, MI, U.S.A.
- P-395 2R,3R-butanediol, a bacterial volatile produced by *Pseudomonas chlororaphis* O6 is involved in induction of systemic tolerance to drought and high salt stresses in *Arabidopsis thaliana*. S. Cho (1), B. Cho (1), K. Yang (1), Y. KIM (1). (1) Department of Plant Biotechnology and Biotechnology Research Institute, Chonnam National University, Gwangju, Korea
- P-396 Transgenic rice plants expressing an active tobacco mitogen-activated protein kinase kinase induce multiple defense responses. S. Yoo (1), J. Jeong (1), D. Yang (1), Y. Kim (1), B. Cho (1), K. YANG (1). (1) Department of Plant Biotechnology and Biotechnology Research Institute, Chonnam National University, Gwangju, Korea
- P-397 Mitogen-activated protein kinase cascade in signaling polyamine biosynthesis in tobacco. E. Jang (2), K. Min (2), S. Nam (3), S. Zhang (1), Y. Kim (2), B. Cho (2), K. YANG (2). (1) Department of Biochemistry, University of Missouri-Columbia, Columbia, MO, U.S.A., (2) Department of Plant Biotechnology and Biotechnology Research Institute, Chonnam National University, Gwangju, Korea, (3) Jeonnam Agricultural Research & Extension Services, Jeonnam, Naju, Korea
- P-398 Identification of gene-specific markers for resistance to *Erwinia amylovora* (fire blight) in *Malus* (apple) by a functional genomics approach. J. L. NORELLI (6), S. E. Gardiner (3), M. Malnoy (1), H. S. Aldwinckle (1), R. E. Farrell (4), M. B. Horner (2), J. Celton (3), A. M. Baldo (5), D. R. Bowatta (3), C. M. Carlisle (3), D. A. Lalli (6), C. L. Bassett (6), M. E. Wisniewski (6). (1) Cornell University, Geneva, NY, U.S.A., (2) HortResearch, Havelock North, New Zealand, (3) HortResearch, Palmerston North, New Zealand, (4) Pennsylvania State University, York, PA, U.S.A., (5) USDA-ARS, Geneva, NY, U.S.A., (6) USDA-ARS, Kearneysville, WV, U.S.A.
- P-399 Explaining the association between apple tree stress and resistance to the fire blight bacterium *Erwinia amylovora*. H. K. NGUGI (2), D. K. Singh (1), B. L. Lehman (2), J. W. Travis (2), T. W. McNellis (1). (1) The Department of Plant Pathology, Pennsylvania State University, University Park, PA, U.S.A., (2) The Department of Plant Pathology, Biglerville, PA, U.S.A.
- P-400 The Rcs phosphorelay system is essential for pathogenicity in *Erwinia amylovora*. D. WANG (1), Y. Zhao (1). (1) Department of Crop Sciences, University of Illinois, Urbana, IL, U.S.A.
- P-401 Molecular characterization of the PhoP/PhoQ two-component signal transduction system in *Erwinia amylovora*. S. NAKKA (1), Y. Zhao (1). (1) Department of Crop Sciences, University of Illinois, Urbana, IL, U.S.A.
- P-402 RetS is a *Pseudomonas syringae* B728a hybrid sensor kinase that controls swarming, regulates expression of the type VI secretion system, and contributes to colonization of bean leaves. A. R. RECORDS (1), D. C. Gross (1). (1) Texas A&M University, Dept. of Plant Pathology & Microbiology, College Station, TX, U.S.A.
- P-403 Genes of *Xanthomonas citri* ssp. *citri* involved in disease development. J. F. FIGUEIREDO (2), J. B. Jones (2), J. H. Graham (3), F. F. White (1). (1) Kansas State University, Manhattan, KS, U.S.A., (2) University of Florida, Gainesville, FL, U.S.A., (3) University of Florida, Lake Alfred, FL, U.S.A.
- P-404 AmbR1 and AmbR2 are two transcriptional regulators essential for the antifungal activity of *Burkholderia* sp. strain MS14. G. Gu (2), S. LU (2), N. Wang (1). (1) Citrus Research and Education Center, University of Florida, Lake Alfred, FL, U.S.A., (2) Department of Entomology and Plant Pathology, Mississippi State University, Mississippi State, MS, U.S.A.
- P-405 Arabidopsis defense pathways activated by *Bacillus mojavensis* isolate 203-7 and *B. mycoides* isolate BmJ. O. T. NEHER (1), B. J. Jacobsen (1). (1) Montana State University, Bozeman, MT, U.S.A.
- P-406 Structural dynamics of NDR1 function in mediating plant resistance to *Pseudomonas syringae*. C. P. KNEPPER (1), E. Savory (1), B. Day (1). (1) Michigan State University, East Lansing, MI, U.S.A.
- P-407 Use of a GUS reporter system to characterize the regulon controlling syringomycin production in *Pseudomonas syringae* pv. *syringae*. J. L. WILLIAMS (1), D. C. Gross (1). (1) Texas A&M University, Department of Plant Pathology and Microbiology, College Station, TX, U.S.A.
- P-408 Clp mediates signal transduction for xylanase and motility, not for biofilm formation in *Xanthomonas oryzae* pv. *oryzae*. K. JEONG (1), G. Kim (1), W. Kim (2), J. Cha (1). (1) Dept. of Plant Medicine, Chungbuk National University, Cheongju, Korea, (2) Honam Agricultural Research Institute, RDA, Iksan, Korea
- P-409 RhlB, a regulon of RpfF, determines virulence of *Xanthomonas oryzae* pv. *oryzae* at low inoculum

- density. J. CHO (1), S. Yang (1), K. Jeong (1), K. Park (1), T. Noh (2), J. Cha (1). (1) Dept. of Plant Medicine, Chungbuk National University, Cheongju, Korea, (2) Honam Agricultural Research Institute, RDA, Iksan, Korea
- P-410 PopW of *Ralstonia solanacearum*, a harpin that can induce tobacco resistance to tobacco mosaic virus. J. LI (1), H. Liu (1), J. Guo (1). (1) Department of Plant Pathology, Nanjing Agricultural University, Nanjing, Jiangsu, China
- P-411 *Pseudomonas syringae* – gene characterization and genome mapping for the next generation. M. LINDEBERG (1), A. Collmer (1), D. J. Schneider (2). (1) Cornell University, Ithaca, NY, U.S.A., (2) USDA-ARS, Ithaca, NY, U.S.A.
- P-412 The presence of a functional *waaL* gene in *Erwinia amylovora* affects virulence in pear and resistance to reactive oxygen species. M. C. BERRY (1), G. C. McGhee (1), G. W. Sundin (1). (1) Michigan State University, East Lansing, MI, U.S.A.
- P-413 Involvement of sensor kinase gene (*skrp 1122*) for biocontrol activity by *Pseudomonas synxantha* BG33R. G. FANG (1), V. C. Waldrop (1), W. P. Wechter (3), D. A. Kluepfel (2). (1) Clemson University, Clemson, SC, U.S.A., (2) USDA, ARS, CPGRU, Davis, CA, U.S.A., (3) USDA, U.S. Vegetable Laboratory, Charleston, SC, U.S.A.
- P-414 The *Pseudomonas syringae* HrpJ protein is type III secreted, required for plant pathogenesis, and controls the secretion of accessory proteins. A. D. KARPISSEK (1), Z. Fu (1), J. R. Alfano (1). (1) University of Nebraska-Lincoln, Lincoln, NE, U.S.A.
- P-415 c-diGMP regulation of *Xylella fastidiosa* Temecula gene expression and biofilm formation. V. ANCONA (2), S. Wei (2), D. Appel (2), Y. Hayakawa (1), P. J. DeFigueiredo (2). (1) Nagoya University, (2) Texas A&M University, College Station, TX, U.S.A.
- P-416 Approaches to identifying functional sites in LRR domains. A. BENT (1), L. Helft (1), W. Sun (1). (1) University of Wisconsin - Madison, Madison, WI, U.S.A.
- P-417 Proteins targets of ADP-ribosyltransferase type III effectors from *Pseudomonas syringae* and their effects on immune responses in plants. A. JOE (1), B. Jeong (1), Z. Fu (1), J. R. Alfano (1). (1) University of Nebraska-Lincoln, Lincoln, NE, U.S.A.
- P-418 Characterization of the HrpK protein of *Pseudomonas syringae* – a putative translocator. E. P. CRABILL (1), J. R. Alfano (1). (1) University of Nebraska-Lincoln, Lincoln, NE, U.S.A.
- P-419 Identification of a type three secretion inhibitor shared by *Dickeya dadantii* and *Yersinia pseudotuberculosis*. D. A. SELIMI (1), Q. Peng (2), A. O. Charkowski (1), C. Yang (2), M. Elofsson (3). (1) UW Madison, Plant Pathology, Madison, WI, U.S.A., (2) UW Milwaukee, Department of Biological Sciences, Milwaukee, WI, U.S.A., (3) Umea University, Department of Chemistry, Umea, Sweden
- P-420 Identification of effector genes in *Xanthomonas axonopodis* pv. *manihotis* using bioinformatics and a forward genetics screen. S. P. Gutierrez (2), L. M. Rodriguez (1), C. Pardo (2), D. Pinzon (2), N. P. Morales (2), S. Restrepo (2), A. J. BERNAL (2). (1) Universidad Nacional de Colombia, Bogotá, (2) Universidad de los Andes
- P-421 Dissecting the responses to the *Pectobacterium* type III secretion system in two *Nicotiana* species. H. KIM (1), A. O. Charkowski (1). (1) University of Wisconsin-Madison, Madison, WI, U.S.A.
- P-422 Defining the role of RTX toxins in virulence of *Pantoea stewartii* subsp. *stewartii*, the causal agent of Stewart's wilt of corn. M. ROPER (1), S. Von Bodman (1). (1) Department of Plant Science, University of Connecticut, Storrs, CT, U.S.A.
- P-423 Diverse bacterial plant pathogens contain homologs of the *Xanthomonas oryzae* pv. *oryzicola* *avrRxo1* effector gene. H. ISHIHARA (1), B. Zhao (2), J. E. Leach (1). (1) Colorado State University, Ft. Collins, CO, U.S.A., (2) Virginia Tech, Blacksburg, VA, U.S.A.
- P-424 Analysis of gene expression in Jupiter rice showing partial resistance to rice panicle blight caused by *Burkholderia glumae*. R. NANDAKUMAR (1), M. C. Rush (1). (1) LSU-Agcenter, Baton Rouge, LA, U.S.A.
- P-425 *Bacillus amyloliquefaciens* KPS46 produces indole-3-acetic acid in culture medium and its effect on growth promotion via increased proteome expression and indole-3-acetic acid content in soybean plant. S. PRATHUANGWONG (1), N. Buensanteai (1). (1) Department of Plant Pathology, Faculty of Agriculture, Kasetsart University, Bangkok, Thailand
- P-426 A diffusible signal factor modulates albicidin biosynthesis by *Xanthomonas albilineans*. P. C. ROTT (1), S. L. Reddy (3), G. C. Marlow (3), M. Royer (2), D. W. Gabriel (3). (1) CIRAD UMR BGPI, Montpellier, France and University of Florida, Plant Pathology Department, Gainesville, FL, U.S.A., (2) CIRAD UMR BGPI, Montpellier, France, (3) University of Florida, Plant Pathology Department, Gainesville, FL, U.S.A.
- P-427 Use of virus-induced gene silencing and surrogate model *Nicotiana benthamiana* for studying *Pseudomonas syringae* pv. *tomato*-induced chlorosis and cell death. S. UPPALAPATI (3), C. Ryu (2), K. Wang (3), C. L. Bender (1), K. S. Mysore (3). (1) Department of Entomology and Plant Pathology, Oklahoma State University, (2) Korea Research Institute of Bioscience and Biotechnology, (3) Plant Biology Division, The Samuel Roberts Noble Foundation, Ardmore, OK, U.S.A.
- P-428 Identification of genes involved in nonhost disease resistance in *Nicotiana benthamiana* and *Arabidopsis thaliana*. S. MUTHAPPA (1), K. Wang (1), C. Ryu (1), K. S. Mysore (1). (1) Plant Biology Division, The Samuel Roberts Noble Foundation, Ardmore, OK, U.S.A.

- P-429 The bacterial phytotoxin coronatine targets the Arabidopsis SCF^{COII}-JAZ protein complex. J. YAO (1), C. Mecey (1), M. Melotto (1), W. Zeng (1), S. He (1). (1) Department of Energy-Plant Research Laboratory, Michigan State University, East Lansing, MI, U.S.A.
- P-430 Validated *Ca. Liberibacter asiaticus* genomic DNA contigs assembled using a metagenomics approach. D. W. GABRIEL (1), S. L. Reddy (1). (1) University of Florida, Gainesville, FL, U.S.A.
- P-431 *Pseudomonas syringae* is equipped with diverse mechanisms to exploit choline and its analogs from plants. C. CHEN (1), A. A. Malek (2), M. J. Wargo (2), D. A. Hogan (2), G. A. Beattie (1). (2) Dartmouth Medical School, (1) Iowa State University
- P-432 Avirulence genes from *Xanthomonas axonopodis* pv. *glycines* causes specific genotype in soybean. D. ATHINUWAT (2), S. Prathuangwong (2), T. J. Burr (1). (1) Department of Plant Pathology, College of Agriculture and Life Sciences, NYSAES, Cornell University, Geneva, NY, U.S.A., (2) Department of Plant Pathology, Faculty of Agriculture, Kasetsart University, Bangkok, Thailand
- P-433 Characterization of HopA1, a *Pseudomonas syringae* type III effector protein. T. Y. TORUÑO (1), M. Guo (1), J. R. Alfano (1). (1) University of Nebraska-Lincoln, Lincoln, NE, U.S.A.
- P-434 Differential and multiple host susceptibility (S) genes control the interaction of *Xanthomonas oryzae* pv. *oryzae* with the host plant rice (*Oryza sativa* L.). T. MAHMOOD (2), G. Antony (2), B. Yang (1), F. White (2). (1) Genetics, Development and Cell Biology, Iowa State University, Ames, IA, U.S.A., (2) Plant Pathology, Kansas State University, Manhattan, KS, U.S.A.
- P-435 Two-component signal transduction systems play a major role in *Erwinia amylovora* pathogenesis and survival. Y. ZHAO (1), D. Wang (1), S. Nakka (1). (1) Department of Crop Sciences, University of Illinois, Urbana, IL, U.S.A.
- P-436  Using the universal language of Gene Ontology to annotate gene products involved in the interactions between microbes and their hosts. C. W. COLLMER (8), T. Torto-Alalibo (7), M. Lindeberg (1), M. Chibucos (7), M. Gwinn-Giglio (5), B. Biehl (6), A. Ireland (2), J. Lomax (2), D. Bird (4), A. Collmer (1), R. Dean (4), J. Glasner (6), L. Hannick (3), T. Mitchell (4), N. Perna (6), J. Setubal (7), O. White (5), B. M. Tyler (7). (1) Cornell University, Ithaca, NY, U.S.A., (2) European Bioinformatics Institute, Hinxton, UK, (3) J. Craig Venter Institute, Rockville, MD, U.S.A., (4) North Carolina State University, Raleigh, NC, U.S.A., (5) University of Maryland School of Medicine, Baltimore, MD, U.S.A., (6) University of Wisconsin, Madison, WI, U.S.A., (7) Virginia Bioinformatics Institute, Virginia Tech, Blacksburg, VA, U.S.A., (8) Wells College, Aurora, NY, U.S.A.
- P-437  Identifying differences in gene expression between Race 1 and Race 3 strains of *Ralstonia solanacearum* during bacterial wilt disease development at warm and cool temperatures. J. M. JACOBS (1), F. Meng (1), C. Allen (1). (1) University of Wisconsin, Department of Plant Pathology, 1630 Linden Dr., Madison, WI, U.S.A.
- P-438  Genomics of secondary metabolite production by *Pseudomonas fluorescens* Pf-5. J. E. LOPER (3), I. Paulsen (1), D. Bruck (3), M. Pechy-Tarr (5), M. Maurhofer (2), C. Keel (5), H. Gross (4). (1) Macquarie University, Sydney, Australia, (2) Swiss Federal Institute of Technology, Zurich, Switzerland, (3) USDA-ARS, Corvallis, OR, U.S.A., (4) University of Bonn, Bonn, Germany, (5) University of Lausanne, Lausanne, Switzerland
- P-439  The virulence mechanisms of *Xylella fastidiosa* in xylem fluid of citrus and grapevines. X. SHI (2), J. Bi (1), N. Toscano (1), D. Cooksey (2). (1) Department of Entomology, University of California, Riverside, CA, U.S.A., (2) Department of Plant Pathology and Microbiology, University of California, Riverside, CA, U.S.A.
- P-440  Differentiation of *Xylella fastidiosa* subspecies *piercei* isolates from a Texas vineyard into strain groups utilizing simple sequence repeat markers. C. P. TORRES (1), D. N. Appel (1), L. Morano (2). (1) Texas A&M University, Department of Plant Pathology and Microbiology, College Station, TX, U.S.A., (2) University of Houston-Downtown, Department of Natural Science, Houston, TX, U.S.A.
- P-441  A horizontally acquired cellulose synthase operon in *Dickeya dadantii* contributes to biofilm formation and attachment to plants. C. E. JAHN (1), J. Apodaca (2), N. T. Perna (2), A. O. Charkowski (1). (1) Department of Plant Pathology, University of Wisconsin-Madison, Madison, WI, U.S.A., (2) Genome Center of Wisconsin, University of Wisconsin-Madison, Madison, WI, U.S.A.

Biological Control

- P-442 Galactinol is a signaling component of the induced systemic resistance caused by *Pseudomonas chlororaphis* O6 root colonization. M. Kim (3), S. Cho (3), Y. Im (3), H. Hoon (2), Y. Kim (3), C. Ryu (1), K. Yang (3), G. Chung (3), B. CHO (3). (1) Systems Microbiology Research Center, KRIBB, Daejeon, South Korea, (2) Department of Agricultural Biochemistry, College of Agri. and Life Sci. Chonnam National University, Gwangju, South Korea, (3) Department of Plant Biotechnology, College of Agri. and Life Sci., Chonnam National University, Gwangju, South Korea
- P-443 Growth rate and temperature tolerance of diverse *Trichoderma koningiopsis* isolates. I. E. YATES (2), S. Chambliss-Bush (2), G. Samuels (1), D. Sparks (3). (1) USDA, ARS, Systematic Botany and Mycology Laboratory, (2) USDA, ARS, TMRU, (3) University of Georgia, Department of Horticulture

P-444 Bioinformatic analysis of TonB dependent receptors of *Pseudomonas fluorescens* Pf-5. S. L. HARTNEY (1), J. E. Loper (2). (1) Oregon State University. (2) USDA-ARS

Diseases of Vegetables

P-445 Tolerance to *Cucurbit yellow stunting disorder virus* in cucumber is not correlated with a delay in virus movement. Y. ABOU JAWDAH (1), S. Eid (1), H. Atamian (1), M. Havey (2). (1) American University of Beirut, Beirut, Lebanon, (2) University of Wisconsin, Madison, U.S.A.

Fungi: Genetics/Molecular Biology/Cell Biology

P-446 Global analyses of defence gene expression in a model tomato-*Verticillium* pathosystem. J. E. ROBB (1), C. D. Castroverde (1), A. C. Kent (1), R. N. Nazar (1). (1) University of Guelph, Guelph, Ontario, Canada

P-447 Investigating the molecular mechanisms of resistance to anthracnose fruit rot in blueberries. T. D. Miles (1), B. Day (1), A. C. SCHILDER (1). (1) Department of Plant Pathology, Michigan State University, East Lansing, MI, U.S.A.


P-448 *Fusarium verticillioides* genes necessary for biotransformation of maize allelopathic compounds. A. E. GLENN (1), C. W. Bacon (1). (1) USDA, ARS, Russell Research Center, Toxicology & Mycotoxin Research Unit, Athens, GA, U.S.A.

P-449 Regulation of pathogenesis by light in *Cercospora zea-maydis*: Identification of a photoreceptor required for infection of maize. B. H. BLUHM (1), L. D. Dunkle (2). (1) Department of Plant Pathology, University of Arkansas, Fayetteville, AR, U.S.A., (2) USDA-ARS Crop Production and Pest Control Research Unit, Purdue University, West Lafayette, IN, U.S.A.

P-450 *Phakopsora pachyrhizi* host penetration strategy. H. EDWARDS (1), M. R. Bonde (2). (1) Department of Biological Sciences, Western Illinois University, Macomb, IL, U.S.A., (2) USDA ARS FDWSRU, Frederick, MD, U.S.A.

P-451 Genome-wide analysis of carbohydrate-active enzyme coding genes in *Phytophthora infestans*: The glycoside hydrolase gene family. J. J. GRIFFITH (1), R. W. Jones (2), M. D. Ospina-Giraldo (1). (1) Lafayette College, Easton, PA, U.S.A., (2) USDA/ARS, Beltsville, MD, U.S.A.

P-452 The carbohydrate esterase gene family in *Phytophthora infestans*. L. A. Seyer (1), R. W. Jones (2), M. D. OSPINA-GIRALDO (1). (1) Lafayette College, Easton, PA, U.S.A., (2) USDA/ARS, Beltsville, MD, U.S.A.

P-453  Functional and structural characterization of cerato-platanin proteins in *Moniliophthora perniciosa*, the cause of Witches' Broom disease in cacao. O. G. CABRERA (1), G. Zaparoli (1), F. J. Medrano (1), R. A. Tiburcio (1), G. G. Lacerda (1), G. G. Pereira (1). (1) UNICAMP, Campinas, São Paulo, Brazil

P-454 Transcriptome analysis of the silicon-*Magnaporthe grisea* interaction. A. M. BRUNINGS (1), L. E. Datnoff (1), J. F. Ma (4), N. Mitani (3), Y. Nagamura (3), B. Rathinasabapathi (2). (1) Department of Plant Pathology, Gainesville, FL, U.S.A., (2) Horticulture Dept., UF, Gainesville, FL, U.S.A., (3) National Institute of Agrobiological Sciences, Tsukuba, Ibaraki, Japan, (4) Research Institute for Bioresources, Okayama University, Kurashiki, Japan

P-455 Comparative transcript profiling of *Lr1*- and *Lr34*-mediated leaf rust resistance in wheat. M. D. BOLTON (3), J. A. Kolmer (2), W. W. Xu (1), D. F. Garvin (3). (1) Supercomputing Institute, University of Minnesota, Minneapolis, MN, U.S.A., (2) USDA - ARS, Cereal Disease Laboratory, St. Paul, MN, U.S.A., (3) USDA - ARS, Plant Science Research Unit, St. Paul, MN, U.S.A.

P-456 Whole genome sequencing of the soil fungus *Rhizoctonia solani* AG-3. M. A. CUBETA (5), R. Dean (5), P. Bayman (9), S. Jabaji (4), S. Neate (6), P. Nolte (7), S. Tavantzis (8), T. Toda (1), R. Vilgalys (2), N. Fedorova (3), W. C. Nierman (3). (1) Akita University, (2) Duke University, (3) J. Craig Venter Institute, (4) McGill University, (5) North Carolina State University, (6) North Dakota State University, (7) University of Idaho, (8) University of Maine, (9) University of Puerto Rico

P-457 Isolation of chitinase gene induced during infection of *Vicia faba* by *Botrytis fabae*. N. M. ABOU-ZEID (1). (1) Plant Pathology Research Institute, ARC, Giza, Egypt

P-458 Differential gene expression during sclerotium formation and development in the southern blight pathogen *Sclerotium rolfsii*. J. E. TAKACH (1), S. E. Gold (1). (1) University of Georgia, Athens, GA, U.S.A.



P-459 Two putative hexose kinase genes, *HXK1* and *HXK2*, are involved in FB₁ biosynthesis of *Fusarium verticillioides*. H. KIM (1), C. P. Woloshuk (1). (1) Purdue University, West Lafayette, IN, U.S.A.









P-460 Differential gene expression in wheat in response to Ptr ToxA produced by *Pyrenophora tritici-repentis*. T. B. ADHIKARI (2), J. Bai (1), M. Myrfield (2), S. Ali (2), N. C. Gudmestad (2), J. B. Rasmussen (2). (1) Kansas State University, Manhattan, KS, U.S.A., (2) North Dakota State University, Fargo, ND, U.S.A.

P-461 Isolation and functional analysis of novel secreted proteins in *Magnaporthe oryzae*. P. SONGKUMARN (1), S. Chen (1), R. Venu (1), M. Gowda (1), G. Wang (1). (1) The Ohio State University, Department of Plant Pathology, Columbus, OH, U.S.A.

P-462 Investigating signaling components required for RB-mediated potato late blight resistance response by RNA interference in Agroinfiltrated leaves of *Nicotiana benthamiana*. Z. LIU (1), D. Halterman (2). (1) Department of Plant Pathology, University of Wisconsin-Madison, Madison, WI, U.S.A., (2) USDA/ARS Vegetable Crops Research, Department


- of Plant Pathology, University of Wisconsin-Madison, Madison, WI, U.S.A.
- P-463 Cellulose binding domain encoding genes in *Phytophthora*. R. JONES (1). (1) USDA-ARS, PSI, GIFVL, Beltsville, MD, U.S.A.
- P-464 Isolation and characterization of two xylanases from *Fusarium graminearum*. S. W. MEINHARDT (1), X. Dong (2), P. B. Schwarz (2). (1) Dept. of Plant Pathology, North Dakota State University, (2) Dept. of Plant Sciences, North Dakota State University
- P-465 A small family of *Phakopsora pachyrhizi* proteins localized to the cell wall. D. G. LUSTER (1), M. B. McMahon (1), M. L. Carter (1). (1) USDA ARS FDWSRU
- P-466 Analysis of gene expression of *Rhizoctonia solani*, (AG-4) to understand its virulence and biology. D. K. LAKSHMAN (2), N. W. Alkharouf (1). (1) Department of Computer and Information Sciences, Towson University, Towson, MD, U.S.A., (2) USDA-ARS, Beltsville, MD, U.S.A.
- P-467 Molecular cloning of *AvrHar* from *Pyrenophora teres* f. *teres*. Z. LIU (1), J. D. Faris (2), M. C. Edwards (2), T. L. Friesen (2). (1) Department of North Dakota State University, Fargo, ND, U.S.A., (2) USDA-ARS Cereal Crops Research Unit, Northern Crop Science Lab, Fargo, ND, U.S.A.
- P-468 Characterization of mutant phenotype and downstream targets of *ust1*, an *Aspergillus* StuA like transcription factor in *Ustilago maydis*. N. CHACKO (1), S. Gold (1). (1) University of Georgia, Athens, GA, U.S.A.
- P-469 Transcriptome of *Fusarium graminearum* during plant infection and toxin biosynthesis. M. Pasquali (2), E. Lysoe (1), K. Seong (2), J. Menke (3), H. KISTLER (2). (1) Bioforsk, As, Norway, (2) USDA ARS Cereal Disease Laboratory, St. Paul, MN, U.S.A., (3) University of Minnesota, St. Paul, MN, U.S.A.
- P-470 Microarray analysis of deoxynivalenol-induced gene expression in susceptible (cv. Morex) barley. S. A. GARDINER (1), H. Jia (1), J. Boddu (1), G. J. Muehlbauer (1). (1) University of Minnesota, St. Paul, MN, U.S.A.
- P-471 Characterization of the *RB*-mediated late blight resistance phenotype. Y. CHEN (1), D. Halterman (2), (1) University of Wisconsin-Madison, Madison, WI, U.S.A., (2) University of Wisconsin-Madison, USDA-ARS, Madison, WI, U.S.A.
- P-472 Silencing of defense-related genes reveals different mechanisms leading to race-specific resistance to *Phytophthora* in soybean. M. Y. Graham (3), M. R. Sinden (3), R. Huger (3), S. Subramanian (1), O. Yu (1), S. St. Martin (2), T. L. GRAHAM (3). (1) Donald Danforth Plant Science Center, St. Louis, MO, U.S.A., (2) Horticulture and Crop Sciences, Ohio State University, Columbus, OH, U.S.A., (3) Plant Pathology, Ohio State University, Columbus, OH, U.S.A.
- P-473 An integrative approach to characterizing the cucumber-*Pseudoperonospora cubensis* interaction. E. A. Savory (1), M. TIAN (1), C. Erhardt (1), M. Hausbeck (1), R. Hammerschmidt (1), B. Day (1). (1) Department of Plant Pathology, Michigan State University, East Lansing, MI, U.S.A.
- P-474 Ptr ToxA alters photosystem I and II homeostasis prior to accumulation of reactive oxygen species. V. A. MANNING (1), A. L. Chu (1), J. E. Steeves (1), T. J. Wolpert (1), L. M. Ciuffetti (1). (1) Oregon State University, Corvallis, OR, U.S.A.
- P-475 Genomic analysis of soybean defense response to *Sclerotinia sclerotiorum*. B. CALLA (3), D. Simmonds (1), S. J. Clough (2). (1) Agriculture and Agri-Food Ottawa, Ontario, Canada, (2) USDA-ARS and the University of Illinois, Urbana, IL, U.S.A., (3) University of Illinois, Urbana, IL, U.S.A.
- P-476 Identification of *Phytophthora infestans* genes potentially involved in potato defense suppression and potentially suppressed potato genes. M. A. HENRIQUEZ (1), F. Daayf (1). (1) Department of Plant Science, University of Manitoba, Winnipeg, MB, Canada
- P-477 Virulence and molecular characterization of Cuban isolates from *Peronospora hyoscyami* sp. *tabacina*. S. LARRAÑAGA (3), B. Muiño (2), O. Chacon (3), J. A. Crespo (3). O. Borrás (1). (1) Laboratory of Plant Functional Genomics, Center for Genetic Engineering and Biotechnology, (2) Plant Health Institute, (3) Tobacco Research Institute, Plant Pathology Department, San Antonio de los Baños, Habana, Cuba
- P-478 Characterization of *Aspergillus* section *Nigri* group-maize interactions by a green fluorescent protein-tagging approach. E. R. PALENCIA (1), A. E. Glenn (2), C. W. Bacon (2). (1) Plant Pathology Department, University of Georgia, Athens, GA, U.S.A., (2) USDA, ARS, Russell Research Center, Athens, GA, U.S.A.
- P-479 Increase in disease impacts of *Septoria tritici* on wheat in Tunisia requires developing new control strategies. W. HAMADA (1), R. Zouid (1). (1) National Agronomic Institute of Tunisia, Tunis, Tunisia
- P-480 Functional characterization of necrosis and ethylene-inducing like proteins (NLPs) from a necrotrophic fungus *Sclerotinia sclerotiorum*. D. LIBERTI (1), D. Qutob (1), M. Gijzen (1), K. F. Dobinson (1). (1) Agriculture and Agri-Food Canada, London, Ontario, Canada
- P-481 Glycoproteins secreted by germinating spores of *Magnaporthe oryzae* determine the specificity like a suppressor in rice plant-blast interaction. A. Shinjo (1), Y. Okamoto (1), A. Kadoiri (1), T. Arie (1), T. TERAOKA (1). (1) Tokyo Univ. Agric. & Techn. (TUAT), Fuchu, Tokyo, Japan
- P-482 Generation and analysis of expression sequence tags from haustoria of the wheat stripe rust fungus *Puccinia striiformis* f. sp. *tritici*. C. YIN (3), X. Chen (2), Z. Kang (1), S. Hulbert (3). (1) Northwest A&F University, Yangling, Shaanxi, China, (2) USDA-ARS and Washington State University, Pullman, WA, U.S.A., (3) Washington State University, Pullman, WA, U.S.A.

- P-483 The Hsp90 inhibitor, geldanamycin, down-regulates genes involved in thermotolerance and pathogenicity in *Magnaporthe oryzae*, the rice blast fungus. M. Mohammadi (1), K. HUANG (1), N. M. Donofrio (1). (1) University of Delaware
- P-484 Towards positional cloning of an avirulence gene from *Cronartium quercuum* f. sp. *fusiforme*. C. ANDERSON (1), J. A. Smith (1), J. M. Davis (1), T. L. Kubisiak (2), C. Nelson (2). (1) School of Forest Resources and Conservation, University of Florida, Gainesville, FL, U.S.A., (2) Southern Institute of Forest Genetics, U.S. Forest Service, Saucier, MS, U.S.A.
- P-485 *Phakopsora pachyrhizi* gene expression during infection in soybean. A. TREMBLAY (1), H. S. Beard (1), S. Li (2), B. E. Scheffler (2), B. F. Matthews (1). (1) USDA-ARS, Beltsville, MD, U.S.A., (2) USDA-ARS, Stoneville, MS, U.S.A.
- P-486 Salinity-induced predisposition to *Phytophthora capsici* in abscisic acid-deficient tomato seedlings. M. F. PYE (1), M. Dileo (1), R. Bostock (1). (1) UC Davis, Davis, CA, U.S.A.
- P-487 Comparative analysis of transcripts associated to all-stage resistance and high-temperature adult-plant resistance to stripe rust in wheat. T. E. CORAM (3), X. Huang (2), M. L. Settles (1), G. Zhan (2), X. Chen (3). (1) Department of Molecular Biosciences, Washington State University, Pullman, WA, U.S.A., (2) Department of Plant Pathology, Washington State University, Pullman WA, U.S.A., (3) USDA-ARS and Department of Plant Pathology, Washington State University, Pullman, WA, U.S.A.
- P-488 Examination of variation among isolates of *Colletotrichum* species causing chili anthracnose worldwide. C. Feng (3), S. B. WARE (3), K. Cornelius (3), B. Gabor (1), T. L. Harp (2), J. C. Correll (3). (1) Seminis, Woodland, CA, U.S.A., (2) Syngenta, Vero Beach, FL, U.S.A., (3) University of Arkansas, Fayetteville, AR, U.S.A.
- P-489 Genome size estimation of *Phymatotrichopsis omnivora*, the causal agent of cotton root rot. B. D. Joshi (1), C. Crane (1), S. Marek (2), I. Moncrief (2), S. MacMil (3), F. Najjar (3), B. Roe (3), C. A. YOUNG (1). (1) Noble Foundation, Ardmore, OK, U.S.A., (2) Oklahoma State University, Stillwater, OK, U.S.A., (3) University of Oklahoma, Norman, OK, U.S.A.
- P-490 Comparative analysis of genes involved in resting structure development in *Verticillium dahliae* and *V. albo-atrum*. S. G. AMYOTTE (2), K. F. Dobinson (1). (1) Agriculture & Agri-Food Canada, London, Ontario, Canada, (2) University of Western Ontario, London, Ontario, Canada
- P-491 Zoosporogenesis and differentiation of grapevine downy mildew pathogen *Plasmopara viticola* in host-free system. M. T. ISLAM (1), A. Tiedemann (1). (1) Division of Plant Pathology and Plant Protection, Georg-August-Universitaet Goettingen, Goettingen, Germany
- P-492 Chemotaxis of *Phytophthora* zoospores to soybean roots is altered by RNAi silencing of isoflavone biosynthesis. K. J. RIGGS (1), T. L. Graham (1). (1) Ohio State University, Plant Pathology, Columbus, OH, U.S.A.
- P-493  Towards the elimination of ergot alkaloid biosynthesis genes in *Neotyphodium coenophialum*. S. FLOREA (1), C. Machado (1), D. Panaccione (2), C. Schardl (1). (1) University of Kentucky, Department of Plant Pathology, Lexington, KY, U.S.A., (2) West Virginia University, Division of Plant and Soil Sciences, Morgantown, WV, U.S.A.
- P-494 Oxalic acid production by *Sclerotinia homoeocarpa*: The causal agent of dollar spot. R. A. BEAULIEU (2), A. Martínez Medina (1), M. J. Boehm (2). (1) CEBAS-CSIC, Murcia, Spain, (2) Dept. Plant Pathology, The Ohio State University, Columbus, OH, U.S.A.
- P-495 Identification of the avirulence gene of *Leptosphaeria maculans* corresponding to the resistance gene LepR1 in Brassica napus through sequence related amplified polymorphic (SRAP) markers. K. Ghanbarnia (2), D. G. FERNANDO (2), G. Li (2), R. Rimmer (1). (1) Agriculture and Agri-Food Canada, 107 Science Place, Saskatoon, SK, Canada, (2) Dept. of Plant Science, University of Manitoba, Winnipeg, MB, Canada
- P-496  The novel *Cladosporium fulvum* effector Ecp6 contains lysine motifs that may act as carbohydrate-binding modules. R. DE JONGE (1), M. D. Bolton (1), H. van Esse (1), B. Thomma (1). (1) Wageningen University and Research Centre, Laboratory of Phytopathology, Wageningen, The Netherlands
- P-497 Molecular identity, infectivity and differential gene expression associated with an *Olpidium*-like fungus in citrus and vegetables. S. Marepally (1), M. Kunta (1), J. V. Da Graca (1), S. Nelson (2), M. SKARIA (1). (1) Texas A&M University-Kingsville Citrus Center, Weslaco, TX, U.S.A., (2) Texas A&M University-Kingsville, Kingsville, TX, U.S.A.
- P-498 Promoter analysis of the cryparin gene from *Cryphonectria parasitica*. B. KWON (4), M. Kim (3), S. Park (4), J. Kim (4), H. Chung (4), K. Jahng (4), M. Yang (4), A. Churchill (1), N. Van Alfen (2), D. Kim (4). (1) Department of Plant Pathology, Cornell University, Ithaca, NY, U.S.A., (2) Department of Plant Pathology, University of California, Davis, CA, U.S.A., (3) Division of Forest Insect and Diseases, Korea Forest Research Institute, Seoul, Korea, (4) Institute for Molecular Biology and Genetics, Research Center of Bioactive Materials, Chonbuk National University, Jeonju, Chonbuk
- P-499 Functional analyses of three transcription factors differentially expressed during initial infection in *Magnaporthe grisea*. G. C. BERNARD (1), Y. Oh (1), J. Marui (3), T. Mitchell (2), R. A. Dean (1). (1) North Carolina State University, Raleigh, NC, U.S.A., (2) Ohio State University, Columbus, OH, U.S.A., (3) Tsukuba, Japan

- P-500 Development of a selective medium for recovery of *Monilinia fructicola* from peach fruit. A. AMIRI (1), P. M. Brannen (2), G. Schnabel (1). (1) Clemson University, Clemson, SC, U.S.A., (2) University of Georgia, Athens, GA, U.S.A.
- P-501  Global gene expression analysis of *Magnaporthe oryzae* under stress conditions. S. M. MATHIONI (2), C. Rizzo (1), N. M. Donofrio (2). (1) Agilent Technologies, (2) University of Delaware
- P-502  Allele mining for genes associated with partial resistance to *Phytophthora sojae* in soybean. H. WANG (3), S. Berry (3), S. K. St. Martin (2), L. Zhou (4), K. Krampis (4), D. Tucker (1), Y. Mao (4), I. Hoeschele (4), M. Maroof (1), B. Tyler (4), A. E. Dorrance (3). (1) Crop and Soil Environmental Science, Virginia Tech, Blacksburg, VA, U.S.A., (2) The Ohio State University, Columbus, OH, U.S.A., (3) The Ohio State University, OARDC, Wooster, OH, U.S.A., (4) Virginia Bioinformatics Institute, Virginia Tech, Blacksburg, VA, U.S.A.
- P-503  Proteomic analysis of potato late blight resistance mediated by the *RB* resistance gene. G. Barrett-Wilt (2), E. Huttlin (1), A. Harms (2), M. Sussman (1), D. HALTERMAN (3). (1) UW Biotechnology Center Mass Spectrometry/Proteomics, Department of Biochemistry, University of Wisconsin-Madison, U.S.A., (2) UW Biotechnology Center Mass Spectrometry/Proteomics, University of Wisconsin-Madison, U.S.A., (3) Vegetable Crops Research Unit, USDA-ARS, University of Wisconsin-Madison, U.S.A.
- P-504  Towards uncovering the secretion mechanism of effector proteins during biotrophic invasion by the blast fungus *Magnaporthe oryzae*. M. C. GIRALDO (2), G. Mosquera (1), B. Valent (2). (1) Bioag Sci & Pest Mgmt, Colorado State University, (2) Kansas State University, Manhattan, KS, U.S.A.
- P-505  Biosynthesis of loline alkaloids in fungal endophytes. J. R. FAULKNER (1), M. J. Spiering (1), R. B. Grossman (1), C. L. Schardl (1). (1) University of Kentucky, Lexington, KY, U.S.A.
- P-506  Application of subtractive suppression hybridization in studying differentially expressed genes between pathotypes of *Ascochyta rabiei*. D. White (2), W. CHEN (1). (1) USDA ARS, Washington State University, (2) Washington State University, Pullman, WA, U.S.A.
- P-507 Fighting fungal pathogen by secreting extracellular DNA at pea root tips. F. WEN (1), H. D. VanEtten (1), Z. Xiong (1), M. C. Hawes (1). (1) Department of Plant Science, University of Arizona, Tucson, AZ, U.S.A.
- P-508  The blast resistance gene Pi37 encodes an NBS-LRR protein and is a member of a resistance gene cluster on rice chromosome 1. F. LIN (1), S. Chen (1), Z. Que (1), L. Wang (1), X. Liu (1), Q. Pan (1). (1) College of Natural Resources & Environment, South China Agricultural University, Guangzhou, China
- P-509  The role of Glycerol metabolism in the *Arabidopsis-Colletotrichum higginsianum* interaction. B. CHANDA (2), S. Venugopal (2), S. Kulshrestha (2), Q. Gao (2), D. Navarre (1), B. Downie (2), A. Kachroo (2), L. Vaillancourt (2), P. Kachroo (2). (1) U.S. Department of Agriculture–Agricultural Research Service, Washington State University, Prosser, WA, U.S.A., (2) University of Kentucky, Lexington, KY, U.S.A.

Host Resistance


- P-510 Characterization of growth and virulence-related genes expression of *Xylella fastidiosa* affected by grape xylem sap and cell-wall constituents. D. W. CHENG (1), H. Lin (1), A. M. Walker (2), D. C. Stenger (1), E. L. Civerolo (1). (1) USDA, ARS, SJVARC, Parlier, CA, U.S.A., (2) University of California, Davis, CA, U.S.A.
- P-511 Development of the recombinant inbred line population of tropical *Japonica* Lemont crossed with *Indica* Jasmine 85. Y. JIA (1), G. Liu (2), A. McClung (1). (1) USDA-ARS Dale Bumpers National Rice Research Center, Stuttgart, AR, U.S.A., (2) University of Arkansas Rice Research and Extension Center, Stuttgart, AR, U.S.A.
- P-512 Characterization of two peanut oxalate oxidase genes and development of peanut cultivars resistant to stem rot (*Sclerotium rolfsii*). X. CHEN (3), T. Breneman (3), A. Culbreath (3), C. Holbrook (1), B. Guo (2). (1) USDA-ARS, Crop Genetics and Breeding Unit, Tifton, GA, U.S.A., (2) USDA-ARS, Crop Protection and Management Unit, Tifton, GA, U.S.A., (3) University of Georgia, Department of Plant Pathology, Tifton, GA, U.S.A.
- P-513 High-resolution genetic and physical mapping of the *Yr5* gene for resistance to stripe rust of wheat. M. WANG (1), T. Coram (3), P. Ling (3), L. Boyd (2), X. Chen (3). (1) Department of Plant Pathology, Washington State University, Pullman, WA, U.S.A., (2) John Innes Centre, Norwich, England, UK, (3) USDA-ARS and Department of Plant Pathology, Washington State University, Pullman, WA, U.S.A.
- P-514 Isolation and functional characterisation of a cluster of TIR-NBS-LRR genes linked to powdery mildew resistance in grapevine. C. Anderson (1), A. Feechan (1), A. M. Jermakow (1), A. Bouquet (3), A. Adam-Blondon (2), M. R. Thomas (1), I. B. DRY (1). (1) CSIRO Plant Industry, Glen Osmond SA, Australia, (2) INRA-URGV, Evry, France, (3) UMR BEPC, Campus Agro-M/INRA, Montpellier, France
- P-515 Soybean plants with reduced levels of oleic acid show increased resistance to multiple pathogens. D. FU (1), S. Ghabrial (1), A. Kachroo (1). (1) University of Kentucky
- P-516 Identification and characterization of interacting proteins of the *AVR-Pita* metalloprotease of *Magnaporthe oryzae* using the yeast two-hybrid system. S. LEE (2), X. Wang (3), Y. Jia (1). (1) USDA-ARS Dale Bumpers National Rice Research Center, (2) University of Arkansas, Rice Research and Extension Center, Stuttgart, AR, U.S.A., (3) Zhejiang University, Hangzhou, P. R. China

- P-517 PI424487B has at least 2 *Rps* genes that confer resistance to *Phytophthora sojae*. W. PIPATPONGPINYO (2), S. Berry (2), S. K. St. Martin (1), A. E. Dorrance (2). (1) The Ohio State University, Columbus, OH, U.S.A., (2) The Ohio State University, OARDC, Wooster, OH, U.S.A.
- P-518 Investigation of maize kernel proteins for use as markers for newly developed aflatoxin-resistant inbreds. R. L. BROWN (3), A. Menkir (1), Z. Chen (2), R. Bandyopadhyay (1), M. Luo (2), T. E. Cleveland (3). (1) International Institute of Tropical Agriculture, Ibadan, Nigeria, (2) Louisiana State University Agricultural Center, Baton Rouge, LA, U.S.A., (3) USDA-ARS-SRRC, New Orleans, LA, U.S.A.
- P-519 Identification and cloning of TSWV resistance gene(s) in cultivated peanuts and development of markers for breeding selection. X. CHEN (3), A. Culbreath (3), T. Brenneman (3), C. Holbrook (1), B. Guo (2). (1) USDA-ARS, Crop Genetics and Breeding Unit, Tifton, GA, U.S.A., (2) USDA-ARS, Crop Protection and Management Unit, Tifton, GA, U.S.A., (3) University of Georgia, Department of Plant Pathology, Tifton, GA, U.S.A.
- P-520  Sequence comparisons between *Hosta virus X* isolates and differential infection of hosta cultivars. C. DE LA TORRE (1), D. Lewandowski (1). (1) Department of Plant Pathology, The Ohio State University, Columbus, OH, U.S.A.
- P-521 Comparative structural genomics of disease resistant wild potato species comprising the tertiary genepool of cultivated potato. L. GAO (1), M. Iorizzo (2), H. S. Mann (1), D. Carputo (3), J. M. Bradeen (1). (1) University of Minnesota, Department of Plant Pathology, St. Paul, MN, U.S.A., (2) University of Minnesota, St. Paul, MN U.S.A. and University of Naples "Federico II", Portici, Italy, (3) University of Naples "Federico II", Portici, Italy

Nematodes: Genetics/Molecular Biology/Cell Biology

- P-522 Withdrawn
- P-523 Host-derived RNA interference analyses of selected parasitism genes of the root-knot nematode *Meloidogyne incognita*. B. XUE (2), G. Huang (3), T. J. Baum (1), R. S. Hussey (3), E. L. Davis (2). (1) Iowa State University, Ames, IA, U.S.A., (2) NC State University, Raleigh, NC, U.S.A., (3) University of Georgia, Athens, GA, U.S.A.
- P-524 Analyses of selected parasitism genes of the root-knot nematode *Meloidogyne incognita* in *Arabidopsis thaliana*. A. D. SMITH (2), B. Xue (2), G. Huang (3), T. J. Baum (1), R. S. Hussey (3), E. L. Davis (2). (1) Iowa State University, Ames, IA, U.S.A., (2) North Carolina State University, Raleigh, NC, U.S.A., (3) University of Georgia, Athens, GA, U.S.A.

Phyllosphere/Rhizosphere





- P-525 Transgene expression in the basidiomycete root pathogen *Armillaria mellea*. K. BAUMGARTNER (2), A. Bailey (1), G. D. Foster (1), S. Kilaru (1). (1) School of Biological Sciences, University of Bristol, England, (2) USDA-ARS, Davis, CA, U.S.A.
- P-526  The putative ion channel DMI1 localizes to the nuclear envelope and regulates nuclear calcium spiking during early symbiotic signaling. M. VENKATESHWARAN (3), B. K. Riely (5), E. Peiter (1), M. Otegui (4), J. Sun (6), A. B. Heckmann (6), G. Lounnon (3), A. Edwards (6), G. Freshour (2), M. G. Hahn (2), D. Sanders (1), G. D. Oldroyd (6), A. J. Downie (6), D. R. Cook (5), J. Ane (3). (1) Biology Department, University of York, York, United Kingdom, (2) Complex Carbohydrate Research Center, University of Georgia, Athens, GA, U.S.A., (3) Department of Agronomy, University of Wisconsin, Madison, WI, U.S.A., (4) Department of Botany, University of Wisconsin, Madison, WI, U.S.A., (5) Department of Plant Pathology, University of California, Davis, CA, U.S.A., (6) John Innes Centre, Norwich Research Park, Norwich, United Kingdom

Systematics/Evolution

- P-527 A multilocus phylogeny of the biotypes of *Moniliophthora perniciosa*, cause of witches' broom on cacao. T. L. TARNOWSKI (1), R. C. Ploetz (1). (1) University of Florida, Homestead, FL, U.S.A.

Viruses: Genetics/Molecular Biology/Cell Biology

- P-528 Protein phosphorylation and second messenger signaling at the interface between viroid infection and symptom development. R. W. HAMMOND (1). (1) USDA ARS MPPL, Beltsville, MD, U.S.A.
- P-529 Viral host factor MPB2C plays a role in cortical microtubular assemblies, stomata patterning and tobamovirus infectivity. P. Ruggenthaler (1), D. Fichtenbauer (1), E. WAIGMANN (1). (1) Max F. Perutz Laboratories, Medical University of Vienna, Vienna, Austria
- P-530 Protein interaction and localization maps for plant-adapted rhabdoviruses. K. MARTIN (2), A. Bandyopadhyay (2), J. Wigginton (2), R. Dietzgen (1), M. Goodin (2). (1) Department of Primary Industries and Fisheries 80 Ann St, Brisbane, Queensland, Australia, (2) University of Kentucky, Lexington, KY, U.S.A.
- P-531 Detection of *Cucurbit yellow stunting disorder virus* (CYSDV) in cucurbit leaves using sap extracts and real-time, quantitative polymerase chain reaction (qPCR). L. C. Papayiannis (1), S. C. Hunter (2), J. K. BROWN (2). (1) Agricultural Research Institute, Nicosia, Cyprus, (2) Department of Plant Sciences, University of Arizona, Tucson, AZ, U.S.A.
- P-532 Effect of mutations in HC-Pro of Soybean mosaic virus on symptom expression in soybean and the

- ability to induce disease synergism in mixed infection with Alfalfa mosaic virus. M. HAJIMORAD (2), A. Eggenberger (3), M. Malapi-Nelson (1), J. Hill (3). (1) Dept. of Entomology and Plant Pathology, The University of Tennessee, Knoxville, TN, U.S.A., (2) Dept. of Plant Pathology and Entomology, The University of Tennessee, Knoxville, TN, U.S.A., (3) Dept. of Plant Pathology, Iowa State University, Ames, IA, U.S.A.
- P-533 Wheat virus resistance via interference RNA. L. F. CRUZ (2), J. P. Fellers (3), H. N. Trick (1). (1) Department of Plant Pathology, Kansas State University, Manhattan, KS, U.S.A., (2) Kansas State University Manhattan, KS, U.S.A., (3) USDA-ARS Plant Science and Entomology Research Unit, Dept. of Plant Pathology, Kansas State University, Manhattan, KS, U.S.A.
- P-534 CAPS markers in an eIF4E gene are linked to *Zucchini yellow mosaic virus* resistant locus in watermelon. K. LING (3), K. Harris (3), J. D. Meyer (1), A. Levi (3), N. Guner (2), T. C. Wehner (2), M. J. Havey (4). (1) Department of Horticulture, University of Wisconsin, Madison, WI, U.S.A., (2) Department of Horticultural Science, North Carolina State University, Raleigh, NC, U.S.A., (3) USDA-ARS, U.S. Vegetable Laboratory, Charleston, SC, U.S.A., (4) USDA-ARS, Vegetable Crops Unit, Madison, WI, U.S.A.
- P-535 Studies on *Dulcamara mottle virus* infectious clone and chimeric genomes with *Turnip yellow mosaic virus*. I. E. TZANETAKIS (2), R. R. Martin (3), T. W. Dreher (1). (1) Dept. of Microbiology, Oregon State University, Corvallis, OR, U.S.A., (2) Dept. of Plant Pathology, University of Arkansas, Fayetteville, AR, U.S.A., (3) USDA-ARS Horticultural Crops Research Laboratory, Corvallis, OR, U.S.A.
- P-536 Withdrawn
- P-537  In planta expression of a soluble recombinant form of the GN glycoprotein (GN-S) of *Tomato spotted wilt virus* (TSWV) and assessment of its interaction with western flower thrips (WFT) gut. I. E. BADILLO-VARGAS (1). (1) University of Wisconsin, Madison, WI, U.S.A.
- P-538  A new and distinct species in the genus *Caulimovirus* exists as an endogenous plant pararetroviral sequence in its host, *Dahlia variabilis*. V. Pahalawatta (1), K. Druffel (1), H. PAPPU (1). (1) Washington State University, Pullman, WA, U.S.A.
- P-539 A new PVY strain from Idaho: An NTN recombinant which causes no veinal necrosis in tobacco. X. HU (1), T. Meacham (1), L. Ewing (1), A. V. Karasev (1). (1) University of Idaho, Moscow, ID, U.S.A.
- P-540  Phloem limitation of potato leafroll virus is an asset not a liability. K. PETER (1), P. Palukaitis (3), F. Gildow (2), S. Gray (4). (1) Cornell University, Ithaca, NY, U.S.A., (2) Pennsylvania State University, (3) Scottish Crop Research Institute, (4) USDA, ARS, Ithaca, NY, U.S.A.
- P-541  Construction of a virus-induced gene silencing (VIGS) vector for cotton using *Cotton leaf crumple virus* and a fragment of the cotton phytoene desaturase gene. A. M. IDRIS (2), B. Ktenz (3), J. R. Tuttle (1), H. Jeske (3), D. Robertson (1), J. K. Brown (2). (1) Department of Plant Biology, North Carolina University, NC, U.S.A., (2) Department of Plant Sciences, University of Arizona, Tucson, AZ, U.S.A., (3) Universitaet Stuttgart, Biologisches Institut, Stuttgart, Germany
- P-542 Resistance to curly top viruses through virus induced gene silencing. W. M. WINTERMANTEL (1), L. L. Hladky (1). (1) USDA-ARS, Salinas, CA, U.S.A.
- P-542.2 Development of a plant expression vector based on cucumber mosaic virus with truncated 3a protein. M. FUJIKI (1), J. Kaczmarczyk (1), S. Rabindran (1), V. Yusibov (1). (1) Fraunhofer U.S.A. Center for Molecular Biotechnology, Newark, DE, U.S.A.

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Plant Disease Management

Biocontrol

- P-543 Plant growth promotion and biological control of *Sclerotinia minor*, the causal agent of lettuce basal drop, by endophytic actinomycetes under UAE tunnel-house conditions. K. EL-TARABILY (1). (1) Department of Biology, Faculty of Science, United Arab Emirates University, Al-Ain, United Arab Emirates
- P-544 Biological control of wilt disease of tomato caused by *Fusarium oxysporum* f. sp. *lycopersici* by endophytic ACC-deaminase producing actinomycetes in the United Arab Emirates. K. EL-TARABILY (1), F. McKenna (2). (1) Department of Biology, Faculty of Science, United Arab Emirates University, Al-Ain, United Arab Emirates, (2) Natural Science Center Inc., 568 Duncan Farm Road, Steele, AL, U.S.A.
- P-545  Inoculation by antagonistic bacteria of slow-filtration unit for soilless cultures: Consequences on microbial communities colonizing the nutrient solutions. D. Renault (3), F. Deniel (3), S. Maurier (3), J. Godon (1), G. Barbier (3), P. REY (2). (1) INRA, Laboratoire de Biotechnologie de l'Environnement, Narbonne, France, (2) INRA, UMR 1065 Santé Végétale, Université de Bordeaux, ENITAB, Gradignan, France, (3) Laboratoire de Biodiversité et Ecologie Microbienne, ESMISAB, Université de Bretagne Occidentale, Plouzané, France
- P-546 Screen of antagonistic bacteria against *Ralstonia solanacearum*. Q. XUE (1), J. Guo (1). (1) Plant Protection, Nanjing, Jiangsu, China
- P-547 Biological control of bacterial spot and anthracnose of pepper by using *Bacillus megaterium* 22-5. C. YEON (1), H. Kim (1). (1) Dept. of Plant Medicine, Chungbuk National University, Cheongju, Chungbuk, Korea
- P-548 Changes in soybean proteome associated with growth promotion by seed treatment with *Bacillus amyloliquefaciens* KPS46. N. BUENSANTEAI (1), S. Prathuangwong (1), G. Y. Yuen (2). (1) Kasetsart University, Chatuchack, Bangkok, Thailand, (2) University of Nebraska - Lincoln, Lincoln, NE, U.S.A.
- P-549 Biological control of peach leaf curl with *Bacillus subtilis*. J. A. TRAQUAIR (2), A. Svircev (1), B. Singh (1). (1) SCPFRC, AAFC, London ON Canada, (2) Southern Crop Protection and Food Research Centre, Agriculture and Agri-Food Canada, London ON Canada
- P-550 The modes of action of *Bacillus* sp. C06 in controlling peach brown rot caused by *Monilinia fructicola*. W. LIU (1), X. Li (1), T. Zhou (1). (1) Agriculture and Agri-Food Canada, Guelph, Ontario, Canada
- P-551 Interaction of fusaric acid and maize seedling lesion development and reduction by isolates of *Bacillus mojavensis*. C. W. BACON (1), D. M. Hinton (1). (1) USDA, ARS, Russell Research Center, Athens, GA, U.S.A.
- P-552 Antibiosis and acidification by *Pantoea agglomerans* strain E325 may contribute to suppression of *Erwinia amylovora*. P. PUSEY (2), V. O. Stockwell (1), D. R. Rudell (2). (1) Oregon State University, Corvallis, OR, U.S.A., (2) USDA-ARS, Wenatchee, WA, U.S.A.
- P-553 Selection and mid-scale production of a fluorescent *Pseudomonas* strain as biocontrol agent for alfalfa damping-off. P. VAZ (4), L. Quagliotto (4), M. Yanes (4), N. Bajsa (2), E. Dibar (1), H. Varela (1), N. A. Altier (3), A. Arias (4). (1) Facultad de Ingeniería, Universidad de la República, Montevideo, Uruguay, (2) Instituto Investigaciones Biológicas Clemente Estable, Facultad de Ciencias Universidad de la República, Montevideo, Uruguay, (3) Instituto Nacional de Investigación Agropecuaria, INIA Las Brujas, Canelones, Uruguay, (4) Instituto de Investigaciones Biológicas Clemente Estable, Montevideo, Uruguay
- P-554 Taegro: A biofungicide with broad spectrum of activity towards soilborne or foliar fungal and bacterial pathogens. S. S. GNANAMANICKAM (1), S. Inman (1), L. West (1), S. Semones (1). (1) Novozymes Biologicals, Salem, VA U.S.A.
- P-555 MOI-106: A new alternative for controlling fungal plant pathogens in ornamentals and edible crops. C. AVILA-ADAME (1), E. Tan (1), B. Campbell (1), H. Huang (1), L. Fernandez (1), M. Koivunen (1), P. Marrone (1). (1) Marrone Organic Innovations, Inc, Davis, CA, U.S.A.
- P-556 Effectiveness of the biopesticides Actinovate and Kaligreen within a management program for powdery mildew on cantaloupe. M. E. MATHERON (1), M. Porchas (1). (1) The University of Arizona, Yuma, AZ, U.S.A.
- P-557 Efficacy of *Muscodor albus* for control of Phytophthora blight on bell pepper and butternut squash in the greenhouse. A. R. CAMP (1), H. W. Lange (1), H. R. Dillard (1), C. D. Smart (1). (1) Cornell University NYSAES, Geneva, NY, U.S.A.
- P-558 Compost and biological amendment effects on soilborne disease and soil microbial communities. R. P. LARKIN (1), S. Tavantzis (2), E. Bernard (2), A. Alyokhin (2), S. Erich (2), S. Gross (2). (1) USDA-ARS, Orono, ME, U.S.A., (2) University of Maine, Orono, ME, U.S.A.
- P-559 Effect of non-aerated compost teas on foliar fungal pathogens of tomato. S. B. Koné (1), A. Dionne (1), R. J. TWEDDELL (1), H. Antoun (1), T. J. Avis (1). (1) Centre de recherche en horticulture, Université Laval, Québec, QC, Canada
- P-560 *In vitro* effect of compost teas on mycelial growth of soilborne tomato pathogens. A. Dionne (1), S. B. Koné (1), R. J. TWEDDELL (1), H. Antoun (1), T. J. Avis (1). (1) Centre de recherche en horticulture, Université Laval, Québec, QC, Canada

- P-561 Soil temperatures solarization in greenhouses in Corrientes, Argentina. M. COLOMBO (1), V. Obregón (1). (1) EEA INTA Bella Vista, Corrientes, Argentina
- P-562 Influence of pH on pathogen inhibition by streptomycetes. A. A. GARZA (3), R. Trevino (1), C. R. Little (2), A. Davelos Baines (1). (1) Department of Biology, The University of Texas – Pan American, Edinburg, TX, U.S.A., (2) Department of Plant Pathology, Kansas State University, Manhattan, KS, U.S.A., (3) Department of Plant Pathology, University of Minnesota, St. Paul, MN, U.S.A.
- P-563 Antibacterial activity of endophytic fungi from rhizomes of *Paris polyphylla* var. *yunnanensis*. J. Zhao (1), L. ZHOU (1). (1) China Agricultural University
- P-564 Fungal endophytes from the Colombian Andean Paramo ecosystem inhibit the growth of plant pathogens *in vitro*. C. LOPERA (1), L. Avila (2), A. Rojas (2), A. E. Franco-Molano (1), M. C. Cepero (2), S. Restrepo (2). (1) Universidad de Antioquia, Medellin, Colombia, (2) Universidad de los Andes, Bogota D.C., Colombia
- P-565 Formulations of *Aspergillus flavus* AF36 to improve in-field residence and sporulation. R. JAIME-GARCIA (2), P. J. Cotty (1). (1) USDA-ARS, University of Arizona, Tucson, AZ, U.S.A., (2) University of Arizona, Tucson, AZ, U.S.A.
- P-566  Development of real-time quantitative assay for rapid detection of *Gliocladium roseum* 67-1, an effective biocontrol agent, in soil. M. Tao (1), S. LI (1), Y. Zhang (1). (1) Soilborne Diseases Laboratory, Inst. of Plant Protection, Chinese Acad. of Agr. Sci., Beijing, China
- P-567 Biological control of plant pathogenic fungi using *Talaromyces flavus*, *Sordaria fimicola* and some endophytic fungi. L. MANOCH (1), O. Jeamjitt (1), T. Dethoup (1), J. Kokaew (1), A. Eamvijarn (1), N. Visarathanonth (1), C. Chamswarng (2). (1) Kasetsart University, Department of Plant Pathology, Bangkok, Thailand, (2) Kasetsart University, Department of Plant Pathology, Nakhon Pathom, Thailand
- P-568 Isolation and comparison of new *Lysobacter enzymogenes* strains for biological control traits. H. YIN (2), E. Caswell-Chen (1), G. Y. Yuen (2). (1) University of California - Davis, Davis, CA, U.S.A., (2) University of Nebraska - Lincoln, Lincoln, NE, U.S.A.
- P-569  Polysaccharide benefits dry storage survival of the biocontrol agent *Pseudomonas fluorescens* S11:P:12 effective against several maladies of stored potatoes. P. J. SLININGER (1), C. A. Dunlap (1), D. A. Schisler (1). (1) National Center for Agricultural Utilization Research, Peoria, IL, U.S.A.
- P-570 Effect of biocontrol and chemical strategies against lettuce drop caused by *Sclerotinia sclerotiorum* and *S. minor* in desert agroecosystems. P. CHITRAMPALAM (1), T. A. Turini (2), B. M. Pryor (1). (1) University of Arizona, Tucson, AZ, U.S.A., (2) University of California, Davis, CA, U.S.A.
- P-571 Control of white mold in soybean with biocontrol agents. W. ZENG (1), W. Kirk (1), R. Hammerschmidt (1), J. Hao (1). (1) Michigan State University
- P-572 New strategy to enhance rice resistance to fungal pathogens. T. XU (2), M. Liu (2), Z. Sun (4), G. E. Harman (1), M. Lorito (3), S. L. Woo (3). (1) Department of Horticultural Sciences, Cornell University, Geneva, NY, U.S.A., (2) Department of Plant Protection, Zhejiang University, Zhejiang, China, (3) Institute of Plant Pathology, Napoli University, Tritici, Italy, (4) Key Laboratory for Rice Biology, China National Rice Research Institute, Hangzhou
- P-573 Search of plant products to control some fungal pathogens. B. KANG (1), S. Kim (1), D. Kim (1), K. Choi (1). (1) Jeollanamdo Agricultural Research and Extension Services, Naju-si, Jeollanam-do, Republic of Korea
- P-574 Development of beneficial microorganism for biology control of tomato Fusarium wilt. B. KANG (2), D. Kim (2), S. Kim (2), K. Choi (2), J. Lee (1), Y. Kim (1). (1) Chonnam National University, Gwangju, Republic of Korea, (2) Jeollanamdo Agricultural Research and Extension Services, Naju-si, Jeollanam-do, Republic of Korea
- P-575 Biological control of strawberry grey mould by *Clonostachys rosea* under field conditions. L. V. Cota (2), L. A. MAFFIA (2), E. S. Mizubuti (2), P. E. Macedo (2), R. F. Antunes (1). (1) Student, (2) Universidade Federal de Viçosa, Viçosa, MG, Brazil
- P-576 Assessment of new inoculation methodologies to evaluate Biocontrol agents on Fusarium crown rot of wheat. E. A. MOYA (1), B. J. Jacobsen (1). (1) Montana State University, Bozeman, MT, U.S.A.
- P-577 Using the antagonist control a soil-borne wilt of cabbage. J. QIU (1), J. Liu (1), W. Liu (1), C. Lu (1), T. Liu (1). (1) Institute of Plant & Environment Protection, Beijing Academy of Agri. & Forestry Sci., Beijing China
- P-578 Effect of conidial seed treatment rate of entomopathogenic *Beauveria bassiana* 11-98 on endophytic colonization of tomato seedlings and control of Rhizoctonia disease. B. H. OWNLEY (1), M. M. Dee (1), K. D. Gwinn (1). (1) The University of Tennessee
- P-579 Microbial antagonists of *Verticillium dahliae* colonize cotton root system. S. M. KHODJIBAEVA (1), G. D. Zolotilina (1), J. J. Tashpulatov (1), R. Stipanovic (2). (1) Institute of Microbiology, Tashkent, Uzbekistan, (2) USDA-ARS, Southern Plains Agricultural Research Center, College Station, TX, U.S.A.
- P-580 Improving survival of beneficial bacteria on anthurium leaves to control bacterial blight caused by *Xanthomonas axonopodis* pv. *dieffenbachiae*. T. S. Vowell (1), P. J. TOVES (1), A. M. Alvarez (1). (1) University of Hawaii, Honolulu, HI, U.S.A.

- P-581 Novel *Pseudomonas* strains antagonistic to *Rhizoctonia solani*, isolated from subterranean seeds of *Amphicarpa bracteata*. J. TAMBONG (1), R. Xu (1), T. A. Ngwa (1), E. Bromfield (1). (1) Agriculture and Agri-Food Canada, Eastern Cereal and Oilseed Research Centre, Ottawa, Ontario Canada
- P-582 Identification of amino acids that improve biological control of anthurium blight through inhibition of *Xanthomonas axonopodis* pv. *dieffenbachiae*. P. J. TOVES (1), T. S. Vowell (1), A. M. Alvarez (1). (1) University of Hawaii, Honolulu, HI, U.S.A.
- P-583 A role of chitinase to exhibit antifungal activity in *Chromobacterium* sp. C61. H. Choi (2), S. Park (1), Y. KIM (2), B. H. Cho (2). (1) Department of Agricultural Biology, Suncheon National University, Suncheon, Korea, (2) Environmental-friendly Agriculture Research Center, Chonnam National University, Gwangju, Korea
- P-584 Screen of antagonistic fungi for biocontrol of root-knot nematode. B. WEI (1), J. Guo (1). (1) Nanjing Agricultural University, Plant Pathology Department, Nanjing, Jiangsu, China
- P-585 Control of root-knot nematodes by *Bacillus cereus*. L. WEI (1), J. Guo (1). (1) Plant Protection, Nanjing, Jiangsu, China
- P-586 Hydrogen cyanide of *Pseudomonas chlororaphis* O6, kills root knot nematode, *Meloidogyne hapla*. J. LEE (1), K. Ma (2), Y. Kim (1). (1) Environmental Friendly Agricultural Research Center, Chonnam National University, Gwangju, Korea, (2) Fruit Crop Experiment Station, Chonnam Agricultural Research & Experiment Service, Haenam, Jeonnam
- P-587  Evaluation of alternative fungicides for organic apple production in Vermont. M. L. CROMWELL (1), L. P. Berkett (1), T. Ashikaga (1), H. M. Darby (1), T. L. Bradshaw (1), S. L. Kingsley-Richards (1). (1) University of Vermont, Burlington, VT, U.S.A.
- P-588 Selection of phage-displayed peptides that inhibit soybean rust. Z. D. FANG (2), J. E. Schoelz (2), G. Stacey (2), F. J. Schmidt (1), J. T. English (2). (1) Division of Biochemistry, University of Missouri, (2) Division of Plant Sciences, University of Missouri
- P-589 Inhibitory activity of the extracts of *Macleaya cordata*, *Reynoutria japonica* and *Scutellaria baicalensis* on plant pathogens. H. Liu (1), L. ZHOU (1). (1) China Agricultural University
- P-590 Chemical composition and antifungal activity of the fruit essential oil of star anise (*Illicium verum* Hook f). Y. Huang (1), L. ZHOU (1). (1) China Agricultural University
- P-591  Isolation and characterization of soil bacteria capable of detoxifying the mycotoxin deoxynivalenol (DON). M. R. ISLAM (2), J. He (2), P. P. Pauls (1), T. Zhou (2). (1) Department of Plant Agriculture, University of Guelph, Guelph, Ontario, Canada, (2) Guelph Food Research Center, AAFC, Guelph, Ontario, Canada
- P-592 Relief of abiotic stress in corn by DAPG-producing *Pseudomonas fluorescens* strain Wood1R under acidic soil conditions. R. E. RAUDALES (1), E. Stone (1), B. B. McSpadden Gardener (1). (1) Plant Pathology, The Ohio State University, Wooster, OH, U.S.A.
- P-593 Proteomic analysis of GacS-regulated proteins in a plant beneficial rhizobacterium, *Pseudomonas chlororaphis* O6. C. Kim (1), B. Kang (2), K. Yang (1), B. Cho (1), Y. KIM (1). (1) Department of Plant Biotechnology and Biotechnology Research Institute, Chonnam National University, Gwangju, Korea, (2) Jeonnam Agricultural Extension Service Center, Naju, Jeonnam, Korea
- P-594 Evaluation of rhizospheric fluorescent *Pseudomonas* for the growth promotion of alfalfa plants. M. Yanes (3), L. De La Fuente (1), N. A. ALTIER (2), A. Arias (3). (1) Department of Plant Pathology, Cornell University, Geneva, NY, U.S.A., (2) Instituto Nacional de Investigación Agropecuaria, INIA Las Brujas, Canelones, Uruguay, (3) Instituto de Investigaciones Biológicas Clemente Estable, Montevideo, Uruguay
- P-595 Affect of crop residue on colonization and survival of *Phoma sclerotoides*, the causal agent of brown root rot of alfalfa. D. A. SAMAC (2), C. Miyamoto (3), J. E. Larsen (3), L. Atkinson (1), C. R. Hollingsworth (1), C. D. Motteberg (1). (1) UMN Crookston, NW Research and Outreach Center, Crookston, MN, U.S.A., (2) USDA ARS, St. Paul, MN, U.S.A., (3) University of Minnesota, St. Paul, MN, U.S.A.
- P-596 Defective cellulase production of *Xanthomonas axonopodis* pv. *glycines* ppsA mutant strain triggered systemic resistance to soybean bacterial pustule. S. KASEM (1), S. Prathuangwong (1). (1) Department of Plant Pathology, Kasetsart University, Bangkok, Thailand
- P-597 Hairy vetch-induced systemic resistance to Fusarium wilt in watermelon. X. ZHOU (1), K. L. Everts (2). (1) University of Maryland, Salisbury, MD, U.S.A., (2) University of Maryland, Salisbury, MD, U.S.A.; University of Delaware, Georgetown, DE, U.S.A.
- P-598 *Trichoderma* species colonize *Theobroma cacao* trichomes internally. B. A. BAILEY (2), M. D. Strem (2), D. F. Wood (1). (1) USDA/ARS/WRRC, Albany, CA, U.S.A., (2) USDA/ARS/SPCL, Beltsville, MD, U.S.A.
- P-599 Microbial enrichment of compost with *Trichoderma* sp. to enhance suppressiveness against *Rhizoctonia solani*. M. PUGLIESE (1), A. Garibaldi (1), M. Gullino (1). (1) Agroinnova - University of Torino, Grugliasco (TO), Italy
- P-600 Evaluation of seed coating formulations of *Trichoderma harzianum* on cucumber seeds against pre- and post-emergence damping-off caused by *Pythium ultimum*. X. JIN (1). (1) USDA-ARS, Mid South Area, Biological Control of Pests Research Unit, Stoneville, MS, U.S.A.
- P-601 Biological control of *Gibberella zeae* with *Trichoderma* spp. M. Cabrera (1), S. A. PEREYRA (2), S. Vero (1). (1) Fac. de Quimica, UDELAR, (2) INIA - Natl Inst for Agric Research, Colonia, Uruguay

- P-602 Occurrence, survival, and population levels of *Trichoderma virens* in soils of animal waste application sites in Mississippi. R. G. PRATT (1). (1) USDA, ARS, Mississippi State, MS, U.S.A.
- P-603 Virulence enhancement of *Fusarium oxysporum*, a strategy for biocontrol of parasitic weeds? D. C. SANDS (3), A. L. Pilgeram (3), M. Vurro (1), J. P. Sands (2). (1) I.S.P.A., Bari, Italy, (2) JEDC LLC, (3) Montana State University, Bozeman, MT, U.S.A.
- P-604 Survey, evaluation and molecular characterization of Nigerian native fungus for potential biocontrol of water hyacinth. W. O. OKUNOWO (1), G. O. Gbenle (1), A. A. Osuntoki (1), A. A. Adekunle (2). (1) Dept. of Biochemistry, College of Medicine, University of Lagos, Lagos State, Nigeria, (2) Dept. of Botany and Microbiology, University of Lagos, Lagos State, Nigeria
- P-605 Comparative virulence of *Rhizoctonia* spp. pathogenic to *Lepidium draba* assessed using survival analysis. A. CAESAR (1), T. Caesar (1). (1) USDA/ARS Northern Plains Agricultural Research Laboratory
- P-606 Yeast microflora of nectarines. W. J. JANISIEWICZ (1), C. Kurtzman (2). (1) Appalachian Fruit Research Station, ARS-USDA, Kearneysville, WV, U.S.A., (2) NCAUR, ARS-USDA, Peoria, IL, U.S.A.
- P-607 Mass production of *Alternaria alternata* isolates: Bioherbicide agents for *Rumex dentatus* and *Chenopodium album*. R. BAJWA (1). (1) University of the Punjab, Lahore, Pakistan
- P-608 Diversity, virulence and 2,4-diacetylphloroglucinol sensitivity of *Gaeumannomyces graminis* var. *tritici* isolates from Washington State. Y. KWAK (1), P. A. Bakker (3), D. C. Glandorf (2), T. Paulitz (4), D. M. Weller (4). (1) Department of Plant Pathology, Washington State University, Pullman, WA, U.S.A., (2) National Institute for Public Health and the Environment, Bilthoven, The Netherlands, (3) Plant-Microbe Interactions, Utrecht University, Utrecht, The Netherlands, (4) USDA, ARS Root Disease and Biological Control Research Unit, Pullman, WA, U.S.A.
- P-609 Inhibition of *Rhizoctonia solani* by essential oils found in monarda herbage. T. N. Springfield (1), K. D. GWINN (1), B. H. Ownley (1). (1) University of Tennessee, Knoxville, TN, U.S.A.
- P-610 Antagonists' impact on enzymatic response in wilt infected cotton plants. T. G. GULYAMOVA (1), D. M. Ruzieva (1), S. M. Nasmetova (1), K. M. Karimova (1), S. M. Khodjibaeva (1), R. Stipanovic (2). (1) Institute of Microbiology, Tashkent, Uzbekistan, (2) USDA-ARS, Southern Plains Agricultural Research Center, College Station, TX, U.S.A.
- P-612 Emergence and progression of streptomycin resistance in *Erwinia amylovora* in Michigan. G. C. MCGHEE (1), J. Guasco (1), L. M. Bellomo (1), S. Blumer (1), G. W. Sundin (1). (1) Michigan State University, East Lansing, MI, U.S.A.
- P-613 Accelerated degradation of metam-sodium in soil: Occurrence and possible mechanism. S. Triky-Dotan (1), M. Austerweil (1), D. Mintz (1), Y. Katan (2), A. GAMLIEL (1). (1) ARO Vocani Center, Bet Dagan, Israel, (2) Hebrew University of Jerusalem, Rehovot, Israel
- P-614 Effectiveness of fungicide seed treatments against seed-borne *Fusarium verticillioides* in maize (*Zea mays* L.). C. RODRIGUEZ-BRLJEVICH (1), A. E. Robertson (1), D. J. Nordman (1). (1) Iowa State University, Ames, IA, U.S.A.
- P-615 Fungicide seed treatments reduce infection of maize by soil-borne *Fusarium* species and thereby contribute to improved photosynthesis. C. RODRIGUEZ-BRLJEVICH (1), A. E. Robertson (1), C. Kanobe (1), D. J. Nordman (1), J. F. Shanahan (2). (1) Iowa State University, Ames, IA, U.S.A., (2) University of Nebraska-Lincoln, Lincoln, NE, U.S.A.
- P-616 Effect of pyraclostrobin foliar fungicide on multiple corn hybrids. C. A. BRADLEY (1), D. G. White (1), K. W. Campbell (2). (1) Department of Crop Sciences, University of Illinois, Urbana, IL, U.S.A., (2) Monsanto Company, Johnston, IA, U.S.A.
- P-617 Study on the resistance risk and resistance inheritance of *Phytophthora capsici* to flumorph. M. Qinxiao (1), C. Xiaolan (1), B. Yang (1), L. Xiaohong (1), H. Jianjun (2), L. XILI (1). (1) Department of Plant Pathology, China Agricultural University, Beijing, R.P. China, (2) Department of Plant Pathology, Michigan State University, East Lansing, MI, U.S.A.
- P-618 Sensitivity of *Phytophthora capsici* isolates to the carboxylic acid amides fungicides mandipropamid and dimethomorph. G. OLAYA (3), A. P. Keinath (1), P. D. Roberts (4), A. Tally (2). (1) Clemson University, CREC, Charleston, SC, U.S.A., (2) Syngenta Crop Protection, Greensboro, NC, U.S.A., (3) Syngenta Crop Protection, Vero Beach, FL, U.S.A., (4) University of Florida, SWFREC, Immokalee, FL, U.S.A.
- P-619 Fungicide resistance of *Erysiphe necator* in the U.S. Mid-Atlantic region. J. F. COLCOL (1), A. B. Baudoin (1). (1) Virginia Polytechnic Institute and State University, Blacksburg, VA, U.S.A.
- P-620 Strategies to reduce risk of benzimidazole resistance in *Monilinia fructicola* populations by using real-time PCR. Y. LUO (1), H. Reyes (1), D. Morgan (1), T. Michailides (1). (1) Department of Plant Pathology, University of California-Davis, Parlier, CA, U.S.A.
- P-621 Molecular characterization of *Monilinia fructicola* populations with different sensitivities to DMI fungicides. I. J. HOLB (2), P. K. Bryson (1), G. Schnabel (1). (1) Department of Entomology, Soils, and Plant Sciences, Clemson University, Clemson, SC, U.S.A., (2) University of Debrecen, Centre of Agricultural Sciences, Debrecen, Hungary



Chemical Control

- P-611 A semi-selective medium for the isolation of copper and streptomycin resistant strains of *Xanthomonas citri* ssp. *citri* from plant material. F. BEHLAU (1), J. B. Jones (1), J. H. Graham (2). (1) University of Florida, Gainesville, FL, U.S.A., (2) University of Florida, Lake Alfred, FL, U.S.A.

- P-622 Competitive studies on parasitic fitness using blended soil infestations of mefenoxam-sensitive and mefenoxam-resistant *Phytophthora erythroseptica* isolates under fungicide selection pressure. V. CHAPARA (1), R. J. Taylor (1), J. S. Pasche (1), N. C. Gudmestad (1). (1) Dept. of Plant Pathology, North Dakota State University, Fargo, ND, U.S.A.
- P-623 Sensitivity to azoxystrobin, difenoconazole and cyprodinil of *Alternaria* spp. isolates causing *Alternaria* leaf spot on almonds. G. OLAYA (2), R. Bounds (1), A. Tally (1). (1) Syngenta Crop Protection, Greensboro, NC, U.S.A., (2) Syngenta Crop Protection, Vero Beach, FL, U.S.A.
- P-624 Evolving management strategies for *Monilinia fructicola* populations with reduced sensitivity to DMIs in Georgia and implications for brown rot control recommendations. P. M. BRANNEN (3), K. Taylor (4), M. Hotchkiss (2), C. Reilly (2), G. Schnabel (1), A. Amiri (1). (1) Clemson University, Clemson, SC, U.S.A., (2) USDA-ARS, Byron, GA, U.S.A., (3) University of Georgia, Athens, GA, U.S.A., (4) University of Georgia, Byron, GA, U.S.A.
- P-625 A single amino-acid change in the cytochrome b560 subunit of succinate dehydrogenase complex (SdhC) correlates with boscalid resistance in *Alternaria alternata* isolates from California pistachio. H. F. AVENOT (2), A. Sellam (1), D. P. Morgan (2), T. J. Michailides (2). (1) Biotechnology Research Institute, Montreal, Canada, (2) University of California Davis, Kearney Agricultural Center, Parlier, CA, U.S.A.
- P-626 Fungicide sensitivity in North Carolina populations of *Colletotrichum cereale* and molecular characterization of benzimidazole- and QoI-insensitive strains. L. P. TREDWAY (1), M. D. Soika (1), M. L. Bunting (1). (1) Department of Plant Pathology, North Carolina State University, Raleigh, NC, U.S.A.
- P-627  Invasion and management of coffee leaf rust in high altitude coffee plantations in Kenya. G. KAIRU (1). (1) Coffee Research Foundation, Ruiru, Kenya
- P-628 Distribution and control of *Pseudocercospora angolensis* on citrus in Zimbabwe and Mozambique. M. C. PRETORIUS (1), G. Holtz (2), (1) Citrus Research International, Nelspruit, Mpumalanga, South Africa, (2) Department of Plant Pathology, University of Stellenbosch, Matieland, South Africa
- P-629 Evaluation of TOPGUARD for control of Asian soybean rust in Alabama. E. J. SIKORA (1), D. P. Delaney (1), M. A. Delaney (1), K. S. Lawrence (1), M. Pegues (1). (1) Auburn University, Auburn, AL, U.S.A.
- P-630 Implications of fungicide application delays on Asian soybean rust control. M. L. ZACCARON (1), J. L. de Oliveira (1), G. W. Fengler (1), B. A. Pontim (1), B. Zuntini (1), M. Mendes (1), R. Kobayashi (1), L. A. Bacchi (1), W. L. Gavassoni (1). (1) Universidade Federal da Grande Dourados, Dourados, Brazil
- P-631 The importance of geographical location of field trials in evaluating new fungicides against *Mycosphaerella graminicola*. C. YAO (1), D. Young (1), C. Klittich (1), A. Meitl (1). (1) Dow AgroSciences, Indianapolis, IN, U.S.A.
- P-632 Detection of high concentrations of organic acids in fish emulsion and their role in pathogen or disease suppression. P. A. ABBASI (1), G. Lazarovits (1), B. Weselowski (1). (1) Southern Crop Protection and Food Research Centre, Agriculture and Agri-Food Canada, London, Ontario, Canada
- P-633 Effect of glyphosate on foliar diseases in Roundup Ready alfalfa. D. Foster-Hartnett (2), D. A. SAMAC (1). (1) USDA ARS, St Paul, MN, U.S.A., (2) University of Minnesota, St Paul, MN, U.S.A.
- P-634 Dose response of soilborne pathogens to acrolein. J. S. GERIK (1), D. Wang (1). (1) USDA-ARS, Parlier, CA, U.S.A.
- P-635 Source of more than 60 years of chemical disease-control data: The publication 'Fungicide and Nematicide Tests', 1945–2006. D. F. RITCHIE (1), K. S. Yoder (3), D. S. Egel (2). (1) N.C. State University, Raleigh, NC, U.S.A., (2) Purdue University, SW Purdue Ag. Center, Vincennes, IN, U.S.A., (3) VA Tech Agric. Res. & Ext. Center, Winchester, VA, U.S.A.
- P-636 Toxicity of commercial algacides to *Phytophthora ramorum*. G. C. COLBURN (1), S. N. Jeffers (1). (1) Department of Entomology, Soils & Plant Sciences, Clemson University, Clemson, SC, U.S.A.
- P-637 The virulence of *Banana bunchy top virus* in banana plants after injection with a bananacide. E. A. PEREZ (2), C. R. Hooks (2), K. Wang (2), M. G. Wright (2), R. P. Almeida (1), R. Manandhar (2). (1) University of Berkeley, (2) University of Hawaii
- P-638 Prophylactic foliar fungicide and insecticide applications and their impact on soybean yield components. L. M. ORTIZ-RIBBING (1), G. K. Roskamp (2), M. D. Roegge (1). (1) University of Illinois Extension, (2) Western Illinois University
- P-639 Control of Asian soybean rust using sequential fungicide applications. E. J. SIKORA (1), D. P. Delaney (1), M. A. Delaney (1), K. S. Lawrence (1), M. Pegues (2). (1) Auburn University, Auburn, AL, U.S.A., (2) Gulf Coast Research and Extension Center, Fairhope, AL, U.S.A.
- P-640 Low-doses of fungicides have a stimulatory effect on *Pythium* spp. *in vitro* and *in planta*. C. D. GARZON (1), G. W. Moorman (3), J. M. Yáñez (3), J. E. Molineros (2), R. C. Leonard (3), M. Jimenez-Gasco (3). (1) Dept. Biology, The College of Wooster, Wooster, OH, U.S.A., (2) Dept. Epidemiology and Biostatistics, Case Western Reserve University, Cleveland, OH, U.S.A., (3) Dept. Plant Pathology, Pennsylvania State University, University Park, PA, U.S.A.
- P-641  Evaluation of phosphite generating materials for Black Shank control. A. S. CSINOS (1), L. Hickman (1), K. L. Mullis (1), P. Ji (1). (1) University of Georgia, Tifton, GA, U.S.A.

- P-642 Control of bacterial spot of tomato with a phosphorous acid product. A. WEN (3), B. Balogh (1), M. Momol (2), S. M. Olson (3), J. B. Jones (4). (1) Department of Plant Pathology & Ecology, The Connecticut Agricultural Experiment Station, New Haven, CT, U.S.A., (2) District Directors Office, University of Florida/IFAS, Gainesville, FL, U.S.A., (3) North Florida Research and Education Center, University of Florida, Quincy, FL, U.S.A., (4) Plant Pathology Department, University of Florida, Gainesville, FL, U.S.A.
- P-643 Influence of fungicides applied before harvest on postharvest gray mold of table grapes. J. L. SMILANICK (2), M. F. Mansour (2), F. Mlikota Gabler (2), D. A. Margosan (2), J. Hashim-Buckey (1). (1) U. California, COOP Ext Kern Co., Bakersfield, CA, U.S.A., (2) USDA ARS, Parlier, CA, U.S.A.
- P-644 Effects of sanitation with a bleach solution on daylily and hosta growth. E. ROBAYO CAMACHO (1), S. N. Jeffers (1). (1) Department of Entomology, Soils, and Plant Sciences, Clemson University, Clemson, SC, U.S.A.
- P-645 Evaluation of a soil baiting technique to test the efficacy of fungicidal seed treatments against soybean seedling pathogens. M. W. WALLHEAD (1), K. D. Broders (1), M. L. Ellis (1), A. E. Dorrance (1). (1) The Ohio State University, OARDC, Wooster, OH, U.S.A.
- P-646 Evaluation of fungicide seed treatments for control of sudden death syndrome of soybean. J. D. WEEMS (1), G. Zhang (1), K. A. Ames (1), C. A. Bradley (1). (1) Department of Crop Sciences, University of Illinois, Urbana, IL, U.S.A.
- P-647 Quantification of *Pratylenchus penetrans* DNA in maize roots for greenhouse seed-treatment studies. C. PAVON (1), X. Gao (1), T. Niblack (1). (1) University of Illinois, Urbana-Champaign, IL, U.S.A.
- P-648 Meta-analysis of hybrid corn yield response to foliar fungicides. P. A. PAUL (2), C. A. Bradley (3), A. E. Robertson (1), L. V. Madden (2). (1) Iowa State University, Ames, IA, U.S.A., (2) The Ohio State University/OARDC, Wooster, OH, U.S.A., (3) University of Illinois, Urbana, IL, U.S.A.
- P-649 Basipetal translocation of propiconazole following trunk infusion of peach trees. A. AMIRI (1), K. E. Bussey (2), M. B. Riley (1), G. Schnabel (1). (1) Clemson University, Clemson, SC, U.S.A., (2) North Carolina State University, Raleigh, NC, U.S.A.
- P-650 Number of insecticide sprays has no effect on the incidence of citrus huanglongbing in a commercial orchard in São Paulo, Brazil. A. BERGAMIN-FILHO (1), M. G. Gasparoto (1), L. Amorim (1), R. B. Bassanezi (2). (1) ESALQ-USP, Piracicaba, SP, Brazil, (2) Fundecitrus, Araraquara, SP, Brazil
- P-651 Investigative study of *M. roridum* toxin on water hyacinth. W. O. OKUNOWO (1), G. O. Gbenle (1), A. A. Osuntoki (1), A. A. Adekunle (2). (1) Dept. of Biochemistry, College of Medicine, University of Lagos, Lagos State, Nigeria, (2) Dept. of Botany and Microbiology, University of Lagos, Lagos State, Nigeria
- P-652 Methyl Iodide and Sulfuryl Fluoride as quarantine treatments for solid wood packing material. K. M. TUBAJIKA (2), A. V. Barak (1). (1) USDA APHIS CPHST, Cape Cod, MA, U.S.A., (2) USDA APHIS CPHST, Raleigh, NC, U.S.A.
- P-653 The efficacy of methyl bromide and alternatives on *Agrobacterium tumefaciens* and *Phytophthora cactorum*. L. E. YAKABE (1), S. R. Parker (1), D. A. Kluepfel (1). (1) USDA, ARS, Crops Pathology Genetics Research Unit, Davis, CA, U.S.A.

Disease Diagnostic and Detection

- P-654 Relationship between the incidence of potato purple top (PPT) and Potato Leaf Roll Virus (PLRV), and the incidence of their vectors in potato fields in Mexico. L. M. VASQUEZ-SILLER (3), J. M. Covarrubias-Ramirez (1), H. Almeida-de Leon (1), A. Flores-Olivas (2), G. A. Frias-Trevino (2), A. Valdez-Oyervides (2). (1) Inst. Nal. de Investigaciones Forestales, Agrícolas y Pecuarias, (2) Univ. Autonoma Agraria Antonio Narro, (3) Universidad Autonoma Agraria Antonio Narro
- P-655 Detection of *Colletotrichum acutatum* in strawberry plants using nested PCR primers with enhanced specificity. R. BHAT (1), G. T. Browne (1). (1) USDA, ARS, CPGRU, UC Davis, CA, U.S.A.
- P-656 Shoot blight and anthracnose of blackberries in Mexico is caused by *Glomerella cingulata*. A. REBOLLAR-ALVITER (2), H. V. Silva-Rojas (1), L. X. Zelaya-Molina (1). (1) Colegio de Postgraduado/Produccion de Semillas, Montecillo, Mexico, (2) Universidad Autonoma Chapingo/Centro Regional Morelia, Morelia Michoacan, Mexico
- P-657 Development of a rapid detection method for *Erwinia amylovora* by loop-mediated isothermal amplification (LAMP). T. N. TEMPLE (1), V. O. Stockwell (1), K. B. Johnson (1). (1) Department of Botany and Plant Pathology, Oregon State University, Corvallis, OR, U.S.A.
- P-658  Sensitivity of ELISA and RT-PCR in detection of *Tomato ringspot virus* in apple cultivars. W. MSIKITA (1), T. Kell (1), R. Welliver (1). (1) Pennsylvania Department of Agriculture, Harrisburg, PA, U.S.A.
- P-659  Quantitative real-time PCR to differentiate infection levels of *Aspergillus flavus* in maize. S. X. MIDEROS (1), W. P. Williams (2), R. J. Nelson (1). (1) Department of Plant Pathology and Plant-Microbe Biology, Cornell University, Ithaca, NY, U.S.A., (2) USDA-ARS Corn Host Plant Resistance Research Unit, Mississippi State, MS, U.S.A.

Diseases of Cereal, Field, and Fiber Crops

- P-660 Effects of Tween 20 on wheat seedling leaf infection by *Fusarium graminearum* Schwabe (teleomorph = *Gibberella zeae* (Schwein.) Petch.). Y. Kawasaki (1), J. Y. Takemoto (1), C. K. EVANS (1). (1) Utah State University, Biology Department, Logan, UT, U.S.A.



- P-661 Control of Pythium root rot in a tobacco float system with surfactants. K. W. SEEBOLD (1), E. Dixon (1). (1) University of Kentucky, Plant Pathology Dept., Lexington, KY, U.S.A.
- P-662 Attenuation of severity of Asian soybean rust with potassium, chloride and minor elements. R. W. SCHNEIDER (1), J. Wang (2), E. P. Mumma (1), C. L. Robertson (1), C. G. Giles (1). (1) Dept. Plant Pathology and Crop Physiology, Louisiana State University Agricultural Center, Baton Rouge, LA, U.S.A., (2) School of PESS, Louisiana State University Agricultural Center, Baton Rouge, LA, U.S.A.

Diseases of Fruits and Nuts

- P-663 Effect of apple scab fungicide programs on colonization and survival of *Botryosphaeria* spp. in mummified apple fruitlets in NY. N. L. RUSSO (1), D. A. Rosenberger (2), K. D. Cox (1). (1) Department of Plant Pathology and Plant-Microbe Biology, Cornell University, Geneva, NY, U.S.A., (2) Department of Plant Pathology and Plant-Microbe Biology, Cornell University, Highland, NY, U.S.A.
- P-664 Detection and management of downy mildew of blackberry caused by *Peronospora sparsa* in Michoacan, Mexico. A. REBOLLAR-ALVITER (2), H. V. Silva-Rojas (1), L. X. Zelaya-Molina (1). (1) Colegio de Postgraduado/Produccion de Semillas, Montecillo, Mexico, (2) Universidad Autonoma Chapingo/Centro Regional Morelia, Morelia Michoacan, Mexico
- P-665 Fungicide efficacy in eradicating powdery mildew and reducing cleistothecium formation on grape leaves. A. C. SCHILDER (1), N. L. Rothwell (2), K. L. Powers (2), M. D. Anderson (2). (1) Department of Plant Pathology, Michigan State University, East Lansing, MI, U.S.A., (2) Northwest Michigan Horticultural Research Station, Michigan State University, Traverse City, MI, U.S.A.
- P-666 Role of garden centers and retail nurseries in spreading citrus Huanglongbing disease. C. RAMADUGU (3), K. L. Manjunath (2), C. Ramos (5), S. Halbert (1), S. Webb (4), R. F. Lee (2). (1) DPI, Gainesville, FL, U.S.A., (2) USDA-ARS, Riverside, CA, U.S.A., (3) University of California, Riverside, CA, U.S.A., (4) University of Florida, Gainesville, FL, U.S.A., (5) University of Panama, Panama
- P-667 QoI sensitivity and the prevalence of DMI resistance in NY populations of the brown rot pathogen *Monilinia fructicola*. S. M. VILLANI (1), K. D. Cox (1). (1) Department of Plant Pathology and Plant-Microbe Biology, Cornell University, Geneva, NY, U.S.A.
- P-668 QoI qualitative resistance and *CYP51A1* upstream anomalies in NY populations of the apple scab pathogen *Venturia inaequalis*. K. D. COX (1), N. L. Russo (1), S. M. Villani (1), D. M. Parker (1),

W. Köller (1). (1) Department of Plant Pathology and Plant-Microbe Biology, Cornell University, Geneva, NY, U.S.A.

- P-669 Incidence, severity and management of *Cytospora* canker in stone fruits. R. R. POKHAREL (1), H. Larsen (1). (1) Western Colorado Research Center
- P-670 Anthracnose resistance in strawberry genotypes for plasticulture systems in the Southeast. M. Rahman (1), F. LOUWS (1). (1) NC State University, Raleigh, NC, U.S.A.

Diseases of Ornamentals



- P-671 Potential for the use of silicon to alleviate disease stresses in floricultural crop production. J. C. LOCKE (1), M. Omer (1), J. Frantz (1), A. Widrig (1), W. Zellner (2), S. Leisner (2), C. Krause (1). (1) USDA-ARS-ATRU, Toledo, OH, U.S.A., (2) University of Toledo, Department of Biological Sciences
- P-672 Disease resistance in commercial cultivars of *Hydrangea macrophylla*. M. T. MMBAGA (1), S. M. Reed (2), M. Windham (4), L. Yonghao (4), T. A. Rinehart (3). (1) Tennessee State University, (2) USDA-ARS, McMinnville, (3) USDA-ARS, Poplarville, (4) University of Tennessee, Knoxville, TN, U.S.A.

Diseases of Turfgrass

- P-673 The virtual irrigation audit: A diagnostic tool for turfgrass disease. L. STOWELL (1), W. Gelernter (1). (1) PACE Turfgrass Research Institute, San Diego, CA, U.S.A.
- P-674 *In vitro* sensitivity of *Waitea circinata* var. *circinata* to fludioxonil and polyoxin-D. C. CHEN (1), F. P. Wong (1). (1) University of California, Riverside, CA, U.S.A.

Diseases of Vegetables

- P-675 Management of whitefly-transmitted viral watermelon vine decline in Florida. C. S. KOUSIK (1), S. T. Adkins (2), W. W. Turechek (2), P. D. Roberts (3). (1) U.S. Vegetable Laboratory, USDA-ARS, Charleston, SC, U.S.A., (2) USHRL, USDA-ARS, Ft. Pierce, FL, U.S.A., (3) University of Florida/IFAS, SWFREC, Immokalee, FL, U.S.A.
- P-676 Balancing nitrogen and fungicide applications to minimize carrot leaf blights. M. MCDONALD (1), S. M. Westerveld (1), C. Saude (1). (1) University of Guelph, Guelph, ON, Canada
- P-677 Evaluation of cover crops for management of Phytophthora blight on squash. D. KONÉ (1), A. S. Csinos (1), J. Yin (1), P. Ji (1). (1) University of Georgia, Tifton, GA, U.S.A.
- P-678 Dose response of soilborne plant pathogens and *Meloidogyne incognita* to citrus-based experimental compounds. F. B. IRIARTE (1), E. N. Roskopf (1), N. Kokalis-Burelle (1). (1) USHRL, ARS, USDA, Fort Pierce, FL, U.S.A.

- P-679 Efficacy of various brassica varieties for the suppression of root knot, ring, and stunt nematodes. K. STEDDOM (3), K. Ong (2), J. Starr (1). (1) Texas A&M University, College Station, TX, U.S.A., (2) Texas AgriLife Extension Service, Dallas, TX, U.S.A., (3) Texas AgriLife Extension Service, Overton, TX, U.S.A.
- P-680  Sensitivity of *Podosphaera xanthii* to registered fungicides at-risk for resistance related to their efficacy for powdery mildew in pumpkin. M. T. MCGRATH (1), M. M. Miazzi (2). (1) Department of Plant Pathology and Plant-Microbe Biology, Cornell University, LIHREC, Riverhead, NY, U.S.A., (2) Dipartimento di Protezione delle Piante e Microbiologia Applicata, Università di Bari, Bari, Italy
- P-681 Baseline sensitivity and evidence of resistance to boscalid in *Didymella bryoniae*. K. L. STEVENSON (1), D. B. Langston (1), F. Sanders (1). (1) Department of Plant Pathology, University of Georgia, Tifton, GA, U.S.A.
- P-682 Alternative control of *Rhizoctonia solani* on potato crop by using Rhizomarr (potassium permanganate at 18% ce) in Tapalpa, Jalisco, México. P. POSOSPONCE (1), J. L. Martinez Ramirez (1), G. Enciso-Cabral (1), C. Duran-Martinez (1), L. A. Rendon-Salcido (1). (1) Universidad de Guadalajara
- P-683 Evaluation of fungicides for control of Phytophthora blight of watermelon in North Carolina and South Carolina. M. L. ADAMS (1), G. Holmes (1), S. Kousik (2). (1) NC State University, Raleigh, NC, U.S.A., (2) USDA-ARS, Charleston, SC, U.S.A.
- P-684 Potential of phosphorous acid-containing products for control of Phytophthora blight on squash. J. YIN (1), K. L. Jackson (1), A. S. Csinos (1), P. Ji (1). (1) University of Georgia, Tifton, GA, U.S.A.
- P-685 Withdrawn
- P-686  Efficacy of control methods on black rot caused by *Xanthomonas campestris* pv. *campestris* in greenhouse transplant production. H. W. LANGE (1), C. D. Smart (1). (1) Cornell University

Forest Pathology

- P-687 Resistance Screening Center, USDA Forest service forest health protection unit, Asheville, NC. J. J. BRONSON (1). (1) USDA Forest Service, Asheville, NC, U.S.A.
- P-688 Whole-tree water relations of western gall rust infected lodgepole pine trees in response to soil drought. J. M. WOLKEN (1), P. V. Blenis (1). (1) University of Alberta
- P-689 Quantitative trait loci (QTL) associated with bacterial blight and blast resistance in Korean rice populations. S. LEE (5), J. Jeung (2), S. Han (5), D. Ra (5), H. Leung (3), S. Hulbert (4), J. Leach (1). (1) Bioagricultural Sciences and Pest Management, Colorado State University, Fort Collins, CO, U.S.A., (2) Genetics and Breeding, NICS, RDA, Suwon, Korea, (3) Plant Breeding, Genetics and Biotechnology, IRRI, Philippines, (4)

Plant Pathology Dept., Washington State University, Pullman, WA, U.S.A., (5) Plant Pathology Div., NIAST, RDA, Suwon, Korea

Host Resistance


- P-690 Improvement in screening for resistance to *Sclerotinia sclerotiorum* in common bean through characterization of the pathogen and utilization of multi-state nurseries. L. K. OTTO-HANSON (1), J. Steadman (2). (1) University of Minnesota-St. Paul, U.S.A., (2) University of Nebraska-Lincoln, Lincoln, NE, U.S.A.
- P-691 Stem rust resistance in *Triticum monococcum* germplasm. M. N. ROUSE (2), Y. Jin (1). (1) USDA-ARS Cereal Disease Laboratory, St. Paul, MN, U.S.A., (2) University of Minnesota, St. Paul, MN, U.S.A.
- P-692 Comparison of field, tuber and detached leaf evaluations of potato germplasm for late blight resistance. J. J. RODRIGUEZ (1), A. L. Thompson (2), V. Rivera-Varas (1), G. A. Secor (1). (1) Department of Plant Pathology, North Dakota State University, Fargo, ND, U.S.A., (2) Department of Plant Science, North Dakota State University, Fargo, ND, U.S.A.
- P-693 Sugar beet cultivar selection for storability and rhizomania resistance. C. A. STRAUSBAUGH (3), E. Rearick (1), P. Foote (2), I. A. Eujayl (3). (1) Amalgamated Research Inc., Twin Falls, ID, U.S.A., (2) Amalgamated Sugar Co., (3) USDA-ARS NWISRL, Kimberly, ID, U.S.A.
- P-694 Evaluation of *Mentha arvensis* for resistance to *Verticillium dahliae* isolates from various hosts. J. K. DUNG (1), B. K. Schroeder (1), D. A. Johnson (1). (1) Department of Plant Pathology, Washington State University, Pullman, WA, U.S.A.
- P-695 *Avena barbata*, a potential source of new crown rust resistance in oat. M. L. CARSON (1). (1) USDA-ARS Cereal Disease Lab, St. Paul, MN, U.S.A.
- P-696 Verticillium wilt resistance in U.S. potato breeding programs. S. H. JANSKY (1). (1) USDA-ARS
- P-697 Biosynthesis of fusaric acid by *Fusarium oxysporum* f. sp. *vasinfectum*. R. D. STIPANOVIC (1), M. H. Wheeler (1), J. Liu (1), L. S. Puckhaber (1), A. A. Bell (1). (1) USDA - ARS, Southern Plains Agricultural Research Center, College Station, TX, U.S.A.
- P-698 Progress on the development of broad spectrum disease resistance in citrus through transformation with *CNGCcit* and *bcl-2* genes. M. KUNTA (1), M. Skaria (1), J. V. Da Graca (1), T. Mirkov (2), E. S. Louzada (1). (1) Texas A&M University-Kingsville Citrus Center, Weslaco, TX, U.S.A., (2) Texas AgriLIFE Research, Weslaco, TX, U.S.A.
- P-699 *In vitro* inoculation of citrus germplasm for rapid screening of resistance to citrus canker. M. I. FRANCIS (1), J. H. Graham (1). (1) University Florida, Citrus Research and Education Center, Lake Alfred, FL, U.S.A.

- P-700 Postharvest *Aspergillus flavus* colonization in responding to preharvest field condition of drought stress and oligo-microarray profiling of developing corn kernel gene expression under drought stress. Z. WANG (4), J. Liu (1), D. Lee (3), B. Scully (2), B. Guo (2). (1) J. Craig Venter Institute, Rockville, MD, U.S.A., (2) USDA-ARS, Crop Protection and Management Unit, Tifton, GA, U.S.A., (3) University of Georgia, Department of Crop and Soil Sciences, Tifton, GA, U.S.A., (4) University of Georgia, NESPAL, Tifton, GA, U.S.A.
- P-701 Defense peptides derived from combinatorial libraries as a novel means of protection against Fusarium head blight. N. W. GROSS (2), Z. D. Fang (2), F. J. Schmidt (1), J. T. English (2). (1) Division of Biochemistry, University of Missouri, (2) Division of Plant Science, University of Missouri
- P-702 Comparing *Leifsonia xyli* subsp. *xyli* vascular colonization to yield loss for ranking susceptibility of sugarcane to ratoon stunting disease. M. P. GRISHAM (1), (1) USDA, ARS, Sugarcane Research Unit, Houma, LA, U.S.A.
- P-703 Influence of host plant genotype on crown gall formation in walnuts. J. K. HASEY (2), M. M. Maccree (1), D. A. Kluepfel (1). (1) USDA, Agricultural Research Service, Davis, CA, U.S.A., (2) University of CA Cooperative Extension, Yuba City, CA, U.S.A.
- P-704 Inheritance of resistance to early blight disease in a diploid hybrid *Solanum phureja*-*S. stenotomum* population after one cycle of recurrent selection. J. H. SANTA CRUZ (1), B. J. Christ (1), K. G. Haynes (2). (1) The Pennsylvania State University, Department of Plant Pathology, University Park, PA, U.S.A., (2) U.S. Department of Agriculture, ARS, Plant Science Institute, Beltsville, MD, U.S.A.
- P-705 Relationship between potato zebra chips symptom incidence and detections of Potato Virus Y (PVY), Potato Virus Y strain N (PVY^N) and unbalance nutritional index. L. M. VASQUEZ SILLER (2), J. Covarrubias-Ramirez (1), J. Garzon-Tiznado (1), M. Zuñiga-Estrada (1), S. Garcia-Garza (1). (1) Inst. Nacional de Investigaciones, Forestales Agrícolas y Pecuarias, (2) UAAAN
- P-706 Roelfs F2007, a new bread wheat variety with improved resistance to stripe rust and leaf rust for southern Sonora, Mexico. P. FIGUEROA-LOPEZ (3), G. Fuentes-Davila (3), R. P. Singh (1), J. Huerta-Espino (2). (1) CIMMYT, Mexico-Veracruz, El Batán, Texcoco, Edo. de Mexico, Mexico, (2) Campo Experimental Valle de Mexico, INIFAP. Mexico-Texcoco, Chapingo, Edo. de Mexico, Mexico, (3) Campo Experimental Valle del Yaqui, CIRNO-INIFAP, Cd. Obregon, Sonora, Mexico
- P-707 Evaluation of North American potato cultivars for their resistance to potato black dot, *Colletotrichum coccodes*. E. GRIMME (1), J. R. Meyer (1), O. T. Neher (1), B. J. Jacobsen (1). (1) Montana State University, Bozeman, MT, U.S.A.
- P-708 Variations in induced resistance response among cultivated tobacco types. V. PARKUNAN (2), C. S. Johnson (2), J. D. Eisenback (1), S. A. Tolin (1), J. Pattison (2). (1) Virginia Tech, Plant Pathology, Physiology, and Weed Science, Blacksburg, VA, U.S.A., (2) Virginia Tech, Southern Piedmont AREC, Blackstone, VA, U.S.A.
- P-709 Soil application of imidacloprid and related SAR-inducing compounds produces effective and persistent control of citrus canker. M. I. FRANCIS (1), A. Redondo (1), J. K. Burns (1), J. H. Graham (1). (1) University of Florida, Citrus Research and Education Center, Lake Alfred, FL, U.S.A.
- P-710 Genotype × management interactions influence susceptibility to false smut and kernel smut of rice. S. BROOKS (1), M. Anders (2). (1) USDA ARS, Stuttgart, AR, U.S.A., (2) University of Arkansas Rice Research and Extension Center, Stuttgart, AR, U.S.A.
- P-711 Resistance and tolerance to *Meloidogyne javanica* in *Colocasia esculenta* from Thailand, Vietnam, and Nepal. A. Ortiz (2), S. Miyasaka (1), J. Cho (3), B. SIPES (2). (1) University of Hawaii, Hilo, HI, U.S.A., (2) University of Hawaii, Honolulu, HI, U.S.A., (3) University of Hawaii, Kula, HI, U.S.A.
- P-712 Quantification of *Fusarium virguliforme* in soybean roots of partially resistant and susceptible genotypes using quantitative polymerase chain reaction. E. TANG (2), G. L. Hartman (1). (1) USDA-ARS, Urbana, IL, U.S.A., (2) University of Illinois, Urbana-Champaign, IL, U.S.A.
- P-713 Evaluation of sources of soybean rust resistance using detached leaves. C. PAUL (2), G. L. Hartman (1), (1) USDA-ARS, Urbana, IL, U.S.A., (2) University of Illinois, Urbana-Champaign, IL, U.S.A.
- P-714 Evaluation of selected soybean genotypes for resistance to *Phakopsora pachyrhizi*. S. LI (1), L. D. Young (1). (1) USDA-ARS, Crop Genetics and Production Research Unit, Stoneville, MS, U.S.A.
- P-715 Metabolic events that are important for soybean rust resistance. A. Lygin (1), S. LI (2), J. Widholm (1), V. Lozovaya (1). (1) Department of Crop Sciences, University of Illinois at Urbana-Champaign, IL, U.S.A., (2) USDA-ARS, Crop Genetics and Production Research Unit, Stoneville, MS, U.S.A.
- P-716 Characterizing soybean rust resistance in *Glycine tomentella*. S. CHANG (2), T. A. Steinlage (2), T. Hymowitz (2), G. L. Hartman (1). (1) USDA-ARS, Urbana, IL, U.S.A., (2) University of Illinois, Urbana-Champaign, IL, U.S.A.
- P-717 Inheritance of soybean rust resistance in common bean. M. A. PASTOR-CORRALES (1), R. D. Frederick (2). (1) ARS-USDA, Soybean Genomics and Improvement Laboratory, Beltsville, MD, U.S.A., (2) ARS-USDA, Foreign Disease-Weed Science Research Unit, Ft. Detrick, MD, U.S.A.
- P-718 Prolonged infection periods to *Sclerotinia sclerotiorum* identified in wild pea germplasm to be bred into pea cultivars to promote disease avoidance. L. D.

PORTER (1), V. A. Coffman (1). (1) USDA-ARS, Prosser, WA, U.S.A.

- P-719 Screening for disease resistance to *Verticillium dahliae* in spinach. M. I. VILLARROEL-ZEBALLOS (1), L. J. du Toit (2), J. C. Correll (1). (1) University of Arkansas, (2) Washington State University

Host Resistance/Molecular Genetics



- P-720 The expression of maize 14 kDa trypsin inhibitor protein on host resistance to *Aspergillus flavus* infection and aflatoxin production. Z. CHEN (1), R. Brown (2), T. Cleveland (2), K. Damann (1). (1) Department of Plant Pathology and 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.
- P-721 A major QTL is associated with resistance to curly top virus in common bean (*Phaseolus vulgaris*) landrace G122. R. LARSEN (2), P. Miklas (2), C. Kurowski (1). (1) Harris Moran Seed Company, Davis, CA, U.S.A., (2) USDA-ARS
- P-722 Locating resistance QTL for Fusarium head blight using association mapping in contemporary barley breeding germplasm. J. M. MASSMAN (1), K. P. Smith (1). (1) University of Minnesota, St. Paul, MN, U.S.A.
- P-723 Genetic analysis and mapping of tan spot resistance genes using DArT markers. P. K. SINGH (1). (1) NDSU, Fargo, ND, U.S.A.
- P-724 Assessment of haplotype diversity at two spot blotch resistance genomic regions among a set of barley resistance sources. C. Torres Puyo (1), J. Albin (1), S. Rodriguez (1), S. Pereyra (2), C. PRITSCH (1). (1) Biología Vegetal, Facultad de Agronomía, Universidad de Uruguay, (2) INIA-LE Uruguay
- P-725  Molecular evolutionary analysis of resistance gene eIF4E and creation of novel resistance alleles in potato. J. R. CAVATORTA (1), K. W. Perez (1), M. Jahn (2), S. Gray (1). (1) Cornell University, Ithaca, NY, U.S.A., (2) University of Wisconsin, Madison, WI, U.S.A.
- P-726 Genetic dissection of loci conditioning disease resistance in maize bin 8.06. C. CHUNG (2), J. Poland (1), R. Wisser (5), J. Kolkman (2), The Maize Diversity Project (4), R. Nelson (3). (1) Dept. of Plant Breeding and Genetics, Cornell University, Ithaca, NY, U.S.A., (2) Dept. of Plant Pathology and Plant-Microbe Biology, Cornell University, Ithaca, NY, U.S.A., (3) Dept. of Plant Pathology and Plant-Microbe Biology; Dept. of Plant Breeding and Genetics, Cornell University, Ithaca, NY, U.S.A., (4) The Maize Diversity Project, NSF, U.S.A., (5) USDA-Agricultural Research Service, Raleigh, NC, U.S.A.
- P-727 Identifying the components in *Spl11*-mediated defense pathway and determining the relationship between *Spl11* and other defense signaling genes in rice. G. S. SHIRSEKAR (2), M. E. Vega-Sanchez (2), A. Bordeos (1), M. Baraoidan (1), H. Leung (1), G. Wang (2). (1) International Rice Research Institute, Manila, Philippines, (2) The Ohio State University, Columbus, OH, U.S.A.

- P-728 Phylogeny, function and structure of rice oxalate oxidases. M. C. Carrillo (3), P. H. Goodwin (2), J. E. Leach (1), H. Leung (3), C. M. VERA CRUZ (3). (1) Bioagricultural Sciences and Pest Management, Colorado State University, Fort Collins, CO, U.S.A., (2) Department of Environmental Biology, University of Guelph, Guelph, ON, Canada, (3) International Rice Research Institute, Metro Manila, Philippines

- P-729 Molecular mapping of a gene for resistance to stripe rust in spring wheat cultivar IDO377s. P. CHENG (1), X. Chen (2). (1) Department of Plant Pathology, Washington State University, Pullman, WA, U.S.A., (2) USDA-ARS and Department of Plant Pathology, Washington State University, Pullman, WA, U.S.A.
- P-730 Analysis of genomic variation of rice blast resistance gene *Pi-ta* in *Oryza* species. S. LEE (2), Y. Jia (1). (1) USDA-ARS Dale Bumpers National Rice Research Center, (2) University of Arkansas, Rice Research and Extension Center


Integrated Pest Management

- P-731 Field evaluation of hair waste on yields of fresh market tomatoes in south Florida. S. ZHANG (1), T. L. White (1). (1) TREC, University of Florida, IFAS, Homestead, FL, U.S.A.
- P-732 Effect of living and straw mulches on yield and disease incidence for spaghetti squash in southern Quebec. V. TOUSSAINT (1), M. Ciotola (1), R. Bacon (1), M. Cadieux (1). (1) Agriculture and Agri-Food Canada, HRDC, St-Jean-sur-Richelieu, QC, Canada
- P-733 Long-term effect of a single application of factory waste lime on sugar beet and *Aphanomyces* root rot. C. E. WINDELS (2), J. R. Brantner (2), A. L. Sims (2), C. A. Bradley (1). (1) University of Illinois, Crop Sciences Dept., Urbana, IL, U.S.A., (2) University of Minnesota, NW Res & Outreach Ctr., Crookston, MN, U.S.A.
- P-734 Suppression of *Rhizoctonia solani* in soils under different transitional organic management practices. F. BAYSAL GUREL (2), M. Kleinhenz (1), J. Cardina (1), B. McSpadden Gardener (2), S. A. Miller (2). (1) Department of Horticulture and Crop Sciences, The Ohio State University-OARDC, Wooster, OH, U.S.A., (2) Department of Plant Pathology, The Ohio State University-OARDC, Wooster, OH, U.S.A.
- P-735 Efficacy of biopesticides and fungicides against pre- and post-emergence damping-off of vegetable seedlings by *Pythium aphanidermatum*. F. BAYSAL GUREL (1), S. A. Miller (1). (1) Department of Plant Pathology, The Ohio State University-OARDC, Wooster, OH, U.S.A.
- P-736 Antagonism between biofumigation and biocontrol in the soil. E. RIGA (1), D. Henderson (3), W. Snyder (2), R. Ramirez (2). (1) Washington State University, Prosser, WA, U.S.A., (2) Washington State University, Pullman, WA, U.S.A., (3) Washington State University, WA, U.S.A.

- P-737 *Phytophthora nicotianae* zoospores evade pressure and agitation stress but are completely destroyed by CO₂ injection. M. O. AHONSI (2), T. J. Banko (2), S. R. Doane (1), A. O. Demuren (1), W. E. Copes (3), C. X. Hong (2). (1) Department of Mechanical Engineering, Old Dominion University, Norfolk, VA 23529, (2) Hampton Roads Agricultural Research and Extension Center, Virginia Tech, Virginia Beach, VA, U.S.A., (3) USDA-ARS Southern Horticultural Laboratory, Poplarville, MS, U.S.A.
- P-738 Evaluation of heated potassium sorbate solutions to control postharvest green and blue molds on commercially important citrus cultivars. L. PALOU (1), C. Montesinos-Herrero (1), C. Pastor (1), M. del Río (1). (1) IVIA, Montcada, València, Spain
- P-739 Preliminary assessment of PGPR, acibenzolar and silicon for their effects on growth and diseases of tomatoes. S. ZHANG (1), T. L. White (1), W. Klassen (1), (1) TREC, University of Florida, IFAS, Homestead, FL, U.S.A.
- P-740 Evaluating hot-water treatment as means to reduce *Xanthomonas fragariae* in strawberry nursery stock: Field trials. W. W. TURECHEK (1), N. A. Peres (2). (1) U.S. Horticultural Research Lab, Ft. Pierce, FL, U.S.A., (2) University of Florida, GCREC, Wimauma, FL, U.S.A.
- P-741 Evaluating strategies for managing *Cercospora* leaf spot of sugarbeet. M. F. KHAN (1). (1) Plant Pathology Department, North Dakota State University & University of Minnesota, Fargo, ND, U.S.A.
- P-742 Watermelon mosaic virus incidence and yield losses in summer squash reduced by use of UV-reflective plastic mulch but not biological control. J. F. MURPHY (1), J. Masiri (1), M. Eubanks (2). (1) Auburn University, AL, U.S.A., (2) Texas A&M University, College Station, TX, U.S.A.
- P-743 Effectiveness of extended duration row covers for suppression of bacterial wilt in muskmelon. A. OWENS (1), L. Jesse (1), M. L. Gleason (1), J. Batzer (1). (1) Department of Plant Pathology, Iowa State University, Ames, IA, U.S.A.
- P-744 Surface plasmon resonance (SPR) detection of potato wart fungus. J. Duy (1), L. CONNELL (1). (1) University of Maine, Orono, ME, U.S.A.
- P-745 Impact of winter cover crop and planting data on diseases, yield and aflatoxin contamination of peanut. K. L. BOWEN (1), A. K. Hagan (1), H. Campbell (1). (1) Dept. Entomology and Plant Pathology, Auburn University, Auburn, AL, U.S.A.
- P-746  Integrated management strategies for bacterial wilt on cucumbers. E. HERNANDEZ (1), P. A. Backman (1), S. J. Fleischer (1). (1) Penn State University, University Park, PA, U.S.A.
- P-747 Integrated control of fire blight with bacterial antagonists and oxytetracycline. V. O. STOCKWELL (1), T. Temple (1), K. B. Johnson (1), J. E. Loper (2). (1) Oregon State University, (2) USDA-ARS
- P-748 Integrated Pest Management in the Cuban tobacco crops. C. R. ROMERO (3), E. Garcia (2), M. Domínguez (3), L. E. Blanco (3), E. Capote (4), C. Mandariaga (1). (1) Plant Health National Center, (2) Sugar Cane Research Institute, (3) Tobacco Research Institute, Plant Pathology Department, San Antonio de lo Baños, Habana Cuba, (4) Trading Tobacco Company
- P-749 Impact of crop rotation on the occurrence of diseases and nematodes in corn, cotton, and peanut in southwest Alabama. H. L. CAMPBELL (1), A. K. Hagan (1), K. L. Bowen (1), M. D. Pegues (2). (1) Auburn University, Auburn, AL, U.S.A., (2) Gulf Coast Research and Extension Center, Fairhope, AL, U.S.A.
- P-750 Evaluation of the Rossi et al. 2000 apple scab ascospore release model in California pear orchards. J. C. BROOME (1), W. Gubler (3), C. Ingels (1), R. Elkins (1), J. F. Strand (2). (1) University of California Cooperative Extension, (2) University of California Integrated Pest Management Program, (3) University of California, Davis, CA, U.S.A.
- P-751 Influence of El Niño Southern Oscillation (ENSO) on tomato spotted wilt incidence and peanut yield. R. O. OLATINWO (1), J. O. Paz (1), A. K. Culbreath (2), R. C. Kemerait (2), G. Hoogenboom (1). (1) Department of Biological and Agricultural Engineering, University of Georgia, Griffin, GA, U.S.A., (2) Department of Plant Pathology, University of Georgia, Tifton, GA, U.S.A.
- P-752 Influence of planting date and tillage on reniform nematode populations in cotton. S. R. STETINA (1), W. T. Pettigrew (1), W. T. Molin (2). (1) USDA ARS CGPRU, Stoneville, MS, U.S.A., (2) USDA ARS SWSRU, Stoneville, MS, U.S.A.
- P-753 Effects of glucosinolates from brassicaceous plants on nematode populations. K. ONG (2), K. Steddom (3), J. L. Starr (1). (1) Texas A&M University, College Station, TX, U.S.A., (2) Texas AgriLife Extension Service, Dallas, TX, U.S.A., (3) Texas AgriLife Extension Service, Overton, TX, U.S.A.
- P-754 Effects of two cover crops on nematode communities in *Helicotylenchus multicinctus* infested banana fields. K. WANG (1), C. R. Hooks (1). (1) University of Hawaii
- P-755 Suppression of *Meloidogyne incognita* population densities with DIBOA. S. L. MEYER (2), I. A. Zasada (2), C. Rice (1). (1) USDA ARS Environmental Management and Byproduct Utilization Lab, Beltsville, MD, U.S.A., (2) USDA ARS Nematology Lab, Beltsville, MD, U.S.A.
- P-756  A holistic approach to control potato late blight in organic production system in Parana, Brazil. N. NAZARENO (2), A. S. Pereira (1), C. B. Medeiros (1). (1) Embrapa, Pelotas, RS, Brazil, (2) IAPAR, Curitiba, PR, Brazil

- P-757 Combining sanitation practices with timing of scab sprays in organic apple production. I. J. HOLB (1). (1) University of Debrecen, Centre of Agricultural Sciences, Debrecen, Hungary
- P-758 Interaction between weed and disease management methods in sugar beet. L. E. HANSON (2), K. A. Barnett (1), C. L. Sprague (1). (1) Michigan State University, East Lansing, MI, U.S.A., (2) USDA-ARS, East Lansing, MI, U.S.A.
- P-759 Control of pineapple fusariosis with liquid tannins of *Acacia mearnsii*. R. CARVALHO (1). (1) EMEPA (Empresa Estadual de Pesquisa Agropecuária da Paraíba) - João Pessoa - Paraíba - Brazil
- P-760 Control of black rot of pineapples with calcium oxide. R. CARVALHO (1). (1) EMEPA (Empresa Estadual de Pesquisa Agropecuária da Paraíba) - João Pessoa - Paraíba - Brazil

Regulatory


- P-761 Head-to-head comparisons of sensitivity and specificity among 5 real-time PCR assays diagnostic for *Phytophthora ramorum*. K. A. ZELLER (1), R. M. DeVries (1), L. Levy (1). (1) USDA-APHIS-PPQ-CPHST, National Plant Germplasm and Biotechnology Laboratory, Beltsville, MD, U.S.A.
- P-762 Development and validation of a tissue based panel for the *P. ramorum* proficiency testing program. V. A. MAVRODIEVA (1), S. Negi (1), D. Picton (1), L. Levy (1), P. Tooley (2), N. Shishkoff (2), D. Luster (2). (1) USDA APHIS PPQ CPHST, Beltsville, MD, U.S.A., (2) USDA ARS FDWSRU, Fort Detrick, MD
- P-763  New Pest Advisory Group: Assessing exotic plant pathogens and pests recently introduced or imminently threatening the United States. K. A. SCHWARTZBURG (1), K. E. Colpetzer (1), B. M. Spears (1). (1) USDA APHIS PPQ Center for Plant Health Science and Technology (CPHST), Raleigh, NC, U.S.A.
- P-764 A model system for measuring citrus propagation risk mitigation based on Hazard Analysis and Critical Control Point (HACCP) methods. L. G. BROWN (1). (1) USDA APHIS PPQ Center for Plant Health Science and Technology, Raleigh, NC, U.S.A.
- P-765 The current status of chrysanthemum white rust in the United States. F. MEHDIZADEGAN (1), S. Redlin (1). (1) USDA, PPQ, Raleigh, NC, U.S.A.
- P-766 Classifying and categorizing scientific literature specific to risk assessments of transgenic crops. S. D. COHEN (1). (1) Center for Regulatory Research, LLC

Seed Pathology

- P-767 A procedure, based on exposure to chlorine gas, for disinfesting watermelon seeds. D. J. Stephens (3), R. W. SCHNEIDER (1), R. R. Walcott (2), C. E. Johnson (3). (1) Department of Plant Pathology, Louisiana State University Agricultural Center, Baton Rouge, LA, U.S.A., (2) Department of Plant Pathology, University of Georgia, Athens, GA, U.S.A., (3) School of PESS, Louisiana State University Agricultural Center, Baton Rouge, LA, U.S.A.
- P-768 Pathology and treatment of American ginseng seed. S. N. HILL (1), M. K. Hausbeck (1). (1) Plant Pathology Dept., Michigan State University, East Lansing, MI, U.S.A.
- P-769 Evaluation of seed treatments for control of soybean seedling diseases under controlled environmental conditions. K. E. URREA (1), J. C. Rupe (1), C. Rothrock (1). (1) University of Arkansas
- P-770 Efficacy of agricultural limestone amendments for suppression of Fusarium wilt in spinach seed crops in Washington State. L. J. DU TOIT (1), M. L. Derie (1), L. M. Brissey (1). (1) Washington State University
- P-771 Simultaneous detection of *Pantoea ananatis* and *Botrytis allii* in onion seeds using magnetic capture hybridization and real-time PCR. Y. HA (1), R. R. Walcott (1). (1) Department of Plant Pathology, University of Georgia, Athens, GA, U.S.A.
- P-772 *Clavibacter michiganensis* subsp. *michiganensis* threshold levels required for transmission by naturally-infested tomato seed. W. S. KANESHIRO (2), D. M. Ingram (1), A. M. Alvarez (2). (1) Central Mississippi Research and Extension Center, Raymond, MS, U.S.A., (2) University of Hawaii, Dept. of Plant & Environmental Protection Sciences, Honolulu, HI, U.S.A.
- P-773 Construction of bioluminescent *Clavibacter michiganensis* subsp. *michiganensis*. X. XU (1), G. Rajashekara (2), S. A. Miller (1). (1) Department of Plant Pathology, The Ohio State University, OARDC, Wooster, OH, U.S.A., (2) Food Animal Health Research Program, OARDC, The Ohio State University, Wooster, OH, U.S.A.
- P-774 Development of a multiplex real-time PCR assay for the simultaneous detection of three seedborne pathogen types in cucurbits. K. LING (3), W. P. Wechter (3), R. R. Walcott (2), A. P. Keinath (1). (1) Coastal Research & Education Center, Clemson University, Charleston, SC, U.S.A., (2) Department of Plant Pathology, University of Georgia, Athens, GA, U.S.A., (3) USDA-ARS, U.S. Vegetable Laboratory, Charleston, SC, U.S.A.

Professionalism/Service/Outreach

Extension Posters

- P-775  Developing a fungicide resistance management guide for vegetable crops grown in the mid-Atlantic region. C. A. WYENANDT (4), K. L. Everts (3), R. L. Mulrooney (1), S. L. Rideout (2), N. L. Maxwell (4). (1) Dept. of Plant & Soil Sciences, University of Delaware, Newark, DE, U.S.A., (2) Dept. of Plant Pathology, Physiology and Weed Sciences, Virginia Polytechnic Inst., ESAREC, Painter, VA, U.S.A., (3) Dept. of Plant Sciences & Landscape Architecture, University of Maryland, Lower Eastern Shore Res. & Ed. Center, Salisbury, MD, U.S.A., (4) Rutgers University, New Jersey Agricultural Experiment Station, Bridgeton, NJ, U.S.A.
- P-776 Using wikis to communicate plant pathology information. G. J. HOLMES (1), B. A. Edmunds (1), S. J. Colucci (1). (1) NC State University, Raleigh, NC, U.S.A.
- P-777 Train-the-trainer workshops as a platform for disseminating applied nematological research to vegetable and small fruit stakeholders in the Northeast. B. K. GUGINO (1), G. S. Abawi (1), J. A. LaMondia (2), D. A. Neher (3). (1) Cornell University, Geneva, NY, U.S.A., (2) The Connecticut Agricultural Experiment Station, Windsor, CT, U.S.A., (3) University of Vermont, Burlington, VT, U.S.A.

History of the Profession Poster



- P-778 The nation's first agricultural experiment station: Discoveries that shaped plant pathology. S. L. Anagnostakis (1), S. DOUGLAS (1). (1) The Connecticut Agricultural Experiment Station, New Haven, CT, U.S.A.

Regulatory Poster

- P-779 Tier risk assessments of biopesticides. G. S. TOMIMATSU (1), W. R. Schneider (1). (1) U.S. Environmental Protection Agency, OPPTS/OPP/BPPD, Washington, DC, U.S.A.

Teaching Posters

- P-780 Online teaching: Engaging students through interactive discussions. S. D. ELLIS (1), M. J. Boehm (1), C. R. Curtis (1). (1) The Ohio State University, Department of Plant Pathology, Columbus, OH, U.S.A.

- P-781 Age demographics, hiring trends, and graduation rates in plant pathology in the United States. D. GADOURY (1), A. Lichens-Park (6), J. Andrews (9), J. MacDonald (7), K. Baumgartner (6), M. Kennelly (3), T. Burr (1), A. Talley (5), S. Savary (2), H. Scherm (8), G. Wang (4). (1) Cornell University, (2) INRA, Bordeaux, (3) Kansas State University, (4) Ohio State University, (5) Syngenta, (6) USDA, (7) University of California, Davis, (8) University of Georgia, (9) University of Wisconsin
- P-782 University of Florida Plant Medicine Program: Leading in the success of an emerging profession. R. J. MCGOVERN (6), A. J. Silagyi (4), S. M. Bledsoe (1), J. S. Strickland (5), J. A. Garces (2), C. R. Semer (7), J. Browning (3), G. N. Agrios (6). (1) Massey Services, Inc., Orlando, FL, U.S.A., (2) Skinner Nurseries, Bunnell, FL, U.S.A., (3) Texas A&M University, Department of Plant Pathology and Microbiology, Lacey, WA, U.S.A., (4) USDA-APHIS-PPQ, Cooperative Agricultural Pest Survey, Gainesville, FL, U.S.A., (5) University of Florida-IFAS, Hernando County Extension Office, Brooksville, FL, U.S.A., (6) University of Florida-IFAS, Department of Plant Pathology and Plant Medicine Program, Gainesville, FL, U.S.A., (7) University of Florida-IFAS, Plant Medicine Program, Gainesville, FL, U.S.A.
- P-783 University of Florida Plant Medicine Program Clinical Trials, A. C. BARBAGLIA (3), T. C. Durham (3), K. H. Cho (3), S. J. Glucksman (3), E. B. Rivera Del Cid (1), C. R. Semer (3), R. J. McGovern (2). (1) Escuela Agricultura PanAmericana (Zamorano), Tegucigalpa, Honduras, (2) University of Florida-IFAS, Dept. of Plant Pathology and Plant Medicine Program, Gainesville, FL, U.S.A., (3) University of Florida-IFAS, Plant Medicine Program, Clinical Trials, Gainesville, FL, U.S.A.
- P-784  Does our teaching impact the affective domain of our students? C. J. D'ARCY (1), D. M. Eastburn (1). (1) University of Illinois, Urbana, IL, U.S.A.
- P-785  "Taking it home" – a project to assess student use of class material. D. M. EASTBURN (1), C. J. D'Arcy (1). (1) University of Illinois, Urbana, IL, U.S.A.
- P-786 Virtual nematode specimens for teaching Nematology. J. D. EISENBACK (1). (1) Virginia Tech, Blacksburg, VA, U.S.A.



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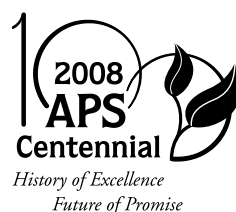
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- Turfgrass Pathology: Chair:* J. E. Kaminski. *Vice Chair:* H. C. Wetzel. M. L. Agnew, T. D. Blunt, M. J. Boehm, D. Y. Han, B. J. Horvath, K. S. Jordan, G. Jung, M. M. Kennelly, J. P. Kerns, U. N. Nanayakkara, S. R. Parker, D. H. Perry, B. Rao, D. L. Smith, M. Tomaso-Peterson, L. P. Tredway, J. R. Young
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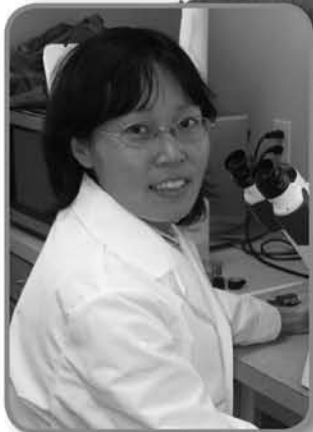


Purchase T-Shirts at the APS PRESS Bookstore in the Exhibit Hall C

Sunday, July 27 6 p.m. – 8 p.m.
Monday, July 28 9 a.m. – 6 p.m.
Tuesday, July 29 8 a.m. – 5 p.m.
Wednesday, July 30 8 a.m. – 11 a.m.



Look Who's Using APS Journals Online!



Lijuan Xing, Ph.D. added *Transfer of Biological Soil Suppressiveness Against Heterodera schachtii* from *Phytopathology* April 2000 to her profile's favorites. Now relocating important articles is easy.



Ron Walcott, Ph.D. added phytopathogenic bacteria, seed pathogens, biological control, and blossom infection to his saved-searches and is notified when new content is published in APS Journals that relates to these terms.



Michelle Moyer signed up for "Table of Contents" alerts for *Plant Disease* and *Phytopathology* and is alerted monthly to view the newly published content.



Tika Adhikari, Ph.D. tracks articles that cite those he is interested in, like *Rice Defense Mechanisms Against Cochliobolus miyabeanus* and *Magnaporthe grisea Are Distinct* in the APS journal *Phytopathology*, November 2005.

Create a custom saved-search in your Plant Pathology Profile at the APS Centennial Meeting and receive a **FREE APS Hand Lens**. Stop by the APS Journals area in the APS PRESS Bookstore.



Jillian Lang added molecular diagnostics, *Xanthomonas oryzae*, and *Pythium ultimum* to her saved-searches and is notified when new content is published in APS Journals that relates to these terms.



Fred Brooks, Ph.D. added *Leaf Position Prevails Over Plant Age and Leaf Age in Reflecting Resistance to Late Blight in Potato* from *Phytopathology*, June 2003 to his profile's favorites. Now locating articles he wants to revisit is easy.

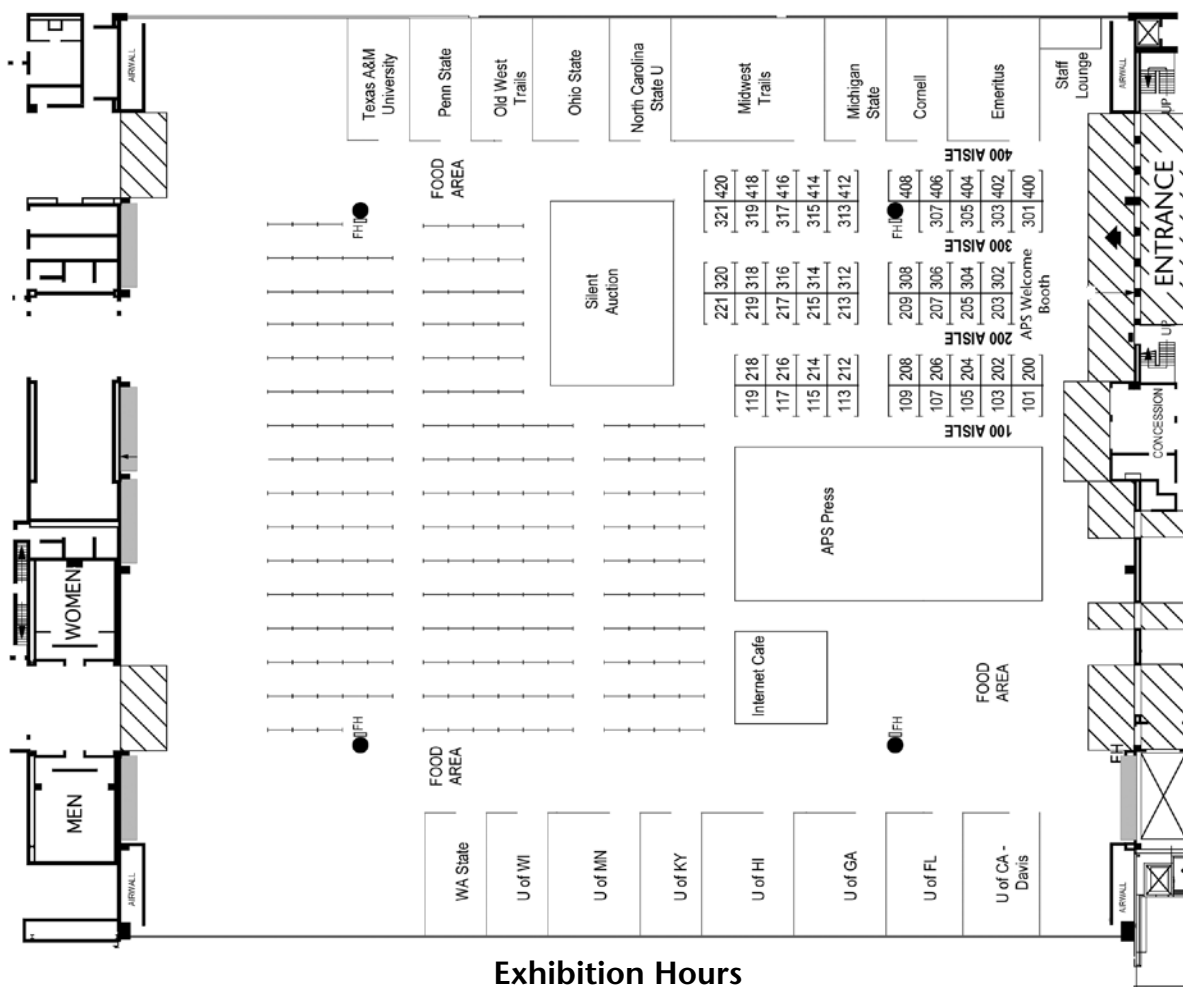


Yan Zhang, Ph.D. tracks articles that cite those she is interested in, like *Mapping and Comparative Analysis of QTL for Crown Rust Resistance in an Italian x Perennial Ryegrass Population* in the APS journal *Phytopathology*, June 2007.



Cynthia Damasceno signed up for "Table of Contents" alerts for *Molecular Plant-Microbe Interactions (MPMI)* and is alerted monthly to view the newly published research results.

APS Exhibit Hall C Floor Plan



Exhibition Hours

Sunday, July 27 6:00 – 8:00 p.m.
 Monday, July 28 9:00 a.m. – 6:00 p.m.
 Tuesday, July 29 8:00 a.m. – 3:00 p.m.

Exhibitors

Listed in numerical order.

101	AC Diagnostics Inc	207	Council for Agricultural Science and Technology	308	United Phosphorus Inc
103	APS OIP (Office of International Programs)	208	USDA APHIS PPQ Ctr for Plant Health Science & Technology	312	Spectrum Technologies Inc
105	APS PPB (Public Policy Board)	209	Bio Chambers Inc	313/412	Springer
107	APS OPRO (Office of Public Relations and Outreach)	212	Microbiology International	314	EnviroLogix
109	Fungicide Resistance Action Committee: FRAC and North America FRAC	213	Dow AgroSciences LLC	315	DuPont Crop Protection
113/115	Convion	214	D & S Electrostatic Samplers	316	Percival Scientific Inc
117	APS OIR (Office of Industry Relations)	215	Heinz Walz, GmbH	318	Oxford University Press
119	Gylling Data Management	216	British Society for Plant Pathology (The)	319/321	9th Intl Congress of Plant Pathology (ICPP2008)
200/202	Bayer CropScience	217	LemnaTec	320	Burkard Manufacturing Co Ltd UK
201/300	APS Welcome/Information	218	Wiley-Blackwell	402	Corbett Robotics
203	CRC Press-Taylor & Francis Group LLC	221	STA Laboratories Inc / BIOREBA AG	404	Elsevier
204	National Plant Diagnostic Network	301/400	Agdia Inc	406	Foundation for Environmental Agriculture Education C/O NAICC
205	Agri-Analysis LLC	302/304	USDA/APHIS/PPQ/PRIM	408	Samuel Roberts Noble Foundation (The)
206	Applied Maths Inc	303/305	BASF Corporation	420	APS Diagnostics Committee C/O SPDN
		306	Meiji Techno America		
		307	Environmental Growth Chambers		

2008 APS Centennial Meeting Exhibitors

Listed alphabetically and current as of June 11, 2008.

Representatives from more than 40 leading industry suppliers will be at this year's meeting to answer questions and share information on products and services.

AC Diagnostics, Inc. 101

1131 W. Cato Springs Road, Fayetteville, AR 72751; Phone: +1.479.595.0320, Fax: +1.479.251.1791, E-mail: infor@acdiainc.com, Web: www.acdiainc.com. AC Diagnostics Inc. (ACD Inc.), a leading agri-diagnostic company, is providing customers with high-quality plant-diagnostic products at affordable prices. ACD Inc. has more than 170 ELISA reagents/kits for testing plant viruses and bacteria. ACD Inc. also offers reliable laboratory testing services and contract research to satisfy customer requirements.

Agdia, Inc. 301/400

30380 County Road 6, Elkhart, IN 46514-9514; Phone: +1.574.264.2615, Fax: +1.574.264.2153, E-mail: info@agdia.com, Web: www.agdia.com. Agdia celebrates 26 years of continuous service, supplying diagnostic test kits, reagents, and services to the world's agricultural industry. Its products and services include tests in various formats for the detection of plant pathogens, transgenic plant traits, and plant growth hormones. 2008 brings new additions to the Agdia lines of ELISA kits, ImmunoStrip® field tests, and testing services.

Agri-Analysis LLC 205

45133 County Rd. 32B, Davis, CA 95618; Phone: +1.530.752.4656, Fax: +1.530.757.4655, E-mail: alfabritius@agri-analysis.com, Web: www.agri-analysis.com. Founded in 1981, Agri-Analysis LLC is an independent, agricultural diagnostic laboratory that provides clients with access to state-of-the-art laboratory techniques to answer their agricultural production problems. We employ ELISA, PCR, and traditional culturing methods to detect bacterial, fungal, and viral pathogens in plant material and soil.

Applied Maths, Inc. 206

13809 Research Blvd., Suite 645, Austin, TX 78750; Phone: +1.512.482.9700, Fax: +1.512.482.9708, E-mail: info-us@applied-maths.com, Web: www.applied-maths.com. Applied Maths develops innovative software solutions for the biosciences. Areas of specialization are pattern matching algorithms, clustering and identification methods, and data mining tools for massive datasets such as sequences and microarrays. Today the company continues to be a pioneer in bioinformatics, with BioNumerics, GelCompar II, GeneMathsXT, and Kodon.

APS Diagnostics Committee, c/o SPDN 420

University of Florida, Plant Pathology Department, 1453 Fifield Hall, Gainesville, FL 32611; Phone: +1.352.392.3631, Fax: +1.352.392.6532. Journey through time with diagnosticians and other scientists of note. The APS Diagnostics Committee has sponsored a display of diagnostic activities, people, and highlights from the past century of plant pathology. Visit with current diagnosticians and view this historic poster display in the Exhibit Hall at the APS Centennial Meeting!

APS OIP (Office of International Programs) 103

3340 Pilot Knob Rd., St. Paul, MN 55121; Phone: +1.651.454.7250, Fax: +1.651.454.0766, Web: www.apsnet.org/members/oip. OIP is a global initiative designed to promote greater worldwide interaction among practitioners of plant pathology. OIP provides coordination of APS international activities, promotes collaboration among plant pathologists and scientists of all nationalities, and facilitates teaching, research, and extension with the aim of increasing agricultural production through improved plant health, especially in developing countries.

APS OIR (Office of Industry Relations) 117

3340 Pilot Knob Rd., St. Paul, MN 55121; Phone: +1.651.454.7250, Fax: +1.651.454.0766, Web: www.apsnet.org/members/oir. Our mission is to develop visionary dialog for long-term health of APS and industry interactions, optimize interactions between APS and its membership on matters pertaining to the diverse industries related to plant disease management, and strengthen advocacy for science-based public policy.

APS OPRO (Office of Public Relations and Outreach) 107

3340 Pilot Knob Rd., St. Paul, MN 55121; Phone: +1.651.454.7250, Fax: +1.651.454.0766, Web: www.apsnet.org/members/media. OPRO's mission is to educate the public on matters related to plant health and plant diseases, increase media coverage of plant health issues to demonstrate the value of plant pathology to society, promote interactions with other scientific and professional organizations, and assist the Public Policy Board in strengthening advocacy for science-based public policy.

APS PPB (Public Policy Board) 105

3340 Pilot Knob Rd., St. Paul, MN 55121; Phone: +1.651.454.7250, Fax: +1.651.454.0766, Web: www.apsnet.org/members/ppb. The PPB provides scientific input on public policy issues to the society's officers, federal policy makers and agency personnel, and works with other scientific organizations and coalitions to increase the awareness of the science of plant pathology.

APS Welcome/Information 201/300

3340 Pilot Knob Rd., St. Paul, MN 55121; Phone: +1.651.454.7250, Fax: +1.651.454.0766, E-mail: apsinfo@scisoc.org, Web: www.apsnet.org/members/member.asp. APS invites you to stop by the APS Central booth, located at the entrance of the exhibit hall, for many fun activities. Membership staff will be on hand to answer questions and provide information about the many resources APS has to offer you.

- BASF Corporation** 303/305
26 Davis Drive, P.O. Box 13528, Research Triangle Park, NC 27709; Phone: +1.919.547.2000, Fax: +1.919.547.2488, Web: www.basf.com/usa. Built on the strength of the world's leading chemical company, BASF Agricultural Products is a technology leader in crop protection and turf and ornamental management. The BASF portfolio includes Cabrio® EG, Caramba™, Headline®, Endura®, Forum™, Multiva™, and Pristine® fungicides in agricultural production; Charter® and Stamina™ fungicides in seed treatment; Insignia® fungicide in turf and ornamentals; and Emerald® and Trinity™ fungicides in turf. These products feature the active ingredients pyraclostrobin, boscalid, dimethomorph, metconazole, or triticonazole.
- Bayer CropScience** 200/202
2 T. W. Alexander Drive, Research Triangle Park, NC 27709; Phone: +1.919.549.7000, Fax: +1.919.549.2778, E-mail: connie.williams@bayercropscience.com, Web: www.bayercropscience.com. Bayer CropScience is one of the world's leading innovative crop science companies in the areas of crop protection, nonagricultural pest control, seeds, and plant biotechnology. The company offers an outstanding range of products and extensive service backup for modern, sustainable agriculture and for nonagricultural applications.
- Bio Chambers Incorporated** 209
477 Jarvis Avenue, Winnipeg, MB R2W 3A8, Canada; Phone: 1.800.361.7778 or +1.204.589.8900, Fax: +1.204.582.1024, E-mail: info@BioChambers.com, Web: www.BioChambers.com. See a live demonstration of how easy it is for us to provide technical support for our growth chambers and rooms in your facility! Visit to tell us your needs and pick up information on our popular products.
- The British Society for Plant Pathology** 216
Marlborough House, Basingstoke Road, Spencer's Wood, Reading, Berkshire, RG7 1AG, United Kingdom; Phone: +44 1603 450285, Fax: +44 1603 450045, E-mail: secretary@bspp.org.uk, Web: www.bspp.org.uk. The BSPP supports the professional interests of plant pathologists worldwide. We provide information to our members in all aspect of plant pathology via a newsletter, website, conferences, and three international high-quality journals. Members can apply for BSPP fellowships, undergraduate bursaries, and travel and public engagement grants.
- Burkard Manufacturing Co. Ltd., UK** 320
Woodcock Hill Industrial Estate, Harefield Road, Rickmansworth, Hertfordshire WD3 1PJ, United Kingdom; Phone: +44 1923 773134, Fax: +44 1923 774790, E-mail: sales@burkard.co.uk, Web: www.burkard.co.uk. Burkard will be exhibiting for the first time a NEW multi-vial cyclone sampler using DNA, ELISA, or real-time analysis. Also laboratory and field instruments for plant pathology, including a new computer-controlled spraying apparatus, air samplers for sampling directly into microtitre wells, and the 'Vortis' insect suction sampler for plant and grassland. Many of the instruments will be displayed under power. A technical representative will be available to answer any enquiries during the meeting.
- Conviron** 113/115
590 Berry Street, Winnipeg, MB R3H 0R9 Canada; Phone: 1.800.363.6451 or +1.204.786.6451, Fax: +1.204.786.7736, E-mail: info@conviron.com, Web: www.conviron.com. Conviron provides world-leading solutions in controlled environment systems. With products in more than 80 countries, Conviron is the world's largest supplier of plant growth chambers and rooms and high-fidelity greenhouses. Our services encompass the entire life cycle of your project—from early-stage design through to installation, project commissioning, and ongoing maintenance support.
- Corbett Robotics** 402
185 Berry Street, Suite 5200, San Francisco, CA 94107; Phone: +1.415.348.1166, Fax: +1.415.348.1177, E-mail: info@corbettrobotics.com, Web: www.corbettlifescience.com. Corbett Robotics provides innovative instrumentation for the life sciences. Our product line is composed of automated extraction robotics, automated PCR workstations, and the Rotor-Gene real-time analyzer. We recently received the 2006 Frost & Sullivan Technology Innovation Award for our Rotor-Gene 6000 product line, including high resolution melting (HRM).
- Council for Agricultural Science and Technology** 207
4420 West Lincoln Way, Ames, IA 50014-3447; Phone: +1.515.292.2125, Fax: +1.515.292.4512, E-mail: dfreeman@cast-science.org, Web: www.cast-science.org. CAST assembles, interprets, and communicates credible, science-based information regionally, nationally, and internationally to legislators, regulators, policymakers, the media, the private sector, and the public. Visit the CAST website at www.cast-science.org.
- CRC Press—Taylor & Francis Group LLC** 203
6000 Broken Sound Parkway NW, Suite 300, Boca Raton, FL 33487; Phone: 1.800.272.7737 or +1.561.994.0555, Fax: +1.561.998.2559, E-mail: orders@taylorandfrancis.com, Web: www.crcpress.com. We are a premier publisher of scientific and technical books, journals, and electronic databases. Visit our booth to browse our convention specials on new and best-selling titles in plant science and plant pathology, including the new edition of our best-selling textbook, *Plant Pathology Concepts and Laboratory Exercises*.
- D & S Electrostatic Samplers** 214
P.O. Box 83674, Baton Rouge, LA 70884-3674; Phone: +1.225.803.6703, Fax: +1.225.208.1281, E-mail: sporetrap@bellsouth.net. We are pleased to present a new technological development in spore trap design that is based upon electrostatic capture of airborne particulate matter. The device is programmable, includes a data logger for environmental variables and is capable of providing samples for light microscopy, scanning electron microscopy (SEM) and PCR analyses.

Dow AgroSciences LLC 213
9330 Zionsville Road, Indianapolis, IN 46268-1054; Phone: +1.317.337.3000, E-mail: bdolson@dow.com, Web: www.dowagro.com. Dow AgroSciences LLC, based in Indianapolis, IN, U.S.A., is a top-tier agricultural company that combines the power of science and technology with the “human element” to constantly improve what is essential to human progress. Dow AgroSciences provides innovative technologies for crop protection, pest and vegetation management, seeds, traits, and agricultural biotechnology to serve the world’s growing population.

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500 Riverside Industrial Parkway, Portland, ME 04103; Phone: +1.207.797.0300, Fax: +1.207.797.7533, E-mail: horticulture@envirologix.com, Web: www.envirologix.com. EnviroLogix Inc. develops and provides rapid test kits to detect pathogens in and on seeds and plants. The ELISA-based plate format is available for high-throughput laboratory analysis. QuickStix™ lateral flow strips give accurate yes/no results in minutes—perfect for field and greenhouse use. Along with the first field test for ToANV, kits are also available for TSWV, LMV, botrytis, and BFB, with more to come.

Environmental Growth Chambers 307
510 East Washington Street, Chagrin Falls, OH 44022-4448; Phone: 1.800.321.6854, Fax: +1.440.247.8710, E-mail: sales@egc.com, Web: www.egc.com. Environmental Growth Chambers has the largest selection of plant growth chambers of any company worldwide. We also produce controlled environmental rooms, tissue culture chambers, lighted and refrigerated biological incubators, shelf-lighted rooms, gas exchange chambers, hydroponics systems, day-lit chambers, and root zone cabinets. Stop by and discuss your requirements.

Foundation for Environmental Agriculture Education c/o NAICC 406
349 E. Nolley Drive, Collierville, TN 38017; Phone: +1.901.861.0511, Fax: +1.901.861.0512, E-mail: jonesNA-ICC@aol.com, Web: www.naicc.org/FEAE. An overview of the National Alliance of Independent Crop Consultant (NA-ICC) Foundation for Environmental Agricultural Education

(FEAE) will be presented by Don Jameson, FEAE president. The FEAE was established in 1991 to catalyze innovative education and training for current and future professional crop management practitioners. The developing success of the University of Florida Doctor of Plant Medicine (DPM) degree program will be a featured component of the display and will be represented by Bob McGovern, program director, and DPM students.

Fungicide Resistance Action Committee (FRAC) and North America FRAC (NA-FRAC) 109
263A Hinton Way, Great Shelford, Cambridge CB22 5AN, United Kingdom; Phone: +44 1223 841724, E-mail: Phil.E.Russell@btinternet.com; and 7145 58th Avenue, Vero Beach, FL 32967; Phone: +1.772.567.5218 ext. 149, E-mail: gilberto.olaya@syngenta.com, Web: www.frac.info. The Fungicide Resistance Action Committee (FRAC) is a Specialist Technical Group of Crop Life International. The purpose of FRAC is to provide fungicide resistance management guidelines to prolong the effectiveness of “at risk” fungicides and to limit crop losses if resistance occurs.

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630 Freedom Business Center, King of Prussia, PA 19406; Phone: 1.800.438.6071 or +1.610.491.2800, Fax: +1.610.491.2850, E-mail: cory.bromley@uniphos.com, Web: www.upi-usa.com. United Phosphorus, Inc. is one of North America's leading suppliers of post-patent crop protection technologies. Following the acquisition of Cerexagri in 2007, UPI has become one of the industry's leading companies in the North American specialty crop, row crop, and noncrop markets. UPI's product portfolio consists of a full line of branded post patent/generic fungicides, insecticides, herbicides, and bactericides.

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USDA/APHIS/PPQ/PRIM 302/304

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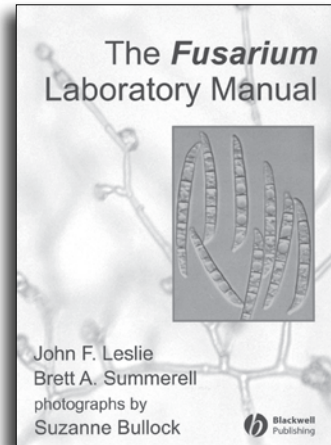
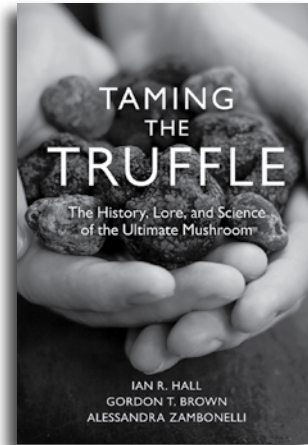
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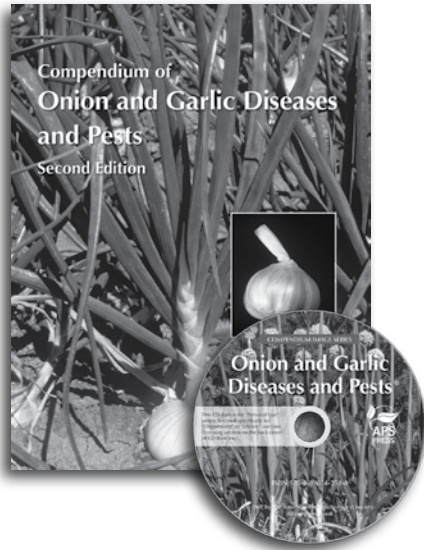
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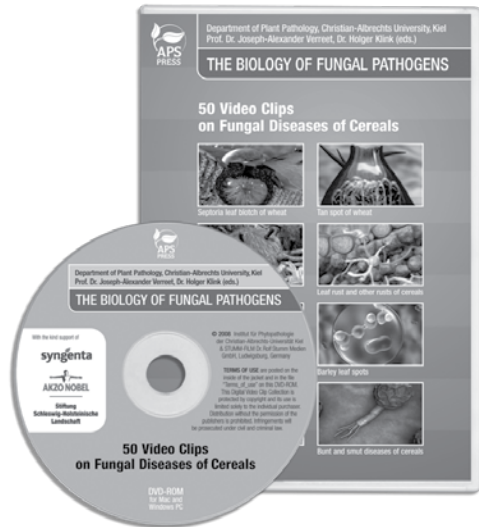
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NOTES

Personal Schedule

Use the blank lines to fill in the sessions and meetings you'll be attending.

Sunday, July 27

7:00 a.m. _____
7:30 a.m. _____
8:00 a.m. _____
8:30 a.m. – 12:00 p.m. **Opening Plenary Session**
12:00 – 1:00 p.m. **Lunch Break:**

1:00 p.m. _____
1:30 p.m. _____
2:00 p.m. _____
2:30 p.m. _____
3:15 – 5:45 p.m. **Centennial Session**
6:00 – 8:00 p.m. **Opening Centennial Celebration**

Monday, July 28

7:00 a.m. _____
7:30 a.m. _____
8:00 a.m. _____
8:00 – 9:30 a.m. **Centennial Session**
8:00 – 9:30 a.m. **Oral Technical Session:**

9:40 a.m. – 12:00 p.m. **Plenary Session**
12:00 – 1:00 p.m. **Lunch Break:**

1:00 – 1:50 p.m. **Flash-and-Dash Poster Presentation:**

1:00 – 3:00 p.m. **Oral Technical Session:**

1:00 – 3:00 p.m. **Special Session:**

3:15 – 6:15 p.m. **Centennial Session**
3:15 – 6:15 p.m. **Special Session:**

Tuesday, July 29

7:00 a.m. _____
7:30 a.m. _____
8:00 a.m. _____
8:30 a.m. _____
9:00 a.m. – 12:00 p.m. **Oral Technical Session:**

9:00 a.m. – 12:00 p.m. **Special Session:**

10:00 – 10:50 a.m. **Flash-and-Dash Poster Presentation:**

12:00 – 1:00 p.m. **Lunch Break:**

1:00 – 1:50 p.m. **Flash-and-Dash Poster Presentation:**

1:00 – 2:30 p.m. **Oral Technical Session:**

1:00 – 2:30 p.m. **Special Session:**

2:45 – 5:45 p.m. **Centennial Session**
6:30 – 7:30 p.m. **Awards & Honors Ceremony**
7:30 – 10:00 p.m. **Final Night Centennial Celebration**

Wednesday, July 29

7:00 a.m. _____
7:30 a.m. _____
8:00 a.m. _____
8:30 a.m. _____
9:00 – 11:30 a.m. **Oral Technical Session:**

9:00 – 11:30 a.m. **Special Session:**

11:45 a.m. – 2:00 p.m. **Closing Plenary Luncheon**

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