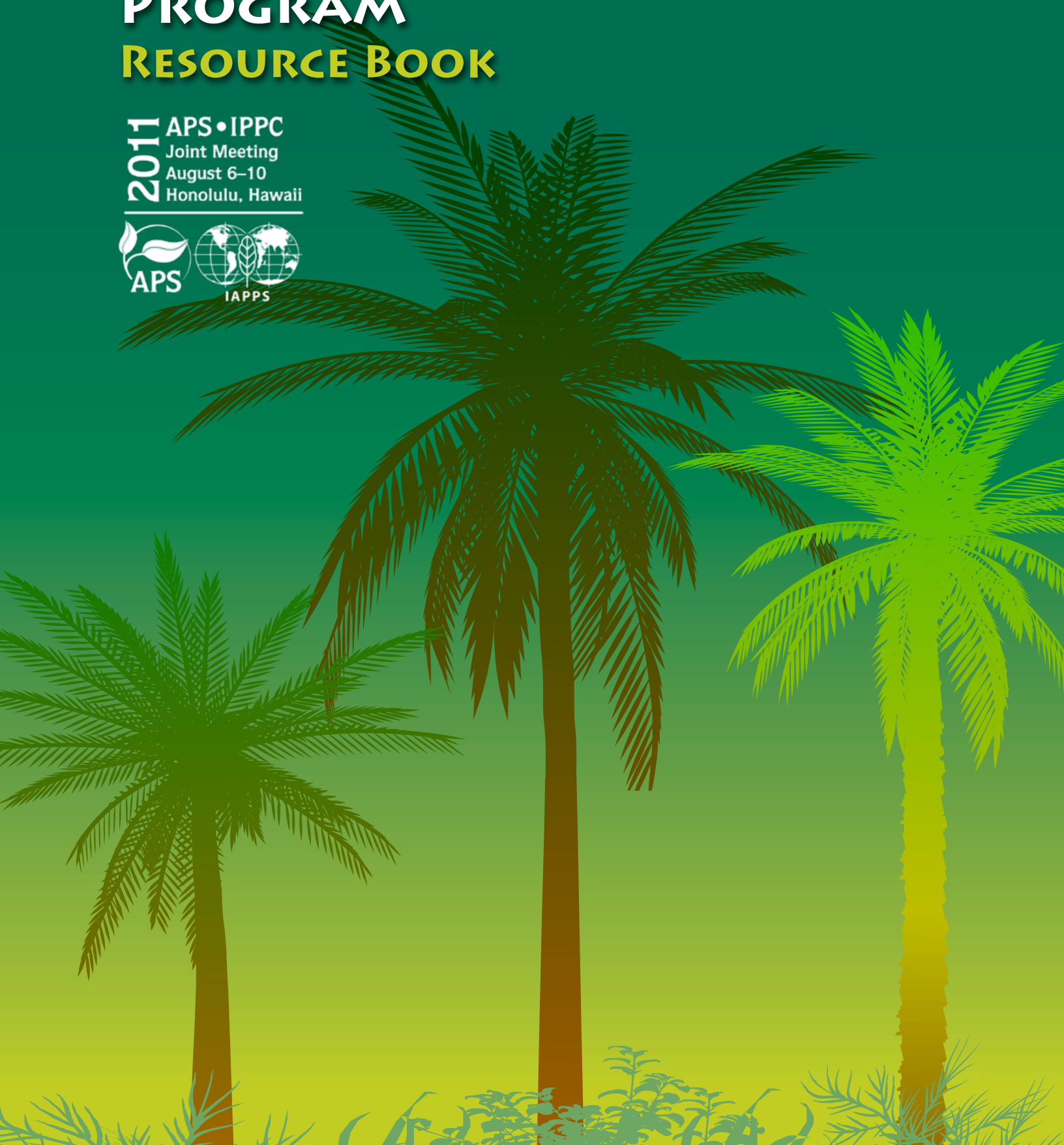


PROGRAM RESOURCE BOOK

2011 APS • IPPC
Joint Meeting
August 6–10
Honolulu, Hawaii



AgriStrip - Lateral flow tests

Complete kits for fast and easy use in field and greenhouse



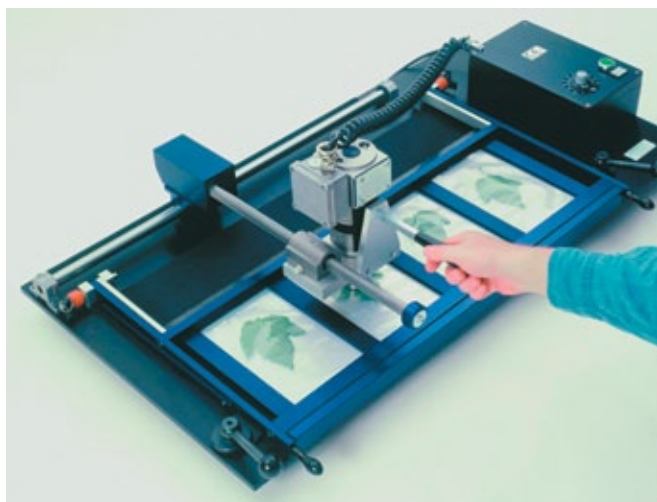
ELISA tests for plant pathogens

Complete kits, reagents, buffers, microtiter plates and extraction bags for laboratory use



Equipment

Homex 6 homogenizer and Easy Wash 2000 plate washer for plant diagnostic applications



Your Partner in Agro-Diagnostics

BIOREBA AG Switzerland
www.bioreba.com

For the US please contact our distributor

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

BIOREBA



TABLE OF CONTENTS

Welcome from Carol Ishimaru	2
Welcome from E. A. “Short” Heinrichs	2

Program

Field Trips	3
Workshops	4
Sessions-at-a-Glance	6
Sunday, August 7	
Special Sessions – Sunday Afternoon	9
Oral Technical Sessions – Sunday Afternoon	11
Monday, August 8	
Special Sessions – Monday Morning	14
Oral Technical Sessions – Monday Morning	16
Tuesday, August 9	
Special Sessions – Tuesday Morning	18
Oral Technical Sessions – Tuesday Morning	21
Wednesday, August 10	
Special Sessions – Wednesday Morning	23
Oral Technical Sessions – Wednesday Morning	25
Special Sessions – Wednesday Afternoon	27
Oral Technical Sessions – Wednesday Afternoon	29

Posters

Poster Schedule and Poster Titles by Category	33
Poster Titles and Authors	34

Recognition

Annual Meeting Planning Committee	87
APS Sustaining Associate Members	87
APS Elected/Appointed Officers and Representatives and Committees	88
IAPPS Members of Governing Board	91
Headquarters Staff Listing	91

Exhibition

Exhibitor Descriptions	93
------------------------------	----

Advertisers Index

AC Diagnostics, Inc	8
Agdia	Cov IV
American Peat Technology, LLC	12
Bioreba AG	Cov II
Convion	32
Envirologix	Cov III

NEW! Program Resource Book

We’ve made some changes! This new Program Resource Book serves as your resource for the meeting - session and poster content, exhibitor information, and recognition. The smaller Program Guide is your key to the program schedule, general information and the exhibit hall floor plan with extra pages to take notes. We hope you find these new formats a convenient way to navigate the meeting.

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



The International Association for Plant Protection Sciences (IAPPS) holds its International Plant Protection Congress (IPPC) every four years. IPPC programs are broadly multidisciplinary with emphasis on integrated pest management (IPM). For 50+ years, IPPCs have provided a forum for plant protection scientists to communicate and discuss important problems and new discoveries related to crop losses due to pests and their management. Visit www.plantprotection.org for more information.



WELCOME TO THE APS-IPPC JOINT MEETING



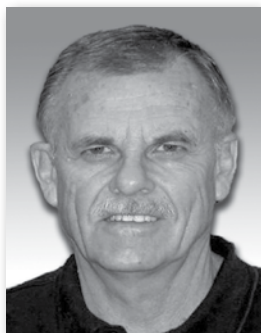
We're so thrilled to be here in Honolulu celebrating the multidisciplinary contributions of two premier professional plant science associations, The American Phytopathological Society (APS) and the International Plant Protection Congress (IPPC). As many as 1,500 attendees from 45 countries are expected to join us here in Hawaii, which is a true testament to your dedication to our science.

The focus this year is on new global initiatives and creating connections with scientists from around the world. The 2011 APS-IPPC Joint Meeting offers a dynamic look into the future of our science, and you will have many opportunities during the next several days to participate in technical, societal, and social activities.

This year's scientific program includes plenary sessions, special sessions, workshops, and technical sessions. More than 1,200 abstracts will be presented as posters and oral technical presentations, which is the highest number of abstracts in years. The extended program also includes educational opportunities where you can attend one of 15 field trips custom-designed for plant scientists or one of 5 premeeting workshops.

We encourage you to take full advantage of your time here. Get involved on every level – attend social gatherings and networking events, and meet the new generation of plant pathologists and researchers. We're glad you're here!

Carol Ishimaru
APS President-Elect



Welcome! On behalf of the Program Committee, we're delighted you have joined us for our first meeting in Honolulu, one that is packed with sessions and networking opportunities that can only happen here in Hawaii.

We're excited that two premier professional plant science associations have joined forces and the APS-IPPC partnership promises new and exciting educational opportunities for all. With more than 45 countries worldwide represented at our meeting, this international and scientific diversity ensures that many unique perspectives will be presented providing you the opportunity to participate in the discussion of the role we as plant protection scientists must play if we are to win the battle against hunger, rural poverty, and global food insecurity.

The 2011 APS-IPPC Joint Meeting highlights efforts to continue moving forward and expanding the boundaries of what our science can be. The joint meeting serves as your chance to come together, network with peers, discuss critical issues in our science, and to get to know each other. It's your link to the latest research and technological developments in global plant protection and helps you come face to face with the top scientists in our field. We hope you make the most of your time here, and return home safely with a renewed vigor and a mind full of new ideas and concepts that you can promote in your home country.

E.A. "Short" Heinrichs
IAPPS Secretary General

Safety Tips

Do not travel alone – stay in groups and travel in well-lit areas. **Remove name badges when outside the hotel or Convention Center unless you are participating in a meeting event.**

- Do not give your room number out to anyone you do not know and avoid giving out your room number in conversations where strangers may hear you talking.
- Bolt your hotel room door and only open it when you know who is on the other side. (Note: hotel personnel wear uniforms and have identification badges. If in doubt, call hotel security to verify an employee's identity.)
- Do not leave your door ajar if you are going down the hall for ice. Someone may enter when you are not looking.
- Know where the stairs are located in case of a fire (do not use elevators). Also count the number of doors to the nearest exit in case you cannot see in a smoke-filled hallway.
- Valuables, airline tickets, and money should be kept in a hotel safety deposit box or in a room safe, if available.

Procedures in Case of a Fire

- Try to leave the hotel as quickly as possible. If you cannot, stay in your room and call the operator or security to let them know you are in your room.
- Put your hand on the room door to see if it is hot before opening it. If it is, do not open 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.

FIELD TRIPS (APS Member Organized)

Listed in chronological order.

Application of Biotechnology to Meet the Challenges of Crop Production in the Tropics

Saturday, August 6, 2011

3:30 a.m. - 9:45 p.m.

Organizers: Richard Lee, USDA ARS NCGRCD, Riverside, CA, U.S.A.; Ronald Brlansky, University of Florida CREC, Lake Alfred, FL, U.S.A.

Section: Plant Pathology-Epidemiology/Ecology/Environmental Biology

Sponsoring Committees: Tropical Plant Pathology; APS Postharvest Pathology

Growing crops under tropical conditions presents special challenges. Each tropical crop has unique pathogen and production challenges. This field trip will afford the opportunity to see 14 different tropical crops with scientists providing information on how biotechnology, coupled with sound horticultural practices, is helping maintain production despite the unique challenges of tropical pests and climate. The field trip will include a short visit to the Volcanoes National Park. This field trip takes place on the Big Island. Roundtrip airfare from Honolulu to the Big Island is included in the fee. *Preregistration is required.*

Fruit, Vegetable, and Ornamental Field Tour

Saturday, August 6, 2011

6:45 a.m. - 9:15 p.m.

Organizers: Kevin Ong, Texas AgriLife Cooperative Extension, College Station, TX, U.S.A.; Cristi Palmer, IR-4 Project/Rutgers University, Princeton, NJ, U.S.A.

Section: Plant Pathology-Diseases of Plants

Sponsoring Committees: Extension; Diseases of Ornamental Plants

Participants of this all-day tour will visit commercial fields as they travel to the Big Island. The focus of the tour will be on diseases of fruits, vegetables, and ornamentals and the solutions implemented by growers to manage these problems. This field trip takes place on Big Island. Roundtrip airfare from Honolulu to the Big Island is included in the fee. *Preregistration is required.*

Turfgrass Field Tour

Saturday, August 6, 2011

8:00 a.m. - 4:30 p.m.

Organizers: Damon Smith, Oklahoma State University, Stillwater, OK, U.S.A.; Brandon Horvath, University of Tennessee, Knoxville, TN, U.S.A.

Section: Plant Pathology-Diseases of Plants

Sponsoring Committee: Turfgrass Pathology

Financial Sponsors: Syngenta

This field tour will highlight the turfgrass challenges associated with various sites in and around Oahu. Possible sites could include golf courses (such as Koo'lau - the U.S. Golf Association's most difficult rated golf course), important historical sites (such as The National Memorial Cemetery of the Pacific), sports fields (such as Clarence TC Cheng Field and Les Murakami Field at the University of Hawaii), and research sites (such as the University of Hawaii-Manoa Turfgrass Research location). This trip will focus on the impact of these sites to the Hawaiian economy and the

challenges associated with maintaining turfgrass sites in Hawaii. *Preregistration is required.*

Pre- and Postharvest Diseases of Tropical Fruits

Saturday, August 6, 2011

8:00 a.m. - 5:30 p.m.

Organizers: Jari S. Sugano, University of Hawaii, Kaneohe, HI, U.S.A.; Alex Cochran, Syngenta Crop Protection, Greensboro, NC, U.S.A.; Chang-Lin Xiao, Washington State University, Wenatchee, WA, U.S.A.

Section: Plant Pathology-Diseases of Plants

Sponsoring Committees: Postharvest Pathology; Chemical Control

Financial Sponsors: Janssen Pharmaceutica; JBT Corporation; Pace International; Syngenta Crop Protection; Valent

This field trip will tour production fields of pineapple, papaya, banana, and coffee as well as a fruit packinghouse along the famous North Shore of Oahu. Participants will have the opportunity to see production operations and talk with growers and university faculty about pre- and postharvest diseases. *Preregistration is required.*

Tropical Forest Pathology

Saturday, August 6, 2011

8:00 a.m. - 6:00 p.m.

Organizers: Phil Cannon, USDA Forest Service, Valeho, CA, U.S.A.; Janice Uchida, University of Hawaii, Honolulu, HI, U.S.A.

Section: Plant Pathology-Diseases of Plants

Sponsoring Committees: Forest Pathology; Tropical Plant Pathology; Emerging Diseases and Pathogens

This loop tour of eastern Oahu will feature several tropical forestry diseases. At the Muanawili Research Station, we will see testing of koa clones to *Fusarium oxysporum* wilt, the rust disease caused by eucalyptus. At the Waimanalo Research station, we will see several tropical tree-crop species and some of the diseases that affect them. *Preregistration is required.*

Hawaiian Fungal Foray

Tuesday, August 9, 2011

1:00 - 7:30 p.m.

Organizers: Amanda Gevens, University of Wisconsin, Madison, WI, U.S.A.; Barry Pryor, University of Arizona, Tucson, AR, U.S.A.

Section: Plant Pathology-Diseases of Plants

Sponsoring Committees: Mycology; Forest Pathology

Observe, collect, and identify fungi from natural ecosystems located on Oahu. In the afternoon, we will visit collecting sites. Upon conclusion of our field activities, we will go to lab spaces on the University of Hawaii campus to identify and share collections. George Wong and Janice Uchida are handling local arrangements. Tom Ranker, University of Hawaii botany chair has offered use of lab space and microscopes. To facilitate this schedule, Uchida has offered to provide the evening meal. Cost for the meal will be covered by the field trip fee. Participants will be subject to state and federal regulations for movement of any collected samples. *Preregistration is required.*

WORKSHOPS

Listed in chronological order.

DNA-Based Pathogen Detection Methods:

Ralstonia solanacearum, A Case Study

Saturday, August 6, 2011

7:30 a.m. - 4:00 p.m.; Offsite

Organizer: Timothy Denny, University of Georgia, Athens, GA, U.S.A.

Section: Professionalism/Outreach/Industry/Generic Engineering

Sponsoring Committee: Plant Pathology and Disease Detection, Bacteriology

This hands-on workshop will focus on advanced detection and identification technology for *Ralstonia solanacearum*, the causal agent of bacterial wilt and a quarantine pathogen of global concern. Participants will perform the cutting-edge methods: immunomagnetic separation-PCR; magnetic capture hybridization-PCR; and, Loop-mediated isothermal amplification (LAMP). Application and suitability of these methods on complex samples for laboratory and field testing will be discussed. Location – University of Hawaii campus and is limited to 16 people.

Preregistration is required.

KNOW New Pathogens: Why and How (Improving Infrastructure and Capacity to Predict, Detect, and Respond to New Pest Introductions)–CANCELLED

Saturday, August 6, 2011

8:00 a.m. - 12:00 p.m.; South Pacific 2, Hilton

Organizer: Kerry Britton, USDA Forest Service, Arlington, VA, U.S.A.

Section: Emerging Pests/Invasive Species

Sponsoring Committees: Emerging Diseases and Pathogens; Regulatory Plant Pathology; Forest Pathology; Diagnostics; Plant Pathogen; Disease Detection

Help strengthen the practical application of our science to predict, prevent, detect, and respond to new non-native plant pathogens. A federal interagency group of plant pathologists, working under the auspices of the National Invasive Species Council, examined the national plant pathology infrastructure and there are some serious deficiencies. We want your input. Our draft report makes specific recommendations to improve diagnostic systems, information sharing, research capacity, outreach, and education of the next generation of professional activities is represented. Have you got the right ideas? More importantly, what can be done next to improve the situation? *Preregistration is required.*

Coordinated Agricultural Projects:

Making CAPs Work for You!

Saturday, August 6, 2011

1:00 - 3:30 p.m.; South Pacific 1, Hilton

Organizer: Nicole Donofrio, University of Delaware, Newark, DE, U.S.A.

Section: Plant Pathology-Molecular/Cellular/Plant-Microbe Interactions

Sponsoring Committee: Molecular and Cellular Phytopathology

What are coordinated agricultural research projects? In the wake of the restructuring of the USDA-NIFA, it will be imperative for many researchers to learn more about CAPs and how to

integrate their own research into large-scale, “big picture”, comprehensive studies. Hear from speakers from every stage of a CAP grant, as well as a program manager whose programs include CAP-type grants. Topics should include, but not be limited to, managerial and time-commitment aspects of writing a CAP, how to coordinate large groups of researchers, and budgetary considerations, as well as the science driving the CAP (solving “big picture” problems). *Preregistration is required.*

Contemporary Methods in Population Genetics for Plant Pathology

Saturday, August 6, 2011

1:00 - 4:00 p.m.; 304A

Organizers: Erica Goss and Niklaus Grunwald, USDA ARS, Corvallis, OR, U.S.A.

Section: Plant Pathology-Epidemiology/Ecology/Environmental Biology

Sponsoring Committee: Genetics

Many software packages and programs are available for analyzing population genetic data, but determining the best analysis for your data can be confusing and overwhelming. This workshop will provide an overview of contemporary software for population genetic analysis and will delve into several of the most broadly useful programs, including Bayesian and coalescent-based methods. There will be discussion of appropriate data sets for each program and how to interpret the output. Participants are encouraged to bring a laptop loaded with the specified freely available software to run example analyses. *Preregistration is required.*

Microbial Collections: Practice and Management

Saturday, August 6, 2011

1:00 - 4:00 p.m.; 304B

Organizers: Shuxian Li, USDA ARS, Crop Genetics Research Unit, Stoneville, MS, U.S.A.; Rick Bennett, University of Arkansas, Fayetteville, AR, U.S.A.

Section: Professional/Outreach/Industry/Genetic Engineering

Sponsoring Committees: APS Collections and Germplasm; APS Mycology

This hands-on workshop will cover the general practical aspects of managing microbial collections. Presentations and demonstrations will be given by experienced curators from fungal, bacterial, and viral collections and a database expert. Topics include protocols for preservation, maintenance, and distribution of fungi; identification, preservation, and shipping bacterial germplasm in the International Collection of Phytopathogenic Bacteria (ICPB), and maintenance and preservation of plant viruses on a budget, as well as an introduction on how to use informatics tools to improve the management of culture collections and associated data. *Preregistration is required.*

IPM for Feed the Future

Saturday, August 6, 2011

5:30 – 8:30 p.m.; South Pacific 3, Hilton

Organizers: R. Muniappan, IPM CRSP, VA Tech, USA; Irmgard Hoeschle-Zeledon, Coordinator, SP-IPM, IITA, Ibadan, Nigeria; E. A. "Short" Heinrichs, IAPPS Secretary General, University of Nebraska, USA

Sponsors: IAPPS, IPM CRSP, and SP-IPM

This workshop will have presentations by leading scientists and administrators from each of the following agencies/institutes: U.S. Agency for International Development (USAID), International Agricultural Research Centers (IARCs), Collaborative Research Support Program (CRSP), U.S. Department of Agriculture (USDA), Bill & Melinda Gates Foundation, Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), CropLife International, and others. They will review IPM activities of different international programs and recommend IPM technologies that could strengthen the US Government's global "Feed the Future Initiative" for increasing food production, improving nutrition and reducing poverty.

Program:

Feed the Future Initiative - Role of IPM. Rob Bertram, USAID
Feed the Future Initiative - Role of USDA. Anita Regmi, Senior Advisor, International Office of the USDA Chief Scientist, U.S.A.

Role of IPM in Bill and Melinda Gates Foundation activities.
Prem Warrior, Senior Program Officer, Bill & Melinda Gates Foundation, U.S.A.

Need for plant protection research and technology transfer in tropical crops - A German development cooperation agency viewpoint. Marlene Diekmann, Research Advisor, Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), Germany

Need for plant protection research and technology transfer in tropical crops from the viewpoint of a CG Center DG. Bob Zeigler, DG, IRRI, The Philippines

Need for IPM strategies and technology transfer activities in tropical vegetable crops from the viewpoint of the IPM CRSP. S.K. De Datta, Associate Vice President for International Affairs and Director, Office of International Research, Education and Development, Virginia Tech, U.S.A.

Impact of IPM programs in tropical agriculture. George Norton, Department of Agricultural and Applied Economics, Virginia Tech, U.S.A.

What has been done and what needs to be done to solve current and future pest constraints to food production. Richard Sikora, Chair, CGIAR SP-IPM Steering Committee, University of Bonn, Germany, Gebisa Ejeta, World Food Prize winner, Purdue University, U.S.A., Geoff Norton, President, IAPPS, University of Queensland, Australia, Keith Jones, Director, Stewardship and Sustainable Agriculture, CropLife International, Belgium, Sanath Reddy, Senior Economic Growth Advisor, USAID Mission, Indonesia, Daniel Coyne, International Institute of Tropical Agriculture (IITA), Tanzania

Recommendations and action plan.

Back by Popular Demand... Exclusive APS Foundation Raffle!



iPad2



Kindle

This year, one ticket buys TWO chances.

Your raffle ticket gives you a chance to win either an iPad or a Kindle eReader

The odds are in your favor, only a maximum of 1,000 tickets will be sold during the meeting. Make sure to stop by the APS Foundation booth to buy your tickets, or buy direct from any APS Foundation Board member during the meeting. Proceeds will help support APS Foundation initiatives.

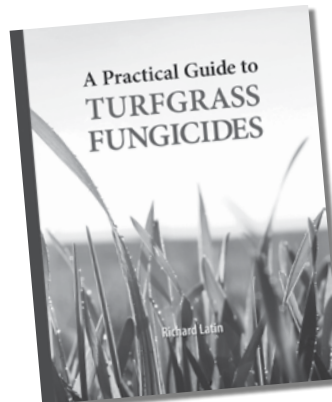
APS PRESS Book Signing Event

Monday from 3:30 to 4:30 p.m.

Special pricing on this book at the Signing – SAVE \$30!

Meet Rick Latin!

Author of the new bestselling



"I don't work on turfgrass diseases but I'm going to buy this book. It contains useful information that can be applied across almost any cropping system."

— Larry Madden,
Distinguished Professor
of Plant Protection,
Ohio State University



Shop APS PRESS in the Exhibit Hall

SCIENTIFIC SESSIONS-AT-A-GLANCE

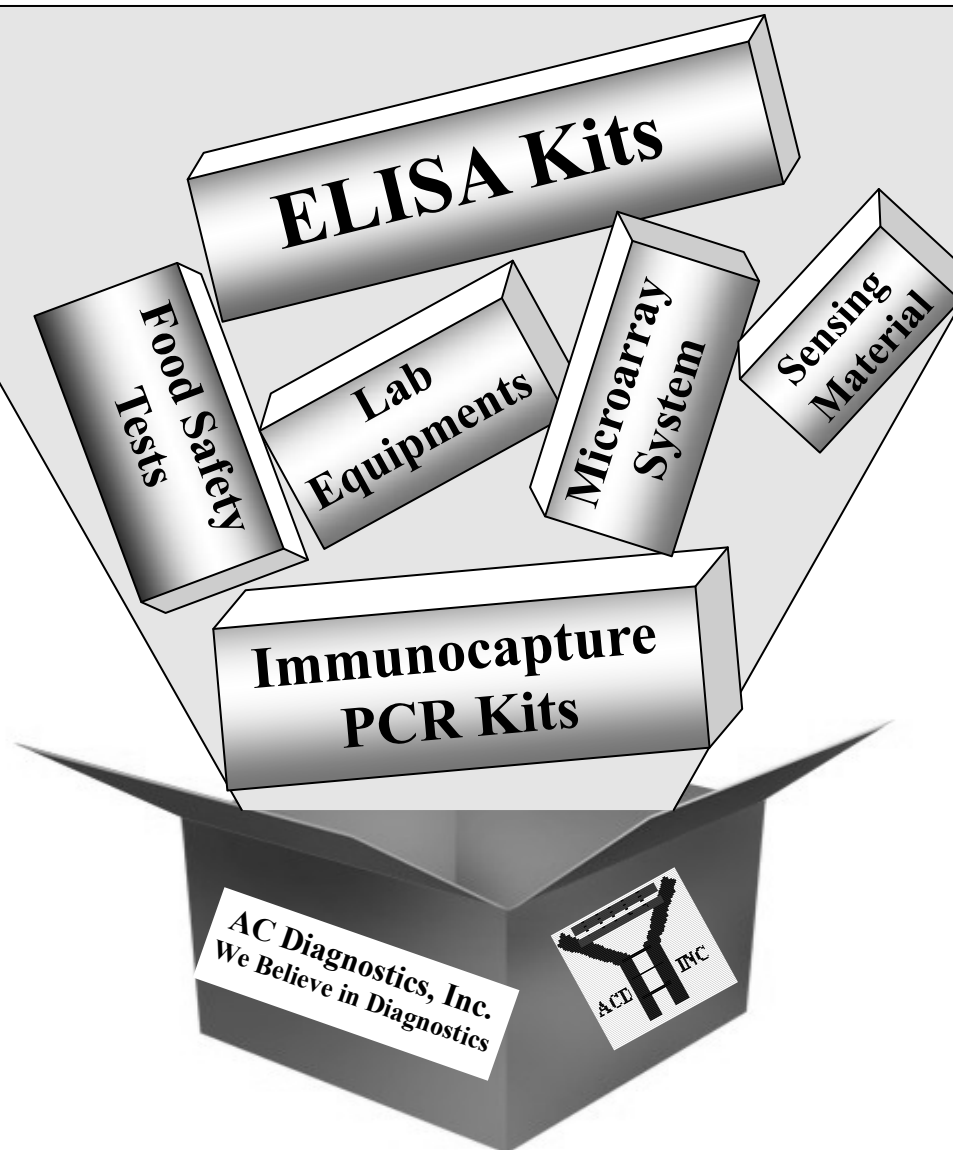
	Biology of Plant Pathogens	Diseases of Plants	Emerging Pests/Invasive Species	Entomology	Epidemiology/Ecology/ Environmental Biology of Pathogens
SUNDAY					
1:00 – 3:45 p.m.					
1:00 – 4:00 p.m.		Management of Insect-Transmitted Plant Virus Diseases in the Tropics • 323B Omics Approaches for the Characterization of Interactions Between Human Enteric Pathogens and Plants: A Plant Pathologists Perspective • 319AB Phytopathological Phreakonomics • 323A	The Developing Crisis, International Movement of Insects and Pathogens in Commercial Trade • 316A TECHNICAL: New & Emerging Pests and Diseases • 317A		Why Care About Crop Loss? Impacts on Science, Production, and Society • 318AB
1:00 – 4:15 p.m.					
MONDAY					
8:30 – 10:00 a.m.			IPM and Biological Control of Insect Pests, Plant Pathogens, and Invasive Weeds in the Pacific Islands: Where Are We Heading? • 325AB		
8:30 – 11:00 a.m.		Schroth Faces of the Future in Nematology • 323C			
8:30 – 11:30 a.m.					International Mycotoxin Issues in a Changing World • 316A TECHNICAL: Epidemiology—Biology of Pathogens • 317A
8:30 – 11:45 a.m.		TECHNICAL: Detection & Diagnosis of Plant Diseases • 323B			
TUESDAY					
8:30 – 11:15 a.m.					
8:30 – 11:30 a.m.	Fungal Comparative Genomics and the Impact of Next Generation Sequencing • 323A		Ag and Food Biosecurity: A Decade of Progress and Reality • 316A		11th I. E. Melhus Graduate Student Symposium: “Today’s Students Making a Difference in Plant Disease Epidemiology and Disease Management” • 323C
8:30 – 11:45 a.m.					
WEDNESDAY					
8:30 – 11:00 a.m.					
8:30 – 11:30 a.m.	TECHNICAL: Biology of Plant Pathogens: Fungi • 323B	Tropical Forest Pathology • 317A TECHNICAL: Diseases of Horticultural Crops & Forests • 317B			
8:30 – 11:45 a.m.		New and Emerging Technologies in Turfgrass Disease Management • 324	Digital Identification Tools: Their Role in Biosecurity and Pest Management • 318AB		
Lunch Break	11:30 a.m.–1:00 p.m.				
1:00 – 4:00 p.m.		Disease Complex Between Nematodes and Other Plant Pathogens • 325AB Technology Outlook: Detection Innovations and Successes • 319AB	Wheat Blast—A Potential Threat to Global Wheat Production • 323C	TECHNICAL: Entomology & Insect Vectors • 317B	TECHNICAL: Pathogen Population Genetics • 318AB (1:00–4:15 p.m.)

IPM/Biocontrol/ Plant Disease Management	Molecular/Cellular/Plant-Microbe Interactions	Professionalism/ Outreach/Industry/ Genetic Engineering	Weed Science
	TECHNICAL: Plant Fungal Interactions • 323C		
		International Perspectives on IPM Education for Advancing Sustainable Agricultural Systems • 325AB	Plant Protection and Food Security in a Changing World • 324
TECHNICAL: Plant Disease Management Chemi- cal & Biological Control • 317B			
Laboratory Methods for Detecting and Charac- terizing Fungicide Resistance • 319AB	Biology and Molecular Biology of Closteroviruses • 323A What Else is There? New Genes, Metabolites, and Regulatory Pathways Involved in Biocontrol by Bacteria • 318AB		Invasive Weeds as a Threat to Agriculture and Human Health • 324
TECHNICAL: Fungicide Resistance & Efficacy • 317B			
	TECHNICAL: Molecular Biology of Plant Viruses • 317B		
New Products and Services • 323B TECHNICAL: IPM • 317A TECHNICAL: Microbial Ecology & Biological Control • 325AB		Challenges to the Production and Distribution of Quality Planting Materials, Seed, and Seed Systems for Farmers in Developing Countries • 318AB Using Translational Biotechnology to Deploy Disease Resistance Traits in Crop Plants • 319AB	
		Innovative Chemical and Biological Approaches to Plant Protection • 324	
TECHNICAL: Induced Plant Response & Disease Resistance • 325AB			
Better Use of Entomopathogenic Microbes in IPM • 323C Crop Health Management for Food Safety and Agroecosystem Health in Developing Countries • 319AB	Current Advances of Molecular Plant Pathology in China • 323A		
		Pesticide Resistance in Agriculture—A Global Issue • 316A	
IPM Program for Vegetable Crops in the Tropics and Opportunities for IPM Graduates • 324	Role of Fatty Acids and Lipids in Host-Pathogen Interactions • 323A TECHNICAL: Molecular Biology of Bacteria & Nematodes • 317A	MRLs: A Growing Agricultural Export Issue • 323B	Parasitic Weeds—The Drawback of the Hungry World • 316A



AC Diagnostics, Inc.

We Believe in Diagnostics !



**Find What You Need for Your Diagnostic Labs
from AC Diagnostics, Inc., Ready to Go!**

AC Diagnostics, Inc. was established with a mission to be a leading provider of quality diagnostic products at affordable prices to worldwide customers. For more information, contact us as 479-595-0320 or email to infor@acdiainc.com

www.acdiainc.com

Visit Our Booth #104 for More Information

PROGRAM

SUNDAY, AUGUST 7, 2011

Listed in alphabetical order by title. Special Sessions listed first followed by Oral Technical Sessions. Find complete details on the meeting website at www.apsnet.org/meetings/annual/program/Pages

■ SPECIAL SESSIONS

The Developing Crisis, International Movement of Insects and Pathogens in Commercial Trade

1:00 - 4:00 p.m.; 316A

Section: Emerging Pests/Invasive Species

Organizers/Moderators: Thomas Harrington, Iowa State University, Ames, IA, U.S.A.; James Steadman, University of Nebraska, Lincoln, NE, U.S.A.

Sponsoring Committees: APS Forest Pathology; APS Public Policy Board; APS Regulations; APS Office of International Programs; IAPPS

Financial Sponsors: The Nature Conservancy; Pioneer Hi-Bred a Dupont Business

- 1:00 p.m. 1-S. You think you have problems? The crisis in Hawaii. C. A. MARTIN (1). (1) Pacific Cooperative Studies Unit, Coordinating Group on Alien Pest Species, Honolulu, HI, U.S.A.
- 1:30 p.m. 2-S. Real and imagined problems in movement of plant pathogens in international seed trade. R. L. DUNKLE (1). (1) American Seed Trade Association, Alexandria, VA, U.S.A.
- 2:00 p.m. 3-S. Introductions of exotic insects and their associated pathogens in solid wood packing material. T. C. HARRINGTON (1). (1) Iowa State University, Ames, IA, U.S.A.
- 2:30 p.m. Break
- 2:45 p.m. 4-S. Flaws in international protocols for preventing entry and spread of plant pathogens via "plants for planting". C. M. BRASIER (1). (1) Forest Research Agency, Farnham, United Kingdom
- 3:15 p.m. 5-S. Progress and pitfalls in developing policies for reducing risks of introductions of exotic forest insects and pathogens. F. T. CAMPBELL (1). (1) The Nature Conservancy, Arlington, VA, U.S.A.
- 3:45 p.m. Discussion

International Perspectives on IPM Education for Advancing Sustainable Agricultural Systems

1:00 - 4:00 p.m.; 325AB

Section: Professionalism/Outreach /Industry/Genetic Engineering

Organizers: Gary Hein, University of Nebraska, Lincoln, NE, U.S.A.; Robert McGovern and Norm Leppla, University of Florida, Gainesville, FL, U.S.A.

Moderators: Gary Hein, University of Nebraska, Lincoln, NE, U.S.A.; Robert McGovern, University of Florida, Gainesville, FL, U.S.A.

Sponsoring Committee: APS Extension

- 1:00 p.m. 6-S. Current status of Integrated Pest Management (IPM) Training in universities and other tertiary agricultural training institutions of East Africa. S. KYAMANYWA (1). (1) Makerere University, Kampala, Uganda
- 1:30 p.m. 7-S. IPM education in India: Training farmers through demonstration. N. KAUSHIK (1). (1) TERI, New Delhi, India
- 2:00 p.m. 8-S. Lessons learned in designing IPM education

programs for farmers in Central America. A. RUEDA (1). (1) Zamorano University, Tegucigalpa, Honduras

- 2:30 p.m. Break
- 2:45 p.m. 9-S. Sustainable intensification of crop production: the essential role of IPM & ecosystem-literacy education for smallholder farmers in Asia. J. KETELAAR (1). (1) FAO, Bangkok, Thailand
- 3:15 p.m. 10-S. Expanding educational and career opportunities for international IPM Practitioners. R. J. MCGOVERN (1), G. L. Hein (2), N. C. Leppla (3). (1) University of Florida-IFAS, Plant Medicine Program, Gainesville, FL, U.S.A.; (2) Doctor of Plant Health Program, University of Nebraska, Lincoln, NE, U.S.A.; (3) University of Florida-IFAS, IPM Florida, Gainesville, FL, U.S.A.
- 3:45 p.m. Discussion

Management of Insect-Transmitted Plant Virus Diseases in the Tropics

1:00 - 4:00 p.m.; 323B

Section: Diseases of Plants

Organizers: Naidu Rayapati, Washington State University, Prosser, WA, U.S.A.; Sue Tolin, Virginia Tech, Blacksburg, VA, U.S.A.

Moderator: Sue Tolin, Virginia Tech, Blacksburg, VA, U.S.A.

Sponsors: IAPPS; APS Virology; APS Tropical Plant Pathology

Financial Sponsors: APS/APHIS Working Group, The Samuel Roberts Noble Foundation, Inc.

- 1:00 p.m. 11-S. The role of epidemiology in the management of insect-transmitted viruses—A tropical perspective. R. A. JONES (1). (1) University of Western Australia, Perth, Other, Australia
- 1:30 p.m. 12-S. Implementation and success of host-free periods for managing tomato-infecting begomoviruses in developing countries. R. L. GILBERTSON (1). (1) University of California Davis, Davis, CA, U.S.A.
- 2:00 p.m. 13-S. Whitefly and *Begomovirus* biology as a tool for their management in a developing country: Guatemala. M. PALMIERI (1). (1) Universidad del Valle de Guatemala, Guatemala
- 2:30 p.m. Break
- 2:45 p.m. 14-S. Whitefly vector populations in relation to virus ecology and management. J. BROWN (1). (1) University of Arizona, Tucson, AZ, U.S.A.
- 3:15 p.m. 15-S. Management of *Peanut bud necrosis virus* disease in tomato in South Asia. R. A. NAIDU (1). (1) Washington State University, Prosser, WA, U.S.A.
- 3:30 p.m. 16-S. Challenges unique to managing viruses in tropical developing countries. S. A. TOLIN (1). (1) Virginia Tech, Blacksburg, VA, U.S.A.
- 3:45 p.m. Discussion

Special Sessions continued

Omics Approaches for the Characterization of Interactions Between Human Enteric Pathogens and Plants: A Plant Pathologists Perspective

1:00 - 4:00 p.m.; 319AB

Section: Diseases of Plants

Organizers: Kelly Chamberlin, USDA-ARS, Stillwater, OK, U.S.A.; Max Teplitski, University of Florida, Genetics Institute, Gainesville, FL, U.S.A.

Moderator: Max Teplitski, University of Florida, Genetics Institute, Gainesville, FL, U.S.A.

Sponsor: IAPPS Organizing Committee

Financial Sponsor: Center for Produce Safety University of California-Davis

- 1:00 p.m. 17-S. Enterics and crops: The field prospective. M. D. DANYLUK (1). (1) University of Florida, Lake Alfred, FL, U.S.A.
- 1:30 p.m. 18-S. Escherichia coli O157:H7 persistence on plants: Lessons from the study of phyllosphere microbiota. M. L. MARCO (1). (1) University of California, Davis, CA, U.S.A.
- 2:00 p.m. 19-S. Transcriptome insights into the interaction of E. coli O157:H7 with lettuce. M. T. BRANDL (1). (1) USDA-ARS, Albany, CA, U.S.A.
- 2:30 p.m. Break
- 2:45 p.m. 20-S. Hunting the plant essential Salmonella enterica genes. J. BARAK (1). (1) Dept. Plant Pathology, University of Wisconsin-Madison, Madison, WI, U.S.A.
- 3:15 p.m. 21-S. Insights from the comparative genomic analysis of pathogenic plant endophytic and clinical Klebsiella pneumoniae isolates. D. E. FOUTS (1). (1) J. Craig Venter Institute, Rockville, MD, U.S.A.
- 3:45 p.m. 22-S. Does pectolytic activity of phytopathogens enhance Salmonella proliferation in tomato fruits? J. T. Noel (1), M. TEPLITSKI (1). (1) University of Florida, Soils and Water Science Dept., Gainesville, FL, U.S.A.

Phytopathological Phreakonomics

1:00 - 4:00 p.m.; 323A

Section: Diseases of Plants

Organizer/Moderator: Janna Beckerman, Purdue University, West Lafayette, IN, U.S.A.

- 1:00 p.m. 23-S. The Freakonomics of plant protection. P. D. MITCHELL (1). (1) University of Wisconsin-Madison, Madison, WI, U.S.A.
- 1:30 p.m. 24-S. How IPM contributed to the current fungicide resistance crisis in apple management. J. L. Beckerman (1), G. W. SUNDIN (2), D. A. Rosenberger (3). (1) Purdue University, West Lafayette, IN, U.S.A.; (2) Michigan State University, East Lansing, MI, U.S.A.; (3) Cornell University, Highland, NY, U.S.A.
- 2:00 p.m. 25-S. Panacea or villain: Biocontrol is neither. H. SCHERM (1), P. S. Ojiambo (2), H. K. Ngugi (3). (1) University of Georgia, Athens, GA, U.S.A.; (2) North Carolina State Univ, Raleigh, NC, U.S.A.; (3) Pennsylvania State University, Biglerville, PA, U.S.A.
- 2:30 p.m. Break
- 2:45 p.m. 26-S. Regulating the ubiquitous. T. GOTTWALD (1). (1) USDA ARS, Fort Pierce, FL, U.S.A.
- 3:15 p.m. 27-S. Don't bother me with the facts: Strobilurins and plant health. P. ESKER (1). (1) University of Wisconsin, Madison, WI, U.S.A.

- 3:45 p.m. 28-S. Against the current: pests, pathogens, and produce on the St. Lawrence Seaway. G. W. HUDLER (1). (1) Cornell University, Ithaca, NY, U.S.A.

Plant Protection and Food Security in a Changing World

1:00 - 4:00 p.m.; 324

Section: Weed Science

Organizers/Moderators: Jenifer Huang McBeath, University of Alaska Fairbanks, Agricultural and Forestry Experiment Station, Fairbanks, AK, U.S.A.; Lewis Ziska, USDA-ARS, Crop Systems and Global Change, Beltsville, MD, U.S.A.

Sponsor: IAPPS Organization Committee

- 1:00 p.m. 29-S. New challenges for plant protection under conditions of climate change. J. H. MCBEATH (1). (1) University of Alaska Fairbanks, Fairbanks, AK, U.S.A.
- 1:30 p.m. 30-S. Snow molds in a changing environment and molecular basis for their interactions with plants under the snow A. TRONSMO (1), R. Imai (2). (1) Norwegian University of Life Sciences, Aas, Norway; (2) National Agricultural Research Center for Hokkaido Region, Sapporo, Japan
- 2:00 p.m. 31-S. Climate change and plant protection: Emerging viral and weed threats. L. H. ZISKA (1). (1) USDA-ARS, Crop Systems and Global Change, Beltsville, MD, U.S.A.
- 2:30 p.m. Break
- 2:45 p.m. 32-S. Climate change: Impact of invasive arthropods and pathogens on food security. A. GUTIERREZ (1), S. M. Coakley (2). (1) University of California/Casas Global NGO, Kensington, CA, U.S.A.; (2) Oregon State University, Corvallis, OR, U.S.A.
- 3:15 p.m. 33-S. Benefits and pitfalls of changing host environment for the purpose of plant protection. D. M. HUBER (1). (1) NutriAct, Melba, ID, U.S.A.
- 3:45 p.m. Discussion

Why Care About Crop Loss? Impacts on Science, Production, and Society

1:00 - 4:00 p.m.; 318AB

Section: Epidemiology/Ecology/Environmental Biology of Pathogens

Organizer: Andrea Ficke, Bioforsk Plantehelse, As, Norway

Moderators: Andrea Ficke, Bioforsk Plantehelse, As, Norway; Serge Savary, IRRI, Metro Manila, Philippines

Sponsors: Crop Loss Assessment and Risk Evaluation (CARE); Epidemiology

- 1:00 p.m. 34-S. Why do we care about crop losses? S. SAVARY (1), E. Duveiller (2), J. Aubertot (3). (1) IRRI, Los Banos, Philippines; (2) CIMMYT, Mexico, Mexico; (3) INRA, Castanet Tolosan, France
- 1:30 p.m. 35-S. How do we assess crop loss? P. ESKER (1), C. Bradley (2), P. Paul (3), A. Robertson (4). (1) University of Wisconsin, Madison, WI, U.S.A.; (2) University of Illinois, Urbana, IL, U.S.A.; (3) Ohio State University, Wooster, OH, U.S.A.; (4) Iowa State University, Ames, IA, U.S.A.
- 2:00 p.m. 36-S. Crop losses at the farm level: A multidimensional approach. A. FICKE (1), D. M. Gadoury (2). (1) Bioforsk Plant Health, Ås, Norway; (2) Cornell University, Geneva, NY, U.S.A.
- 2:30 p.m. Break

- 2:45 p.m. 37-S. Crop losses in highly populated areas: A global perspective. L. WILLOCQUET (1), A. Nelson (1), A. Sparks (1), A. Laborte (1), S. Savary (1). (1) IRR, Los Banos, Philippines
- 3:15 p.m. 38-S. Impact of crop loss in the United States. C. A. HOLLIER (1). (1) Louisiana State University Agricultural Center, Baton Rouge, LA, U.S.A.
- 3:45 p.m. Discussion

■ ORAL TECHNICAL SESSIONS

New & Emerging Pests and Diseases

1:00 – 4:00 p.m.; 317A

Section: Emerging Pests/Invasive Species

Moderators: Kerry Britton, USDA Forest Service, Research & Development, Arlington, VA, U.S.A.; Ebenezer I. Jonathan, Tamil Nadu Agricultural University, Coimbatore, India

- 1:00 p.m. 1-O. Improving the detection of new and emerging pests and diseases through the Plantwise Initiative. S. L. HOBBS (1). (1) CAB, Wallingford, United Kingdom
- 1:15 p.m. 2-O. Pest interceptions on live plants at U.S. ports of entry: A system overwhelmed. K. O. BRITTON (1), J. L. Parke (2), L. J. Garrett (3), F. Lowenstein (4), A. Nuding (5). (1) USDA Forest Service, Research & Development, Arlington, VA, U.S.A.; (2) Oregon State University, Dept. of Botany and Plant Pathology, Corvallis, OR, U.S.A.; (3) USDA-APHIS, PPQ, CPHST, Plant Epidemiology and Risk Assessment Laboratory, Raleigh, NC, U.S.A.; (4) The Nature Conservancy, Arlington, VA, U.S.A.; (5) Western Resource Advocates, Boulder, CO, U.S.A.
- 1:30 p.m. 3-O. Management of papaya mealybug, *Paracoccus marginatus*, through biological control. E. I. JONATHAN (1), S. Suresh (1), M. Kalyanasundaram (1), C. A. Mahalingam (1), P. Karupuchamy (1), S. Venkatesan (1). (1) Tamil Nadu Agricultural University, Coimbatore, India
- 1:45 p.m. 4-O. Integrated management of invasive mealybugs in brinjal. S. SEETHARAMAN (1), J. Indra (2), G. Ramasamy (3), K. Pandian (3). (1) CPPS, TNAU, Coimbatore, India; (2) TNAU, CPPS, Coimbatore, India; (3) TNAU, Coimbatore, India
- 2:00 p.m. 5-O. Pythium root rot of corn in Japan; Unique symptom climb up the mature stem, and possible drift of the major species in causal *Pythium* flora. K. SUGAWARA (1), T. Tsukiboshi (1), T. Kikawada (1), H. Tamaki (1), S. Mitsuhashi (1), S. Morita (1), I. Okabe (1). (1) National Institute of Livestock & Grassland Science, Nasushiobara, Japan
- 2:15 p.m. 6-O. *Tomato leaf curl Peru virus*: A locally evolved monopartite New World begomovirus. T. A. MELGAREJO (1), T. Kon (1), R. L. Gilbertson (1). (1) Dept. of Plant Pathology, University of California-Davis, Davis, CA, U.S.A.
- 2:30 p.m. Break
- 2:45 p.m. 7-O. A novel M RNA reassortant of *Groundnut ringspot virus* and *Tomato chlorotic spot virus* infecting vegetables in Florida. C. G. Webster (1), S. R. Reitz (2), G. Frantz (3), H. Mellinger (3), K. L. Perry (4), S. ADKINS (1). (1) USDA ARS, Fort Pierce, FL, U.S.A.; (2) USDA ARS, Tallahassee, FL, U.S.A.; (3) Glades Crop Care, Inc., Jupiter, FL, U.S.A.; (4) Cornell University, Ithaca, NY, U.S.A.

- 3:00 p.m. **Pacific Division Talk** 8-O. New species of the toxic fungal endophyte, *Undifilum*, from western United States locoweeds. D. BAUCOM (1), R. Belfon (1), M. Romero (1), R. Creamer (1). (1) New Mexico State University, Las Cruces, NM, U.S.A.
- 3:15 p.m. 9-O. Common ragweed (*Ambrosia artemisiifolia*)—A worldwide problem. T. KOMIVES (1), P. Reisinger (2). (1) Plant Protection Institute, Hungarian Academy of Sciences, Budapest, Hungary; (2) Plant Protection Institute, University of West Hungary, Mosonmagyaróvár, Hungary
- 3:30 p.m. 10-O. Biological control of invasive common ragweed, *Ambrosia artemisiifolia* L., with beneficial insect herbivores in China. F. WAN (1), Z. Zhou (1), J. Guo (1), L. Meng (2), B. Li (2), H. Chen (1). (1) Institute of Plant Protection, Chinese Academy of Agricultural Sciences, Beijing, Peoples Rep of China; (2) College of Plant Protection, Nanjing Agricultural University, Nanjing, Peoples Rep of China
- 3:45 p.m. 11-O. A new disease of parsley (*Petroselinum crispum*) in California caused by a fluorescent pseudomonad related to *Pseudomonas viridiflava*. S. J. MAUZEY (1), C. D. Davis (2), O. M. Martins (3), S. T. Koike (4), C. T. Bull (5). (1) California State University, Monterey Bay, Undergraduate Research Opportunities Center, Seaside, CA, U.S.A.; (2) Hartnell College, Salinas, CA, U.S.A.; (3) Embrapa Genetic Resources and Biotechnology, Brasília, Brazil; (4) University of California-Davis, Salinas, CA, U.S.A.; (5) USDA ARS, Salinas, CA, U.S.A.

Plant Disease Management Chemical & Biological Control

1:00 – 4:15 p.m.; 317B

Section: IPM/Biocontrol/Plant Disease Management

Moderator: Bangya, Ma, North Carolina State University, Raleigh, NC, U.S.A.

- 1:00 p.m. 12-O. *Bacillus subtilis*, strain QST 713: Soil applications for disease control, crop yield, and quality enhancement. P. WALGENBACH (1), M. Guilhabert (1), D. Warkentin (2), D. Long (3), D. Manker (1). (1) AgraQuest, Inc., Davis, CA, U.S.A.; (2) AgraQuest, Inc., Valdosta, GA, U.S.A.; (3) AgraQuest.com, Atlanta, GA, U.S.A.
- 1:15 p.m. 13-O. Strategies of biological and symbiotic control of citrus variegated chlorosis by endophytic bacteria. P. T. LACAVA (1), C. S. Gai (2), T. A. Miller (3), J. S. Hartung (4), J. Azevedo (2). (1) Federal University of Alfenas - UNIFAL/MG, Alfenas, Brazil; (2) University of São Paulo, Piracicaba, Brazil; (3) University of California-Riverside, Riverside, CA, U.S.A.; (4) USDA-ARS, Beltsville, MD, U.S.A.
- 1:30 p.m. 14-O. Characterization of bacteriophages PT21 and UASP infecting *Ralstonia solanacearum*: A potential biocontrol agent. M. K. PRASANNA KUMAR (1), A. N. A. Khan (2), K. N. Chandrashekar (3), S. V. Manjunath (4). (1) University of Agricultural Sciences, Mandya, India; (2) University of Agricultural Sciences, Bangalore, India; (3) Division of Biotechnology, Indian Institute of Horticulture Research (ICAR), Hessarghatta, Bangalore, India; (4) Dept. of Plant Pathology, College of Agriculture,

Oral Technical Sessions continued

AMERICAN PEAT TECHNOLOGY, LLC

**BioAPT- the industry standard
organic microbe carrier**

BioAPT is available in granular and powdered form

BioAPT is composed of reed sedge peat which has been used in the
Rhizobia inoculant industry for over 70 years

BioAPT absorbs moisture quickly and retains that moisture and added
nutrients over extended periods of time, under adverse conditions

The equipment needed for application is produced by all major
agricultural equipment manufacturers

American Peat Technology is a leader in green technology

For more information, or to request a free sample, contact

Doug Green, President

218.927.1888

dgreen@americanpeattech.com

www.americanpeattech.com

- University of Agricultural Sciences, GKVK, Bangalore, India
- 1:45 p.m. 15-O. Managing potato scab and enhancing tuber yield with low rates of fish emulsion applied as a preplant soil amendment. P. A. ABBASI (1). (1) Agriculture & Agri-Food Canada, London, ON, Canada
- 2:00 p.m. 16-O. Responses of *Rhizoctonia* spp. and *Sclerotium hydrophilum* to the plant extracts. S. AYE (1), M. Matsumoto (1). (1) Kyushu University, Fukuoka, Japan
- 2:15 p.m. 17-O. A novel endophytic biocontrol agent of oomycete pathogens with the activity of plant growth promotion, resistance induction, and nitrogen fixation. F. Bibi (1), E. Chung (2), A. Khan (1), Y. CHUNG (1). (1) Gyeongsang National University, Division of Applied Life Science (BK 21), Plant Molecular Biology and Biotechnology Research Center, Jinju, Korea; (2) JGreen Inc., Dept. of Research & Development, Changnyeong, Korea
- 2:30 p.m. Break
- 2:45 p.m. 18-O. Use of silver nanoparticles for control of seedborne diseases. J. Cho (1), J. Thorkelson (1), H. Jeong (1), J. Rho (2), D. Shin (2), Y. JO (1). (1) Texas A&M University, College Station, TX, U.S.A.; (2) Rural Development Administration, Suwon, Korea
- 3:00 p.m. 19-O. Systemic nematocidal activity of fluensulfone against the root-knot nematode *Meloidogyne incognita* on pepper. Y. OKA (1), S. Shuker (1), N. Tkachi (1). (1) Gilat Research Center, M. P. Negev, Israel
- 3:15 p.m. 20-O. Relevance of the deposit structure for the biological efficacy of glyphosate as evaluated on four weed species. S. BASI (1), M. Hunsche (2), G. Noga (2). (1) University of Bonn, Bonn, Germany; (2) University of Bonn, INRES-Horticultural Science, Bonn, Germany
- 3:30 p.m. 21-O. Glyphosate activity on plant diseases and potential impact on plant health and yield in Roundup Ready cropping systems. F. KOHN (1), G. Baley (1), A. Dias (2), K. Kretzmer (1), S. Metz (1), A. Peper (3). (1) Monsanto Co., St. Louis, MO, U.S.A.; (2) Monsanto Co., Waterman, IL, U.S.A.; (3) Monsanto Co., Pergamino, Argentina
- 3:45 p.m. 22-O. Suppression of bacterial panicle blight of rice by pretreatment with various chemical compounds. B. K. SHRESTHA (1), H. S. Karki (1), D. E. Groth (2), M. C. Rush (1), J. H. Ham (1). (1) Louisiana State University, Baton Rouge, LA, U.S.A.; (2) Louisiana State University AgCenter Rice Research Station, Crowley, LA, U.S.A.
- 4:00 p.m. 23-O. Evaluation of ningnanmycin for management of dollar spot and anthracnose in turfgrasses. B. MA (1), L. P. Tredway (1). (1) North Carolina State University, Raleigh, NC, U.S.A.

Plant Fungal Interactions

1:00 – 3:45 p.m.; 323C

Section: Molecular/Cellular/Plant-Microbe Interactions

Moderator: Grant Poole, Washington State University, Pullman, WA, U.S.A.

- 1:00 p.m. 24-O. Differential proteins and genes related to *Curvularia lunata* potential virulence variation

- induced continuously by resistant maize germplasm. J. CHEN (1). (1) Shanghai Jiaotong University, Shanghai, Peoples Rep of China
- 1:15 p.m. 25-O. Identifying quantitative trait loci (QTL) for resistance to *Fusarium* crown rot (*Fusarium pseudograminearum*) in two spring wheat populations. G. POOLE (1), R. Smiley (2), T. C. Paulitz (3), K. Garland-Campbell (3). (1) Washington State University, Pullman, WA, U.S.A.; (2) Oregon State University, Pendleton, OR, U.S.A.; (3) USDA-ARS, Pullman, WA, U.S.A.
- 1:30 p.m. ★ **APS Foundation Awardee** 26-O. Identification of a candidate resistance gene to *Phakopsora pachyrhizi*, the causal agent of soybean rust, in the alternative host kudzu, *Pueraria* spp. H. M. YOUNG (1), D. Liberti (2), P. Harmon (2), J. J. Marois (1), D. L. Wright (1). (1) University of Florida/NFREC, Quincy, FL, U.S.A.; (2) University of Florida, Gainesville, FL, U.S.A.
- 1:45 p.m. 27-O. Linkage block and recombination suppression at the *Pi-ta* locus at the centromere region of rice chromosome 12. Y. JIA (1), M. H. Jia (1), G. Liu (2). (1) USDA-ARS Dale Bumpers National Rice Research Center, Stuttgart, AR, U.S.A.; (2) Texas A&M University System AgriLife Research and Extension Center, Beaumont, TX, U.S.A.
- 2:00 p.m. 28-O. Characterization of the *Pi-b* rice blast resistance gene in the National Small Grains Collection (NSGC). M. ROYCHOWDHURY (1), Y. Jia (2), M. Jia (2), R. Fjellstrom (2), R. Cartwright (3). (1) University of Arkansas, Stuttgart, AR, U.S.A.; (2) ARS-USDA, Stuttgart, AR, U.S.A.; (3) University of Arkansas, Fayetteville, AR, U.S.A.
- 2:15 p.m. 29-O. The rice blast fungus, *Magnaporthe oryzae*, copes with plant-generated reactive oxygen species through the virulence factor *MoHYR1*. K. HUANG (1), K. J. Czymmek (1), J. L. Caplan (2), J. A. Sweigard (3), N. M. Donofrio (1). (1) University of Delaware, Newark, DE, U.S.A.; (2) Delaware Biotechnology Institute, Newark, DE, U.S.A.; (3) DuPont Stine-Haskell, Newark, DE, U.S.A.
- 2:30 p.m. Break
- 2:45 p.m. 30-O. Small RNAs of *Magnaporthe oryzae*, and the role of different sRNA biosynthetic genes on pathogenicity. V. RAMAN (1), S. A. Simon (1), A. Romag (1), F. Demirci (1), J. Zhai (1), B. C. Meyers (1), N. M. Donofrio (1). (1) University of Delaware, Newark, DE, U.S.A.
- 3:00 p.m. 31-O. The transcription factor Amr1 induces melanin biosynthesis and conidium production but differentially suppresses virulence in *Alternaria brassicicola*. Y. CHO (1). (1) University of Hawaii-Manoa, Honolulu, HI, U.S.A.
- 3:15 p.m. 32-O. Transgenic rice with inducible overproduction of ethylene exhibits broad-spectrum disease resistance. E. E. HELLIWELL (1), Q. Wang (2), Y. Yang (2). (1) Pennsylvania State University, State College, PA, U.S.A.; (2) Pennsylvania State University, University Park, PA, U.S.A.
- 3:30 p.m. ★ **APS Foundation Awardee** **Pacific Division Talk** 33-O. The heritability of virulence to pine in *Gibberella circinata*. S. L. SLINSKI (1), T. R. Gordon (1). (1) University of California, Davis, CA, U.S.A.

MONDAY, AUGUST 8, 2011

Listed in alphabetical order by title. Special Sessions listed first followed by Oral Technical Sessions. Find complete details on the meeting website at www.apsnet.org/meetings/annual/program/Pages

■ SPECIAL SESSIONS

Biology and Molecular Biology of Closteroviruses

8:30 – 11:30 a.m.; 323A

Section: Molecular/Cellular/Plant-Microbe Interactions

Organizers/Moderators: Naidu Rayapati, Washington State University, Prosser, WA, U.S.A.; Alex Karasev, University of Idaho, Moscow, ID, U.S.A.

Sponsor: Virology

Financial Sponsor: The Samuel Roberts Noble Foundation, Inc.

- 8:30 a.m. 39-S. Current status of the molecular biology of closteroviruses. W. O. DAWSON (1). (1) Citrus Research and Education Center, University of Florida, Lake Alfred, FL, U.S.A.
- 9:15 a.m. 40-S. Closteroviruses infecting pineapple in Hawaii. J. S. HU (1), D. M. Sether (1), M. J. Melzer (1), C. V. Subere (1), K. Dey (1), W. B. Borth (1). (1) University of Hawaii, Honolulu, HI, U.S.A.
- 9:45 a.m. 41-S. Closteroviruses infecting grapevine. R.A. NAIDU (1). (1) Washington State University, Prosser, WA, U.S.A.
- 10:00 a.m. Break
- 10:15 a.m. 41-S. Closteroviruses infecting grapevine. R.A. NAIDU (1). (1) Washington State University, Prosser, WA, U.S.A.
- 10:30 a.m. 42-S. Novel closteroviruses in small fruit crops. I.E. TZANETAKIS (1). (1) Dept. of Plant Pathology, University of Arkansas, Fayetteville, AR, U.S.A.
- 11:00 a.m. 43-S. Aphid transmission of Beet yellows virus in a model system. A. V. KARASEV (1), S. Blades (1), A. R. Poplawsky (1). (1) University of Idaho, Moscow, ID, U.S.A.

International Mycotoxin Issues in a Changing World

8:30 – 11:30 a.m.; 316A

Section: Epidemiology/Ecology/Environmental Biology of Pathogens

Organizers: Anthony Glenn, USDA, ARS, Russell Research Center, Athens, GA, U.S.A.; Rubella Goswami, North Dakota State University, Fargo, ND, U.S.A.

Moderators: Rubella S. Goswami, North Dakota State University, Fargo, ND, U.S.A.; Henry Ngugi, Dept. of Plant Pathology, Pennsylvania State University, Biglerville, PA, U.S.A.

Sponsors: Mycotoxicology; Office of International Programs; Tropical Plant Pathology; Mycology; Epidemiology

Financial Sponsor: Romer Labs

- 8:30 a.m. 44-S. Potential strategies for preventing recurrent aflatoxicosis outbreaks in Kenya. H. K. NGUGI (1), C. K. Mutegei (2). (1) Department of Plant Pathology, Pennsylvania State University, Biglerville, PA, U.S.A.; (2) Kenya Agricultural Research Institute, Nairobi, Kenya
- 9:00 a.m. 45-S. Risk index assessment of aflatoxin contamination of peanut. K.L. BOWEN (1). (1) Dept. Ent. and Plant Pathology, Auburn University, AL, U.S.A.
- 9:30 a.m. 46-S. Evaluating human exposure to fumonisins in Guatemala and its possible role as a contributing

factor to neural tube defects. J. Gelineau van Waes (1), J. Maddox (1), A. Ashley-Koch (2), S. Gregory (2), O. Torres de Matute (3), K. A. Voss (4), R. T. RILEY (4). (1) Creighton University, Omaha, NE, U.S.A.; (2) Duke University Medical Center, Durham, NC, U.S.A.; (3) Centro de Investigaciones en Nutricion y Salud, Guatemala City, Guatemala; (4) USDA-ARS Toxicology and Mycotoxin Research Unit, Athens, GA, U.S.A.

10:00 a.m. Break

10:15 a.m. 47-S. Mycotoxins in Asia and other countries-2009-2010. K. Naeher (1), I. Rodrigues (1), J. L. RICHARD (2). (1) Biomin Holding GmbH, Herzogenburg, Austria; (2) Romer Labs, Inc., Union, MO, U.S.A.

10:45 a.m. 48-S. Pathogenesis by mycotoxigenic fungi: The tipping points. G. A. PAYNE (1). (1) North Carolina State University, Raleigh, NC, U.S.A.

11:15 a.m. Discussion

Invasive Weeds as a Threat to Agriculture and Human Health

8:30 – 11:30 a.m.; 324

Section: Weed Science

Organizers/Moderators: Tamas Komives, Hungarian Academy of Science, Budapest, Hungary; Steve W. Adkins, The University of Queensland, Brisbane, Australia

Sponsors: APS/IAPPS and Weed Science

- 8:30 a.m. 49-S. *Ambrosia* spp.: Weed management and human allergy. T. KOMIVES (1), P. Reisinger (2). (1) Plant Protection Institute, Hungarian Academy of Sciences, Budapest, Hungary; (2) University of West-Hungary, Mosonmagyaróvár, Hungary
- 9:00 a.m. 50-S. The need for weed risk assessment. R. E. LABRADA (1). (1) ex FAO UN, Rome, Italy
- 9:30 a.m. 51-S. Towards the sustainable management of parthenium weed (*Parthenium hysterophorus* L.) under a changing climate: An international collaborative approach. S. W. ADKINS (1), C. O'Donnell (1), N. Khan (1), T. Nguyen (1), I. Khan (2), A. Shabbir (2), K. Dhileepan (3), D. George (2), Z. Hanif (2), R. Toh (2), A. Belgeri Garcia (2), S. Navie (2), L. Strathie (4), A. McConnachie (4), L. Nigatu (5), G. Hassan (6), G. Nasim (7), W. Mersie (8). (1) The University of Queensland, St. Lucia, Qld, Australia; (2) UQ, BNE, Australia; (3) DEEDI, BNE, Australia; (4) ARC - PPRI, Hilton, Rep of South Africa; (5) Haramaya University, Haramaya, Ethiopia; (6) KPA University, Peshawar, Pakistan; (7) University of the Punjab, Lahore, Pakistan; (8) Virginia State University, Petersburg, VA, U.S.A.
- 10:00 a.m. Break
- 10:15 a.m. 52-S. Invasive weeds—A global overview. J. M. DITOMASO (1). (1) University of California- Davis, Davis, CA, U.S.A.
- 10:45 a.m. 53-S. Invasive weeds in the Mediterranean region. T. YAACOBY (1). (1) Plant Protection & Inspection Services, Bet Dagan, Israel

- 11:15 a.m. 54-S. Ability of native insects in Hungary to suppress the spread of common ragweed (*Ambrosia artemisiifolia* L.). Z. BASKY (1). (1) Plant Protection Institute, Hungarian Academy of Sciences, Budapest, Hungary

IPM and Biological Control of Insect Pests, Plant Pathogens, and Invasive Weeds in the Pacific Islands: Where Are We Heading?

8:30 – 10:00 a.m., 325AB

Section: Emerging Pests/Invasive Species

Organizers: Roy Masamdu, SPC Land Resources Division, Suva, Fiji Islands; Trevor Jackson, Lincoln Research Centre, AgResearch, Lincoln, New Zealand

Moderator: Trevor Jackson, Lincoln Research Centre, AgResearch, Lincoln, New Zealand

- 8:30 a.m. 55-S. Experiences with biocontrol of invasive pests and weeds in the Pacific. R. Masamdu (1), W. Orapa (1), T. A. JACKSON (2). (1) SPC Land Resources Division, Suva, Fiji; (2) Lincoln Research Centre, AgResearch, Lincoln, New Zealand
- 8:45 a.m. 56-S. Containing the rhinoceros beetle outbreak on Guam. A. MOORE (1). (1) University of Guam, Mangilao, Guam
- 9:00 a.m. 57-S. Behavior and management strategies for taro beetles in Pacific Islands. R. T. MASAMDU (1), F. Atumurirava (1). (1) Secretariat of the Pacific Community, Suva, Fiji
- 9:15 a.m. 58-S. Pests of oil palm in Papua New Guinea, with emphasis on West New Britain. C. F. DEWHURST (1). (1) PNG Oil Palm Research Association, Kimbe, New Guinea
- 9:30 a.m. 59-S. Host preferences by *Bactrocera musae* (Tryon) on two banana varieties at different ripening stages. A. N. MARARUAI (1). (1) National Agricultural Research Institute, Port Moresby, New Guinea
- 9:45 a.m. 60-S. Future directions for biological control in the Pacific. T. A. JACKSON (1), R. T. Masamdu (2). (1) AgResearch, Lincoln, New Zealand; (2) SPC Land Resources Division, Suva, Fiji

Laboratory Methods for Detecting and Characterizing Fungicide Resistance

8:30 – 11:30 a.m., 319AB

Section: IPM/Biocontrol/Plant Disease Management

Organizers: Frank Wong, University of California-Riverside, Riverside, CA, U.S.A.; Gerald Holmes, Valent USA Corp., Cary, NC, U.S.A.; Gilberto Olaya, Syngenta Crop Protection, Vero Beach, FL, U.S.A.

Moderators: Gerald Holmes, Valent USA Corp., Cary, NC, U.S.A.; Frank Wong, University of California-Riverside, Riverside, CA, U.S.A.

Sponsors: APS Pathogen Resistance; APS Chemical Control; APS Industry; North American Fungicide Resistance Action Committee (FRAC)

- 8:30 a.m. 61-S. Fungicide resistance testing and monitoring strategies: Good science and common mistakes. W. F. WILCOX (1). (1) Cornell University, Geneva, NY, U.S.A.
- 9:00 a.m. 62-S. Sampling for detecting fungicide resistance. L. V. MADDEN (1). (1) Ohio State University, Wooster, OH, U.S.A.

- 9:30 a.m. 63-S. Laboratory methods for evaluating resistance in vitro. G. OLAYA (1). (1) Syngenta Crop Protection, Vero Beach, FL, U.S.A.

10:00 a.m. Break

- 10:15 a.m. 64-S. Laboratory methods for evaluating resistance for obligate pathogens. F. P. WONG (1), G. Olaya (2). (1) University of California, Riverside, CA, U.S.A.; (2) Syngenta Crop Protection, Vero Beach, FL, U.S.A.

- 10:45 a.m. 65-S. Molecular methods for fungicide resistance detection. H. SIEROTZKI (1), G. Stammer (2), A. Mehl (3). (1) Syngenta, Stein, Switzerland; (2) BASF, Ludwigshafen, Germany; (3) Bayer, Mohnheim, Germany

11:15 a.m. Discussion

Schroth Faces of the Future in Nematology

8:30 – 11:00 a.m., 323C

Section: Diseases of Plants

Organizers: Gilda Rauscher, Pioneer-Dupont, Wilmington, DE, U.S.A.; Teresa Hughes, USDA-ARS, Purdue University, West Lafayette, IN, U.S.A.; Christopher Wallis, USDA-ARS, Parlier, CA, U.S.A.

Moderator: Teresa Hughes, USDA-ARS, Purdue University, West Lafayette, IN, U.S.A.

Sponsor: Early Career Professionals

- 8:30 a.m. 66-S. The Schroth Faces of the Future symposium—APS Foundation. R. D. MARTYN (1). (1) Purdue University, West Lafayette, IN, U.S.A.
- 8:45 a.m. 67-S. Introduction of the '2011 Recipients for Nematology'. T. HUGHES (1). (1) USDA-ARS, Purdue University, West Lafayette, IN, U.S.A.
- 9:00 a.m. 68-S. Chemical ecology and isolation of biologically active compounds from parasitic nematodes. F. KAPLAN (1), H. T. Alborn (1). (1) USDA-ARS, Gainesville, FL, U.S.A.
- 9:30 a.m. 69-S. Teaching and learning plant-parasitic nematode identification. P. AGUDELO (1). (1) Clemson University, Clemson, SC, U.S.A.
- 10:00 a.m. Break
- 10:15 a.m. 70-S. Dissecting the interactions between *Meloidogyne chitwoodi* and potato – an integrated approach. A. A. ELLING (1). (1) Washington State University, Department of Plant Pathology, Pullman, WA, U.S.A.
- 10:45 a.m. Discussion

What Else is There? New Genes, Metabolites, and Regulatory Pathways Involved in Biocontrol by Bacteria

8:30 – 11:30 a.m., 318AB

Section: Molecular/Cellular/Plant-Microbe Interactions

Organizer: Brian McSpadden Gardener, The Ohio State University-OARDC, Wooster, OH, U.S.A.

Moderator: Barry Jacobsen, Montana State University Bozeman, MT, U.S.A.

Sponsors: APS Biological Control; APS Bacteriology

- 8:30 a.m. 71-S. Comparative genomic analysis reveals new aspects of the biology and secondary metabolism of biological control strains of *Pseudomonas* spp. J. E. LOPER (1), K. A. Hassan (2), E. W. Davis (1), C. K. Lim (2), I. T. Paulsen (2). (1) USDA-ARS, Corvallis, OR, U.S.A.; (2) Macquarie University, Sydney, Australia

Special Sessions continued

- 9:00 a.m. 72-S. Novel pathways revealed in *P. fluorescens* Q2-87 and Q8r1-96. L. S. THOMASHOW (1), D. V. Mavrodi (2), K. A. Hassan (3), I. T. Paulsen (4), J. E. Loper (5), J. R. Alfano (6), D. M. Weller (1). (1) USDA-Agricultural Research Service, Pullman, WA, U.S.A.; (2) Dept. of Plant Pathology, Washington State University, Pullman, WA, U.S.A.; (3) Dept. of Chemistry and Biomolecular Sciences, Macquarie University, Sydney, Australia; (4) Dept. of Chemistry and Biomolecular Sciences, Macquarie University, Sydney, Australia; (5) USDA-Agricultural Research Service, Corvallis, OR, U.S.A.; (6) Center for Plant Science Innovation, University of Nebraska, Lincoln, NE, U.S.A.
- 9:30 a.m. 73-S. What makes *Chromobacterium* tick? New metabolites from a novel biocontrol agent. H. Kim (1), I. Kim (1), B. M. Gardener (2), Y. KIM (1). (1) Chonnam National University, Gwangju, South Korea; (2) The Ohio State University-OARDC, Wooster, OH, U.S.A.
- 10:00 a.m. Break
- 10:15 a.m. 74-S. Pathogenesis as a mechanism of biological control by *Lysobacter* enzymogenes. D. Y. KOBAYASHI (1), N. Patel (1), B. I. Hillman (1), J. Ravel (2). (1) Rutgers University, New Brunswick, NJ, U.S.A.; (2) University of Maryland School of Medicine, Baltimore, MD, U.S.A.
- 10:45 a.m. 75-S. Pantoea applied genomics to understand and improve biocontrol activity against fire blight. B. DUFFY (1), T. Kamber (1), F. Rezzonico (1), P. Llop (2), C. A. Ishimaru (3), P. Pusey (4), V. O. Stockwell (5), T. H. Smits (1). (1) Agroscope Changins-Wädenswil ACW, Wädenswil, Switzerland; (2) Agroscope Changins-Wädenswil ACW; IVIA-Valencia Spain, Wädenswil, Switzerland; (3) Dept. of Plant Pathology, University of Minnesota, St. Paul, MN, U.S.A.; (4) USDA-ARS Tree Fruit Research LAB, Wenatchee, WA, U.S.A.; (5) Oregon State University, Dept. of Botany and Plant Pathology, Corvallis, OR, U.S.A.
- 11:15 a.m. Discussion

ORAL TECHNICAL SESSIONS

Detection & Diagnosis of Plant Diseases

8:30 – 11:45 a.m.; 323B

Section: Diseases of Plants

Moderator: Mohammad Babadoost, University of Illinois, Urbana, IL, U.S.A.

- 8:30 a.m. 34-O. Potential of Fourier transform infra-red (FTIR) spectroscopy for differentiation of phytopathogens. A. POMERANTZ (1), A. Salman (2), S. Mordechai (1), M. Huleihai (1). (1) Ben-Gurion University of the Negev, Beer-Sheva, Israel; (2) SCE-Sami Shamoon College of Engineering, Beer-Sheva, Israel
- 8:45 a.m. 35-O. Blue-green and chlorophyll fluorescence-based differentiation between simultaneously occurring N deficiency and pathogen infection in winter wheat. K. Buerling (1), M. HUNSCHE (1), G. Noga (1). (1) University of Bonn, INRES-Horticultural Sciences, Bonn, Germany
- 9:00 a.m. 36-O. Grapevines infected with powdery mildew emit specific volatile organic compounds that

can be utilized for pathogen detection. A. M. SUTHERLAND (1), O. Fiehn (1), K. McCabe (2), R. Wingo (2), W. D. Gubler (1). (1) University of California-Davis, Davis, CA, U.S.A.; (2) Los Alamos National Laboratory, Los Alamos, NM, U.S.A.

- 9:15 a.m. 37-O. Detection, diversity, and molecular characterization of closteroviruses infecting Hawaiian ti (*Cordyline fruticosa* L.). M. MELZER (1), J. Sugano (1), D. Sether (1), W. Borth (1), J. Hu (1). (1) University of Hawaii, Honolulu, HI, U.S.A.
- 9:30 a.m.  38-O. *Alternanthera mosaic virus* identified in clock vine in Florida. A. VITORELI (1), C. A. Baker (2), C. L. Harmon (3). (1) University of Florida Dept. of Plant Pathology Extension Plant Disease Clinic, Gainesville, FL, U.S.A.; (2) Florida Dept. of Agriculture and Consumer Services, Division of Plant Industry, Gainesville, FL, U.S.A.; (3) University of Florida, Dept. of Plant Pathology and Southern Plant Diagnostic Network, Gainesville, FL, U.S.A.
- 9:45 a.m. 39-O. Bacterial spot (*Xanthomonas cucurbitae*): An emerging disease of pumpkin in Illinois. M. BABADOOST (1), A. Ravanlou (2). (1) University of Illinois, Urbana, IL, U.S.A.; (2) Dept. of Crop Sciences, University of Illinois, Urbana, IL, U.S.A.
- 10:00 a.m. Break
- 10:15 a.m. 40-O. Development of a species-specific PCR assay to identify the cereal cyst nematode *Heterodera filipjevi*. G. YAN (1), R. W. Smiley (1), P. A. Okubara (2). (1) Oregon State University, Columbia Basin Agricultural Research Center, Pendleton, OR, U.S.A.; (2) USDA ARS, Root Disease and Biological Control Research Unit, Pullman, WA, U.S.A.
- 10:30 a.m. 41-O. Application of a real-time PCR assay for detection of eastern filbert blight in hazelnut breeding. T. J. MOLNAR (1), N. Zhang (1). (1) Rutgers University, New Brunswick, NJ, U.S.A.
- 10:45 a.m. 42-O. *Monilinia* species in China—Surprising facts. M. Hu (1), K. D. Cox (2), G. Schnabel (3), C. LUO (1). (1) Huazhong Agricultural University, Wuhan, Peoples Rep of China; (2) Cornell University, Geneva, NY, U.S.A.; (3) Clemson University, Clemson, SC, U.S.A.
- 11:00 a.m. 43-O. Species identification of the causal agent of Eutypa dieback of grapevine in northeastern U.S. and southeastern Canadian vineyards. P. E. ROLSHAUSEN (1), K. Baumgartner (2), R. Travadon (3), P. Fujiyoshi (3), N. Mahoney (4), R. Molyneux (5), W. Wilcox (6). (1) University of California, Riverside, CA, U.S.A.; (2) USDA-ARS, Davis, CA, U.S.A.; (3) University of California, Davis, CA, U.S.A.; (4) USDA-ARS, Albany, CA, U.S.A.; (5) University of Hawaii, Hilo, HI, U.S.A.; (6) Cornell University, Geneva, NY, U.S.A.
- 11:15 a.m. 44-O. MALDI-TOF mass spectrometry: Applications for rapid bacterial identification and phylogenetic analysis. J. F. Pothier (1), V. Pflueger (2), D. Ziegler (3), M. Tonolla (4), G. Vogel (3), B. DUFFY (1). (1) Agroscope Changins-Wädenswil ACW, Wädenswil, Switzerland; (2) Agroscope Changins-Wädenswil ACW/Mabritec AG, Riehen, Switzerland; (3) Mabritec AG, Riehen, Switzerland; (4) Istituto Cantonale di Microbiologia, Microbiology Unit, BIVEG, Bellinzona, Switzerland

- 11:30 a.m. 45-O. Development of a qPCR assay for quantification of *Verticillium dahliae* in spinach seed. D. DURESSA (1), G. Rauscher (2), B. Mou (1), R. Hayes (1), S. T. Koike (3), K. Maruthachalam (3), K. V. Subbarao (4), S. J. Klosterman (1). (1) USDA-ARS, Salinas, CA, U.S.A.; (2) Pioneer-Dupont, Wilmington, NC, U.S.A.; (3) University of California-Davis, Salinas, CA, U.S.A.; (4) University of California, Davis, CA, U.S.A.

Epidemiology—Biology of Pathogens

8:30 – 11:30 a.m.; 317A

Section: Epidemiology/Ecology/Environmental Biology of Pathogens

Moderators: Peter Ojiambo, North Carolina State University, Raleigh, NC, U.S.A.; Jay Pscheidt, Oregon State University, Corvallis, OR, U.S.A.

- 8:30 a.m. 46-O. Pycnidial development and pycnidiospore germination of Botryosphaeriaceae species as influenced by temperature. L. COSTADONE (1), A. Sutherland (1), W. D. Gubler (1). (1) University of California, Davis, CA, U.S.A.
- 8:45 a.m. ★ **APF Foundation Awardee** 47-O. Identification of a novel fruiting structure produced by *Aspergillus niger* and *A. carbonarius* in grape berries affected by sour rot. C. PISANI (1), W. D. Dubler (1). (1) University of California-Davis, Davis, CA, U.S.A.
- 9:00 a.m. 48-O. Modelling of *Guignardia pseudothecium* maturation and ascospore dispersal in citrus orchards. P. H. FOURIE (1), G. C. Schutte (2), S. Serfontein (3), S. H. Swart (3). (1) Citrus Research International, Stellenbosch, Rep of South Africa; (2) Citrus Research International, Nelspruit, Rep of South Africa; (3) QMS Agriscience, Tzaneen, Rep of South Africa
- 9:15 a.m. 49-O. Temporal and spatial spread of cucurbit downy mildew in the eastern United States. P. OJIAMBO (1), G. Holmes (2). (1) North Carolina State University, Raleigh, NC, U.S.A.; (2) Valent U.S.A. Corporation, Cary, NC, U.S.A.
- 9:30 a.m. 50-O. Epidemiological studies on *Blackberry chlorotic ringspot virus*. B. POUDEL (1), A. G. Laney (1), I. E. Tzanetakis (1). (1) University of Arkansas, Fayetteville, AR, U.S.A.
- 9:45 a.m. 51-O. Differential effects of host plants on accumulation, competition, and transmission of curtoviruses from single and mixed infections. W. M. WINTERMANTEL (1). (1) USDA ARS, Salinas, CA, U.S.A.
- 10:00 a.m. Break
- 10:15 a.m. 52-O. Molecular typing of *Potato virus Y* isolates from Brazil reveals a history of introduction of necrotic strains. S. B. Galvino-Costa (1), A. D. FIGUEIRA (1), P. S. Geraldino (1), O. V. Nikolaeva (2), A. Karasev (2). (1) Universidade Federal de Lavras, Lavras - MG, Brazil; (2) University of Idaho, Moscow, ID, U.S.A.
- 10:30 a.m. ★ **APF Foundation Awardee** **Pacific Division Talk** 53-O. The cryptic dimension of host-pathogen interactions: Physiological impacts of *Fusarium circinatum* infection on symptomless *Pinus radiata*. C. L. SWETT (1), T. R. Gordon (1). (1) University of California, Davis, CA, U.S.A.

- 10:45 a.m. 54-O. Disease progress of thousand cankers disease in Oregon. J. PSCHIEDT (1). (1) Oregon State University, Corvallis, OR, U.S.A.
- 11:00 a.m. 55-O. Nature of *Ceratocystis smalleyi*–*Scolytus quadrispinosus* interactions on stems of bitternut hickory with declining crowns. J. JUZWIK (1), M. Banik (2). (1) USDA Forest Service, St. Paul, MN, U.S.A.; (2) USDA Forest Service, Madison, WI, U.S.A.
- 11:15 a.m. **Pacific Division Talk** 56-O. Ascospore viability and dispersal from pruned branches infected with *Anisogramma anomala*. S. HECKERT (1), J. W. Pscheidt (1), J. K. Stone (1), S. A. Cluskey (1). (1) Oregon State University, Corvallis, OR, U.S.A.

Fungicide Resistance & Efficacy

8:30 – 11:45 a.m.; 317B

Section: IPM/Biocontrol/Plant Disease Management

Moderators: Henry Ngugi, Dept. of Plant Pathology, Pennsylvania State University, Biglerville, PA, U.S.A.; Rubella S. Goswami, North Dakota State University, Fargo, ND, U.S.A.

- 8:30 a.m. ★ **APF Foundation Awardee** 57-O. Seasonal distribution of SI fungicide resistance in apple scab populations in Virginia. S. C. MARINE (1), D. G. Schmale (2), K. S. Yoder (1). (1) Virginia Tech, Winchester, VA, U.S.A.; (2) Virginia Tech, Blacksburg, VA, U.S.A.
- 8:45 a.m. 58-O. Multiple resistance phenotypes of *Botrytis cinerea* in apple orchards and effects on control of gray mold in stored apples with postharvest fungicides. Y. KIM (1), C. Xiao (1). (1) Washington State University, TFREC, Wenatchee, WA, U.S.A.
- 9:00 a.m. 59-O. Fungicide sensitivity of *Podosphaera xanthii* and efficacy of fungicides with resistance risk for cucurbit powdery mildew in New York in 2010. M. T. MCGRATH (1), L. K. Hunsberger (1). (1) Cornell University, Riverhead, NY, U.S.A.
- 9:15 a.m. 60-O. Practical resistance to fenhexamid *Botrytis cinerea* isolates from grapevines in New York. S. SAITO (1), L. Cadle-Davidson (2), W. F. Wilcox (1). (1) Cornell University NYSAES, Geneva, NY, U.S.A.; (2) ARS USDA, Geneva, NY, U.S.A.
- 9:30 a.m. 61-O. Development of a PCR-based assay for detection of resistance to QoI fungicides in *Asochyta rabiei*. R. S. GOSWAMI (1), J. A. Delgado (1), T. C. Lynnes (1), S. W. Meinhardt (1), S. G. Markell (1). (1) North Dakota State University, Fargo, ND, U.S.A.
- 9:45 a.m. 62-O. IR-4 project fungicide registration on specialty crops update. D. C. THOMPSON (1). (1) Rutgers University, Princeton, NJ, U.S.A.
- 10:00 a.m. Break
- 10:15 a.m. 63-O. Evidence for multiple fungicide resistance in field populations of *Venturia inaequalis*. H. K. NGUGI (1), K. D. Cox (2), S. M. Villani (2), W. Köller (2). (1) Dept. of Plant Pathology, Pennsylvania State University, Biglerville, PA, U.S.A.; (2) Dept. of Plant Pathology and Plant-Microbe Biology, Cornell University, Geneva, NY, U.S.A.
- 10:30 a.m. 64-O. Fungicidal efficacy of oxysilver nitrate and sodium diperiodatoargentate (III) for control of seedborne and foliar diseases. M. W. HARDING (1), R. J. Howard (2), M. E. Olson (3). (1) Innovotech

Oral Technical Sessions continued

- Inc., Brooks, AB, Canada; (2) Alberta Agriculture and Rural Development, Brooks, AB, Canada; (3) Innovotech Inc., Edmonton, AB, Canada
- 10:45 a.m. 65-O. Field efficacy of novel fungicides for the control of *Sclerotium cepivorum* in California. A. E. FERRY (1), M. Davis (1). (1) University of California-Davis, Davis, CA, U.S.A.
- 11:00 a.m. 66-O. Effect of presowing soil-incorporated treatments on *Alternaria radicina* in carrot, *Daucus carota*. R.S. Trivedi (1), J. M. TOWNSHEND (2), J. G. Hampton (1), M. V. Jaspers (1), H. J. Ridgway (1).

- (1) Lincoln University, Lincoln, New Zealand; (2) Midlands Seed Ltd., Ashburton, New Zealand
- 11:15 a.m. 67-O. Economic analysis of small plot and on-farm fungicide trials on soybean in Iowa. N. R. BESTOR (1), D. S. Mueller (1), A. E. Robertson (1). (1) Iowa State University, Ames, IA, U.S.A.
- 11:30 a.m. 68-O. Uptake and translocation of penthiopyrad fungicide in wheat leaves and correlation to fungicidal control of key foliar diseases. J. R. PILS (1), S. G. Smith (1), C. P. Shepherd (1), R. M. Geddens (1). (1) DuPont-Crop Protection, Newark, DE, U.S.A.

TUESDAY, AUGUST 9, 2011

Listed in alphabetical order by title. Special Sessions listed first followed by Oral Technical Sessions. Find complete details on the meeting website at www.apsnet.org/meetings/annual/program/Pages

■ SPECIAL SESSIONS

11th I. E. Melhus Graduate Student Symposium: “Today’s Students Making a Difference in Plant Disease Epidemiology and Disease Management”

8:30 – 11:30 a.m.; 323C

Section: Epidemiology/Ecology/Environmental Biology of Pathogens

Organizer: Forrest Nutter, Jr., Iowa State University, Ames, IA, U.S.A.

Moderators: Forrest Nutter, Jr., Iowa State University, Ames, IA, U.S.A.; Ray Martyn, Purdue University, West Lafayette, IN, U.S.A.; Peter Ojiambo, North Carolina State University, Raleigh, NC, U.S.A.

Sponsors: Epidemiology; APS Foundation

Financial Sponsors: DuPont Crop Protection; BASF Corp.; Agdia, Inc.; Pioneer Hi-Bred a DuPont Business

- 8:30 a.m. 76-S. Opening remarks and introduction. F. W. NUTTER, Jr. (1). (1) Iowa State University, Ames, IA, U.S.A.
- 8:45 a.m. 77-S. The APS Foundation and the I.E. Melhus Graduate Student Symposium: A successful partnership. R. D. MARTYN (1), (1) Purdue University, West Lafayette, IN, U.S.A.
- 9:00 a.m. 78-S. Climate, weather, and the heterogeneity of *Fusarium* head blight. A. B. KRISS (1), L. V. Madden (1), P. A. Paul (1), X. Xu (2). (1) The Ohio State University, OARDC, Wooster, OH, U.S.A.; (2) East Malling Research, West Malling, United Kingdom
- 9:30 a.m. 79-S. Spatial distribution of brown rot symptoms and fine-scale genetic structure of populations of *Monilinia* spp. within and among stone fruit tree canopies. S. E. EVERHART (1), A. Askew (1), L. Seymour (1), I. J. Holb (2), H. Scherm (1). (1) University of Georgia, Athens, GA, U.S.A.; (2) Center for Agricultural Sciences, University of Debrecen, and Plant Protection Institute, Hungarian Academy of Sciences, Debrecen and Budapest, Hungary
- 10:00 a.m. Break
- 10:15 a.m. 80-S. Effects of temperature and wetness duration on the sporulation rate of *Phomopsis viticola* on infected grape canes. D. J. ANCO (1), L. V. Madden (1), M. A. Ellis (1). (1) The Ohio State University, OARDC, Wooster, OH, U.S.A.

- 10:45 a.m. 81-S. Epidemiological analysis of the U.S. and Canadian Plum pox virus eradication programs. A. GOUGHERTY (1), F. W. Nutter (1). (1) Iowa State University, Ames, IA, U.S.A.

- 11:15 a.m. Closing comments, award certificates.

Ag and Food Biosecurity: A Decade of Progress and Reality

8:30 – 11:30 a.m.; 316A

Section: Emerging Pests/Invasive Species

Organizers/Moderators: Jacqueline Fletcher, Oklahoma State University, Stillwater, OK, U.S.A.; Maria Lodovica Gullino, AGROINNOVA, University of Torino, Torino, Italy

Sponsors: IAPPS; APS Emerging Diseases and Pathogens; APS Advisory Committee on Plant Biosecurity

- 8:30 a.m. 82-S. Crop biosecurity: An international perspective. M. GULLINO (1). (1) Agroinnova-University of Torino, Grugliasco (TO), Italy
- 9:00 a.m. 83-S. Global insect threats and issues for agricultural biosecurity. J. E. FOSTER (1), O. Youm (1), S. R. Skoda (2). (1) Dept. of Entomology, University of Nebraska-Lincoln, Lincoln, NE, U.S.A.; (2) USDA-ARS-KBUSLIRL, Screwworm Research Unit, Kerrville, TX, U.S.A.
- 9:30 a.m. 84-S. Food defense: Farm to fork. K. WARRINER (1). (1) University of Guelph, Guelph, ON, Canada
- 10:00 a.m. Break
- 10:15 a.m. 85-S. Microbial forensics: Investigative plant pathology. F. OCHOA-CORONA (1). (1) National Institute for Microbial Forensics & Food and Agricultural Biosecurity, Dept. of Entomology and Plant Pathology, Oklahoma State University, Stillwater, OK, U.S.A.
- 10:45 a.m. 86-S. The dual use dilemma. J. E. LEACH (1). (1) Colorado State University, Fort Collins, CO, U.S.A.
- 11:15 a.m. Discussion

Challenges to the Production and Distribution of Quality Planting Materials, Seed, and Seed Systems for Farmers in Developing Countries

8:30 – 11:30 a.m.; 318AB

Section: Professionalism/Outreach/Industry/Genetic Engineering

Organizers: Alethia Brown, DuPont Crop Protection, Newark, DE, U.S.A.; Reginald Young, DuPont Crop Protection, Wilmington, DE, U.S.A.

Moderator: Reginald Young, DuPont Crop Protection, Wilmington, DE, U.S.A.

Sponsor: IAPPS

- 8:30 a.m. 87-S. Overview of industry's role in the development of quality seeds. W. E. DOLEZAL (1). (1) Pioneer Hi-Bred Intl., Inc., Johnston, IA, U.S.A.
- 9:00 a.m. 88-S. Addressing cereal crops' seed supply challenges in sub Saharan Africa. Y. KEBEDE (1). (1) Bill and Melinda Gates Foundation, Seattle, WA, U.S.A.
- 9:30 a.m. 89-S. Overcoming poor seed systems for clonal crops in developing countries. D. L. COYNE (1), E. Schulte-Geldermann (2). (1) IITA/SP-IPM, Dar es Salaam, Tanzania; (2) CIP/SP-IPM, Nairobi, Kenya
- 10:00 a.m. Break
- 10:15 a.m. 90-S. Development of seed technologies and benefits for Africa. M. TUINSTRA (1), S. Soumana (2), H. Traore (3), M. Kayentao (4), D. Aba (5), O. Ibikunle (6), J. Beitle (7), R. Young (7). (1) Purdue University, West Lafayette, IN, U.S.A.; (2) INRAN, Niamey, Niger; (3) INERA, Ouagadougou, Burkina Faso; (4) IER, Bamako, Mali; (5) Ahmadu Bello University, Zaria, Nigeria; (6) DuPont, Zaria, Nigeria; (7) DuPont Crop Protection, Wilmington, DE, U.S.A.
- 10:45 a.m. 91-S. Seed and seed systems in developing countries and their significance in attaining food security. G. EJETA (1). (1) Purdue University, West Lafayette, IN, U.S.A.
- 11:15 a.m. Discussion

Fungal Comparative Genomics and the Impact of Next Generation Sequencing

8:30 – 11:30 a.m.; 323A

Section: Biology of Plant Pathogens

Organizers: Corby Kistler, University of Minnesota/USDA-ARS, St. Paul, MN, U.S.A.; Steve Klosterman, USDA ARS, Salinas, CA, U.S.A.

Moderator: Steve Klosterman, USDA ARS, Salinas, CA, U.S.A.

Sponsors: Genetics; Molecular and Cellular Phytopathology; Biotechnology

- 8:30 a.m. 92-S. *Mycosphaerella* comparative genomics reveals chromosome dynamics, genome evolution, and stealth pathogenesis. S. B. GOODWIN (1), B. Dhillon (2), S. Ben M'Barek (3), I. V. Grigoriev (4), G. H. Kema (3). (1) USDA-ARS/Purdue University, West Lafayette, IN, U.S.A.; (2) University of British Columbia, Vancouver, BC, Canada; (3) Wageningen University and Research Centre, Plant Research International, Wageningen, Netherlands; (4) Eukaryotic Genomics Group, DOE Joint Genome Institute, Walnut Creek, CA, U.S.A.

- 9:00 a.m. 93-S. *Verticillium* comparative genomics yields insights into niche adaptation by plant vascular wilt pathogens. S. J. KLOSTERMAN (1), K. V. Subbarao (2), S. Kang (3), P. Veronese (4), S. E. Gold (5), B. P. Thomma (6), Z. Chen (7), B. Henrissat (8), Y. Lee (9), J. Park (9), M. D. Garcia-Pedrajas (10), D. J. Barbara (11), A. Anchieta (1), R. de Jonge (6), P. Santhanam (6), K. Maruthachalam (2), Z. Atallah (12), S. G. Amyotte (13), Z. Paz (5), P. Inderbitzin (2), R. J. Hayes (1), D. I. Heiman (7), S. Young (7), Q. Zeng (7), R. Engels (7), J. Galagan (7), C. Cuomo (7), K. F. Dobinson (14), L. Ma (7). (1) USDA ARS, Salinas, CA, U.S.A.; (2) University of California, Davis, CA, U.S.A.; (3) Pennsylvania State University, University Park, PA, U.S.A.; (4) North Carolina State University, Raleigh, NC, U.S.A.; (5) University of Georgia, Athens, GA, U.S.A.; (6) Wageningen University, Wageningen, Netherlands; (7) Broad Institute, Cambridge, MA, U.S.A.; (8) CNRS, Universites Aix-Marseille, Marseille, France; (9) Seoul National University, Seoul, Korea; (10) Estacion Experimental La Mayora, CSIC, Malaga, Spain; (11) University of Warwick, Warwick, United Kingdom; (12) University of California, Salinas, CA, U.S.A.; (13) University of Western Ontario, London, ON, Canada; (14) Agriculture and Agri-Food Canada, London, ON, Canada
- 9:30 a.m. 94-S. Genome dynamics of the *Fusarium oxysporum* species complex. L. MA (1), S. Zhou (2), C. Kistler (3). (1) University of Massachusetts Amherst, Plant Soil & Insect Sciences, Amherst, MA, U.S.A.; (2) University of Wisconsin, Madison, WI, U.S.A.; (3) University of Minnesota, St Paul, MN, U.S.A.
- 10:00 a.m. Break
- 10:15 a.m. 95-S. New insights into the obligate biotrophic lifestyle of rust fungi through comparative genomics. C. Cuomo (1), L. J. SZABO (2), M. Grabherr (1), E. Mauceli (1), S. Young (1), Q. Zeng (1), S. Sakthikumar (1), A. Bharti (3), A. D. Farmer (3), J. A. Crow (3), T. Ramaraj (3), G. Bakkeren (4), J. Fellers (5), F. Katagiri (6), J. Glazebrook (6), Y. Tsuda (6), T. J. Stoddard (6), K. Tsuda (6), X. Chen (7), C. Yin (8), S. Hulbert (8). (1) Broad Institute, Cambridge, MA, U.S.A.; (2) USDA ARS, St Paul, MN, U.S.A.; (3) National Center for Genomic Research, Santa Fe, NM, U.S.A.; (4) Agriculture and Agri-Food Canada, Summerland, BC, Canada; (5) USDA ARS, Manhattan, KS, U.S.A.; (6) University of Minnesota, St Paul, MN, U.S.A.; (7) USDA ARS, Pullman, WA, U.S.A.; (8) Washington State University, Pullman, WA, U.S.A.
- 10:45 a.m. 96-S. Discovery of new soybean and soybean rust genes using next generation sequencing. A. TREMBLAY (1), P. Hosseini (1), S. Li (2), N. W. Alkharouf (3), B. F. Matthews (1). (1) USDA-ARS-PSI-SGIL, Beltsville, MD, U.S.A.; (2) USDA-ARS-CGRU, Stoneville, MS, U.S.A.; (3) Towson University, Towson, MD, U.S.A.
- 11:15 a.m. Discussion

Special Sessions continued

Innovative Chemical and Biological Approaches to Plant Protection

8:30 – 11:45 a.m.; 324

Section: Professionalism/Outreach /Industry/Genetic Engineering
Organizer/Moderator: Noriharu Ken Umetsu, IAPPS/EARC/Otsuka Chemical Co./Tokyo University of Agriculture, Osaka, Japan

Sponsor: IAPPS

- 8:30 a.m. 97-S. Chemical and gene technological approaches for plant defense activators to control plant diseases. N. K. UMETSU (1). (1) Otsuka Chemical Co. (Tokyo University of Agriculture), Naruto, Japan
- 8:45 a.m. 98-S. Strigolactones as chemical signals for plant-plant and plant-microbe interactions in the rhizosphere. K. YONEYAMA (1), X. Xie (1), K. Yoneyama (1). (1) Utsunomiya University, Utsunomiya, Japan
- 9:15 a.m. 99-S. Novel technology for termite control based on the dummy-egg carrying behavior. K. MATSUURA (1). (1) Graduate School of Environmental Science, Okayama University, Okayama, Japan
- 9:45 a.m. 100-S. Microorganisms and plant activators as alternatives to chemical fumigants to control soilborne diseases in Japan. T. ARIE (1). (1) Tokyo University of Agriculture and Technology, Fuchu Tokyo, Japan
- 10:00 a.m. Break
- 10:15 a.m. 101-S. Recent development on research and application of novel green pesticides in China:Neonicotinoid insecticides and plant activators as examples. X. QIAN (1). (1) East China University of Science and Technology, Shanghai, PRC Peoples Rep of China
- 10:45 a.m. 102-S. Recent developments in neonicotinoid insecticides for plant protection. I. YAMAMOTO (1), I. Yamamoto (1). (1) Tokyo University of Agriculture, Tokyo, Japan
- 11:15 a.m. 103-S. Enhancement of plant growth and plant growth and plant defence activation by *Bacillus valisnaria* EXTN-1 on various crops. K. PARK (1). (1) National Academy of Agricultural Science, Suwon, South Korea

New Products and Services

8:30 – 11:30 a.m.; 323B

Section: IPM-Biocontrol-Plant Disease Management

Organizer/Moderator: George Musson, Bayer CropScience, Research Triangle Park, NC, U.S.A.

Sponsor: Industry

- 8:30 a.m. 104-S. A novel single-tube nested-PCR kit for sensitive and reliable detection of Citrus Huanglongbing. J. Q. XIA (1). (1) AC Diagnostics, Inc., Fayetteville, AR, U.S.A.
- 8:40 a.m. 105-S. New Family of Cucurbit ELISA Test Kits. K. MCGUIRE (1). (1) EnviroLogix Inc., Portland, ME, U.S.A.
- 8:50 a.m. 106-S. AmplifyRP™ isothermal nucleic acid detection system for plant pathogens. R. C. BOHANNON (1). (1) Agdia, Inc., Elkhart, IN, U.S.A.
- 9:00 a.m. 107-S. AgriStrip-magnetic for PLRV detection. W. BITTERLIN (1). (1) Bioreba AG, Reinach BL1, Switzerland
- 9:10 a.m. 108-S. New uses for Dithane (mancozeb), Quintec (quinoxifen), and Indar (fenbuconazole). C. GALLUP (1). (1) Dow AgroSciences, Indianapolis, IN, U.S.A.

- 9:20 a.m. 109-S. Stratego YLD: A newly launched fungicide in corn and soybeans. J. E. FAJARDO (1). (1) Bayer CropScience, RTP, NC, U.S.A.
- 9:30 a.m. 110-S. MCW-2 (fluensulfone); A new non-systemic nematocide from Makhteshim Agan Industries. C. SCHILLER (1). (1) Makhteshim Agan of North America Inc., Raleigh, NC, U.S.A.
- 9:40 a.m. 111-S. Fontelis™ 1.67 SC, Vertisan™ 1.67 EC, and Aproach™ 2.08 SC, three new broad-spectrum fungicides from DuPont Crop Protection. M. J. MARTIN (1). (1) DuPont Crop Protection, Columbus, OH, U.S.A.
- 9:50 a.m. 112-S. Sedaxane – a new fungicide AI developed exclusively for seed treatment. M. OOSTENDORP (1). (1) Syngenta Crop Protection, Basel, Switzerland
- 10:00 a.m. Break
- 10:15 a.m. 113-S. Rizolex™ Flowable Fungicide: A New Seed Protectant Product. K. ARTHUR (1). (1) Valent U.S.A. Corporation, Plano, TX, U.S.A.
- 10:25 a.m. 114-S. Update on fungicides from BASF. H. YPEMA (1). (1) BASF Corporation, Raleigh, NC, U.S.A.
- 10:35 a.m. 115-S. ARM Version 9 Software Upgrade. M. KAP-PENMAN (1). (1) Gylling Data Management, Inc., Brookings, SD, U.S.A.
- 10:45 a.m. 116-S. 1000 Series Micro Station. C. TURSKI (1). (1) Spectrum Technologies, Inc., Plainfield, IL, U.S.A.
- 10:55 a.m. 117-S. Systec Automated Plate Pourer. B. RICHMAN (1). (1) Microbiology International, Frederick, MD, U.S.A.
- 11:05 a.m. 118-S. The LemnaTec Scanalyzer HTS growth chamber integrated automatic high throughput 3D plant imaging system. J. VANDENHIRTZ (1). (1) LemnaTec, Wuerselen, Germany
- 11:15 a.m. Discussion

Using Translational Biotechnology to Deploy Disease Resistance Traits in Crop Plants

8:30 – 11:30 a.m.; 319AB

Section: Professionalism/Outreach /Industry/Genetic Engineering

Organizers: Dennis Halterman, USDA/ARS, Madison, WI, U.S.A.; Yinong Yang, Penn State University, College Park, PA, U.S.A.; Scott Soby, Midwestern University, Glendale, AZ, U.S.A.; Peter Raymond, Ag Sci Consulting, Cottageville, SC, U.S.A.; Dennis Gonsalves, USDA/ARS, Hilo, HI, U.S.A.; Kelly Chamberlin, USDA/ARS, Stillwater, OK, U.S.A.

Moderator: Dennis Gonsalves, USDA/ARS, Hilo, HI, U.S.A.

Sponsors: Biotechnology; Molecular and Cellular Phytopathology; Host Resistance

Financial Sponsors: British Society for Plant Pathology, Ag Sci Consulting, Monsanto Vegetable Seeds Division; Two Blades Foundation, Hawaii Crop Improvement Association

- 8:30 a.m. 119-S. An ethical look at integrating new traits using biotechnology—A nonscientist perspective. D. MAGNUS (1). (1) Stanford University, Stanford, CA, U.S.A.
- 9:00 a.m. 120-S. Risk assessment studies: insights into the safety of disease-resistant transgenic horticultural crops. M. F. FUCHS (1). (1) Cornell University, Geneva, NY, U.S.A.
- 9:30 a.m. 121-S. Transgenic squash: The inside story. H. QUEMADA (1). (1) Donald Danforth Plant Science Center, St. Louis, MO, U.S.A.

- 10:00 a.m. Break
10:15 a.m. 122-S. A resistance gene from pepper confers effective field resistance to Bacterial Leaf Spot in tomatoes. D. HORVATH (1). (1) Two Blades Foundation, Evanston, IL, U.S.A.
10:45 a.m. 123-S. History of the successful introduction of transgenic virus-resistant papaya in Hawaii. D. GONSALVES (1). (1) USDA, Hilo, HI, U.S.A.
11:15 a.m. Discussion

■ ORAL TECHNICAL SESSIONS

IPM

8:30 – 11:30 a.m.; 317A

Section: IPM/Biocontrol/Plant Disease Management

Moderators: Joe Nunez, University of California Cooperative Extension, Bakersfield, CA, U.S.A.; Guido Schnabel, Clemson University, Clemson, SC, U.S.A.

- 8:30 a.m. 69-O. Evaluation of ten leguminous cover crops as cryptic hosts for *Verticillium dahliae*. M. G. LLOYD (1), T. Gordon (1). (1) University of California, Davis, CA, U.S.A.
8:45 a.m. 70-O. Increases in snap bean and soybean seedling diseases associated with a chloride salt and changes in the micro-partitioning of taproot calcium. C. H. CANADAY (1), P. Donald (2), A. Mengistu (2). (1) University of Tennessee, Jackson, TN, U.S.A.; (2) Crop Genetics Research Unit, USDA-ARS, Jackson, TN, U.S.A.
9:00 a.m. 71-O. Use of plastic and spray mulches to manage insects vectoring plant viruses. J. NUNEZ (1). (1) University of California Cooperative Extension, Bakersfield, CA, U.S.A.
9:15 a.m. 72-O. High planting combined with root collar excavation extends life of peach trees on Armillaria root rot-infested replant sites. G. SCHNABEL (1). (1) Clemson University, Clemson, SC, U.S.A.
9:30 a.m. 73-O. Mating disruption for *Planococcus ficus* S.: How to successfully initiate a novel sustainable control tool. J. L. MIANO (1), V. C. Becerra (2), M. F. Gonzalez (2). (1) INTA, Luján de Cuyo - Mendoza, Argentina; (2) INTA, Luján de Cuyo, Argentina
9:45 a.m. 74-O. PGPR-mediated IPM for tropical vegetables in south India. R. SAMIYAPPAN (1), E. Jonathan (1), S. Mohankumar (1), T. Raguchander (1), G. Karthikeyan (1). (1) TNAU, Coimbatore, India
10:00 a.m. Break
10:15 a.m. 75-O. Comparing the efficiency of visual scouting, spore trapping systems, and a bioindicator for early detection of *Erysiphe necator* in California vineyards. F. PEDUTO (1), A. M. Sutherland (1), E. K. Hand (1), J. C. Broome (1), P. D. Parikh (1), L. J. Bettega (2), R. J. Smith (3), W. F. Mahaffee (4), W. D. Gubler (1). (1) University of California, Davis, CA, U.S.A.; (2) UC Cooperative Extension Monterey County, Salinas, CA, U.S.A.; (3) UC Cooperative Extension Sonoma County, Santa Rosa, CA, U.S.A.; (4) USDA-ARS HCRL, Corvallis, OR, U.S.A.
10:30 a.m. 76-O. Eradicating grapevine disease with minimal economic impact. M. R. SOSNOWSKI (1), W. F. Wilcox (2), R. W. Emmett (3), T. J. Wicks (1). (1) South Australian Research and Development Institute (SARDI), Adelaide, Australia; (2) Cornell

University, Geneva, NY, U.S.A.; (3) Dept. of Primary Industries, Victoria, Mildura, Australia

- 10:45 a.m. 77-O. Alternative control of citrus black fly, *Aleurocanthus woglumi* Ashby, 1915, in the northeast of Brazil. R. A. CARVALHO (1). (1) EMEPA-PB, João Pessoa, Brazil
11:00 a.m. 78-O. Comparison of pecan scab predictions in Oklahoma using weather inputs from the National Weather Service, the Oklahoma Mesonet, and onsite-monitoring. A. PAYNE (1), D. L. Smith (1). (1) Oklahoma State University, Stillwater, OK, U.S.A.
11:15 a.m. 79-O. Is there any other elixir of life on this planet? V. KURUCHEVE (1). (1) Annamalai University, Chidambaram, India

Microbial Ecology & Biological Control

8:30 – 11:30 a.m.; 325AB

Section: IPM/Biocontrol/Plant Disease Management

Moderators: Sebastian Kiewnick, Agroscope Changins, Wädenswil, Switzerland; Dilantha Fernando, University of Manitoba, Winnipeg, MB, Canada

- 8:30 a.m. 80-O. Characterizing microbial communities of potato common scab-suppressive soil using pyrosequencing. N. ROSENZWEIG (1), J. Hao (1). (1) Michigan State University, East Lansing, MI, U.S.A.
8:45 a.m. 81-O. Effect of huanglongbing on the structure and functional diversity of microbial communities associated with citrus rhizosphere. P. TRIVEDI (1), Z. He (2), J. D. Van Nostrand (2), J. Zhou (2), G. Albrigo (3), N. Wang (1). (1) Citrus Research and Education Center, Dept. of Microbiology and Cell Science, University of Florida, Lake Alfred, FL, U.S.A.; (2) Dept. of Botany and Microbiology, Institute for Environmental Genomics, University of Oklahoma, Norman, OK, U.S.A.; (3) Citrus Research and Education Center, University of Florida, Lake Alfred, FL, U.S.A.
9:00 a.m. 82-O. Marker-assisted selection improves the efficiency of bioprospecting and results in the recovery of novel biocontrol bacteria. J. Park (1), S. Lee (1), J. Lee (1), S. Han (1), J. Kim (1), Y. Kim (3), B. MCSPADDEN GARDENER (3). (1) Chonnam National University, Gwangju, South Korea; (2) Korea Research Institute of Chemical Technology, Daejeon, South Korea; (3) Ohio State University, Wooster, OH, U.S.A.
9:15 a.m. 83-O. Isolation of double-stranded RNA mycoviruses in *Macrophomina phaseolina* isolates in Iran. S. SOUZANI (1), B. Mahmoudi (2), M. Hashemi (3), H. Zamanizadeh (1). (1) Dept. of Plant Pathology, Science and Research Branch, Islamic Azad University, Tehran, Iran; (2) Sugar Beet Seed Institute, Karaj, Iran; (3) Seed and Plant Improvement Institute, Karaj, Iran
9:30 a.m. 84-O. 454-Pyrosequencing reveals the influence of organic and conventional farming systems on beneficial bacterial communities to enhance plant health. R. Li (1), D. G. FERNANDO (1), T. de Kievit (1), M. Entz (1), E. Khafipour (1), D. Krause (1). (1) University of Manitoba, Winnipeg, MB, Canada

Oral Technical Sessions continued

- 9:45 a.m. 85-O. Community structure of *Aspergillus flavus* and persistence of the atoxigenic strain *A. flavus* AF36 in applied fields. R. JAIME (1), P. J. Cotty (2). (1) University of Arizona, Tucson, AZ, U.S.A.; (2) USDA-ARS, University of Arizona, Tucson, AZ, U.S.A.
- 10:00 a.m. Break
- 10:15 a.m. 86-O. Forest products protection: From chemical to biological roadways. D. YANG (1). (1) FPInnovations, Quebec City, QC, Canada
- 10:30 a.m. 87-O. Characterization of *Pythium nunn* newly recorded in Japan on antagonistic activity against *P. ultimum* and *P. aphanidermatum*. M. TOJO (1), S. Kobayashi (1), N. Tsujita (1), S. Uzuhashi (2). (1) Osaka Prefecture University, Sakai, Japan; (2) Agriculture & Agri-Food Canada, Saskatoon, SK, Canada
- 10:45 a.m. 88-O. Biocontrol potential and plant growth promotional activity of actinomycetes isolated from various herbal vermicomposts. S. GOPALAKRISHNAN (1), P. Humayun (1), K. Deepthi (1). (1) ICRISAT, Hyderabad, India
- 11:00 a.m. 89-O. Reduction of aflatoxins, cyclopiazonic acid, and fumonisins in corn by biocontrol strains of non-aflatoxigenic *Aspergillus flavus*. H. ABBAS (1), B. Horn (2), M. Weaver (3), X. Jin (3), C. Abel (4), W. T. Shier (5). (1) USDA ARS CG&PRU, Stoneville, MS, U.S.A.; (2) National Peanut Research Laboratory, USDA, ARS, Dawson, GA, U.S.A.; (3) USDA ARS, Biological Control of Pests Research Unit, Stoneville, MS, U.S.A.; (4) USDA-ARS Corn Insects and Crop Genetics Research Unit, Ames, IA, U.S.A.; (5) Dept. of Medicinal Chemistry, University of Minnesota, Minneapolis, MN, U.S.A.
- 11:15 a.m. 90-O. Potential of *Paecilomyces lilacinus* strain 251 to control the root-knot nematode *Meloidogyne enterolobii*, a new quarantine species for the EPPO region. S. KIEWNICK (1). (1) Agroscope Changins, Waedenswil, Switzerland

Molecular Biology of Plant Viruses

8:30 – 11:15 a.m.; 317B

Section: Molecular/Cellular/Plant-Microbe Interactions

Moderator: Moderators: Olufemi J. Alabi, Washington State University, Prosser, WA, U.S.A.; Carlos Angel, Div. of Plant Sciences, University of Missouri, Columbia, MO, U.S.A./Centro Nacional de Investigaciones de Café CENICAFE, Chinchiná, Caldas, Colombia

- 8:30 a.m. 91-O. Genetic diversity of *Potato virus Y^o* and origin of recombinant PVY strains. A. V. KARASEV (1), X. Hu (2), C. J. Brown (1), C. Kerlan (1), O. V. Nikolaeva (1), J. M. Crosslin (3), S. M. Gray (4). (1) University of Idaho, Moscow, ID, U.S.A.; (2) SAIC-Frederick, Inc., Frederick, MD, U.S.A.; (3) USDA-ARS, Prosser, WA, U.S.A.; (4) USDA-ARS, Ithaca, NY, U.S.A.
- 8:45 a.m. 92-O. A novel type of *Potato virus Y* recombinant genome. S. B. GALVINO-COSTA (1), A. R. Figueira (1), X. Hu (2), C. Kerlan (3), A. V. Karasev (3). (1) University of Lavras, Lavras, Brazil; (2) SAIC, Inc., Frederick, MD, U.S.A.; (3) University of Idaho, Moscow, ID, U.S.A.

- 9:00 a.m. 93-O. Systemic infection of coffee plants (*Coffea arabica* L.) by *Tobacco mosaic virus*. C. A. ANGEL (1), A. L. Gaitán (2), J. E. Schoelz (3). (1) Division of Plant Sciences, University of Missouri, Columbia, MO, U.S.A./Centro Nacional de Investigaciones de Café CENICAFE, Chinchiná, Caldas, Colombia; (2) Centro Nacional de Investigaciones de Café - CENICAFE, Chinchiná, Colombia; (3) Division of Plant Sciences, University of Missouri, Columbia, MO, U.S.A.
- 9:15 a.m. ★ **APS Foundation Awardee** 94-O. Usefulness of a high-throughput transient expression system to test virus-derived genetic constructs for resistance against *Grapevine fanleaf virus*. J. E. OLIVER (1), M. Fuchs (1). (1) Cornell University NYSAES, Geneva, NY, U.S.A.
- 9:30 a.m. 95-O. Genome sequence of an unassigned *Citrus tristeza virus* genotypic isolate from Puerto Rico reveals a trifoliate resistance breaking genotype. A. ROY (1), N. Choudhary (1), J. S. Hartung (2), R. H. Brlansky (1). (1) University of Florida, Lake Alfred, FL, U.S.A.; (2) USDA-ARS, Beltsville, MD, U.S.A.
- 9:45 a.m. 96-O. Citrus-CTV molecular interactions: What is the host side of the story? H. DODDAPANENI (1), M. Saponari (2), A. Giampetruzzi (3), G. Loconsole (3), P. Saldarelli (2), R. K. Yokomi (4). (1) Carver Center for Genomics, Dept. of Biology, The University of Iowa, Iowa City, IA, U.S.A.; (2) CNR, Institute of Plant Virology, Bari, Italy; (3) Agriculture Faculty, University of Bari, Bari, Italy; (4) USDA, ARS, Parlier, CA, U.S.A.
- 10:00 a.m. Break
- 10:15 a.m. ★ **APS Foundation Awardee** 97-O. A DNA virus in grapevine and its association with vein-clearing and vine decline syndrome. Y. ZHANG (1), K. Singh (1), M. Xu (1), W. Qiu (1). (1) Missouri State University, William H. Darr School of Agriculture, Mountain Grove, MO, U.S.A.
- 10:30 a.m. 98-O. *Grapevine leafroll-associated virus 1* occurs as genetically diverse populations in wine grape cultivars. O. J. ALABI (1), M. Al Rwahnih (2), G. Karthikeyan (3), S. Poojari (1), M. F. Fuchs (4), A. Rowhani (2), R. A. Naidu (1). (1) Washington State University, Prosser, WA, U.S.A.; (2) University of California-Davis, Davis, CA, U.S.A.; (3) Washington State University, IAREC, Prosser, WA, U.S.A.; (4) Cornell University, Geneva, NY, U.S.A.
- 10:45 a.m. ★ **APS Foundation Awardee** 99-O. Engineering *Grapevine fanleaf virus* into a plant expression vector. J. GOTTULA (1), E. Vigne (2), C. Keichinger (3), C. Ritzenthaler (3), M. Fuchs (1). (1) Cornell University, Geneva, NY, U.S.A.; (2) INRA, Colmar, France; (3) IBMP, Strasbourg, France
- 11:00 a.m. 100-O. Deep sequencing of small RNAs for virus and viroid identification in tomatoes. K. LING (1), Z. Fei (2), W. P. Wechter (1), A. G. Hernamdez (3). (1) USDA-ARS, Charleston, SC, U.S.A.; (2) USDA, ARS, BTI, Cornell University, Ithaca, NY, U.S.A.; (3) University of Illinois at Urbana-Champaign, Urbana, IL, U.S.A.

Listed in alphabetical order by title. Special Sessions listed first followed by Oral Technical Sessions. Find complete details on the meeting website at www.apsnet.org/meetings/annual/program/Pages

■ SPECIAL SESSIONS

Better Use of Entomopathogenic Microbes in IPM

8:30 – 11:30 a.m.; 323C

Section: IPM-Biocontrol-Plant Disease Management

Organizers: Trevor Jackson, Lincoln Research Centre, AgResearch, Lincoln, New Zealand; Gerald R. Carner, Clemson University, Clemson, SC, U.S.A.; Muni Muniappan, Virginia Tech, Blacksburg, VA, U.S.A.

Moderator: Gerald R. Carner, Clemson University, Clemson, SC, U.S.A.

- 8:30 a.m. 124-S. A bioprotection strategy for greater integration of beneficial microbes into IPM. T. A. JACKSON (1). (1) AgResearch, Lincoln, New Zealand
- 8:45 a.m. 125-S. Release of *Beauveria bassiana* insecticide does not cause silkworm white muscardine. Z. LI (1). (1) Anhui Agricultural University, Hefei, Anhui, Taiwan Rep of China
- 9:00 a.m. 126-S. Microbial control in Brazil. F. MOSCARDI (1), F. Cunha (1), M. L. Moscardi (1). 1) UEL, Londrina, Brazil
- 9:15 a.m. 127-S. Microbial control in Australian cropping systems. C. HAUXWELL (1). (1) E. H. Graham Centre for Agricultural Innovation, Charles Sturt University, Wagga Wagga, Australia
- 9:30 a.m. 128-S. Making use of microbes in pasture bioprotection. S. M. ZYDENBOS (1), T. A. Jackson (2). (1) AgResearch, Christchurch, New Zealand; (2) AgResearch, Lincoln, New Zealand
- 9:45 a.m. 129-S. Promising new biopesticides for use in microbial control of major pests in African cropping systems. M. TAMO (1), I. Godonou (1), B. James (2), R. Srinivasan (3), J. N. Maniania (4), S. Ekesi (4), S. Nakamura (5), T. Adati (5). (1) IITA, Cotonou, Benin; (2) IITA, Freetown, Sierra Leone; (3) AVRDC, Tainan, Taiwan Rep of China; (4) ICIPE, Nairobi, Kenya; (5) Tokyo University of Agriculture, Tokyo, Japan
- 10:00 a.m. Break
- 10:15 a.m. 130-S. Microbial control of arthropod pests, a key component of IPM programs in Indonesia. Y. M. KUSUMAH (1), G. R. Carner (2). (1) Bogor Agricultural University, Bogor, Indonesia; (2) Clemson University, Clemson, SC, U.S.A.
- 10:30 a.m. 131-S. Plant extracts protect the Nucleopolyhedrovirus of the beet armyworm from breakdown by ultraviolet rays. M. Shapiro (1), S. El Salamouny (2), M. SHEPARD (3). (1) Clemson University, Clemson, SC, U.S.A.; (2) Cairo University, Giza, Egypt; (3) Clemson University, Charleston, SC, U.S.A.
- 10:45 a.m. 132-S. Microbial control in IPM programs for vegetable crops. G. R. CARNER (1). (1) Clemson University, Clemson, SC, U.S.A.
- 11:00 a.m. Discussion

Crop Health Management for Food Safety and Agroecosystem Health in Developing Countries

8:30 – 11:30 a.m.; 319AB

Section: IPM-Biocontrol-Plant Disease Management

Organizer: Irmgard Hoeschle-Zeledon, SP-IPM, c/o International Institute of Tropical Agriculture, Ibadan, Nigeria

Moderator: Richard A. Sikora, University of Bonn, Bonn, Germany

Sponsor: IPM-Biocontrol

- 8:30 a.m. 133-S. Disseminating good agricultural practices in vegetable production for better human and agroecosystem health. J. WANG (1), G. Luther (1), S. Neave (2), M. Bhattarai (1), K. Weinberger (1), K. Kriesemer (1). (1) AVRDC-The World Vegetable Center, Tainan, Taiwan Rep of China; (2) AVRDC-The World Vegetable Center, Honiara, Solomon Islands
- 9:00 a.m. 134-S. Advances in integrated aflatoxin management in Africa. R. BANDYOPADHYAY (1), P. J. Cotty (2). (1) International Institute of Tropical Agriculture (IITA), Ibadan, Nigeria; (2) USDA-ARS, Tucson, AZ, U.S.A.
- 9:30 a.m. 135-S. Seeing the unseen - Improving agroecosystem health through sustainable nematode management in smallholder systems. D. L. COYNE (1), I. Hoeschle-Zeledon (2). 1) IITA, Dar es Salaam, Tanzania; (2) IITA, Ibadan, Nigeria
- 9:45 a.m. 136-S. Integrated management of food legume diseases for sustainable rainfed agroecosystem. S. PANDE (1). (1) ICRISAT, Patancheru, India
- 10:00 a.m. Break
- 10:15 a.m. 137-S. Integrated pest management for potato in developing countries: challenges, opportunities and new control strategies. J. E. KROSCHEL (1). (1) International Potato Center, Lima, Peru
- 10:30 a.m. 138-S. Role of insect-resistant transgenic crops for pest management and their impact on environment and food safety. H. C. SHARMA (1) International Crops Research Institute for the semi-Arid Tropics (ICRISAT), Patancheru, Hyderabad, India
- 10:45 a.m. 139-S. Harnessing Agro-Ecosystem Resilience in water limited wheat based cropping systems— a major challenge for food security in West Asia and North Africa. J. M. NICOL (1), R. Sikora (2), N. Bolat (3), A. Yahyaoui (4), B. Govaerts (5), A. A. Dababat (6). (1) CIMMYT Int. Mexico/SP-IPM, Mexico; (2) SP-IPM/Bonn University Germany, Bonn, Germany; (3) ANADOLU Institute, Turkish Ministry of Agriculture, Eskisehir, Turkey; (4) ICARDA/SP-IPM, Aleppo, Syrian Arab Republic; (5) CIMMYT Int. Mexico, Mexico; (6) CIMMYT Int. TURKEY/SP-IPM, Turkey
- 11:00 a.m. Discussion

Current Advances of Molecular Plant Pathology in China

8:30 – 11:30 a.m.; 323A

Organizer/Moderator: Yulin Jia, USDA ARS DBNRRRC, Stuttgart, AR, U.S.A.

Sponsor: Sino-US Plant Pathology Panel

- 8:30 a.m. 140-S. The role of copper in rice–*Xanthomonas oryzae* interaction. M. Yuan (1), S. WANG (1). (1) Huazhong Agricultural University, Wuhan, PRC Peoples Rep of China
- 9:00 a.m. 141-S. Arabidopsis–*Pseudomonas syringae* interaction provides insight into PAMP-triggered immunity. J. ZHANG (1), J. Zhou (1). (1) National Institute of Biological Sciences, Beijing, Beijing, PRC Peoples Rep of China
- 9:30 a.m. 142-S. Plant defense and geminivirus counter-defense. X. ZHOU (1). (1) Institute of Biotechnology, Zhejiang University, Hangzhou, PRC Peoples Rep of China
- 10:00 a.m. Break
- 10:15 a.m. 143-S. Mycoviruses in *Sclerotinia sclerotiorum*. D. JIANG (1). (1) Huazhong Agricultural University, Wuhan, PRC Peoples Rep of China
- 10:45 a.m. 144-S. Update on interactions between wheat and stripe rust pathogens. X. Wang (1), Y. Fu (1), D. Han (1). (1) College of Plant Protection, Northwest A&F University, Yangling, PRC Peoples Rep of China
- 11:15 a.m. Discussion

Digital Identification Tools: Their Role in Biosecurity and Pest Management

8:30 – 11:45 a.m.; 318AB

Section: Emerging Pests/Invasive Species

Organizers/Moderators: Geoff Norton, The University of Queensland, Brisbane, QLD, Australia; Terrence Walters, USDA-APHIS-PPQ CPHST, Fort Collins, CO, U.S.A.

Sponsors: IAPPS, APS Diagnostics

- 8:30 a.m. 145-S. Designing, developing, and delivering digital identification tools for plant protection and quarantine. T. W. WALTERS (1). (1) USDA APHIS PPQ CPHST, Fort Collins, CO, U.S.A.
- 9:00 a.m. 146-S. The Pestnet diagnosis service in the South Pacific and Southeast Asia. G. JACKSON (1). (1) Pestnet, Queens Park, NSW, Australia
- 9:30 a.m. 147-S. The role of Q-Bank in supporting plant regulatory agencies. P. BONANTS (1), M. J. Edema (2). (1) Plant Research International, Wageningen, Netherlands; (2) n VWA, Division Plant, Wageningen, Netherlands
- 10:00 a.m. Break
- 10:15 a.m. 148-S. PaDIL - A Virtual Diagnostic tool to assist in plant pest diagnostics. K. L. WALKER (1). (1) Museum Victoria, Melbourne, Australia
- 10:45 a.m. 149-S. Leveraging digital resources and social networks for identification and extension education. J. LAFOREST (1). (1) University of Georgia, Tifton, GA, U.S.A.
- 11:15 a.m. Discussion

New and Emerging Technologies in Turfgrass Disease Management

8:30 – 11:45 a.m.; 324

Section: Diseases of Plants

Organizer/Moderator: Damon Smith, Oklahoma State University, Stillwater, OK, U.S.A.

Sponsor: Turfgrass Pathology

- 8:30 a.m. 150-S. The history and new advances in Fungicide development for turfgrass disease management. J. KERNS (1). (1) UW-Madison Department of Plant Pathology, Madison, WI, U.S.A.
- 9:00 a.m. 151-S. Advances in application technology for turfgrass disease management. M. M. KENNELLY (1). (1) Kansas State University, Manhattan, KS, U.S.A.
- 9:30 a.m. 152-S. Turfgrass diagnostics and new, advanced technologies. L. A. Beirn (1), E. N. Njambere (1), N. Zhang (1), B. B. Clarke (1), J. CROUCH (2). (1) Rutgers University, New Brunswick, NJ, U.S.A.; (2) USDA-ARS, Systematic Mycology and Microbiology Laboratory, Beltsville, MD, U.S.A.
- 10:00 a.m. Break
- 10:15 a.m. 153-S. Enhancing systemic resistance in turfgrass disease management. T. HSIANG (1), P. H. Goodwin (1), A. Cortes-Barco (1), B. Nash (1). (1) University of Guelph, Guelph, ON, Canada
- 10:45 a.m. 154-S. Using molecular tools to improve our knowledge of turfgrass pathogens. N. R. WALKER (1). (1) Oklahoma State University, Stillwater, OK, U.S.A.
- 11:15 a.m. 155-S. Using social media in turfgrass disease management education. J. E. KAMINSKI (1). (1) Pennsylvania State University, University Park, PA, U.S.A.

Pesticide Resistance in Agriculture—A Global Issue

8:30 – 11:30 a.m.; 316A

Section: Professionalism/Outreach /Industry/Genetic Engineering

Organizers: Baruch Rubin, The Hebrew University of Jerusalem, Rehovot, Israel; Jim Bone, Dupont, Valdosta, GA, U.S.A.

Moderator: Dale Shaner, USDA-ARS, Fort Collins, CO, U.S.A.

Sponsors: APS Industry; IAPPS

- 8:30 a.m. 156-S. IRAC global industry leadership to preserve insecticide chemistries through education, maintaining insect susceptibility, and managing insect resistance. J. T. ANDALORO (1), R. Nauen (2). (1) IRAC International - DuPont Company, Stine Research Ctr, Newark, DE, U.S.A.; (2) IRAC International - Bayer CropScience, Monheim, Germany
- 8:45 a.m. 157-S. Fungicide RAC approach to resistance management. A.J. LEADBEATER (1). (1) Syngenta Crop Protection AG, Basel, Switzerland
- 9:00 a.m. 158-S. Herbicide RAC view of resistance. J. K. SOTERES (1). (1) Monsanto Company, St. Louis, MO, U.S.A.
- 9:15 a.m. 159-S. Gene flow and herbicide resistance: lessons learned from herbicide-resistant rice systems. D. GEALY (1), N. Burgos (2). (1) USDA-ARS, DBNRRRC, Stuttgart, AR, U.S.A.; (2) University of Arkansas, Fayetteville, AR, U.S.A.
- 9:30 a.m. 160-S. Herbicide resistance as a threat to dryland farming in the Mediterranean. B. RUBIN (1). (1) Hebrew University of Jerusalem, Faculty of Agriculture, Food and Environment, Rehovot, Israel

- 9:45 a.m. 161-S. ACCase resistance in grasses. J. P. RUIZ-SANTAELLA (1). (1) Bayer.
- 10:00 a.m. Break
- 10:15 a.m. 162-S. Managing glyphosate resistant weeds in dicamba resistant soybeans. P. FENG (1). (1) Monsanto Co, St Louis, MO, U.S.A.
- 10:30 a.m. 163-S. The current state of resistance to Acetohydroxyacid/Acetolactate Synthase Inhibitors. D. SHANER (1). (1) USDA-ARS, Fort Collins, CO, U.S.A.
- 10:45 a.m. Discussion

Tropical Forest Pathology

8:30 – 11:30 a.m.; 317A

Section: Diseases of Plants

Organizers/Moderators: Pauline Spaine, USDA APHIS, Riverdale, MD, U.S.A.; Jennifer Juzwik, USDA Forest Service, Northern Research Station, St. Paul, MN, U.S.A.

Sponsors: Forest Pathology; Tropical Plant Pathology; Mycology

- 8:30 a.m. 164-S. Diseases of tropical *Eucalyptus* spp.: Growing threats to a critically valuable global forestry resource. M. J. WINGFIELD (1), J. Roux (2), B. Slippers (2), B. Wingfield (2). (1) Forestry and Agricultural Biotechnology Institute (FABI), University of Pretoria, Pretoria, Rep of South Africa; (2) University of Pretoria, Pretoria, Rep of South Africa
- 9:00 a.m. 165-S. Current knowledge of *Eucalyptus* rust in Brazil. A. C. ALFENAS (1), R. N. Graça (1). (1) Federal University of Viçosa, Viçosa, Brazil
- 9:30 a.m. 166-S. Invasion of *Puccinia psidii* into Hawaii, hosts infected, molecular characterization, and pathogenicity tests. J. UCHIDA (1). (1) University of Hawaii at Manoa, Honolulu, HI, U.S.A.
- 10:00 a.m. Break
- 10:15 a.m. 167-S. Disease resistance screening for Koa wilt disease. N. S. Dudley (1), T. Jones (2), R. L. James (3), P. Cannon (4), R. Sneizko (5), I. Rushanaedy (2), D. BORTHAKUR (2). (1) Hawaii Agriculture Research Center, Kunia, HI, U.S.A.; (2) University of Hawaii at Manoa, Dept. of Molecular Biosciences & Bioengineering, Honolulu, HI, U.S.A.; (3) U. S. Forest Service, Vancouver, WA, U.S.A.; (4) USDA Forest Service, Pacific Southwest Region, Vallejo, CA, U.S.A.; (5) Dorena Genetic Resource Center, Cottage Grove, OR, U.S.A.
- 10:45 a.m. 168-S. Decline of *Casuarina equisetifolia* (ironwood) trees on Guam: Symptomatology and explanatory variables. R. L. SCHLUB (1), A. Moore (1), B. Marx (2), K. Schlub (2), L. Kennaway (3), M. Quintanilla (4), M. Putnam (5), Z. Mersha (6). (1) University of Guam, Mangilao, Guam; (2) Louisiana State University, Baton Rouge, LA, U.S.A.; (3) USDA-APHIS-PPQ-CPHST, Fort Collins, CO, U.S.A.; (4) Northern Marianas College, Saipan; (5) Oregon State University, Corvallis, OR, U.S.A.; (6) University of Florida, Homestead, FL, U.S.A.
- 11:00 a.m. 169-S. Decline of *Casuarina equisetifolia* (ironwood) trees on Guam: *Ganoderma* and *Phellinus*. Z. MERSHA (1), M. C. Aime (2), P. Cannon (3), D. Nandwani (4), S. Nelson (5), P. C. Spaine (6), R. L. Schlub (7). (1) University of Florida, Homestead, FL, U.S.A.; (2) Louisiana State University, Baton Rouge, LA, U.S.A.; (3) USDA Forest Service, Vallejo,

CA, U.S.A.; (4) Northern Marianas College, Saipan; (5) University of Hawaii, Manoa, HI, U.S.A.; (6) USDA/APHIS/BRS, Riverdale, MD, U.S.A.; (7) University of Guam, Mangilao, Guam

11:15 a.m. Discussion

ORAL TECHNICAL SESSIONS

Biology of Plant Pathogens: Fungi

8:30 – 11:30 a.m.; 323B

Section: Biology of Plant Pathogens

Moderator: Ning Zhang, Rutgers University, New Brunswick, NJ, U.S.A.; Alejandro Ortega-Beltran, University of Arizona, Tucson, AZ, U.S.A

- 8:30 a.m. 101-O. Evolution of mode of infection in the rice blast fungus and allied species. N. ZHANG (1), S. Zhao (1). (1) Rutgers University, New Brunswick, NJ, U.S.A.
- 8:45 a.m. 102-O. Evidence of genetic diversity and heterothallism in *Sclerotinia homoeocarpa*, the causal agent of dollar spot disease on turfgrass. D. LIBERTI (1), J. A. Rollins (1), P. F. Harmon (1). (1) University of Florida, Gainesville, FL, U.S.A.
- 9:00 a.m. 103-O. Anthracnose disease of *Capsicum* spp. P. W. TAYLOR (1), O. Mongkolporn (2). (1) University of Melbourne, Melbourne, Australia; (2) Kasetsart University, Kamphaeng Saen, Thailand
- 9:15 a.m. 104-O. Correlation of environmental and edaphic factors to the isolation frequency of *Rhizoctonia* and *Chrysorhiza* from seashore paspalum. S. J. KAMMERER (1), P. F. Harmon (1). (1) University of Florida, Gainesville, FL, U.S.A.
- 9:30 a.m. 105-O. Aflatoxin-producing fungi in maize fields of Sonora, Mexico, at varying elevations: A three-year study. A. ORTEGA-BELTRAN (1), R. Jaime-Garcia (1), P. J. Cotty (2). (1) University of Arizona, Tucson, AZ, U.S.A.; (2) USDA ARS/University of Arizona, Tucson, AZ, U.S.A.
- 9:45 a.m. 106-O. Determination of presumptive vegetative compatibility groups of *Verticillium dahliae* occurring on sunflower using molecular markers. K. M. ALANANBEH (1), N. C. Gudmestad (1), T. J. Gulya (2), S. Markell (1). (1) North Dakota State University, Fargo, ND, U.S.A.; (2) USDA-ARS NCSL, Fargo, ND, U.S.A.
- 10:00 a.m. Break
- 10:15 a.m. 107-O. Analyses of nuclear and mitochondrial sequences reveal an ancient split in the evolutionary history of *Verticillium dahliae*. Z. K. ATALLAH (1), K. Maruthachalam (1), L. E. Radmer (2), F. N. Martin (2), S. J. Klosterman (2), K. V. Subbarao (1). (1) University of California-Davis, Salinas, CA, U.S.A.; (2) USDA-ARS, Salinas, CA, U.S.A.
- 10:30 a.m. 108-O. Laurel wilt of avocado: Relationships among disease severity, water conduction, and the spatial distribution of *Raffaelea lauricola*. S. A. INCH (1), R. Ploetz (1). (1) University of Florida, Homestead, FL, U.S.A.
- 10:45 a.m. 109-O. First report of *Raffaelea canadensis* showing laurel wilt disease symptoms on avocado in California. A. ESKALEN (1), V. McDonald (1). (1) University of California, Riverside, CA, U.S.A.

Oral Technical Sessions continued

11:00 a.m. 110-O. Interactions between *Fusarium* root rot pathogens and *Heterodera glycines* on soybean roots. M. DIAZ-ARIAS (1), G. L. Tylka (1), L. Leandro (1), G. Munkvold (1). (1) Iowa State University, Ames, IA, U.S.A.

11:15 a.m. **Pacific Division Talk** 111-O. Virulence diversity of international collections of the wheat stripe rust pathogen, *Puccinia striiformis* f. sp. *tritici*. D. SHARMA-POUDYAL (1), X. Chen (2). (1) Washington State University, Pullman, WA, U.S.A.; (2) USDA-ARS, Wheat Genetics, Quality, Physiology, and Disease Research Unit, Pullman, WA, U.S.A.

Diseases of Horticultural Crops & Forests

8:30 – 11:30 a.m.; 317B

Section: Diseases of Plants

Moderator: Sara Thomas, University of Georgia, Athens, GA, U.S.A.

8:30 a.m. 112-O. Fungi in Botryosphaeriaceae causing stem blight in the southeast and latent infection in southern highbush blueberry propagative material. A. F. WRIGHT (1). (1) University of Florida, Gainesville, FL, U.S.A.

8:45 a.m. 113-O. *Calosphaeria* canker of sweet cherry in California. F. P. TROUILLAS (1), F. Peduto (1), J. A. Grant (2), W. D. Gubler (1). (1) University of California-Davis, Davis, CA, U.S.A.; (2) University of California-Davis, Stockton, CA, U.S.A.

9:00 a.m.  114-O. Pre- and post-anthesis activity of fenbuconazole and triforine against blueberry flower infection by *Monilinia vaccinii-corymbosi*. S. THOMAS (1), H. Scherm (1). (1) University of Georgia, Athens, GA, U.S.A.

9:15 a.m. 115-O. Report of chlorotic ringspot disease on peanuts caused by *Tomato yellow fruit ring virus* in Iran. A. GOLNARAGHI (1), R. Pourrahim (2), S. Farzadfar (2), K. Ohshima (3). (1) Dept. of Plant Protection, College of Agriculture and Natural Resources, Science and Research Branch, Islamic Azad University, Tehran, Iran; (2) Dept. of Plant Virology, Iranian Institute of Plant Protection, Tehran, Iran; (3) Laboratory of Plant Virology, Dept. of Applied Biological Sciences, Saga University, Saga, Japan

9:30 a.m. 116-O. Comparative study of *Pythium* species causing carrot cavity spot in California and Michigan. X. H. LU (1), R. M. Davis (2), J. J. Hao (1). (1) Michigan State University, East Lansing, MI, U.S.A.; (2) University of California-Davis, Davis, CA, U.S.A.

9:45 a.m.  **Pacific Division Talk** 117-O. Prevalence and aggressiveness of *Alternaria solani* and *A. alternata* on potato in the Columbia Basin of the Pacific Northwest. L. S. TYMON (1), D. A. Johnson (1). (1) Washington State University, Pullman, WA, U.S.A.

10:00 a.m. Break

10:15 a.m. 118-O. Survey of *Potato virus Y* isolates in potato in Chihuahua, Mexico. L. Robles-Hernandez (1), A. C. GONZALEZ-FRANCO (1), J. Hernandez-Huerta (1), T. M. Meacham (2), A. V. Karasev (2). (1) Universidad Autonoma de Chihuahua, Chihuahua, Mexico; (2) University of Idaho, Moscow, ID, U.S.A.

10:30 a.m. 119-O. Sexual reproduction of *Pseudoperonospora*

cubensis. Y. COHEN (1), A. Rubin (1), M. Galperin (1). (1) Bar-Ilan University, Ramat-Gan, Israel

10:45 a.m. 120-O. Blackstain root disease effects on foliar nutrients, chlorophyll content, and internodal growth in ponderosa pine. W. OTROSINA (1), S. Sung (2), J. Kliejunas (3), W. Woodruff (4), P. Spaine (5). (1) USDA Forest Service, Athens, GA, U.S.A.; (2) USDA Forest Service, Pineville, LA, U.S.A.; (3) USDA Forest Service, Kent, WA, U.S.A.; (4) USDA Forest Service, Susanville, CA, U.S.A.; (5) USDA APHIS, Riverdale, MD, U.S.A.

11:00 a.m. 121-O. The potency of fungal antagonists to combat root rot in industrial *Acacia mangium* plantation. MUCHARROMAH (1), E. Maria (1), Shintami (1), Junarto (2), S. Oktarina (2). (1) Agriculture College University of Bengkulu, Bengkulu, Indonesia; (2) PT Musi Hutan Persada, South Sumatera, Indonesia

11:15 a.m. 122-O. SSR markers closely linked with a major QTL on chromosome 12 associated with resistance to phylotype I strains of *Ralstonia solanacearum* in tomato. J. WANG (1), F. Ho (1), H. Truong (1), S. Huang (1), V. Dittapongpitch (2), N. Hidayati (3). (1) AVRDC-The World Vegetable Center, Shanhua, Tainan, Taiwan Rep of China; (2) East-West Seed Thailand, Amphur Sainoi, Nonthaburi, Thailand; (3) East-West Seed Indonesia, Purwakarta, Indonesia

Induced Plant Response & Disease Resistance

8:30 – 11:00 a.m.; 325AB

Section: IPM/Biocontrol/Plant Disease Management

Moderator: Chandrasekar S. Kousik, U.S. Vegetable Laboratory, USDA, ARS, Charleston, SC, U.S.A.

8:30 a.m. 123-O. Using phenotypic markers to identify common beans with two and three rust resistance genes. M. A. PASTOR-CORRALES (1), J. M. Osorno (2), S. G. Markell (2), R. S. Goswami (2). (1) USDA ARS, Beltsville, MD, U.S.A.; (2) North Dakota State University, Fargo, ND, U.S.A.

8:45 a.m. 124-O. Resistance of *Brachiaria* genotypes to *Rhizoctonia* spp. E. ALVAREZ (1), M. Latorre (1). (1) CIAT, Cali, Colombia

9:00 a.m. 125-O. Sources of resistance to *Phytophthora* fruit rot in watermelon plant introductions. C. S. KOUSIK (1). (1) U.S. Vegetable Laboratory, USDA, ARS, Charleston, SC, U.S.A.

9:15 a.m. 126-O. Components of resistance to *Phytophthora nicotianae* in doubled-haploid lines of tobacco possessing a novel source of resistance. K. R. LANNON (1), D. Shew (1), R. S. Lewis (1). (1) North Carolina State University, Raleigh, NC, U.S.A.

9:30 a.m. 127-O. Molecular cloning and characterization of the immunosuppressive protein from the surface coat of *Steinernema glaseri*. H. ZENG (1), D. Qiu (1), X. Yang (1), H. Yang (1). (1) Institute of Plant Protection, Chinese Academy of Agricultural Sciences, Beijing, Peoples Rep of China

9:45 a.m. 128-O. Novel heat-stable protein elicitor from *Alternaria tenuissima* activates plants resistance and growth. D. QIU (1), H. Zeng (1), X. Yang (1), L. Guo (1). (1) Institute of Plant Protection, Chinese Academy of Agricultural Sciences, Beijing, Peoples Rep of China

10:00 a.m. Break

- 10:15 a.m. 129-O. A new approach to manage phytoplasma diseases: Field treatments with resistance inducers to contain grapevine Bois noir. G. ROMANAZZI (1), S. Murolo (1), L. Landi (1), E. Feliziani (1). (1) Marche Polytechnic University, Ancona, Italy
- 10:30 a.m. 130-O. Identification of small molecule inhibitors against SecA of '*Candidatus Liberibacter asiaticus*' by molecular modeling studies. N. AKULA (1), P.

Trivedi (1), N. Wang (1). (1) University of Florida, Lake Alfred, FL, U.S.A.

- 10:45 a.m. 131-O. Effect of vulculic acid produced by *Nimbya alternantherae* on chloroplast function of alligator-weed. M. XIANG (1), L. Wang (1). (1) Zhongkai University of Agriculture & Engineering, Guangzhou, Peoples Rep of China

WEDNESDAY, AUGUST 10, 2011 (Afternoon)

■ SPECIAL SESSIONS

Disease Complex Between Nematodes and Other Plant Pathogens

1:00 – 4:00 p.m.; 325AB

Section: Diseases of Plants

Organizer/Moderator: Koon-Hui Wang, University of Hawaii, Honolulu, HI, U.S.A.

Sponsors: Nematology; Soil Microbiology and Root Diseases

- 1:00 p.m. 170-S. The nightmare of plant diseases associated with soybean cyst nematodes. T. L. NIBLACK (1), J. P. Bond (2), G. L. Tylka (3). (1) University of Illinois, Urbana, IL, U.S.A.; (2) Southern Illinois University, Carbondale, IL, U.S.A.; (3) Iowa State University, Ames, IA, U.S.A.
- 1:30 p.m. 171-S. Is it nematode or fungus that causes Mr. Potato to die early? A. E. MACGUIDWIN (1). (1) University of Wisconsin-Madison, Madison, WI, U.S.A.
- 2:00 a.m. 172-S. You think the root-knot nematode is the only culprit? T. L. KIRKPATRICK (1), C. S. Rothrock (2), J. Ma (2). (1) University of Arkansas Southwest Research and Extension Center, Hope, AR, U.S.A.; (2) University of Arkansas, Fayetteville, AR, U.S.A.
- 2:30 p.m. Break
- 2:45 p.m. 173-S. Pine wilt disease: From nematology to quarantine. B. ZHAO (1), R. Li (2), F. Lin (1). (1) Nanjing Forestry University, Nanjing, PRC Peoples Rep of China; (2) Qingdao University, Qingdao, PRC Peoples Rep of China
- 3:15 p.m. 174-S. Viruses transmitted by nematodes: When the germs meet the worms. I. ZASADA (1). (1) USDA-ARS, Corvallis, OR, U.S.A.
- 3:45 p.m. Discussion

IPM Program for Vegetable Crops in the Tropics and Opportunities for IPM Graduates

1:00 – 4:00 p.m.; 324

Section: IPM-Biocontrol-Plant Disease Management

Organizers/Moderators: R. Muniappan, IPM CRSP/ Virginia Tech, Blacksburg, VA, U.S.A.; Merle Shepard, Emeritus Professor of Entomology, Clemson, Charleston, SC, U.S.A.

Sponsors: IAPPS, APS Biological Control; APS Integrated Plant Disease Management

- 1:00 p.m. 175-S. IPM program for vegetable crops in Central Asia. K. M. MAREDA (1). (1) Michigan State University, East Lansing, MI, U.S.A.
- 1:15 p.m. 176-S. IPM tactics for vegetable crops in Indonesia. A. RAUF (1), M. B. Shepard (2), G. R. Carner (3), M. D. Hammig (4). 1) Bogor Agricultural University, Bogor, Indonesia; (2) Coastal Research and

Education Center, Clemson University, Charleston, SC, U.S.A.; (3) Dept. of Entomology, Soil and Plant Sciences, Clemson University, Clemson, SC, U.S.A.; (4) Dept. of Applied Economics and Statistics, Clemson University, Clemson, SC, U.S.A.

- 1:30 p.m. 177-S. IPM technologies developed for vegetable crops in the Philippines. H. R. RAPUSAS (1), E. A. Parac (1), M. Hammig (3), M. Shepard (3). (1) PhilRice, Science City of Munoz, Nueva Ecija, Philippines; (2) Clemson University, Charleston, SC, U.S.A.
- 1:45 p.m. 178-S. FAO at work: case studies of vegetable integrated pest management and farmer education in Asia. J. KETELAAR (1). (1) FAO, Bangkok, Thailand
- 2:00 p.m. 179-S. IPM packages for vegetable crops in India. C. Durairaj (1), G. Karthikeyan (1), S. Ramakrishnan (2), G. Gajendran (1), D. Dinakaran (1), L. Pugalandhi (1), E. Jonathan (1), R. Samiyappan (1), S. MOHANKUMAR (1), (1) TNAU, Coimbatore, India; (2) Other, Coimbatore, India
- 2:15 p.m. 180-S. Technology transfer of vegetable IPM packages in India. N. KAUSHIK (1). (1) TERI, New Delhi, India
- 2:30 p.m. Break
- 2:45 p.m. 181-S. IPM: Changing the vegetable pest management system in Bangladesh. A.N.R. KARIM (1). (1) IPM CRSP Bangladesh Site, Gazipur, Bangladesh
- 3:00 p.m. 182-S. IPM packages developed for high-value horticultural crops in Latin America and the Caribbean. J. ALWANG (1). (1) Virginia Tech, Blacksburg, VA, U.S.A.
- 3:15 p.m. 183-S. IPM packages developed for vegetable crops in West Africa. D. G. PFEIFFER (1), D. E. Mullins (1), R. L. Gilbertson (2), C. C. Brewster (1), J. Westwood (1), S. A. Miller (3), P. Hipkins (1), G. Mbata (4), K. T. Gamby (5), E. V. Coly (6), D. S. Sall (7), M. K. Osei (8). (1) Virginia Tech, Blacksburg, VA, U.S.A.; (2) University California - Davis, Davis, CA, U.S.A.; (3) Ohio State University, Wooster, OH, U.S.A.; (4) Fort Valley State University, Fort Valley, GA, U.S.A.; (5) Institut d'Economie Rurale, Bamako, Mali; (6) Centre pour le Developpement de l'Horticulture, Dakar, Senegal; (7) Institut Senegalais de Recherches Agricoles, Dakar, Senegal; (8) Crops Research Institute, Kumasi, Ghana
- 3:30 p.m. 184-S. IPM program for vegetable crops in the tropics and opportunities for IPM graduates packages for horticultural crops in Uganda. S. KYAMANYWA (1). (1) Makerere University, Kampala, Uganda

Special Sessions continued

- 3:45 p.m. 185-S. Opportunities for graduates of IPM and related areas in international agriculture. S. A. MILLER (1). (1) The Ohio State University OARDC, Wooster, OH, U.S.A.

MRLs: A Growing Agricultural Export Issue

1:00 – 4:00 p.m.; 323B

Section: Professionalism/Outreach /Industry/Genetic Engineering

Organizers/Moderators: Alex Cochran, Syngenta Crop Protection, Granite Bay, CA, U.S.A.; Aaron Hert, Helena Research, CA, U.S.A.

Sponsor: Industry

Financial Sponsor: Dow AgroSciences

- 1:00 p.m. 186-S. Pesticide maximum residue limits: Why do they matter? G. LUDWIG (1). (1) Almond Board of California, Modesto, CA, U.S.A.
- 1:30 p.m. 187-S. The Pacific Rim Maximum Residue Level (MRL) issues. M. L. MARTIN (1). (1) California Grape & Tree Fruit League, Fresno, CA, U.S.A.
- 2:00 p.m. 188-S. MRLs in Europe—How philosophies differ from the United States. H. B. IRRIG (1). (1) Syngenta Crop Protection, Greensboro, NC, U.S.A.
- 2:30 p.m. Break
- 2:45 p.m. 189-S. MRL Challenges: Tree fruit exports from the Pacific Northwest. D. H. CARTER (1). (1) Northwest Horticultural Council, Yakima, WA, U.S.A.
- 3:15 p.m. Discussion

Parasitic Weeds—The Drawback of the Hungry World

1:00 – 4:00 p.m.; 316A

Section: Weed Science

Organizer/Moderator: Yaakov Goldwasser, The Hebrew University of Jerusalem, Rehovot, Israel

Sponsor: IAPPS Weed Science

Financial Sponsors: FAO; CropLife International

- 1:00 p.m. 190-S. Striga—A formidable challenge to Africa's food security. G. EJETA (1). (1) Purdue University, West Lafayette, IN, U.S.A.
- 1:30 p.m. 191-S. Broomrape management- difficulties and solutions. Y. GOLDWASSER (1). (1) The Hebrew University of Jerusalem, Rehovot, Israel
- 2:00 p.m. 192-S. Selective and non-selective management of field dodder (*Cuscuta campestris*). B. RUBIN (1). (1) Hebrew University of Jerusalem, Rehovot, Israel
- 2:30 p.m. Break
- 2:45 p.m. 193-S. Role of strigolactones in the host-parasite association. K. YONEYAMA (1), X. Xie (1), K. Yoneyama (1). (1) Utsunomiya University, Utsunomiya, Japan
- 3:15 p.m. 194-S. Genomics approaches to parasitic plant research. J. WESTWOOD (1), M. Fernandez-Aparicio (2), G. Kim (2), M. LeBlanc (2), M. Das (2), S. Alford (2), V. Stromberg (2), N. Wickett (3), K. Huang (4), B. Wu (5), J. Yoder (5), M. Timko (4), C. dePamphilis (3). (1) VPI & State Univ, Blacksburg, VA, U.S.A.; (2) Virginia Tech, Blacksburg, VA, U.S.A.; (3) Penn State University, State College, PA, U.S.A.; (4) University of Virginia, Charlottesville, VA, U.S.A.; (5) UC Davis, Davis, CA, U.S.A.
- 3:45 p.m. Discussion

Role of Fatty Acids and Lipids in Host-Pathogen Interactions

1:00 – 4:00 p.m.; 323A

Section: Molecular/Cellular/Plant-Microbe Interactions

Organizers: Shaker Kousik, USDA-ARS, Charleston, SC, U.S.A.; Pradeep Kachroo, University of Kentucky, Lexington, KY, U.S.A.; Alemu Mengistu, USDA-ARS, Jackson, TN, U.S.A.

Moderator: Shaker Kousik, USDA-ARS, Charleston, SC, U.S.A.

Sponsors: Host Resistance; Molecular and Cellular

Phytopathology

- 1:00 p.m. 195-S. The plant defense hormone Jasmonate and its molecular mechanism of action. G. HOWE (1). (1) Michigan State University, East Lansing, MI, U.S.A.
- 1:30 p.m. 196-S. How PI-3-P mediates entry of oomycete, fungal and insect effectors into host cells. B. M. TYLER (1), S. D. Kale (1), V. Antignani (1), J. Vega-Arreguin (1), R. Anderson (1), B. Gu (2), D. G. Capelluto (1), D. Dou (3), E. Feldman (1), A. Rumore (1), F. D. Arredondo (1), R. Hanlon (1), J. Plett (4), R. Aggarwal (5), I. Fudal (6), T. Rouxel (6), F. Martin (4), J. J. Stuart (5), J. M. McDowell (1), C. B. Lawrence (1), W. Shan (2). (1) Virginia Tech, Blacksburg, VA, U.S.A.; (2) NW A&F University, Yangling, PRC Peoples Rep of China; (3) Nanjing Agricultural University, Nanjing, PRC PRC Peoples Rep of China; (4) Centre INRA de Nancy, Champenoux, France; (5) Purdue University, West Lafayette, IN, U.S.A.; (6) INRA-Bioger, Campus AgroParisTech, Thiverval-Grignon, France
- 2:00 p.m. 197-S. Role of glycerolipid metabolism in plant systemic immunity. A. KACHROO (1), B. Chanda (1), Y. Xia (1), M. K. Mandal (1), K. Yu (1), K. Sekine (1), Q. Gao (1), D. Selote (1), D. Navarre (2), P. Kachroo (1). (1) University of Kentucky, Lexington, KY, U.S.A.; (2) USDA-ARS, Washington State University, Prosser, WA, U.S.A.
- 2;30 p.m. Break
- 2:45 p.m. 198-S. Lipid-mediated cross-talk between plant hosts and fungal pathogens. M.V. KOLOMIETS (1), X. Gao (1), Y. Park (1), S. Christensen (1), E. Borrego (1), Y. Yan (1), N. Keller (2). (1) Texas A&M University, College Station, TX, U.S.A.; (2) University of Wisconsin-Madison, Madison, WI, U.S.A.
- 3:15 p.m. 199-S. Chemical ecology of plant-parasite interactions. C. M. DE MORAES (1), M. C. Mescher (1). (1) The Pennsylvania State University, University Park, PA, U.S.A.
- 3:45 p.m. Discussion

Technology Outlook: Detection Innovations and Successes

1:00 – 4:00 p.m.; 319AB

Section: Diseases of Plants

Organizers/Moderators: Clarissa Maroon-Lango and Jorge Abad, USDA APHIS PPQ PGQP, Beltsville, MD, U.S.A.; Laurene Levy, USDA APHIS PPQ CPHST, Beltsville, MD, U.S.A.

Sponsors: Plant Pathogen and Disease Detection; Emerging Diseases and Pathogens; Diagnostics

Financial Sponsor: USDA-APHIS-PPQ

- 1:00 p.m. 200-S. Deployment of DNA arrays in plant pathogen detection. C. A. LEVESQUE (1). (1) Agriculture and

- 1:30 p.m. Agri-Food Canada, Ottawa, ON, Canada
201-S. *iPhyClassifier*: an interactive online tool for phytoplasma identification and classification. Y. Zhao (1), W. WEI (1), I. Lee (1), J. Shao (1), X. Suo (2), R. E. Davis (1). (1) MPPL-ARS-USDA, Beltsville, MD, U.S.A.; (2) NBC-DOI, Herndon, VA, U.S.A.
- 2:00 p.m. 202-S. Using surface plasmon resonance (SPR) technology to detect quarantine plant pathogens. R. DI (1). (1) Rutgers University, New Brunswick, NJ, U.S.A.
- 2:30 p.m. Break
- 2:45 p.m. 203-S. The quest for unknown viruses in plants by siRNA deep sequencing. J. F. KREUZE (1), W. J. Cuellar (1). (1) International Potato Center (CIP), Lima, Peru
- 3:15 p.m. 204-S. The use of isothermal DNA amplification (NEAR) in plant disease diagnostics. T. R. Spennhauer (1), S. Judice (1), P. Lampton (1), J. Hardingham (1), M. Estock (1), S. Kovacs (1), G. Hoyos (1), T. K. McFadd (1), B. O. PARKER (1). (1) EnviroLogix Inc, Portland, ME, U.S.A.
- 3:45 p.m. Discussion

Wheat Blast—A Potential Threat to Global Wheat Production

1:00 – 4:00 p.m.; 323C

Section: Emerging Pests/Invasive Species

Organizer/Moderator: Gary Peterson, USDA ARS Foreign Disease-Weed Science Research Unit, Fort Detrick, MD, U.S.A.

Sponsor: APS Regulatory Plant Pathology; APS Emerging Diseases and Pathogens

Financial Sponsor: British Society for Plant Pathology, Brazilian Agricultural Research Corporation, LABEX-USA, USDA APHIS PPQ

- 1:00 p.m. 205-S. Resistance among US wheat (*Triticum aestivum*) cultivars to the wheat pathotype of *Magnaporthe oryzae*. C. D. CRUZ (1), W. Bockus (1), K. Pedley (2), G. Peterson (2), J. Stack (1), X. Tang (1), B. Valent (1). (1) Kansas State University, Manhattan, KS, U.S.A.; (2) USDA-ARS, Fort Detrick, MD, U.S.A.
- 1:30 p.m. 206-S. An international perspective on wheat blast. E. DUVEILLER (1), D. Hodson (2), K. Sonder (1), A. von Tiedemann (3). (1) CIMMYT, Mexico D.F., Mexico; (2) Food and Agriculture Organization, Rome, Italy; (3) Georg-August-University of Göttingen, Göttingen, Germany
- 2:00 p.m. 207-S. A “de novo” origin for the wheat-adapted populations of *Magnaporthe oryzae* in Southern Brazil and levels of gene flow 20 years after the first epidemics. P. C. CERESINI (1), J. L. Maciel (2), L. Kohn (3), M. Levy (4), B. A. McDonald (5). (1) UNESP University of Sao Paulo State - Campus de Ilha Solteira, Ilha Solteira, Brazil; (2) EMBRAPA Trigo, Passo Fundo, Brazil; (3) University of Toronto, Mississauga, ON, Canada; (4) Purdue University, Dept. of Biological Sciences, West Lafayette, IN, U.S.A.; (5) ETH Zurich - Swiss Federal Institute of Technology, IBZ - Institute of Integrative Biology - Plant Pathology, Zurich, Switzerland
- 2:30 p.m. Break
- 2:45 p.m. 208-S. Risk mapping wheat blast potential in Brazil.

J. C. FERNANDES (1), W. Pavan (2). (1) Embrapa, Passo Fundo, Brazil; (2) University of Passo Fundo, Passo Fundo, Brazil

- 3:15 p.m. 209-S. Cellular and molecular defence responses of wheat to *Magnaporthe* species. H. A. TUFAN (1), G. R. McGrann (1), R. MacCormack (1), L. A. Boyd (1). (1) John Innes Centre, Norwich, United Kingdom
- 3:45 p.m. Discussion

ORAL TECHNICAL SESSIONS

Entomology & Insect Vectors

1:00 – 3:30 p.m.; 317B

Section: Entomology

Moderator: Robin Ross, Acadian Sea Plants Limited, Monroe, NC, U.S.A.

- 1:00 p.m. 132-O. Further spread of and domination by *Bemisia tabaci* biotype Q on field crops in China. Y. ZHANG (1), H. Pan (1). (1) Institute of Vegetables and Flowers, Beijing, PRC Peoples Rep of China
- 1:15 p.m. 133-O. Overseas migration affects the status of insecticide resistance in domestic populations of the small brown planthopper, *Laodelphax striatellus*. S. SANADA-MORIMURA (1), S. Sakumoto (2), R. Ohtsu (3), A. Otuka (1), M. Matsumura (1). (1) National Agricultural Research Center for Kyushu Okinawa Region, Koshi, Japan; (2) Kumamoto Prefectural Agricultural Research Center, Koshi, Japan; (3) Nagasaki Plant Protection Station, Isahaya, Japan
- 1:30 p.m. 134-O. Resistance selection and risk assessment of fenprothrin against *Panonychus citri* (Acari: Tetranychidae). J. WANG (1), H. He (1), W. Dou (1), H. Liu (1), Z. Zhao (1). (1) Southwest University, Chongqing, Peoples Rep of China
- 1:45 p.m. 135-O. A commercial extract of the brown seaweed *Ascophyllum nodosum* suppresses thrips in peppers, cucumbers, and hass avocados. W. Neily (1), D. Holden (2), R. E. ROSS (3). (1) Acadian Seaplants Limited, Clemensport, NS, Canada; (2) Holden Research and Consulting, Camarillo, CA, U.S.A.; (3) Acadian Sea Plants Limited, Monroe, NC, U.S.A.
- 2:00 p.m. 136-O. Transmission of the opportunistic cotton (*Gossypium hirsutum* L.) boll pathogen *Pantoea agglomerans* by the brown stink bug (*Euschistus servus* Say). E. G. MEDRANO (1), J. F. Esquivel (2), A. A. Bell (1). (1) USDA-ARS Cotton Pathology Research Unit, College Station, TX, U.S.A.; (2) USDA-ARS Areawide Pest Management Research Unit, College Station, TX, U.S.A.
- 2:15 a.m. 137-O. Effect of barley chromosome addition to wheat on the preference and performance of the migratory locust *Locusta migratoria* (Orthoptera: Acrididae). M. TOKUDA (1), S. Tanaka (2), K. Harano (2), K. Kawaura (3), Y. Ogihara (3). (1) Kyushu University, Fukuoka, Japan; (2) National Institute of Agrobiological Sciences at Ohwashi, Tsukuba, Japan; (3) Kihara Institute for Biological Research, Yokohama City University, Yokohama, Japan
- 2:30 p.m. Break

Oral Technical Sessions continued

- 2:45 p.m. 139-O. Seasonal variation of 'Candidatus Liberibacter asiaticus' in citrus branches and in vector, *Diaphorina citri*, in central Florida sweet orange groves. V. PARKUNAN (1), T. Ebert (1), N. Wang (1), M. Rogers (1), M. Dewdney (1). (1) University of Florida Citrus Research and Education Center, Lake Alfred, FL, U.S.A.
- 3:00 p.m. 140-O. *Raspberry latent virus* a plant reovirus that is aphid transmitted in a replicative persistent manner. D. F. QUITO-ALVA (1), R. R. Martin (2). (1) Oregon State University, Corvallis, OR, U.S.A.; (2) USDA ARS, Corvallis, OR, U.S.A.
- 3:15 p.m. 141-O. Localization of *Banana bunchy top virus* within the aphid vector, *Pentalonia nigronervosa*, as revealed by immunofluorescence, TEM, and PCR assays. A. Bressan (1), S. WATANABE (2). (1) University of Hawaii, Honolulu, HI, U.S.A.

Molecular Biology of Bacteria & Nematodes

1:00 – 4:00 p.m.; 317A

Section: Molecular/Cellular/Plant-Microbe Interactions

Moderator: Jonathan Jacobs, University of Wisconsin, Madison, WI, U.S.A.; Leonard Nunney, University of California-Riverside, Riverside, CA, U.S.A.

1:00 p.m. 142-O. Comparative genomic analysis of *Xanthomonas axonopodis* pv. *citrumelo* strain FL-1195 and closely related bacteria. N. JALAN (1), V. Aritua (1), N. Wang (2). (1) University of Florida, Lake Alfred, FL, U.S.A.

1:15 p.m. 143-O. Identification of genes involved in biofilm formation using an EZ-Tn5 mutant library of *Xanthomonas citri* subsp. *citri* strain 306. J. LI (1), N. Wang (2). (1) University of Florida, Lake Alfred, FL, U.S.A.; (2) Citrus Research and Education Center, Dept. of Microbiology and Cell Science, University of Florida, Lake Alfred, FL, U.S.A.

1:30 p.m. 144-O. Genome-wide identification of virulence factors of citrus canker pathogen *Xanthomonas citri* subsp. *citri* using a transposon mutagenesis strategy. Q. YAN (1), N. Wang (1). (1) University of Florida, Lake Alfred, FL, U.S.A.

1:45 p.m. 145-O. Functional characterization of the PidS/PidR two-component regulatory system of *Burkholderia glumae*. H. S. KARKI (1), I. K. Barphagha (1), J. H. Ham (1). (1) Louisiana State University, Baton Rouge, LA, U.S.A.

2:00 p.m. 146-O. The host-specific virulence activity of *Ralstonia solanacearum* type three effector PopS. J. M. JACOBS (1), A. Milling (1), B. Remenant (1), C. Allen (1). (1) University of Wisconsin, Madison, WI, U.S.A.

2:15 p.m. 147-O. Characterization of the *occF* gene associated with antifungal activity of occidiofungin produced by *Burkholderia contaminans* strain MS14. K. Chen (1), L. Smith (2), A. Liu (1), A. Ravichandran (2), G. Gu (1), S. M. Baird (1), S. LU (1). (1) Mississippi State University, Mississippi State, MS, U.S.A.; (2) Texas A&M University, College Station, TX, U.S.A.

2:30 p.m. Break

2:45 p.m. 148-O. Understanding cellular and molecular interactions between the rice blast fungus and a putative biocontrol bacterium. S. MATHIONI (1), J. Caplan (2), N. Patel (3), K. J. Czymmek (1), R. F. Sullivan (4), D. Y. Kobayashi (3), N. M. Donofrio

(1). (1) University of Delaware, Newark, DE, U.S.A.; (2) Delaware Biotechnology Institute, Newark, DE, U.S.A.; (3) Rutgers University, New Brunswick, NJ, U.S.A.; (4) Aberdeen Proving Ground (U.S. Army), Aberdeen, MD, U.S.A.

3:00 p.m. 149-O. Homologous recombination and the invasion of a new plant host by the pathogenic bacterium, *Xylella fastidiosa*. L. NUNNEY (1). (1) University of California-Riverside, Riverside, CA, U.S.A.

3:15 p.m. 150-O. Adapting synthetic gene circuits for plant-based detection of pathogen indicators: A test case. L. R. TRIPLETT (1), K. J. Morey (1), K. D. Albrecht (1), M. Ionescu (2), J. E. Leach (1), S. E. Lindow (2), N. A. Tisserat (1), J. I. Medford (1). (1) Colorado State University, Fort Collins, CO, U.S.A.; (2) University of California-Berkeley, Berkeley, CA, U.S.A.

3:30 p.m. 151-O. Root-knot nematode genomes encode suites of plant peptide hormone mimics. P. M. DIGENNARO (1), E. H. Scholl (1), J. P. Cromer (1), C. H. Opperman (1), D. M. Bird (1). (1) North Carolina State University, Raleigh, NC, U.S.A.

3:45 p.m. 152-O. Innate response in tissue-cultured *Anthurium andraeanum* against *Radopholus similis*. Y. MAKIMOTO (1), B. Sipes (1). (1) University of Hawaii at Manoa, Honolulu, HI, U.S.A.

Pathogen Population Genetics

1:00 – 4:15 p.m.; 318AB

Section: Epidemiology/Ecology/Environmental Biology of Pathogens

Moderators: Kendra Baumgartner, USDA ARS, Davis, CA, U.S.A.; Kirk Broders, University of New Hampshire, Durham, NH, U.S.A.

1:00 p.m. 153-O. Diversity of the mating type locus in *Sclerotinia sclerotiorum* in relation to formation of apothecia. P. CHITRAMPALAM (1), P. Inderbitzin (1), K. V. Subbarao (1). (1) University of California, Davis, CA, U.S.A.

1:15 p.m.  154-O. Genotypic diversity of *Verticillium dahliae* impacting potato and mint. J. K. DUNG (1), T. L. Peever (1), D. A. Johnson (1). (1) Washington State University, Pullman, WA, U.S.A.

1:30 p.m. 155-O. Development of microsatellite markers for population genetic analysis of *Waitea circinata* var. *circinata*. E. N. NJAMBERE (1), F. Wong (2), B. B. Clarke (1), N. Zhang (1). (1) Rutgers University, New Brunswick, NJ, U.S.A.; (2) University of California, Riverside, Riverside, CA, U.S.A.

1:45 p.m. 156-O. Effects of plant growth regulators on a DMI-insensitive *Sclerotinia homoeocarpa* population. K. Campbell-Nelson (1), J. Popko (1), G. JUNG (1). (1) University of Massachusetts, Amherst, MA, U.S.A.

2:00 p.m. 157-O. Two newly detected populations of *Fusarium graminearum* in the United States. L. R. GALE (1), E. A. Milus (2), S. K. Stangeland (1), M. W. Haas (1), H. C. Kistler (3). (1) University of Minnesota, St. Paul, MN, U.S.A.; (2) University of Arkansas, Fayetteville, AR, U.S.A.; (3) USDA ARS - Cereal Disease Lab, St. Paul, MN, U.S.A.

2:15 p.m. **Pacific Division Talk** 158-O. Fusarium head blight in southeastern Idaho. K. M. BISSONNETTE (1), J.

- M. Marshall (1). (1) University of Idaho, Idaho Falls, ID, U.S.A.
- 2:30 p.m. Break
- 2:45 p.m. **Pacific Division Talk** 159-O. Genetic diversity and population differentiation of *Sclerotinia sclerotiorum* collected from canola in China and in United States. R. N. ATTANAYAKE (1), D. H. Jiang (2), M. L. del Río (3), W. Chen (4). (1) Washington State University, Pullman, WA, U.S.A.; (2) Huazhong Agricultural University, Wuhan, Peoples Rep of China; (3) North Dakota State University, Fargo, ND, U.S.A.; (4) USDA - ARS, Pullman, WA, U.S.A.
- 3:00 p.m. 160-O. Clonal and sexual dispersal of *Armillaria mellea* in an ornamental landscape. R. TRAVADON (1), P. Fujiyoshi (2), M. E. Smith (3), G. W. Douhan (4), D. M. Rizzo (1), K. Baumgartner (2). (1) University of California, Davis, CA, U.S.A.; (2) USDA-ARS, Davis, CA, U.S.A.; (3) Duke University, Durham, NC, U.S.A.; (4) University of California, Riverside, CA, U.S.A.
- 3:15 p.m. 161-O. The genetic structure of *Pseudoperonospora cubensis* global populations. L. QUESADA-OCAMPO (1), L. Granke (1), J. Olsen (1), H. Gutting (1), F. Runge (2), M. Thines (2), A. Lebeda (3), M. Hausbeck (1). (1) Michigan State University, East Lansing, MI, U.S.A.; (2) University of Hohenheim, Hohenheim, Germany; (3) Palacky University in Olomouc, Faculty of Science, Dept. of Botany, Olomouc-Holice, Czech Republic
- 3:30 p.m. 162-O. Population genetic structure of *Phytophthora cinnamomi* associated with Phytophthora root rot of avocado (*Persea americana*) within California. D. PAGLIACCIA (1), B. McKee (1), E. Pond (1), G. W. Douhan (1). (1) University of California-Riverside, Riverside, CA, U.S.A.
- 3:45 p.m. 163-O. Population genetics of *Eutypa lata* in the major grape-growing regions of the world and historical patterns of viticulture. K. BAUMGARTNER (1), R. Travadon (2), P. Rolshausen (3), D. Gubler (2), M. Sosnowski (4), P. Lecomte (5), F. Halleen (6), J. Peros (7). (1) USDA ARS, Davis, CA, U.S.A.; (2) Dept. of Plant Pathology, University of California, Davis, CA, U.S.A.; (3) Dept. of Plant Pathology and Microbiology, University of California, Riverside, CA, U.S.A.; (4) South Australian Research and Development Institute, Adelaide, Australia; (5) INRA, UMR Santé Végétale, Villenave d'Ornon, France; (6) ARC Infruitec-Nietvoorbij, Stellenbosch, Rep of South Africa; (7) INRA, UMR DIAPC, Montpellier, France
- 4:00 p.m. 164-O. Population structure of *Ophiognomonia clavignenti-juglandacearum* reveals multiple introductions of the butternut canker fungus into North America. K. BRODERS (1), L. Barbison (2), G. Boland (2). (1) University of New Hampshire, Durham, NH, U.S.A.; (2) University of Guelph, Guelph, ON, Canada

Shop APS PRESS and SAVE 20%

Plus **FREE** Shipping if you buy 4 or more APS PRESS titles!

Key for Identification
of Common
Phytophthora Species

NEW

See Demo of this
software by
Jean Ristaino at
1:30 p.m. on
Monday in the
bookstore.

Virus and
Virus-Like Diseases
of Pome
and Stone Fruits

NEW

GENOME-ENABLED
ANALYSIS
OF PLANT-PATHOGEN
INTERACTIONS

NEW

Plant Diseases
Caused by Bacteria
An Image Database and
Educational Resource

NEW

Special
Foundation
Discount
First 40 Customers



Shop APS PRESS in the Exhibit Hall!

Sunday	4:30 – 6:30 p.m.
Monday	9:00 a.m. – 7:00 p.m.
Tuesday	7:30 a.m. – 4:30 p.m.
Wednesday	8:00 – 11 a.m.



Growing together

For nearly half a century, Conviron has been helping agricultural researchers advance their science. As a leader in controlled environment systems, our standard and custom solutions can be found in many of the largest and most prestigious corporate, government, and academic institutions around the world. With Conviron as your research partner, you can rest assured that you'll always have solutions tailored to meet your research needs.

For more information on our growing selection of products and services, contact one of our sales representatives today at **1-800-363-6451** or visit us online at **www.conviron.com**



CONVIRON
Building Partnerships | Creating Solutions

POSTERS

POSTER SCHEDULE AND POSTER TITLES BY CATEGORY

Poster Viewing Hours

Sunday, August 7

12:00 – 3:00 p.m.

Poster Set-up

4:30 – 8:00 p.m.

Poster Viewing

Monday, August 8

7:30 a.m. – 8:00 p.m.

Poster Viewing

4:00 – 5:30 p.m.

Even-numbered poster authors present

5:30 – 7:00 p.m.

Odd-numbered poster authors present

Tuesday, August 9

7:30 a.m. – 8:00 p.m.

Poster Viewing

Wednesday, August 10

8:00 – 10:00 a.m.

Poster Take-down

2011 APS-IPPC Joint Meeting Poster Categories

<i>Poster Categories</i>	<i>Poster numbers</i>	<i>Poster Categories</i>	<i>Poster numbers</i>
Biology of Plant Pathogens		Nematodes	499 – 503
Bacteria - Systematics/Evolution/Ecology	1 – 16	Pathogen - Vector Interactions	504 – 510
Fungi - Systematics/Evolution/Ecology	17 – 51	Phyllosphere/Rhizosphere Microbiology and Ecology	511 – 528
Nematodes - Systematics/Evolution/Ecology	52 – 57	Population Genetics	529 – 552
Phytoplasmas/Spiroplasmas/Fastidious Prokaryotes	58 – 66	Virology	553 – 557
Postharvest Pathology and Mycotoxicology	67 – 75		
Viruses - Systematics/Evolution/Ecology	76 – 90	IPM/Biocontrol/Plant Disease Management	
Diseases of Plants		Insects/Nematodes	558 – 578
Crop Loss Assessment	91 – 97	IPM	579 – 586
Disease Detection and Diagnosis	98 – 174	IPM: Biocides and Chemical Control	587 – 615
Diseases - Cereals, Field, and Fiber Crops	175 – 225	PDM: Field and Row Crops	616 – 630
Diseases - Fruits and Nuts	226 – 261	PDM: Fruits, Nuts	631 – 682
Diseases- Ornamentals	262 – 283	PDM: GMOS	683 – 688
Diseases - Turf grasses	284 – 301	PDM: Host Resistance	689 – 693
Diseases – Vegetables	302 – 326	PDM: Ornamentals	694 – 696
Forest Pathology	327 – 339	PDM: Postharvest Diseases	697 – 703
Seed Pathology	340 – 341	PDM: Small Grains	704 – 739
Tropical Plant Pathology	342 – 351	PDM: Soilbourne and Seed Disease	740 – 762
Emerging Pests/Invasive Species		PDM: Solanaceous Crops	763 – 792
Emerging Pests/Invasive Species	352 – 356	PDM: Vegetables	793 – 816
Insects	357 – 363	Weeds	817 – 824
Plant Pathogens	364 – 397	Molecular/Cellular/Plant-Microbe Interactions	
Weeds	398 – 399	Bacteria	825 – 879
Entomology		Fungi	880 – 961
Entomology	400 – 438	Nematodes	962 – 963
Epidemiology/Ecology/Environmental Biology of Pathogens		Viruses	964 – 1015
Bacteria	439 – 454	Professionalism/Outreach /Industry/Genetic Engineering	
Biology	455 – 492	Professionalism/Outreach	1016 – 1021
Climate Change	493 – 497	Weed Science	
Ecology	498	Weed Science	1022 – 1026

■ BIOLOGY OF PLANT PATHOGENS

Bacteria: Systematics/Evolution/Ecology

- 1-P Genetic diversity of environmental and clinical strains of the *Enterobacter cloacae* complex determined by multilocus phylogenetic and genome analyses. J. L. HUMANN (1), A. A. Bates (1), J. E. Pena (1), M. Wildung (1), J. C. Drew (2), T. L. Peever (1), D. Main (1), E. Triplett (2), B. K. Schroeder (1). (1) Washington State University, Pullman, WA, U.S.A.; (2) University of Florida, Gainesville, FL, U.S.A.
- 2-P Colonization of tomato seedlings by bioluminescent *Clavibacter michiganensis* subsp. *michiganensis* under different humidity regimes. X. XU (1), G. Rajashekara (1), P. A. Paul (1), S. A. Miller (1). (1) Ohio State University, Wooster, OH, U.S.A.
- 3-P A common scab-resistant potato cultivar is not explained by pathogen growth in soil or window of infectivity. L. A. WANNER (1), X. Qu (2), B. J. Christ (2). (1) USDA ARS, Beltsville, MD, U.S.A.; (2) Pennsylvania State University, University Park, PA, U.S.A.
- 4-P Assembly of the draft genome of *Xanthomonas axonopodis* pv. *dieffenbachiae* strain V108LRUH1, a bioluminescent strain highly virulent on anthurium. G. MARRERO (1), K. L. Schneider (1), A. M. Alvarez (1), G. G. Presting (1). (1) University of Hawaii at Manoa, Honolulu, HI, U.S.A.
- 5-P Diversity and population dynamics of *Xanthomonas axonopodis* pv. *manihotis* in Colombia from 2008 to 2010. C. A. TRUJILLO (1), S. Restrepo (1), C. E. López (2), A. J. Bernal (1). (1) Universidad de Los Andes, Bogotá, Colombia; (2) Universidad Nacional, Sede Bogotá, Bogotá, Colombia
- 6-P RIFdb: An online database for the classification of plant-associated bacteria using the computationally derived RIF marker. K. L. SCHNEIDER (1), G. Marrero (1), A. M. Alvarez (1), G. G. Presting (1). (1) University of Hawaii at Manoa, Honolulu, HI, U.S.A.
- 6a-P Influence of *Pythium aphanidermatum*, *P. irregulare*, and *P. cryptoirregulare* on the bacterial community in recycled irrigated water. M. L. BURGOS-GARAY (1), G. W. Moorman (1). (1) Penn State, University Park, PA, U.S.A.
- 7-P PCR-based detection, by use of degenerate primers, of an *EngA* cellulase gene in *Xanthomonas sacchari* from asymptomatic sugarcane. L. Kuykendall (1), F. Davenport (2), J. Y. Shao (3), C. J. MAROON-LANGO (4). (1) National Germplasm Resources Lab & Molecular Plant Pathology Laboratory, USDA ARS, BARC-West, Beltsville, MD, U.S.A.; (2) National Germplasm Resources Lab, USDA ARS, BARC-West, Beltsville, MD, U.S.A.; (3) Molecular Plant Pathology Laboratory, USDA ARS, BARC-West, Beltsville, MD, U.S.A.; (4) USDA APHIS PPQ PHP Plant Germplasm Quarantine Program, Beltsville, MD, U.S.A.
- 8-P A new model for races of *Xanthomonas campestris* pv. *campestris*. A. N. Ignatov (1), E. Mazurin (2), F. Djalilov (2), E. Matveeva (1), D. G. LUSTER (3), N. W. Schaad (3). (1) Russian Research Institute of Phytopathology, Bolshie Vyazemy, Russia; (2) Russian State Agricultural University, Moscow, Russia; (3) USDA, ARS, Foreign Disease-Weed Science Research Unit, Fort Detrick, MD, U.S.A.

- 9-P Genetic diversity of antagonistic *Bacillus subtilis* against citrus canker bacteria. T. HUANG (1), C. Chen (1), Y. Lee (1), B. Hwang (2), D. Tzeng (1), K. Tzeng (1). (1) National Chung-Hsing University, Taichung, Taiwan; (2) China Medical University, Taichung, Taiwan
- 10-P Plasmid content of *Erwinia amylovora* isolates from orchards in Washington and Oregon. A. B. Carey (1), P. Pusey (2), T. J. Smith (3), J. E. Loper (4), V. STOCKWELL (1). (1) Oregon State University, Corvallis, OR, U.S.A.; (2) USDA ARS, Wenatchee, WA, U.S.A.; (3) Washington State University, Wenatchee, WA, U.S.A.; (4) USDA ARS, Corvallis, OR, U.S.A.
- 11-P Comparative genomics of *Salmonella enterica* serovar Weltevreden plant and animal isolates. K. Brankatschk (1), T. H. Smits (1), A. Goesmann (2), B. DUFFY (3). (1) Agroscope Changins-Wädenswil ACW, Wädenswil, Switzerland; (2) CeBiTec, University of Bielefeld, Bielefeld, Germany; (3) Swiss Federal Research Station, Wädenswil, Switzerland
- 12-P Expression of the cloned IS53 transposase promoter from *Pseudomonas savastanoi* under stress conditions. T. R. CERVONE (1), S. D. Soby (1). (1) Midwestern University-Arizona, Glendale, AZ, U.S.A.
- 13-P Effect of the localization of *Acidovorax citrulli* in watermelon seeds on pathogen detection. M. Vernaiz (1), B. DUTTA (1), A. Castro Sparks (1), R. Walcott (1). (1) University of Georgia, Athens, GA, U.S.A.
- 14-P *Erwinia tracheiphila* colonization of cantaloupe fruits through flower inoculation. D. Gautam (1), L. MA (1), B. Bruton (2), J. Fletcher (1). (1) Oklahoma State University, Stillwater, OK, U.S.A.; (2) USDA ARS, Lane, OK, U.S.A.
- 15-P A functional 3-hydroxy-2-butanone pathway is required for virulence in *Pectobacterium carotovorum* subsp. *carotovorum*. M. MARQUEZ-VILLAVICENCIO (1), B. Weber (1), R. A. Witherell (1), A. O. Charkowski (1). (1) University of Wisconsin, Madison, WI, U.S.A.
- 16-P Evolution of the '*Ca. Liberibacter asiaticus*' genome for and intracellular lifestyle. J. S. HARTUNG (1), J. Shao (1), L. D. Kuykendall (1). (1) USDA ARS MPPL, Beltsville, MD, U.S.A.

Fungi: Systematics/Evolution/Ecology

- 17-P Characterization of *Phytophthora infestans* from Wisconsin in 2009 and 2010. A. C. SEIDL (1), A. J. Gevens (1). (1) University of Wisconsin, Madison, WI, U.S.A.
- 18-P Identification, hosts, distribution, and molecular phylogeny of desert truffles in Iran. S. Jamali (1), Z. BANIHASHEMI (1). (1) Shiraz University, Shiraz, Iran
- 19-P Genetic structure and pathogenicity of *Phytophthora infestans* sensu lato collected from *Solanum betaceum* in southwestern Colombia. M. MIDEROS (1), Y. Castillo (2), C. Obando (2), M. Cárdenas (1), L. Lagos Mora (2), A. Bernal (1), P. Jiménez (3), S. Restrepo (1). (1) Universidad de Los Andes, Bogota, Colombia; (2) Universidad de Nariño, San Juan de Pasto, Colombia; (3) Universidad Militar Nueva Granada, Bogota, Colombia

- 20-P Global phenotypic variation in *Phytophthora capsici*. L. GRANKE (1), L. M. Quesada-Ocampo (1), A. Lebeis (1), L. Henderson (1), M. VanOverbeke (1), M. Hausbeck (1). (1) Michigan State University, East Lansing, MI, U.S.A.
- 21-P Gene trees versus species trees for resolving the *Phytophthora* clade 1C phylogeny. J. E. BLAIR (1), M. D. Coffey (2), F. Martin (3). (1) Franklin & Marshall College, Lancaster, PA, U.S.A.; (2) University of California, Riverside, CA, U.S.A.; (3) USDA ARS, Salinas, CA, U.S.A.
- 22-P Mycelial growth and sporangial production of *Phytophthora capsici* as affected by extracts from pecan tissues. S. SANOGO (1), L. Liess (1), R. Richman (1). (1) New Mexico State University, Las Cruces, NM, U.S.A.
- 23-P Race and virulence dynamics of *Puccinia triticina* in China during 2000–2006. W. CHEN (1). (1) Institute of Plant Protection, Chinese Academy of Agricultural Sciences, Beijing, Peoples Republic of China
- 24-P *Aspergillus* section *Flavi* populations in cornfields of Jalisco and its potential for aflatoxin contamination in maize. A. VALENCIA-BOTÍN (1). (1) Universidad de Guadalajara, Guadalajara, Jalisco, Mexico
- 25-P Identification of yeasts associated with grape sour rot in the north of China. Y. WEI (1), X. Li (2), J. Cai (1), X. Zhang (1), Z. Liu (1), Q. Shang (1), X. Zhao (1). (1) Beijing University of Agriculture, Beijing, Peoples Republic of China; (2) Beijing Academy of Agriculture and Forestry Science, Beijing, Peoples Republic of China
- 25a-P Describe, classify, and cultivation of Chinese and America edible mushroom 300 species of Inner-Mongolia, Yunan, Tibetan, and California and Alaska. M. CHEN (1). (1) University of California, Berkeley, CA, U.S.A.
- 26-P Aggressiveness of *Sclerotinia sclerotiorum* from the northcentral United States on multiple crops. L. ALDRICH-WOLFE (1), S. E. Travers (2), B. D. Nelson (3). (1) Biology, Concordia College, Moorhead, MN, U.S.A.; (2) Biology, North Dakota State University, Fargo, ND, U.S.A.; (3) Plant Pathology, North Dakota State University, Fargo, ND, U.S.A.
- 27-P Evaluating resistance to *Aspergillus flavus* in maize genotypes using stem inoculations. A. K. WOOD-JONES (1), R. Baird (1). (1) Mississippi State University, Starkville, MS, U.S.A.
- 28-P How many species cause common and dwarf bunt of wheat? X. Bao (1), J. Stewart (1), L. CARRIS (1). (1) Washington State University, Pullman, WA, U.S.A.
- 29-P Comparative transcriptome analyses of *Fusarium oysporum* f. sp. *cubense*. M. DITA (1), R. Herai (2), M. Yamagishi (3), G. Ferreira (4), M. Souza (5), P. Giachetto (3), C. Waalwijk (6), G. Kema (6). (1) Bioversity International, Turrialba, Costa Rica; (2) Universidade Estadual de Campinas, Campinas, Brazil; (3) Embrapa, Campinas, Brazil; (4) Embrapa, Manaus, Brazil; (5) Embrapa, Brasilia, Brazil; (6) Plant Research International, Wageningen, Netherlands
- 30-P Molecular and phenotypic variation of German populations of *Fusarium graminearum* causing head blight in wheat. T. MIEDANER (1), F. Talas (1). (1) Universität Hohenheim, Stuttgart, Germany
- 31-P Population structure and mating system of the faba bean pathogen, *Didymella fabae* (anamorph: *Ascochyta fabae*), in Syria. H. OZKILINC (1), H. Akamatsu (1), M. Abang (2), K. Thomas (1), M. Chilvers (1), T. Peever (1). (1) Washington State University, Pullman, WA, U.S.A.; (2) International Center for Agricultural Research in the Dry Areas, Aleppo, Syrian Arab Republic
- 32-P Evolutionary history and species boundaries of the citrus brown spot fungus. J. Stewart (1), H. OZKILINC (1), L. Timmer (2), B. Pryor (3), T. Peever (1). (1) Washington State University, Pullman, WA, U.S.A.; (2) University of Florida, Lake Alfred, FL, U.S.A.; (3) University of Arizona, Tucson, AZ, U.S.A.
- 33-P Identification and virulence differentiation of *Colletotrichum gloeosporioides*, the causal agent of grapevine anthracnose in China. X. LI (1), J. Shang (2), J. Yan (2), H. Yan (2). (1) Beijing Academy of Agriculture and Forestry Sciences, Beijing, Peoples Republic of China; (2) IPEP, BAAFS, Beijing, Peoples Republic of China
- 34-P Temperature effects on appressorial formation of *Colletotrichum cereale* on two turfgrass hosts. Y. WANG (1), J. Kerns (1). (1) University of Wisconsin, Madison, WI, U.S.A.
- 35-P Species limits in *Verticillium*, a group of vascular wilt pathogens of global importance. P. INDERBITZIN (1), R. M. Bostock (1), K. V. Subbarao (1). (1) University of California, Davis, CA, U.S.A.
- 36-P Virulence and molecular comparison of *Puccinia striiformis* f. sp. *tritici* populations in China and the United States. G. Zhan (1), X. CHEN (2), Z. Kang (3), M. Wang (4), A. Wan (4), P. Cheng (4). (1) College of Crop Protection, Northwest A&F University, Yangling, Shaanxi, Peoples Republic of China; (2) USDA ARS, Pullman, WA, U.S.A.; (3) College of Plant Protection, Northwest A&F University, Yangling Shaanxi, Peoples Republic of China; (4) Dept. of Plant Pathology, Washington State University, Pullman, WA, U.S.A.
- 37-P Evaluation of differentiation between *Magnaporthe grisea* and *M. oryzae* by using of specific primers. M. MAGHSOUDI (1), H. Zamanizadeh (1), B. Morid (2), F. Padasht (3), S. Hajmansoor (1). (1) Dept. of Plant Pathology, College of Agriculture and Natural Resources, Science and Research Branch, Islamic Azad University, Tehran, Iran; (2) Dept. of Plant Protection, College of Agriculture, Takestan Branch, Islamic Azad University, Takestan, Iran; (3) Dept. of Plant Protection, Rice Research Institute of Iran, Rasht, Iran
- 38-P Abundance and diversity of fungal endophytic community in an Italian beech forest: Pyrosequencing vs. isolation method. V. ANNA MARIA (1), A. Vannini (1). (1) University of Tuscia, Italy
- 39-P Morphological and molecular diagnosis of *Corynespora cassiicola* and *Cercospora* sp. causal agents for hydrangea leaf spot diseases. M. T. MMBAGA (1), L. Mackasmie (2), R. J. Sauve (2). (1) Tennessee State University School of Agriculture & Consumer Sciences, McMinnville, TN, U.S.A.; (2) Tennessee State University, Nashville, TN, U.S.A.
- 40-P The beauty & the smut: An examination of the evolutionary relationships of *Microbotryum* transmission with the Montiaceae family. M. SERPI

- (1), E. Goldberger (1), J. Mena-Ali (1). (1) Franklin & Marshall College, Lancaster, PA, U.S.A.
- 41-P Development of expressed sequence tag-derived SSR markers for *Puccinia striiformis*, the stripe rust pathogen. P. CHENG (1), X. Chen (2). (1) Washington State University, Pullman, WA, U.S.A.; (2) USDA ARS, Pullman, WA, U.S.A.
- 42-P Phylogenetic relationships among *Verticillium dahliae* vegetative compatibility groups based on IGS and polymorphic sequences. M. JIMENEZ-GASCO (1), G. M. Malcolm (1), M. Berbegal (2), J. Armengol (2), R. M. Jimenez-Diaz (3). (1) Pennsylvania State University, University Park, PA, U.S.A.; (2) Universidad Polit cnica de Valencia, Valencia, Spain; (3) Universidad de Cordoba and Instituto de Agricultura Sostenible (CSIC), Cordoba, Spain
- 43-P A new selective medium for isolation of *Rhizoctonia* spp. from soil. T. SPURLOCK (1), C. Rothrock (1), W. Monfort (2). (1) University of Arkansas, Fayetteville, AR, U.S.A.; (2) University of Arkansas, Lonoke, AR, U.S.A.
- 44-P Genetic diversity and host range of *Colletotrichum acutatum* isolates obtained from several crops in South Korea. J. KIM (1). (1) Chungbuk National University, Cheongju-Si, Chungbuk, South Korea
- 45-P Mixed modes of reproduction and spatial aggregation of genotypes of the grape powdery mildew fungus, *Erysiphe necator*, within vineyards. M. T. BREWER (1), M. G. Milgroom (1). (1) Cornell University, Ithaca, NY, U.S.A.
- 46-P Antagonism between *Trichoderma harzianum* ETS 323 and *Botrytis cinerea* associated with L-phenylalanine oxidase-induced reactive oxygen species generation. S. Liu (1), C. Yang (2), K. Peng (3), C. Lo (4), C. CHENG (3). (1) Da Yeh University/Dept. of Molecular Biotechnology, Changhua, Taiwan Republic of China; (2) Tzu Chi University/Institute of Medical Science, Hualien, Taiwan Republic of China; (3) National Dong-Hwa University/Institute of Biotechnology, Hualien, Taiwan Republic of China; (4) National Formosa University/Dept. of Biotechnology, Yunlin, Taiwan Republic of China
- 47-P VCG and AFLP analysis of *Fusarium oxysporum*, the causal agent of koa wilt in Hawaii. A. SHIRAIISHI (1), J. F. Leslie (2), J. Y. Uchida (1). (1) University of Hawaii at Manoa, Honolulu, HI, U.S.A.; (2) Kansas State University, Manhattan, KS, U.S.A.
- 48-P Biochemical and antibacterial properties of L-amino acid oxidase derived from *Trichoderma harzianum* ETS 323. S. Liu (1), C. Cheng (1), C. Lo (2), K. PENG (3), C. Yang (4). (1) National Dong Hwa University, Hualien, Taiwan Republic of China; (2) National Formosa University, Yunlin, Taiwan Republic of China; (3) National Dong Hwa University, Shoufeng, Hualien, Taiwan Republic of China; (4) Tzu Chi University, Hualien, Taiwan Republic of China
- 49-P Genetic diversity and pathotype determination of *Colletotrichum sublineolum* isolated causing anthracnose disease in sorghum. R. Perumal (1), C. R. LITTLE (2), S. R. Erraitaimuthu (2), L. K. Prom (3), C. W. Magill (4). (1) Kansas State University, Hays, KS, U.S.A.; (2) Kansas State University, Manhattan, KS, U.S.A.; (3) USDA-ARS, College Station, TX, U.S.A.; (4) Texas A&M University, College Station, TX, U.S.A.
- 50-P Virulence and molecular genotyping studies of *Sporisorium reilianum* isolates in sorghum. R. Perumal (1), C. R. LITTLE (1), S. R. Erraitaimuthu (1), L. K. Prom (2), C. W. Magill (3). (1) Kansas State University, Manhattan, KS, U.S.A.; (2) USDA-ARS, College Station, TX, U.S.A.; (3) Texas A&M University, College Station, TX, U.S.A.
- 51-P Disease severity and microsclerotium properties of the sorghum sooty stripe pathogen, *Ramulispora sorghi*. C. R. Brady (1), L. W. Noll (1), A. A. Saleh (2), C. R. LITTLE (1). (1) Kansas State University, Manhattan, KS, U.S.A.; (2) King Saud University, Riyadh, Saudi Arabia
- Nematodes: Systematics/Evolution/Ecology**
- 52-P QBOL—Barcoding as a new tool for identification of quarantine nematodes and their close relatives. S. KIEWNICK (1), M. Holterman (1), H. Helder (2), J. Frey (1). (1) Agroscope Changins-Waedenswil, Waedenswil, Switzerland; (2) Laboratory of Nematology, Wageningen University, Wageningen, Netherlands
- 53-P Identification of the tropical root-knot nematode species *Meloidogyne incognita*, *M. arenaria*, and *M. javanica* by a multiplex PCR protocol. S. KIEWNICK (1), S. Wolf (1), J. Frey (1). (1) Agroscope Changins-Wadenswil, Wadenswil, Switzerland
- 54-P Host status of soybean differential genotypes to *Rotylenchulus reniformis* and *Meloidogyne incognita* race 3. K. S. LAWRENCE (1), G. Lawrence (2), V. Klink (2), S. Moore (1). (1) Auburn University, Auburn, AL, U.S.A.; (2) Mississippi State University, Mississippi State, MS, U.S.A.
- 55-P The nature of the relationship between soybean cyst nematode population densities and soil pH. S. N. WIGGS (1), G. L. Tylka (1). (1) Iowa State University, Ames, IA, U.S.A.
- 56-P Proteome reference map for the soybean cyst nematode. S. NATARAJAN (1), X. Chen (2), M. MacDonald (2), W. Garrett (2), B. Matthews (2). (1) USDA-PSI-ARS, Beltsville, MD, U.S.A.; (2) USDA-ARS, Beltsville, MD, U.S.A.
- 57-P Identification of species and pathotypes of cereal cyst nematode in winter wheat on the Huang-Huai floodplain of China. H. LI (1), H. Yuan (1), X. Xing (1), B. Fu (1), G. Nian (1), X. Hou (1), J. Sun (1). (1) Henan Agricultural University, Zhengzhou, Henan, Peoples Republic of China
- Phytoplasmas/Spiroplasmas/Fastidious Prokaryotes**
- 58-P Possible interactions between huanglongbing and nutrients in symptom development and bacterial movement. E. G. JOHNSON (1), M. S. Irey (2), T. Gast (2), J. H. Graham (1). (1) University of Florida, Lake Alfred, FL, U.S.A.; (2) U.S. Sugar Corp, Clewiston, FL, U.S.A.
- 59-P Complete genome sequence analyses and functional predictions for ‘*Ca. L. solanacearum*’, the bacterium associated with potato zebra chip disease. H. LIN (1), J. M. Glynn (2), E. L. Civerolo (2). (1) USDA ARS PWA, Parlier, CA, U.S.A.; (2) USDA-ARS, Parlier, CA, U.S.A.

- 60-P Effects of temperature on potato zebra chip disease development. V. G. SENGODA (1), J. E. Munyaneza (2), J. L. Buchman (1), T. W. Fisher (1), H. R. Pappu (3). (1) Washington State University and USDA-ARS, Wapato, WA, U.S.A.; (2) USDA-ARS, Wapato, WA, U.S.A.; (3) Washington State University, Pullman, WA, U.S.A.
- 61-P Comparison of “*Candidatus Liberibacter asiaticus*” populations from Brazil, China, and United States at two unrelated genomic loci. X. Deng (1), J. CHEN (2), S. Lopes (3), X. Wang (4), X. Sun (5), D. Jones (6), M. S. Irey (7), E. Civerolo (8). (1) South China Agricultural University, Guangzhou, Peoples Republic of China; (2) USDA ARS PWA, Parlier, CA, U.S.A.; (3) Fundecitrus, Sao Paulo, Brazil; (4) Citrus Research Institute, Chinese Academy of Agricultural Sciences, Chongqing, Peoples Republic of China; (5) Florida Dept. of Agriculture and Consumer Services, Gainesville, FL, U.S.A.; (6) Division of Plant Industry-DOACS, Gainesville, FL, U.S.A.; (7) U.S. Sugar Corp, Clewiston, FL, U.S.A.; (8) USDA-ARS, Parlier, CA, U.S.A.
- 62-P Prophages of ‘*Candidatus Liberibacter asiaticus*’ and their distribution in southern China. Y. Gao (1), X. DENG (1), J. Chen (2), H. Li (1). (1) South China Agricultural University, Guangzhou, Peoples Republic of China; (2) USDA ARS PWA, Parlier, CA, U.S.A.
- 63-P Phylogenetic relationship of *Xylella fastidiosa* between pear leaf scorch strains and strains of other host origins. C. CHANG (1), C. Su (2), W. Young (2), S. Hsu (3), K. Tzeng (3), W. Deng (3), F. Jan (3). (1) University of Georgia, Griffin, GA, U.S.A.; (2) Taiwan Agricultural Chemicals and Toxic Substances Research Institute, Wufeng, Taiwan; (3) National Chung Hsing University, Taichung, Taiwan
- 64-P Nutritional requirements and possible alternate hosts of *Xylella fastidiosa* that causes pear leaf scorch in Taiwan. W. DENG (1), S. Hsu (1), Y. Tzeng (1), T. Huang (1), C. Su (2), F. Jan (1), C. Chang (3). (1) National Chung Hsing University/Dept. of Plant Pathology, Taichung, Taiwan; (2) Agricultural and Toxic Substances Research Institute/Dept. of Pesticide Application, Wufeng, Taichung, Taiwan; (3) National Chung Hsing University, Dept. of Plant Pathology, Taichung, Taiwan/University of Georgia, Dept. of Plant Pathology, Griffin, GA, U.S.A.
- 65-P Searching for small RNAs in *Xylella fastidiosa* genomes. J. CHEN (1), H. Huang (2). (1) USDA ARS PWA, Parlier, CA, U.S.A.; (2) University of South Florida, Tampa, FL, U.S.A.
- 66-P Witch’s-broom phytoplasma infecting *Echinacea pallida* in Australia. T. L. Pearce (1), J. B. SCOTT (1), S. J. Pethybridge (2). (1) Tasmanian Institute of Agricultural Research, University of Tasmania, Burnie, Australia; (2) Botanical Resources Australia, Ulverstone, Australia
- Belgrade, Serbia; (3) USDA-ARS, Kearneysville, WV, U.S.A.
- 68-P Nutritional cues and ambient pH modulate the in vitro activity of a polygalacturonase isozyme produced by *Penicillium expansum*. I. VICO (1), W. M. Jurick II (2), V. L. Gaskins (2), K. A. Peter (2), W. J. Janisiewicz (3), W. S. Conway (2). (1) USDA ARS, Food Quality Laboratory, Beltsville, MD, U.S.A.; (2) USDA-ARS, Beltsville, MD, U.S.A.; (3) USDA-ARS, Kearneysville, WV, U.S.A.
- 69-P Microorganisms and antifungal properties associated with noni (*Morinda citrifolia*) fruit and fermented juice in Hawaii. K. A. NISHIJIMA (1), M. M. Wall (1), L. M. Keith (1). (1) USDA ARS, Hilo, HI, U.S.A.
- 70-P Evaluating the use of solid-phase microextraction to detect aflatoxin-producing isolates of the fungus *Aspergillus flavus*. A. K. WOOD-JONES (1), D. Sun (1), T. Mlsna (1), R. Baird (1). (1) Mississippi State University, Starkville, MS, U.S.A.
- 71-P Endophytic associations and production of mycotoxins by the *Aspergillus* section *Nigri* species. E. R. PALENCIA (1), T. R. Mitchell (2), R. T. Riley (3), D. M. Hinton (2), M. E. Snook (2), C. Bacon (2). (1) USDA ARS, Russell Research Center & Dept. of Plant Pathology, University of Georgia, Athens, GA, U.S.A.; (2) USDA ARS, Russell Research Center, Athens, GA, U.S.A.; (3) USDA-ARS Toxicology and Mycotoxin Research Unit, Athens, GA, U.S.A.
- 72-P Cross-infection of *Colletotrichum* species on tropical fruit in postharvest. L. A. Aguilar-Pérez (1), D. NIETO-ANGEL (1), M. D. Sánchez-Aguirre (1), F. M. Lara-Viveros (1), M. Orozco-Santos (2), A. R. São José (3). (1) Colegio de Postgraduados, Montecillo, Mexico; (2) INIFAP-Campo Experimental Tecmán, Tecmán, Mexico; (3) Universidade Estadual do Sudoeste da Bahia, Vitoria da Conquista, BA, Brazil
- 73-P Study on molecular targets of hydrogen peroxide in fungal pathogen mitochondria under oxidative stress. S. TIAN (1), G. Qin (1), J. Liu (1), B. Cao (1). (1) Institute of Botany, Chinese Academy of Sciences, Beijing, Peoples Republic of China
- 74-P Aflatoxin producing potential and community structure of *Aspergillus* section *Flavi* in almond orchards of the Central Valley of California. M. Donner (1), P. S. Lichtemberg (1), D. P. Morgan (1), T. J. MICHAILIDES (1). (1) University of California-Davis, Parlier, CA, U.S.A.
- 75-P WITHDRAWN

Viruses: Systematics/Evolution/Ecology

Postharvest Pathology and Mycotoxicology

- 67-P Host modification of *Penicillium solium* during postharvest decay of apple fruit. K. PETER (1), W. M. Jurick (1), I. Vico (2), E. Park (1), V. L. Gaskins (1), W. J. Janisiewicz (3), W. S. Conway (1). (1) USDA-ARS, Beltsville, MD, U.S.A.; (2) University of Belgrade, Faculty of Agriculture, Institute of Phytomedicine,
- 76-P Dissect the evolutionary process of *Potato virus Y* to overcome host resistance during single-host passages. Z. XIONG (1), R. Acosta-Leal (1). (1) University of Arizona, Division of Plant Pathology and Microbiology, Tucson, AZ, U.S.A.
- 77-P Evidence that recombination plays an important role in the evolution and emergence of new curtoviruses (family *Geminiviridae*). L. CHEN (1), R. L. Gilbertson (1). (1) University of California, Davis, CA, U.S.A.
- 78-P An unusual serological reactivity revealed in isolates of *Potato virus Y* from Brazil. S. B. GALVINO-COSTA (1), A. R. Figueira (1), O. V. Nikolaeva (2), A. V. Karasev (2). (1) Federal University of Lavras, Lavras,

- 79-P Brazil; (2) University of Idaho, Moscow, ID, U.S.A.
Co-infection of a single *Phytophthora infestans* isolate by two distinct viruses. G. CAI (1), K. Myers (2), W. E. Fry (2), B. I. Hillman (1). (1) Rutgers University, New Brunswick, NJ, U.S.A.; (2) Cornell University, Ithaca, NY, U.S.A.
- 80-P Detection of *Citrus leprosis virus* cytoplasmic type utilizing the polyclonal antibodies specific to the movement and coat proteins. N. CHOUDHARY (1), A. Roy (1), G. A. Leon (2), L. Levy (3), R. H. Bransky (1). (1) University of Florida, Lake Alfred, FL, U.S.A.; (2) CORPOICA, C.I. La Libertad, Villavicencio Meta, Colombia; (3) USDA-APHIS-PPQ-CPHST, Beltsville, MD, U.S.A.
- 81-P Molecular characterization of a Chinese isolate of *Chickpea chlorotic stunt virus* infecting pea. C. Zhou (1), H. Xiang (1), D. Li (1), J. Yu (1), C. HAN (1). (1) Dept. of Plant Pathology, China Agricultural University, Beijing, Peoples Republic of China
- 82-P *Malvavirus yellow mosaic virus*, a weed-infecting begomovirus carrying a nanovirus-like nonanucleotide and a modified stem-loop structure. A. T. Lima (1), C. S. Rocha (1), D. R. Barros (2), F. N. Silva (1), P. ALFENAS-ZERBINI (1), E. W. Kitajima (3), F. M. Zerbin (1). (1) Universidade Federal de Vicos, Vicos, Brazil; (2) Universidade Federal de Pelotas, Pelotas, Brazil; (3) Universidade de São Paulo, Piracicaba, Brazil
- 83-P European nanoviruses: Identification of three new species and new DNA components. I. Grigoras (1), T. Timchenko (1), B. Gronenborn (1), H. VETTEN (2). (1) Institut des Sciences du Végétal, CNRS, Gif sur Yvette, France; (2) Julius Kühn Institute, Federal Research Centre for Cultivated Plants, Institute of Epidemiology and Pathogen Diagnostics, Braunschweig, Germany
- 84-P Incidence of multiple viruses in western Colorado cherry orchards. R. POKHAREL (1), R. G. Mock (2), G. Kinard (3), R. Li (3). (1) Colorado State University, Grand Junction, CO, U.S.A.; (2) USDA, ARS, NGR, Beltsville, MD, U.S.A.; (3) USDA ARS, Beltsville, MD, U.S.A.
- 85-P Study of *Citrus exocortis viroid* replication in citrus protoplasts. S. HAJERI (1), J. Ng (2), C. Ramadugu (2), M. Keremane (3), R. Lee (3), G. Vidalakis (2). (1) University of Florida, Lake Alfred, FL, U.S.A.; (2) University of California, Riverside, CA, U.S.A.; (3) USDA ARS, National Clonal Germplasm Repository for Citrus & Dates, Riverside, CA, U.S.A.
- 86-P Comparative analyses of Korean isolates of *Cucumber mosaic virus*. M. KIM (1), H. Kwak (1), S. Ko (2), S. Lee (1), J. Kim (1), K. Park (1), K. Kim (3), B. Cha (4), H. Choi (1). (1) National Academy of Agricultural Science, Rural Development Administration, Suwon, South Korea; (2) Jeonnam Agricultural Research and Extension Services, Naju, South Korea; (3) Seoul National University, Seoul, South Korea; (4) Chungbuk National University, Cheongju, South Korea
- 87-P WITHDRAWN
- 88-P Cloning and sequencing analysis of two *Banana bunchy top virus* genomes in Hainan, China. N. YU (1), Y. Zhang (1), J. Wang (1), M. Kulye (2), W. Yang (1), Z. Lin (1), Z. Liu (1), Z. Xiong (3). (1) Institute of Tropical Bioscience and Biotechnology, Chinese Academy of Tropical Agricultural Science, Haikou, Hainan, Peoples Republic of China; (2) College of Environment and Plant Protection, Hainan University, Haikou, Hainan, Peoples Republic of China; (3) School of Plant Sciences and BIO5 Institute, University of Arizona, Tucson, AZ, U.S.A.
- 89-P Engineering an infectious cDNA clone of an Arizona *Pepino mosaic virus* isolate. N. Yu (1), B. L. Anderson (2), Y. Shen (3), Z. XIONG (2). (1) Institute of Tropical Bioscience and Biotechnology, Chinese Academy of Tropical Agricultural Science, Haikou, Hainan, Peoples Republic of China; (2) School of Plant Sciences and BIO5 Institute, University of Arizona, Tucson, AZ, U.S.A.; (3) School of Plant Sciences, University of Arizona, Tucson, AZ, U.S.A.
- 90-P Identify the pathogen of tomato yellow leaf curl disease of Jiangsu, China. Y. JI (1), X. Zhou (1), Y. Zhou (1). (1) Jiangsu Academy of Agricultural Sciences, Nanjing, Peoples Republic of China

■ DISEASES OF PLANTS

Crop Loss Assessment

- 91-P Top rot form of red strip caused by *Aciovirax avenae* subsp. *avenae* in Louisiana sugarcane. M. P. GRISHAM (1), R. M. Johnson (2). (1) USDA ARS, Houma, LA, U.S.A.; (2) USDA ARS, Sugarcane Research Unit, Houma, LA, U.S.A.
- 92-P Yield loss in spring wheat due to disease caused by *Xanthomonas campestris* pv. *translucens*. Y. R. KANDEL (1), L. E. Osborne (1), K. D. Glover (1), C. A. Tande (1). (1) South Dakota State University, Brookings, SD, U.S.A.
- 93-P Effect of *Puccinia emaculata* infection on ethanol production potential of *Panicum virgatum*. V. R. SYKES (1), F. L. Allen (1), J. R. Mielenz (2), N. Stewart (1), M. T. Windham (1). (1) University of Tennessee, Knoxville, TN, U.S.A.; (2) Oak Ridge National Lab, Oak Ridge, TN, U.S.A.
- 94-P Use of standard area diagrams to improve assessment of pecan scab on fruit. N. V. YADAV (1), S. M. de Vos (2), C. H. Bock (3), B. W. Wood (3). (1) Fort Valley State University, Fort Valley, GA, U.S.A.; (2) University of Florida, Byron, GA, U.S.A.; (3) USDA-ARS-SEFTNRL, Byron, GA, U.S.A.
- 95-P The occurrence of *Cucurbit chlorotic yellows virus* disease in Taiwan and evaluation of the virus-infected fruit quality and yield. J. PENG (1), Y. Huang (1). (1) Tainan District Agricultural Research and Extension Station, Council of Agriculture, Tainan, Taiwan
- 95a-P Studies on *Maize streak virus* infection and yield attributes in F1 maize hybrids. M. SALAUDEEN (1), A. Menkir (2), G. Atiri (3), P. Lava Kumar (2). (1) IITA, Dept. of Crop Protection and Environmental Biology, University of Ibadan, Ibadan, Nigeria; (2) International Institute of Tropical Agriculture, Ibadan, Nigeria; (3) Dept. of Crop Protection and Environmental Biology, University of Ibadan, Ibadan, Nigeria
- 95b-P Relative susceptibility of six soybean genotypes against single and multiple viral infections in Nigeria. M. IMBOR (1), G. Atiri (2), P. Lava Kumar (3).

- (1) International Institute of Tropical Agriculture, University of Ibadan, Ibadan, Nigeria; (2) Dept. of Crop Protection and Environmental Biology, University of Ibadan, Ibadan, Nigeria; (3) International Institute of Tropical Agriculture, Ibadan, Nigeria
- 96-P Pyrethrum yield estimation by digital image analysis. J. B. SCOTT (1), S. J. Pethybridge (2), F. S. Hay (1). (1) Tasmanian Institute of Agricultural Research, University of Tasmania, Burnie, Australia; (2) Botanical Resources Australia, Ulverstone, Australia
- 97-P Pattern recognition favorability of temporal dynamics of Asian soybean rust using backpropagation neural network. E. N. MOREIRA (1), F. X. Vale (2), R. A. Rodrigues (1). (1) Federal University Vicos, Vicos, Brazil; (2) Universidade Federal De Vicos, Vicos, Brazil
- Disease Detection and Diagnosis**
- 98-P Identification of an emergent bacterial blight of garlic in Brazil. O. M. MARTINS (1), M. E. Couto (2), C. T. Bull (3). (1) Embrapa Genetic Resources and Biotechnology, Brasilia, Brazil; (2) Embrapa Clima Temperado, Pelotas, Brazil; (3) USDA ARS, Salinas, CA, U.S.A.
- 99-P Distribution of *Arabis mosaic virus* (ArMV) on grapevines and roses in western and eastern Azarbaijan Provinces, Iran. H. DOUSTSEDDIGH (1), F. Rakhshandehroo (1), M. Shams-Bakhsh (2). (1) Dept. of Plant Pathology, College of Agriculture and Natural Resources, Science and Research Branch, Islamic Azad University, Tehran, Iran; (2) Dept. of Plant Pathology, Faculty of Agriculture, Tarbiat Modares University, Tehran, Iran
- 100-P Detection of *Tomato ringspot virus* in rose and almond in Fars Province of Iran. M. SATTARY (1), F. Rakhshandehroo (2), J. Mozaffari (3). (1) Islamic Azad University, Dept. of Plant Pathology, College of Agriculture and Natural Resources, Science and Research Branch, Islamic Azad University, Tehran, Iran; (2) Dept. of Plant Pathology, College of Agriculture and Natural Resources, Science and Research Branch, Islamic Azad University, Tehran, Iran; (3) Dept. of Genetics and National Plant Gene-Bank, Seed and Plant Improvement Institute, Karaj, Iran
- 101-P First report of *Tomato mosaic virus* on eggplant in Iran. V. AGHAMOHAMMADI (1), F. Rakhshandehroo (1), M. Shams-Bakhsh (2). (1) Dept. of Plant Pathology, College of Agriculture and Natural Resources, Science and Research Branch, Islamic Azad University, Tehran, Iran; (2) Dept. of Plant Pathology, Faculty of Agriculture, Tarbiat Modares University, Tehran, Iran
- 102-P Development of PCR assay using simple sequence repeat primers for detection of '*Candidatus Liberibacter solanacearum*'. A. WEN (1), H. Lin (2), N. C. Gudmestad (1). (1) North Dakota State University, Fargo, ND, U.S.A.; (2) USDA ARS, Parlier, CA, U.S.A.
- 103-P Characterization of two newly described curtoviruses isolated from spinach in south-central Arizona. J. K. Brown (1), C. HERNANDEZ-ZEPEDA (1). (1) University of Arizona, Tucson, AZ, U.S.A.
- 104-P Enzyme-linked immunosorbent assay for *Pyrenophora teres* in soil. T. CAESAR-TONTHAT (1), R. L. Lartey (1), W. L. Shelver (2), A. J. Caesar (1), S. L. Hanson (1). (1) USDA-ARS, Sidney, MT, U.S.A.; (2) USDA-ARS, Fargo, ND, U.S.A.
- 105-P Potato virus and phytoplasma diseases in Yunnan, China. J. DONG (1), L. Zhang (1), D. Wang (1), J. H. McBeath (2), Z. Zhang (1). (1) Institute of Biotechnology and Germplasm Resources, Yunnan Academy of Agricultural Sciences, Kunming, Peoples Republic of China; (2) University of Alaska, Fairbanks, AK, U.S.A.
- 106-P A qPCR assay to detect and quantify *Macrophomina phaseolina* in soybean roots. N. AZARMANESH (1), J. P. Bond (1), A. Vick (1), A. Mengistu (2), A. M. Fakhoury (1). (1) Southern Illinois University, Carbondale, IL, U.S.A.; (2) Crop Genetics Research Unit, USDA-ARS, Jackson, TN, U.S.A.
- 107-P Search for '*Candidatus Liberibacter*' spp. in citrus and orange jasmine plants and psyllids in Texas by field surveys and multiloci PCR assays. M. KUNTA (1), W. Li (2), J. V. da Graça (1), L. Levy (2). (1) Texas A&M University-Kingsville, Weslaco, TX, U.S.A.; (2) USDA APHIS CPHST NPGBL, Beltsville, MD, U.S.A.
- 108-P First report of apple canker caused by *Xanthomonas* sp. from Iran. N. SHAKI (1), N. Hasanzadeh (2), E. Nazerian (3), M. Keshavarsi (4). (1) Azad University of Tehran, Tehran, Iran; (2) Islamic Azad University, Science and Research Branch, Tehran, Iran; (3) Plant Protection Dept., Faculty of Agriculture, University Putra Malaysia, Serdang, Malaysia; (4) Seed and Plant Improvement Institute, Karaj, Iran
- 109-P The occurrence and diagnosis of soybean diseases in Korea. Y. LEE (1), N. Kim (1), H. Yun (1), J. Ko (1), H. Shim (1), B. Lee (1), M. Jeon (1), K. Yang (1), H. Kim (1), C. Jung (1), Y. Yoon (1), S. Lee (2), G. Lee (3), I. Baek (1). (1) National Institute of Crop Science, Miryang, South Korea; (2) National Institute of Agricultural Science and Technology (NIAT), Suwon, South Korea; (3) Kyungbook National University, Deagu, South Korea
- 110-P Association of *Plum pox virus* M strain with plum fruit dropping in Iran. E. MOHAMMADI (1), F. Goharzar (1), A. Ahangaran (1). (1) Plant Protection Organization of Iran, Tehran, Iran
- 111-P Studies on the mix infection of *Tomato yellow leaf curl virus* (TYLCV) and *Watermelon chlorotic stunt virus* (WmCSV) in south of Iran. E. MOHAMMADI (1), F. Goharzar (1). (1) Plant Protection Organization of Iran, Tehran, Iran
- 112-P Identification of the pathogens caused greenhouse strawberry root and crown diseases in Beijing area, China. G. ZHANG (1), X. Li (2), J. Shang (2), B. Jin (1). (1) China Agricultural University, Beijing, Peoples Republic of China; (2) Beijing Academy of Agricultural and Forestry Sciences, Beijing, Peoples Republic of China
- 113-P Detection and identification of various *Clavibacter michiganensis* strains using a novel isothermal nucleic acid amplification. P. F. RUSSELL (1), R. Bohannon (1), N. McOwen (1). (1) Agdia, Inc., Elkhart, IN, U.S.A.
- 114-P Development and validation of *Citrus leprosis virus-C* (CiLV-C) molecular detection and identification methods for use in regulatory diagnostic assays. M. K.

- NAKHLA (1), W. Li (2), G. Wei (2), L. Levy (2). (1) USDA APHIS PPQ CPHST, Beltsville, MD, U.S.A.; (2) USDA-APHIS-PPQ-CPHST-NPGBL, Beltsville, MD, U.S.A.
- 115-P Development and validation of a multiplex one-step RT-PCR for the improved detection of potyviruses infecting imported germplasm. M. K. NAKHLA (1), D. D. Picton (2), K. J. Owens (2), L. Levy (2). (1) USDA APHIS PPQ CPHST, Beltsville, MD, U.S.A.; (2) USDA-APHIS-PPQ-CPHST-NPGBL, Beltsville, MD, U.S.A.
- 116-P Detection of *Fusarium oxysporum* f. sp. *canariensis* and *F. proliferatum* from palms in southern Nevada. A. Munoz (1), S. WANG (1). (1) Nevada Dept. of Agriculture, Sparks, NV, U.S.A.
- 117-P Rapid field-deployable detection of *Ralstonia solanacearum* race 3 biovar 2 in environmental samples using magnetic bead separation and real-time PCR. Y. HA (1), J. Kim (1), T. Denny (1), M. Schell (1). (1) University of Georgia, Athens, GA, U.S.A.
- 118-P Detection of 'Candidatus Liberibacter asiaticus' in psyllid and citrus hosts in Pakistan and analysis of psyllid populations. M. F. Razi (1), K. L. Manjunath (2), C. Ramadugu (3), M. J. Jaskani (1), S. A. Basra (1), M. Roose (3), I. A. Khan (1), R. F. LEE (2). (1) University of Agriculture, Faisalabad, Pakistan; (2) National Clonal Germplasm Repository for Citrus and Dates, USDA-ARS, Riverside, CA, U.S.A.; (3) Dept. of Botany and Plant Sciences, University of California, Riverside, CA, U.S.A.
- 119-P Development of molecular diagnostic markers for *Xanthomonas translucens*. J. Snelling (1), J. Hamilton (2), T. Adhikari (3), V. M. Verdier (1), C. Bragard (4), E. Duveiller (5), N. TISSERAT (1), C. Buell (2), J. E. Leach (1). (1) Colorado State University, Fort Collins, CO, U.S.A.; (2) Michigan State University, East Lansing, MI, U.S.A.; (3) North Dakota State University, Fargo, ND, U.S.A.; (4) Université Catholique de Louvain (UCL), Louvain-la-Neuve, Belgium; (5) CIMMYT, Mexico D.F., Mexico
- 120-P Use of massively parallel sequencing as a diagnostic tool. A. H. STOBBE (1), J. Daniels (1), A. Espindola (1), W. L. Schneider (2), J. Fletcher (3), U. K. Melcher (1). (1) Oklahoma State University, Stillwater, OK, U.S.A.; (2) Foreign Disease-Weed Science Research Unit, USDA-ARS, Fort Detrick, MD, U.S.A.; (3) National Institute for Microbial Forensics and Food and Agricultural Biosecurity (NIMFFAB), Stillwater, OK, U.S.A.
- 121-P The USDA-APHIS quarantine programs for sugarcane, grasses, rice, and bamboo. C. MAROON-LANGO (1), R. S. Turner (1), H. Brown (1), J. E. McCallister (1), A. A. Barbosa (1), M. R. Smither (1), V. L. Boulais (1). (1) Plant Germplasm Quarantine Program, Plant Health Programs, Plant Protection & Quarantine, USDA-APHIS, BARC-East, Beltsville, MD, U.S.A.
- 122-P  Rapid and real-time detection of grapevine leafroll associated viruses in grapevines and insect vectors. S. POOJARI (1), O. J. Alabi (1), D. B. Walsh (1), P. Okubara (2), R. A. Naidu (3). (1) Dept. of Entomology, Washington State University, Irrigated Agriculture Research and Extension Center, Prosser, WA, U.S.A.; (2) USDA-ARS/Dept. of Plant Pathology, Washington State University, Pullman, WA, U.S.A.; (3) Washington State University, Irrigated Agriculture Research and Extension Center, Prosser, WA, U.S.A.
- 123-P New host record for *Pseudomonas syringae* on *Lomatium* spp. R. SAMPANGI (1), K. Mohan (1), C. Shock (2). (1) University of Idaho, Parma, ID, U.S.A.; (2) Oregon State University, Ontario, OR, U.S.A.
- 124-P Quantitative detection of *Verticillium longisporum* and *V. dahliae* in the soil of cabbage fields using nested real-time PCR. S. BANNO (1), H. Saito (1), H. Sakai (2), T. Urushibara (2), K. Ikeda (2), T. Kabe (2), I. Kemmochi (2), I. Yamaguchi (1), M. Fujimura (1). (1) Toyo University, Itakura, Oura-gun, Japan; (2) Gunma Agricultural Technology Center, Isesaki, Japan
- 125-P Morphological-molecular characterization of *Phytophthora*, *Pythium*, and *Phytophythium* on intensive crops in Buenos Aires, Argentina. H. E. PALMUCCI (1), P. E. Grijalba (1), S. M. Wolcan (2), C. Herrera (1), E. Fantino (1), M. Steciow (3), G. Z. Abad (4). (1) Departamento de Producción Vegetal, Facultad de Agronomía Universidad Nacional de Buenos Aires, Buenos Aires, Argentina; (2) CIC-CIDEFI, Facultad de Ciencias Agrarias y Forestales, UNLP, La Plata, Provincia de Buenos Aires, Argentina; (3) Instituto de Botánica Spegazzini (FCNyM, UNLP, La Plata Provincia de Buenos Aires, Argentina; (4) USDA-APHIS-PPQ-PHP-PSPI, National Identification Service, Molecular Diagnostics Laboratory, Beltsville, MD, U.S.A.
- 126-P Detection and discrimination of *Pythium aphanidermatum* and *P. deliense* by single probe-based real-time PCR and multiplex end point PCR. M. ARIF (1), C. Garzon (2), F. Ochoa Corona (1). (1) National Institute for Microbial Forensics & Food and Agricultural Biosecurity, Dept. of Entomology and Plant Pathology, Oklahoma State University, Stillwater, OK, U.S.A.; (2) Dept. of Entomology and Plant Pathology, Oklahoma State University, Stillwater, OK, U.S.A.
- 127-P In silico simulation of massively parallel sequencing as a diagnostic tool for bacterial phytopathogens. J. DANIELS (1), T. Stobbe (2), A. Espindola (1), W. L. Schneider (3), J. Fletcher (1), F. Ochoa-Corona (1). (1) National Institute for Microbial Forensics & Food and Agricultural Biosecurity, Dept. of Entomology and Plant Pathology, Oklahoma State University, Stillwater, OK, U.S.A.; (2) National Institute for Microbial Forensics & Food and Agricultural Biosecurity, Dept. of Biochemistry and Molecular Biology, Oklahoma State University, Stillwater, OK, U.S.A.; (3) USDA ARS, Fort Detrick, MD, U.S.A.
- 128-P Sensitive detection and discrimination of *Xyllela fastidiosa* subsp. *pauca*, causal agent of citrus variegated chlorosis. P. Ouyang (1), M. ARIF (1), F. Ochoa-Corona (1), U. Melcher (2), J. Fletcher (1). (1) National Institute for Microbial Forensics & Food and Agricultural Biosecurity, Dept. of Entomology and Plant Pathology, Oklahoma State University, Stillwater, OK, U.S.A.; (2) National Institute for Microbial Forensics & Food and Agricultural Biosecurity, Dept. of Biochemistry and Molecular Biology, Oklahoma State University, Stillwater, OK, U.S.A.
- 129-P Multigene-based detection and identification of

- Phymatotrichopsis omnivora*. M. ARIF (1), F. Ochoa-Corona (1), S. Marek (2), J. Fletcher (1). (1) National Institute for Microbial Forensics & Food and Agricultural Biosecurity, Dept. of Entomology and Plant Pathology, Oklahoma State University, Stillwater, OK, U.S.A.; (2) Dept. of Entomology and Plant Pathology, Oklahoma State University, Stillwater, OK, U.S.A.
- 130-P An elution-independent collection device for rapid sampling of microorganisms and nucleic acids for PCR assays. C. R. Donna (1), F. OCHOA-CORONA (1). (1) National Institute for Microbial Forensics & Food and Agricultural Biosecurity, Dept. of Entomology and Plant Pathology, Oklahoma State University, Stillwater, OK, U.S.A.
- 131-P Sensitive detection and discrimination of WSMV, TriMV, and HPV using multiplex RT-PCR. M. ARIF (1), J. Olson (2), A. Whitfield (3), F. Ochoa-Corona (1). (1) National Institute for Microbial Forensics & Food and Agricultural Biosecurity, Dept. of Entomology and Plant Pathology, Oklahoma State University, Stillwater, OK, U.S.A.; (2) Dept. of Entomology and Plant Pathology, Oklahoma State University, Stillwater, OK, U.S.A.; (3) Dept. of Plant Pathology, Kansas State University, Manhattan, KS, U.S.A.
- 132-P Dynamic monitor of physiological race variation for wheat stripe rust in Gansu Province in China. S. JIN (1), Q. Jia (1), S. Cao (1). (1) Institute of Plant Protection, GAAS, Lanzhou, Peoples Republic of China
- 133-P Biological and molecular characterization of *Ribgrass mosaic tobamovirus* infecting *Rehmannia glutinosa*. M. KIM (1), H. Kwak (1), D. Lee (1), S. Ko (2), S. Lee (1), J. Kim (1), K. Park (1), B. Cha (3), H. Choi (1). (1) National Academy of Agricultural Science, Rural Development Administration, Suwon, South Korea; (2) Jeonnam Agricultural Research and Extension Services, Naju, South Korea; (3) Chungbuk National University, Cheongju, South Korea
- 134-P Design and validation of queries for the detection of *Phytophthora ramorum* in simulated metagenomes. A. S. ESPINDOLA (1), A. H. Stobbe (1), J. Daniels (1), J. Fletcher (1), C. D. Garzon (1), W. L. Schneider (2). (1) Oklahoma State University, Stillwater, OK, U.S.A.; (2) Foreign Disease-Weed Science Research Unit, USDA-ARS, Fort Detrick, MD, U.S.A.
- 134a-P An in vitro baiting assay for recovery of *Phytophthora ramorum* from waterways. S. OAK (1), J. Hwang (2), S. Jeffers (2). (1) USDA Forest Service, Southern Region Forest Health Protection, Asheville, NC, U.S.A.; (2) Clemson University, Clemson, SC, U.S.A.
- 135-P Design and validation of queries for the detection of *Puccinia graminis* in simulated metagenomes. A. S. ESPINDOLA (1), A. H. Stobbe (1), J. Daniels (1), J. Fletcher (1), C. D. Garzon (1), W. L. Schneider (2). (1) Oklahoma State University, Stillwater, OK, U.S.A.; (2) Foreign Disease-Weed Science Research Unit, USDA-ARS, Fort Detrick, MD, U.S.A.
- 136-P Current status of legume viruses in the Pacific Northwestern U.S.A. B. M. VEMULAPATI (1), D. Husebye (2), K. L. Druffel (1), S. D. Eigenbrode (2), A. Karasev (2), H. R. Pappu (1). (1) Washington State University, Pullman, WA, U.S.A.; (2) University of Idaho, Moscow, ID, U.S.A.
- 137-P Identification and characterization of *Pectobacterium* species causing potato blackleg disease in North China. X. Wang (1), H. Liu (1), J. LI (1), L. Luo (1). (1) Dept. of Plant Pathology, China Agricultural University, Beijing, Peoples Republic of China
- 138-P Pathological and molecular race determinations of *Fusarium oxysporum* f. sp. *lactucae* from Taiwan. P. CHANG (1), Y. Lin (1), P. Lai (1), T. Chang (1), Y. Wan (1), J. Huang (2), J. Huang (1). (1) Dept. of Plant Pathology, National Chung Hsing University, Taichung City, Taiwan Republic of China; (2) Division of Plant Pathology, Taiwan Agricultural Research Institute, Council of Agriculture, Wufeng, Taichung City, Taiwan Republic of China
- 139-P PVX-M3—A deviant pepper isolate of *Potato virus X*. L. PALKOVICS (1), I. Wolf (2), É. Pájtli (1), P. Salamon (3). (1) Corvinus University of Budapest, Dept. of Plant Pathology, Budapest, Hungary; (2) University of Pannonia, Potato Research Centre, Keszthely, Hungary; (3) Agricultural Biotechnology Center, Godollo, Hungary
- 140-P Distribution and genetic variation of *Thecaphora amaranthi* in amaranth crop regions in Mexico. M. Moreno-Velázquez (1), M. YÁÑEZ-MORALES (2), R. I. Rojas-Martínez (2). (1) SENASICA-SAGARPA, Mexico, Distrito Federal, Mexico; (2) Colegio de Postgraduados, Campus Montecillo, Fitosanidad, Montecillo-Texcoco, Edo. de Mexico, Mexico
- 141-P  Application of multiplex PCR to mixed populations of tomato bacterial pathogens. J. T. MIXON (1), A. L. Vu (1), B. H. Ownley (1), S. C. Bost (2). (1) University of Tennessee, Knoxville, TN, U.S.A.; (2) University of Tennessee, Nashville, TN, U.S.A.
- 142-P Remote sensing for detection of Rhizoctonia crown and root rot in sugar beet fields. G. J. REYNOLDS (1), I. V. MacRae (2), C. E. Windels (3), A. Sims (4), S. Laguette (5). (1) University of California, Davis, CA, U.S.A.; (2) University of Minnesota, Dept. of Entomology and Northwest Research and Outreach Center, Crookston, MN, U.S.A.; (3) University of Minnesota, Dept. of Plant Pathology and Northwest Research and Outreach Center, Crookston, MN, U.S.A.; (4) University of Minnesota, Dept. of Soil, Water, and Climate and Northwest Research and Outreach Center, Crookston, MN, U.S.A.; (5) University of North Dakota, Dept. of Earth System Science and Policy, Grand Forks, ND, U.S.A.
- 143-P Rapid detection of *Ustilago nuda* on barley (*Hordeum vulgare*). S. ASAAD (1). (1) International Centre for Agricultural Research in the Dry Areas (ICARDA), Aleppo, Syrian Arab Republic
- 144-P Molecular detection of banana bacterial soft rot pathogen, *Dickeya* sp. (*Pectobacterium chrysanthemi*). L. BIRUN (1), L. Peiqian (1), S. Huifang (1), P. Xiaoming (1). (1) Plant Protection Research Institute, Guangdong Academy of Agricultural Sciences, Guangzhou, Peoples Republic of China
- 145-P Specific detection of the causal agent of bacterial blight, *Pseudomonas syringae* pv. *pisi* in the seeds of peas by nested PCR and real-time TaqMan PCR. J.

- CHO (1), K. Yim (2), H. Lee (2), J. Baeg (2), J. Cha (1). (1) Dept. of Plant Medicine, Chungbuk National University, Cheongju, Korea; (2) National Quarantine Service, Anyang, Kyung-Ki, Korea
- 146-P A multiplex RT-PCR for detection of three cucurbits-infecting poleroviruses. Q. SHANG (1), H. Xiang (2), C. Han (2), D. Li (2), J. Yu (2). (1) Beijing University of Agriculture, Beijing, Peoples Republic of China; (2) China Agricultural University, Beijing, Peoples Republic of China
- 147-P First report of bacterial leaf spot on milk vetch (*Astragalus sinicus*) caused by *Pseudomonas viridiflava* in Korea. J. Kim (1), S. Cheong (1), D. Kim (1), W. Lee (2), J. KIM (1). (1) Jeollabuk-do Agricultural Research and Extension Services, Iksan, Korea; (2) Faculty Biological Resources Science, Chonbuk National University, Jeonju, Korea
- 148-P Anthracnose of sweet pepper caused by *Colletotrichum simmondsii* found in Japan. T. KANTO (1), T. Usami (2), T. Sato (3), J. Moriawaki (4), K. Matsuura (1). (1) Hyogo Prefectural Technology Center for Agriculture, Forestry, and Fisheries, Kasai Hyogo, Japan; (2) Graduate School of Horticulture, Chiba University, Matsudo, Japan; (3) National Institute of Agrobiological Sciences, Tsukuba, Japan; (4) Horticultural Research Institute, Toyama Prefectural Agricultural, Forestry & Fisheries Research Center, Toyama, Japan
- 149-P The development of a specific real-time TaqMan for the detection of *Clavibacter michiganensis* subsp. *michiganensis*. J. OOSTERHOF (1), S. Berendsen (1). (1) Rijk Zwaan Breeding BV, DeLier, Netherlands
- 150-P RT-PCR detection and partial characterization of *Prunus necrotic ringspot virus* isolates occurring in Iran. P. RAHMANIAN (1), F. Rakhshandehroo (1), H. Zamanizadeh (1). (1) Dept. of Plant Pathology, College of Agriculture and Natural Resources, Science and Research Branch, Islamic Azad University, Tehran, Iran
- 151-P One-step multiplex RT-PCR assay for simultaneous detection of two viroids and *Plum bark necrosis stem pitting-associated virus* in stone fruit trees. L. LIN (1), R. Li (1), R. Mock (1), G. Kinard (1). (1) USDA ARS, Beltsville, MD, U.S.A.
- 152-P Development of a real-time RT-PCR assay to detect *Peach latent mosaic viroid* infections in stone fruit trees. L. LIN (1), R. Li (1), R. Mock (1), G. Kinard (1). (1) USDA ARS, Beltsville, MD, U.S.A.
- 153-P Woody host plant problems in Maryland diagnostic clinics from 2008–2010. M. E. MCCONNELL (1), K. K. Rane (1), D. L. Clement (2), M. K. Malinoski (2), E. M. Dutky (1). (1) University of Maryland, College Park, MD, U.S.A.; (2) University of Maryland, Ellicott City, MD, U.S.A.
- 154-P Previous reports of bacterial diseases on crucifers attributed to *Pseudomonas syringae* pv. *maculicola* were caused by *P. cannabina* pv. *alisalensis*. I. RUBIO (1), C. T. Bull (2). (1) California State University, Monterey Bay, Undergraduate Research Opportunities Center, Seaside, CA, U.S.A.; (2) USDA ARS, Salinas, CA, U.S.A.
- 155-P Fusarium wilt of strawberry, caused by *Fusarium oxysporum* f. sp. *fragariae*, a new disease in California. C. M. ISLAS (1), T. R. Gordon (1), O. Daugovich (2), S. Koike (3). (1) University of California, Davis, CA, U.S.A.; (2) University of California Cooperative Extension, Ventura, CA, U.S.A.; (3) University of California Cooperative Extension, Salinas, CA, U.S.A.
- 156-P Development of genome-based diagnostic markers to detect and differentiate strains of *Xylella fastidiosa*. Q. HUANG (1), J. Shao (1), R. E. Davis (1). (1) USDA-ARS, Beltsville, MD, U.S.A.
- 157-P Black root rot of soybean: An emerging problem in Arkansas. C. M. COKER (1), A. M. Greer (2), W. S. Monfort (3), A. G. Carroll (3), M. J. Emerson (3), S. E. Smith (4). (1) Southeast Research and Extension Center, Monticello, AR, U.S.A.; (2) University of Arkansas, Monticello, AR, U.S.A.; (3) University of Arkansas, Lonoke, AR, U.S.A.; (4) University of Arkansas, Fayetteville, AR, U.S.A.
- 158-P Yam virus diseases: A threat to a food security crop in West Africa. A. O. ENI (1), J. Hughes (2), C. Rey (3). (1) Covenant University, Ota, Ota, Ogun State, Nigeria; (2) AVRDC – The World Vegetable Center, Shanhua, Taiwan; (3) University of the Witwatersrand, Johannesburg, Southwest Africa
- 159-P A quantitative PCR assay for the detection of phytoplasmas causing almond brownline, peach yellow leafroll, and pear decline diseases in California. M. R. SUDARSHANA (1), A. Gonzalez (1), A. Dave (2), J. K. Uyemoto (3). (1) USDA ARS, Davis, CA, U.S.A.; (2) University of California, Davis, CA, U.S.A.; (3) USDA-ARS, University of California, Davis, CA, U.S.A.
- 160-P Incidence of *Fig leaf mottle-associated virus* and *Fig mosaic virus* in Eastern Province of Saudi Arabia. K. ALHUDAIB (1). (1) King Faisal University, Hofuf, Saudi Arabia
- 161-P First report of ‘*Candidatus* Phytoplasma asteris’ (group 16Sr1) infecting fruits and vegetables in Islamabad, Pakistan. F. FAHMEED (1). (1) National Agricultural Research Center, Chicago, IL, U.S.A.
- 162-P Detection of *Pyrenophora teres* in conidia and barley seed by PCR, a technique for rapid diagnosis of infestation. R. T. LARTEY (1), T. Caesar-TonThat (1), K. Ghoshroy (2), R. G. Evans (1), A. J. Caesar (1), S. Hanson (1), U. M. Sainju (1). (1) USDA ARS, Sidney, MT, U.S.A.; (2) Division of Science, Mathematics and Engineering, University of South Carolina, Sumter, SC, U.S.A.
- 163-P Identification of *Fusarium oxysporum* f. sp. *lycopersici* and *Fusarium oxysporum* f. sp. *radicis lycopersici* using specific primer. S. PIRAHESH (1), H. Zamanizadeh (1), S. Rezaee (1), B. Morid (2), S. Hajmansoor (1). (1) Dept. of Plant Pathology, College of Agriculture and Natural Resources, Science and Research Branch, Islamic Azad University, Tehran, Iran; (2) Dept. of Plant Protection, College of Agriculture, Takestan Branch, Islamic Azad University, Takestan, Iran
- 164-P Detection and distribution of root-lesion nematodes (Pratylenchidae) on fruit trees in northeast regions of Iran. A. TALE ZARI (1), F. Khozeini (2), S. Barouti (3), H. Zamanizadeh (1). (1) Dept. of Plant Pathology, College of Agriculture and Natural Resources, Science and Research Branch, Islamic Azad University, Tehran, Iran; (2) Plant Protection Organization, Ministry of Jihad Agriculture, Tehran, Iran; (3) Dept. of

- Nematology Research, Iranian Research Institute of Plant Protection, Tehran, Iran
- 165-P Rapid immuno-test combined with magnetic bead technology for on-site detection of *Potato leafroll virus*. D. Altenbach (1), W. BITTERLIN (1). (1) BIOREBA AG, Reinach BL, Switzerland
- 166-P Characterization of *Tomato necrotic spot virus* (ToNSV), a new *Ilarvirus* species infecting processing tomatoes in the Central Valley of California. O. BATUMAN (1), L. Chen (1), R. L. Gilbertson (1). (1) University of California, Davis, CA, U.S.A.
- 167-P Genome-enabled primer design to distinguish geographic origin of *Xanthomonas oryzae* pvs. *oryzicola* and *oryzae*. V. Verdier (1), L. R. TRIPLETT (1), R. Corral (1), J. E. Leach (1). (1) Colorado State University, Fort Collins, CO, U.S.A.
- 168-P Simultaneous detection and differentiation of four sweet potato potyviruses by one-step RT-PCR. F. LI (1), R. Zuo (2), D. Xu (1), J. Abad (3), R. Li (1). (1) USDA-ARS, Beltsville, MD, U.S.A.; (2) Yunnan Agricultural University, Kunming, Peoples Republic of China; (3) USDA-APHIS, Beltsville, MD, U.S.A.
- 169-P Nuclear magnetic resonance for nondestructive imaging of belowground damage caused by *Heterodera schachtii* and *Rhizoctonia solani* on sugar beet. C. Hillnhütter (1), R. SIKORA (1), E. Oerke (1), D. van Dusschoten (2). (1) Institute of Crop Science and Resource Conservation (INRES), Bonn, Germany; (2) ICG-3: Phytosphere, Jülich, Germany
- 170-P Multiplex detection of *Phytophthora*: Padlock probe-based universal detection multiplex array (PUMA). P. J. BONANTS (1), K. Gaszcyk (2), O. Mendes (1), E. Verstappen (1), C. D. Schoen (1). (1) Plant Research International, Wageningen, Netherlands; (2) Forest Research Institute, Raszyn, Poland
- 171-P Evaluation and adaptation of CANARY technology for rapid detection of plant pathogens. Z. LIU (1), K. Rappaport (1), H. Bowman (1), E. Twieg (1), V. Mavrodieva (1), L. Levy (1). (1) USDA-APHIS-PPQ-CPHST-NPGBL, Beltsville, MD, U.S.A.
- 171a-P Validation of real-time PCR assays for bioforensic detection of model plant pathogens. M. James (1), T. Blagden (1), I. Moncrief (1), J. P. Burans (2), K. Schneider (2), J. FLETCHER (1). (1) Dept. of Entomology and Plant Pathology, Oklahoma State University, Stillwater, OK, U.S.A.; (2) National Biodefense Analysis and Countermeasures Center, Fort Detrick, MD, U.S.A.
- 171b-P Establishment of a foundational federal-academic partnership for the enhancement of forensic plant pathology. T. Blagden (1), K. Schneider (2), J. Burans (2), M. James (1), I. Moncrief (1), J. FLETCHER (1). (1) Dept. of Entomology and Plant Pathology, Oklahoma State University, Stillwater, OK, U.S.A.; (2) National Biodefense Analysis and Countermeasures Center, Fort Detrick, MD, U.S.A.
- 172-P Development of a PCR-based assay for QoI resistance monitoring in the pecan scab pathogen, *Fusicladium effusum*. H. F. Avenot (1), K. J. Lewis (2), T. B. Breneman (2), K. L. STEVENSON (2). (1) University of Georgia, Griffin, GA, U.S.A.; (2) University of Georgia, Tifton, GA, U.S.A.
- 173-P Multiplex PCR assay for the simultaneous detection of *E. coli* O157:H7 and *Salmonella* spp. from fresh produce. J. HUR (1). (1) Kangwon National University, Chuncheon, Korea
- 174-P Development of a multivariate matrix to trace *Clavibacter michiganensis* subsp. *michiganensis* through tomato greenhouse operations. M. L. LEWIS IVEY (1), S. A. Miller (1), F. Baysal-Gurel (1), X. Xu (1), M. E. Bledsoe (2). (1) Ohio State University, Wooster, OH, U.S.A.; (2) Village Farms International, Inc., Heathrow, FL, U.S.A.
- Diseases: Cereals, Field, and Fiber Crops**
- 175-P Plant diseases monitoring system based on Web GIS in Jeonnam Province, Korea. S. KO (1), Y. Lee (2), B. Kang (3), D. Choi (3), D. Kim (3), H. Kim (3), I. Oh (4), H. Shim (5). (1) Jeonnam Agricultural Research and Extension Services, Jeonnam Province, Korea; (2) Rural Development Administration, Suwon, Korea; (3) Jeollanamdo Agricultural Research and Extension Services, Naju, Korea; (4) National of Crop Science, Suwon, Korea; (5) National Academy of Agricultural Science, Suwon, Korea
- 176-P  Identification of phytopathogenic fungi associated with giant miscanthus in Mississippi. M. GILLEY (1), M. Tomaso-Peterson (1). (1) Mississippi State University, Mississippi State, MS, U.S.A.
- 177-P Proteins associated with aflatoxin-resistance are identified and characterized towards candidacy for breeding markers. R. BROWN (1), Z. Chen (2), M. Warburton (3), M. Luo (4), A. Menkir (5), A. Fakhoury (6), D. Bhatnagar (1). (1) USDA ARS SRRC, New Orleans, LA, U.S.A.; (2) Louisiana State University, Baton Rouge, LA, U.S.A.; (3) USDA-ARS, Mississippi State, MS, U.S.A.; (4) Louisiana State University Agricultural Center, Baton Rouge, LA, U.S.A.; (5) International Institute of Tropical Agriculture, Ibadan, Nigeria; (6) Southern Illinois University, Carbondale, IL, U.S.A.
- 177a-P  The role of mycotoxins produced by *Fusarium verticillioides* and *Fusarium graminearum* in maize seedling infection. T. BRUNS (1), R. Proctor (2), G. Munkvold (1). (1) Iowa State University, Ames, IA, U.S.A.; (2) USDA, Peoria, IL, U.S.A.
- 178-P Fungicide seed treatments to manage seedling blight of faba bean in Alberta, Canada, 2010. K. CHANG (1), S. HWANG (1), R. Conner (2), B. Gossen (3), S. Strelkov (4), D. McLaren (5), G. Turnbull (1). (1) Alberta Agriculture & Rural Development, Edmonton, AB, Canada; (2) Agriculture & Agri-Food Canada, Morden, AB, Canada; (3) Agriculture & Agri-Food Canada, Saskatoon, SK, Canada; (4) University of Alberta, Edmonton, AB, Canada; (5) Agriculture & Agri-Food Canada, Brandon, MB, Canada
- 179-P Impact of clubroot resistance on root hair infection, disease severity, and growth of canola in soil inoculated with *Plasmodiophora brassicae*. S. HWANG (1), H. U. Ahmed (1), Q. Zhou (1), S. E. Strelkov (2), B. D. Gossen (3), G. Peng (3), G. D. Turnbull (1). (1) Alberta Agriculture and Rural Development, Edmonton, AB, Canada; (2) University of Alberta, Edmonton, AB, Canada; (3) Agriculture & Agri-Food Canada Research Centre, Saskatoon, SK, Canada
- 180-P Impact of nitrogen rate and variety selection on disease

- severity and yield of rainfed forage and sweet sorghum grown for biofuel. A. K. Hagan (1), K. L. BOWEN (1), M. Pegues (2), J. Jones (2). (1) Auburn University, Auburn, AL, U.S.A.; (2) Auburn University, Fairhope, AL, U.S.A.
- 181-P Effects of cultural practices, *Meloidogyne incognita*, and *Thielaviopsis basicola* on cotton root morphology in the field. J. MA (1), J. Jaraba (1), T. Kirkpatrick (2), C. Rothrock (1). (1) University of Arkansas, Fayetteville, AR, U.S.A.; (2) Southwest Research and Extension Center, University of Arkansas, Hope, AR, U.S.A.
- 182-P Evaluation of the effects of soil moisture on the damage potential of *Rotylenchulus reniformis* on cotton. S. R. MOORE (1), K. S. Lawrence (1), B. Ortiz (2), J. Shaw (1), J. Fulton (1). (1) Auburn University, Auburn, AL, U.S.A.; (2) Alabama Cooperative Extension System, Auburn, AL, U.S.A.
- 183-P Disease incidence and race characterization of Fusarium wilt. T. SCOTT (1), K. Lawrence (1), K. Glass (1). (1) Auburn University, Auburn, AL, U.S.A.
- 184-P Determining the prevalence and distribution of bacterial diseases in Nebraska dry bean production fields. R. HARVESON (1). (1) University of Nebraska, Scottsbluff, NE, U.S.A.
- 185-P Distribution and sequence analysis of the rDNA-ITS region of cereal cyst nematodes from different locations in China. L. WEI (1), Y. Zhou (1). (1) Institute of Plant Protection, Jiangsu Academy of Agricultural Sciences, Nanjing, Peoples Republic of China
- 186-P The effects of swathing versus straight-cut combining on FHB DON accumulation in barley. P. GROSS (1), R. Brueggeman (1). (1) North Dakota State University, Fargo, ND, U.S.A.
- 187-P Identification of pathogens responsible for root rot diseases of wheat and maize in Hebei, China. L. Ji (1), L. KONG (1), L. Wang (1), Q. Li (1). (1) Plant Protection Institute, Hebei Academy of Agricultural and Forestry Sciences, IPM Center of Hebei Province, Baoding, Peoples Republic of China
- 188-P Integrating sedaxane as part of a comprehensive seed care product for broad-spectrum disease protection of small grains. K. SHETTY (1), T. Labun (2), G. Pastushock (3). (1) Syngenta Crop Protection, Durham, NH, U.S.A.; (2) Syngenta, Calgary, AB, Canada; (3) Syngenta, Bozeman, MT, U.S.A.
- 189-P Could viruses of wheat prevent supply meeting demand? L. J. FLINT (1), N. Boonham (1), J. Turner (1), A. Fox (1), M. Dickinson (2). (1) The Food and Environment Research Agency, York, United Kingdom; (2) The University of Nottingham, Nottingham, United Kingdom
- 190-P Regional-based typology of the main fungal diseases affecting winter wheat in the Grand-Duchy of Luxembourg. M. EL JARROUDI (1), F. Giraud (2), P. Delfosse (3), L. Kouadio (1), L. Hoffmann (3), H. Maraite (4), B. Tychon (1). (1) Université de Liège, Arlon, Belgium; (2) Staphyt/BIORIZON, Martillac, France; (3) Centre de Recherches Public Gabriel Lippmann, Belvaux, Luxembourg; (4) Earth & Life Institute, Université Catholique de Louvain (UCL), Louvain-la-Neuve, Belgium
- 191-P Resistance to the stem rust 'Ug99' race group in spring wheat landrace accessions from the USDA-ARS National Small Grains Collection (NSGC). M. NEWCOMB (1), M. Acevedo (2), H. E. Bockelman (3), G. Brown-Guedira (4), B. J. Goates (3), E. W. Jackson (3), Y. Jin (5), P. Njau (6), D. Singh (7), R. Wanyera (6), J. Bonman (3). (1) USDA ARS, Aberdeen, ID, U.S.A.; (2) Dept. of Plant Pathology, North Dakota State University, Fargo, ND, U.S.A.; (3) USDA ARS Small Grains and Potato Germplasm Research Unit, Aberdeen, ID, U.S.A.; (4) USDA ARS, Eastern Regional Genotyping Laboratory, Raleigh, NC, U.S.A.; (5) USDA-ARS Cereal Disease Laboratory and Dept. of Plant Pathology, University of Minnesota, St. Paul, MN, U.S.A.; (6) Kenya Agricultural Research Institute, Njoro Kenya, Njoro, Kenya; (7) Plant Breeding Institute, The University of Sydney, NSW, Australia, Cobbitty, NSW, Australia
- 192-P Molecular mapping of new genes for stripe rust resistance in spring wheat genotypes PI 178759 and PI 183527. X. Zhou (1), R. Ren (1), M. Wang (1), X. CHEN (2). (1) Dept. of Plant Pathology, Washington State University, Pullman, WA, U.S.A.; (2) USDA ARS, Pullman, WA, U.S.A.
- 193-P Survey on the distribution of *Rhizoctonia* spp. in European soils. A. Schade-Schütze (1), M. OOSTENDORP (2). (1) Syngenta Crop Protection AG, Stein, Switzerland; (2) Syngenta Crop Protection, Basel, Switzerland
- 194-P Wheat powdery mildew researches in China. X. DUAN (1). (1) Institute of Plant Protection, Chinese Academy of Agricultural Sciences, Beijing, Peoples Republic of China
- 195-P *Wheat streak mosaic virus* outbreak in North Dakota 2010. D. E. WALDSTEIN (1). (1) North Dakota State University, Minot, ND, U.S.A.
- 196-P Assessment of seed treatments to protect against biological winterkill in winter wheat. A. C. Hogg (1), J. A. JOHNSTON (1), P. Lamb (2), G. R. Carlson (2), A. T. Dyer (1). (1) Montana State University, Bozeman, MT, U.S.A.; (2) Montana State University Experiment Station, Havre, MT, U.S.A.
- 197-P Detection of wheat powdery mildew by using hyperspectral remote sensing. X. Cao (1), Y. ZHOU (1), X. Duan (1), D. Cheng (1). (1) Institute of Plant Protection, Chinese Academy of Agricultural Sciences, Beijing, Peoples Republic of China
- 198-P Evaluation of wheat varieties for resistance to stripe rust in south Gansu in China during 2006–2010. S. CAO (1), S. Jin (1), H. Luo (1). (1) Institute of Plant Protection, Gansu Academy of Agricultural Sciences, Lanzhou, Peoples Republic of China
- 199-P Genetic analysis of gene conferring resistance to wheat stripe rust in Lankao5. Y. Qiang (1), H. Maomiao (1), G. Qingyun (1), J. JINXUE (1). (1) Qinghai Academy of Agricultural & Forestry Sciences, Xining, Peoples Republic of China
- 200-P WITHDRAWN
- 201-P Physiological and genetic differentiation of *Curvularia lunata* and resistance evaluation on corn *Curvularia* leaf spot in northeast of China. S. Qianfu (1), Z. Xinfang (1), J. QIMING (1). (1) Jilin Academy of Agricultural Sciences, Gongzhuling, Peoples Republic of China
- 202-P Races of *Exserohilum turcicum* and evaluation of maize cultivars on the resistance to northern corn leaf blight

- in Jilin Province of China. J. QIMING (1), S. Qianfu (1), L. Hong (1), M. Lingmin (1). (1) Jilin Academy of Agricultural Sciences, Gongzhuling, Peoples Republic of China
- 203-P Strategies for management of southern corn rust in Georgia. S. S. ARCIBAL (1), F. H. Sanders (2), R. C. Kemerait (2). (1) University of Georgia, Athens, GA, U.S.A.; (2) University of Georgia, Tifton, GA, U.S.A.
- 204-P Distribution and abundance of nematodes in corn fields in Illinois. H. D. LOPEZ NICORA (1), T. Mekete (2), A. C. Colgrove (1), N. D. Bowman (1), J. Morrison (1), D. Feltes (1), T. L. Niblack (1). (1) University of Illinois, Urbana, IL, U.S.A.; (2) University of Florida, Gainesville, FL, U.S.A.
- 205-P Occurrence and control of Physoderma disease in China. L. KONG (1), L. Ji (1), Q. Li (1), L. Wang (1). (1) Plant Protection Institute, Hebei Academy of Agricultural and Forestry Sciences, IPM Center of Hebei Province, Baoding, Peoples Republic of China
- 206-P Detection and damage analysis of *Acidovorax avenae* subsp. *avenae* in proso millet. Y. YOON (1), Y. Lee (2), J. Jung (1), Y. Lee (1), H. Kim (1), S. Bae (3), M. Nam (1). (1) National Institute of Crop Science, Rural Development Administration, Milyang, Korea; (2) Crop Protection Division, Dept. of Agricultural Biology, National Academy of Agricultural Science, Rural Development Administration, Suwon, Korea; (3) National Institute of Crop Science, Rural Development Administration, Miryang, Korea
- 207-P Occurrence of northern stem canker in first soybean plantings following Conservation Reserve in South Dakota. T. E. CHASE (1). (1) South Dakota State University, Brookings, SD, U.S.A.
- 208-P Relationship between stink bugs and seed decay in Mississippi soybean production. J. L. JONES (1), T. W. Allen (2), M. Tomaso-Peterson (1), A. L. Catchot (1), F. R. Musser (1), J. Gore (1). (1) Mississippi State University, Mississippi State, MS, U.S.A.; (2) Mississippi State University, Starkville, MS, U.S.A.
- 209-P  Microscopic observation of the interaction between the soybean sudden death syndrome pathogen and soybean cyst nematode, in soybean roots. N. TATALOVIC (1), G. L. Tylka (1), L. F. Leandro (1). (1) Iowa State University, Ames, IA, U.S.A.
- 210-P Efficacy of seed treatments on *Thielaviopsis basicola* in soybean. A. G. CARROLL (1), W. S. Monfort (1), M. J. Emerson (1). (1) University of Arkansas Cooperative Extension Service, Lonoke, AR, U.S.A.
- 211-P Performance of recombinant inbred line populations segregating for *Fusarium virguliforme* resistance in soybean (*Glycine max* (L.) Merr.). S. K. KANTARTZI (1), J. Klein (1), C. Schmidt (1), W. D. Clark (1), M. Schmidt (1). (1) Southern Illinois University, Carbondale, IL, U.S.A.
- 212-P Identification and pathogenic analysis of *Colletotrichum* species causing soybean anthracnose. H. YANG (1), G. L. Hartman (2). (1) Dept. of Natural Resources and Environmental Sciences, University of Illinois at Urbana-Champaign, Urbana, IL, U.S.A.; (2) USDA-ARS, Dept. of Crop Sciences, University of Illinois at Urbana-Champaign, Urbana, IL, U.S.A.
- 213-P Inverse responses of two major genes against bacterial blight of rice at different temperature regimes. C. M. VERA CRUZ (1), J. F. Balidion (2), I. Choi (3), R. P. Mauleon (4), K. Satoh (5), S. Kikuchi (5), P. H. Goodwin (6), K. M. Webb (7), K. A. Garrett (8), K. Wydra (9), J. E. Leach (10). (1) International Rice Research Institute, Metro Manila, Philippines; (2) Crop Protection Cluster, College of Agriculture, University of the Philippines, Los Baños, Philippines; (3) Plant Breeding, Genetics and Biotechnology Division, International Rice Research Institute, Los Baños, Philippines; (4) T.T. Chang Genetic Resources Center, International Rice Research Institute, Los Baños, Philippines; (5) Plant Genome Research Unit, Division of Genome and Biodiversity Research, National Institute of Agrobiological Sciences, Tsukuba, Japan; (6) Dept. of Environmental Biology, Ontario Agricultural College, University of Guelph, Guelph, ON, Canada; (7) USDA-ARS, Sugar Beet Research Unit, Fort Collins, CO, U.S.A.; (8) Dept. of Plant Pathology, Kansas State University, Manhattan, KS, U.S.A.; (9) Centre for Tropical and Subtropical Agriculture and Forestry, Tropenzzentrum Georg-August Universität Goettingen, Goettingen, Germany; (10) Bioagricultural Sciences and Pest Management, Plant Sciences Bldg., Colorado State University, Fort Collins, CO, U.S.A.
- 214-P Development of a new methodology for identification of rice cultivar's resistance to rice stripe disease. T. ZHOU (1), Y. Zhou (1). (1) Institute of Plant Protection, Jiangsu Academy of Agricultural Sciences, Nanjing, Peoples Republic of China
- 215-P The role of rice rhizobacteria in defense against *Magnaporthe oryzae* infection. E. ALFF (1), H. Bais (1), N. Donofrio (1). (1) University of Delaware, Newark, DE, U.S.A.
- 216-P Genetic characterization of *Rhizoctonia solani* population isolated from sugar beet and dry bean. D. K. Santra (1), R. Harveson (1), K. A. Nielsen (1), T. PLYLER-HARVESON (1). (1) University of Nebraska, Scottsbluff, NE, U.S.A.
- 217-P Aggressiveness of *Rhizoctonia solani* AG 2-2 ISGs IV and IIIB on sugar beet and rotation crops. J. R. BRANTNER (1), C. E. Windels (1). (1) University of Minnesota, Northwest Research and Outreach Center, Crookston, MN, U.S.A.
- 218-P Impact of soybean cyst nematode on *Rhizoctonia* root and crown rot of sugar beet. K. RUDOLPH (1), M. D. Bolton (2), B. D. Nelson (1). (1) Plant Pathology, North Dakota State University, Fargo, ND, U.S.A.; (2) USDA-ARS, Northern Crop Science Laboratory, Fargo, ND, U.S.A.
- 219-P Influence of rhizoctonia-bacterial root rot complex on storability of sugar beet. C. A. STRAUSBAUGH (1), E. Rearick (2), I. A. Eujayl (3), P. Foote (4). (1) USDA ARS NWISRL, Kimberly, ID, U.S.A.; (2) Amalgamated Research LLC, Twin Falls, ID, U.S.A.; (3) USDA-ARS, Kimberly, ID, U.S.A.; (4) Amalgamated Sugar Co. LLC, Paul, ID, U.S.A.
- 220-P Assessment of prescription programs using peanut Rx for management of peanut diseases. A. M. FULMER (1), F. H. Sanders (2), R. Olatinwo (3), M. Boudreau (1), R. C. Kemerait (2). (1) University of Georgia, Athens, GA, U.S.A.; (2) University of Georgia, Tifton, GA, U.S.A.; (3) University of Georgia, Griffin, GA, U.S.A.

- 221-P Production practices and cultivar selection impacts the occurrence of diseases and the yield of peanut. A. K. Hagan (1), L. Campell (1), K. L. BOWEN (1), L. Wells (1). (1) Auburn University, Auburn, AL, U.S.A.
- 222-P Characterization of the ICRISAT mini-core peanut germplasm collection regarding Sclerotinia blight resistance and oleic acid composition. K. CHAMBERLIN (1), H. Melouk (1). (1) USDA-ARS, Stillwater, OK, U.S.A.
- 223-P Genetical, biological, and pathological characters of Japanese potato strains of *Ralstonia solanacearum*. Y. SUGA (1), M. Horita (2), A. Ooshiro (3), N. Furuya (4), K. Tsuchiya (4). (1) Nagasaki Agricultural and Forestry Technical Development Center, Graduate School of Agriculture, Kyushu University, Omura, Japan; (2) National Institute for Agro-Environmental Sciences, Tsukuba, Japan; (3) Okinawa Prefectural Agricultural Research Center, Nago, Japan; (4) Graduate School of Agriculture, Kyushu University, Fukuoka, Japan
- 224-P Endophytic bacteria in potato tubers affected by zebra chip disease. Q. Liu (1), J. CHEN (2), J. Munyaneza (3), E. Civerolo (2). (1) South China Agricultural University, Guangzhou, Peoples Republic of China; (2) USDA ARS PWA, Parlier, CA, U.S.A.; (3) USDA-ARS, Wapato, WA, U.S.A.
- 225-P Phylogenetic relationships of closely related potyviruses infecting sweet potato determined by genomic characterization of *Sweet potato virus 2* and *Sweet potato virus G*. F. LI (1), D. Xu (1), J. Abad (2), R. Li (1). (1) USDA-ARS, Beltsville, MD, U.S.A.; (2) USDA-APHIS, Beltsville, MD, U.S.A.
- Diseases: Fruits and Nuts**
- 226-P A new *Botrytis* sp. causing grey mold on blackberry. X. LI (1), G. Schnabel (1). (1) Clemson University, Clemson, SC, U.S.A.
- 227-P Identification and characterization of a new ampelovirus infecting cultivated and wild blackberries. S. SABANADZOVIC (1), K. E. Keller (2), R. R. Martin (2), I. E. Tzanetakis (3). (1) Dept. of Biochemistry, Molecular Biology, Entomology and Plant Pathology, Mississippi State University, Mississippi State, MS, U.S.A.; (2) USDA-ARS Horticulture Crops Research Unit, Corvallis, OR, U.S.A.; (3) Dept. of Plant Pathology, Division of Agriculture, University of Arkansas, Fayetteville, AR, U.S.A.
- 228-P Characterization of a novel emaravirus infecting blackberry. M. HASSAN (1), K. K. Keller (2), R. R. Martin (2), S. Sabanadzovic (3), I. E. Tzanetakis (4). (1) University of Arkansas, Fayetteville, AR, U.S.A.; (2) USDA-ARS, Corvallis, OR, U.S.A.; (3) Dept. of Biochemistry, Molecular Biology, Entomology and Plant Pathology, Mississippi State University, Mississippi State, MS, U.S.A.; (4) Dept. of Plant Pathology, Division of Agriculture, University of Arkansas, Fayetteville, AR, U.S.A.
- 229-P Evaluation of raspberry (*Rubus* sp.) cultivars for postharvest quality and resistance to *Botrytis cinerea*. J. M. HARSHMAN (1), W. M. Jurick (2), K. Lewers (2), J. Sullivan (1), C. S. Walsh (1). (1) University of Maryland, College Park, MD, U.S.A.; (2) USDA-ARS, Beltsville, MD, U.S.A.
- 230-P Elimination of small fruit viruses by in vitro therapy. A. JEON (1), E. Cheong (1), R. G. Mock (1). (1) USDA, ARS, NGRL, Beltsville, MD, U.S.A.
- 231-P A novel vitivirus isolated from *Ribes* species in Alaska. N. ROBERTSON (1), D. F. Quito-Avila (2), K. E. Keller (3), R. R. Martin (3). (1) USDA ARS, Palmer, AK, U.S.A.; (2) Oregon State University, Corvallis, OR, U.S.A.; (3) USDA-ARS, Corvallis, OR, U.S.A.
- 232-P Significant increase in titer of *Raspberry bushy dwarf virus* when present with *Raspberry leaf mottle virus* and its effect on raspberry plants. D. F. QUITO-ALVA (1), R. R. Martin (2). (1) Oregon State University, Corvallis, OR, U.S.A.; (2) USDA ARS, Corvallis, OR, U.S.A.
- 232a-P *Diaporthe/Phomopsis* complex associated with stem cankers of blueberry in Chile. B. A. LATORRE (1), R. Torres (1). (1) Pontificia Universidad Catolica de Chile, Santiago, Chile
- 232b-P Blueberry necrotic ring blotch, a new blueberry disease caused by a virus. R. R. Martin (1), D. F. QUITO-AVILA (2), W. O. Cline (3), P. F. Harmon (4), P. M. Brannen (5). (1) USDA ARS, Corvallis, OR, U.S.A.; (2) Oregon State University, Corvallis, OR, U.S.A.; (3) North Carolina State University, Castle Hayne, NC, U.S.A.; (4) University of Florida, Gainesville, FL, U.S.A.; (5) University of Georgia, Athens, GA, U.S.A.
- 233-P Molecular analysis of complete genomic sequences of four isolates of *Gooseberry vein banding associated virus*. D. Xu (1), R. Mock (1), G. Kinard (1), R. LI (1). (1) USDA-ARS, Beltsville, MD, U.S.A.
- 234-P Fruit rot resistance and heritability in cultivated cranberry. J. POLASHOCK (1), N. Vorsa (2), J. Johnson-Cicalese (2), M. Tadych (3), J. White (3). (1) USDA ARS, Chatsworth, NJ, U.S.A.; (2) Rutgers University, Chatsworth, NJ, U.S.A.; (3) Rutgers The State University of New Jersey, New Brunswick, NJ, U.S.A.
- 235-P Temporal analysis of scab on four passion fruit varieties on Brazilian cerrado. A. A. SUSSEL (1), A. Zacaroni (2), T. G. Guimarães (1), V. D. Barros (3), H. T. Santos (3), A. C. Souza (4). (1) Embrapa Cerrados, Planaltina, Brazil; (2) Federal University of Lavras, Sobradinho, Brazil; (3) União Pioneira de Integração Social UPIS, Planaltina, Brazil; (4) Instituto Federal de Ensino, Campus Planaltina, Planaltina, Brazil
- 236-P New *Phomopsis* species identified from wood cankers in eastern North American vineyards. P. FUJIYOSHI (1), P. Rolshausen (2), L. Castlebury (3), M. Nita (4), K. Baumgartner (1). (1) USDA-ARS, Davis, CA, U.S.A.; (2) Dept. of Plant Pathology and Microbiology, University of California, Riverside, CA, U.S.A.; (3) USDA-ARS, Beltsville, MD, U.S.A.; (4) Dept. of Plant Pathology, Physiology, and Weed Science, Virginia Tech University, Winchester, VA, U.S.A.
- 237-P Effects of acute low temperature events on establishment of *Erysiphe necator* and susceptibility of *Vitis* species. K. BEKOSCKE (1), M. Moyer (2), D. Gadoury (2), R. Seem (2), L. Cadle-Davidson (2). (1) Cornell University, Lakewood, NY, U.S.A.; (2) Cornell University, Ithaca, NY, U.S.A.
- 238-P Proposed guidelines for sample processing and downstream detection of grapevine viruses. F. OSMAN

- (1), T. Olineka (2), E. Hodzic (2), A. Rowhani (1). (1) Dept. of Plant Pathology, University of California, Davis, CA, U.S.A.; (2) Real-Time PCR Research & Diagnostic Core Facility, University of California, Davis, CA, U.S.A.
- 239-P The status of grapevine trunk diseases in British Columbia. J. R. URBEZ TORRES (1), P. Haag (1), D. T. O'Gorman (1). (1) Agriculture & Agri-Food Canada/Pacific Agri-Food Research Center, Summerland, BC, Canada
- 240-P *Vitis californica* and *Vitis californica* x *Vitis vinifera* are hosts for *Grapevine leafroll-associated virus-2* and *-3*, and *Grapevine virus A* and *B*. D. A. GOLINO (1), V. A. Klaassen (2), S. T. Sim (1), G. S. Dengl (2), F. A. Osman (2), M. Al Rwahnih (2), A. Rowhani (1). (1) Dept. of Plant Pathology, University of California, Davis, CA, U.S.A.; (2) Foundation Plant Services, University of California, Davis, CA, U.S.A.
- 241-P Impacts of grapevine leafroll disease on an own-rooted wine grape cultivar. O. J. ALABI (1), L. R. Gutha (1), L. F. Casassa (2), J. Harbertson (2), M. S. Mireles (1), R. A. Naidu (3). (1) Washington State University, Prosser, WA, U.S.A.; (2) Washington State University, Irrigated Agriculture Research and Extension Center, Prosser, WA, U.S.A.; (3) Irrigated Agriculture Research and Extension Center, Dept. of Plant Pathology, Washington State University, Prosser, WA, U.S.A.
- 242-P Identification of fungi associated with trunk diseases of grapevine (*Vitis vinifera*) in Chile. G. A. DIAZ (1), B. A. Latorre (1). (1) Pontificia Universidad Catolica de Chile, Santiago, Chile
- 243-P Quantification of *Cylindrocarpum* sp. in roots of almond and peach trees from orchards affected by Prunus replant disease. R. G. BHAT (1), L. S. Schmidt (2), G. T. Browne (2). (1) University of California, Davis, CA, U.S.A.; (2) USDA ARS, Davis, CA, U.S.A.
- 244-P Evaluations and modifications of semiselective media for improved isolation of *Agrobacterium tumefaciens* biovar 1 from cultivated walnut. 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.
- 245-P First report of *Phyllactinia guttata* on almonds in Lebanon. A. T. SAAD (1), Z. N. Atallah (2), L. T. Hanna (1). (1) American University of Beirut, Beirut, Lebanon; (2) University of California-Davis, Salinas, CA, U.S.A.
- 246-P Evaluation of wild walnut *Juglans* spp. for resistance to crown gall disease. D. A. KLUEPFEL (1), M. K. Aradhya (1), J. W. Moersfelder (1), A. E. McClean (1), W. P. Hackett (2), A. J. Dull (1). (1) USDA ARS, University of California, Davis, CA, U.S.A.; (2) Dept. of Plant Sciences, University of California, Davis, CA, U.S.A.
- 247-P Characterization of *Cylindrocarpum* populations associated with replant disease of almond and peach. L. S. SCHMIDT (1), R. G. Bhat (2), G. T. Browne (1). (1) USDA ARS, Davis, CA, U.S.A.; (2) University of California, Davis, CA, U.S.A.
- 248-P Management of peach blossom blight canker development with biorational fungicides. N. LALANCETTE (1), K. McFarland (1). (1) Rutgers University, Bridgeton, NJ, U.S.A.
- 249-P Fungi and oomycetes associated with a peach replant problem. J. YANG (1), J. O. Becker (1), J. Borneman (1). (1) University of California, Riverside, CA, U.S.A.
- 250-P The mixed infections of peach trees by *Pseudomonas syringae* pathovars in Mazandaran Province, Iran. S. TAHERI (1), N. Hasanzadeh (1), E. Nazerian (2), A. Ghasemi (3). (1) Dept. of Plant Pathology, College of Agriculture and Natural Resources, Science and Research Branch, Islamic Azad University, Tehran, Iran; (2) Plant Protection Dept., Faculty of Agriculture, University Putra Malaysia, Qualalampoor, Malaysia; (3) Dept. of Plant Diseases, Iranian Research Institute of Plant Protection, Tehran, Iran
- 251-P A species-specific primer for detecting *Botryosphaeria dothidea*. W. Tang (1), L. GUO (1). (1) China Agricultural University, Beijing, Peoples Republic of China
- 252-P First report of *Alternaria mali* on apples in Brazil. C. L. Rollemberg (1), F. Fayad (1), N. A. Hamada (1), L. L. MAY DE MIO (1). (1) Federal University of Paraná State, Curitiba, PR, Brazil
- 253-P Evaluation of pruning techniques and bactericides for managing bacterial canker of sweet cherry. J. E. CARROLL (1), T. J. Burr (1), T. L. Robinson (1), S. A. Hoying (2), K. D. Cox (1). (1) Cornell University, Geneva, NY, U.S.A.; (2) Cornell University, Highland, NY, U.S.A.
- 254-P Aspects of popcorn disease occurrence on mulberry fruits in Korea. S. CHEONG (1), J. Kim (1), D. Kim (1). (1) Jeollabukdo Agricultural Research and Extension Services, Iksan, Korea
- 255-P  Characterization and epidemiological aspects of a novel badnavirus infecting fig. A. G. LANEY (1), M. Hassan (1), I. E. Tzanetakis (1). (1) Dept. of Plant Pathology, Division of Agriculture, University of Arkansas, Fayetteville, AR, U.S.A.
- 256-P Evidence of a low rate of seed transmission of *Citrus tatter leaf virus* in citrus. J. D. Tanner (1), M. Kunta (1), J. V. DA GRAÇA (1), M. Skaria (1), S. D. Nelson (1). (1) Texas A&M University-Kingsville, Weslaco, TX, U.S.A.
- 257-P First report of sweet orange scab in United States. M. KUNTA (1), J. Rascoe (2), M. E. Palm (2), J. V. da Graça (1), B. Salas (3), A. Satpute (1), M. Sétamou (1), P. B. de Sa Snow (4), M. Skaria (1). (1) Texas A&M University-Kingsville, Weslaco, TX, U.S.A.; (2) USDA APHIS PPQ PHP RIPPS, Beltsville, MD, U.S.A.; (3) USDA APHIS PPQ CPHST PDDML, Mission, TX, U.S.A.; (4) USDA-APHIS-PPQ-PHP-RIPPS-MDL, Beltsville, MD, U.S.A.
- 258-P Occurrence of citrus quick decline in California. A. ESKALEN (1), G. Vidalakis (1), N. O'Connell (2). (1) University of California, Riverside, CA, U.S.A.; (2) University of California Cooperative Extension, Tulare, CA, U.S.A.
- 259-P Foamy bark rot of Fukumoto navel: A condition with etiology not yet understood. A. Adesemoye (1), A. ESKALEN (1), N. O'Connell (2), G. Vidalakis (1), P. Wang (1), C. Roper (1). (1) University of California, Riverside, CA, U.S.A.; (2) University of California Cooperative Extension, Tulare, CA, U.S.A.
- 260-P Viruses associated with yellow vein and vein enation disease of citrus. S. Kanrar (1), M. Afunian (1), G.

Greer (1), I. Tzanetakis (2), G. VIDALAKIS (1). (1) University of California, Riverside, CA, U.S.A.; (2) University of Arkansas, Fayetteville, AR, U.S.A.

- 261-P Identification of different species causing Botryosphaeriaceae canker in citrus reveal *Neofusicoccum mangiferae* with *Scytalidium*-like synonomorph. A. ESKALEN (1), A. Adesemoye (1), D. Wang (1). (1) University of California, Riverside, CA, U.S.A.

Diseases: Ornamentals

- 262-P A sensitive molecular method for detecting virus in orchids. E. V. CAMPOVERDE (1), A. J. Palmateer (1). (1) University of Florida, Homestead, FL, U.S.A.
- 263-P Detection of the begomovirus *Clerodendrum golden mosaic China virus* in *Salvia splendens* cv. Dancing Flame. R. VALVERDE (1), S. Sabanadzovic (2), R. Singh (1). (1) Louisiana State University AgCenter, Baton Rouge, LA, U.S.A.; (2) Mississippi State University, Mississippi State, MS, U.S.A.
- 264-P Molecular characterization of *Tobacco rattle virus* RNA1 from *Dicentra spectabilis* (L.) Lem (bleeding-heart). N. L. ROBERTSON (1). (1) USDA ARS, Palmer, AK, U.S.A.
- 265-P Sweet bunden of sugarberry—A novel ampelovirus found in *Celtis laevigata*. J. ZHOU (1), K. Karen (2), M. Robert (2), I. Tzanetakis (1). (1) Dept. of Plant Pathology, Division of Agriculture and Cell and Molecular Biology Program, University of Arkansas, Fayetteville, AR, U.S.A.; (2) USDA-ARS, Corvallis, OR, U.S.A.
- 266-P Molecular characterization of an endornavirus from *Cucumis* spp. S. SABANADZOVIC (1), R. A. Valverde (2), W. M. Wintermantel (3). (1) Dept. of Biochemistry, Molecular Biology, 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.; (3) USDA-ARS, Salinas, CA, U.S.A.
- 267-P Emaravirus and cryptovirus infection of *Viburnum lantanoides* in the Great Smoky Mountains National Park. S. SABANADZOVIC (1), N. Abou Ghanem-Sabanadzovic (1). (1) Dept. of Biochemistry, Molecular Biology, Entomology and Plant Pathology, Mississippi State University, Mississippi State, MS, U.S.A.
- 268-P Evidence of root graft transmission of two rose mosaic viruses, *Prunus necrotic ringspot virus* and *Apple mosaic virus* in rose rootstocks. D. A. Golino (1), S. T. SIM (1), M. Cunningham (2), A. Rowhani (1). (1) Dept. of Plant Pathology, University of California, Davis, CA, U.S.A.; (2) Foundation Plant Services, University of California, Davis, CA, U.S.A.
- 269-P Detection of tospoviruses infecting *Hymenocallis littoraris* and *Hippeastrum vittatum* in Kunming, China. Q. FANG (1), J. Dong (1), Z. Zhang (1). (1) Institute of Biotechnology and Germplasm Resources, Yunnan Academy of Agricultural Sciences, Kunming, Peoples Republic of China
- 270-P A putative novel carlavirus associated with the disease in *Magnolia tripetala* L. S. SABANADZOVIC (1), N. Abou Ghanem-Sabanadzovic (1), R. E. Baird (1), C. Banks (2), A. Lawrence (3). (1) Dept. of Biochemistry,

Molecular Biology, Entomology and Plant Pathology, Mississippi State University, Mississippi State, MS, U.S.A.; (2) Highlands Biological Station, Western Carolina University, Highlands, NC, U.S.A.; (3) Electron Microscope Center, Mississippi State University, Mississippi State, MS, U.S.A.

- 271-P Xanthomonas leaf blight of *Ficus elastica*. E. V. CAMPOVERDE (1), A. J. Palmateer (1). (1) University of Florida, Homestead, FL, U.S.A.
- 272-P Effect of temperature on bacterial leaf spot of *Phalaenopsis*, caused by *Acidovorax cattleyae*. T. L. Tarnowski (1), A. J. Palmateer (1), R. T. MCMILLAN (2). (1) University of Florida, Homestead, FL, U.S.A.; (2) Kerry's, Homestead, FL, U.S.A.
- 273-P Occurrence of a soft-rot disease on *Oncidium* orchids caused by a *Dickeya* sp. in Florida. R. A. Cating (1), A. J. PALMATEER (2). (1) Twyford International, Apopka, FL, U.S.A.; (2) University of Florida, Homestead, FL, U.S.A.
- 274-P Characterization and mefenoxam sensitivity of *Pythium* species in North Carolina greenhouses. E. LOOKABAUGH (1), B. Shew (1), K. Ivors (1). (1) North Carolina State University, Raleigh, NC, U.S.A.
- 275-P Identifying *Phytophthora* species isolated from nursery irrigation water throughout North Carolina. A. LOYD (1), D. M. Benson (1), K. Ivors (2). (1) North Carolina State University, Raleigh, NC, U.S.A.; (2) North Carolina State University, Mills River, NC, U.S.A.
- 276-P A new *Phytophthora* sp. causing basal rot on Japanese iris. Y. AMEMIYA (1), T. Usami (1), R. Okazaki (1), M. Katori (2), S. Uematsu (3). (1) Chiba University, Matsudo-city, Japan; (2) Suigou Sawara Aquatic Botanical Garden, Katori-city, Japan; (3) Chiba Pest Management Center, Chiba-city, Japan
- 277-P *Phytophthora ramorum* research at the National Ornamentals Research Site at Dominican University of California. S. JOHNSON-BROUSSEAU (1), M. Henkes (1), K. L. Kosta (2), K. Suslow (3), A. Posadas (4), R. Bulluck (5), S. Ghosh (1). (1) Dominican University of California, San Rafael, CA, U.S.A.; (2) California Dept. of Food and Agriculture, Sacramento, CA, U.S.A.; (3) Hines Nurseries LLC, Winters, CA, U.S.A.; (4) National Plant Board, Sacramento, CA, U.S.A.; (5) USDA APHIS PPQ CPHST, Raleigh, NC, U.S.A.
- 278-P Identifying resistance to white mold in annual bedding plants. M. A. GRABOWSKI (1), D. Malvick (2). (1) University of Minnesota, Andover, MN, U.S.A.; (2) University of Minnesota, St. Paul, MN, U.S.A.
- 279-P Managing daylily rust with fungicide dips, drenches, and foliar spray applications. J. BUCK (1), W. B. Dong (1). (1) University of Georgia, Griffin, GA, U.S.A.
- 280-P Susceptibility of mesquite species to powdery mildew in Arizona. C. NISCHWITZ (1), M. Olsen (2). (1) Utah State University, Logan, UT, U.S.A.; (2) The University of Arizona, Tucson, AZ, U.S.A.
- 281-P Interaction of *Rosellinia necatrix*, *Fusarium oxysporum*, and *Ophystoma stenoceras* in white rot of *Rosa* sp. R. GARCÍA-VELASCO (1), J. G. González-Díaz (1), T. Castañeda-Martínez (1), D. Nieto-Angel (2). (1) Universidad Autónoma del Estado de México, Tenancingo, Mexico; (2) Colegio de Postgraduados, Fritopatología, Montecillo, Mexico

- 282-P The major fungal diseases of ornamental plants in Kerman Province, Iran. S. BARSAM (1), S. Rezaee (1), M. Aminae (2). (1) Dept. of Plant Pathology, College of Agriculture and Natural Resources, Science and Research Branch, Islamic Azad University, Tehran, Iran; (2) Dept. of Plant Protection, Agricultural Research Centre, Kerman, Iran
- 283-P Drench and foliar fungicides compared for control of Entomosporium leaf spot on photinia. A. K. Hagan (1), R. Akridge (2), K. L. BOWEN (1). (1) Auburn University, Auburn, AL, U.S.A.; (2) Auburn University, Brewton, AL, U.S.A.

Diseases: Turfgrasses

- 284-P Bacteria associated with creeping bentgrass (*Agrostis palustris* L.) disease syndrome in southern and southeastern United States during the summer of 2010. H. FOULY (1), H. T. Wilkinson (2), B. Martin (1). (1) Clemson University, Florence, SC, U.S.A.; (2) University of Illinois, Urbana, IL, U.S.A.
- 285-P Development and application of a TaqMan real-time PCR assay for rapid detection of *Magnaporthe poae*. S. ZHAO (1), B. B. Clarke (1), Q. Shen (2), J. Hu (2), N. Zhang (1). (1) Rutgers University, New Brunswick, NJ, U.S.A.; (2) Nanjing Agricultural University, Nanjing, Peoples Republic of China
- 286-P Residual efficacy of fungicides for brown patch management. J. DANIELS (1), R. Latin (1). (1) Purdue University, West Lafayette, IN, U.S.A.
- 287-P Host specificity of *Cochliobolus* sp., a new pathogen of warm-season turfgrasses. M. TOMASO-PETERSON (1). (1) Mississippi State University, Mississippi State, MS, U.S.A.
- 288-P Detection of *Colletotrichum cereale* specimens from modern and historical collections using culture-independent, real-time PCR methods. L. A. BEIRN (1), B. B. Clarke (1), J. Crouch (2). (1) Rutgers University, New Brunswick, NJ, U.S.A.; (2) USDA-ARS, Systematic Mycology and Microbiology Laboratory, Beltsville, MD, U.S.A.
- 289-P Effects of temperature on growth and aggressiveness of *Sclerotinia homoeocarpa*. C. M. WILSON (1), J. P. Kerns (1), D. L. Smith (2). (1) University of Wisconsin, Madison, WI, U.S.A.; (2) Oklahoma State University, Stillwater, OK, U.S.A.
- 290-P Characterization of *Poculum* sp. isolated from warm-season turfgrass in Florida. G. T. COOPER (1), P. Harmon (1), D. Liberti (1), J. Rollins (1), L. Kohn (2). (1) University of Florida, Gainesville, FL, U.S.A.; (2) University of Toronto, Mississauga, ON, Canada
- 291-P ★ *APS Foundation Awardee* Where does it come from? Determining initial inoculum for dollar spot. R. RIOUX (1), B. Van Ryzin (1), J. Kerns (1). (1) University of Wisconsin, Dept. of Plant Pathology, Madison, WI, U.S.A.
- 292-P Influence of fungicide timing and postapplication irrigation on dollar spot severity. J. E. KAMINSKI (1), J. Inguagiato (2), A. I. Putman (3). (1) The Pennsylvania State University, University Park, PA, U.S.A.; (2) University of Connecticut, Storrs, CT, U.S.A.; (3) North Carolina State University, Raleigh, NC, U.S.A.
- 293-P Effectiveness of early-season fungicide programs for the control of *Sclerotinia homoeocarpa*, the causal agent of

dollar spot. C. M. WILSON (1), P. L. Koch (1), J. P. Kerns (1). (1) University of Wisconsin, Madison, WI, U.S.A.

- 294-P Implication of early-season fungicide application on season-long dollar spot control. J. C. INGUAGIATO (1), J. E. Kaminski (2). (1) University of Connecticut, Storrs, CT, U.S.A.; (2) Pennsylvania State University, University Park, PA, U.S.A.
- 295-P Sensitivity of *Magnaporthe grisea* to isoprothiolane, iprobenfos, and tricyclazole. Y. Du (1), K. Li (1), H. Ruan (1), X. Lu (2), X. Yang (1), F. CHEN (1). (1) Institute of Plant Protection, Fujian Academy of Agricultural Sciences, Fuzhou, Peoples Republic of China; (2) Plant Pathology Dept., China Agricultural University, Beijing, Peoples Republic of China
- 296-P Effect of intermittent leaf wetness on incidence and severity of gray leaf spot of perennial ryegrass turf. Y. LI (1). (1) Pennsylvania State University, University Park, PA, U.S.A.
- 297-P *Typhula ishikariensis* and *Typhula incarnata* vary in sensitivity to fludioxonil, propiconazole, and chlorothalonil. T. BLUNT (1), G. Brunk (1), N. Tisserat (1). (1) Colorado State University, Fort Collins, CO, U.S.A.
- 298-P Efficacy of spring fenarimol applications for spring dead spot control in a Tifway bermudagrass fairway in Mississippi. M. TOMASO-PETERSON (1). (1) Mississippi State University, Mississippi State, MS, U.S.A.
- 298a-P Root-knot nematode species in golf course greens in the western United States. C. NISCHWITZ (1), M. Schmitt (2), A. Skantar (3), T. Bunderson (1), M. McClure (2). (1) Utah State University, Logan, UT, U.S.A.; (2) The University of Arizona, Tucson, AZ, U.S.A.; (3) USDA-ARS Nematology Laboratory, Beltsville, MD, U.S.A.
- 299-P Effects of DMI fungicide applications on secondary metabolites in creeping bentgrass (*Agrostis stolonifera* L.). D. P. Shell (1), B. J. HORVATH (1), D. A. Kopsell (1). (1) University of Tennessee, Knoxville, TN, U.S.A.
- 300-P ★ *APS Foundation Awardee* Foliar diseases identified on switchgrass in Mississippi. M. GILLEY (1), M. Tomaso-Peterson (1). (1) Mississippi State University, Mississippi State, MS, U.S.A.
- 301-P ★ *APS Foundation Awardee* Incidence and prevalence of fungal pathogens on switchgrass seed produced in the United States. A. L. VU (1), K. D. Gwinn (1), B. H. Ownley (1). (1) University of Tennessee, Knoxville, TN, U.S.A.

Diseases: Vegetables

- 302-P Diversity and distribution of *Iris yellow spot virus* (genus *Tospovirus*) infecting onion in Eastern Africa. S. Subramanian (1), H. R. PAPPU (2), R. Biriithia (1), O. Shem (1), J. Muthomi (3), P. Sseruwagi (4), R. Narla (3). (1) icipe—African Insect Science for Food and Health, Nairobi, Kenya; (2) Washington State University, Pullman, WA, U.S.A.; (3) University of Nairobi, Nairobi, Kenya; (4) National Crops Resources Research Institute (*NaCRRRI*), Kampala, Uganda
- 303-P New records of tospoviruses and geminiviruses in Mauritius. K. Lobin (1), S. P. Benimadhu (1), H. R. PAPPU (2). (1) Plant Pathology Division, Agricultural Research and Extension Unit (AREU), Reduit,

- Mauritius; (2) Washington State University, Pullman, WA, U.S.A.
- 304-P Onion cultivar resistance to *Iris yellow spot virus* and onion thrips in Colorado. C. BOATENG (1), H. F. Schwartz (1), K. Otto (1). (1) Colorado State University, Fort Collins, CO, U.S.A.
- 305-P Effects of *Iris yellow spot virus* and onion thrips on onion physiology, growth, and productivity. C. BOATENG (1), H. F. Schwartz (1). (1) Colorado State University, Fort Collins, CO, U.S.A.
- 306-P Biological characterization and complete genomic sequence of *Carrot thin leaf virus*. D. XU (1), H. Liu (2), F. Li (1), B. Howell (3), T. Tian (4), R. Li (1). (1) USDA-ARS, Beltsville, MD, U.S.A.; (2) USDA-ARS, Salinas, CA, U.S.A.; (3) Washington State University, Prosser, WA, U.S.A.; (4) California Dept. of Food and Agriculture, Sacramento, CA, U.S.A.
- 307-P Preliminary results of the distribution and genetic diversity of *Potato virus Y* (PVY) in the main Turkish pepper-growing areas. N. BUZKAN (1), B. B. Arpaci (2), G. Gorsoy (1), B. Moury (3). (1) Kahramanmaraş Sutcu Imam University, Kahramanmaraş, Turkey; (2) Kilis Yedi Aralık University, Kilis, Turkey; (3) Inra Avignon, Unite De Pathologie Vegetale, Montfavet Cedex, France
- 308-P Identification of *Curly top virus* infection in jalapeño pepper in Chihuahua, Mexico. L. ROBLES-HERNANDEZ (1), A. C. Gonzalez-Franco (1), E. M. Gill-Langarica (1), O. V. Nikolaeva (2), A. V. Karasev (2). (1) Universidad Autonoma de Chihuahua, Chihuahua, Mexico; (2) University of Idaho, Moscow, ID, U.S.A.
- 309-P Weeds as reservoir hosts of *Tomato leaf curl virus* (*Begomovirus*) in Tamil Nadu. K. KRISHNAN (1), D. Gunasekaran (1). (1) University of Madras, Chennai, India
- 310-P Effects of venom alkaloids from red imported fire ants on bacterial canker of tomato in the greenhouse. S. Li (1), X. JIN (2), J. Chen (2). (1) Institute of Plant Protection, Hebei Academy of Agricultural and Forestry Sciences, Baoding, Hebei Province, Peoples Republic of China; (2) USDA ARS MSA, Stoneville, MS, U.S.A.
- 311-P Assessment of copper resistance in populations of *Pseudomonas syringae* pv. *phaseolicola*, the causal agent of halo blight on snap bean. S. ZHANG (1), Y. Fu (1), Z. Mersha (1). (1) Tropical Research and Education Center, University of Florida, Institute of Food and Agricultural Sciences, Homestead, FL, U.S.A.
- 312-P Detection of sour skin of onion, caused by *Burkholderia cepacia*, using zNose technology. A. WATSON (1), R. Gitaitis (1), C. Li (1). (1) University of Georgia, Tifton, GA, U.S.A.
- 313-P Diversity and fungicide resistance of *Phytophthora capsici* on vegetable crops in Georgia. K. L. JACKSON (1), J. Yin (1), A. S. Csinos (1), H. Scherm (2), P. Ji (1). (1) University of Georgia, Tifton, GA, U.S.A.; (2) University of Georgia, Athens, GA, U.S.A.
- 314-P The occurrence of late blight in 2010 following the 2009 epidemic. K. L. DEAHL (1). (1) USDA-ARS, Silver Spring, MD, U.S.A.
- 315-P Response of pepper (*Capsicum annuum*) genotypes to coinfection by *Phytophthora capsici* and *Meloidogyne incognita*. J. A. THIES (1), J. J. Ariss (1), C. S. Kousik (1). (1) U.S. Vegetable Laboratory, USDA ARS, Charleston, SC, U.S.A.
- 316-P Characterization of three new isolates and extended experimental host range of *Phytophthora capsici* in Brazil. F. R. do Carmo (1), M. P. Lima (1), L. S. Boiteux (2), M. N. Fonseca (1), A. C. Filho (3), A. B. REIS (1). (1) Embrapa Vegetable Crops, Brasília-DF, Brazil; (2) NA, Brasília-DF, Brazil; (3) University of Brasília, Brasília-DF, Brazil
- 317-P Characterization of new races (races 11 and 12) and several novel strains of spinach downy mildew pathogen *Peronospora farinosa* f. sp. *spinaciae*. C. FENG (1), J. C. Correll (1), K. E. Kammeijer (2), S. T. Koike (2). (1) University of Arkansas, Fayetteville, AR, U.S.A.; (2) University of California Cooperative Extension, Salinas, CA, U.S.A.
- 318-P Control of late blight on tomato in western Washington using high tunnels. D. Inglis (1), B. GUNDERSEN (2). (1) Washington State University, Mount Vernon, WA, U.S.A.; (2) Washington State University, Mount Vernon NWREC, Mount Vernon, WA, U.S.A.
- 319-P Profile of *Pythium* spp. in certified organic fields for vegetable production in central Washington. A. C. ALCALA (1), T. C. Paulitz (2), L. D. Porter (3), L. J. du Toit (1). (1) Washington State University, Mount Vernon NWREC, Mount Vernon, WA, U.S.A.; (2) USDA-ARS Root Disease and Biological Control Research Unit, Pullman, WA, U.S.A.; (3) USDA-ARS, Prosser, WA, U.S.A.
- 320-P Molecular characterization through IGS sequencing of *formae speciales* of *Fusarium oxysporum* pathogenic on lamb's lettuce and rocket. M. GULLINO (1), D. Spadaro (1), G. Gilardi (1), A. Garibaldi (1). (1) Centro Agroinnova-University of Torino, Grugliasco Torino, Italy
- 321-P Atypical 'deep' lesions on specialty potato tubers in western Washington caused by *Colletotrichum coccodes*. D. INGLIS (1). (1) Washington State University, Mount Vernon, WA, U.S.A.
- 322-P Comparison of culture-based and culture-independent methods for identifying *Rhizoctonia solani* AG2.1 and 3 inhabiting infected plant material of potato. T. J. WIECHEL (1), M. Wardzynski (1), J. Verstraten (1), F. Richardson (1). (1) Dept. of Primary Industries, Victoria, Knoxfield, Australia
- 323-P Identification of solanaceous and non-solanaceous species as hosts of *Stemphylium solani* isolates in Brazil. A. REIS (1), L. S. Boiteux (1), M. N. Fonseca (1). (1) Embrapa Vegetable Crops, Brasília, Brazil
- 324-P Effect of soil-incorporated cover crops and Actinovate biocontrol on suppression of Fusarium wilt of watermelon. J. HIMMELSTEIN (1), K. Everts (2), J. Maul (3). (1) University of Maryland, College Park, MD, U.S.A.; (2) University of Maryland, College Park and University of Delaware, Salisbury, DE, U.S.A.; (3) Sustainable Agriculture Systems Lab, USDA-ARS, Beltsville, MD, U.S.A.
- 325-P Chemical management of Fusarium wilt of watermelon in the eastern United States. K. L. EVERTS (1), X. G. Zhou (2), D. Egel (3). (1) University of Maryland-College Park, Salisbury, MD, U.S.A.; (2) Texas A&M

- University System, AgriLife Research, Beaumont, TX, U.S.A.; (3) Southwest Purdue Agricultural Center, Purdue University, Vincennes, IN, U.S.A.
- 326-P Overview of the onion ipmPIPE and the development of innovative disease diagnostic tools for onion diseases. B. SCHROEDER (1), J. VanKirk (2), J. Lafferty (3), G. Douce (4), G. Jibilian (5), G. W. Norton (6), H. F. Schwartz (7). (1) Dept. of Plant Pathology, Washington State University, Pullman, WA, U.S.A.; (2) Southern Region IPM Center, North Carolina State University, Raleigh, NC, U.S.A.; (3) Planalytics, Inc., Berwyn, PA, U.S.A.; (4) Center for Invasive Species & Ecosystem Health, The University of Georgia, Tifton, GA, U.S.A.; (5) Multigrain International, LLC, Fort Collins, CO, U.S.A.; (6) Dept. of Agricultural and Applied Economics, Virginia Tech, Blacksburg, VA, U.S.A.; (7) Dept. of Bioagricultural Sciences & Pest Management, Colorado State University, Fort Collins, CO, U.S.A.

Forest Pathology

- 327-P The detection of *Ceratocystis fagacearum* in Texas live oak using real-time polymerase chain reaction. T. KURDYLA (1), D. Appel (1). (1) Texas A&M University, College Station, TX, U.S.A.
- 328-P Relationships between nematode distribution in pine stem and development of xylem embolism observed with a compact MRI in pine wilt disease. A. AKAMI (1), M. Komatsu (2), K. Fukuda (1). (1) University of Tokyo, Chiba, Japan; (2) Forestry and Forest Products Research Institute, Ibaraki, Japan
- 329-P Population genetic analysis of *Leptographium longiclavatum*, a pathogen associate with the mountain pine beetle *Dendroctonus ponderosae*. L. C. FARFAN (1), C. Tsui (1), R. Hamelin (1), Y. El-Kassaby (1). (1) University of British Columbia, Vancouver, BC, Canada
- 330-P Risk analysis for *Verticillium albo-atrum* isolate PSU 140, causal agent of Verticillium wilt of tree-of-heaven (*Ailanthus altissima*). M. T. KASSON (1), D. D. Davis (1). (1) Pennsylvania State University, University Park, PA, U.S.A.
- 331-P Kermes scale (*Allokermes* sp.) and the drippy nut pathogen (*Brenneria quercina*) associated with a decline of red oak species in Colorado. J. Snelling (1), N. A. TISSERAT (1), W. Cranshaw (1). (1) Colorado State University, Fort Collins, CO, U.S.A.
- 332-P Canyon live oak (*Quercus chrysolepis*) is susceptible to bole infection by *Phytophthora ramorum*. K. ARAM (1), T. Swiecki (2), E. Bernhardt (2), D. M. Rizzo (1). (1) University of California, Davis, CA, U.S.A.; (2) Phytosphere Research, Vacaville, CA, U.S.A.
- 333-P First report of a bacterial disease in Australian cedar (*Toona ciliata*). A. ZACARONI (1), R. M. Souza (2), T. O. Mansur (2), A. R. Figueira (2), E. A. Pozza (2), A. A. Sussel (3). (1) Federal University of Lavras, Sobradinho, Brazil; (2) Federal University of Lavras, Lavras, Brazil; (3) Embrapa CERRADOS, Planaltina, Brazil
- 334-P Potential invasiveness of *Armillaria solidipes*, a tree-root-disease pathogen with a circumboreal distribution. N. B. KLOPFENSTEIN (1), J. W. Hanna (1), M. Kim (2). (1) USDA Forest Service, Rocky Mountain Research Station, Moscow, ID, U.S.A.; (2) Dept.

- of Forestry, Environment, and Systems, Kookmin University, Seoul, South Korea
- 335-P Virulence of *Fusarium* root-disease pathogens (*Fusarium oxysporum* and *F. commune*) to Douglas-fir (*Pseudotsuga menziesii*). J. E. Stewart (1), Z. Abdo (2), R. Dumroese (3), N. B. Klopfenstein (3), M. KIM (4). (1) Dept. of Plant Pathology, Washington State University, Pullman, WA, U.S.A.; (2) Depts. of Mathematics and Statistics, University of Idaho, Moscow, ID, U.S.A.; (3) USDA Forest Service, Rocky Mountain Research Station, Moscow, ID, U.S.A.; (4) Dept. of Forestry, Environment, and Systems, Kookmin University, Seoul, South Korea
- 336-P Diversity of plant-pathogenic fungi associated with native Amazon forest species. G. B. SILVA (1), D. C. Lustosa (2), K. L. Nechet (3), C. S. Conceição (1), J. F. Silva (1), M. J. Rego (1), M. B. Pantoja (1). (1) Universidade Federal Rural da Amazônia, Belem, Brazil; (2) Universidade Federal do Oeste do Para (UFOPA), Santarem, Brazil; (3) Embrapa, Jaguariuna, Brazil
- 336a-P The study of Tibetan Plateau forest disease and insects and it's integrated pest management. M. CHEN (1). (1) University of California, Berkeley, CA, U.S.A.
- 337-P Forest Phytophthoras of the world website. J. L. PARKE (1), J. E. Eberhart (1), E. M. Hansen (1), S. J. Frankel (2). (1) Oregon State University, Corvallis, OR, U.S.A.; (2) USDA Forest Service, PSW Research Station, Albany, CA, U.S.A.
- 338-P Did *Phytophthora ramorum* already invade Italian forests? A possible answer by mass sequence approach. A. VANNINI (1). (1) University of Tuscia, Viterbo, Italy
- 339-P Historical pathways of introduction for nonindigenous forest pathogens. J. L. PARKE (1), K. O. Britton (2), S. J. Frankel (3). (1) Oregon State University, Corvallis, OR, U.S.A.; (2) USDA Forest Service, Research & Development, Arlington, VA, U.S.A.; (3) USDA Forest Service, PSW Research Station, Albany, CA, U.S.A.

Seed Pathology

- 340-P Comparison of nine PCR primer sets designed to detect *Pantoea stewartii* subsp. *stewartii* in maize. C. C. Block (1), L. SHEPHERD (2), G. Munkvold (2). (1) USDA ARS, Ames, IA, U.S.A.; (2) Iowa State University, Ames, IA, U.S.A.
- 341-P Seed storage duration and relationships with seed quality. K. COCHRAN (1), J. Rupe (1), J. Robinson (2). (1) University of Arkansas, Fayetteville, AR, U.S.A.; (2) Ohio State University, Columbus, OH, U.S.A.

Tropical Plant Pathology

- 342-P Histological and ultrastructural changes in avocado (*Persea Americana*) induced by *Raffaelea lauricola*. S. INCH (1), R. Ploetz (1), R. Blanchette (2), B. Held (2). (1) University of Florida, Homestead, FL, U.S.A.; (2) University of Minnesota, St. Paul, MN, U.S.A.
- 342a-P Review of the development of fludioxonil for postharvest decay control on various tropical fruit crops. A. COCHRAN (1), D. McKenzie (2), C. Oda (3), G. Swart (2). (1) Syngenta Crop Protection, Greensboro, NC, U.S.A.; (2) Syngenta AG, Basel,

- Switzerland; (3) Private consultant, Honolulu, HI, U.S.A.
- 343-P Screening for powdery mildew resistance in 'Ohelo berry germplasm in Hawaii. L. KEITH (1), L. Sugiyama (1), T. Foote (1), T. Matsumoto (1), F. Zee (1). (1) USDA-ARS, Hilo, HI, U.S.A.
- 344-P Leaf blight and stem canker of mangosteen in Hawaii. L. Keith (1), L. SUGIYAMA (1), T. Matsumoto (1). (1) USDA-ARS, Hilo, HI, U.S.A.
- 345-P Dissemination, incidence, and severity of *Leifsonia xyli* subsp. *xyli* in sugarcane of Sao Paulo State, Brazil. A. URASHIMA (1). (1) Universidade Federal de Sao Carlos, Araras, Brazil
- 346-P Genetic diversity and characterization of geographic distribution of *Begomovirus* in Yunnan, China. M. Ding (1), Z. ZHANG (1). (1) Yunnan Academy of Agricultural Sciences, Kunming, Peoples Republic of China
- 347-P Discovering putative *Phytophthora palmivora* disease tolerance genes in papaya (*Carica papaya* L.). R. JIA (1), K. M. Noorda-Nguyen (1), Y. J. Zhu (1). (1) Hawaii Agriculture Research Center, Kunia, HI, U.S.A.
- 348-P Pathogenic and nonpathogenic fungi associated with longan (*Dimocarpus longan* L.) in Puerto Rico. L. M. SERRATO-DIAZ (1), L. I. Rivera-Vargas (2), R. J. Goenaga (3), R. D. French-Monar (1). (1) AgriLife Extension Texas A&M, Amarillo, TX, U.S.A.; (2) University of Puerto Rico-Mayaguez Campus, Mayaguez, Puerto Rico; (3) USDA-ARS Tropical Agriculture Research Station, Mayaguez, Puerto Rico
- 349-P Unavailable
- 350-P Open access online database of powdery mildews (order Erysiphales) in Puerto Rico. L. I. Rivera (1), E. LATONI (2), C. Estevez (2). (1) University of Puerto Rico, Boqueron, U.S.A.; (2) University of Puerto Rico, Mayaguez, Puerto Rico, U.S.A.
- 351-P Bacterial and fungal pathogens associated with diseased oil palm (*Elaeis guineensis*) plants in Pamol Plantations, Cameroon, Central Africa. T. T. OBEN (1), C. E. Etta (1), O. Oguntade (2), O. O. Wanobi (1), C. O. Mekanya (1). (1) Pamol Plantations Plc, Ekondo Titi, Cameroon; (2) International Institute of Tropical Agriculture, Ibadan, Nigeria

■ EMERGING PESTS/INVASIVE SPECIES

Emerging Pests/Invasive Species

- 352-P Progress on industry pest information platform (iPIPE). R. L. DUNKLE (1), W. E. Dolezal (2), J. L. Chaky (2), D. M. Borchert (3), J. Russo (4), R. D. Magarey (5). (1) American Seed Trade Association, Alexandria, VA, U.S.A.; (2) Pioneer Hi-Bred Intl. Inc., Johnston, IA, U.S.A.; (3) USDA/APHIS/PPQ/CPHST/PERAL, Raleigh, NC, U.S.A.; (4) ZedX, Inc., Bellefonte, PA, U.S.A.; (5) North Carolina State University, Raleigh, NC, U.S.A.
- 353-P Managing pest risk of plants for planting in international trade: U.S. import regulations at a crossroad. C. MARASAS (1). (1) USDA APHIS, Riverdale, MD, U.S.A.
- 354-P Plant and food biosecurity: A European Union network of excellence. M. GULLINO (1), J. E. Thomas (2), C.

Henry (3), H. Dehne (4), F. Suffert (5), M. Bonifert (6), J. Mumford (7), H. Alpas (8), A. Bertin (9), F. Marelli (10), A. Gamliel (11), J. Fletcher (12), J. Stack (13). (1) University of Torino, Grugliasco (TO), Italy; (2) NIAB, Cambridge, United Kingdom; (3) FERA, York, United Kingdom; (4) INRES, Bonn, Germany; (5) INRA, Thiverval-Grignon, France; (6) REC, Szentendre, Hungary; (7) Imperial College London, Ascot, United Kingdom; (8) METU, Ankara, Turkey; (9) Spin-To, Torino, Italy; (10) UNICRI, Torino, Italy; (11) ARO, Bet Dagan, Israel; (12) National Institute for Microbial Forensics and Food and Agricultural Biosecurity (NIMFFAB), Stillwater, OK, U.S.A.; (13) Kansas State University, Manhattan, KS, U.S.A.

355-P The National Plant Diagnostic Network: First detector training and education. R. W. HOENISCH (1), S. Cain (2), G. E. Ruhl (2), D. L. Clement (3), S. Dobesh (4), J. Stack (4), M. A. Draper (5), A. P. Dunfee (6), G. K. Douce (7), J. LaForest (7), A. C. Hodges (8), S. D. Stocks (8), W. Hoffman (5), N. A. Hummel (9), R. L. McCarthy (10), K. L. Snover-Clift (10), H. Watters (11). (1) University of California, Davis, CA, U.S.A.; (2) Purdue University, West Lafayette, IN, U.S.A.; (3) University of Maryland, Ellicott City, MD, U.S.A.; (4) Kansas State University, Manhattan, KS, U.S.A.; (5) USDA, National Institute for Food and Agriculture, Washington, DC, U.S.A.; (6) Michigan State University, East Lansing, MI, U.S.A.; (7) University of Georgia, Tifton, GA, U.S.A.; (8) University of Florida, Gainesville, FL, U.S.A.; (9) Louisiana State University, Baton Rouge, LA, U.S.A.; (10) Cornell University, Ithaca, NY, U.S.A.; (11) Ohio State University, Urbana, OH, U.S.A.

- 356-P Protect United States: Community-based invasive species education for small farmers and the general public. M. A. DRAPER (1), A. C. Hodges (2), S. D. Stocks (3), S. T. Ratcliffe (4). (1) USDA-NIFA, Washington, DC, U.S.A.; (2) Southern Plant Diagnostic Network, University of Florida, Gainesville, FL, U.S.A.; (3) University of Florida, Gainesville, FL, U.S.A.; (4) North Central IPM Center, University of Illinois, Urbana, IL, U.S.A.

Insects

- 357-P Ophiostomatoid fungi associated with bark beetles infesting conifers in China. X. ZHOU (1), W. De Beer (2), M. Wingfield (2). (1) China Eucalypt Research Centre, ZhanJiang, Guangdong, Peoples Republic of China; (2) Forestry and Agricultural Biotechnology Institute (FABI), University of Pretoria, Pretoria, Republic of South Africa
- 358-P First report of the yeast *Eremothecium coryli* associated with brown marmorated stink bug-feeding injury on tomato and apple. G. E. BRUST (1), K. K. Rane (1). (1) University of Maryland, College Park, MD, U.S.A.
- 359-P *Homalodisca vitripennis* reovirus polymorphism validates timing and limited introduction of glassy-winged sharpshooter to California. D. C. STENGER (1), M. S. Sisterson (1), R. French (2). (1) USDA ARS, Parlier, CA, U.S.A.; (2) USDA-ARS, Lincoln, NE, U.S.A.
- 360-P Oviposition or host-feeding: Host handling strategy in the whitefly parasitoids *Eretmocerus hayati* and *Encarsia*

- sophia*. F. WAN (1), N. Yang (1), L. Ji (1). (1) Institute of Plant Protection, Chinese Academy of Agricultural Sciences, Beijing, Peoples Republic of China
- 361-P Persistence of the walnut twig beetle in black walnut logs as influenced by chemical and cultural treatments. E. Peachey (1), W. Cranshaw (1), N. TISSERAT (1). (1) Colorado State University, Fort Collins, CO, U.S.A.
- 362-P Development of a user-friendly identification system for the native and invasive pest thrips and their parasitoids in East Africa. M. Gerald (1), S. SUBRAMANIAN (2), B. Sandra (1), S. Triapitsyn (3). (1) Developmental Biology, Martin-Luther- University of Halle, Domplatz 4, Halle, Germany; (2) icipe— African Insect Science for Food and Health, Nairobi, Kenya; (3) Entomology Research Museum, University of California, Riverside, CA, U.S.A.
- 363-P Temperature-dependent development and reproduction of the whitefly *Trialeurodes vaporariorum* Westwood (Hemiptera: Aleyrodidae). H. GAMARRA (1), M. Rivera (2), H. Tonnang (1), H. Juarez (1), P. Carhuapoma (1), J. E. Kroschel (1). (1) International Potato Center (CIP), Lima, Peru; (2) Universidad Nacional Agraria La Molina, Lima, Peru
- Plant Pathogens**
- 364-P Characterization of a novel satellite RNA associated with natural population of *Cucumber mosaic virus* (CMV) in Wisconsin snap bean fields. S. NOURI (1), B. W. Falk (2), R. L. Groves (1). (1) University of Wisconsin, Madison, WI, U.S.A.; (2) University of California, Davis, CA, U.S.A.
- 365-P Deployment of rapid diagnostic tools for *Phytophthora* on horticultural crops in Central America. J. B. RISTAINO (1), K. Ivors (2), P. Bonants (3), M. Blanco-Meneses (4), J. Melgar (5), L. Gomez-Alpizar (6). (1) Dept. of Plant Pathology, North Carolina State University, Raleigh, NC, U.S.A.; (2) Dept. of Plant Pathology, Mountain Horticultural Crops Research and Extension Center (MHCRC), Mills River, NC, U.S.A.; (3) Plant Research International, Droevendaalsesteeg 1, Wageningen, Netherlands; (4) Laboratorio de Técnicas Moleculares Aplicadas a la Fitoprotección, Centro de Investigaciones en Protección de Cultivos, Escuela de Agronomía, Universidad de Costa Rica, San Jose, Costa Rica; (5) Departamento de Protección Vegetal, Fundación Hondureña de Investigación Agrícola, La Lima, Cortes, Honduras; (6) Agronomic Research Center, University of Costa Rica, San Pedro, Montes de Oca, San Jose, Costa Rica
- 366-P A Lucid key to the common *Phytophthora* species. J. B. RISTAINO (1). (1) North Carolina State University, Raleigh, NC, U.S.A.
- 367-P Susceptibility of select U.S. winter wheat cultivars to wheat blast (*Magnaporthe oryzae*). G. L. PETERSON (1), K. F. Pedley (1), W. W. Bockus (2), J. P. Stack (2), C. D. Cruz (2), B. S. Valent (2). (1) USDA ARS NAA FDWSRU, Fort Detrick, MD, U.S.A.; (2) Kansas State University, Manhattan, KS, U.S.A.
- 368-P *Clonostachys rhizophaga* can delay and reduce emergence of chickpea but does not consistently induce wilt in Washington State. F. M. DUGAN (1), S. L. Lupien (1), W. Chen (2). (1) USDA ARS WRPIS, Pullman, WA, U.S.A.; (2) USDA-ARS, Grain Legume Genetics, Pullman, WA, U.S.A.
- 369-P Volunteer stream monitoring for invasive *Phytophthora* species in western Washington. M. ELLIOTT (1), G. Chastagner (1), K. P. Coats (1), A. DeBauw (1), K. Riley (1). (1) Washington State University, Puyallup Research and Extension Center, Puyallup, WA, U.S.A.
- 370-P Severe outbreak of bacterial panicle blight across Texas Rice Belt in 2010. X. G. ZHOU (1), A. M. McClung (2), M. O. Way (1), Y. Jo (3), R. E. Tabien (1), L. T. Wilson (1). (1) Texas A&M University System, AgriLife Research, Beaumont, TX, U.S.A.; (2) USDA-ARS, Rice Research Unit, Beaumont, TX, U.S.A.; (3) Texas A&M University, College Station, TX, U.S.A.
- 371-P Emergence of a plant pathogen via hybridization of the Irish famine pathogen, *Phytophthora infestans*, and an unknown related species. E. M. GOSS (1), M. E. Cardenas (2), G. A. Forbes (3), W. E. Fry (4), S. Restrepo (2), N. J. Grunwald (5). (1) University of Florida, Gainesville, FL, U.S.A.; (2) Universidad de Los Andes, Bogota, Colombia; (3) International Potato Center, Lima, Peru; (4) Cornell University, Ithaca, NY, U.S.A.; (5) USDA ARS, Corvallis, OR, U.S.A.
- 372-P Standardization of protocols to test wheat (*Triticum aestivum* L.) for reaction to blast in a biocontainment laboratory. C. D. CRUZ (1), W. W. Bockus (1), K. Pedley (2), G. Peterson (2), J. Stack (1), X. Tang (1), B. Valent (1). (1) Kansas State University, Manhattan, KS, U.S.A.; (2) USDA-ARS, Fort Detrick, MD, U.S.A.
- 373-P First report of *Phytophthora ramorum* infecting *Trachelospermum jasminoides* in Oregon. N. OSTERBAUER (1), A. Trippe (1), S. Lane (1), S. Lewis (1). (1) Oregon Dept. of Agriculture, Salem, OR, U.S.A.
- 374-P Occurrence of early blight on black nightshade caused by *Alternaria tomatophila* in Korea. S. HONG (1), W. Kim (1), H. Choi (1), Y. Lee (1), H. Shim (1). (1) National Academy of Agricultural Science, Suwon, South Korea
- 375-P Diversity and pathogenicity of *Fusarium* species associated with grain mold of sorghum in Korea. H. CHOI (1), S. Hong (1), W. Kim (1), Y. Lee (1), S. Chun (2). (1) National Academy of Agricultural Science, Suwon, South Korea; (2) Dept. of Molecular Biotechnology, College of Life and Environmental Sciences, Konkuk University, Seoul, South Korea
- 376-P Risk analysis of native and ornamental plants for root infection and inoculum production from roots by *Phytophthora ramorum*. N. SHISHKOFF (1). (1) USDA ARS FDWSRU, Frederick, MD, U.S.A.
- 377-P Impact and characterization of “black shadow” on highbush blueberry. J. POLASHOCK (1), C. Constantelos (2), P. Oudemans (2). (1) USDA ARS, Chatsworth, NJ, U.S.A.; (2) Rutgers University, Chatsworth, NJ, U.S.A.
- 378-P Duplex qPCR assay to detect and quantify pathogenic *Guignardia citricarpa* and nonpathogenic *G. mangiferae* in plant samples. J. HU (1), N. Wang (1), M. Dewdney (1). (1) Citrus Research and Education Center, University of Florida, Lake Alfred, FL, U.S.A.
- 379-P Temperature and fungal isolate influence canker development in black walnut caused by *Geosmithia morbida*. E. Freeland (1), W. Cranshaw (1), N.

- TISSERAT (1). (1) Colorado State University, Fort Collins, CO, U.S.A.
- 380-P Zebra chip disease is associated with increases in pathogenesis-related protein activity and host defense-associated secondary metabolites in tubers. C. WALLIS (1), J. Chen (2). (1) USDA ARS, Parlier, CA, U.S.A.; (2) USDA ARS PWA, Parlier, CA, U.S.A.
- 381-P Effect of temperature on potato psyllid reproduction and *Liberibacter* titer level in tubers. F. WORKNEH (1), D. C. Henne (2), L. Paetzold (1), C. M. Rush (1). (1) Texas AgriLife Research, Bushland, TX, U.S.A.; (2) Texas AgriLife Research, Weslaco, TX, U.S.A.
- 382-P Incidence of criniviruses in multiple crops in Costa Rica. P. Ramirez (1), R. M. Castro (1), J. Vargas (1), J. Guevara (1), A. Solorzano-Morales (1), E. Hernandez (1), F. Mora (1), N. Barboza (1), R. W. HAMMOND (2). (1) University of Costa Rica, San Jose, Costa Rica; (2) USDA ARS PSI MPPL, Beltsville, MD, U.S.A.
- 383-P Managing gladiolus rust in Mexico with fungicides. A. VALENCIA-BOTÍN (1), J. Buck (2), S. Jeffers (3), C. Palmer (4). (1) Universidad de Guadalajara, Guadalajara, Jalisco, Mexico; (2) University of Georgia, Griffin, GA, U.S.A.; (3) Clemson University, Clemson, SC, U.S.A.; (4) IR-4 Project, Princeton, NJ, U.S.A.
- 384-P Reevaluation of *Phomopsis* species affecting sunflowers in the United States. F. Mathew (1), K. Alananbeh (1), N. Balbyshev (2), E. Heitkamp (1), T. Gulya (2), S. MARKELL (1). (1) North Dakota State University, Fargo, ND, U.S.A.; (2) USDA-ARS, Northern Crop Science Lab, Fargo, ND, U.S.A.
- 385-P Spread of *Phytophthora ramorum* to water, soil, and vegetation outside a nursery in Pierce County, Washington. G. CHASTAGNER (1), K. Coats (1), M. Elliott (1). (1) Washington State University, Puyallup, WA, U.S.A.
- 386-P Mystery on the Sammamish: What are the sources of *Phytophthora ramorum* infesting this Washington State waterway? G. Chastagner (1), K. COATS (1), D. Omdal (2), A. Ramsey-Kroll (2), M. Elliott (3). (1) Washington State University, Puyallup, WA, U.S.A.; (2) Washington State Dept. of Natural Resources, Olympia, WA, U.S.A.; (3) Washington State University, Puyallup Research and Extension Center, Puyallup, WA, U.S.A.
- 387-P Population structure of *Geosmithia morbida* in the United States is complex. M. M. ZERILLO (1), K. Woeste (2), E. Freeland (1), S. Seybold (3), W. Cranshaw (1), N. Tisserat (1). (1) Colorado State University, Fort Collins, CO, U.S.A.; (2) Dept. of Forestry and Natural Resources, Purdue University, West Lafayette, IN, U.S.A.; (3) USDA Forest Service, Davis, CA, U.S.A.
- 388-P Microsatellites and microsatellite-associate loci confirms diversity of *Ralstonia solanacearum* strains isolated from the southeastern United States. J. C. HONG (1), D. J. Norman (2), J. B. Jones (1), T. M. Momol (1), D. L. Reed (1). (1) University of Florida, Gainesville, FL, U.S.A.; (2) University of Florida, Apopka, FL, U.S.A.
- 389-P Overwintering of Chrysanthemum white rust caused by *Puccinia horiana* in Pennsylvania and challenges in its management. S. KIM (1), E. V. Nikolaeva (2), T. N. Olson (1), S. Kang (2). (1) Pennsylvania Dept. of Agriculture, Harrisburg, PA, U.S.A.; (2) Pennsylvania State University, University Park, PA, U.S.A.
- 390-P *Phytophthora obscura* sp. nov. defines a novel *Phytophthora* subclade 8d. N. J. GRUNWALD (1), S. Werres (2), E. M. Goss (3), C. R. Taylor (4), V. J. Fieland (4). (1) USDA ARS, Corvallis, OR, U.S.A.; (2) Julius Kühn Institute, Federal Research Centre for Cultivated Plants (JKI), Braunschweig, Germany; (3) Dept. of Plant Pathology and Emerging Pathogens Institute, University of Florida, Gainesville, FL, U.S.A.; (4) Dept. of Botany and Plant Pathology, Oregon State University, Corvallis, OR, U.S.A.
- 391-P The effects of salinity on *Phytophthora ramorum* viability and infectivity. J. A. PREUETT (1), D. J. Collins (1), D. G. Luster (2), T. L. Widmer (2). (1) Urban Forestry Program Southern University and A&M College, Baton Rouge, LA, U.S.A.; (2) USDA ARS, Foreign Disease-Weed Science Research Unit, Fort Detrick, MD, U.S.A.
- 392-P Improving reproduction of the Idaho population of the pale cyst nematode, *Globodera pallida*, for use in studies of its control and/or eradication. X. GAO (1), C. Bates (2), J. Worapong (1), J. Johnson (1), R. Zemetra (1). (1) University of Idaho, Moscow, ID, U.S.A.; (2) Washington State University, Pullman, WA, U.S.A.
- 393-P Incursion of myrtle rust in Australia caused by *Uredo rangelii*. M. HIRSCH (1). (1) Australian Government, Canberra, Australia
- 394-P New race of *Phytophthora sojae* in southern Buenos Aires Province (Argentina). P. E. GRIJALBA (1), A. D. Ridao (2), H. E. Palmucci (3). (1) Departamento de Producción Vegetal. Facultad de Agronomía Universidad Nacional de Buenos Aires, Buenos Aires, Argentina; (2) Cátedra de Fitopatología Facultad de Ciencias Agrarias Universidad Nacional de Mar del Plata., Balcarce, provincia de Buenos Aires, Argentina; (3) Cátedra de Fitopatología Facultad de Agronomía Universidad Nacional de Buenos Aires, Buenos Aires, Argentina
- 395-P Multiplication and movement of *Xylella fastidiosa* in Australian native plant species. A. A. RATHE (1), L. J. Pilkington (2), G. M. Gurr (3). (1) EH Graham Centre for Agricultural Innovation (Industry and Investment NSW and Charles Sturt University), Gosford, Australia; (2) EH Graham Centre for Agricultural Innovation (Industry and Investment NSW and Charles Sturt University), Industry & Investment NSW, Gosford, Australia; (3) EH Graham Centre for Agricultural Innovation (Industry and Investment NSW and Charles Sturt University), Charles Sturt University, Orange, Australia
- 396-P Tropical race 4: Current and future impact on export and subsistence banana production. R. PLOETZ (1), M. Dita (2), G. Kema (3). (1) University of Florida, Homestead, FL, U.S.A.; (2) Bioversity International, Turrialba, Costa Rica; (3) Plant Research International, Wageningen, Netherlands
- 397-P Current and future risk assessment of the spread of *Trioza erytreae* in citrus-growing areas of North America. H. Arteaga (1), T. P. Feria (1), E. L. SCHUENZEL (1). (1) University of Texas Pan American, Edinburg, TX, U.S.A.

Weeds

- 398-P EDDMapS: The common operating platform for aggregating and using invasive species distribution data. J. LAFOREST (1), C. T. Barger (1). (1) University of Georgia, Tifton, GA, U.S.A.
- 399-P Evolutionary ecology of invasion in the *omics* era: Examining inbreeding depression and invasion success of the common horsenettle, *Solanum carolinense*. J. MENA-ALI (1), B. Forry (1), R. Kariyat (2), K. Mauck (2), M. Mescher (2), C. de Moraes (2), A. Stephenson (2). (1) Franklin & Marshall College, Lancaster, PA, U.S.A.; (2) Pennsylvania State University, University Park, PA, U.S.A.

ENTOMOLOGY

Entomology

- 400-P Evaluating alfalfa cutting as a potential measure to enhance abundance of predators to *Aphis gossypii* in cotton-alfalfa intercropping system. M. CHEN (1). (1) Gansu Academy of Agricultural Sciences, Lanzhou, Peoples Republic of China
- 401-P Apoptosis of insect cells Sf9 and Spex-VII leaded by cantharidin. Z. ZHANG (1), L. Chen (2), B. Yang (2), A. Zhang (2), M. Zhang (2). (1) Beijing University of Agriculture, Beijing, Peoples Republic of China; (2) Plant Science and Technology College, Beijing University of Agriculture, Beijing, Peoples Republic of China
- 402-P Egg parasitoids of *Chrysocoris javanus* Westw. (Hemiptera: Scutelleridae) on *Jatropha curcas* L. in Bogor, West Java, Indonesia. N. MARYANA (1), H. A. Qodir (1). (1) Bogor Agricultural University, Bogor, Indonesia
- 403-P Cymene inhibition of *Beauveria bassiana* spore germination. W. LIU (1), L. Nguyen (2), D. Bodioga (3), R. Kelemen (4), J. Joo (1), B. H. Ownley (1), K. D. Gwinn (1). (1) University of Tennessee, Knoxville, TN, U.S.A.; (2) Mount Holyoke College, South Hadley, MA, U.S.A.; (3) Hood College, Frederick, MD, U.S.A.; (4) Iowa State University, Ames, IA, U.S.A.
- 404-P Susceptibility to nucleopolyhedrovirus and mitochondrial DNA sequence variation among different geographic populations of *Ectropis oblique* Pount. Q. XIAO (1), Y. Xi (1), J. Fu (1), K. Yin (1). (1) Tea Research Institute of China, Hangzhou, Peoples Republic of China
- 405-P Green leaf volatile-induced direct defenses against insect herbivores. J. ENGELBERTH (1), M. Engelberth (1), F. Contreras (1), N. White (1). (1) University of Texas, San Antonio, TX, U.S.A.
- 406-P WITHDRAWN
- 407-P The effects of temperature on the development of *Amblyseius barkeri* (Hughes) (Acari:Phytoseiidae). H. LIU (1), J. Wang (2), Z. Wang (2). (1) Southwest University, Chongqing, Peoples Republic of China; (2) College of Plant Protection, Southwest University, Chongqing, Peoples Republic of China
- 408-P Synergy in biorational insecticides used on collard greens, *Brassica oleracea*, infested with diamondback moth, *Plutella xylostella*. M. C. FLANERY (1), H. O. Sintim (1), C. W. Raczkowski (1), B. N. Dingha (1), L. E. Jackai (1). (1) North Carolina Agricultural and Technical State University, Greensboro, NC, U.S.A.
- 409-P Efficacy of silk channel injections with insecticides for management of Lepidopteran pests of sweet corn. A. N. SPARKS (1), L. Gadal (2), X. Ni (3). (1) University of Georgia Cooperative Extension, Tifton, GA, U.S.A.; (2) Monsanto-Dekalb, Montpellier, France; (3) USDA-ARS, Crops Genetics and Breeding Research Unit, Tifton, GA, U.S.A.
- 410-P Comparative studies of acetylcholinesterase purified from various field populations of *Bactrocera dorsalis* (Diptera: Tephritidae). X. Wang (1), G. Shen (1), W. DOU (1), Z. Zhao (1), J. Wang (1). (1) Southwest University, Chongqing, Peoples Republic of China
- 411-P Cultural control of maize wallaby-ear symptom: Damage avoidance by earlier planting of forage maize. K. MATSUKURA (1), M. Matsumura (1). (1) National Agricultural Research Center for Kyushu Okinawa Region, Koshi, Kumamoto, Japan
- 412-P Development of mtCOI PCR primers with 5' AT-rich flaps for rapid identification of high-consequence *Bemisia tabaci*. S. ANDREASON (1), J. Brown (2), J. Fletcher (1), F. Ochoa-Corona (1), A. Wayadande (1). (1) Oklahoma State University, Stillwater, OK, U.S.A.; (2) The University of Arizona, Tucson, AZ, U.S.A.
- 413-P Insecticidal activity of cantharidin against *Plutella xylostella* and its toxicological mechanism in Lepidopteran cells. W. JINZHONG (1), M. Linlin (2), Z. Zhiyong (3), S. Shuling (2), Z. Minzhao (2), Z. Aihuan (2), Z. Pengfei (2), H. Shaodong (2). (1) Beijing University of Agriculture, Beijing Key Laboratory of New Technology of Agricultural Application, Beijing, Peoples Republic of China; (2) College of Plant Science and Technology, Beijing University of Agriculture, Beijing, Peoples Republic of China; (3) Beijing Key Laboratory of New Technology of Agricultural Application, Beijing University of Agriculture, Beijing, Peoples Republic of China
- 414-P Accessing phosphoglucose isomerase: A gene with potential links to fitness and invasibility of the leafroller *Epiphyas postvittana* (Lepidoptera). S. HE (1), K. F. Armstrong (2). (1) Yunnan Agricultural University, Kunming, Peoples Republic of China; (2) Bio-protection Research Centre, Lincoln University, Christchurch, New Zealand
- 414a-P Identification and differentiation of gall midge species from West Africa. F. NWILENE (1), A. Onasanya (1), A. Togola (1), M. Ukwungwu (2), A. Hamadoun (3), D. Dakouo (4), N. Woin (5), B. Malick (4), S. Nacro (4), C. James (6). (1) Africa Rice Center, Cotonou, Benin; (2) National Cereals Research Institute (NCRI), Nigeria; (3) IER/CRRA, Sikasso, Mali; (4) INERA Station de Farako-Ba, Bobo-Dioulasso, Burkina Faso; (5) Institut de Recherche Agricole pour le Développement (IRAD), Cameroon; (6) Rokupr Rice Research Station, Freetown, Sierra Leone
- 415-P Pesticidal activities of *Hyptis suaveolens* in pest management. O. O. OLOTUAH (1). (1) Adekunle Ajasin University, Akungba-Akoko, Nigeria
- 416-P Characterizing whitefly species and/or biotypes vectoring geminiviruses on peppers in Indonesia.

- S. RAMASAMY (1), Y. Hsu (1), M. Lin (1), A. Dibiyantoro (2). (1) AVRDC-The World Vegetable Center, Shanhua, Taiwan; (2) AVRDC-The World Vegetable Center, Kota Tegal, Indonesia
- 417-P Effect of alternative products on mortality of adults of citrus black fly *Aleurocanthus woglumi* Ashby, 1915 on leaves of orange trees. R. A. CARVALHO (1). (1) EMEPA-PB, João Pessoa, Brazil
- 418-P Effect of concentrations of detergent on mortality of adults of citrus black fly *Aleurocanthus woglumi* Ashby, 1915 on leaves of orange trees. R. A. CARVALHO (1). (1) EMEPA-PB, João Pessoa, Brazil
- 419-P Efficiency of concentrations of detergent on mortality of adults of citrus black fly *Aleurocanthus woglumi* on leaves of tangerine trees. R. A. CARVALHO (1). (1) EMEPA-PB, João Pessoa, Brazil
- 420-P Efficiency of alternative products on mortality of adults of citrus black fly *Aleurocanthus woglumi* on leaves of tangerine trees. R. A. CARVALHO (1). (1) EMEPA-PB, João Pessoa, Brazil
- 421-P Efficiency of concentrations of orange peel oil on mortality of adults of citrus black fly *Aleurocanthus woglumi* on leaves of tangerine trees. R. A. CARVALHO (1). (1) EMEPA-PB, João Pessoa, Brazil
- 422-P Effect of concentrations of orange peel oil on mortality of adults of citrus black fly *Aleurocanthus woglumi* Ashby, 1915 on leaves of orange trees. R. A. CARVALHO (1). (1) EMEPA-PB, João Pessoa, Brazil
- 423-P Effect of alternative products on mortality of 4th instar larvae (pupas) of citrus black fly *Aleurocanthus woglumi* on leaves of orange trees. R. A. CARVALHO (1). (1) EMEPA-PB, João Pessoa, Brazil
- 424-P Effect of alternative products on mortality of 2nd and 3rd instar larvae of citrus black fly *Aleurocanthus woglumi* on leaves of orange trees. R. A. CARVALHO (1). (1) EMEPA-PB, João Pessoa, Brazil
- 425-P Effect of concentrations of orange oil on mortality of 2nd and 3rd instar larvae of citrus black fly *Aleurocanthus woglumi* on leaves of lemon trees. R. A. CARVALHO (1). (1) EMEPA-PB, João Pessoa, Brazil
- 426-P Development of an electronic-nose technology for the rapid detection and discrimination of subterranean termites within wood in service. A. WILSON (1), C. S. Oberle (1). (1) USDA Forest Service, Stoneville, MS, U.S.A.
- 427-P Seasonal synchrony between pheromone trap catches of the bean bug, *Riptortus pedestris*, and the timing of invasion into soybean fields. N. ENDO (1), T. Wada (1), R. Sasaki (2). (1) National Agricultural Research Center for Kyushu Okinawa Region, Koshi, Japan; (2) Fuji Flavor Co., Ltd., Hamura, Japan
- 428-P The occurrence and management of brown planthopper, *Nilaparvata lugens* (Stål), in Korea. Y. SONG (1). (1) Gyeongsang National University, Jinju, South Korea
- 429-P Integration of balanced crop nutrition and chlorpyrifos in management of coffee berry borer, *Hypothenemus hampei* (Coleoptera: Scolytidae) in Kenya. H. M. MUGO (1). (1) Coffee Research Foundation, Ruiru, Kenya
- 430-P Red palm weevil, *Rhynchophorus ferrugineus* (Olivier), the worst invasive pest of palms. A. M. AJLAN (1), K. A. Alhudaib (1), J. R. Faleiro (2), K. S. Abdulsalam (1). (1) King Faisal University, Hofuf, Saudi Arabia; (2) FAO Project, National Date Palm Research Centre, King Faisal University, Hofuf, Saudi Arabia
- 431-P Radar observations of the migration of *Nilaparvata lugens* S. (Delphacidae) in southern China. C. JIANG (1), D. Cheng (1). (1) State Key Laboratory of Biology of Plant Diseases and Insect Pests, Institute of Plant Protection, Chinese Academy of Agricultural Sciences, Beijing, Peoples Republic of China
- 432-P Analysis on population sources of the first generation *Loxostege sticticalis* L. (Lepidoptera: Pyralidae) moth in China. Y. Zhang (1), L. WEN (2), D. Cheng (1). (1) State Key Laboratory for Biology of Plant Disease and Insect Pests, Institute of Plant Protection, Chinese Academy of Agricultural Sciences, Beijing, Peoples Republic of China; (2) Institute of Plant Protection, Chinese Academy of Agricultural Sciences, China Society of Plant Protection, Beijing, Peoples Republic of China
- 433-P Gut bacterial communities in the *Bactrocera dorsalis* and their luring activities on host. H. Wang (1), H. ZHANG (1). (1) Huazhong Agricultural University, Wuhan, Peoples Republic of China
- 434-P House fly regurgitation spots may be a source of *E. coli* O157:H7 contamination of leafy greens. L. Wasala (1), J. Talley (1), J. Fletcher (1), A. WAYADANDE (1). (1) Oklahoma State University, Stillwater, OK, U.S.A.
- 435-P Grape hosts infested with glassy-winged sharpshooters produce volatile compounds which may attract egg parasitoids. C. WALLIS (1), R. Krugner (1), S. Walse (1). (1) USDA ARS, Parlier, CA, U.S.A.
- 436-P Effect of barley chromosome addition on the susceptibility of wheat to feeding by gall-inducing leafhopper, *Cicadulina bipunctata* (Hemiptera: Cicadellidae). S. KUMASHIRO (1), K. Matsukura (2), K. Kawaura (3), M. Matsumura (2), Y. Ogihara (3), M. Tokuda (1). (1) Kyushu University, Fukuoka, Japan; (2) National Agricultural Research Center for Kyushu Okinawa Region, Koshi, Japan; (3) Yokohama City University, Yokohama, Japan
- 437-P Is the striped mealybug, *Ferrisia virgata*, a vector of huanglongbing bacterium '*Candidatus Liberibacter asiaticus*'? M. T. HOFFMAN (1), Y. Duan (1), L. Zhou (2), I. Stocks (3), D. Hall (1). (1) USDA ARS USHRL, Fort Pierce, FL, U.S.A.; (2) University of Florida, IFAS-IRREC, Fort Pierce, FL, U.S.A.; (3) Florida Dept. of Agriculture & Consumer Services, Division of Plant Industry, Gainesville, FL, U.S.A.
- 438-P Effect of arbuscular mycorrhizae on aphid infestation of wheat. M. ABDELKARIM (1), B. H. Ownley (1), W. E. Klingeman (1), K. D. Gwinn (1). (1) University of Tennessee, Knoxville, TN, U.S.A.

■ EPIDEMIOLOGY/ECOLOGY/ ENVIRONMENTAL BIOLOGY OF PATHOGENS

Bacteria

- 439-P Lettuce cultivar influences *Xanthomonas campestris* pv. *vitians* population levels. S. J. GEBBEN (1), R. Hayes (2), C. T. Bull (2). (1) Hartnell College, Salinas, CA, U.S.A.; (2) USDA ARS, Salinas, CA, U.S.A.

- 440-P Genetic structure of *Waitea circinata* var. *circinata* on creeping bentgrass and annual bluegrass putting greens in southern California. C. CHEN (1), G. W. Douhan (1), F. P. Wong (1). (1) University of California, Riverside, CA, U.S.A.
- 441-P Genetic diversity of *Xanthomonas oryzae* pv. *oryzicola* from West Africa. I. Wonni (1), L. Detemmerman (2), S. Dao (3), L. Ouedraogo (1), S. Soungalo (4), O. Koita (5), B. Szurek (6), R. Koebnik (6), L. Triplett (7), B. Cottyn (8), V. VERDIER (7). (1) INERA, Bobo Dioulasso, Burkina Faso; (2) ILVO, Merelbeke, Belgium; (3) University Bamako, Bamako, Mali; (4) IER, Niono, Mali; (5) University Bamako, FAST, LBMA, Bamako, Mali; (6) IRD, Montpellier, France; (7) Colorado State University, Fort Collins, CO, U.S.A.; (8) ILVO, Niono, Belgium
- 441.a-P Genetic diversity and DNA fingerprinting of *Xanthomonas oryzae* pv. *oryzae* isolates from East and Central Africa. O. AMOS (1), E. R. Gasore (2), F. E. Nwilene (3), I. Ingelbrecht (4), J. Lamo (5), K. Wydra (6), M. M. Ekperigin (7), M. Langa (8), Y. Sere (9), R. O. Onasanya (7), P. Kiepe (9), T. Kumashiro (9). (1) Africa Rice Center, Dar-es-Salaam, Tanzania; (2) Rwanda Agricultural Research Institute, Butare, Rwanda; (3) Africa Rice Center, Ibadan, Nigeria; (4) Central Biotechnology Laboratory, Ibadan, Nigeria; (5) National Crop Resources Research Institute (NaCRRI), Kampala, Uganda; (6) Institute of Plant Diseases and Plant Protection, Hannover, Germany; (7) Federal University of Technology Akure, Akure, Nigeria; (8) Institute of Agricultural Research of Mozambique, Maputo, Mozambique; (9) Africa Rice Center (AfricaRice), Cotonou, Benin
- 442-P Genetic diversity of ‘*Candidatus Liberibacter asiaticus*’ strains from Thailand based on DnaA and TufB genes. S. DONNUA (1), A. Paradornuwat (1), A. Sechler (2), N. Schaad (2), S. Chowpongpan (1), N. Thaveechai (1). (1) Kasetsart University, Jatujak, Bangkok, Thailand; (2) FDWSRU/ARS/USDA, Fort Detrick, MD, U.S.A.
- 443-P Genotypic classification of pathogenic variants of *Xanthomonas axonopodis* pv. *citri* from Taiwan by various DNA typing methods. H. LIN (1), H. Chang (2), Y. Chang (1). (1) Chung Chou Institute of Technology, Changhua County, Taiwan; (2) Agricultural Research Institute Council of Agriculture, Taichung County, Taiwan
- 444-P Seasonal fluctuation of ‘*Candidatus Liberibacter asiaticus*’ titers in citrus trees. S. A. LOPES (1), M. C. Sousa (1), G. F. Frare (2), J. C. Barbosa (3), J. A. Silva (4), E. L. Furtado (5). (1) FUNDECITRUS, Araraquara, Brazil; (2) Esalq/USP, Piracicaba, Brazil; (3) FCAV/UNESP, Jaboticabal, Brazil; (4) APTA/Colina, Colina, Brazil; (5) FCA/UNESP, Botucatu, Brazil
- 445-P FRET probe genotyping of *Xylella fastidiosa* strains. J. BRADY (1), J. Faske (1), F. Mitchell (1). (1) Texas AgriLife Research, Stephenville, TX, U.S.A.
- 446-P The filamentous phage phiRSS1 enhances virulence of *Ralstonia solanacearum*. H. S. ADDY (1), T. Kawasaki (1), M. Fujie (1), T. Yamada (1). (1) Hiroshima University, Higashi Hiroshima, Japan
- 447-P Creeping stem cuttings, the possible inoculum source for bacterial wilt of vegetable sweetpotato. Y. CHEN (1), Y. Lin (2), W. Chung (1). (1) National Chung Hsing University, Taichung, Taiwan; (2) Asia University, Taichung, Taiwan
- 448-P Host specificity in *Erwinia tracheiphila* (Smith): Evidence from rep-PCR and pathogenicity assays. E. SAALAU ROJAS (1). (1) Iowa State University, Ames, IA, U.S.A.
- 449-P Activity of citrus canker lesions on leaves, shoots, and fruit of grapefruit in a Florida orchard from June 2010 to January 2011. C. H. BOCK (1), T. R. Gottwald (2), J. H. Graham (3). (1) USDA-ARS-SEFTNRL, Byron, GA, U.S.A.; (2) USDA-ARS-USHRL, Fort Pierce, FL, U.S.A.; (3) University of Florida, Lake Alfred, FL, U.S.A.
- 450-P *Erwinia amylovora* CRISPR arrays provide an effective tool for evaluating species diversity and microbial source tracking. G. C. MCGHEE (1), G. W. Sundin (1). (1) Michigan State University, East Lansing, MI, U.S.A.
- 451-P Biogeographic diversity analysis of *Erwinia amylovora* using multilocus variable number of tandem repeats analysis (MLVA). T. DREO (1), T. H. Smits (2), J. E. Frey (2), M. Ravnkar (1), B. Duffy (3). (1) National Institute of Biology, Ljubljana, Slovenia; (2) Agroscope Changins-Wädenswil ACW, Wädenswil, Switzerland; (3) Swiss Federal Research Station, Wädenswil, Switzerland
- 452-P *Salmonella enterica* moderates *Pectobacterium carotovorum* populations and virulence on lettuce. G. KWAN (1), A. O. Charkowski (1), J. D. Barak (1). (1) University of Wisconsin, Madison, WI, U.S.A.
- 453-P Increasing the sensitivity of PCR for the detection of foodborne pathogens in fresh produce. S. Dobhal (1), C. Timmons (1), J. Fletcher (1), L. MA (1). (1) Oklahoma State University, Stillwater, OK, U.S.A.
- 454-P Endospore-forming bacteria indigenous to landscape planting beds and their inhibition of *Rhizoctonia solani*. D. NORMAN (1), E. R. Dickstein (2), J. M. Yuen (1). (1) University of Florida, Apopka, FL, U.S.A.; (2) University of Florida, Gainesville, FL, U.S.A.
- Biology**
- 455-P Pathogen transport and response-tool for agricultural canopies (P-TRAC)—A modeling system to guide disease management decisions in perennial canopies. W. MAHAFFEE (1), B. Bailey (2), E. Pardyjak (2), P. Skinkis (3), R. Stoll (2). (1) USDA ARS HCRL, Corvallis, OR, U.S.A.; (2) Dept. of Mechanical Engineering, University of Utah, Salt Lake, UT, U.S.A.; (3) Dept. of Horticulture, Oregon State University, Corvallis, OR, U.S.A.
- 456-P *Pestalotiopsis* and *Colletotrichum* species causing latent infection on persimmon fruits in Brazil. R. Y. Blood (1), L. C. Rozwalka (1), T. J. Michailides (2), L. L. MAY DE MIO (3). (1) Federal University of Paraná, Curitiba, Brazil; (2) University of California-Davis, Parlier, CA, U.S.A.; (3) Universidade Federal do Paraná, Curitiba, Brazil
- 457-P Influence of weather factors on panicle blast in upland rice in Brazil. M. C. FILIPPI (1), V. L. Silva-Lobo (1), G. B. Silva (2), A. S. Prabhu (1), R. S. Figueiredo (3). (1) Embrapa-CNPAE, Santo Antonio De Goias, Brazil; (2) Universidade Federal Rural da Amazônia (UFRA),

- Belem, Brazil; (3) Universidade Federal de Goiás (UFG), Goiânia, Brazil
- 458-P Development of a forecast model for the carpogenic germination of *Sclerotinia sclerotiorum* sclerotia. A. M. Geraldine (1), M. Hikishima (1), A. H. Maia (2), M. LOBO JUNIOR (1). (1) Embrapa Rice and Beans, Santo Antônio de Goiás, Brazil; (2) Embrapa Environment, Jaguariúna, Brazil
- 459-P  Interactive effects of temperature and wetness duration on infection parameters of *Pseudoperonospora cubensis* in cucurbit varieties. K. N. NEUFELD (1), P. S. Ojiambo (1). (1) North Carolina State University, Raleigh, NC, U.S.A.
- 460-P Effect of environmental conditions and lesion age on sporulation of *Phytophthora ramorum* on California bay, rhododendron, and camellia. S. TJOSVOLD (1), D. Chambers (1), S. Mori (2). (1) University of California Cooperative Extension, Watsonville, CA, U.S.A.; (2) Forest Service, Albany, CA, U.S.A.
- 461-P *Phytophthora ramorum*'s trophic nature suggests that it cannot utilize dead leaf litter in aquatic systems. K. ARAM (1), D. M. Rizzo (1). (1) University of California, Davis, CA, U.S.A.
- 462-P Switchgrass rust epidemics (*Puccinia emaculata*) in agronomic fields in Tennessee. J. BLACK (1), A. Windham (1), M. Windham (1). (1) University of Tennessee, Knoxville, TN, U.S.A.
- 463-P Refined empirical models for predicting Fusarium head blight epidemics in the United States. A. SPARKS (1), D. Shah (2), E. De Wolf (3), L. Madden (4), P. Paul (5), K. Willyerd (5). (1) International Rice Research Institute, Metro Manila, Philippines; (2) FHB Consulting, Lewiston, NY, U.S.A.; (3) Kansas State University, Manhattan, KS, U.S.A.; (4) The Ohio State University, Columbus, OH, U.S.A.; (5) The Ohio State University, Wooster, OH, U.S.A.
- 464-P Diversity of *Phytophthora* species identified in a nursery irrigation runoff water containment basin of eastern Virginia. C. HONG (1), P. Richardson (1), S. Ghimire (1), P. Kong (1), J. Hu (1), G. Moorman (2), J. Lea-Cox (3), D. Ross (3). (1) Virginia Tech, Virginia Beach, VA, U.S.A.; (2) Penn State, University Park, PA, U.S.A.; (3) University of Maryland, College Park, MD, U.S.A.
- 465-P *Phytophthora* species identified from streams in Virginia. C. Hong (1), P. RICHARDSON (1), P. Kong (1), T. Edgerton (2), C. Asaro (2), S. Oak (3). (1) Virginia Tech, Virginia Beach, VA, U.S.A.; (2) Virginia Dept. of Forestry, Charlottesville, VA, U.S.A.; (3) USDA Forest Service, Asheville, NC, U.S.A.
- 466-P Survey of *Rhizoctonia* spp. from wheat soils in the United States and determination of pathogenicity on wheat and barley. K. L. SCHROEDER (1), K. K. Shetty (2), T. C. Paulitz (3). (1) Washington State University, Pullman, WA, U.S.A.; (2) Syngenta Seed Care, Durham, NH, U.S.A.; (3) USDA-ARS, Pullman, WA, U.S.A.
- 467-P South American leaf blight of rubber tree: Dynamics of pathogen inoculum, progress and damages, in three topographical strata. J. HONORATO JUNIOR (1), L. Maffia (1), E. S. Mizubuti (1), C. R. Mattos (2). (1) Universidade Federal De Viçosa, Viçosa, Brazil; (2) Michelin, Igrapiúna, Brazil
- 468-P Survival of *Cercospora sojina* on soybean leaves in Illinois. G. R. ZHANG (1), C. A. Bradley (1). (1) University of Illinois, Urbana, IL, U.S.A.
- 469-P *Botryosphaeria* species complex associated with coast live oak (*Quercus agrifolia*) mortality in southern California. S. LYNCH (1), A. Eskalen (1), P. Zambino (2), T. Scott (1). (1) University of California, Riverside, CA, U.S.A.; (2) Forest Service, Pacific Southwest Region, San Bernardino, CA, U.S.A.
- 470-P Monitoring sugarcane rust spore concentrations by real-time qPCR and passive spore trapping. N. C. GLYNN (1), J. S. Haudenshield (2), G. L. Hartman (3), R. N. Raid (4), J. C. Comstock (1). (1) USDA-ARS, Sugarcane Field Station, Canal Point, FL, U.S.A.; (2) USDA-ARS, National Soybean Research Center, Urbana, IL, U.S.A.; (3) USDA-ARS, University of Illinois, Urbana, IL, U.S.A.; (4) Everglades Research and Education Center, University of Florida, Belle Glade, FL, U.S.A.
- 471-P Epidemiology of grape anthracnose: Identification of factors associated with defoliation of grape leaves infected by *Elsinoe ampelina*. O. CARISSE (1). (1) Agriculture & Agri-Food Canada, St-Jean-sur-Richelieu, QC, Canada
- 472-P Comparison of old and new strains of *Puccinia striiformis* f. sp. *tritici* for ability to initiate stripe rust epidemics in wheat. E. Milus (1), D. MOON (1). (1) University of Arkansas, Fayetteville, AR, U.S.A.
- 473-P Maintaining maturity group IV soybean seed quality: Perspectives from Mississippi, 2009 and 2010. T. ALLEN (1), A. Catchot (2), J. Gore (1), D. Cook (1), N. Buehring (3), H. R. Smith (4). (1) Mississippi State University, Stoneville, MS, U.S.A.; (2) Mississippi State University, Starkville, MS, U.S.A.; (3) Mississippi State University, Verona, MS, U.S.A.; (4) Mississippi State University, Mendenhall, MS, U.S.A.
- 474-P Survival of three quarantine pathogens in a simulated aquatic system at different levels of pH. P. KONG (1), J. D. Lea-Cox (2), G. W. Moorman (3), C. Hong (1). (1) Virginia Tech, Virginia Beach, VA, U.S.A.; (2) University of Maryland, College Park, MD, U.S.A.; (3) The Pennsylvania State University, University Park, PA, U.S.A.
- 475-P Multiple gene genealogy analysis reveals *Mycosphaerellaceae* species known to be specific to *Eucalyptus* associated to native Myrtaceae in Uruguay. C. A. PEREZ (1), M. J. Wingfield (2), N. A. Altier (3), R. A. Blanchette (4). (1) Universidad de la Republica, Paysandu, Uruguay; (2) Forestry and Agricultural Biotechnology Institute (FABI), University of Pretoria, Pretoria, Southwest Africa; (3) Instituto Nacional de Investigacion Agropecuaria, Canelones, Uruguay; (4) Dept. of Plant Pathology, University of Minnesota, St. Paul, MN, U.S.A.
- 476-P Effect of temperature on survival of *Phytophthora* and bacterial species in irrigation water. W. HAO (1), B. Vinatzer (2), C. Hong (1). (1) Virginia Tech, Hampton Roads AREC, Virginia Beach, VA, U.S.A.; (2) Virginia Tech, Blacksburg, VA, U.S.A.
- 477-P Distribution, pathogenicity, and molecular analysis of *Puccinia psidii* in Hawaii. J. UCHIDA (1), C. Kadooka (1). (1) University of Hawaii, Honolulu, HI, U.S.A.
- 478-P Detection of latent infection of wheat leaves caused by *Puccinia striiformis* f. sp. *tritici* using single-tube nested

- PCR. Z. Sun (1), C. Huang (1), H. Wang (1), Z. MA (1). (1) China Agricultural University, Beijing, Peoples Republic of China
- 479-P Distribution and frequency of isolation of *Fusarium* species associated with soybean roots in Iowa. M. DIAZ-ARIAS (1), L. Leandro (1), G. Munkvold (1). (1) Iowa State University, Ames, IA, U.S.A.
- 480-P Rhizoctonia web blight development on azalea in relation to duration of leaf wetness. W. E. COPES (1). (1) USDA ARS, Poplarville, MS, U.S.A.
- 481-P Air sampling of three powdery mildew populations using a Burkard cyclone sampler in eastern Washington. Q. LIU (1), M. E. Nelson (1), G. G. Grove (1). (1) Washington State University, Prosser, WA, U.S.A.
- 482-P Development and dispersal of chasmothecia of *Erysiphe necator* and *Podosphaera clandestina*, causal agents of powdery mildews of wine grape and cherry. J. Zhang (1), Q. LIU (1), M. E. Nelson (1), G. G. Grove (1). (1) Washington State University, Prosser, WA, U.S.A.
- 483-P Sporulation potential of *Phytophthora kernoviae* compared to *P. syringae* and *P. cactorum* on selected hosts. T. L. WIDMER (1). (1) USDA ARS FDWSRU, Frederick, MD, U.S.A.
- 484-P Effects of seedborne and overwintering inoculum on ray blight severity in pyrethrum. S. J. PETHYBRIDGE (1), D. Gent (2), F. S. Hay (3). (1) Botanical Resources Australia, Ulverstone, Australia; (2) USDA ARS NFSPRC, Corvallis, OR, U.S.A.; (3) University of Tasmania, Burnie, Australia
- 485-P Temporal dispersal patterns of *Sclerotinia sclerotiorum* ascospores during canola flowering. I. S. QANDAH (1), L. E. del Rio Mandoza (2). (1) Monsanto Co., Spencer, IA, U.S.A.; (2) North Dakota State University, Fargo, ND, U.S.A.
- 486-P Effect of postinoculation relative humidity on peanut infection by *Sclerotinia minor*. M. J. Brown (1), H. A. MELOUK (2), R. M. Hunger (1). (1) Dept. of Entomology and Plant Pathology, Oklahoma State University, Stillwater, OK, U.S.A.; (2) USDA-ARS, Dept. of Entomology and Plant Pathology, Oklahoma State University, Stillwater, OK, U.S.A.
- 487-P Scale-dependent landscape epidemiology. P. SKELSEY (1). (1) Kansas State University, Manhattan, KS, U.S.A.
- 488-P Systemic resistance phenomena from an evolutionary perspective. G. REYNOLDS (1), T. R. Gordon (1), N. McRoberts (1). (1) University of California, Davis, CA, U.S.A.
- 489-P Fumigation and fungicide effects and qualitative and quantitative analysis of *Pythium*, *Fusarium*, and *Rhizoctonia* on strawberry roots. B. LIU (1), J. Sun (1), K. Peeden (1), J. Driver (1), F. Louws (1). (1) North Carolina State University, Raleigh, NC, U.S.A.
- 489a-P Early warning method and system for cucumber diseases in solar greenhouses. X. Yang (1), M. LI (1), C. Sun (1), J. Qian (1), Z. Ji (1), C. Zhao (1). (1) China National Engineering Research Center for Information Technology in Agriculture (NERCITA), Beijing, Peoples Republic of China
- 490-P Revisiting flag leaf-based foliar fungicide application thresholds for *Stagonospora nodorum* blotch management in soft red winter wheat. K. T. Willyerd (1), C. Bradley (2), S. Conley (3), P. Esker (3), L. Madden (1), K. Wise (4), P. PAUL (1). (1) Ohio State University, Wooster, OH, U.S.A.; (2) University of Illinois, Urbana, IL, U.S.A.; (3) University of Wisconsin, Madison, WI, U.S.A.; (4) Purdue University, West Lafayette, IN, U.S.A.
- 491-P Effect of UV-A and UV-B on airborne conidia concentrations of *Erysiphe necator* in eastern Washington. H. YAN (1), M. Nelson (1), G. Grove (1). (1) Washington State University, Irrigated Agriculture Research and Extension Center, Prosser, WA, U.S.A.
- 492-P The time-lagged effects on the relationship between weather variables and airborne spore concentration of *Erysiphe necator*. H. YAN (1), Q. Liu (1), M. Nelson (1), G. Grove (1). (1) Washington State University, Irrigated Agriculture Research and Extension Center, Prosser, WA, U.S.A.
- Climate Change**
- 493-P Potential impact of climate change over the occurrence of black spot of papaya in State of the Espírito Santo. W. C. Jesus Junior (1), W. B. MORAES (1), W. B. Moraes (2), F. C. Cosmi (1), R. A. Cecílio (1), F. R. Alves (1). (1) Federal University of Espírito Santo, Alegre, Brazil; (2) State University Paulista "Julio de Mesquita Filho", Alegre, Brazil
- 494-P Impact of global climate change over the geographic distribution of *Ceratocystis fimbriata* of eucalyptus in Brazil. W. C. JESUS JUNIOR (1), W. B. Moraes (1), R. A. Cecílio (1), J. Macedo Pezzopane (1), W. B. Moraes (2). (1) Federal University of Espírito Santo, Alegre, Brazil; (2) State University Paulista "Julio de Mesquita Filho", Alegre, Brazil
- 495-P An analysis of plant disease and vector threats under future climates. K. J. FINLAY (1), J. E. Luck (1), S. Chakraborty (2), F. Constable (3), A. Freeman (4), W. Griffiths (4), G. Hollaway (4), P. Melloy (5), N. Nancarrow (1), P. Trebicki (4). (1) Dept. of Primary Industries Victoria, Melbourne, Australia; (2) CSIRO, Brisbane, Australia; (3) Dept. of Primary Industries, Melbourne, Australia; (4) Dept. of Primary Industries Victoria, Horsham, Australia; (5) University of Queensland, Brisbane, Australia
- 496-P Spatial characterization of favorable climate conditions for soybean rust progress on current and future scenarios in Brazil. R. A. Rodrigues (1), F. X. VALE (2), W. C. Jesus (3), W. B. Moraes (3), E. N. Moreira (4). (1) Universidade Federal de Viçosa, Departamento de Engenharia Agrícola, Viçosa, Brazil; (2) Universidade Federal De Vicos, Vicos, Brazil; (3) Universidade Federal do Espirito Santo, Alegre, Brazil; (4) Universidade Federal de Viçosa, Departamento de Fitopatologia, Vicos, Brazil
- 497-P Use of an integrated system for disease monitoring and forecasting of wheat stripe rust in China. X. LI (1), J. Zeng (2), W. Liu (2). (1) Iowa State University, Ames, IA, U.S.A.; (2) National Agro-Tech Extension and Service Center, Beijing, Peoples Republic of China
- Ecology**
- 498-P Fungal communities on strawberry roots and in soils amended with mustard meal (MM). J. SUN (1), B. Liu (2), K. A. Peeden (2), J. G. Driver (2), F. J. Louws (2). (1) North Carolina State University, Cary, NC, U.S.A.; (2) North Carolina State University, Raleigh, NC, U.S.A.

Nematodes

- 499-P Spatial distribution of soybean cyst nematode in research plots. S. POROMARTO (1), L. E. del Rio Mendoza (1), B. D. Nelson (1). (1) Plant Pathology, North Dakota State University, Fargo, ND, U.S.A.
- 500-P Distribution and population density of tea root lesion nematode (*Pratylenchus loosi*) in Iran. A. HOSSEINIKHAH CHOSHALI (1), A. Seraji (2), S. Rezaee (1), A. Shirinfekr (2). (1) Dept. of Plant Pathology, College of Agriculture and Natural Resources, Science and Research Branch, Islamic Azad University, Tehran, Iran; (2) Tea Research Institute of Iran, Lahijan, Iran
- 501-P Unavailable
- 502-P Projected distribution and severity of clubroot of canola in the Canadian prairies. T. K. TURKINGTON (1), H. Klein-Gebbinck (2), O. O. Olfert (3), R. M. Weiss (3), D. J. Kriticos (4), H. R. Kutcher (5), K. C. Falk (3), S. E. Strelkov (6). (1) Agriculture & Agri-Food Canada, Lacombe, AB, Canada; (2) Agriculture & Agri-Food Canada, Beaverlodge, AB, Canada; (3) Agriculture & Agri-Food Canada, Saskatoon, SK, Canada; (4) CSIRO Ecosystem Sciences, Canberra, ACT, Australia; (5) Agriculture & Agri-Food Canada, Melfort, SK, Canada; (6) University of Alberta, Edmonton, AB, Canada
- 503-P Role of rhizosphere microbial communities and nematodes in SDS development and/or suppressiveness in soybean cultivated fields. A. Y. SROUR (1), K. Islam (1), S. Mansouri (1), J. Bond (1), L. Leandro (2), D. Malvick (3), A. M. Fakhoury (1). (1) Southern Illinois University, Carbondale, IL, U.S.A.; (2) Iowa State University, Ames, IA, U.S.A.; (3) University of Minnesota, St. Paul, MN, U.S.A.

Pathogen-Vector Interactions

- 504-P WITHDRAWN
- 505-P Importance of vector movement on the epidemiology of a complex of mite-transmitted wheat viruses. G. L. HEIN (1), A. R. Stilwell (1), D. Rundquist (1). (1) University of Nebraska, Lincoln, NE, U.S.A.
- 506-P Influence of *Maize mosaic virus* on the fitness and wing morphology of *Peregrinus maidis* (Hemiptera: Delphacidae). C. H. HIGASHI (1), A. Bressan (1). (1) University of Hawaii, Honolulu, HI, U.S.A.
- 507-P Dissecting the mode of transmission of *Maize chlorotic mottle virus* by the corn thrips, *Frankliniella williamsi*. D. CABANAS (1), A. Bressan (1). (1) University of Hawaii, Honolulu, HI, U.S.A.
- 508-P Exploring the insect vector-virus interactome using co-immunoprecipitation coupled to mass spectrometry. S. GRAY (1), M. Cilia (1), K. Howe (1), T. Fish (1), T. Thannhauser (1). (1) USDA ARS, Ithaca, NY, U.S.A.
- 509-P Limited effects of foliar insecticidal treatments on the spread of grapevine leafroll disease. T. Jones (1), M. NITA (2), T. Mekuria (3), R. A. Naidu (3). (1) Virginia Tech, AHS AREC, Winchester, VA, U.S.A.; (2) Virginia Tech, Winchester, VA, U.S.A.; (3) Washington State University, Irrigated Agriculture Research and Extension Center, Prosser, WA, U.S.A.
- 510-P Agent-based model of plant virus-host-vector interactions. B. HADI (1), L. Osborne (1). (1) South Dakota State University, Brookings, SD, U.S.A.

Phyllosphere/Rhizosphere Microbiology and Ecology

- 511-P A network of field trials to test the susceptibility of rice mega-varieties to sheath blight. N. F. MAGCULIA (1), S. Savary (1), J. S. Lore (2), J. Kumar (3), S. Singh (4), A. Karthikeyan (5). (1) International Rice Research Institute, Los Baños, Laguna, Philippines; (2) Punjab Agricultural University, Dept. of Plant Pathology, Ludhiana, India; (3) G.B. Pant University of Agriculture and Technology, Dept. of Plant Pathology, Pantnagar, India; (4) Maharashtra Hybrid Seeds Company Limited (Mahyco), Hyderabad, India; (5) Tamil Nadu Agricultural University, Dept. of Plant Pathology, Aduthurai, Tamil Nadu, India
- 512-P Are plant communities shaped by fungal root endophytes? V. REININGER (1), C. R. Grünig (1), T. N. Sieber (1). (1) ETH Zürich, Zürich, Switzerland
- 513-P Fungal and bacterial diversity differ in their responses to fallow period in the Bolivian highlands. L. GOMEZ-MONTANO (1), A. Jumpponen (1), M. A. Gonzales (2), J. Cusicanqui (3), C. Valdivia (4), P. Motavalli (4), M. Herman (1), K. A. Garrett (1). (1) Kansas State University, Manhattan, KS, U.S.A.; (2) Fundacion PROINPA, La Paz, Bolivia; (3) Universidad Mayor de San Andres, La Paz, Bolivia; (4) University of Missouri, Columbia, MO, U.S.A.
- 514-P Competitive interactions between the biocontrol fungus *Trichoderma harzianum* and *Fusarium solani* f. sp. *pisi* in soil. T. Kim (1), G. R. KNUDSEN (1). (1) University of Idaho, Moscow, ID, U.S.A.
- 515-P Sporulation dynamics of *Spilocaea oleagina* and timing of olive leaf spot infection in the orchard. J. L. HENRIQUEZ (1), P. A. Alarcon (1), P. A. Paez (1). (1) University of Chile, Santiago, Chile
- 516-P Suppression of *Fusarium* spp. in tissue culture (TC) banana established in field soils inoculated with commercial biological products. A. M. KAVOO (1), S. Okoth (2), R. Muklhongo (1), E. Mwangi (1), J. Jefwa (1). (1) CIAT-TSBF, Nairobi, Kenya; (2) University of Nairobi, School of Physical and Biological Sciences, Nairobi, Kenya
- 517-P Characterization of the fungal community in the tomato phyllosphere. S. Debenport (1), E. van der Knaap (1), B. MCSPADDEN GARDENER (1). (1) The Ohio State University, OARDC, Wooster, OH, U.S.A.
- 518-P Epiphytic populations and the effect of UV light on *Cladosporium* spp. found on blueberries. B. A. LATORRE (1), H. Chuaqui (1), S. Rojas (1), R. Torres (1), G. A. Díaz (1). (1) Pontificia Universidad Catolica de Chile, Santiago, Chile
- 519-P Survival potential of *Phytophthora infestans* sporangia in relation to meteorological factors. M. OLANYA (1), R. Larkin (1), H. Zhongqi (1), S. Jain (2). (1) USDA ARS, Orono, ME, U.S.A.; (2) University of Maine, Orono, ME, U.S.A.
- 520-P Role of soybean seed exudates in cultivar resistance to *Pythium aphanidermatum*. M. V. AVANZATO (1), J. C. Rupe (1). (1) University of Arkansas, Fayetteville, AR, U.S.A.
- 521-P Suppressiveness to *Phytophthora infestans* infection in potato tubers by Andean soils from three provinces of Ecuador. D. Villamarín (1), G. Orquera (1), C. Mogrovejo (1), C. D. Garzon (2), J. Molineros (2),

- G. A. Forbes (3), A. Koch (1), M. BENITEZ (1). (1) Escuela Politécnica del Ejercito - ESPE, Quito, Ecuador; (2) Oklahoma State University, Stillwater, OK, U.S.A.; (3) International Potato Center, Lima, Peru
- 522-P Characterization of microbial populations from *P. infestans* suppressive Andean soils in Ecuador. G. Orquera (1), C. Mogrovejo (1), D. Villamarín (1), F. Jarrin (2), C. D. Garzon (3), J. Molineros (3), G. A. Forbes (4), A. Koch (1), M. BENITEZ (1). (1) Escuela Politécnica del Ejercito - ESPE, Quito, Ecuador; (2) International Potato Center, Quito, Ecuador; (3) Oklahoma State University, Stillwater, OK, U.S.A.; (4) International Potato Center, Lima, Peru
- 523-P Volatile-mediated plant growth promotion by *Fusarium oxysporum*. V. BITAS (1), S. Kang (1), J. H. Tumlinson (1), K. M. Bitas (1), N. McCartney (1). (1) Pennsylvania State University, University Park, PA, U.S.A.
- 524-P Severity risk spatial model for *Phytophthora* diseases in woody ornamental nurseries in southern middle Tennessee. K. Kilbourne (1), M. T. MMBAGA (2), R. Harrison (1). (1) Tennessee State University, Nashville, TN, U.S.A.; (2) Tennessee State University School of Agriculture and Consumer Sciences, McMinnville, TN, U.S.A.
- 525-P The ectomycorrhizal fungus, *Sebacina vermifera*, imparts drought tolerance to the bioenergy crop switchgrass (*Panicum virgatum* L.). S. R. GHIMIRE (1). (1) The Samuel Roberts Noble Foundation, Ardmore, OK, U.S.A.
- 526-P Effect of microbial diversity on soil fungistasis, disease suppression, and colonization by biological control agents. F. SCALA (1), G. Bonanomi (1), M. Capodilupo (1), M. Cennicola (1), M. Lorito (1). (1) University of Naples "Federico II", Portici, Italy
- 527-P The impact of plant pathogens on post-weed biocontrol restoration. A. CAESAR (1), T. Caesar-TonThat (1). (1) USDA ARS, Sidney, MT, U.S.A.
- 528-P Vegetative compatibility group (VCG) characterization of *Fusarium oxysporum* f. sp. *cubense* in Asia. A. B. MOLINA (1), A. Viljoen (2), W. O'Neil (3), D. Mostert (2), C. Hermanto (4), R. Thangavelu (5), C. Chao (6), N. Masdek (7), V. O. Sinohin (1). (1) Bioversity International, Los Banos, Philippines; (2) University of Stellenbosch, Stellenbosch, Southwest Africa; (3) Agri-Science Queensland, DEEDI, Brisbane, Australia; (4) Indonesian Tropical Fruits Research Institute, Solok, Indonesia; (5) National Research Center for Banana, ICAR, Trichy, India; (6) Taiwan Banana Research Institute, Pintung, Taiwan; (7) Malaysian Agricultural Research Institute, Serdang, Malaysia
- 530-P Agriculture, Takestan Branch, Islamic Azad University, Takestan, Iran; (4) Maize & Forage Crops Research Dept., Seed & Plant Improvement Institute, Karaj, Iran
- 531-P Analysis of the association between *Fusarium verticillioides* isolates isolated from rice and corn in Iran. M. KARIMI DEHKORDI (1), M. Javan-Nikkhah (2), B. Morid (3), H. Zamanizadeh (1), S. Hajmansoor (1). (1) Dept. of Plant Pathology, College of Agriculture and Natural Resources, Science and Research Branch, Islamic Azad University, Tehran, Iran; (2) Dept. of Plant Protection, Faculty of Agriculture, University of Tehran, Karaj, Iran; (3) Dept. of Plant Protection, College of Agriculture, Takestan Branch, Islamic Azad University, Takestan, Iran
- 532-P Genome-wide identification and characterization of microsatellite markers in *Anisogramma anomala*. G. CAI (1), C. Leadbetter (1), T. Molnar (1), B. I. Hillman (1). (1) Rutgers University, New Brunswick, NJ, U.S.A.
- 533-P Characterization of endophytic microflora colonizing wood tissues of healthy and esca-diseased vines. E. BRUEZ (1), J. Vallance (1), J. Gerbore (1), P. Lecomte (1), L. Guérin-Dubrana (1), P. Rey (1). (1) UMR Santé et Agroécologie du Vignoble 1065, Villenave d'Ornon, France
- 534-P Detection of *Phomopsis sclerotioides* in commercial cucurbit field soil by a nested time-release PCR-based technique. H. FURUYA (1), S. Ito (2), E. Sato (1), T. Ito (1), T. Toda (1), S. Fuji (1). (1) Dept. of Biological Production Science, Akita Prefectural University, Akita, Japan; (2) Akita Plant Protection Office, Akita, Japan
- 535-P Population structure and genetic diversity of *Sclerotinia minor* from peanut research plots in Oklahoma. P. A. GARRIDO (1), S. Dobhal (1), F. J. Flores (1), C. G. Rodriguez (2), K. Blough (1), H. Melouk (3), C. D. Garzon (1). (1) Oklahoma State University, Stillwater, OK, U.S.A.; (2) Escuela Politécnica del Ejercito, Sangolqui, Ecuador; (3) USDA-ARS, Stillwater, OK, U.S.A.
- 536-P Genetic characterization and distribution of mating type genes in *Sclerotinia homoeocarpa* populations. A. I. PUTMAN (1), I. Carbone (1), L. P. Tredway (1). (1) North Carolina State University, Raleigh, NC, U.S.A.
- 537-P Development and characterization of microsatellite markers for *Sclerotinia homoeocarpa*. A. I. PUTMAN (1), I. Carbone (1), L. P. Tredway (1). (1) North Carolina State University, Raleigh, NC, U.S.A.
- 538-P Genetic diversity and temporal dynamics of *Venturia inaequalis* populations following two apple scab epidemics in Pennsylvania. M. JIMENEZ-GASCO (1), L. Zhang (1), H. K. Ngugi (2). (1) Pennsylvania State University, University Park, PA, U.S.A.; (2) Pennsylvania State University, Biglerville, PA, U.S.A.
- 539-P Molecular identification of *Galactomyces* species and population structure of the two postharvest sour rot pathogens of fruit crops in California. A. McKay (1), H. FORSTER (2), N. Nguyen (1), J. Adaskaveg (1). (1) University of California, Riverside, CA, U.S.A.; (2) University of California, Davis, CA, U.S.A.
- 539-P Diversity of vegetative compatibility groups in Michigan populations of the chestnut blight fungus, *Cryphonectria parasitica*, 1996 to 2009. J. C. Springer (1), M. T. Chansler (2), A. L. Davelos Baines (3),

Population Genetics

- 529-P Genetic diversity of *Fusarium verticillioides* isolated from corn in Iran. M. KARIMI DEHKORDI (1), M. Javan-Nikkhah (2), B. Morid (3), V. Rahjoo (4), S. Hajmansoor (1). (1) Dept. of Plant Pathology, College of Agriculture and Natural Resources, Science and Research Branch, Islamic Azad University, Tehran, Iran; (2) Dept. of Plant Protection, Faculty of Agriculture, University of Tehran, Karaj, Iran; (3) College of

- A. M. JAROSZ (2). (1) Michigan State University, Lansing, MI, U.S.A.; (2) Michigan State University, East Lansing, MI, U.S.A.; (3) University of Wisconsin, LaCrosse, WI, U.S.A.
- 540-P Virulence variability and genetic diversity among *Cochliobolus sativus* isolates recovered from barley and wheat in North Dakota. S. ALI (1), S. Zhong (1), K. D. Puri (1). (1) North Dakota State University, Fargo, ND, U.S.A.
- 541-P Species diversity, phylogeny and genetic structure of begomovirus populations infecting leguminous weeds in northeastern Brazil. S. J. Silva (1), G. P. Castillo-Urquiza (1), B. T. Hora-Junior (1), I. P. Assunção (2), G. S. Lima (2), G. Pio-Ribeiro (3), E. S. Mizubuti (1), F. M. ZERBINI (1). (1) Universidade Federal de Vicos, Vicos, Brazil; (2) Universidade Federal de Alagoas, Rio Largo, Brazil; (3) Universidade Federal Rural de Pernambuco, Recife, Brazil
- 542-P Unavailable
- 543-P Population genetic structure of the fungus *Leptosphaeria maculans* in commercial canola (*Brassica napus*) fields in North Dakota. A. NEPAL (1), T. Adhikari (1), S. Gurung (1), L. del Rio (1). (1) North Dakota State University, Fargo, ND, U.S.A.
- 544-P North Dakota populations of *Leptosphaeria maculans* are becoming more diverse. A. NEPAL (1), L. del Rio (1). (1) North Dakota State University, Fargo, ND, U.S.A.
- 545-P Microsatellite profile of *Puccinia psidii* in Hawaii and South America. R. NEVES GRACA (1), A. L. Ross-Davis (2), N. B. Klopffentein (2), M. Kim (3), T. L. Peever (4), P. G. Cannon (5), J. Y. Uchida (6), A. C. Alfenas (7). (1) Federal University of Vicos (UFV), Brazil; (2) USDA Forest Service, Moscow, ID, U.S.A.; (3) Kookmin University, Seoul, Korea; (4) Washington State University, Pullman, WA, U.S.A.; (5) USDA Forest Service, Vallejo, CA, U.S.A.; (6) University of Hawaii at Manoa, Honolulu, HI, U.S.A.; (7) Universidade Federal de Vicos, Vicos, Brazil
- 546-P Multilocus genotypes indicate selection by host in *Puccinia psidii* populations from Brazil. R. NEVES GRACA (1), A. L. Ross-Davis (2), N. B. Klopffentein (2), M. Kim (3), T. L. Peever (4), P. G. Cannon (5), C. P. Aun (6), E. S. Mizubuti (6), A. C. Alfenas (6). (1) Federal University of Vicos (UFV), Brazil; (2) USDA Forest Service, Moscow, ID, U.S.A.; (3) Kookmin University, Seoul, Korea; (4) Washington State University, Pullman, WA, U.S.A.; (5) USDA Forest Service, Vallejo, CA, U.S.A.; (6) Federal University of Vicos, Vicos, Brazil
- 547-P Species profile and genetic variation of *Fusarium* isolates sampled from koa trees in Hawaii. K. D. Puri (1), A. Shiraishi (2), J. Uchida (2), S. ZHONG (1). (1) North Dakota State University, Fargo, ND, U.S.A.; (2) University of Hawaii at Manoa, Honolulu, HI, U.S.A.
- 548-P Causes of genetic diversities of plant viruses in Yunnan. Z. ZHANG (1). (1) Institute of Biotechnology and Germplasm Resources, Yunnan Academy of Agricultural Sciences, Kunming, Peoples Republic of China
- 549-P Fungal community analysis in wheat residues infested with *Fusarium pseudograminearum* through internal transcribed spacer region (ITS) sequencing. A. C. HOGG (1), E. V. Chamberlin (1), A. T. Dyer (1). (1) Montana State University, Bozeman, MT, U.S.A.
- 550-P Investigating the genetic structure of *Phytophthora capsici* populations. L. QUESADA-OCAMPO (1), L. Granke (1), M. Mercier (1), J. Olsen (1), M. Hausbeck (1). (1) Michigan State University, East Lansing, MI, U.S.A.
- 551-P Differences in virulence of *Phytophthora capsici* isolates from a global collection. L. GRANKE (1), L. M. Quesada-Ocampo (1), M. Wood (1), J. Olsen (1), M. Mercier (1), M. Hausbeck (1). (1) Michigan State University, East Lansing, MI, U.S.A.
- 552-P Multilocus analysis of *Phoma sclerotoides* isolates from Minnesota. C. V. CASTELL-MILLER (1), M. R. Dornbusch (1), D. A. Samac (1). (1) ARS-USDA Plant Science Research Unit, St. Paul, MN, U.S.A.
- ### Virology
- 553-P Spatial dynamics of *Plum pox virus* in *Prunus* spp. in Ontario and Pennsylvania. A. GOUGHERTY (1), F. W. Nutter (1). (1) Iowa State University, Ames, IA, U.S.A.
- 554-P Genetic variability of Colorado *Cherry rasp leaf virus*. R. POKHAREL (1), R. Li (2), R. G. Mock (3). (1) Colorado State University, Grand Junction, CO, U.S.A.; (2) USDA ARS, Beltsville, MD, U.S.A.; (3) USDA, ARS, NGR, Beltsville, MD, U.S.A.
- 555-P The implications of noncrop hosts in the epidemiology of *Tomato spotted wilt virus* in the Solanaceae of Georgia. S. MULLIS (1), R. Gitaitis (1), A. S. Csinos (1), C. Nischwitz (2). (1) University of Georgia, Tifton, GA, U.S.A.; (2) Utah State University, Logan, UT, U.S.A.
- 556-P Evolutionary and epidemiological consequences of using host resistance genes for controlling *Tomato spotted wilt virus*. J. HOULE (1), G. Kennedy (1). (1) North Carolina State University, Raleigh, NC, U.S.A.
- 557-P Pathogenicity of *Coconut cadang-cadang viroid* (CCCVd) variants on oil palm (*Elaeis guineensis* Jacq.) seedlings. H. Joseph (1), W. Lau (1), S. Abdullah (1), J. W. Randles (2), G. VADAMALAI (1). (1) Universiti Putra Malaysia, Serdang, Malaysia; (2) The University of Adelaide, Adelaide, Australia
- ## ■ IPM/BIOCONTROL/PLANT DISEASE MANAGEMENT
- ### Insects/Nematodes
- 558-P Corn yield components affected by controlling needle nematodes. T. A. MUELLER (1), R. P. Knake (2), J. J. Deardorff (3), J. L. Riggs (4). (1) Bayer CropScience, Earlham, IA, U.S.A.; (2) Bayer CropScience, Johnston, IA, U.S.A.; (3) Iowa State University, Ames, IA, U.S.A.; (4) Bayer CropScience, Research Triangle Park, NC, U.S.A.
- 559-P Nematicidal activity of plant essential oils and components from *Gaultheria fragrantissima* and *Zanthoxylum alatum* against pine wood nematode. I. PARK (1), S. Shin (1), S. Seo (1). (1) Korea Forest Research Institute, Seoul, Korea
- 560-P Radiosynthesis of tritium-labelled and the stability of novel *cis*-configuration nitromethylene neonicotinoids. X. XU (1), Z. Li (1), X. Shao (1), C. Li (1), X.

- 561-P Zhao (1). (1) East China University of Science and Technology, Shanghai, Peoples Republic of China
Reducing damage to root-knot nematode with fluensulfone (formerly thiazosulfene) in cucumbers and peppers. D. B. LANGSTON (1), F. H. Sanders (1). (1) University of Georgia, Tifton, GA, U.S.A.
- 562-P Nematode community analysis for soil ecosystem health prediction. I. WANG (1), B. S. Sipes (1), K. Wang (1). (1) University of Hawaii at Manoa, Plant and Environmental Protection Science, Honolulu, HI, U.S.A.
- 563-P Screening strains of *Trichoderma* spp. for decomposition of agriculture wastes. C. LO (1), J. Hsieh (1), K. Peng (2). (1) National Formosa University, Yunlin, Taiwan; (2) National Dong Hwa University, Hualien, Taiwan
- 564-P From bacteriosis of the fall webworm *Hyphantria cunea* to development of bio-insecticide based on *Bacillus thuringiensis* in Kazakhstan. K. TOLEUBAYEV (1), B. Duisembekov (1), B. Kopzhassarov (1). (1) The Kazakh Research Institute for Plant Protection and Quarantine, Almaty, Kazakhstan
- 565-P Cultivation and formulation of an endophytic *Beauveria bassiana* strain. D. Jakobs-Schönwandt (1), R. Lohse (1), A. V. PATEL (1). (1) University of Applied Sciences, Bielefeld, Germany
- 566-P Ecological and ecological effects on inundate release *Trichogramma dendrolimi* to control Asian corn borer in northern China. B. CONG (1), C. Yang (1), H. Dong (1), X. Wang (1). (1) Shenyang Agricultural University, Shenyang, Peoples Republic of China
- 567-P The participatory training of farmers in integrated production and pest management using the Farmers's Field School approach in Burkina Faso, 2001–2010. S. NACRO (1). (1) Institut de l'Environnement et de Recherches Agricoles (INERA), Bobo-Dioulasso, Burkina Faso
- 568-P Testing bait sprays and male annihilation traps for area-wide management of the invasive fruit fly *Bactrocera invadens* in Senegal, West Africa. L. VAUGHAN (1), K. Badji (2). (1) Virginia Tech, Blacksburg, VA, U.S.A.; (2) Direction de la Protection des Vegetaux, Dakar, Senegal
- 569-P Food and microhabitat preferences of *Mononchus*: A preliminary investigation. K. WANG (1), R. Cabos (2). (1) University of Hawaii, Honolulu, HI, U.S.A.; (2) USDA, ARS, U.S. Pacific Basin Agricultural Research Center, Hilo, HI, U.S.A.
- 570-P Integration of sunn hemp cover cropping and soil solarization for reniform nematode, *Rotylenchulus reniformis*, management. S. P. MARAHATTA (1), K. Wang (1), B. S. Sipes (1). (1) Dept. of Plant and Environmental Protection Sciences (PEPS), University of Hawaii, Honolulu, HI, U.S.A.
- 571-P The synergy between *Bombyx mori* gut bacteria and insecticidal crystal proten of *Bacillus thuringiensis* to its larvae. M. Li (1), D. Hu (1), Y. Hou (1), Y. Xue (1), Y. Ke (1), Z. YU (1). (1) State Key Laboratory of Agricultural Microbiology, National Engineering Research Center of Microbial Pesticides, Huazhong Agricultural University, Wuhan, Peoples Republic of China
- 572-P Recent advance of plant protection science in China. Y. Guo (1), W. CHEN (2). (1) Institute of Plant Protection, Chinese Academy of Agricultural Sciences, Beijing, Peoples Republic of China; (2) China Society of Plant Protection, Beijing, Peoples Republic of China
- 573-P Nematicidal activity of two components from the broth filtrate of *Aspergillus niger* Y-61. J. QIU (1), T. Liu (1), W. Liu (1). (1) Beijing Academy of Agriculture and Forestry Sciences, Beijing, Peoples Republic of China
- 574-P Study on the extraction, purification, and chemical structure of the activity component from *Gymnoascus reessii* za-130. J. LIU (1), T. Liu (1), W. Liu (1), J. Qiu (1). (1) Beijing Academy of Agriculture and Forestry Sciences, Beijing, Peoples Republic of China
- 575-P Development of encapsulation methods for CO₂ attractants and plant extracts as plant protection products. M. Vemmer (1), A. V. PATEL (1). (1) University of Applied Sciences, Bielefeld, Germany
- 576-P Effects of *Bacillus firmus* GB-126 on the soybean cyst nematode mobility in vitro. D. W. SCHRIMSHER (1), K. S. Lawrence (1), J. Castillo (1), S. R. Moore (1), J. W. Kloepper (1). (1) Auburn University, Auburn, AL, U.S.A.
- 577-P Effects of green manures on nematode population densities in an organic tomato field. S. L. MEYER (1), K. L. Everts (2), B. B. McSpadden Gardener (3). (1) USDA ARS, Beltsville, MD, U.S.A.; (2) University of Maryland and University of Delaware, Salisbury, MD, U.S.A.; (3) The Ohio State University, OARDC, Wooster, OH, U.S.A.
- 578-P Evaluation and characterization of antifungal compounds from the fermented products of *Trichoderma harzianum* SL-BNR1-6. S. Liu (1), F. Cai (2), M. Shibu (2), C. Lo (3), K. PENG (4). (1) Da-Yeh University, Changhua, Taiwan; (2) Institute of Biotechnology, National Dong Hwa University, Hualien, Taiwan, Shoufeng, Hualien, Taiwan; (3) National Formosa University/Dept. of Biotechnology, Yunlin, Taiwan Republic of China; (4) National Dong Hwa University, Shoufeng, Hualien, Taiwan
- IPM**
- 579-P Soil suppressiveness against Fusarium crown and root rot of cucumber in organic-amended soil: Occurrence and possible mechanisms. E. Klein (1), J. Katan (2), D. Minz (1), M. Ofek (1), A. GAMLIEL (1). (1) ARO Volcani Center, Bet Dagan, Israel; (2) Hebrew University, Rehovot, Israel
- 580-P *Ganoderma lucidum* and *Streptomyces lydicus* as biological control agents of *Xanthomonas campestris* pv. *vesicatoria*. L. ROBLES-HERNANDEZ (1), A. C. Gonzalez-Franco (1), J. R. López-Vega (1), J. Hernández-Huerta (1), G. Nevárez-Portillo (1). (1) Universidad Autonoma de Chihuahua, Chihuahua, Mexico
- 581-P Antimicrobial activity of essential oils of various plants against brown blotch disease on *Agaricus bisporus*. N. ANSARI DEZFOOLI (1), N. Hasanzadeh (2), M. B. Rezaee (3). (1) Dept. of Biotechnology, College of Agriculture and Natural Resources, Science and Research Branch, Islamic Azad University, Tehran, Iran; (2) Dept. of Plant Pathology, College of Agriculture and Natural Resources, Science and Research Branch, Islamic Azad University, Tehran, Iran; (3) Research Institute of Forest and Rangelands, Tehran, Iran

- 582-P Biological control of root rots of groundnut in Rajasthan, India. P. SHARMA (1), M. Tripathi (2), A. Patel (2), S. Deep (2). (1) Indian Agricultural Research Institute, New Delhi, India; (2) Plant Pathology, Indian Agricultural Research Institute, New Delhi, India
- 583-P Identification and evaluation of apple scab in Vf-resistant apple cultivars. J. BECKERMAN (1), K. Chapman (1). (1) Purdue University, West Lafayette, IN, U.S.A.
- 584-P *Chromobacterium sensu lato* isolated from native and commercial cranberry with potential for biological control of Phytophthora root rot. S. SOBY (1), F. L. Caruso (2). (1) Midwestern University, Glendale, AZ, U.S.A.; (2) University of Massachusetts, East Wareham, MA, U.S.A.
- 585-P Managing resistance of *Cercospora beticola* Sacc. for integrated disease management in sugar beet. D. BUDAKOV (1), V. Stojšin (1), F. Bagi (1). (1) University of Novi Sad, Faculty of Agriculture, Novi Sad, Serbia
- 586-P "Peak", a nutritional formulation to suppress bacterial plant diseases. D. M. HUBER (1). (1) NutriAct, Melba, ID, U.S.A.
- 587-P Use of *Datura stramonium* and *Nicotiana benthamiana* to study acibenzolar-S-methyl-induced SAR against *Iris yellow spot virus* (genus *Tospovirus*). D. TRIPATHI (1), H. R. Pappu (1). (1) Washington State University, Pullman, WA, U.S.A.
- 588-P Breeding of the high effective biocontrol strain of *Streptomyces lydicus* against plant fungal diseases by genome shuffling. W. LIU (1), D. Dong (1), J. Yang (1), C. Lu (1), T. Zhang (1), F. Qi (1). (1) Institute of Plant and Environment Protection, Beijing Academy of Agriculture and Forestry Sciences, Beijing, Peoples Republic of China
- 589-P Microbial ecology of soils and strawberry roots in nontreated soils that appear to enhance plant growth compared to fumigated soils. K. PEEDEN (1), B. Liu (1), F. Louws (1). (1) North Carolina State University, Raleigh, NC, U.S.A.
- 590-P ASI-261: A potential nonfumigant alternative to methy bromide. E. ROSSKOPF (1), N. Kokalis-Burelle (1), Z. He (2), J. Noling (3), D. Butler (4), F. Iriarte (5), B. Booker (6), F. Sances (7). (1) USDA ARS, Fort Pierce, FL, U.S.A.; (2) University of Florida, IRREC, Fort Pierce, FL, U.S.A.; (3) University of Florida, CREC, Lake Alfred, FL, U.S.A.; (4) University of Tennessee, Knoxville, TN, U.S.A.; (5) Kansas State University, Manhattan, KS, U.S.A.; (6) Pacific Ag Group, Dover, FL, U.S.A.; (7) Pacific Ag Group, San Luis Obispo, CA, U.S.A.
- 591-P Unavailable
- 592-P Biocontrol of bacterial wilt of tobacco via induced resistance by endophytic bacteria. H. HOANG (1), N. Furuya (1), M. Takeshita (1), K. Tsuchiya (1). (1) Kyushu University, Fukuoka, Japan
- 593-P Novel plant activator PRDA-003 for soilborne disease. Y. XU (1). (1) East China University of Science and Technology, Shanghai, Peoples Republic of China
- 594-P Fungicidal efficacy and partitioning of penthiopyrad in apple leaves in relation to application rate. J. R. PILS (1), R. M. Geddens (1), S. G. Smith (1), C. P. Shepherd (1). (1) DuPont Crop Protection, Newark, DE, U.S.A.
- 595-P Mutation range leading to resistance to SDHI fungicides. H. SIEROTZKI (1), M. Moesch (2), G. Olaya (3). (1) Syngenta Crop Protection, Stein, Switzerland; (2) Syngenta, Stein, Switzerland; (3) Syngenta, Vero Beach, FL, U.S.A.
- 596-P A new broad-spectrum fungicide for use in row crops. N. FASSLER (1), S. Walker (1), J. Barnes (1). (1) BASF Corp., Research Triangle Park, NC, U.S.A.
- 597-P Fluxapyroxad: A new broad-spectrum fungicide. S. STRATHMANN (1), S. Walker (2), J. Barnes (2). (1) BASF SE, Limburgerhof, Germany; (2) BASF Corp., Research Triangle Park, NC, U.S.A.
- 598-P Influence of adjuvants and rain-free period on the application of haloxyfop-methyl. U. R. ANTUNIASI (1), M. R. Correa (2), E. Negrisoni (2), E. D. Velini (3), L. Perim (3). (1) Universidade Estadual Paulista, Botucatu, Brazil; (2) Techfield, Botucatu/SP, Brazil; (3) Unive Estadual Paulista, Botucatu, Brazil
- 599-P Biodegradation of cypermethrin by *Rhodopseudomonas palustris* GJ-22 isolated from contaminated sludge. Y. LIU (1), L. Yin (2), X. Li (2). (1) Hunan Plant Protection Institute, Changsha, MaPoLing, Peoples Republic of China; (2) Hunan Plant Protection Institute, Ma-PoLing, Changsha, Peoples Republic of China
- 600-P Fungicide resistance mechanisms of *Fusarium fujikuroi* strains against prochloraz. I. Kim (1), Y. YANG (1). (1) Chonnam National University, Gwangju, Korea
- 601-P Evaluation of drip applications of Revus in fungicide programs for management of Phytophthora blight (*Phytophthora capsici*) on bell pepper and squash. P. KUHN (1), M. Babadoost (2), D. Thomas (1), P. Ji (3), H. McLean (1), A. Hert (1), D. Tory (1), A. Tally (1). (1) Syngenta Crop Protection, Greensboro, NC, U.S.A.; (2) Dept. of Crop Sciences, University of Illinois, Urbana, IL, U.S.A.; (3) Dept. of Plant Pathology, University of Georgia, Tifton, GA, U.S.A.
- 602-P Fungicide resistance in Czech cucurbit powdery mildew populations. A. LEBEDA (1), B. Sedlakova (1). (1) Palacky University in Olomouc, Faculty of Science, Dept. of Botany, Olomouc-Holice, Czech Republic
- 603-P Uptake, transport, and fungicidal efficacy of penthiopyrad fungicide in wheat resulting in protection of treated and untreated foliage. J. R. PILS (1), R. M. Geddens (1), S. G. Smith (1), C. P. Shepherd (1), B. Perotin (2). (1) DuPont Crop Protection, Newark, DE, U.S.A.; (2) DuPont Crop Protection, Nambesheim, France
- 604-P Risk assessment of *Phytophthora capsici* resistant to fluopicolide. X. LU (1), M. Hausbeck (2), X. Li (1), J. J. Hao (2). (1) China Agricultural University, Beijing, Peoples Republic of China; (2) Michigan State University, East Lansing, MI, U.S.A.
- 605-P Tank-mixing of dodine in early-season apple scab programs and possibilities for renewed use in the eastern United States. G. JACON (1), T. Kippely (2), K. Cox (3), K. Yoder (4), G. Sundin (5), J. Alicandro (6), N. Halbrendt (7), H. Ngugi (7), T. Sutton (8). (1) Agriphar, Ougree, Belgium; (2) Aceto Agricultural Chemicals Corporation, New York, NY, U.S.A.; (3) Dept. of Plant Pathology and Plant-Microbe Biology, Cornell University, Geneva, NY, U.S.A.; (4) Virginia

- Tech AREC, Winchester, VA, U.S.A.; (5) Dept. of Plant Pathology, Michigan State University, East Lansing, MI, U.S.A.; (6) Agr. Assistance, North Rose, NY, U.S.A.; (7) Fruit Research and Extension Center, Penn State University, Biglerville, PA, U.S.A.; (8) Dept. of Plant Pathology, North Carolina State University, Raleigh, NC, U.S.A.
- 606-P Early emergence applications of prothioconazole for management of *Cylindrocladium* black rot of peanut. T. BRENNEMAN (1), H. Young (2), K. Rucker (2). (1) University of Georgia, Tifton, GA, U.S.A.; (2) Bayer CropScience, Tifton, GA, U.S.A.
- 607-P Evaluation of chemicals for control of citrus canker, *Xanthomonas citri* subsp. *citri*. M. Zhang (1), Y. Duan (2), C. POWELL (3). (1) University of Florida, Fort Pierce, FL, U.S.A.; (2) USHRL, USDA-ARS, Fort Pierce, FL, U.S.A.; (3) IRREC-IFAS, University of Florida, Fort Pierce, FL, U.S.A.
- 608-P On-farm research activities to implement methyl bromide alternatives: An area-wide initiative update. J. G. DRIVER (1), R. M. Welker (1), F. Louws (1). (1) North Carolina State University, Raleigh, NC, U.S.A.
- 609-P Fluopyram products for the control of diseases of horticultural crops. G. MUSSON (1), L. Fought (2), H. Young (3). (1) Bayer CropScience, Research Triangle Park, NC, U.S.A.; (2) Bayer CropScience, Fresno, CA, U.S.A.; (3) Bayer CropScience, Tifton, GA, U.S.A.
- 610-P Fluopyram fungicides for the control of diseases of horticultural and row crops. L. FOUGHT (1), G. H. Musson (2), H. Young (2). (1) Bayer CropScience, Fresno, CA, U.S.A.; (2) Bayer CropScience, Raleigh, NC, U.S.A.
- 611-P Effect of fungicide and plant defense activator drench applications for controlling Fusarium wilt of watermelon. F. H. SANDERS (1), D. B. Langston (1). (1) University of Georgia, Tifton, GA, U.S.A.
- 612-P Primary postharvest evaluation of chemicals as inducers of resistance against *Penicillium digitatum* and *Penicillium italicum* on citrus fruits. P. A. Moscoso-Ramírez (1), L. PALOU (2). (1) Campus Tabasco, Colegio de Postgraduados, H. Cárdenas, Tabasco, Mexico; (2) IVIA, Postharvest Technology Center, Montcada, València, Spain
- 613-P Novel broad-spectrum highly potent fungicide: EV-050. G. ARUNAN (1), R. Tumuluri (1), S. Raghavan (1), R. CH (1), V. Tulam (1), P. M. MURALI (1). (1) Evolva Biotech Private Limited, Chennai, India
- 614-P Comparing foliar and drench application of azoxystrobin for controlling Rhizoctonia root rot of sugar beet. M. F. KHAN (1), S. P. DeSouza (2). (1) North Dakota State University & University of Minnesota, Fargo, ND, U.S.A.; (2) North Dakota State University, Fargo, ND, U.S.A.
- 615-P Spray drift from aerial application on sugarcane in Brazil. U. R. ANTUNIASSI (1), C. A. Carbonari (1), E. D. Velini (1), R. B. Oliveira (1), M. A. Oliveira (2), A. A. Mota (1). (1) Universidade Estadual Paulista, Botucatu, Brazil; (2) UNIVAG, Varzea Grande/MT, Brazil
- Mississauga, ON, Canada
- 617-P Inheritance of resistance to Fusarium root rot in common bean. C. MUKANKUSI (1), J. Derera (2), R. Melis (2), P. Gibson (3), R. A. Buruchara (1). (1) CIAT, Kampala, Uganda; (2) African Centre for Crop Improvement (ACCI), Scottsville, Republic of South Africa; (3) Makerere University, Kampala, Uganda
- 618-P Legume ipmPIPE—A real-time disease/pest monitoring and reporting network. H. F. SCHWARTZ (1), M. A. Langham (2), S. A. Tolin (3), J. Golod (4), J. H. LaForest (5), K. F. Cardwell (6). (1) Colorado State University, Fort Collins, CO, U.S.A.; (2) South Dakota State University, Brookings, SD, U.S.A.; (3) Virginia Tech, Blacksburg, VA, U.S.A.; (4) ZedX Inc., University Park, PA, U.S.A.; (5) University of Georgia, Tifton, GA, U.S.A.; (6) USDA NIFA Plant & Animal Systems, Washington, DC, U.S.A.
- 619-P Performance of aerial application for soybean rust control and drift under unsuitable meteorological conditions for spraying. U. R. ANTUNIASSI (1), A. A. Mota (1), A. C. Silva (1), R. G. Chechetto (1), C. M. Vilela (1), F. K. Carvalho (1). (1) Universidade Estadual Paulista, Botucatu, Brazil
- 620-P Evaluation of *Cercospora sojina* isolates sensitive and resistant to azoxystrobin using a mycelial growth inhibition assay. G. OLAYA (1), D. Pearsaul (1), G. Zhang (2), C. Bradley (2). (1) Syngenta Crop Protection, Vero Beach, FL, U.S.A.; (2) University of Illinois, Urbana, IL, U.S.A.
- 621-P Effects of *Coniothyrium minitans* strains on viability of sclerotia of soybean white mold fungus. S. NAVI (1), L. Jing (1). (1) Iowa State University, Ames, IA, U.S.A.
- 622-P  Assessing the validity of diagnostic quantitative PCR assays for *Phakopsora pachyrhizi* and *P. meibomia*. T. A. RUSH (1), R. W. Schneider (1), M. C. Aime (1), G. L. Hartman (2), S. Hambleton (3), N. B. Ward (1). (1) Louisiana State University, Baton Rouge, LA, U.S.A.; (2) University of Illinois at Urbana-Champaign, Urbana, IL, U.S.A.; (3) Agriculture & Agri-Food Canada, Ottawa, ON, Canada
- 623-P Presence and levels of aflatoxins in common bean (*Phaseolus vulgaris* L.) samples from Uganda. R. A. BURUCHARA (1), S. Buah (1), C. Mukankusi (1). (1) CIAT, Kampala, Uganda
- 624-P Studies on viability of sclerotia collected from Sclerotinia stem rot-infected soybean plants in Iowa during 1995–2010. L. Jing (1), S. NAVI (1). (1) Iowa State University, Ames, IA, U.S.A.
- 625-P Making foliar fungicide applications to corn consistently profitable in Illinois. J. D. WEEMS (1), K. A. Ames (1), C. A. Bradley (1). (1) University of Illinois, Urbana, IL, U.S.A.
- 626-P Monitoring *Cercospora zae-maydis* sensitivity levels to quinone outside inhibitor fungicides across multiple years. V. CHAPARA (1), D. K. Pedersen (1), P. Esker (2), P. A. Paul (3), A. E. Robertson (4), C. A. Bradley (1). (1) University of Illinois, Urbana, IL, U.S.A.; (2) University of Wisconsin, Madison, WI, U.S.A.; (3) The Ohio State University, OARDC, Wooster, OH, U.S.A.; (4) Iowa State University, Ames, IA, U.S.A.
- 627-P Perception by growers and consultants of the importance of corn diseases. P. ESKER (1), C. Bradley (2), P. Paul (3), A. Robertson (4). (1) University of
- PDM: Field and Row Crops**
- 616-P A new broad-spectrum fungicide for use on lentil, field pea, and chickpea crops. G. M. MARTENS (1), T. E. Kraus (1), W. R. Barton (1). (1) BASF Canada,

Wisconsin, Madison, WI, U.S.A.; (2) University of Illinois, Urbana, IL, U.S.A.; (3) Ohio State University, Wooster, OH, U.S.A.; (4) Iowa State University, Ames, IA, U.S.A.

- 628-P Management of aflatoxin contamination of corn in Oklahoma. J. DAMICONE (1), C. Godsey (1), V. Murley (2). (1) Oklahoma State University, Stillwater, OK, U.S.A.; (2) Oklahoma Dept. of Agriculture, Food and Forestry, Oklahoma City, OK, U.S.A.
- 629-P Surfactin A isoforms characterizations in strains of *Bacillus mojavensis* for control of a maize pathogen, *Fusarium verticillioides*. C. W. BACON (1), D. M. Hinton (2), T. Mitchell (2), M. E. Snook (2). (1) USDA ARS, Athens, GA, U.S.A.; (2) USDA ARS, Russell Research Center, Athens, GA, U.S.A.
- 630-P Role of seaweeds occurring at Karachi coast in suppressing the root diseases of cotton and chili. J. ARA (1), V. Sultana (2), G. N. Baloch (3), M. R. Tariq (4), S. Ehteshamul-Haque (3). (1) Dept. of Food Science & Technology, University of Karachi, Karachi, Pakistan; (2) Dept. of Biochemistry, University of Karachi, Karachi, Pakistan; (3) Dept. of Botany, University of Karachi, Karachi, Pakistan; (4) M.A.H. Qadri Biological Research Centre, University of Karachi, Karachi, Pakistan

PDM: Fruits and Nuts

- 631-P An in vitro evaluation of chemical and biological agents for control of *Botryosphaeria* species. P. SRIVASTAVA (1), P. C. Andersen (1), J. Marois (1), R. F. Mizell III (1), D. L. Wright (1). (1) Institute of Food and Agricultural Sciences/University of Florida, Quincy, FL, U.S.A.
- 632-P Baseline sensitivity and potential resistance mechanism of *Monilinia fructicola* to SYP-Z048. F. CHEN (1), J. Fan (2), G. Schnabel (1), X. Liu (2). (1) Clemson University, Clemson, SC, U.S.A.; (2) China Agriculture University, Beijing, Peoples Republic of China
- 633-P Fungicide screening and application for the control of walnut anthracnose caused by *Glomerella cingulata*. S. LEE (1), S. Seo (1), S. Lee (1), K. Kim (1), J. Lee (2). (1) Korea Forest Research Institute, Seoul, South Korea; (2) Kangwon National University, Chuncheon, South Korea
- 634-P Unavailable
- 635-P A decision support system for management of organic vineyards against downy mildew. T. CAFFI (1), F. Salinari (2), V. Rossi (1). (1) Università Cattolica del Sacro Cuore, Piacenza, Italy; (2) Horta srl, Piacenza, Italy
- 636-P Two new broad-spectrum fungicides for use on pome fruits, stone fruits, fruiting vegetables, and potatoes. S. WALKER (1), S. Broschius (1), J. Barnes (1). (1) BASF Corp., Research Triangle Park, NC, U.S.A.
- 637-P Kasugamycin in combination with copper or mancozeb for management of walnut blight in California. J. ADASKAVEG (1), H. Forster (2), L. Wade (3). (1) University of California, Riverside, CA, U.S.A.; (2) University of California, Davis, CA, U.S.A.; (3) Arysta Life Science, Roseville, CA, U.S.A.
- 638-P Molecular mechanism of QoI resistance in *Fusicladosporium carpophilum*, causal pathogen of almond scab in California. Y. LUO (1), H. Forster (2),

J. Adaskaveg (1). (1) University of California, Riverside, CA, U.S.A.; (2) University of California, Davis, CA, U.S.A.

- 639-P High levels of natural resistance against selected DMI fungicides in populations of *Fusicladosporium carpophilum* but not *Alternaria* spp. from almond. H. FORSTER (1), K. Nguyen (2), M. Vilchez (2), J. Connell (3), J. Adaskaveg (2). (1) University of California, Davis, CA, U.S.A.; (2) University of California, Riverside, CA, U.S.A.; (3) University of California Cooperative Extension, Oroville, CA, U.S.A.
- 640-P Advances in Brassicaceae seed meal formulation and application for replant disease control in organic apple orchards. M. MAZZOLA (1). (1) USDA ARS, Wenatchee, WA, U.S.A.
- 641-P Research on the elimination of CyMV and ORSV from *Phalaenopsis amabilis*. R. Wang (1), M. LI (1), P. Yang (1). (1) Chinese Academy of Inspection and Quarantine, Beijing, Peoples Republic of China
- 642-P Development of an in vitro bioassay to screen *Prunus* spp. for resistance to *Armillaria ostoyae*. E. L. Warnstrom (1), C. A. Outwater (1), J. L. JACOBS (1), R. Hammerschmidt (1). (1) Michigan State University, East Lansing, MI, U.S.A.
- 643-P Molecular screening of walnut backcross populations for a DNA marker linked to *Cherry leafroll virus* resistance. N. LYNN (1), C. A. Leslie (1), A. Gonzalez (2), M. R. Sudarshana (2). (1) University of California, Davis, CA, U.S.A.; (2) USDA ARS, Davis, CA, U.S.A.
- 644-P Influence of nickel on severity of pecan scab. B. W. Wood (1), C. Reilly (1), C. H. BOCK (1), M. W. Hotchkiss (1). (1) USDA-ARS-SEFTNRL, Byron, GA, U.S.A.
- 645-P *Erwinia amylovora* early detection in orchards using lateral-flow immunostrips Ea AgriStrip and quantitative PCR for flower monitoring. A. BRAUN-KIEWNICK (1), A. Lehmann (1), T. Dreo (2), V. O. Stockwell (3), B. Duffy (4). (1) Agroscope Changins-Wädenswil ACW, Wädenswil, Switzerland; (2) Agroscope Changins-Wädenswil ACW; NIB Slovenia, Wädenswil, Switzerland; (3) Oregon State University, Dept. of Botany and Plant Pathology, Corvallis, OR, U.S.A.; (4) Swiss Federal Research Station, Wädenswil, Switzerland
- 646-P Characterization of biocontrol strains of *Pythium oligandrum* and control of an esca-pathogenic fungus attack. J. Gerbore (1), E. BRUEZ (1), J. Vallance (1), M. Massot (1), D. Grizard (2), C. Regnault-Roger (3), P. Rey (1). (1) UMR Santé et Agroécologie du Vignoble, 1065 INRA/ENITA de Bordeaux, Institut des Sciences de la Vigne et du Vin, Université de Bordeaux, INRA Domaine de la Grande Ferrade- BP81, Villenave d'Ornon cedex, France; (2) BIOVITIS, Saint Etienne de Chomeil, France; (3) Université de Pau et des Pays de l'Adour, UMR CNRS 5254/IPREM-EEM, IBEAS, Pau cedex, France
- 647-P  Effects of downy and powdery mildew on juice grapes in Michigan. L. L. AVILA (1), A. M. C. Schilder (1), P. Sabbatini (1). (1) Michigan State University, East Lansing, MI, U.S.A.
- 648-P Volatile organic compounds produced by *Ceratocystis fimbriata* and their inhibition on plant-pathogenic fungi. Q. LI (1), J. Deng (2), J. Li (1). (1) Dept. of Plant Pathology, China Agricultural University, Beijing,

- Peoples Republic of China; (2) Syngenta (China) Investment Co. Ltd., Shanghai, Peoples Republic of China
- 649-P Isolation, purification, and identification of the antifungal protein produced by a newly isolated *Bacillus subtilis* strain. X. ZHAO (1), Z. Liu (1), Y. Wei (1), Q. Shang (1), X. Zhao (1). (1) Beijing University of Agriculture, Beijing, Peoples Republic of China
- 650-P Isolation, identification of scutellaria extraction by 80% ethanol and its antifungal mechanism against *Monilinia fructicola*. Z. LIU (1), X. Zhao (1), Y. Wei (1), Q. Shang (1), J. Yang (1). (1) Beijing University of Agriculture, Beijing, Peoples Republic of China
- 651-P Biological control of fire blight disease *Erwinia amylovora* under field condition of Karaj, Iran. E. GERAMI (1), N. Hassanzadeh (1), H. Abdollahi (2), S. Hajmansoor (1). (1) Dept. of Plant Pathology, College of Agriculture and Natural Resources, Science and Research Branch, Islamic Azad University, Tehran, Iran; (2) Horticulture Research Dept., Seed & Plant Improvement Research Institute, Karaj, Iran
- 652-P Grower implementation of LAMP PCR to initiate grape powdery mildew fungicide program based on inoculum detection. W. MAHAFFEE (1), G. Grove (2), D. Martin (1), A. Albrecht (3). (1) USDA ARS HCRL, Corvallis, OR, U.S.A.; (2) Washington State University, Irrigated Agriculture Research and Extension Center, Prosser, WA, U.S.A.; (3) Dept. of Botany and Plant Pathology, Oregon State University, Corvallis, OR, U.S.A.
- 653-P Development of loop-mediated isothermal amplification (LAMP) assays for the detection of *Plum pox virus*. Y. Gao (1), M. LI (2), J. Wang (1). (1) Beijing University of Agriculture, Beijing, Peoples Republic of China; (2) Chinese Academy of Inspection & Quarantine, Beijing, Peoples Republic of China
- 654-P Epiphytic yeasts for biocontrol of *Botrytis cinerea* on table grapes cv. Thompson seedless. X. Sepúlveda (1), M. VARGAS (1), N. Zapata (1), J. Berríos (1), L. Zuñiga (1). (1) Universidad de Concepción, Chillán, Chile
- 655-P Siderophore loci in *Agrobacterium vitis* strain F25 are associated with its ability to provide biological control of grape crown gall. S. KAEWNUM (1). (1) Cornell University, Geneva, NY, U.S.A.
- 656-P Antibiosis by *Pantoea agglomerans* biocontrol strain E325 against *Erwinia amylovora* on apple flower stigmas. P. PUSEY (1), V. O. Stockwell (2), C. L. Reardon (3), T. H. Smits (4), B. Duffy (4). (1) USDA ARS, Wenatchee, WA, U.S.A.; (2) Dept. of Botany and Plant Pathology, Oregon State University, Corvallis, OR, U.S.A.; (3) USDA-ARS, The Columbia Plateau Conservation Research Center, Adams, OR, U.S.A.; (4) Swiss Federal Research Station, Agroscope Changins-Wädenswil ACW, Wädenswil, Switzerland
- 657-P Inhibitory effects of *Bacillus amyloliquefasciens* and *Paenibacillus polymyxa* on *Botrytis cinerea* causing gray rot of grapes. J. L. HENRIQUEZ (1), B. K. Schroeder (2), D. Riquelme (1), P. A. Alarcon (1). (1) University of Chile, Santiago, Chile; (2) Washington State University, Pullman, WA, U.S.A.
- 658-P *Pantoea agglomerans* fire blight biocontrol strain- and species-specific real-time PCR tools to monitor environmental impact and behavior in orchards. A. BRAUN-KIEWNICK (1), A. Lehmann (1), T. H. Smits (1), B. Duffy (2). (1) Agroscope Changins-Wädenswil ACW, Wädenswil, Switzerland; (2) Swiss Federal Research Station, Wädenswil, Switzerland
- 659-P Powdery mildew biological control agents exhibit endophytic characteristics. L. Mackasmie (1), M. T. MMBAGA (2), R. J. Sauve (1). (1) Tennessee State University, Nashville, TN, U.S.A.; (2) Tennessee State University School of Agriculture and Consumer Sciences, McMinnville, TN, U.S.A.
- 660-P Yearly variation in the development of current season needle necrosis on noble, Nordmann, and Turkish fir Christmas trees in the U.S. Pacific Northwest. G. CHASTAGNER (1), K. Riley (1), C. Landgren (2). (1) Washington State University, Puyallup, WA, U.S.A.; (2) Oregon State University, Aurora, OR, U.S.A.
- 661-P A new endophytic fungus from *Citrus medica* var. *sarcodactylis* and its application on controlling damping-off and anthracnose of *Brassica rapa*. W. CHUNG (1), M. Ho (1), W. Chung (2). (1) National Chung Hsing University, Taichung, Taiwan; (2) Taiwan Seed Improvement and Propagation Station, Taichung, Taiwan
- 662-P Characterization of QoI-resistant isolates in *Alternaria alternata* causing Alternaria brown spot in citrus. B. VEGA (1), D. Liberti (2), P. F. Harmon (2), M. M. Dewdney (1). (1) University of Florida, Lake Alfred, FL, U.S.A.; (2) University of Florida, Gainesville, FL, U.S.A.
- 663-P Survey of *Erwinia amylovora*, causal agent of fire blight, from apple and pear orchards in Utah for streptomycin resistance. C. Nischwitz (1), C. DHIMAN (1). (1) Utah State University, Logan, UT, U.S.A.
- 664-P Evaluation of phosphite to control scab on pecan in the southeastern United States. C. H. BOCK (1), T. B. Breneman (2), M. W. Hotchkiss (1), B. W. Wood (1). (1) USDA-ARS-SEFTNRL, Byron, GA, U.S.A.; (2) University of Georgia, Tifton, GA, U.S.A.
- 665-P Vermicompost tea for control of *Phytophthora nicotianae* in pineapple. B. S. SIPES (1), G. Taniguchi (1), T. Radovich (1). (1) University of Hawaii at Manoa, Honolulu, HI, U.S.A.
- 666-P Screening taro (*Colocasia esculenta*) for resistance to taro leaf blight (TLB) using a detached-leaf disc bioassay and marker-assisted selection. A. BROWN (1), S. C. Miyasaka (2), M. Shintaku (1). (1) University of Hawaii-Hilo, Hilo, HI, U.S.A.; (2) University of Hawaii-Manoa, Hilo, HI, U.S.A.
- 667-P Detection of *Ralstonia solanacearum* in Hawaiian field soils and evaluation of composts for suppressing pathogen populations. S. A. MOTOMURA (1), A. Read (2), N. Q. Arancon (3), S. C. Miyasaka (4), M. Shintaku (3). (1) University of Hawaii, Hilo, HI, U.S.A.; (2) Monsanto, Cambridge, MA, U.S.A.; (3) University of Hawaii-Hilo, Hilo, HI, U.S.A.; (4) University of Hawaii-Manoa, Hilo, HI, U.S.A.
- 668-P The effect of imazalil on *Colletotrichum gloeosporioides* isolated from avocado (*Persea americana*) fruit. D. NIETO-ANGEL (1), M. A. Cruz-Hernández (1), L. A. Aguilar-Pérez (1), F. M. Lara-Viveros (1), R. García-Velasco (2). (1) Colegio de Postgraduados, Montecillo, Mexico; (2) Universidad Autónoma del Estado de México, Montecillo, Mexico

- 669-P Management of diseased leaves with black sigatoka to reduce the disease severity in banana Grand Nain. M. OROZCO-SANTOS (1), G. Manzo-Sánchez (2), S. Guzmán-González (2), L. Martínez-Bolaños (3), B. Canto-Canché (4). (1) INIFAP, Tecoman, Colima, Mexico; (2) Universidad de Colima-FCBA, Tecmán, Colima, Mexico; (3) Universidad Autónoma Chapingo, Chapingo, Texcoco, Mexico; (4) CICY, Mérida, Yucatán, Mexico
- 670-P Cherry leaf spot disease management in ornamental flowering cherry. J. O. Joshua (1), M. T. MMBAGA (2), L. Mackasmel (3). (1) Tennessee State University, Nashville, TN, U.S.A.; (2) Tennessee State University Research Center, McMinnville, TN, U.S.A.; (3) Tennessee State University School of Agriculture and Consumer Sciences, McMinnville, TN, U.S.A.
- 671-P ★ **APS Foundation Awardee** Screening of a Valencia peanut core collection for resistance to *Sclerotinia sclerotiorum*. B. SMYTHE (1), S. Sanogo (1), N. Puppala (1), S. Thomas (1), R. Steiner (1). (1) New Mexico State University, Las Cruces, NM, U.S.A.
- 672-P Management of Sclerotinia blight of peanut in Texas: An integrated approach. J. WOODWARD (1), S. Russell (2), T. Baughman (3). (1) Texas AgriLife Extension Service, Lubbock, TX, U.S.A.; (2) Texas Tech University, Lubbock, TX, U.S.A.; (3) Texas AgriLife Extension Service, Vernon, TX, U.S.A.
- 673-P Studies on *Peanut bud necrosis virus* affecting tomato in India. K. GANDHI (1), V. Pandian (1), S. K. Manoranjitham (1), G. Chandrasekar (1), R. Samiyappan (1), E. I. Jonathan (1), R. A. Naidu (2). (1) Tamil Nadu Agricultural University, Coimbatore, India; (2) Washington State University, Prosser, WA, U.S.A.
- 674-P Functional biodiversity: Study of the raspberry bush—*Rubus idaeus* (Rosaceae). C. HERVE (1), D. Jean Claude (1), P. Richard (2). (1) Chambre d'Agriculture de la Corrèze, Brive, France; (2) Joseph Fourier University, Grenoble, France
- 675-P Industry-wide assessment of methyl bromide alternatives and sting nematode management in Florida strawberry. J. W. NOLING (1), A. W. Schumann (1). (1) University of Florida, Lake Alfred, FL, U.S.A.
- 676-P Large-scale demonstration trialing of drip fumigants in Florida strawberry. J. W. NOLING (1), M. Cody (1). (1) University of Florida, Lake Alfred, FL, U.S.A.
- 677-P Effect of bed height and soil amendments on survival of southern highbush blueberry cultivars in *Phytophthora* spp.-infested soils in Mississippi. B. J. SMITH (1). (1) USDA ARS, Southern Horticultural Lab, Poplarville, MS, U.S.A.
- 678-P Micro-biota associated with wild and cultivated strawberry and their potential use as biological control agents for strawberry black root rot. A. TORRES-BARRAGAN (1), P. Tran (1), K. A. Peeden (1), F. J. Louws (1). (1) North Carolina State University, Raleigh, NC, U.S.A.
- 679-P Active manipulation of resident biology to suppress *Macrophomina phaseolina* in strawberry. M. MAZZOLA (1). (1) USDA ARS, Wenatchee, WA, U.S.A.
- 680-P The Strawberry Advisory System: A forecast system for control of anthracnose and Botrytis fruit rots. N. A. PERES (1), S. MacKenzie (1), C. W. Fraisse (2), W. Pavan (2). (1) University of Florida, Wimauma, FL, U.S.A.; (2) University of Florida, Gainesville, FL, U.S.A.
- 681-P Management of strawberry anthracnose fruit rot in North Carolina with reduced fungicide spray schedules. M. E. CARNES (1), M. Rahman (1), F. J. Louws (1). (1) North Carolina State University, Raleigh, NC, U.S.A.
- 682-P Increased strawberry production in Florida over a generation is associated with adoption of favorable arthropod management practices. J. F. PRICE (1). (1) University of Florida, Bradenton, FL, U.S.A.
- PDM: GMOs**
- 683-P Establishment of a TMV-based transient expression system for AMPs in plants and their in planta/in vitro activity against compatible pathogens. K. H. SHAH (1), H. Bohlmann (1). (1) Institute of Plant Protection (IPS), University of Natural Resources and Life Sciences, Vienna, Austria
- 684-P Construction and function analysis of *Trichoderma* transformant with *Metarhizium anisopliae* genes against insects. J. CHEN (1). (1) Shanghai Jiaotong University, Shanghai, Peoples Republic of China
- 685-P Generation of broad-spectrum resistance in transgenic tobacco and tomato plants against distinct *Tospovirus* species of different serogroups. J. PENG (1), T. Chen (2), S. Yeh (3). (1) Tainan District Agricultural Research and Extension Station, Council of Agriculture, Tainan, Taiwan; (2) Dept. of Biotechnology, Asia University, Taichung, Taiwan; (3) Dept. of Plant Pathology, National Chung Hsing University, Taichung, Taiwan
- 686-P De novo-generated eIF4E resistance genes protect potato from infection by *Potato virus Y*. S. GRAY (1), J. Cavatorta (2), M. Jahn (3). (1) USDA ARS, Ithaca, NY, U.S.A.; (2) Cornell University, Ithaca, NY, U.S.A.; (3) University of Wisconsin, Madison, WI, U.S.A.
- 687-P *Agrobacterium*-mediated transformation of sugarcane with the anti-apoptotic gene CED-9 confers abiotic stress tolerance. M. F. MOLINA (1), M. D. Molina Risco (1), M. B. Dickman (1). (1) Texas A&M University, College Station, TX, U.S.A.
- 688-P Development of an in vitro multiplication method of sugarcane transgenic lines to improve stress tolerance screening. M. D. MOLINA RISCO (1), M. F. Molina (1), M. B. Dickman (1). (1) Texas A&M University, College Station, TX, U.S.A.
- PDM: Host Resistance**
- 689-P Transgenic plants expressing antimicrobial lactoferrin protein are resistant to *Rhizoctonia solani*. D. K. LAKSHMAN (1), T. C. Nguyen (2), J. Han (2), L. C. Galvez (2), A. Mitra (2). (1) USDA ARS, Beltsville, MD, U.S.A.; (2) University of Nebraska, Lincoln, NE, U.S.A.
- 690-P Field resistance of selected banana cultivars against tropical race 4 of *Fusarium oxysporum* f. sp. *cubense* in the Philippines. A. B. MOLINA (1), E. G. Fabregar (2), E. G. Ramillete (2), V. O. Sinohin (1), A. Viljoen (3). (1) Bioversity International, Los Banos, Philippines; (2) Lapanday Fruits Development Corp, Davao, Philippines; (3) University of Stellenbosch, Stellenbosch, Southwest Africa

- 691-P Engineering resistance in cotton by RNAi-mediated silencing of parasitism genes of *Meloidogyne incognita*. N. GOKTE-NARKHEDKAR (1), K. Bhanare (1), P. Nawkarkar (1), M. K. Meshram (1). (1) Central Institute for Cotton Research, Nagpur, India
- 692-P Linkage analysis of soybean *Phytophthora* root rot resistance loci on chromosome 13. A. GUNADI (1), A. Roberts (1), A. Dorrance (1), S. Berry (1). (1) Dept. of Plant Pathology, The Ohio State University, OARDC, Wooster, OH, U.S.A.
- 693-P Identification of quantitative trait loci conferring partial resistance to *Phytophthora sojae* in soybean PI 427106. S. LEE (1), M. Mian (2), H. Wang (3), L. McHale (4), C. Sneller (1), A. Dorrance (3). (1) Dept. of Horticulture and Crop Science, The Ohio State University, Wooster, OH, U.S.A.; (2) Corn and Soybean Unit, USDA-ARS, Wooster, OH, U.S.A.; (3) Dept. of Plant Pathology, The Ohio State University, Wooster, OH, U.S.A.; (4) Dept. of Horticulture and Crop Science, The Ohio State University, Columbus, OH, U.S.A.
- 693a-P Identification of soybean accessions with resistance to Phomopsis seed decay: Joint effort from USDA and university scientists. S. LI (1), P. Chen (2), J. C. Rupe (2), A. Wrather (3), G. Sciumbato (4), J. Smith (1), R. Nelson (5). (1) USDA-ARS, Crop Genetics Research Unit (CGRU), Stoneville, MS, U.S.A.; (2) University of Arkansas, Fayetteville, AR, U.S.A.; (3) University of Missouri, Portageville, MO, U.S.A.; (4) University of Mississippi, Stoneville, MS, U.S.A.; (5) USDA-ARS, Soybean/Maize Germplasm, Pathology, Genetics Research Unit, Urbana, IL, U.S.A.
- 693b-P University of Arkansas Soybean Disease Screening Project. M. J. EMERSON (1), W. S. Monfort (1), A. G. Carroll (1). (1) University of Arkansas, Lonoke, AR, U.S.A.
- 693c-P Mapping partial resistance to *Fusarium graminearum* in 'Conrad' soybean. M. L. ELLIS (1), H. Wang (2), P. A. Paul (2), A. E. Dorrance (2). (1) Ohio State University, Wooster, OH, U.S.A.; (2) Ohio State University, OARDC, Wooster, OH, U.S.A.
- 693d-P Mapping partial resistance to *Pythium irregulare* in the soybean accession PI 424354. M. L. ELLIS (1), P. A. Paul (2), S. K. St. Martin (3), A. E. Dorrance (2). (1) Ohio State University, Wooster, OH, U.S.A.; (2) Ohio State University, OARDC, Wooster, OH, U.S.A.; (3) Ohio State University, Columbus, OH, U.S.A.

PDM: Ornamentals

- 694-P Use of real-time and nested PCR to detect *Phytophthora ramorum* in infested nursery container mixes and soils. G. COLBURN (1), S. Jeffers (2). (1) Clemson University, Pendleton, SC, U.S.A.; (2) Clemson University, Clemson, SC, U.S.A.
- 695-P Factors influencing efficacy of plastic shelters for control of bacterial blight of lilac. V. O. STOCKWELL (1), B. T. Shaffer (2), M. D. Henkels (2), J. W. Pscheidt (1), J. E. Loper (2). (1) Oregon State University, Corvallis, OR, U.S.A.; (2) USDA-ARS, Corvallis, OR, U.S.A.
- 696-P Partial saturation of potted ornamentals reduces *Pythium* root rot on flooded floor greenhouses. W. H. ELMER (1), M. P. Gent (1), R. L. McAvoy (2). (1) The

Connecticut Agricultural Experiment Station, New Haven, CT, U.S.A.; (2) University of Connecticut, Storrs, CT, U.S.A.

PDM: Postharvest Diseases

- 697-P Effect glucorafano isolated of broccoli florets on the germination of *Colletotrichum gloeosporioides* spores. F. M. Lara-Viveros (1), D. NIETO-ANGEL (1), C. Nava-Diaz (1), L. A. Aguilar-Pérez (1), N. Landero-Valenzuela (1). (1) Colegio de Postgraduados, Montecillo, Mexico
- 698-P Effect of fungicides on the control of postharvest diseases in papaya fruits. M. OROZCO-SANTOS (1), K. García-Mariscal (1), D. Nieto-Angel (2), J. Velázquez-Monreal (1), J. Vázquez-Jiménez (1), M. Robles-González (1). (1) INIFAP, Tecomán, Colima, Mexico; (2) Colegio de Postgraduados, Texcoco, Mexico
- 699-P Phylogenetic background of Japanese *B. cinerea* isolates resistant to benzimidazoles, dicarboximides, and other fungicides. M. FUJIMURA (1), S. Banno (1), I. Yamaguchi (1). (1) Toyo University, Gunma, Japan
- 700-P Effect glucorafano isolated of broccoli florets on the germination of *Rhizopus stolonifer* spores. D. NIETO-ANGEL (1), F. M. Lara-Viveros (1), N. Landero-Valenzuela (1), R. García-Velasco (2), T. H. Rebouças (3). (1) Colegio de Postgraduados, Montecillo, Mexico; (2) Universidad Autónoma del Estado de México, Tenancingo, Mexico; (3) Universidade Estadual do Sudoeste da Bahia, Vitoria da Conquista, BA, Brazil
- 701-P Postharvest control of gray mold of blackberry caused by *Botrytis cinerea* with preharvest applications of fungicides in Michoacan México. A. REBOLLAR-ALVITER (1), O. Roldán-Nestor (2), H. V. Silva-Rojas (3), I. López-Cruz (4), J. Boyzo-Marín (5). (1) Universidad Autonoma Chapingo, Morelia, Michoacan, Mexico; (2) Posgrado en Protección Vegetal, Departamento de Parasitología Universidad Autónoma Chapingo, Chapingo, Mexico; (3) Laboratotio de Biotecnología de Semillas, Colegio de Postgraduados, Montecillo, Texcoco, Mexico; (4) Centro Regiona Morelia, Universidad Autónoma Chapingo, Morelia, Michoacan, Mexico; (5) Instituto Tecnológico del Valle de Morelia, Morelia, Michoacan, Mexico
- 702-P Cloning glucanase and chitinase genes from antagonistic yeasts for postharvest disease control. M. GULLINO (1), D. Spadaro (1), D. Zhang (1), A. Garibaldi (1). (1) Centro Agroinnova-University of Torino, Grugliasco Torino, Italy
- 703-P Selecting antagonists for control of postharvest brown rot of stone fruits originating from latent infections. W. J. JANISIEWICZ (1), R. S. Pimenta (2), W. M. Jurick II (3). (1) USDA ARS AFRS, Kearneysville, WV, U.S.A.; (2) Universidade Federal do Tocantins (UFT), Palmas, Brazil; (3) Food Quality Laboratory, USDA-ARS, Beltsville, MD, U.S.A.

PDM: Small Grains

- 704-P Construction of recombinant fluorescent *Pseudomonas* spp. for suppression of soilborne pathogens. J. ZHANG (1), L. S. Thomashow (2), O. V. Mavrodi (3), D. M. Weller (2), D. V. Mavrodi (3). (1) State Key

- 705-P Laboratory of Agricultural Microbiology, Huazhong Agricultural University, Wuhan, Peoples Republic of China; (2) USDA ARS, Pullman, WA, U.S.A.; (3) Washington State University, Pullman, WA, U.S.A.
QTL mapping of resistance genes for eyespot of wheat in *Aegilops longissima*. H. SHENG (1), D. R. See (2), T. D. Murray (1). (1) Plant Pathology, Washington State University, Pullman, WA, U.S.A.; (2) USDA-ARS, Western Wheat Quality Laboratory, Pullman, WA, U.S.A.
- 706-P Resistance to race TTKSK of *Puccinia graminis* f. sp. *tritici* in tetraploid wheat. P. D. OLIVERA FIRPO (1), Y. Jin (2), A. Badebo (3), S. Xu (4), D. Klindworth (4). (1) University of Minnesota, St. Paul, MN, U.S.A.; (2) USDA-ARS Cereal Disease Laboratory and Dept. of Plant Pathology, University of Minnesota, St. Paul, MN, U.S.A.; (3) Ethiopian Institute of Agricultural Research, Debre Zeit, Ethiopia; (4) USDA-ARS, Fargo, ND, U.S.A.
- 707-P Interaction between powdery mildew (*Blumeria graminis*) and triticale (x*Triticosecale*) in Germany as a model for pathosystem analysis. K. FLATH (1). (1) Julius Kühn-Institut, Federal Research Centre for Cultivated Plants, Kleinmachnow, Germany
- 708-P Continued deployment of moderate resistance to Cephalosporium stripe in Kansas winter wheat cultivars. W. W. BOCKUS (1), M. A. Davis (1), A. K. Fritz (1), J. Martin (2). (1) Kansas State University, Manhattan, KS, U.S.A.; (2) Kansas State University, Hays, KS, U.S.A.
- 709-P Phenotyping *Yr17* resistance in wheat to stripe rust and *Yr17* virulence in *Puccinia striiformis*. E. Milus (1), K. LEE (1). (1) University of Arkansas, Fayetteville, AR, U.S.A.
- 710-P Reduced infection of wheat spikelets inoculated with ascospores of *Gibberella zeae* in the presence of fungal mating pheromone peptides. G. Y. YUEN (1), C. C. Jochum (1), N. W. Gross (2), J. T. English (2), J. F. Leslie (3). (1) University of Nebraska, Lincoln, NE, U.S.A.; (2) University of Missouri, Columbia, MO, U.S.A.; (3) Kansas State University, Manhattan, KS, U.S.A.
- 711-P IPM programs for winter wheat in Oklahoma: A team approach to manage insects, diseases, and weeds. T. A. ROYER (1), K. L. Giles (1), N. C. Elliott (2), R. L. Hunger (1), B. F. Carver (1), J. T. Edwards (1), J. Armstrong (1). (1) Oklahoma State University, Stillwater, OK, U.S.A.; (2) USDA ARS, Stillwater, OK, U.S.A.
- 712-P The impact of fungicide and herbicide timing on barley leaf disease severity, weed management, and crop productivity. T. K. TURKINGTON (1), H. R. Kutcher (2), K. Xi (3), K. N. Harker (1), J. T. O'Donovan (1), E. N. Johnson (4). (1) Agriculture & Agri-Food Canada, Lacombe, AB, Canada; (2) Agriculture & Agri-Food Canada, Melfort, SK, Canada; (3) Alberta Agriculture and Rural Development, Lacombe, AB, Canada; (4) Agriculture & Agri-Food Canada, Scott, SK, Canada
- 713-P Search for the volatiles of *Bacillus cereus* C1L involved in the induction of systemic disease resistance and plant growth promotion. C. Huang (1), H. Yang (1), C. Tsai (1), C. CHEN (1). (1) National Taiwan University, Taipei, Taiwan Republic of China
- 714-P New method for establishing a network of operational warning of Septoria leaf blotch disease in winter wheat. M. EL JARROUDI (1), F. Giraud (2), P. Delfosse (3), L. Kouadio (1), L. Hoffmann (3), H. Maraite (4), B. Tychon (1). (1) Université de Liège, Arlon, Belgium; (2) Staphyt/BIORIZON, Martillac, France; (3) Centre de Recherches Public Gabriel Lippmann, Belvaux, Luxembourg; (4) Earth & Life Institute, Université Catholique de Louvain (UCL), Louvain-la-Neuve, Belgium
- 715-P Results of long-term trials to control diseases in cereal crops. M. JAHN (1). (1) Julius Kuehn Institute, Federal Research Centre for Cultivated Plants, Kleinmachnow, Germany
- 716-P Efficacy of pre-flag leaf emergence foliar fungicide application for *Stagonospora nodorum* blotch management in soft red winter wheat. K. T. Willyerd (1), C. Bradley (2), S. Conley (3), P. Esker (3), L. Madden (1), K. Wise (4), P. PAUL (1). (1) Ohio State University, Wooster, OH, U.S.A.; (2) University of Illinois, Urbana, IL, U.S.A.; (3) University of Wisconsin, Madison, WI, U.S.A.; (4) Purdue University, West Lafayette, IN, U.S.A.
- 717-P Survival and natural biological control of *Sclerotinia sclerotiorum* sclerotia in alfalfa seed production. L. D. PORTER (1), D. B. Walsh (2), R. A. Boydston (1), K. O'Donnell (3). (1) USDA ARS, Prosser, WA, U.S.A.; (2) Washington State University, Prosser, WA, U.S.A.; (3) USDA-ARS, Peoria, IL, U.S.A.
- 718-P Fungicide application on disease resistant wheat: Is the response what you would expect? B. R. OLSON (1), R. M. Hunger (1), J. T. Edwards (2). (1) Oklahoma State University, Dept. of Entomology and Plant Pathology, Stillwater, OK, U.S.A.; (2) Oklahoma State University, Dept. of Plant and Soil Sciences, Stillwater, OK, U.S.A.
- 719-P Biological control of Fusarium head blight in wheat caused by *Gibberella zeae*—A two-year, multilocation study. G. Y. YUEN (1), C. C. Jochum (1), S. A. Halley (2), L. E. Sweets (3), W. W. Kirk (4), D. A. Schisler (5). (1) University of Nebraska, Lincoln, NE, U.S.A.; (2) North Dakota State University, Langdon Research Extension Center, Langdon, NE, U.S.A.; (3) University of Missouri, Columbia, MO, U.S.A.; (4) Michigan State University, East Lansing, MI, U.S.A.; (5) USDA ARS MWA NCAUR, Peoria, IL, U.S.A.
- 720-P  Ecology of *Bacillus amyloliquefaciens* on wheat florets in relation to biological control of Fusarium head blight. J. CRANE (1), G. Bergstrom (1), D. Gibson (2). (1) Cornell University, Ithaca, NY, U.S.A.; (2) USDA-ARS, Cornell University, Ithaca, NY, U.S.A.
- 721-P Basis for inhibition of *Pyrenophora teres* by *Laetisaria arvalis*, a scanning and transmission electron microscopic study. R. T. LARTEY (1), K. Ghoshroy (2), T. Caesar-TonThat (1), R. G. Evans (1), S. Ghoshroy (3). (1) USDA ARS, Sidney, MT, U.S.A.; (2) Division of Science, Mathematics and Engineering, University of South Carolina, Sumter, SC, U.S.A.; (3) Electron Microscopy Center and Biological Sciences, University of South Carolina, Columbia, SC, U.S.A.
- 722-P Silicon and its interaction with fungicide on the control of anthracnose in susceptible and resistant sorghum lines. R. S. Resende (1), F. A. RODRIGUES (1), R. V.

- Costa (2), D. D. Silva (2). (1) Universidade Federal de Viçosa, Departamento de Fitopatologia, Viçosa, Brazil; (2) Embrapa Milho e Sorgo, Sete Lagoas, Brazil
- 723-P Concentration and cultivar effects on efficacy of ACM941-CL01 biofungicide in controlling *Fusarium* head blight of wheat. A. XUE (1), Y. Chen (2), H. Voldeng (2), G. Fedak (2). (1) Eastern Cereal and Oilseed Research Centre, Ottawa, ON, Canada; (2) Eastern Cereal and Oilseed Research Centre (ECORC), Agriculture & Agri-Food Canada, Ottawa, ON, Canada
- 724-P Coinoculation of wheat with *Triticum mosaic virus* and *Wheat streak mosaic virus* exacerbates loss of fresh and dry matter. E. Z. BYAMUKAMA (1), S. Tatineni (2), G. L. Hein (3), S. N. Wegulo (1). (1) University of Nebraska, Lincoln, NE, U.S.A.; (2) USDA ARS, Lincoln, NE, U.S.A.; (3) Doctor of Plant Health Program, University of Nebraska, Lincoln, NE, U.S.A.
- 725-P Antagonist *Cryptococcus flavecens* OH 182.9 3C colonization of wheat heads when applied with triazole fungicides and the effect on scab. D. A. SCHISLER (1), P. A. Paul (2), M. J. Boehm (3), C. A. Bradley (4), C. A. Dunlap (1). (1) USDA ARS MWA NCAUR, Peoria, IL, U.S.A.; (2) The Ohio State University, OARDC, Wooster, OH, U.S.A.; (3) Ohio State University, Columbus, OH, U.S.A.; (4) University of Illinois, Urbana, IL, U.S.A.
- 726-P Pathogenic variation in *Pyricularia grisea*, the causal agent of pearl millet blast and resistance in mini core collection to the pathogen. R. SHARMA (1), S. M. Manjunatha (1), V. P. Rao (1), H. D. Upadhyaya (1), R. P. Thakur (1). (1) ICRISAT, Hyderabad, Andhra Pradesh, India
- 727-P The role of silicon transport in improving plant disease resistance. J. VIVANCOS (1), J. Montpetit (1), G. Arsenault-Labrecque (1), W. Rémus-Borel (1), F. Belzile (1), J. G. Menzies (2), R. R. Bélanger (1). (1) Université Laval, Quebec, QC, Canada; (2) Agriculture & Agri-Food Canada, Winnipeg, MB, Canada
- 728-P WITHDRAWN
- 729-P *Pseudomonas fluorescens* SP007s reduces plant infection and increases γ -aminobutyric acid in seed infected by a complex pathogens of rice. S. Prathuangwong (1), T. CHATNAPARAT (2), W. Chuaboon (2), W. Pupakdeepean (2), A. Sulaiman (2), N. Hemsanit (2). (1) Kasetsart University, Chatuchack, Bangkok, Thailand; (2) Kasetsart University, Bangkok, Thailand
- 730-P The effect of sodium hypochlorite on the control of bakanae disease of rice caused by *Gibberella fujikuroi*. D. SHIN (1), Y. Kim (1), H. Park (1), J. Roh (1), I. Oh (1), Y. Lee (2). (1) National Institute of Crop Science, Rural Development Administration, Suwon, South Korea; (2) Director General for Planning & Coordination, Rural Development Administration, Suwon, South Korea
- 731-P Influences from long-term crop rotation, soil tillage, and fertility on the severity of rice grain smuts. M. ANDERS (1), S. Brooks (2), K. Yeater (3). (1) University of Arkansas, Stuttgart, AR, U.S.A.; (2) RiceTec, Inc., Alvin, TX, U.S.A.; (3) USDA ARS, College Station, TX, U.S.A.
- 732-P Rice mutated lines showing improved resistance to *Magnaporthe oryzae* induced by space mutation. Y. QIYUN (1), X. Wuming (1), Z. Jingxin (1), W. Hui (2), Z. Xiaoyuan (1), C. Zhiqiang (2). (1) Plant Protection Research Institute, Guangdong Academy of Agricultural Sciences, Guangzhou, China, Guangzhou, Peoples Republic of China; (2) National Engineering Research Center of Plant Space-Induced Breeding, South China Agricultural University, Guangzhou, Peoples Republic of China
- 733-P Field disease reaction of rice cultivars and elite lines in Texas. X. G. ZHOU (1), R. E. Tabien (1), A. M. McClung (2). (1) Texas A&M University System, AgriLife Research, Beaumont, TX, U.S.A.; (2) USDA-ARS, Rice Research Unit, Beaumont, TX, U.S.A.
- 734-P Assessing the genetic basis of resistance to rice sheath blight. S. SRINIVASACHARY (1), G. Beligan (1), L. Willocquet (1), S. Savary (1). (1) International Rice Research Institute, Los Banos, Laguna, Philippines
- 735-P Influence of genetic background of bacterial blight resistance gene *Xa7* on population and movement of *Xanthomonas oryzae* pv. *oryzae*. H. WATANABE (1), N. Furuya (1), H. Hoang (1), T. Goto (2), A. Yoshimura (1), K. Tsuchiya (1). (1) Kyushu University, Fukuoka, Japan; (2) Sanwa Shurui Co., Ltd., Oita, Japan
- 736-P Effects of hot-water treatment for seed disinfection and seed germination in rice. J. ROH (1), G. Kim (1), Y. Yoon (1), M. Nam (1), D. Shin (1). (1) Dept. of Functional Crop, National Institute of Crop Science, Suwon, South Korea
- 737-P Field evaluation of a beneficial *Bacillus* strain for biocontrol of sheath blight in rice. X. G. ZHOU (1), M. S. Reddy (2), J. W. Kloepper (2), K. K. Kumar (2), S. Zhang (3). (1) Texas A&M University System, AgriLife Research, Beaumont, TX, U.S.A.; (2) Auburn University, Auburn, AL, U.S.A.; (3) University of Florida, Tropical REC, Homestead, FL, U.S.A.
- 738-P Inhibition of *Magnaporthe oryzae* and *Rhizoctonia solani* by *Sarocladium oryzae*, the causal agent of sheath rot in rice. V. L. SILVA-LOBO (1), M. V. Côrtes (2), L. P. Silva (3), M. C. Filippi (2), A. S. Prabhu (2). (1) Embrapa-CNPAP, Santo Antonio De Goiás, Brazil; (2) Embrapa Arroz e Feijão, Santo Antônio de Goiás, Brazil; (3) Agronomy School Federal University of Goiás, Santo Antônio de Goiás, Brazil
- 739-P Exploring the Brazilian diversity of *Trichoderma* spp. with focus on biological control of white mold on common beans in the field. M. LOBO JUNIOR (1), A. M. Geraldine (1), D. D. Carvalho (2), P. S. Ribeiro (3), R. S. Brandão (1), R. N. Silva (4), C. J. Ulhoa (3). (1) Embrapa Rice and Beans, Santo Antônio de Goiás, Brazil; (2) Universidade de Brasília, Brasília, Brazil; (3) Universidade Federal de Goiás, Goiânia, Brazil; (4) Faculdade de Medicina de Ribeirão Preto/ Universidade de São Paulo, Ribeirão Preto, Brazil
- PDM: Soilborne and Seed Disease**
- 740-P Control of *Fusarium virguliforme* (sudden death syndrome) with a seed treatment. T. A. MUELLER (1), R. P. Knake (2), J. L. Riggs (3). (1) Bayer CropScience, Earlham, IA, U.S.A.; (2) Bayer CropScience, Johnston, IA, U.S.A.; (3) Bayer CropScience, Research Triangle Park, NC, U.S.A.
- 741-P Sedaxane, a new experimental active ingredient from Syngenta for seed treatment use. M. OOSTENDORP

- (1), R. Zeun (2). (1) Syngenta Crop Protection AG, Basel, Switzerland; (2) Syngenta Crop Protection AG, Stein, Switzerland
- 742-P Corn and soybean yield responses using sedaxane, a new seed treatment experimental fungicide from Syngenta. G. OLAYA (1), C. Watrin (2), P. Pedersen (2). (1) Syngenta Crop Protection, Vero Beach, FL, U.S.A.; (2) Syngenta Crop Protection, Greensboro, NC, U.S.A.
- 743-P Evaluation of organic sulfide fumigants for suppression of vegetable soilborne replanting diseases in greenhouse. C. Ma (1), S. LI (2), Z. Miao (2). (1) Institute of Plant Protection, Shanghai Academy of Agricultural Sciences, Shanghai, Peoples Republic of China; (2) Institute of Plant Protection, Chinese Academy of Agricultural Sciences, Beijing, Peoples Republic of China
- 744-P Prioritizing cover crops for improving root health and yield of vegetables in the northeast. G. S. ABAWI (1), C. H. Petzoldt (1), B. K. Gugino (2), J. A. LaMondia (3). (1) Cornell University, Geneva, NY, U.S.A.; (2) The Pennsylvania State University, University Park, PA, U.S.A.; (3) Connecticut Agricultural Experiment Station, Windsor, CT, U.S.A.
- 745-P Host plant and substrate-mediated shifts in soil microbial community composition in microplots simulating transitional organic production systems. D. CHELLEMI (1), E. N. Roskopf (1), N. Kokalis-Burelle (1). (1) USDA ARS, Fort Pierce, FL, U.S.A.
- 746-P Interactions of postemergence herbicides, strobilurin fungicides, and Rhizoctonia root rot of soybean. R. ZHANG (1), G. L. Hartman (2), D. M. Eastburn (1). (1) University of Illinois, Urbana, IL, U.S.A.; (2) USDA-ARS, University of Illinois, Urbana, IL, U.S.A.
- 747-P Effect of soil amendment with seeds of *Vernonia anthelmintica* on soilborne diseases and growth of okra. V. SULTANA (1), G. N. Baloch (2), J. Ara (3), S. Ehteshamul-Haque (2). (1) Dept. of Biochemistry, University of Karachi, Karachi, Pakistan; (2) Dept. of Botany, University of Karachi, Karachi, Pakistan; (3) Dept. of Food Science & Technology, University of Karachi, Karachi, Pakistan
- 748-P The amplification culture of endospore formulation of *Bacillus subtilis* biofungicide and its use in disease management. W. HUANG (1), Y. Chiu (1), T. Wang (1), T. Huang (1), D. Tzeng (1). (1) National Chung-Hsing University, Taichung, Taiwan
- 749-P Seed treatment and drench with *Reynoutria* sp. in controlling damping-off caused by *Rhizoctonia solani* and *Pythium ultimum* in soybean or cotton. H. SU (1), D. Cummings (1), C. Gilbert (1), T. Johnson (1), P. Himmel (1), P. Marrone (1). (1) Marrone Bio Innovations, Inc., Davis, CA, U.S.A.
- 750-P Detection and population dynamic analysis of biological control agent *Pseudomonas fluorescens* LRB3W1 in tomato plants from the 'Live coating seed'. Y. MATSUGUMA (1), L. Nwe (1), H. Hoang (1), M. Takeshita (1), N. Someya (2), N. Furuya (1), Y. Hashimoto (3), K. Tsuchiya (1). (1) Kyushu University, Fukuoka, Japan; (2) National Agricultural Research Center for Hokkaido Region, Obihiro, Japan; (3) Sakata Seed Corporation, Yokohama, Japan
- 751-P Effect of fungicide seed treatments and cultivars on *Pythium* damping-off and root rot of edamame soybean. F. Baysal-Gurel (1), J. Mera (1), S. A. MILLER (1). (1) The Ohio State University, Wooster, OH, U.S.A.
- 752-P Using metconazole as a seed treatment to protect sugarbeets from early-season Rhizoctonia crown and root rot. D. MCDUFFEE (1). (1) Valent USA Corp., Indianapolis, IN, U.S.A.
- 753-P The effect of dsRNA mycoviruses of *Macrophomina phaseolina* on pathogenicity, laccase activity, mycelial growth, and microscлерotia production. S. SOUZANI (1), B. Mahmoudi (2), M. Hashemi (3), H. Zamanizadeh (1). (1) Dept. of Plant Pathology, Science and Research Branch, Islamic Azad University, Tehran, Iran; (2) Sugar Beet Seed Institute, Karaj, Iran; (3) Seed and Plant Improvement Institute, Karaj, Iran
- 754-P Development of a simple and practical detection method of seed-borne bacterial pathogens from potato tubers. M. HORITA (1), F. Tanaka (2), H. Fuwa (3). (1) National Institute for Agro-Environmental Sciences, Tsukuba Ibaraki, Japan; (2) Central Agricultural Experiment Station, Hokkaido Research Organization, Naganuma, Hokkaido, Japan; (3) National Center for Seeds and Seedlings, Kitahiroshima, Hokkaido, Japan
- 755-P Control of soilborne plant pathogens by microorganisms isolated from suppressive composts. M. GULLINO (1), M. Pugliese (2), A. Garibaldi (2). (1) University of Torino, Grugliasco Torino, Italy; (2) Agroinnova-University of Torino, Grugliasco (TO), Italy
- 756-P Biological control properties of *Pseudomonas* isolates. O. MAVRODI (1), N. Walter (2), C. Taylor (3), P. Okubara (2). (1) Washington State University, Pullman, WA, U.S.A.; (2) USDA-ARS Root Disease and Biological Control Research Unit, Pullman, WA, U.S.A.; (3) OARDC-Plant Pathology, Ohio State University, Wooster, OH, U.S.A.
- 757-P Incorporation of peanut rhizobia with plant growth-promoting rhizobacteria as biocontroller effectively against the seed-borne fungi, *Aspergillus niger*. W. Yuttavanichakul (1), S. Wongkaew (2), N. Teaumroong (1), N. Boonkerd (1), P. TITTABUTR (1). (1) School of Biotechnology, Suranaree University of Technology, Nakhon Ratchasima, Thailand; (2) School of Crop Production Technology, Suranaree University of Technology, Nakhon Ratchasima, Thailand
- 758-P Management of *Phytophthora ramorum*-infested nursery soil with *Trichoderma asperellum*. T. L. WIDMER (1), S. A. Johnson-Brousseau (2), S. Ghosh (2). (1) USDA ARS FDWSRU, Frederick, MD, U.S.A.; (2) Dominican University of California, San Rafael, CA, U.S.A.
- 759-P Inducing of the systemic resistance against Fusarium crown and root rot of tomato (*Fusarium oxysporum* f. sp. *radicis-lycopersici*) by rhizobacteria. A. Gül (1), H. ÖZAKTAN (2), L. Yolageldi (2), B. Çakır (1). (1) University of Ege, Faculty of Agriculture, Dept. of Horticulture, Izmir, Turkey; (2) University of Ege, Faculty of Agriculture, Dept. of Plant Protection, Izmir, Turkey
- 760-P Evaluation of commercial algacides to mitigate *Phytophthora* spp. in naturally infested water. I. M.

- MEADOWS (1), S. N. Jeffers (1). (1) Clemson University, Clemson, SC, U.S.A.
- 761-P Epistatic involvement of plasmodesmatal localized protein and malic acid transporter in aerial pathogenesis and belowground rhizobacterial recruitment. V. LAKSHMANAN (1), W. Cui (1), S. L. Kitto (2), J. Lee (1), H. P. Bais (1). (1) Delaware Biotechnology Institute, Newark, DE, U.S.A.; (2) Plant and Soil Science, Newark, DE, U.S.A.
- 762-P Evaluation of *Bacillus firmus* strain GB-126 seed treatment for the biocontrol of the reniform nematode on cotton plants. J. D. CASTILLO (1), K. S. Lawrence (1), J. W. Kloepper (1). (1) Auburn University, Auburn, AL, U.S.A.
- PDM: Solanaceous Crops**
- 763-P Evaluating the efficacy of fungicide programs for the control of potato early blight in the central sands of Wisconsin. A. J. GEVENS (1), K. M. Cleveland (1), J. Dobbs (1), R. A. Clark (1). (1) University of Wisconsin, Madison, WI, U.S.A.
- 764-P Sensitivity of tomato early blight isolates (*Alternaria solani*) from Jordan to mancozeb, chlorothalonil, and azoxystrobin fungicides. F. M. ABU-EL SAMEN (1), A. M. Al Shudifat (2). (1) Jordan University of Science and Technology, Irbid, Jordan; (2) National Center for Agricultural Research and Extension, Mafraq, Jordan
- 765-P Semidorminant mutations in *cesA3* leading to the resistance to CAA fungicides in *Phytophthora capsici*. L. Chen (1), Q. Wang (1), X. Lu (1), S. Zhu (2), X. LIU (1). (1) Plant Pathology Dept., China Agricultural University, Beijing, Peoples Republic of China; (2) Plant Pathology Dept., Yunnan Agricultural University, Kunming, Peoples Republic of China
- 766-P MCW-2 for management of root-knot nematode on carrot, tomato, and cucurbits. B. B. WESTERDAHL (1), C. T. Schiller (2). (1) University of California, Davis, CA, U.S.A.; (2) Makhteshim Agan of North America (MANA), Raleigh, NC, U.S.A.
- 767-P Grafting of a commercially important but bacterial wilt-susceptible tomato variety with disease-resistant rootstocks for open field production. M. L. PARET (1), J. H. Freeman (2), T. McAvoy (2), S. L. Rideout (2), S. M. Olson (1). (1) North Florida Research and Education Center, University of Florida, Quincy, FL, U.S.A.; (2) Eastern Shore Agricultural Research and Extension Center, Virginia Polytechnic Institute and State University, Painter, VA, U.S.A.
- 768-P Effect of immersion depth, dwell time, and fruit-water temperature differences on water uptake by flumed tomatoes. J. A. BARTZ (1), M. T. Elkahky (2), D. R. Spiceland (1). (1) University of Florida, Gainesville, FL, U.S.A.; (2) Mansoura University, Mansoura, Egypt
- 769-P Use of disease-suppressive brassica rotation crops in potato production: Overview of 10 years of field trials. R. P. LARKIN (1), M. Olanya (2), Z. He (2), J. Halloran (2), W. Honeycutt (2). (1) USDA ARS, Orono, ME, U.S.A.; (2) USDA-ARS, NEPSWL, Orono, ME, U.S.A.
- 770-P Potato virus Y resistance from *Ry_{adg}* and *Ry_{sto}* genes: Practical application in a potato breeding program. J. L. WHITWORTH (1), R. G. Novy (1), S. Yilma (2). (1) USDA-ARS, Aberdeen, ID, U.S.A.; (2) Oregon State University, Corvallis, OR, U.S.A.
- 771-P Potato IPM program: Taking the research to the farm. J. D. DWYER (1), J. F. Dill (2), S. B. Johnson (1), G. M. Dill (2). (1) University of Maine Cooperative Extension, Presque Isle, ME, U.S.A.; (2) University of Maine Cooperative Extension, Orono, ME, U.S.A.
- 772-P Red potato cultivar (*Solanum tuberosum* L.) susceptibility to the root-knot nematode *Meloidogyne incognita*. B. KANDOUTH (1), B. Sipes (1). (1) University of Hawaii at Manoa, Honolulu, HI, U.S.A.
- 773-P Potential role of grafting as a method to manage *Verticillium dahliae* race 2 in tomato production systems. M. IOTT (1), R. M. Welker (1), C. L. Rivard (2), F. J. Louws (1). (1) North Carolina State University, Raleigh, NC, U.S.A.; (2) Kansas State University, Olathe, KS, U.S.A.
- 774-P Management of leaf curl diseases by eco-friendly methods. V. KURUCHEVE (1). (1) Annamalai University, Chidambaram, India
- 775-P Production of healthy seed potatoes on organic farms. A. O. CHARKOWSKI (1), R. Genger (1), R. Groves (1), E. Mueller (1), J. Guenther (2). (1) University of Wisconsin, Madison, WI, U.S.A.; (2) University of Idaho, Moscow, ID, U.S.A.
- 776-P Field evaluation of an anthracnose forecaster to spray fungicide for hot pepper during 2005–2010. S. YUN (1). (1) Sun Moon University, Asan-si, Chung Nam, Korea
- 777-P Management of charcoal rot of sweet potato in India. V. B. PATIL (1). (1) Shivaji University, Kolhapur, India
- 778-P Control of powdery mildew and *Phytophthora* blight of red pepper by microbial and chemical fungicides. S. HONG (1), H. Jee (1), Y. Kim (1), J. Park (1), E. Han (1), C. Shim (1), M. Lee (1), J. Kim (1), H. Goo (2). (1) Organic Agriculture Division, National Academy of Agricultural Science, Suwon, South Korea; (2) Gimpo Agricultural Technical Center, Gimpo, South Korea
- 779-P Management of *Phytophthora capsici* and potential human foodborne pathogens in irrigation water. M. L. LEWIS IVEY (1), S. A. Miller (1). (1) Ohio State University, Wooster, OH, U.S.A.
- 780-P Achieving sustainable potato production through the use of new potato varieties with reduced fungicide requirements. A. R. BELCHER (1), P. S. Wharton (1), C. Lowder (1), W. Buhrig (2), M. Thornton (2), J. Stark (1). (1) University of Idaho, Aberdeen, ID, U.S.A.; (2) University of Idaho, Parma, ID, U.S.A.
- 781-P Efficacy of OMRI-certified fungicides and chitosan to manage early blight and Septoria leaf spot in tomato. M. FELICIANO-RIVERA (1). (1) University of Kentucky, Lexington, KY, U.S.A.
- 782-P Evaluating the spread of potato powdery scab in storage. A. J. GEVENS (1), B. J. Webster (1), R. A. Clark (1). (1) University of Wisconsin, Madison, WI, U.S.A.
- 783-P Tomato powdery mildew may be significantly reduced by choice and management of irrigation system in the Brazilian Middle West. D. A. Lage (1), W. A. Marouelli (2), A. C. CAFE-FILHO (1). (1) Universidade de Brasília, Brasília, DF, Brazil; (2) Embrapa Hortaliças, Brasília, DF, Brazil
- 784-P The use of natural plant volatile compounds for the control of potato blemish disease pathogens. E.

- WOOD (1), P. S. Wharton (1). (1) University of Idaho, Aberdeen, ID, U.S.A.
- 785-P An inhibitory effect of a novel *Bacillus* sp. strain against potato common scab. Q. MENG (1), H. Liu (1), J. Hao (1). (1) Michigan State University, East Lansing, MI, U.S.A.
- 786-P Screening newly released Northwest Potato Variety Development Program cultivars for resistance to Pythium leak. P. S. WHARTON (1), A. R. Belcher (1), L. Woodell (2), N. Olsen (2). (1) University of Idaho, Aberdeen, ID, U.S.A.; (2) University of Idaho, Kimberly, ID, U.S.A.
- 787-P Control of potato early blight tuber rot using postharvest fungicide treatments. P. S. WHARTON (1), A. R. Belcher (1), L. Woodell (2), N. Olsen (2). (1) University of Idaho, Aberdeen, ID, U.S.A.; (2) University of Idaho, Kimberly, ID, U.S.A.
- 788-P Development of noninvasive inoculation methods of tomato fruit with *Geotrichum candidum* to improve postharvest disease management strategies. K. FIEDLER (1), S. Rideout (1). (1) Virginia Tech Eastern Shore AREC, Painter, VA, U.S.A.
- 789-P Microplate assay for copper resistance in *Xanthomonas* spp. P. Horobet (1), K. D. GWINN (2), B. H. Ownley (2). (1) Hardin Valley Academy, Knoxville, TN, U.S.A.; (2) University of Tennessee, Knoxville, TN, U.S.A.
- 790-P The use of field bioassay to facilitate the deregulation of fields formerly infested with *Globodera rostochiensis* in New York. R. BULLUCK (1), D. J. Kepich (2), P. M. Baldauf (2), M. K. Kelly (3), J. M. Jones (4), Y. M. Demarino (5). (1) USDA Animal Plant Health Inspection Service (APHIS) Plant Protection and Quarantine (PPQ) Center for Plant Health Science and Technology (CPHST), Raleigh, NC, U.S.A.; (2) USDA APHIS PPQ, Avoca, NY, U.S.A.; (3) New York State Dept. of Agriculture and Markets (NYDAM) Division of Plant Industry (DPI), Albany, NY, U.S.A.; (4) USDA APHIS PPQ, Riverdale, MD, U.S.A.; (5) USDA APHIS PPQ, Albany, NY, U.S.A.
- 791-P Effect of inoculum placement on alternative *Pythium* control methods for tobacco transplant production. C. S. JOHNSON (1), D. Reed (2), K. W. Seebold (3). (1) Virginia Polytechnic Institute & State University, Blackstone, VA, U.S.A.; (2) Virginia Tech, So. Piedmont AREC, Blackstone, VA, U.S.A.; (3) Dept. of Plant Pathology, University of Kentucky, Lexington, KY, U.S.A.
- 792-P The biofumigation potential of *Brassica juncea* against black shank of tobacco. A. M. HOLDCROFT (1), K. W. Seebold (1). (1) University of Kentucky, Lexington, KY, U.S.A.
- PDM: Vegetables**
- 793-P Elucidation of negative interactions between glyphosate and azoxystrobin and effects on *Rhizoctonia solani* severity under field conditions. O. T. NEHER (1), D. Morishita (1). (1) University of Idaho, Kimberly, ID, U.S.A.
- 794-P Evaluation of leaf blight-resistant plant introductions of *Brassica juncea* and *Brassica rapa* and elucidation of inheritance of resistance. W. Wechter (1), A. KEINATH (2), P. Smith (3), M. Farnham (1). (1) USDA, ARS, Charleston, SC, U.S.A.; (2) Clemson University, Charleston, SC, U.S.A.; (3) Clemson University, Lexington, SC, U.S.A.
- 795-P Using the *Tomato spotted wilt virus* nucleocapsid protein gene for pathogen-derived resistance in lettuce. K. AKAHOSHI (1), S. Chantha (2), C. Seeve (3), M. Shintaku (1). (1) University of Hawaii, Hilo, HI, U.S.A.; (2) McGill University, Montreal, QC, Canada; (3) Texas A&M University, College Station, TX, U.S.A.
- 796-P Selection of antagonistic yeasts for the control of *Salmonella enterica* serovar *typhimurium* on fresh cut lettuce. M. GULLINO (1), D. Spadaro (1), A. Lorè (1). (1) Centro Agroinnova-University of Torino, Grugliasco Torino, Italy
- 797-P A volatile substance from *Talaromyces* sp. promotes the plant growth and blocks the disease development on several plants. T. SHIRAIISHI (1), Y. Yamagiwa (1), P. T. Le (1), K. Maeda (1), Y. Inagaki (1), Y. Ichinose (1), M. Hyakumachi (2), K. Toyoda (1). (1) Okayama University, Okayama, Japan; (2) Gifu University, Gifu, Japan
- 798-P Evaluation of systemic acquired resistance inducers for control of basil downy mildew. Z. MERSHA (1), S. Zhang (1). (1) University of Florida, Tropical Research and Education Center, Homestead, FL, U.S.A.
- 799-P Controlling gummy stem blight in the greenhouse on watermelon seedlings grafted onto cucurbit rootstocks. A. KEINATH (1), G. V. Baccari (1), V. DuBose (1). (1) Clemson University, Charleston, SC, U.S.A.
- 800-P Evaluation of rotation crops for their ability to suppress plant-parasitic nematodes in strawberries. A. C. SCHILDER (1), F. W. Warner (1), J. M. Gillett (1), R. W. Sysak (1). (1) Michigan State University, East Lansing, MI, U.S.A.
- 801-P Screening and application of bacterial isolates as biocontrol agent against powdery mildew on cucumber. P. Ma (1), S. LI (1), X. Lu (1), B. Li (1), Q. Guo (1). (1) Plant Protection Institute, Hebei Academy of Agricultural and Forestry Sciences, Baoding, Peoples Republic of China
- 802-P Field application of asafetida and seaweed for the management of root diseases of watermelon and eggplant. S. EHTESHAMUL-HAQUE (1), G. N. Baloch (1), V. Sultana (2), J. Ara (3). (1) Dept. of Botany, University of Karachi, Karachi, Pakistan; (2) Dept. of Biochemistry, University of Karachi, Karachi, Pakistan; (3) Dept. of Food Science & Technology, University of Karachi, Karachi, Pakistan
- 803-P The use of arthrospore formulation of antagonistic *Streptomyces* for the control of diseases caused by *Phytophthora* species. D. Tzeng (1), W. Huang (1), Y. LIANG (1), C. Chen (1), T. Huang (1), T. Lee (1), W. Lai (1). (1) National Chung-Hsing University, Taichung, Taiwan
- 804-P Protection of cucumber diseases by using hot-water extract from spent substrate of edible mushrooms. R. Y. PARADA (1), S. Murakami (2), N. Shimomura (1), H. Otani (1). (1) Tottori University, Tottori, Japan; (2) The Tottori Mycological Institute, Tottori, Japan
- 805-P Methods for introduction of nonpathogenic *Fusarium oxysporum* into cucumber plants for better control of Fusarium wilt disease in Taiwan. W. CHUNG (1), C. Wang (1), Y. Lin (2). (1) National Chung Hsing

- University, Taichung, Taiwan; (2) Asia University, Taichung, Taiwan
- 806-P Comparison of seed health methods for the detection of *Acidovorax avenae* subsp. *citrulli* in cucurbit seeds. L. E. Yakabe (1), S. R. PARKER (2). (1) USDA-ARS, CPGRU, Davis, CA, U.S.A.; (2) Syngenta, Nampa, ID, U.S.A.
- 807-P Suppression of soilborne diseases in watermelon and rice with brassica biofumigation crops. X. G. ZHOU (1), K. L. Everts (2), C. Zhou (3). (1) Texas A&M University System, AgriLife Research, Beaumont, TX, U.S.A.; (2) University of Maryland/Delaware, Salisbury/Georgetown, MD, U.S.A.; (3) University of Maryland, Salisbury, MD, U.S.A.
- 808-P  Molecular diversity of viruses in vegetable crops from farmers' fields in South and Southeast Asia. S. POOJARI (1), O. J. Alabi (1), K. Gandhi (2), S. K. Manoranjitham (2), T. A. Damayanti (3), S. H. Hidayat (4), R. A. Naidu (5). (1) Washington State University, Prosser, WA, U.S.A.; (2) Tamil Nadu Agricultural University, Coimbatore, India; (3) Faculty of Agriculture, Bogor Agricultural University, Bogor, Indonesia; (4) Dept. of Plant Protection, Faculty of Agriculture, Bogor Agricultural University, Bogor, Indonesia; (5) Washington State University, Irrigated Agriculture Research and Extension Center, Prosser, WA, U.S.A.
- 809-P Toward the development of integrated pest management (IPM) packages for tomatoes and other vegetable crops in West Africa. R. GILBERTSON (1), M. Noussourou (2), K. Gamby (2), M. Osei (3), S. Miller (4), D. Pfeiffer (5), C. Brewster (5), D. Mullins (5). (1) University of California, Davis, CA, U.S.A.; (2) Institut Economie Rural, Bamako, Mali; (3) Crops Research Institute, Kumasi, Ghana; (4) Ohio State University, Wooster, OH, U.S.A.; (5) Virginia Tech, Blacksburg, VA, U.S.A.
- 810-P Relative efficacy of chemical management tools on Phytophthora crown and root rot of pepper plants. M. E. MATHERON (1). (1) University of Arizona, Yuma, AZ, U.S.A.
- 811-P Evaluate Actigard applied through drip irrigation for suppression of *Xanthomonas* contamination in carrot seed. B. WU (1), R. Simmons (2), K. B. Johnson (3), L. J. du Toit (4). (1) Oregon State University, Central Oregon Agricultural Research Center, Madras, OR, U.S.A.; (2) Central Oregon Agricultural Research Center, Madras, OR, U.S.A.; (3) Oregon State University, Corvallis, OR, U.S.A.; (4) Washington State University, Mount Vernon, WA, U.S.A.
- 812-P Effect of fungicide programs on white rot of garlic in central California. T. A. TURINI (1), D. A. Rodriguez (1). (1) University of California Cooperative Extension, Fresno, CA, U.S.A.
- 812a-P In vitro sensitivity of the Pythium blight pathogens of snap bean to various fungicides. L. A. HARRISON (1), S. L. Rideout (1). (1) Virginia Polytechnic Institute, Painter, VA, U.S.A.
- 813-P Management of onion bacterial diseases using alternative mulches and plant spacing. B. K. GUGINO (1), C. A. Hoepting (2), J. Stoltzfus (3), M. A. Mansfield (1), K. Klotzbach (2), J. Reid (4). (1) The Pennsylvania State University, University Park, PA, U.S.A.; (2) Cornell Cooperative Extension, Albion, NY, U.S.A.; (3) Eastern Lancaster County School District, New Holland, PA, U.S.A.; (4) Cornell Cooperative Extension, Penn Yan, NY, U.S.A.
- 814-P Evaluation and popularization of integrated pest management module in onion. G. GAJENDRAN (1), D. Dinakaran (1), S. Mohan Kumar (2), G. Karthikeyan (2), V. Jayabal (1). (1) Anbil Dharmalingam Agricultural College and Research Institute, Tiruchirappalli, India; (2) Tamil Nadu Agricultural University, Coimbatore, India
- 815-P Management of onion purple blotch with bioformulations and fungicides. D. DINAKARAN (1), G. Gajendran (1), S. Mohan Kumar (2), G. Karthikeyan (2), S. Mathiyazhagan (1), S. Thiruvudainambi (1), V. Jayabal (1). (1) Anbil Dharmalingam Agricultural College and Research Institute, Tiruchirappalli, India; (2) Tamil Nadu Agricultural University, Coimbatore, India
- 816-P Efficacy of bio-fumigation and soil solarization on soilborne onion pathogens. R. POKHAREL (1). (1) Colorado State University, Grand Junction, CO, U.S.A.
- Weeds**
- 817-P Species-specific detection of *Mycosphaerella* spp. as classical biological control agents for *Fallopia japonica* (Japanese knotweed) by PCR assay. N. FURUYA (1), T. Saeki (1), D. Kurose (2), H. C. Evans (3), S. Tsushima (2), K. Tsuchiya (1). (1) Kyushu University, Fukuoka, Japan; (2) National Institute for Agro-Environmental Sciences, Tsukuba, Japan; (3) CABI Europe-UK, Egham, United Kingdom
- 818-P Survey and screening of classical biological control agents for Japanese knotweed (*Fallopia japonica*). K. TSUCHIYA (1), D. Kurose (2), R. Shaw (3), D. Djeddour (3), H. Evans (3), S. Tsushima (2), N. Furuya (1). (1) Kyushu University, Fukuoka, Japan; (2) National Institute for Agro-Environmental Sciences, Tsukuba, Japan; (3) CABI Europe-UK, Egham, United Kingdom
- 819-P Using pathogen dispersal characteristics to improve biological control of Canada thistle with the rust fungus *Puccinia punctiformis*. S. A. CONAWAY (1), P. A. Backman (1), S. A. Isard (1). (1) Penn State University, University Park, PA, U.S.A.
- 820-P Biological control of silvery threadmoss (*Bryum argenteum*) a weed problem of golf course putting greens and nursery crops. A. R. POST (1), D. S. McCall (1), S. D. Askew (1). (1) Virginia Tech, Blacksburg, VA, U.S.A.
- 821-P Pathogenicity test of four potential fungal biocontrol agents on Setose Cephalanoplos weed and their safety on agricultural crops. Z. Haixia (1), G. QINGYUN (2), C. Liang (2). (1) Institute of Plant Protection, Beijing, Peoples Republic of China; (2) Institute of Plant Protection, Qinghai Academy of Agricultural and Forestry, Xining, Peoples Republic of China
- 822-P Potential organic substrates for soil application of *Microsphaeropsis amaranthi* and *Phomopsis amaranthicola* bioherbicides. L. M. ORTIZ-RIBBING (1), L. M. Coers (2), G. K. Roskamp (2), S. G. Hallett (3). (1) University of Wisconsin, River Falls, WI,

U.S.A.; (2) Western Illinois University, Macomb, IL, U.S.A.; (3) Purdue University, West Lafayette, IN, U.S.A.

- 823-P Responsiveness of *Striga*-susceptible and *Striga*-resistant sorghum genotypes to soil phosphorus and arbuscular mycorrhizal fungi. A. B. LEYTEM (1), J. L. Parke (1). (1) Oregon State University, Corvallis, OR, U.S.A.
- 824-P Evaluation of *Mycosphaerella polygoni-cuspidati* for classical biological control of Japanese knotweed (*Fallopia japonica*). D. KUROSE (1), N. Furuya (2), D. H. Djeddour (3), H. C. Evans (3), S. Tsushima (1), K. Tsuchiya (2). (1) National Institute for Agro-Environmental Sciences, Tsukuba, Japan; (2) Kyushu University, Fukuoka, Japan; (3) CABI Europe-UK, Egham, United Kingdom

■ MOLECULAR/CELLULAR/ PLANT-MICROBE INTERACTIONS

Bacteria

- 825-P Optimization of RNA isolation and qRT-PCR strategies to monitor microbial gene expression in soil. A. NOVINSKAK (1), V. J. Gadkar (1), M. Filion (1). (1) University of Moncton, Moncton, NB, Canada
- 826-P Implication of phenazine-1-carboxylic acid production by *Pseudomonas* sp. LBUM223 in the biocontrol of *S. scabies* causing common scab of potato. T. ARSENEAULT (1), C. Goyer (2), V. J. Gadkar (1), M. Filion (1). (1) University of Moncton, Moncton, NB, Canada; (2) Agriculture & Agri-Food Canada, Fredericton, NB, Canada
- 827-P The plant growth-promoting rhizobacterium *Bacillus cereus* AR156 induces resistance in *Arabidopsis thaliana* and tomato. D. NIU (1), H. Liu (1), J. Guo (1). (1) Dept. of Plant Pathology, College of Plant Protection, Nanjing Agricultural University, Nanjing, Peoples Republic of China
- 828-P The effect of phase variation on the interaction of *Salmonella enterica* sv. *typhimurium* with tomatoes. W. ZARAGOZA (1), M. Teplitski (1). (1) University of Florida, Gainesville, FL, U.S.A.
- 829-P High throughput screens reveal *Salmonella* behaviors required for persistence in tomatoes. M. TEPLITSKI (1), J. Noel (1), M. McClelland (2), E. Creary (1), A. Alagely (1). (1) University of Florida, Gainesville, FL, U.S.A.; (2) University of California, Irvine, CA, U.S.A.
- 830-P Antimicrobial lipopeptide iturin induce systemic resistance of *Arabidopsis thaliana*. Y. Kurosawa (1), K. Higuchi (1), E. Miwa (1), K. YOKOTA (1). (1) Tokyo University of Agriculture, Tokyo, Japan
- 831-P Application of bioinformatics to study type III effector signals. N. POTNIS (1), J. F. Figueiredo (1), L. Zhou (1), D. J. Norman (2), J. B. Jones (1). (1) University of Florida, Gainesville, FL, U.S.A.; (2) University of Florida, Apopka, FL, U.S.A.
- 832-P Extracellular trapping of bacteria in plant defense responses: Dynamics and specificity. G. CURLANGO-RIVERA (1), Z. Xiong (2), J. O. Kessler (3), M. C. Hawes (4). (1) School of Plant Sciences, University of Arizona, Tucson, AZ, U.S.A.; (2) School of Plant Sciences and BIO5 Institute, University of Arizona, Tucson, AZ, U.S.A.; (3) Dept. of Physics, University of Arizona, Tucson, AZ, U.S.A.; (4) Soil, Water and Environmental Science Dept., University of Arizona, Tucson, AZ, U.S.A.
- 833-P A 14-3-3 protein appears to be required for establishing normal nodulation in soybean. O. RADWAN (1), M. Govindarajulu (2), X. Wu (3), M. Libault (4), D. Neece (5), R. Berg (6), S. C. Huber (5), G. Stacey (4), C. G. Taylor (7), C. J. Steven (5). (1) University of Illinois, Urbana, IL, U.S.A.; (2) UC Davis Genome Center, University of California, Davis, CA, U.S.A.; (3) Dept. of Crop Sciences, University of Illinois, Urbana, IL, U.S.A.; (4) Dept. of Molecular Microbiology and Immunology, University of Missouri, Columbia, MO, U.S.A.; (5) Dept. of Crop Sciences and USDA-ARS, Urbana, IL, U.S.A.; (6) Danforth Plant Science Center, St. Louis, MO, U.S.A.; (7) Plant Pathology Dept., Ohio State University, Wooster, OH, U.S.A.
- 834-P The SA and ET signaling pathways mediate tomato resistance to bacterial wilt at cool temperatures. A. MILLING (1), C. Allen (1). (1) University of Wisconsin, Madison, WI, U.S.A.
- 835-P AWR effector proteins from *R. solanacearum* play a role in virulence and plant recognition. M. SOLÉ (1), O. Mith (2), K. Sohn (3), S. Genin (4), M. Valls (1). (1) Dept. Genètica, Universitat de Barcelona, Barcelona, Spain; (2) Université Paul Sabatier, Toulouse, France; (3) The Sainsbury Laboratory, John Innes Center, Norwich, United Kingdom; (4) Laboratoire des Interactions Plantes Micro-organismes (LIPM), INRA/CNRS, Toulouse, France
- 836-P Monitoring behaviors of *Ralstonia solanacearum* cells by GFP labeling during infection process to plant cells. M. FUJIE (1), R. Isozaki (1), H. Kajita (1), H. Takamoto (1), T. Kawasaki (1), T. Yamada (1). (1) Hiroshima University, Higashi-Hiroshima, Japan
- 837-P Implication of antibiosis in the biocontrol of *Clavibacter michiganensis* causing bacterial wilt and canker of tomato by *Pseudomonas* spp. C. Lanteigne (1), V. J. Gadkar (1), A. Novinscak (1), T. Wallon (2), M. FILION (1). (1) University of Moncton, Moncton, NB, Canada; (2) Université de Sherbrooke, Sherbrooke, QC, Canada
- 838-P Evaluation of *Arabidopsis thaliana* as a model host for *Xylella fastidiosa*. E. ROGERS (1). (1) USDA ARS SJVASC, Parlier, CA, U.S.A.
- 838a-P PemK toxin encoded by the *Xylella fastidiosa* IncP-1 plasmid pXF-RIV11 is a ribonuclease. M. LEE (1), E. E. Rogers (1), D. C. Stenger (1). (1) USDA-ARS, Parlier, CA, U.S.A.
- 839-P Characterization of a single chemosensory gene cluster in *Xylella fastidiosa* Pierce's disease pathogen of grape. D. ATHINUWAT (1), P. Mowery (2), C. Galvani (2), L. Cursino (2), H. C. Hoch (3), T. J. Burr (3). (1) Thammasat University/Dept. of Agricultural Technology, Muang District, Thailand; (2) Hobart & William Smith Colleges/Dept. of Biology, Geneva, NY, U.S.A.; (3) Cornell University/Dept. of Plant Pathology and Plant-Microbe Biology, Geneva, NY, U.S.A.
- 840-P The role of lipopolysaccharide in virulence and host specificity of *Xylella fastidiosa*. J. COLBURN-CLIFFORD (1), M. C. Roper (1). (1) University of California, Riverside, CA, U.S.A.
- 841-P Metabolic profiling of xylem sap from Pierce's disease-resistant and -susceptible grapevines. P. LIU (1), H.

- Lin (2), M. A. Walker (3). (1) China Agricultural University, Beijing, Peoples Republic of China; (2) USDA ARS PWA, Parlier, CA, U.S.A.; (3) University of California, Davis, CA, U.S.A.
- 842-P Proteomic analysis of grapevines in response to *Xylella fastidiosa* infection. H. LIN (1), L. Yang (2), E. L. Civerolo (3), M. A. Walker (4). (1) USDA ARS PWA, Parlier, CA, U.S.A.; (2) Agricultural College, Guangxi University, Nanning, Peoples Republic of China; (3) USDA-ARS, Parlier, CA, U.S.A.; (4) University of California, Davis, CA, U.S.A.
- 843-P Improving PCR-based detection of *Xylella fastidiosa* in blueberry with a cost-effective DNA extraction procedure. R. CHRISTIANO (1), H. Scherm (1). (1) University of Georgia, Athens, GA, U.S.A.
- 844-P Biological characteristics regulated by *algU* in *Xylella fastidiosa*. X. SHI (1), D. A. Cooksey (2). (1) Cornell University, Geneva, NY, U.S.A.; (2) University of California Riverside, CA, U.S.A.
- 845-P *Xylella fastidiosa* infection of grapevines affects host secondary metabolite and defense-related protein levels within xylem. C. WALLIS (1), M. S. Sisterson (1). (1) USDA ARS, Parlier, CA, U.S.A.
- 846-P  Construction of plasmid-based expression vectors for the production of recombinant proteins in *Xylella fastidiosa*. J. WARREN (1), G. Kasun (1), B. Kirkpatrick (1). (1) University of California, Davis, CA, U.S.A.
- 847-P Characterization of orthologs of Ax21 and two, two-component regulatory systems, phoPQ and colRS, in *Xylella fastidiosa*. B. PIERCE (1), S. Han (1), B. Kirkpatrick (1), P. Ronald (1). (1) University of California, Davis, CA, U.S.A.
- 848-P Expression of hemolysin (exotoxin) of '*Candidatus Liberibacter asiaticus*' in citrus using *Citrus tristeza virus* vector. S. HAJERI (1), Y. Duan (2), S. Gowda (1). (1) Citrus Research and Education Center/Institute of Food and Agricultural Sciences, UF, Lake Alfred, FL, U.S.A.; (2) U.S. Horticultural Research Laboratory, Fort Pierce, FL, U.S.A.
- 849-P Metagenomic analysis of '*Candidatus Liberibacter asiaticus*' in naturally populated psyllids (*Diaphorina citri*) using BAC libraries. L. ZHOU (1), C. Armstrong (2), C. A. Powell (3), Y. Duan (2). (1) Horticulture Research Laboratory, Fort Pierce, FL, U.S.A.; (2) USDA-ARS-USHRL, Fort Pierce, FL, U.S.A.; (3) University of Florida, IFAS-IRREC, Fort Pierce, FL, U.S.A.
- 850-P Characterization of the host defense response induced by the flagellin protein of '*Candidatus Liberibacter asiaticus*'. H. Zou (1), Y. DUAN (2), S. Gowda (1), C. A. Powell (3), G. Chen (4). (1) Citrus Research and Education Center, University of Florida, Institute of Food and Agricultural Sciences, Lake Alfred, FL, U.S.A.; (2) USDA-ARS-USHRL, Fort Pierce, FL, U.S.A.; (3) University of Florida, IFAS-IRREC, Fort Pierce, FL, U.S.A.; (4) Shanghai Jiaotong University, Dept. of Environment Resources, Shanghai, Peoples Republic of China
- 851-P Comparative analysis of the host response of citrus leaf, stem, and root tissues to infection by '*Candidatus Liberibacter asiaticus*'. A. A. VALENTE (1), N. Wang (2). (1) University of Florida, Lake Alfred, FL, U.S.A.; (2) Citrus Research and Education Center, Dept. of Microbiology and Cell Science, University of Florida, Lake Alfred, FL, U.S.A.
- 852-P A tomato model system to study citrus huanglongbing. K. L. MANJUNATH (1), C. Ramadugu (2), G. Kund (3), J. Trumble (3), R. F. Lee (1). (1) National Clonal Germplasm Repository for Citrus and Dates, USDA-ARS, Riverside, CA, U.S.A.; (2) Dept. of Botany and Plant Sciences, University of California, Riverside, CA, U.S.A.; (3) Dept. of Entomology, University of California, Riverside, CA, U.S.A.
- 853-P Analysis of citrus huanglongbing-associated '*Candidatus Liberibacter*' strains from Pakistan. C. RAMADUGU (1), K. L. Manjunath (2), M. F. Razi (3), I. A. Khan (3), M. Roose (4), R. F. Lee (5). (1) Dept. of Botany and Plant Sciences, University of California, Riverside, CA, U.S.A.; (2) National Clonal Germplasm Repository for Citrus and Dates, USDA-ARS, Riverside, CA, U.S.A.; (3) University of Agriculture, Faisalabad, Pakistan; (4) University of California, Riverside, CA, U.S.A.; (5) National Clonal Repository for Citrus and Dates, USDA-ARS, Riverside, CA, U.S.A.
- 854-P Identification of potential virulence genes of '*Candidatus Liberibacter asiaticus*' differentially expressed in citrus and psyllids, using real-time PCR. A. SREEDHARAN (1), S. Wei (1), N. Wang (1). (1) University of Florida, Lake Alfred, FL, U.S.A.
- 855-P Production of single chain antibodies against '*Ca. Liberibacter asiaticus*'. Q. Yuan (1), R. Jordan (2), R. H. Bransky (3), O. Minenkova (4), J. HARTUNG (1). (1) USDA ARS MPPL, Beltsville, MD, U.S.A.; (2) USDA ARS FNPRU, Beltsville, MD, U.S.A.; (3) University of Florida, Lake Alfred, FL, U.S.A.; (4) Sigma tau Pharmaceuticals, Rome, Italy
- 856-P Characterization of the DSF-mediated quorum-sensing regulon of *Xanthomonas citri* subsp. *citri*. Y. GUO (1), N. Wang (1). (1) University of Florida, Lake Alfred, FL, U.S.A.
- 857-P Cassava's immunity suppression mediated by type III effectors of *Xanthomonas axonopodis* pv. *manihotis*. P. A. REYES CALDAS (1), S. Restrepo (1), A. J. Bernal (1). (1) Universidad de Los Andes, Bogotá D.C., Colombia
- 858-P Citrus cybrid response to biotic stress caused by *Xanthomonas citri* subsp. *citri*. M. I. FRANCIS (1), A. Peña (1), J. W. Grosser (1), J. H. Graham (1). (1) University of Florida, Institute of Food and Agricultural Sciences CREC, Lake Alfred, FL, U.S.A.
- 859-P Complete genome sequence of the stone fruit pathogen *Xanthomonas arboricola* pv. *pruni*. J. F. Pothier (1), T. H. Smits (1), J. Blom (2), F. Vorhoefer (2), A. Goesmann (2), A. Puehler (2), B. DUFFY (1). (1) Agroscope Changins-Wädenswil ACW, Wädenswil, Switzerland; (2) CeBiTec, University of Bielefeld, Bielefeld, Germany
- 860-P LuxR homolog XagR of *Xanthomonas axonopodis* pv. *glycines* is solubilized only in the soybean plant and contributes to the infection process. T. CHATNAPARAT (1), S. Prathuangwong (2), M. Ionescu (3), S. E. Lindow (3). (1) Kasetsart University, Chatuchack, Bangkok, Thailand; (2) Kasetsart University, Bangkok, Thailand; (3) University of California, Berkeley, CA, U.S.A.

- 861-P Double *fliD* and *xagP* mutants of *Xanthomonas axonopodis* pv. *glycines* and their roles on host and nonhost plant. W. Chuaboon (1), T. J. BURR (2), S. Prathuangwong (3). (1) Kasetsart University, Chatuchack, Bangkok, Thailand; (2) Cornell University, Geneva, NY, U.S.A.; (3) Kasetsart University, Bangkok, Thailand
- 862-P Early activation of defense genes in kumquat by the citrus canker pathogen. V. J. FEBRES (1), A. A. Khalaf (1), Q. Shi (1), F. G. Gmitter (2), G. A. Moore (1). (1) University of Florida, Gainesville, FL, U.S.A.; (2) University of Florida, Lake Alfred, FL, U.S.A.
- 863-P Comparative host response of grapefruit and alemow to narrow and broad-host-range strains of *Xanthomonas citri* subsp. *citri*. E. G. JOHNSON (1), S. Mony (1), N. Wang (1), J. H. Graham (1). (1) University of Florida, Lake Alfred, FL, U.S.A.
- 864-P Characterization of the roles of the putative secreted protein-encoding XAC1496 in the growth and pathogenesis of *Xanthomonas citri* subsp. *citri*. X. HU (1), Q. Yan (1), N. Wang (1). (1) University of Florida, Lake Alfred, FL, U.S.A.
- 865-P RpfG interaction in *Xanthomonas axonopodis* pv. *manihotis*. M. RESTREPO BENAVIDES (1), S. Restrepo Restrepo (1), A. J. Bernal Giraldo (1). (1) Universidad de Los Andes, Bogota, Colombia
- 866-P Diversity of TonB-dependent outer-membrane proteins in plant-associated strains of *Pseudomonas fluorescens*. S. L. HARTNEY (1), S. Mazurier (2), P. Lemanceau (2), J. E. Loper (3). (1) Oregon State University, Corvallis, OR, U.S.A.; (2) INRA, Université de Bourgogne, UMR1229 'Microbiologie du Sol et de l'Environnement', Dijon, France; (3) USDA-ARS HCRL, Corvallis, OR, U.S.A.
- 867-P Endophytic colonization and induced resistance by *Pseudomonas aeruginosa* strain UPMP3. M. WONG (1), S. Hamid (1), S. Meon (1), S. Abdullah (1). (1) Universiti Putra Malaysia, Serdang, Selangor, Malaysia
- 868-P A multifunctional role for the type IV pilus in the bacterial biological control agent *Lysobacter enzymogenes*. N. Patel (1), M. Cornejo (1), D. Lambert (1), A. Craig (1), B. I. Hillman (1), D. Y. KOBAYASHI (1). (1) Rutgers University, New Brunswick, NJ, U.S.A.
- 869-P The iron responsive sigma factor, AcsS, responsible for regulation of achromobactin biosynthesis in *Pseudomonas syringae* pv. *syringae* B728a. J. W. Greenwald (1), C. J. Greenwald (1), B. J. Philmus (1), T. P. Begley (1), D. C. GROSS (1). (1) Texas A&M University, College Station, TX, U.S.A.
- 870-P Complete genomes of plant growth-promoting rhizobacteria *Pseudomonas fluorescens* strains Q8r1-96 and Q2-87. D. MAVRODI (1), K. Hassan (2), O. Mavrodi (1), I. Paulsen (2), J. Loper (3), D. Weller (4), L. Thomashow (4). (1) Dept. of Plant Pathology, Washington State University, Pullman, WA, U.S.A.; (2) Dept. of Chemistry and Biomolecular Sciences, Macquarie University, Sydney, Australia; (3) USDA ARS, Horticultural Crops Research Laboratory, Corvallis, OR, U.S.A.; (4) USDA ARS, Root Disease and Biological Control Research Unit, Pullman, WA, U.S.A.
- 871-P Role of *rsmA* in virulence of phytotoxin-producing pathovars of *Pseudomonas syringae*. H. Kong (1), D. ROBERTS (2), C. Patterson (2), S. Kuehn (3), S. Heeb (3), D. Lakshman (2), J. Lydon (4). (1) FDA, Rockville, MD, U.S.A.; (2) USDA Sustainable Agricultural Systems Laboratory, Beltsville, MD, U.S.A.; (3) School of Molecular Medical Sciences, University of Nottingham, Nottingham, United Kingdom; (4) USDA National Program Staff, Beltsville, MD, U.S.A.
- 872-P Spontaneous Gac mutants in *Pseudomonas* biological control strains: Are they cheaters or mutualists? W. W. Driscoll (1), L. S. Pierson (2), E. A. PIERSON (3). (1) Ecology and Evolutionary Biology Dept., University of Arizona, Tucson, AZ, U.S.A.; (2) Dept. of Plant Pathology and Microbiology, Texas A&M University, College Station, TX, U.S.A.; (3) Dept. of Horticultural Sciences, Texas A&M University, College Station, TX, U.S.A.
- 873-P Characterization of novel genes involved in *Erwinia amylovora* pathogenesis. R. R. MCNALLY (1), Y. F. Zhao (2), G. W. Sundin (1). (1) Dept. of Plant Pathology, Michigan State University, East Lansing, MI, U.S.A.; (2) University of Illinois, Urbana, IL, U.S.A.
- 874-P  The role of an oxidative stress sensor in the oxidative stress response, virulence, and host colonization of *Pantoea stewartii* subsp. *stewartii*. L. P. BURBANK (1), M. Roper (1). (1) University of California, Riverside, CA, U.S.A.
- 874a-P Quorum sensing directly controls the Hrp regulatory cascade and the Gac/Rsm signal transduction pathway in the gall-forming *Pantoea agglomerans*. M. Panijel (1), L. Chalupowicz (2), G. Sessa (1), S. Manulis-Sasson (2), I. BARASH (3). (1) Dept. of Molecular Biology and Ecology of Plants, Tel-Aviv University, Tel-Aviv, Israel; (2) Dept. of Plant Pathology and Weed Research, ARO, Volcani Center, Bet Dagan, Israel; (3) Tel-Aviv University, Tel-Aviv, Israel
- 875-P Genome-wide identification of genes regulated by RcsB and RcsC in *Erwinia amylovora*. D. WANG (1), B. Calla (1), M. Qi (1), S. Korban (1), S. Clough (2), G. Sundin (3), I. Toth (4), Y. Zhao (1). (1) University of Illinois, Urbana, IL, U.S.A.; (2) USDA-ARS, Urbana, IL, U.S.A.; (3) Michigan State University, East Lansing, MI, U.S.A.; (4) Plant Pathology Program, Scottish Crop Research Institute, Scotland, United Kingdom
- 876-P  Identification of type III secretion inhibitors in *Erwinia amylovora*, the causal agent of fire blight of apple and pear. F. YANG (1), Y. Zhao (1). (1) University of Illinois, Urbana, IL, U.S.A.
- 877-P  Effect of EnvZ/OmpR and GrrS/GrrA systems on *Erwinia amylovora* virulence. W. LI (1), Y. Zhao (1). (1) University of Illinois, Urbana, IL, U.S.A.
- 878-P The SlyA/MarR family regulator Hrp regulates HrpL regulon T3SS genes in a HrpL independent manner. L. Zou (1), Q. Zeng (2), H. Lin (3), E. Biddle (2), G. Chen (1), C. YANG (2). (1) Shanghai Jiao Tong University, Shanghai, Peoples Republic of China; (2) University of Wisconsin, Milwaukee, WI, U.S.A.; (3) Zhejiang A & F University, Lin'an, Peoples Republic of China
- 879-P Induction of grape tissue necrosis and tobacco leaf HR by *Agrobacterium vitis* requires a polyketide synthase and a nonribosomal peptide synthase. T. Burr (1), D. ZHENG (1). (1) Cornell University, Geneva, NY, U.S.A.

- 879a-P Identification of biochemical function of *Agrobacterium* T-complex recruiting protein VBP. D. Gao (1), M. GUO (1), C. Liang (1). (1) College of Bioscience and Biotechnology, Yangzhou University, Yangzhou City, Jiangsu, Peoples Republic of China
- Fungi**
- 880-P Potassium phosphite protects European beech (*Fagus sylvatica*) seedlings against *Phytophthora plurivora*. R. DALIO (1), F. Fleischmann (1), W. Osswald (1). (1) Technical University of Munich, Freising, Germany
- 881-P Non-host plant defense against multiple genera of fungal pathogens—Initiated with DNase signals released by the pathogen. L. A. HADWIGER (1), K. Druffel (1), J. Humann (1), C. Holloway (1). (1) Washington State University, Pullman, WA, U.S.A.
- 882-P Assessment of resistance pathways induced in *Arabidopsis thaliana* by hypovirulent *Rhizoctonia* spp. isolates. B. Sneh (1), M. Sharon (2), S. FREEMAN (2). (1) Tel Aviv University, Tel Aviv, Israel; (2) Agricultural Research Organization, The Volcani Center, Bet Dagan, Israel
- 883-P Transcriptome analysis of a wheat cultivar infected by different chemotypes of *Fusarium graminearum*. D. G. FERNANDO (1), K. Al-Taweel (1), A. Brule-Babel (1). (1) University of Manitoba, Winnipeg, MB, Canada
- 883a-P Application of the 2-cyanoacetamide method for spectrophotometric assay of cellulase enzyme activity. W. M. JURICK II (1), I. Vico (2), V. L. Gaskins (2), B. D. Whitaker (2), K. A. Peter (2), W. J. Janisiewicz (3), W. S. Conway (2). (1) USDA ARS, Food Quality Laboratory, Beltsville, MD, U.S.A.; (2) USDA-ARS, Beltsville, MD, U.S.A.; (3) USDA-ARS, Kearneysville, WV, U.S.A.
- 884-P The genome of *Arachis hypogaea*: Genetic linkage map will aid the whole genome sequence assembly. B. GUO (1), H. Qin (2), S. Feng (3), C. Chen (4), A. Culbreath (3), X. Zhang (5), C. Holbrook (6), P. Ozias-Akins (7), X. Liang (8). (1) USDA ARS CPMRU, Tifton, GA, U.S.A.; (2) Hubei Academy of Agricultural Sciences, Cash Crop Research Institute, Wuhan, Peoples Republic of China; (3) University of Georgia, Dept. of Plant Pathology, Tifton, GA, U.S.A.; (4) USDA, ARS, National Peanut Research Laboratory, Dawson, GA, U.S.A.; (5) Henan Academy of Agricultural Sciences, Peanut Research Unit, Zhengzhou, Peoples Republic of China; (6) USDA, ARS, Crop Genetics and Breeding Research Unit, Tifton, GA, U.S.A.; (7) University of Georgia, Dept. of Horticulture, Tifton, GA, U.S.A.; (8) Guangdong Academy of Agricultural Sciences, Institute of Crop Sciences, Guangzhou, Peoples Republic of China
- 885-P Potassium phosphite blocks root colonization of *Phytophthora plurivora* in the phloem of *Fagus sylvatica* seedlings. R. J. DALIO (1), F. Fleischmann (1), W. Osswald (1). (1) Technical University of Munich, Freising, Germany
- 886-P Cytological alterations in *Gibberella zeae* germings induced by combinatorially selected defense peptides. N. W. GROSS (1), J. E. Schoelz (1), F. J. Schmidt (1), J. T. English (1). (1) University of Missouri, Columbia, MO, U.S.A.
- 887-P What we can learn from high similarities of molecular mechanisms between barley host and nonhost resistances to *Blumeria graminis*. T. Zhang (1), J. Huan (1), J. Huang (1), J. Shi (1), M. Cheng (1), W. Kuang (1), W. DONG (1). (1) Huazhong Agricultural University, Wuhan, Peoples Republic of China
- 888-P Meta-analysis of *Solanum* resistance gene analogs—Towards a comprehensive catalog of *R*-gene alleles for research and crop improvement. J. M. BRADEEN (1), E. A. Quirin (1), H. Mann (1), R. S. Meyer (2), A. Litt (2). (1) University of Minnesota, St. Paul, MN, U.S.A.; (2) New York Botanical Garden, Bronx, NY, U.S.A.
- 889-P The effect of biological control practices on inducible defense genes and metabolic genes in field-cultivated potato plants. E. R. CHAMPACO (1), S. Tavantzis (1), R. P. Larkin (2), B. de los Reyes (1). (1) University of Maine, Orono, ME, U.S.A.; (2) USDA-ARS, Orono, ME, U.S.A.
- 890-P The CRT1 family participates in four distinct layers of immunity against a wide range of pathogens in *Arabidopsis*. P. MANOSALVA (1), H. Kang (1), P. Liu (1), H. Choi (1), D. Klessig (1). (1) Boyce Thompson Institute for Plant Research, Ithaca, NY, U.S.A.
- 891-P Partial biochemical characterization of caspase 3-like activity involved in *Solanum tuberosum*-*P. infestans* interaction. M. B. FERNÁNDEZ (1), G. R. Daleo (1), M. G. Guevara (1). (1) Universidad Nacional de Mar del Plata/IIB-CONICET, Mar del Plata, Argentina
- 892-P Identification of a soybean G-protein coupled receptor and its role in plant defense responses. B. CALLA (1), D. Neece (2), L. Blahut-Beatty (3), L. Koziol (3), D. Simmonds (3), S. Clough (2). (1) University of Illinois, Urbana, IL, U.S.A.; (2) USDA, ARS, Urbana, IL, U.S.A.; (3) Agriculture & Agri-Food Canada, Ottawa, ON, Canada
- 893-P Rice OsERF9 is involved in responses to biotic and abiotic stresses. D. Liu (1), X. Chen (1), J. Liu (1), Z. GUO (1). (1) China Agricultural University, Beijing, Peoples Republic of China
- 894-P Suppression of plant cell death and immunity by a family of *Magnaporthe oryzae* zinc-finger effectors. W. Liu (1), Q. Wang (1), Y. YANG (1). (1) Penn State University, University Park, PA, U.S.A.
- 895-P Multiple copies of genes encoding endoglucanase inhibitor proteins are harbored in an 85kB region of potato genome. R. JONES (1). (1) USDA ARS, Beltsville, MD, U.S.A.
- 896-P  Antifungal compounds in ripe fruit from a resistant blueberry cultivar suppress infection by *Colletotrichum acutatum*. T. D. MILES (1), M. G. Nair (1), C. Vandervoort (1), A. M. C. Schilder (1). (1) Michigan State University, East Lansing, MI, U.S.A.
- 897-P The effect of plant activators on salinity-induced predisposition in tomato to *Phytophthora* root rot and bacterial speck disease. M. F. Pye (1), F. Hakuno (2), J. D. MacDonald (1), R. M. BOSTOCK (1). (1) University of California, Davis, CA, U.S.A.; (2) Nihon Nohyaku Co., Ltd., Tokyo, Japan
- 898-P Comparative expression analysis of genes encoding pectin methylesterase enzymes in *Phytophthora infestans* during infection of *Solanum tuberosum*. M. D. OSPINA-GIRALDO (1), C. Mingora (1). (1) Lafayette College, Easton, PA, U.S.A.

- 899-P Variation in copy number, expression, and sequence of *Avr1a/avr1a* among populations of the oomycete plant pathogen, *Phytophthora sojae*. D. WICKRAMASINGHE (1), S. Stewart (2), A. Robertson (2), A. Dorrance (1). (1) Dept. of Plant Pathology, Ohio State University, Wooster, OH, U.S.A.; (2) Dept. of Plant Pathology, Iowa State University, Ames, IA, U.S.A.
- 900-P Screening of the World *Phytophthora* Collection for viruses. D. M. MATHEWS (1), D. Gu (1), B. S. Johnston (1), M. D. Coffey (1). (1) University of California, Riverside, CA, U.S.A.
- 901-P Presence of the potato late blight resistance gene *Rpi-blb1* does not promote adaptive parasitism of *Phytophthora infestans*. D. HALTERMAN (1), G. Middleton (1). (1) USDA, ARS, Madison, WI, U.S.A.
- 902-P Localization of *Phytophthora plurivora* effector protein citricolin in *Fagus sylvatica* roots by light and fluorescence laser scanning microscopy. R. J. DALIO (1), F. Fleischmann (1), W. Osswald (1). (1) Technical University of Munich, Freising, Germany
- 903-P ★ *APS Foundation Awardee* RNA-seq analysis of potato tuber transcriptome dynamics in response to the late blight pathogen *Phytophthora infestans*. L. GAO (1), Z. Tu (2), F. Katagiri (3), J. M. Bradeen (1). (1) Dept. of Plant Pathology, University of Minnesota, St. Paul, MN, U.S.A.; (2) Minnesota Supercomputing Institute, University of Minnesota, Minneapolis, MN, U.S.A.; (3) Dept. of Plant Biology & Microbial and Plant Genomics Institute, University of Minnesota, St. Paul, MN, U.S.A.
- 904-P Custom transcription factors for manipulation of gene expression in *Phytophthora infestans*. K. ANDREEVA (1), H. Judelson (1). (1) University of California, Riverside, CA, U.S.A.
- 905-P ★ *APS Foundation Awardee* Comparison of genes underlying two QTL conferring partial resistance to *Phytophthora sojae* from resistant and susceptible soybean genotypes. H. WANG (1), A. Wijeratne (2), S. Wijeratne (2), S. K. St. Martin (3), A. E. Dorrance (1). (1) Dept. of Plant Pathology, The Ohio State University, Wooster, OH, U.S.A.; (2) Molecular and Cellular Imaging Center, OARDC, Wooster, OH, U.S.A.; (3) Dept. of Horticulture and Crop Science, The Ohio State University, Columbus, OH, U.S.A.
- 906-P ★ *APS Foundation Awardee* Mapping soybean QTL conferring resistance to *Phytophthora sojae* through different phenotypic methods and assessment of their contribution to yield. H. WANG (1), S. K. St. Martin (2), A. E. Dorrance (1). (1) Dept. of Plant Pathology, The Ohio State University, Wooster, OH, U.S.A.; (2) Dept. of Horticulture and Crop Science, The Ohio State University, Columbus, OH, U.S.A.
- 907-P *Fusarium virguliforme* genes and pathways involved in the development of sudden death syndrome in soybean. S. MANSOURI (1), B. H. Bluhm (2), J. P. Bond (1), A. M. Fakhoury (1). (1) Southern Illinois University, Carbondale, IL, U.S.A.; (2) University of Arkansas, Fayetteville, AR, U.S.A.
- 908-P ★ *APS Foundation Awardee* *Fufsr1* in *Fusarium virguliforme* affects the development of SDS in soybean. K. T. ISLAM (1), S. Mansouri (1), J. Bond (1), A. Fakhoury (1). (1) Southern Illinois University, Carbondale, IL, U.S.A.
- 909-P Soybean susceptible leaves response to *Fusarium virguliforme* toxin in a manner resembling an incompatible interaction. O. RADWAN (1), S. J. Clough (2). (1) Dept. of Crop Sciences, University of Illinois, Urbana, IL, U.S.A.; (2) Dept. of Crop Sciences and USDA-ARS, Urbana, IL, U.S.A.
- 910-P Defining the interactome underlying sudden death syndrome of soybean. J. B. RIDENOUR (1), T. Kazi (2), A. M. Fakhoury (2), B. H. Bluhm (1). (1) University of Arkansas, Fayetteville, AR, U.S.A.; (2) Southern Illinois University, Carbondale, IL, U.S.A.
- 910a-P ★ *APS Foundation Awardee* Analysis of gene expression during infection of field pea roots by *Fusarium graminearum*. K. CHITTEM (1), W. Yajima (1), R. S. Goswami (1). (1) North Dakota State University, Fargo, ND, U.S.A.
- 911-P *Fusarium verticillioides* infection of maize seedlings and the corresponding movement of fungus, fumonisins, and biomarkers of exposure. N. C. ZITOMER (1), T. T. Baldwin (2), A. E. Glenn (3), C. W. Bacon (1), R. T. Riley (4). (1) USDA ARS, Athens, GA, U.S.A.; (2) USDA, Athens, GA, U.S.A.; (3) USDA, ARS, Richard B. Russell Research Center, Toxicology & Mycotoxin Research Unit, Athens, GA, U.S.A.; (4) USDA-ARS Toxicology and Mycotoxin Research Unit, Athens, GA, U.S.A.
- 912-P Gene expression profiling in *Phytophthora phaseoli* during the infection of lima bean. S. G. KUNJETI (1), N. M. Donofrio (1), G. F. Nancy (1), A. G. Marsh (1), S. Kunjeti (1), B. C. Meyers (1), T. A. Evans (1). (1) University of Delaware, Newark, DE, U.S.A.
- 913-P Characterization of VvBsl-1 a R2R3-MYB transcription factor involved in response to *Botrytis cinerea* infection in *Vitis vinifera*. J. SERRANO-ACEVEDO (1), P. Arce-Johnson (1). (1) Pontificia Universidad Catolica de Chile, Santiago, Chile
- 914-P ★ *APS Foundation Awardee* Deciphering the putative role of *AoMDV1* in ochratoxin A biosynthesis in *Aspergillus ochraceus*. K. EL MOUNADI (1), A. M. Fakhoury (1). (1) Southern Illinois University, Carbondale, IL, U.S.A.
- 915-P Identifying *Macrophomina phaseolina* genes involved in phytotoxin phaseolinone production using cDNA-AFLP analysis. N. AZARMANESH (1), M. Saini (1), J. Bond (1), A. M. Fakhoury (1). (1) Southern Illinois University, Carbondale, IL, U.S.A.
- 916-P The identification and characterization of genes involved in foliar infection of maize by *Cercospora zeae-maydis*. R. L. HIRSCH (1), B. H. Bluhm (1). (1) University of Arkansas, Fayetteville, AR, U.S.A.
- 917-P Functional characterization of two genes involved in cercosporin biosynthesis in *Cercospora kikuchii*. A. K. CHANDA (1), Z. Chen (1), R. W. Schneider (1). (1) Louisiana State University, Baton Rouge, LA, U.S.A.
- 918-P The dynamics of ABA biosynthesis by *Cercospora zeae-maydis*. W. DORLEKU (1), B. H. Bluhm (1). (1) University of Arkansas, Fayetteville, AR, U.S.A.
- 919-P Pathogenic *Embellisia astragali* on *Astragalus adsurgens* is very closely related to locoweed endophyte. Y. LI (1), R. Creamer (2), D. Baucom (2), Z. Nan (1). (1) College of Pastoral Agriculture Science and Technology, Lanzhou University, Lanzhou, Peoples Republic of China; (2) Entomology, Plant Pathology and Weed Science, New Mexico State University, Las Cruces, NM, U.S.A.

- 920-P Colonization of spinach (*Spinacia oleracea* L.) by GFP-tagged *Verticillium dahliae*. K. MARUTHACHALAM (1), S. J. Klosterman (2), K. V. Subbarao (3). (1) University of California, Salinas, CA, U.S.A.; (2) USDA-ARS, Salinas, CA, U.S.A.; (3) University of California, Davis, CA, U.S.A.
- 921-P Comparison of endophytic *Undifilum* DNA and swainsonine content on locoweeds. J. ACHATA BOTTGER (1), R. Creamer (1), D. Gardner (2). (1) New Mexico State University, Las Cruces, NM, U.S.A.; (2) USDA-ARS, Logan, UT, U.S.A.
- 922-P Detection and localization of *Undifilum oxytropis* fungi in locoweed tissues. R. REYNA (1). (1) New Mexico State University, Las Cruces, NM, U.S.A.
- 923-P Morphological, pathological, and molecular characterization of lupin anthracnose and its relationship with tamarillo anthracnose in Ecuadorian Andes. C. E. FALCONI (1), A. S. van Heusden (2). (1) ESPE University, Sangolqui, Pichincha, Quito, Ecuador; (2) Wageningen UR, Wageningen, Netherlands
- 924-P  Protein extraction methods and proteomic analysis of the locoweed filamentous fungus *Undifilum oxytropis*. H. LI (1), O. Holguin (1), T. Schaub (1), R. Creamer (1). (1) New Mexico State University, Las Cruces, NM, U.S.A.
- 925-P Development of a PCR-RFLP method to rapidly identify common entomopathogenic fungi infecting soybean aphid. R. M. RITSON (1), A. Robertson (1), M. O'Neal (1). (1) Iowa State University, Ames, IA, U.S.A.
- 926-P Discovery of key pathogenesis-associated genes among predicted transcription factors in the plant-pathogenic fungus, *Alternaria brassicicola*. A. SRIVASTAVA (1). (1) University of Hawaii at Manoa, Honolulu, HI, U.S.A.
- 926.a-P Pathogenic and genetic diversity in *Alternaria brassicae* and *Alternaria brassicicola* causing black leaf spot of cauliflower in India. P. SHARMA (1), S. Deep (1), S. Gothandapani (1), M. Sharma (1), P. Kalia (2), P. Chowdappa (3). (1) Plant Pathology, Indian Agricultural Research Institute, New Delhi, India; (2) Vegetable Science Division, Indian Agricultural Research Institute, New Delhi, India; (3) Indian Institute of Horticultural Research, Bangalore, India
- 927-P Genome sequencing and analysis of *Anisogramma anomala*, the causal agent of eastern filbert blight. G. CAI (1), C. Leadbetter (1), T. Molnar (1), B. I. Hillman (1). (1) Rutgers University, New Brunswick, NJ, U.S.A.
- 928-P Microarray reveals the role of auxin in mediating the interactions between *Macrophomina phaseolina* and *Medicago truncatula*. B. SHUAI (1), K. Mah (1), T. Doerksen (1). (1) Wichita State University, Wichita, KS, U.S.A.
- 929-P Comparative genomics of a lucerne and nonlucerne isolate of *Verticillium albo-atrum*. M. T. KASSON (1), D. D. Davis (1), L. R. Kasson (1), S. C. Schuster (1), F. Zhao (2). (1) Pennsylvania State University, University Park, PA, U.S.A.; (2) Beijing Institutes of Life Science, Chinese Academy of Sciences, Beijing, Peoples Republic of China
- 930-P Molecular analysis of fumonisin biosynthetic genes in nontoxigenic *Aspergillus niger* strains. J. D. PALUMBO (1), T. L. O'Keeffe (1). (1) USDA ARS WRRRC, Albany, CA, U.S.A.
- 931-P Molecular and biochemical characterization of resistance to *Botrytis cinerea* among the Solanaceae. J. E. SMITH (1), B. G. Mengesha (2), T. D. Mengiste (2), B. H. Bluhm (1). (1) University of Arkansas, Fayetteville, AR, U.S.A.; (2) Purdue University, West Lafayette, IN, U.S.A.
- 932-P Pathogenicity analysis of secretory protein of the rice blast fungus and interaction study using rice cell suspension culture. X. ZHOU (1). (1) Yunnan Academy of Agricultural Sciences, Kunming, Peoples Republic of China
- 933-P Functional analyses of two acetyl coenzyme A synthetases in the ascomycete *Gibberella zeae*. S. Lee (1), H. SON (1), J. Lee (2), K. Min (1), K. Choi (3), J. Kim (3), Y. Lee (1). (1) Dept. of Agricultural Biotechnology and Center for Fungal Pathogenesis, Seoul National University, Seoul, South Korea; (2) Dept. of Applied Biology, Dong-A University, Busan, South Korea; (3) Biological Function Research Team, Korea Research Institute of Chemical Technology, Daejeon, South Korea
- 934-P The phenomics of rice blast: Using extensive nutritional profiling to understand how the devastating plant pathogen *Magnaporthe oryzae* causes disease. C. QUISPE (1), A. Seng (1), H. Do (1), R. Wilson (1). (1) University of Nebraska, Lincoln, NE, U.S.A.
- 935-P Rice chitinase gene contributes to rice sheath blight disease resistance. S. LEE (1), J. Snelling (2), S. Han (1), J. Park (1), J. Leach (2). (1) National Academy of Agricultural Science, Suwon, South Korea; (2) Colorado State University, Fort Collins, CO, U.S.A.
- 936-P Formation of chlamydospore-like structure in the ascomycete fungus *Gibberella zeae*. H. SON (1), J. Lee (2), Y. Lee (1). (1) Dept. of Agricultural Biotechnology and Center for Fungal Pathogenesis, Seoul National University, Seoul, South Korea; (2) Dept. of Applied Biology, Dong-A University, Busan, South Korea
- 937-P *PCG1* encodes a novel splicing factor that is essential for pathogenesis in *Magnaporthe oryzae*. J. YANG (1), W. Wang (1), L. Kong (1), W. Zhao (1), M. Xue (1), J. Sun (1), X. Chen (1), D. Wang (1), R. Wang (1), Y. Zhang (1), J. Xu (2), Y. Peng (1). (1) China Agricultural University, Beijing, Peoples Republic of China; (2) Purdue University, West Lafayette, IN, U.S.A.
- 938-P *Pcg2*, a novel pathogenicity gene in *Magnaporthe oryzae* encodes a transcription factor that activates and represses expression of distinct genes. D. WANG (1), X. Ma (1), J. Yang (1), M. Xue (1), X. Chen (1), W. Zhao (1), Y. Peng (1). (1) China Agricultural University, Beijing, Peoples Republic of China
- 939-P PacC-mediated adaptation to alkaline pH is critical for developing infection hyphae in penetrated plant cells in *Magnaporthe oryzae*. Y. PENG (1), X. Chen (1), J. Yang (1), M. Xue (1), D. Wang (1), J. Huang (1), Z. Peng (1), J. Xu (2). (1) China Agricultural University, Beijing, Peoples Republic of China; (2) Purdue University, West Lafayette, IN, U.S.A.
- 940-P Assembling and exploring the *Cochliobolus miyabeanus* genome of a strain pathogenic on wild rice (*Zizania palustris*). C. V. CASTELL-MILLER (1), Z. Tu (2), C. P. Vance (1), D. A. Samac (1). (1) ARS-USDA Plant Science Research Unit, St. Paul, MN, U.S.A.;

- (2) University of Minnesota Supercomputing Institute, Minneapolis, MN, U.S.A.
- 941-P *Sclerotinia sclerotiorum* utilizes oxalic acid to hijack defenses and manipulate the host redox environment. M. KABBAGE (1), B. Williams (1), H. Kim (1), M. B. Dickman (1). (1) Texas A&M University, College Station, TX, U.S.A.
- 942-P Multiplex PCR for four *Sclerotinia* species. A. W. Abd-Elmagid (1), P. GARRIDO (1), R. M. Hunger (1), H. A. Melouk (2), M. Arif (1), C. D. Garzon (1). (1) Dept. of Entomology and Plant Pathology, Oklahoma State University, Stillwater, OK, U.S.A.; (2) USDA-ARS, Dept. Entomology and Plant Pathology, Oklahoma State University, Stillwater, OK, U.S.A.
- 943-P Mycoviruses that infect plant pathogen *Sclerotinia sclerotiorum*. D. JIANG (1), X. Yu (1), H. Liu (1), B. Li (1), J. Xie (1), R. Liu (1), L. Liu (1), X. Sun (1), J. Xie (1), J. Cheng (1), Y. Fu (1), G. Li (1). (1) Hanzhong Agricultural University, Wuhan, Peoples Republic of China
- 944-P Comparative transcriptome analysis in *Sclerotinia sclerotiorum* and *S. trifoliorum* by 454 titanium RNA sequencing. D. QIU (1), G. Vandemark (2), W. Chen (2). (1) Washington State University, Pullman, WA, U.S.A.; (2) USDA ARS, Pullman, WA, U.S.A.
- 945-P Comparative analyses of endogenous small RNAs in *Sclerotinia sclerotiorum* and *S. trifoliorum*. D. QIU (1), G. Vandemark (2), W. Chen (2). (1) Washington State University, Pullman, WA, U.S.A.; (2) USDA ARS, Pullman, WA, U.S.A.
- 946-P Oxalate-minus mutants of *Sclerotinia sclerotiorum* via random mutagenesis retain pathogenicity. X. LIANGSHENG (1), M. Xiang (1), D. White (1), W. Chen (2). (1) Washington State University, Pullman, WA, U.S.A.; (2) USDA ARS, Pullman, WA, U.S.A.
- 947-P Random T-DNA mutagenesis identifies a Cu-Zn-superoxide dismutase gene as a virulence factor of *Sclerotinia sclerotiorum*. X. LIANGSHENG (1), W. Chen (2). (1) Washington State University, Pullman, WA, U.S.A.; (2) USDA ARS, Pullman, WA, U.S.A.
- 948-P Association mapping of stem rot resistance in a world collection of *Brassica napus*. S. GYAWALI (1), L. Buchwaldt (1), M. Harrington (1), I. Parkin (1), D. Bekkaoui (1), J. Poon (1), K. Horner (1), E. Higgins (1), D. D. Hegedus (1). (1) Agriculture & Agri-Food Canada, Saskatoon, SK, Canada
- 949-P  Identifying genes differentially expressed during early interactions between the stem rot fungus (*Sclerotium rolfsii*) and peanut (*Arachis hypogaea*). A. JOGI (1), S. Gold (1). (1) University of Georgia, Athens, GA, U.S.A.
- 950-P Protein photocleavers chrysophanol and pachybasin involved in *Trichoderma*'s biocontrol mechanism. S. LIU (1), K. Chang (2), Z. Wei (1), C. Lo (3), K. Peng (2). (1) Da-Yeh University, Changhua, Taiwan; (2) National Dong-Hwa University, Hualien, Taiwan; (3) National Formosa University of Science and Technology, Yunlin, Taiwan
- 951-P Proteomic and biochemical analysis of heat shock responses in *Trichoderma* species. R. D. PRASAD (1), V. Dinesh Kumar (1), P. Sowmya (1), T. Navaneetha (1). (1) Directorate of Oilseeds Research, Hyderabad, India
- 952-P An effector of *Puccinia striiformis* f. sp. *tritici* is expressed in haustoria and required for avirulence on wheat cultivar carrying resistance gene YrTr. C. YIN (1), A. Wan (1), X. Chen (1), S. Hulbert (1). (1) Washington State University, Pullman, WA, U.S.A.
- 953-P The *Rpg5* NBS-LRR-STPK gene and a second NBS-LRR gene are required together for *rpg4*-mediated wheat stem rust resistance in barley. R. BRUEGGEMAN (1), M. Acevedo (1), T. Gross (1). (1) North Dakota State University, Fargo, ND, U.S.A.
- 954-P Novel rust resistance in wheat (*Triticum aestivum* L.). J. B. CAMPBELL (1), M. J. Giroux (1), Y. Jin (2), X. Chen (3), L. Huang (1). (1) Montana State University, Dept. of Plant Sciences and Plant Pathology, Bozeman, MT, U.S.A.; (2) USDA-ARS Cereal Disease Laboratory and Dept. of Plant Pathology, University of Minnesota, St. Paul, MN, U.S.A.; (3) USDA-ARS Wheat Genetics, Physiology, Quality, and Disease Research Unit, and Dept. of Plant Pathology, Washington State University, Pullman, WA, U.S.A.
- 955-P Functional analysis of Asian soybean rust resistance pathways using virus-induced gene silencing. K. F. PEDLEY (1), A. K. Pandey (2), M. D. Kendrick (3), C. Zhang (4), M. A. Graham (5), S. A. Whitham (4), J. H. Hill (4). (1) USDA ARS FDWSRU, Fort Detrick, MD, U.S.A.; (2) USDA ARS, Iowa State University, Fort Detrick, MD, U.S.A.; (3) USDA ARS, Fort Detrick, MD, U.S.A.; (4) Iowa State University, Ames, IA, U.S.A.; (5) USDA ARS, Ames, IA, U.S.A.
- 956-P Differences in responses and protein profiles of soybean near-isogenic lines (NILs) to *Phakopsora pachyrhizi* inoculation. M. C. GANIGER (1), D. R. Walker (2), Z. Chen (1). (1) Louisiana State University, Baton Rouge, LA, U.S.A.; (2) USDA-ARS Soybean/Maize Germplasm, Pathology, and Genetics Research Unit, Urbana, IL, U.S.A.
- 957-P Comparison of the ergot alkaloid synthesis (*EAS*) gene cluster among clavicipitaceous fungi. S. FLOREA (1), J. Pan (1), C. Young (2), D. G. Panaccione (3), C. L. Schardl (1). (1) University of Kentucky, Dept. of Plant Pathology, Lexington, KY, U.S.A.; (2) The Samuel Roberts Noble Foundation, Forage Improvement Division, Ardmore, OK, U.S.A.; (3) West Virginia University, Division of Plant & Soil Sciences, Morgantown, WV, U.S.A.
- 958-P Ergot alkaloid gene expression studies in a grass-endophyte association. S. FLOREA (1), P. Mulinti (2), D. G. Panaccione (2), C. L. Schardl (1). (1) University of Kentucky, Dept. of Plant Pathology, Lexington, KY, U.S.A.; (2) West Virginia University, Division of Plant & Soil Sciences, Morgantown, WV, U.S.A.
- 959-P Identification and characterization of fungal endophytes from a Greek tall fescue collection. J. TAKACH (1), S. Mittal (1), A. Hopkins (1), C. Young (1). (1) The Samuel Roberts Noble Foundation, Ardmore, OK, U.S.A.
- 960-P *Grossmannia clavigera*, a mountain pine beetle-associated pathogen, has efficient ABC transporters for excreting monoterpenes or their derivatives. Y. WANG (1), S. DiGuistini (1), L. Lim (1), T. Wang (1), J. Bohlmann (1), C. Breuil (1). (1) University of British Columbia, Vancouver, BC, Canada
- 961-P Genome and transcriptome analysis of *Geosmithia*

morbida. M. M. ZERILLO (1), K. Woeste (2), J. Snelling (1), N. Tisserat (1). (1) Colorado State University, Fort Collins, CO, U.S.A.; (2) Dept. of Forestry and Natural Resources/Purdue University, West Lafayette, IN, U.S.A.

Nematodes

- 962-P Alteration of host gene silencing during root-knot nematode infection. E. K. WALSH (1), C. G. Taylor (1). (1) Ohio State University, OARDC, Wooster, OH, U.S.A.
- 963-P QTL analysis for transgressive resistance to root-knot nematode in a cotton RIL population derived from interspecific susceptible parents (*Gossypium* spp.). C. WANG (1), T. R. Mullens (1), M. Ulloa (2), P. A. Roberts (1). (1) University of California, Riverside, CA, U.S.A.; (2) USDA-ARS, Western Intergrated Cropping Systems Research Unit, Shafter, CA, U.S.A.

Viruses

- 964-P The generation of *Pepino mosaic virus* infectious clones; investigating the link between genotype and phenotype. C. DUFF-FARRIER (1), N. Boonham (2), G. D. Foster (1). (1) University of Bristol, Bristol, United Kingdom; (2) Dept. for Environment, Food and Rural Affairs, York, United Kingdom
- 964a-P Transcriptional regulation of complementary sense genes in geminiviruses. G. SUNTER (1), J. Guerrero (1). (1) University of Texas, San Antonio, TX, U.S.A.
- 965-P Functional analysis of NSs and NSm genes of *Impatiens necrotic spot virus* found in Salinas Valley, California. Y. KUO (1), S. T. Koike (2), R. L. Gilbertson (1). (1) University of California, Davis, CA, U.S.A.; (2) University of California-Davis, Salinas, CA, U.S.A.
- 966-P The *Nicotiana benthamiana* Hsp-alpha protein (NbHsp- α) interacts with the movement protein of the bipartite begomovirus *Bean dwarf mosaic virus*. M. PARK (1), Y. Seo (2), R. L. Gilbertson (1). (1) University of California, Davis, CA, U.S.A.; (2) Seoul National University, Seoul, Korea
- 967-P A nonstructural, p17 protein of *Potato leafroll virus* colocalizes in plant phloem tissue with virus capsid protein. S. EID (1), J. S. Durrin (1), O. V. Nikolaeva (1), A. Karasev (1). (1) University of Idaho, Moscow, ID, U.S.A.
- 968-P Genetic-based population analysis of the nucleocapsid protein of *Tomato spotted wilt virus* isolates in New Mexico. J. M. French (1), N. Goldberg (2), S. Hanson (2), J. RANDALL (2). (1) New Mexico State University Cooperative Extension, Las Cruces, NM, U.S.A.; (2) New Mexico State University, Las Cruces, NM, U.S.A.
- 969-P  Tradeoffs between host adaptation and vector transmission of *Soybean dwarf virus*. B. TIAN (1), W. L. Schneider (2), F. E. Gildow (1). (1) Dept. of Plant Pathology, The Pennsylvania State University, State College, PA, U.S.A.; (2) Foreign Disease-Weed Science Research Unit, USDA-ARS, Fort Detrick, MD, U.S.A.
- 970-P Genetic and biological variability of *Pepino mosaic virus* isolates infecting tomato plants. B. HASIOW-JAROSZEWSKA (1), N. Borodynko (1), H. Pospieszny (1). (1) Institute of Plant Protection-

- National Research Institute, Poznan, Poland
- 971-P Influence of defective RNAs of *Tomato black ring virus* on symptoms expression. N. BORODYNKO (1), B. Hasiow-Jaroszevska (1), H. Pospieszny (1). (1) Institute of Plant Protection-National Research Institute, Poznan, Poland
- 972-P Development of an efficient system for assessing gene function in the cotton plant using virus-induced gene silencing (VIGS). J. BROWN (1), Z. He (1), C. Hernandez-Zepeda (1). (1) University of Arizona, Tucson, AZ, U.S.A.
- 973-P Characterization of a coupled termination-reinitiation strategy for downstream ORF translation in victoriviruses (family *Totiviridae*). H. LI (1), W. M. Havens (1), M. L. Nibert (2), S. A. Ghabrial (1). (1) Plant Pathology Dept., University of Kentucky, Lexington, KY, U.S.A.; (2) Dept. of Microbiology and Molecular Genetics, Harvard Medical School, Boston, MA, U.S.A.
- 974-P Production of both carboxy-coterminal coat protein forms of *Lolium latent virus* is required for efficient systemic movement. A. Vaira (1), H. Lim (2), R. A. Owens (3), M. M. Dienelt (4), M. D. Reinsel (4), J. HAMMOND (4). (1) CNR, Istituto di Virologia Vegetale, Torino, Italy; (2) Chungnam National University, Daejeon, South Korea; (3) USDA-ARS MPPL, Beltsville, MD, U.S.A.; (4) USDA-ARS FNPRU, Beltsville, MD, U.S.A.
- 975-P Identification of an RNA silencing suppressor encoded by *Southern rice black-streaked dwarf virus* S6. Q. XU (1), Y. Lu (1), J. Zhang (1), R. Xiong (1), Y. Zhou (1). (1) Institute of Plant Protection, Jiangsu Academy of Agricultural Sciences, Nanjing, Peoples Republic of China
- 976-P Detection of *Grapevine leafroll-associated virus 7* using real-time qRT-PCR and conventional RT-PCR. M. AL RWAHNIH (1), F. Osman (1), M. R. Sudarshana (2), J. K. Uyemoto (2), A. Rowhani (1). (1) Dept. of Plant Pathology, University of California, Davis, CA, U.S.A.; (2) USDA-ARS, University of California, Davis, CA, U.S.A.
- 977-P A preliminary account of the sanitary status of *Prunus* species in the National Clonal Germplasm Repository. F. OSMAN (1), M. Al Rwahnih (1), T. Pitman (2), F. Cordero (1), J. Preece (3), D. Golino (1). (1) Dept. of Plant Pathology, University of California, Davis, CA, U.S.A.; (2) Foundation Plant Services, University of California, Davis, CA, U.S.A.; (3) National Clonal Germplasm Repository, USDA-ARS, Davis, CA, U.S.A.
- 978-P Probe the interaction between SCMV PIPO with maize protein. D. Liu (1), M. LI (2), Y. Zhang (2), Z. Fan (1). (1) China Agriculture University, Beijing, Peoples Republic of China; (2) Chinese Academy of Inspection & Quarantine, Beijing, Peoples Republic of China
- 979-P Protein-protein interaction of *Cucurbit aphid-borne yellows virus* using yeast two-hybrid system and bimolecular fluorescence complementation. X. Chen (1), H. Xiang (2), C. Han (2), D. Li (3), J. Yu (3), Y. CHENG (1). (1) Dept. of Pomology, China Agricultural University, Beijing, Peoples Republic of China; (2) Dept. of Plant Pathology, China Agricultural University, Beijing, Peoples Republic of

- China; (3) State Key Laboratory for Agrobiotechnology, College of Biological Sciences, China Agricultural University, Beijing, Peoples Republic of China
- 980-P Generation and affinities with antigen of single-chain variable fragment antibody against *Odontoglossum ringspot virus* from phage display library. Y. Y. Fu (1), Y. C. Ping (1), C. H. FUNG (2). (1) National Chia Yi University (NCYU), Chia-yi, Taiwan; (2) TND AIS, Chia-yi, Taiwan
- 981-P Discovery the new synthesized of PTGS-related small RNAs by an ultrasensitive silicon nanowire field-effect transistor and next-generation sequence. S. LIN (1), K. Chen (2), Y. Chiu (1), L. Wang (1), K. Lee (2), Y. Chen (2). (1) Institute of Biotechnology, National Taiwan University, Taipei, Taiwan; (2) Institute of Atomic and Molecular Sciences, Academia Sinica, Taipei, Taiwan
- 982-P Identification of the critical factors for mechanical transmissibility of *Tomato leaf curl New Delhi virus*. C. Chan (1), H. Chang (2), H. Ku (1), F. JAN (2). (1) Dept. of Agronomy, National Chung Hsing University, Taichung, Taiwan; (2) Dept. of Plant Pathology, National Chung Hsing University, Taichung, Taiwan
- 983-P Interrelationships among SA, MeSA, lipids, and light in systemic acquired resistance (SAR). D. F. KLESSIG (1), P. Liu (1), C. Von Dahl (1), S. Park (1). (1) Boyce Thompson Institute for Plant Research, Ithaca, NY, U.S.A.
- 984-P Development of a *Tobacco streak virus* (TSV)-based gene silencing vector for soybean seed development. S. JOSSEY (1), A. K. Singh (2), S. A. Ghabrial (2), L. L. Domier (3). (1) Dept. of Crop Sciences, University of Illinois, Urbana, IL, U.S.A.; (2) Plant Pathology Dept., University of Kentucky, Lexington, KY, U.S.A.; (3) USDA ARS, Dept. of Crop Sciences, University of Illinois, Urbana, IL, U.S.A.
- 985-P Characterization of a rare *Plum pox virus* W isolate found in germplasm illegally carried to the United States. V. MAVRODIEVA (1), K. Williams (1), S. Negi (1), L. Levy (1). (1) USDA APHIS PPQ CPHST, Beltsville, MD, U.S.A.
- 986-P Requirements of different regions of the 5' nontranslated region in replication of *Grapevine leafroll-associated virus 3*. S. JARUGULA (1), S. Gowda (2), S. Poojari (1), W. O. Dawson (2), R. A. Naidu (1). (1) Irrigated Agriculture Research and Extension Center, Dept. of Plant Pathology, Washington State University, Prosser, WA, U.S.A.; (2) Citrus Research and Education Center, University of Florida, Lake Alfred, FL, U.S.A.
- 987-P A highly sensitive and robust single-tube nested PCR assay for the detection of *Pineapple mealybug wilt associated virus* (PMWaV-2). K. K. DEY (1), W. Borth (1), M. Melzer (1), D. Sether (1), J. Hu (1). (1) University of Hawaii, Honolulu, HI, U.S.A.
- 988-P Curtovirus quantification and species differentiation within mixed infections through real-time PCR. S. A. PEINADO (1). (1) New Mexico State University, Las Cruces, NM, U.S.A.
- 989-P Responses of maize (*Zea mays* L.) near-isogenic lines carrying *Wsm1*, *Wsm2*, and *Wsm3* to three viruses in the *Potyviridae*. M. G. REDINBAUGH (1), M. W. Jones (1), E. C. Boyd (2). (1) USDA ARS Corn and Soybean Research, Wooster, OH, U.S.A.; (2) Dept. Plant Pathology, Ohio State University OARDC, Wooster, OH, U.S.A.
- 990-P Analysis of the *Frankliniella occidentalis* proteome and differentially expressed proteins in response to *Tomato spotted wilt virus* infection. I. E. BADILLO-VARGAS (1), D. Rotenberg (1), Y. Hiromasa (2), J. M. Tomich (2), A. E. Whitfield (1). (1) Kansas State University, Dept. of Plant Pathology, Manhattan, KS, U.S.A.; (2) Kansas State University, Dept. of Biochemistry and Biotechnology Core/Proteomics Facilities, Manhattan, KS, U.S.A.
- 991-P Effects of grapevine leafroll disease on berry anthocyanins and other flavonoids in a wine grape cultivar. L. R. GUTHA (1), L. F. Casassa (1), M. Mireles (1), J. F. Harbertson (1), R. A. Naidu (1). (1) Washington State University, Prosser, WA, U.S.A.
- 992-P The land plant-specific NbPSL1IP protein plays a key role in plant antiviral defense by interacting with *Potato virus X* RNAs and proteins. S. CHO (1), W. Cho (1), S. Park (1), H. Choi (2), K. Kim (1). (1) Seoul National University, Seoul, Korea; (2) Rural Development Administration, Suwon, Korea
- 993-P Alteration of gene expression profile in maize infected with a double-stranded RNA fijivirus associated with symptom development. M. Jia (1), Y. Li (1), L. Lei (1), T. Zhou (1), D. Di (2), H. Miao (2), Z. FAN (1). (1) Plant Pathology Dept., China Agricultural University, Beijing, Peoples Republic of China; (2) Plant Protection Institute, Hebei Academy of Agricultural Sciences, Baoding, Peoples Republic of China
- 994-P A critical amino acid of 6K2 protein of *Papaya ringspot virus* for inducing wilting symptom on papaya plants. S. YEH (1), K. Chen (2), H. Cheng (2). (1) National Chung Hsing University, Taichung, Taiwan; (2) Dept. of Plant Pathology, National Chung Hsing University, Taichung, Taiwan
- 995-P Solving the problem of sequence homology-independent breakdown of transgenic resistance by disarming viral gene silencing suppressor. S. YEH (1), Y. Kung (1). (1) Dept. of Plant Pathology, National Chung Hsing University, Taichung, Taiwan
- 996-P Copackaging of genomic RNAs and virion accumulation are controlled by the N-terminus of the *Red clover necrotic mosaic virus* capsid protein. S. Park (1), T. L. Sit (2), K. Kim (1), S. A. LOMMEL (2). (1) Seoul National University, Seoul, Korea; (2) North Carolina State University, Raleigh, NC, U.S.A.
- 997-P Optimization of *Maize fine streak virus* (MFSV) protein expression in *Drosophila* S2 cells. F. CISNEROS (1), M. Redinbaugh (2). (1) The Ohio State University, Wooster, OH, U.S.A.; (2) USDA, ARS, The Ohio State University, Wooster, OH, U.S.A.
- 998-P Deletion of the N terminus of *Papaya ringspot virus* larger coat protein disrupt viral systemic infection. C. CHIANG (1), Z. Wu (1), B. Lin (1), H. Bau (2), K. Chen (3), T. Yu (1), S. Yeh (3). (1) Dept. of Molecular Biotechnology, Da-Yeh University, Changhua, Taiwan; (2) Dept. of Biotechnology, TransWorld University, Yunlin, Taiwan; (3) Dept. of Plant Pathology, National Chung Hsing University, Taichung, Taiwan
- 999-P Roles of NtERF5 in N-gene mediated TMV resistance. J. YOON (1), S. Choi (2), P. Palukaitis (1). (1) Seoul

- Women's University, Seoul, South Korea; (2) National Institute of Horticultural & Herbal Science (NIHHS), Rural Development Administration, Suwon, South Korea
- 1000-P BBWV2-resistant transgenic *Nicotiana benthamiana* expressing a virus-derived hairpin RNA. J. Yoon (1), S. CHOI (2), E. Baek (1), P. Palukaitis (1). (1) Seoul Women's University, Seoul, South Korea; (2) National Institute of Horticultural & Herbal Science (NIHHS), Rural Development Administration, Suwon, South Korea
- 1001-P Effects of pesticide treatments on SABP2-mediated systemic acquired resistance in plants. D. KUMAR (1), J. P. Yuh (1), A. Dotson (1), D. Harper (1). (1) East Tennessee State University, Johnson City, TN, U.S.A.
- 1002-P Virus-like particles of *Maize rayado fino virus*, *Cucumber mosaic virus*, and *Lolium latent virus* as chemical bio-conjugate substrates. A. Natilla (1), L. G. Nemchinov (1), A. Vaira (2), J. Hammond (3), R. W. HAMMOND (1). (1) USDA ARS PSI MPPL, Beltsville, MD, U.S.A.; (2) CNR, Istituto di Virologia Vegetale, Torino, Italy; (3) Floral & Nursery Plants Research Unit, U.S. National Arboretum, USDA-ARS, Beltsville, MD, U.S.A.
- 1003-P  Characterizing in planta expression of G_N-S, a soluble form of *Tomato spotted wilt virus* G_N glycoprotein. M. MONTERO-ASTÚA (1), A. E. Whitfield (1). (1) Kansas State University, Manhattan, KS, U.S.A.
- 1004-P Characterization of silencing suppressor activity of NSs from *Iris yellow spot virus* (genus *Tospovirus*). P. K. Sharma (1), K. DRUFFEL (1), N. Mitter (2), H. R. Pappu (1). (1) Washington State University, Pullman, WA, U.S.A.; (2) Queensland Alliance for Agriculture and Food Innovation, The University of Queensland, Brisbane, Australia
- 1005-P Evaluating artificial microRNAs for engineering resistance against tospoviruses. N. MITTER (1), K. Chua (1), S. Bag (2), K. Druffel (2), R. Mitchell (3), H. R. Pappu (2). (1) Queensland Alliance for Agriculture and Food Innovation, The University of Queensland, Brisbane, Australia; (2) Washington State University, Pullman, WA, U.S.A.; (3) Dept. of Employment, Economic Development and Innovation, St. Lucia, Australia
- 1006-P Biological characterization of distinct strains of *Iris yellow spot virus* (genus *Tospovirus*). S. BAG (1), C. S. Cramer (2), H. F. Schwartz (3), H. R. Pappu (1). (1) Washington State University, Pullman, WA, U.S.A.; (2) Dept. of Plant and Environmental Sciences, New Mexico State University, Las Cruces, NM, U.S.A.; (3) Dept. of Bioagricultural Sciences and Pest Management, Colorado State University, Ft. Collins, CO, U.S.A.
- 1007-P Characterization of small RNAs derived from *Tomato spotted wilt virus* infection by deep sequencing. V. Koundal (1), N. MITTER (2), S. Williams (3), H. R. Pappu (1). (1) Washington State University, Pullman, WA, U.S.A.; (2) Queensland Alliance for Agriculture and Food Innovation, The University of Queensland, Brisbane, Australia; (3) Queensland Facility for Advanced Bioinformatics, The University of Queensland, Brisbane, Australia
- 1008-P Genetic complementation between two viruses in an otherwise restrictive host. S. BAG (1), N. Mitter (2), H. R. Pappu (1). (1) Washington State University, Pullman, WA, U.S.A.; (2) Queensland Alliance for Agriculture and Food Innovation, the University of Queensland, Brisbane, Australia
- 1009-P The effect of *Potato virus S* infection on late blight severity in selected potato genotypes. Y. LIN (1), D. A. Johnson (1), H. R. Pappu (1). (1) Washington State University, Pullman, WA, U.S.A.
- 1010-P Identification and characterization of promoter elements from plant pararetroviruses from dahlia (*Dahlia variabilis*). C. V. ALMEYDA (1), H. R. Pappu (1). (1) Washington State University, Pullman, WA, U.S.A.
- 1011-P Diversity in *Cotton leaf curl virus* (CLCuV) isolates prevalent in northwestern India in light of the breakdown of CLCuV resistance in cotton. P. K. CHAKRABARTY (1), S. V. Sable (2), V. Koundal (3), B. Kalbande (1), D. Monga (4), R. Soni (4), H. R. Pappu (3). (1) Central Institute for Cotton Research, Nagpur, Maharashtra, India; (2) Central Institute for Cotton Research, Nagpur, India; (3) Washington State University, Pullman, WA, U.S.A.; (4) Central Institute for Cotton Research, Sirsa, Haryana, India
- 1012-P Functional analysis of the *Cucumber mosaic virus* 2b protein. K. Nemes (1), Á. Gellért (2), E. Balázs (2), K. SALÁNKI (1). (1) Agricultural Biotechnology Center, Godollo, Hungary; (2) Agricultural Research Institute of the Hungarian Academy of Sciences, Applied Genomics Dept., Martonvasar, Hungary
- 1013-P Coat protein expression strategy of *Oat blue dwarf virus*. M. C. EDWARDS (1), J. J. Weiland (1). (1) USDA ARS, Fargo, ND, U.S.A.
- 1014-P Validation of a single nucleotide polymorphism genotyping method for *Wheat streak mosaic virus*. S. ROGERS (1), M. Payton (1), R. Allen (1), U. Melcher (1), J. Fletcher (1). (1) Oklahoma State University, Stillwater, OK, U.S.A.
- 1015-P Geminiviral (PHYVV and PepGMV) and cucumoviral (CMV) co-infection in chili pepper fields: The *AC1* gene in PepGMV with a mutation with aminoacid change. S. FRAIRE (1), M. Recendez-Alvarado (1), J. Carrillo-Tripp (2), R. Rivera-Bustamante (3), M. Alvarado-Rodríguez (4). (1) Universidad Autónoma de Zacatecas, Guadalupe, Zacatecas, Mexico; (2) CINVESTAV-IPN Campus Guanajuato, Irapuato, Mexico; (3) CINVESTAV-IPN Campus Guanajuato, Irapuato, Gto., Mexico; (4) Universidad Autónoma de Zacatecas, Zacatecas, Zac., Mexico

■ PROFESSIONALISM/OUTREACH/ INDUSTRY/GENETIC ENGINEERING

Professionalism/Outreach

- 1016-P Editing in Wikipedia to learn concepts in plant pathology. M. HAYSLETT (1), D. Rouse (1). (1) University of Wisconsin, Madison, WI, U.S.A.
- 1017-P The burden of truth: Visual representations of genetic engineering and genetically modified organisms in the online media. L. RODRIGUEZ (1). (1) Iowa State University, Ames, IA, U.S.A.
- 1018-P Does one size fit all for delivering corn disease-related information? P. ESKER (1), C. Bradley (2), P. Paul

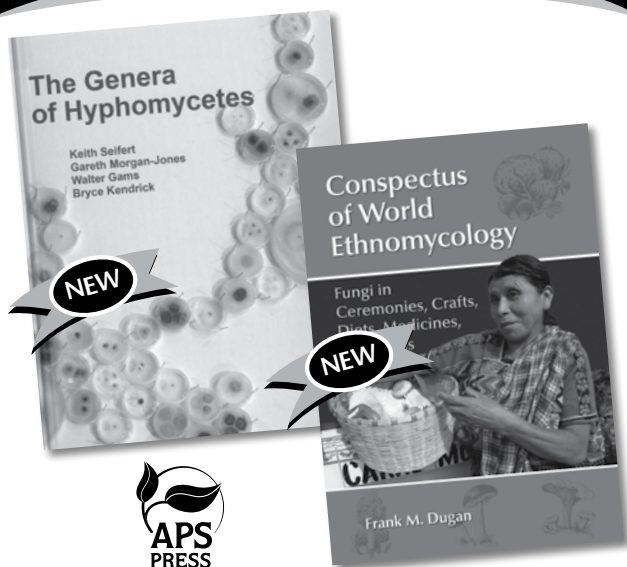
- (3), A. Robertson (4). (1) University of Wisconsin, Madison, WI, U.S.A.; (2) University of Illinois, Urbana, IL, U.S.A.; (3) Ohio State University, Wooster, OH, U.S.A.; (4) Iowa State University, Ames, IA, U.S.A.
- 1019-P The use of social media sites at the Plant Disease and Insect Clinic at North Carolina State University. E. LOOKABAUGH (1), B. Shew (1). (1) North Carolina State University, Raleigh, NC, U.S.A.
- 1020-P APS works for you. M. ELLIOTT (1), K. Schneider (2), E. Honeycutt (3), R. Brlansky (4), A. Kriss (5), N. Donofrio (6), J. Liu (7), T. Durham (8), K. Ong (9), M. Grabowski (10), B. Christ (11), J. Leach (12), G. Franc (13). (1) University of Florida, Fort Lauderdale, FL, U.S.A.; (2) National Biodefense Analysis & Countermeasures Center, Frederick, MD, U.S.A.; (3) Bartlett Tree Experts, Charlotte, NC, U.S.A.; (4) Citrus Research and Education Center, Lake Alfred, FL, U.S.A.; (5) Ohio State University, Wooster, OH, U.S.A.; (6) University of Delaware, Newark, DE, U.S.A.; (7) Pioneer Hi-Bred Intl. Inc., Johnston, IA, U.S.A.; (8) Florida Gulf Coast University, Fort Meyers, FL, U.S.A.; (9) Texas AgriLife Extension Service, College Station, TX, U.S.A.; (10) University of Minnesota, Andover, MN, U.S.A.; (11) Penn State University, University Park, PA, U.S.A.; (12) Colorado State University, Fort Collins, CO, U.S.A.; (13) University of Wyoming, Laramie, WY, U.S.A.
- 1021-P Global food security short courses to enhance urban forestry education and training at Southern University and A&M College. D. COLLINS (1), Y. Qi (1). (1) Urban Forestry Program Southern University and A&M College, Baton Rouge, LA, U.S.A.

WEED SCIENCE

Weed Science

- 1022-P *Myrothecium roridum* tode and its toxin shows potential for management of water lettuce. W. O. OKUNOWO (1), A. A. Osuntoki (1), A. A. Adekunle (1). (1) University of Lagos, Lagos State, Nigeria
- 1023-P Arbuscular mycorrhizal fungi diversity associated with coexisting cheatgrass and big sagebrush communities. R. Busby (1), M. Stromberger (2), M. DENIGHT (1), D. Gebhart (1), G. Rodriguez (1), M. Paschke (3). (1) U.S. Army Engineer Research and Development Center, Champaign, IL, U.S.A.; (2) Colorado State University, Dept. of Soil and Crop Sciences, Fort Collins, CO, U.S.A.; (3) Colorado State University, Dept. of Forest Rangeland Watershed Stewardship, Fort Collins, CO, U.S.A.
- 1024-P Fluorescence spectra and lifetime of relevant weed species as impacted by selected herbicides. M. HUNSCHKE (1), K. Buerling (1), G. Noga (1). (1) University of Bonn, INRES-Horticultural Sciences, Bonn, Germany
- 1025-P Weed control with flaming and cultivation in corn. S. KNEZEVIC (1). (1) University of Nebraska, Condord, NE, U.S.A.
- 1026-P Does weed management for sweet corn differ with planting date? M. VANGESSEL (1), B. Scott (1), Q. Johnson (1). (1) University of Delaware, Georgetown, DE, U.S.A.

NEW SAVE 20%
Plus **FREE Shipping** if you buy
4 or more APS PRESS titles!



Shop APS PRESS in the Exhibit Hall

Celebrate our 20th!

The APS Public Policy Board
celebrates 20 years of advocacy
on behalf of plant pathologists.

Stop by booth #218
to get engaged!



RECOGNITION

2011 APS-IPPC JOINT MEETING PROGRAM TEAM

APS-IPPC Joint Meeting Program Chairs	Carol Ishimaru, <i>University of Minnesota, U.S.A.</i> Bill Tweedy, <i>Albaugh, Inc., U.S.A.</i> E. (Short) Heinrichs, <i>University of Nebraska, U.S.A.</i>
APS-IPPC Joint Meeting Program Vice Chair	Mike Boehm, <i>Ohio State University, U.S.A.</i>
APS-IPPC Joint Meeting Board	
<i>Director</i>	Scott Adkins, <i>USDA ARS USHRL, U.S.A.</i>
<i>Workshop Chair</i>	James Buck, <i>University of Georgia, U.S.A.</i>
<i>APS-IPPC Section Chairs</i>	Janna Beckerman, <i>Purdue University, U.S.A.</i> Jim Bone, <i>Retired, DuPont, U.S.A.</i> John Burd, <i>USDA ARS, U.S.A.</i> Amy Charkowski, <i>University of Wisconsin, U.S.A.</i> Martin Dickman, <i>Texas A&M University, U.S.A.</i> Paul Esker, <i>University of Wisconsin, U.S.A.</i> E. (Short) Heinrichs, <i>University of Nebraska, U.S.A.</i> Aaron Hert, <i>Helena Research, U.S.A.</i> Peter Ojiambo, <i>North Carolina State University, U.S.A.</i> Baruch Rubin, <i>The Hebrew University of Jerusalem, Israel</i>
<i>Members</i>	Antonius Baudoin, <i>Virginia Tech, U.S.A.</i> Carolee Bull, <i>USDA ARS, U.S.A.</i>

Thank You APS SUSTAINING ASSOCIATE MEMBERS!

Special thanks to the following APS Sustaining Associate Members who provide their support and contribute their expertise and professional involvement to ensure the continued strength of The American Phytopathological Society.

AC Diagnostics, Inc.	DuPont Ag & Nutrition	Percival Scientific, Inc.
Agdia, Inc.	EnviroLogix	Pest Pros, Inc.
American Peat Technology, LLC	Eurofins/STA Laboratories, Inc.	PhytoTechnology Laboratories
Ball Horticultural Co.	Gylling Data Management, Inc.	Pioneer Hi-Bred Intl, Inc.
BASF Corp.	ISK Biosciences Corp.	Sakata Seed America, Inc.
Bayer CropScience	Janssen PMP	Shanghai WLH Bio Technology Co.
BIOREBA AG	Landis International, Inc.	Spectrum Technologies, Inc.
Cereal Research Non Profit Co. Inst.	Monsanto Co.	Syngenta Crop Protection
Convion	National Alliance of Independent	Syngenta Seeds
Dimole, Inc.	Crop Consultants	Valent USA Corp.
Dow AgroSciences, LLC	Natural Industries, Inc.	

*If your organization isn't listed, consider joining these leaders to support the field of plant pathology.
Contact APS Member Services at +1.651.454.7250.*

APS Elected and Appointed Officers, Representatives, and Committees for 2011

These listings reflect current appointments as of June 1, 2011. For up-to-date listings following the annual meeting, please refer to APSnet.

APS Council

President: J. L. Sherwood
President-Elect: C. A. Ishimaru
Vice President: M. J. Boehm
Immediate Past President: B. J. Christ
Internal Communications Officer (ICO): D. T. Beadle
ICO-Elect: D. M. Gadoury
Treasurer: R. C. Rowe
Senior Councilor-at-Large: C. T. Bull
Intermediate Councilor-at-Large: A. E. Dorrance
Junior Councilor-at-Large: W. F. Mahaffee
Divisional Councilor: D. G. Schmale
Publications Councilor: T. P. Keinath
Executive Vice President: S. C. Nelson

Annual Meetings Board (AMB) (fnaSPB): *Director*: S. T. Adkins. *Program Chair*: C. A. Ishimaru. *Vice Chair*: M. J. Boehm. *Section Chairs*: J. L. Beckerman, A. O. Charkowski, M. B. Dickman, P. Esker, A. P. Hert, P. S. Ojiambo, *Workshops Chair*: J. W. Buck. *Members*: A. B. Baudoin, C. T. Bull

Auxiliary Meetings Board (AXMB): *Director*: G. C. Bergstrom. *Director-Elect*: A. R. Bennett. *Members*: K. S. Arthur, J. W. Buck, S. H. Hulbert, S. A. Miller, A. E. Robertson, K. L. Smith, K. V. Subbarao

Awards and Honors Committee: *Chair*: S. M. Coakley. *Immediate Past Chair*: D. M. Weller. *Members*: S. B. Goodwin, M. K. Hausbeck, N. P. Keller, S. A. Lommel, H. Scherm

Divisional Forum: *Chair*: G. W. Sundin, *Divisional Councilor*: D. G. Schmale. *Members*: J. E. Adaskaveg, T. B. Brenneman, W. H. Elmer, K. L. Everts, M. M. Roca, J. C. Rupe

Executive Committee: *Chair*: J. L. Sherwood. *Members*: D. T. Beadle, M. J. Boehm, C. T. Bull, C. A. Ishimaru, B. J. Christ, S. C. Nelson, R. C. Rowe,

Financial Advisory Committee: *Chair*: R. C. Rowe, *Members*: J. E. Adaskaveg, M. J. Boehm, M. L. Daughtrey, C. A. Ishimaru, J. C. Rupe

Foundation-Board of Directors: *Chair*: R. D. Martyn. *Treasurer*: R. C. Rowe, *Members*: A. M. Alvarez, J. Amador, R. J. Cook, L. E. Datnoff, S. M. Douglas, T. D. Murray, A. H. Tally. *Ex-Officio*: K. R. Lannon

Leadership Institute: *Cochairs*: R. M. Bostock, C. D. Smart. *Members*: L. M. Ciuffetti, M. M. Kennelly, W. Schneider, J. E. Schoelz, E. C. Tedford, L. P. Tredway

Nominations: *Chair*: J. D. MacDonald. *Members*: C. T. Bull, A. O. Charkowski, D. H. Gent, R. S. Goswami, T. K. Mitchell, G. P. Munkvold, B. D. Olson, J. C. Rupe

Office of Electronic Communications (OEC): *Director*: D. M. Eastburn. *APSnet Feature Editor*: G. D. Franc. *Members*: A. M. Brunings, D. A. Glawe, S. Kang, J. M. Marshall, K. J. Martin, G. Rauscher, *Ex-Officio*: A. B. Baudoin

Office of Industry Relations (OIR): *Director*: B. D. Olson. *Members*: J. R. Bloomberg, A. Cochran, G. J. Holmes, C. L. Kohls, D. G. Ouimette, M. R. Schwarz, V. J. Spadafora, R. Van Haren. *Industry Liaison*: J. L. Chaky. *Sustaining Associates Chair*: D. Myhaver

Office of International Programs Advisory Board (OIP): *Director*: S. A. Miller. *Library Assistance Coordinator*: M. Babadoost. *Members*: J. E. Bowman, J. K. Brown, M. M. Kennelly, J. H. McBeath, M. D. Ospina-Giraldo, M. A. Pastor-Corrales, A. C. Schilder, J. R. Steadman. *Ex-Officio*: R. J. Cook

Office of Public Relations and Outreach (OPRO): *Director*: M. L. Elliott. *Members*: R. H. Brlansky, N. M. Donofrio, T. Durham, M. A. Grabowski, E. W. Honeycutt, A. B. Kriss, J. Q. Liu, K. Ong, K. T. Schneider. *Ex-Officio*, *APSnet Feature Editor*: G. D. Franc. *Ex-Officio*: B. J. Christ, J. E. Leach

Phytopathology News Advisory: *Editor-in-Chief*: D. J. Jardine. *Members*: A. E. Dorrance, H. A. Olson, D. G. Schmale III, A. U. Tenuta

Publications Board: *Chair*: T. P. Keinath. *Members*: A. B. Baudoin, M. J. Boehm, M. L. Daughtrey, R. M. Davis, D. M. Eastburn, N. Grunwald, D. J. Jardine, G. Stacey, N. A. Tisserat, F. P. Wong

Public Policy Board (PPB): *Chair*: J. E. Leach. *Members*: J. D. Barak, A. R. Bennett, M. J. Boehm, T. C. Harrington, P. T. Himmel, C. A. Ishimaru, J. P. Mueller, J. L. Sherwood, J. R. Steadman. *Ex-Officio*: M. L. Elliott. *Interns*: M. L. Lewis Ivey, M. Kabbage. *DC Rep*: K. A. Eversole

Visioning Forum: *Cochairs*: C. C. Mundt, L. L. Kinkel. *Members*: C. Allen, W. E. Dolezal, C. E. De Jensen, S. E. Gold, N. Grunwald, R. P. Kaiser, S. Kamoun, F. J. Louws, K. Ong, P. A. Paul, L. J. Vaillancourt, F. P. Wong

APS Ad Hoc Committees

Annual Meeting Models: *Chair*: A. E. Dorrance. *Members*: J. E. Adaskaveg, J. C. Beinapfl, C. Cowger, C. A. Ishimaru, D. J. Jardine, R. P. Kaiser, W. F. Mahaffee, J. W. Moyer, J. E. Takach

Committee on Innovation and Entrepreneurship: *Cochairs*: A. R. Chase, F. P. Wong. *Members*: G. E. Harman, G. J. Holmes, T. K. Mitchell, J. M. Russo, D. G. Schmale, H. Scherm, L. J. Stowell, C. L. Swett, L. R. Triplett. *Consulting Member*: M. A. Mellano

APS-CSPP Working Group: *Chair*: Y. Jia. *Members*: J. H. McBeath, Y.-L. Peng, G.-L. Wang, Y. Yang

ISF Collaboration on Codification of Plant Races/Strains: *Chair*: P. T. Himmel. *Members*: W. E. Dolezal, L. J. du Toit, V. Grimault, C. J. Kurowski, J. Mizicko, G. A. Pederson, R. Ranganathan, C. M. Sandlin, K. van Etteken, E. Vivoda, K. M. Webb. *Consulting Members*: R. L. Dunkle, A. W. LaVigne

Manual of Operations 2011: *Chair*: D. T. Beadle. *Members*: M. E. Daub, D. M. Gadoury, R. C. Gergerich, J. E. Loper

Special Committees

APS Advisory Committee on Plant Biosecurity: *Chair*: J. P. Stack. *Members*: K. O. Britton, W. E. Dolezal, M. A. Draper, J. Fletcher, S. Kim, C. Levesque, D. G. Luster, R. D. Martyn, M. H. Royer, K. T. Schneider, J. L. Sherwood, K. L. Smith

APS-PMN Oversight: *Chair*: K. L. Ivors. *JEC Representatives*: R. D. Martyn, B. D. Olson. *Members*: J. E. Kaminski, C. L. Palmer, N. A. Tisserat

Emerging Diseases and Pathogens: *Chair*: D. G. Luster. *Members*: A. M. Alvarez, A. R. Bennett, P. H. Berger, M. R. Bonde, J. K. Brown, R. Bulluck, V. D. Damsteegt, J. Fletcher, N. Grunwald, J. Hammond, J. S. Hartung, D. M. Huber, C. A. Ishimaru, G. Kuldau, A. Levesque, L. Levy, L. V. Madden, C. W. Magill, R. R. Martin, D. C. McGee, F. W. Nutter, M. E. Palm, N. W. Schaad, J. L. Sherwood, D. R. Smith, J. P. Stack, S. A. Tolin, A. T. Tschanz, A. K. Vidaver, W. M. Wintermantel, G. C. Wisler, X. Yang

Editorial Boards

APS Press: *Editor-in-Chief*: M. L. Daughtrey. *Associate Editor-in-Chief*: T. C. Paulitz. *Acquisitions Editors*: D. M. Benson, L. V. Madden. *Senior Editors*: C. Allen, J. K. Brown, L. E. Datnoff, F. M. Dugan, D. M. Eastburn, J. H. Graham, S. T. Koike, G. P. Munkvold, M. E. Palm-Hernandez. *Ex-Officio (non-voting)*: R. C. Rowe

Education Center-Plant Health Instructor: *Editor-in-Chief*: A. B. Baudoin. *Senior Editors*: W. W. Bockus, P. D. Brune, T. A. Evans, S. E. Gold, W.-B. Shim, N. Shishkoff, C. D. Smart, K. L. Stevenson. *Associate Editors*: L. F. S. Leandro, I. I. Santamaria

MPMI: *Editor-in-Chief*: G. Stacey. *Senior Editors*: J. R. Alfano, G. A. Beaty, J. P. Carr, B. Ding, B. N. Kunkel, M. Lorito, J. M. McDowell, T. P. Nuernberger, U. Paszkowski, S. Robatzek, D. Roby, M. J. Sadowsky, K. Shirasu, G. Smant, K. Szczygłowski. *Associate Editors*: G. Berg, J. Boch, A. Brachmann, T. C. Charles, G. L. Coaker, E. Cytrin, B. Day, D. Desveaux, A. DiPietro, A. Heese, L. Johnson, P. Kachroo, M. Kawaguchi, K. Kazan, B. Kemmerling, D. Mackey, P. Mergaert, K. Minamsawa, M. Mitchum, P. Moffett, P. van West, A. Viterbo, J. Zhou, C. Zipfel

Phytopathology: *Editor-in-Chief*: N. Grunwald. *Senior Editors*: T. B. Adhikari, V. C. Blok, C. M. Deom, B. K. Duffy, D. H. Gent, S. B. Goodwin, R. C. Hamelin, A. V. Karasev, N. McRoberts, T. L. Peever, J. J. Polashock, B. M. Pryor, S. S. Savary, G. W. Sundin, W. W. Turechek. *Associate Editors*: J. Crouch, N. M. Donofrio, G. W. Douhan, L. J. du Toit, K. J. Evans,

E.W. Jackson, E. Jacquot, M. Jimenez-Gasco, R. W. Jones, S. T. Koike, W. Ma, W. F. Mahaffee, A. L. Mila, T. K. Mitchell, E. S. G. Mizubuti, O. P. Pruvost, N.A. Rayapati, S. Restrepo, H. Sanfacon, J. B. Scott, B. Sipes, I. E. Tzanetakis, C. M. Vera Cruz, L. A. Wanner, S. L. Woo, F. Workneh, X. Xu, and Y. Zhao

Plant Disease: Editor-in-Chief: R. M. Davis. *Focus Editor:* Thor Kommedahl. *Senior Editors:* K. Baumgartner, R. H. Bransky, J. W. Buck, A. O. Charkowski, J. C. Correll, C. Cowger, L. J. du Toit, M. L. Gleason, R. M. Harveson, B. D. Nelson, S. J. Pethybridge, M. K. Romberg, E. N. Roskopf, G. Schnabel, J. J. Stapleton, C. A. Strausbaugh, I. E. Tzanetakis, Feature Editor: J. J. Farrar. *Disease Notes Assigning Editors:* J. Hao, B. M. Wu. *Associate Editors:* B. J. Aegerter, M. E. L. Burrows, K. D. Cox, A. T. Dyer, A. Elling, A. Eskalen, C. D. Garzon, D. H. Gent, S. F. Hanson, C. Hong, M. M. Kennelly, M. F. R. Khan, S. M. Marek, M. R. Miles, S. C. Nelson, P. A. Paul, D. G. Schmale III, C. D. Smart, K. C. Steddom, C. Y. Warfield, C. Y. Warfield, L. Wilcoquet, C. Xiao, L. E. Yakabe

Plant Disease Management Reports: Editor-in-Chief: F. P. Wong. *Section Editors:* K. D. Cox, J. R. Glass, M. R. Khan, C. S. Kousik, D. B. Langston, J. C. Mertely, J. S. Miller, B. D. Olson, D. G. Ouimette, G. B. Padgett, S. L. Rideout, H. J. Scheck, K. W. Seebold, M. Tomaso-Peterson, K. A. Wise, C. A. Wyenandt. *Assigning Editors:* C. M. Becker, J. L. Beckerman, D. R. Cooley, P. F. Harmon, A. Henn, C. R. Hollingsworth, T. A. Jackson, C. S. Johnson, R. C. Kemerait, R. P. Larkin, C. Y. Warfield

Plant Health Progress: Editor-in-Chief: N. A. Tisserat. *Senior Editors:* D. M. Ferrin, C. M. O'camb, G. B. Padgett, J. W. Pscheidt, P. D. Roberts, J. P. Stack, N. R. Walker. *Associate Editor:* S. T. Koike

Affiliate Representatives:

American Association for the Advancement of Science: D. G. Gilchrist; *Coalition on Funding Agricultural Research:* J. L. Sherwood; *Intl Society for Plant Pathology:* T. A. Evans. *Members:* J. H. Andrews, M. Babadoost, A. R. Bennett, L. A. Calvert, K. F. Cardwell, J. C. Correll, J. H. McBeath, S. A. Miller, R. C. Ploetz. *Intl Union of Microbiological Societies:* C. T. Bull; *Mycological Society of America:* C. M. Stiles; *National Council for Science and the Environment:* J. J. Marois; *PlantingScience:* A. B. Baudoin, K. Ong; *Society of Environmental Toxicology and Chemistry:* M. Simini; *Society of Nematologists:* T. L. Niblack

Historian:

P. D. Peterson

APS General Policy Committees

Collections and Germplasm: Chair: S. Li. *Immediate Past Chair:* K. McCluskey. *Vice Chair:* A. Bennett. *Members:* N. Abou-Zeid, M. G. Bakker, M. D. Bandla, M. Chen, W. E. Dolezal, F. M. Dugan, K. A. Eversole, D. R. Fravel, J. B. Jones, M. L. Miller, T. Reid, A. Sechler, M. S. Torres, A. Wiest

Committee for Diversity and Equality: Chair: L. Ma. *Immediate Past Chair:* M. Luisa Burgos. *Vice Chair:* R. S. Goswami. *Members:* F. Baysal-Gurel, A. M. Brunings, C. T. Bull, R. Bulluck, S. Y. Elateek, P. L. Fashing, A. Gambhir, L. E. Hanson, M. C. Hayslett, E. Hernandez, D. M. Hinton, S. Lunden, K. J. Martin, F. M. Mathew, S. J. Mauzey, S. A. Mazurek, R. Melanson, R. L. Melnick, V. Parkunan, A. M. Poleatewich, P. Rojas, D. Serrano, A. Terry, M. S. Torres, C. H. Walkinshaw, N. A. Ward, W. Wechter, A. Wen, A. E. Whitfield, D. Xavier, L. Zhang

Early Career Professionals: Chair: T. J. Hughes. *Immediate Past Chair:* G. Rauscher. *Vice Chair:* C. M. Wallis. *Members:* O. Batuman, F. Baysal-Gurel, K. D. Broders, R. Bulluck, E. Z. Byamukama, C. E. Jahn, Y. Li, J. Marelli, D. A. McDuffee, T. K. Mitchell, E. A. Moya, K. Janor Owens, V. Parkunan, S. Restrepo, K. T. Schneider, B. K. Scholz-Schroeder, K. L. Schroeder, V. Sengoda Gounder, A. Terry, M. Xiang

Extension: Chair: B. K. Gugino. *Immediate Past Chair:* K. W. Seebold. *Vice Chair:* L. E. Osborne. *Members:* B. J. Aegerter, T. W. Allen, S. S. Arcibal, C. J. Balbalian, M. M. Dewdney, H. R. Dillard, A. E. Dorrance, K. L. Everts, D. M. Ferrin, A. E. Ferry, A. J. Gevens, R. M. Harveson, J. Carol Himmelstein, A. Coleen Hodges, R. M. Hunger, K. L. Ivors, T. A. Jackson, Y. Jo, R. C. Kemerait, M. F. R. Khan, J. L. Koenig, C. Lapaire Harmon, D. K. Malvick, S. G. Markell, M. T. McGrath, K. A. McGuire, R. Melanson, J. C. Mertely, O. T. Neher, S. C. Nelson, K. Ong, V. Parkunan, E. E. Pfeuffer, S. L. Rideout, A. E. Robertson, G. E. Ruhl, K. C. Steddom, A. U. Tenuta, S. J. Vasquez, N. A. Ward, K. A. Wise, C. A. Wyenandt

Graduate Student: Chair: K. R. Lannon. *Immediate Past Chair:* H. A. Olson. *Vice Chair:* J. M. Jacobs. *Members:* M. Abdelkarim, S. S. Arcibal, T. Baldwin, S. J. Bardsley, R. Bittner, O. Burbano-Figueroa, M. Luisa Burgos, E. Campoverde, A. K. Chanda, C. Chen, J. S. Clark, B. L. Dalsing, J. Daniels, S. Y. Elateek, M. Lee Ellis, K. Fiedler, V. Gupta, S. Hill, J. Hu, J. C. Jirak, S. G. Kunjeti, K. Liberator, C. Mattupalli, S. A. Mazurek, R. Melanson, A. F. Morris, M. M. Moyer, K. L. Ness, K. N. Neufeld, R. Noar, J. Patel, A. F. Payne, E. E. Pfeuffer, I. Power, R. Raudales Banegas, T. Reid, M. Soledad Benitez, A. Terry, S. Thomas, B. Tian, L. R. Triplett, M. C. Velez, A. L. Vu, P. Wallace, N. A. Ward, L. P. Wasala, A. Watson, D. Xavier, Z. Zhang, C. R. Zumpetta

Industry: Chair: J. L. Chaky. *Chair-Elect:* G. H. Musson. *Immediate Past Chair:* A. P. Hert. *Vice Chair:* C. A. Gallup. *Members:* D. T. Beadle, M. A. Bhatti, W. E. Dolezal, K. A. Eversole, J. E. Fajardo, J. Fletcher, L. Fought, G. J. Holmes, E. W. Honeycutt, R. Joost, R. P. Kaiser, P. J. Kuhn, D. A. McDuffee, D. McKenzie, C. B. Meador, H. Mellinger, P. Morrow, H. Morton, J. P. Mueller, D. Myhaver, B. D. Olson, P. M. Rogers, B. E. Ruden, C. T. Schiller, V. Spadafora, E. C. Tedford, D. C. Thompson, R. S. Whitson, K. R. Whitten Buxton

Regulatory Plant Pathology: Chair: N. K. Osterbauer. *Immediate Past Chair:* T. S. Schubert. *Vice Chair:* C. S. Thomas. *Members:* P. Abad, F. M. Assis Filho, P. H. Berger, T. N. Boratynski, L. G. Brown, R. Bulluck, C. Chung, S. Hill, C. R. Hollingsworth, D. A. Johnson, M. J. Kenney, K. L. Kosta, K. W. Kromroy, R. T. Lartey, P. I. Lewis, M. L. Lewis Ivey, C. J. Maroon-Lango, J. M. McKemy, A. F. Morris, S. W. Mullis, G. L. Peterson, E. V. Podleckis, J. J. Qiu, T. Reid, S. Rizvi, T. Seeland, E. S. Serrano, G. K. Smith, S. Thomas, M. G. Tiffany, J. C. Trolinger, A. T. Tschanz. *Nominees:* S. Inch, A. K. Pathan

Teaching: Chair: M. Skaria. *Immediate Past Chair:* C. R. Little. *Vice Chair:* J. E. Woodward. *Members:* K. Bastas, T. E. Chase, M. Chen, S. Durairaj, D. M. Eastburn, S. D. Ellis, D. M. Gadoury, B. D. Geary, F. E. Gildow, M. Jimenez-Gasco, M. D. Ospina-Giraldo, B. H. Ownley, A. M. Poleatewich, T. Reid, K. T. Willyerd

APS Subject Matter Committees

Bacteriology: Chair: Y. Zhao. *Immediate Past Chair:* M. Roper. *Vice Chair:* N. Wang. *Members:* T. B. Adhikari, C. Allen, A. M. Alvarez, V. Ancona, P. Basu Thakur, G. A. Beattie, S. V. Beer, F. Behlau, C. T. Bull, P. Champoiseau, A. O. Charkowski, K. Chen, J. Chen, T. A. Coutinho, J. Daniels, L. De La Fuente, T. P. Denny, M. M. Dewdney, S. M. Dossey, S. Durairaj, J. Figueiredo, L. Fleites, Z. Flores, F. F. Garces, J. W. Greenwald, G. Gu, Y. Guo, J. Ham, A. P. Hert, A. Huerta, J. M. Jacobs, N. Jalan, E. G. Johnson, J. B. Jones, H. S. Karki, L. M. Keith, D. Y. Kobayashi, S. A. Lee, S. Li, Q. Liu, S. Lu, M. Marquez Villavicenci, B. B. McSpadden Gardener, F. Meng, G. O'Keefe, J. Palumbo, M. L. Paret, G. David Peckham, E. Postnikova, N. Potnis, G. De Rebello, A. R. Records, T. Reid, P. Rott, N. W. Schaad, D. Selimi, F. Smith, S. Soby, A. Sreedharan, L. R. Triplett, P. Trivedi, H. Tseng, L. A. Wanner, A. C. Wayadande, A. Mohamed Zaid, S. Zhang, C. R. Zumpetta

Biological Control: Chair: M. A. Weaver. *Immediate Past Chair:* X. Jin. *Vice Chair:* Y. Huang. *Members:* H. K. Abbas, N. Abou-Zeid, M. G. Bakker, F. Baysal-Gurel, C. Cao, J. J. Cascino, S. Chen, S. A. Conaway, D. R. Fravel, E. Hernandez, R. Jaime, P. Ji, D. Lakshman, R. P. Larkin, R. G. Linderman, S. Lu, B. B. McSpadden Gardener, R. L. Melnick, E. A. Moya, O. T. Neher, J. Park, A. M. Poleatewich, B. M. Pryor, X. Rong, S. Francis Shamoun, F. Smith, B. Spakes Richter, A. Tohamy, G. S. Tomimatsu, W. Wechter, J. Yu, G. Y. Yuen, A. Mohamed Zaid, S. Zhang

Biotechnology: Chair: D. A. Halterman. *Immediate Past Chair:* Y. Yang. *Vice Chair:* P. J. Raymond. *Members:* M. A. Bhatti, S. Chaluvadi, K. Chen, X. Chen, V. R. Correa, C. Maria De La Torre Cuba, S. Durairaj, J. Figueiredo, L. Fleites, G. Gu, L. R. Gutha, S. F. Hanson, E. E. Helliwell, B. Karakkat, S. J. Klosterman, S. G. Kunjeti, J. Liu, J. Marelli, A. F. Morris, E. Ng, P. Obilo, W. O. Okunowo, A. Pashae, W. Pipatpongpinoy, N. Potnis, A. Rahman, G. De Rebello, M. Roca, A. Edith Rodriguez Estrada, G. Shirsekar, S. Soby, P. Songkumarn, G. S. Tomimatsu, N. A. Weinsetel, W. Wight, S. Zhang

Chemical Control: Chair: G. J. Holmes. *Immediate Past Chair:* A. Cochran. *Vice Chair:* C. T. Schiller. *Members:* J. E. Adaskaveg, H. F. Avenot, M. Babadoost, D. R. Cooley, C. D. Cruz, J. E. Fajardo, H. C. Forster, L. Fought, J. A. Frank, C. D. Garzon, U. U. Gisi, B. K. Gugino, N. I. Khan, M. F. R. Khan, Y. Kim, C. L. Kohls, X. Li, H. Morton, G. H. Musson,

- B. D. Olson, A. K. Pathan, J. W. Pscheidt, G. Qiao, M. Rahman, S. L. Rideout, B. E. Ruden, P. G. Sanderson, J. Silveira Baggio, V. Spadafora, A. H. Tally, E. C. Tedford, A. Terry, A. Thomas, D. C. Thompson, C. A. Wyenandt, C. Xiao, Y. Yin
- Crop Loss Assessment and Risk Evaluation (CARE): Chair:* L. G. Brown. *Immediate Past Chair:* L. Willocquet. *Vice Chair:* K. L. Bowen. *Members:* A. N. Awurum, C. H. Bock, E. Z. Byamukama, P. Esker, A. Ficke, D. H. Gent, C. A. Hollier, A. B. Kriss, D. L. Long, X. Lu, L. V. Madden, N. McRoberts, O. Modesto Olanya, M. Nita, F. W. Nutter, K. J. Odenbach, P. V. Oudemans, S. Parker, P. A. Paul, S. J. Pethybridge, W. F. Pfender, P. J. Raymond, S. S. Savary, A. Westphal, J. L. Woods
- Diagnostics: Chair:* M. Williamson. *Immediate Past Chair:* C. D. Garzon. *Vice Chair:* E. W. Honeycutt. *Members:* F. M. Assis Filho, C. J. Balbalian, F. Baysal-Gurel, J. M. Byrne, J. L. Chaky, P. B. de Sa, S. M. Dobesh, B. Aurora Edmunds, C. K. Evans, H. M. Fouly, A. Coleen Hodges, E. W. Honeycutt, G. P. Hoyos, W. Kaneshiro Sueno, S. Kim, U. C. Kodira, S. T. Koike, R. Kubota, J. H. LaForest, L. Levy, Y. Li, M. F. Licha, S. A. McBride, B. L. Meiring, T. Mekuria, D. D. Miller, O. Mor, M. K. Nakhla, P. R. Northover, J. L. O'Mara, J. H. Payne, K. K. Rane, G. E. Ruhl, M. Serdani, R. Singh, N. J. Taylor, M. S. Torres, A. M. Vitoreli, A. Vrient, I. Wagara, J. Q. Xia
- Diseases of Ornamental Plants: Chair:* A. J. Palmateer. *Immediate Past Chair:* C. L. Palmer. *Vice Chair:* D. M. Ferrin. *Members:* D. Benson, A. R. Chase, J. H. Dobbs, W. Dong, B. Aurora Edmunds, J. L. Hall, K. L. Ivors, K. E. Kalmowitz, C. R. Krause, J. S. Lamborn, Y. Li, R. G. Linderman, W. F. Mahaffee, B. L. Meiring, M. T. Mmbaga, K. K. Rane, B. Rao, C. A. Smith, K. C. Steddom, N. J. Taylor, A. Vrient
- Epidemiology: Chair:* P. Sande Ojiambo. *Immediate Past Chair:* A. L. Mila. *Vice Chair:* H. K. Ngugi. *Members:* D. J. Anco, L. G. Brown, E. Z. Byamukama, N. P. Castilla, X. Chen, K. Chiang, D. R. Cooley, P. Esker, D. M. Gadoury, E. M. Goss, A. B. Kriss, Y. Li, S. Livingston, M. M. Moyer, K. J. Odenbach, S. J. Pethybridge, W. F. Pfender, V. Pihlon, T. Reid, J. Salgado, L. Turoop, M. W. Wallhead, K. T. Willyerd. *Nominee:* N. Fernandez Magculia
- Forest Pathology: Chair:* J. J. Bronson. *Immediate Past Chair:* P. C. Spaine. *Vice Chair:* I. Meadows. *Members:* D. N. Appel, C. J. Balbalian, K. O. Britton, G. A. Chastagner, M. Chen, S. J. Frankel, E. M. Goheen, E. M. Hansen, L. M. Haugen, M. T. Kasson, M. Kim, G. Laflamme, W. L. MacDonald, D. Noshad, S. W. Oak, J. G. O'Brien, W. J. Otrosina, B. A. Perez, T. Reid, D. M. Rizzo, S. Francis Shamoun, P. W. Sherwood, W. C. Shortle, R. A. Snieszko, B. Spakes Richter, C. S. Thomas, N. A. Tisserat, M. C. Velez, Y. Wu, P. J. Zambino. *Nominee:* A. K. Pathan
- Genetics: Chair:* E. M. Goss. *Immediate Past Chair:* S. Zhong. *Vice Chair:* S. J. Klosterman. *Members:* T. B. Adhikari, S. Amyotte, P. J. Balint-Kurti, R. G. Bhat, M. Luisa Burgos, W. Chen, X. Chen, K. F. Dobinson, T. L. Friesen, S. L. Giammaria, N. Grunwald, B. Guo, R. Hernandez-Martinez, M. Jimenez-Gasco, B. Karakkat, H. Kistler, S. Li, L. Ma, X. Mao, T. Reid, J. Xu, K. A. Zeller, L. Zhang
- Host Resistance: Chair:* A. Mengistu. *Immediate Past Chair:* K. M. Webb. *Vice Chair:* C. S. Kousik. *Members:* T. B. Adhikari, P. J. Balint-Kurti, R. G. Bhat, R. L. Brown, E. Campoverde, M. L. Carson, W. Chen, X. Chen, Z. Chen, C. Chung, X. Gao, F. F. Garces, N. W. Gross, D. A. Halterman, R. M. Hunger, R. Joost, S. G. Kunjeti, S. Li, Y. Li, E. A. Milus, O. Mor, M. Ortega, M. A. Pastor-Corrales, J. B. Rasmussen, G. Rauscher, M. G. Redinbaugh, J. C. Rupe, P. W. Sherwood, R. A. Snieszko, G. M. Tabor, P. Uribe, C. M. Vera Cruz, P. Veronese, A. Westphal, C. Xie, Y. Yang
- Integrated Plant Disease Management: Chair:* P. D. Roberts. *Immediate Past Chair:* S. Sanogo. *Vice Chair:* P. J. Pi. *Members:* A. Adesemoye, H. F. Avenot, F. Baysal-Gurel, E. Z. Byamukama, M. Chen, D. H. Gent, C. S. Kousik, C. R. Krause, S. Monfort, O. T. Neher, M. L. Paret, G. Qiao, A. Tohamy, G. E. Vallad, I. Wagara, J. E. Woodward, A. Mohamed Zaid, S. Zhang, X. Zhou. *Nominee:* N. Fernandez Magculia
- Molecular and Cellular Phytopathology: Chair:* N. M. Donofrio. *Immediate Past Chair:* D. A. Halterman. *Vice Chair:* S. R. Uppalapati. *Members:* T. B. Adhikari, B. H. Bluhm, M. D. Bolton, O. Burbano-Figueroa, A. K. Chanda, Y. Chen, L. M. Ciuffetti, V. R. Correa, C. Maria De La Torre Cuba, S. Ding, M. Lee Ellis, J. Figueiredo, X. Gao, C. D. Garzon, L. Guo, L. A. Hadwiger, D. Kumar, D. Lakshman, J. Liu, S. Lunden, L. Ma, S. M. Marek, R. Melanson, T. K. Mitchell, M. Mukherjee, M. Ortega, F. Qu, T. Reid, K. Jane Riggs, W. Shim, G. Shirsekar, D. Kumar Singh, P. Songkumarn, P. Uribe, H. Wang, D. Wickramasinghe, R. P. Wise, T. J. Wolpert, Q. Xiang, Y. Yang, X. Yang, X. Zhou
- Mycology: Chair:* T. E. Chase. *Immediate Past Chair:* A. J. Gevens. *Vice Chair:* B. M. Pryor. *Members:* G. Z. Abad, M. Abril, R. G. Bhat, K. D. Broders, W. L. Bruckart, M. Chen, M. Chen, K. E. Damann, J. C. Dianese, F. M. Dugan, D. M. Eastburn, M. Lee Ellis, Z. Fan, D. L. Funnell-Harris, D. A. Glawe, N. W. Gross, L. Guo, L. E. Hanson, G. W. Hudler, P. Inderbitzin, S. A. Jordan, M. Karunakaran, H. Kistler, D. Lakshman, C. Lapaire Harmon, S. Li, S. Livingston, S. R. May, J. Morales Osorio, E. Nyaga Njambere, R. Noar, M. Ortega, K. Rappaport, R. Ren, L. Ma Rodriguez-Salamanca, L. Ines Santamaria, M. Skaria, C. M. Stiles, R. R. Sweany, M. S. Torres, A. M. Vitoreli, M. W. Wallhead, A. Wan, B. M. Wu, J. Xu, H. M. Young, S. Zhong
- Mycotoxicology: Chair:* H. K. Abbas. *Immediate Past Chair:* A. E. Glenn. *Vice Chair:* S. Monfort. *Members:* T. W. Allen, C. W. Bacon, T. Baldwin, R. Bandyopadhyay, B. H. Bluhm, R. L. Brown, T. E. Chase, Z. Chen, P. J. Corty, K. E. Damann, A. E. Desjardins, R. Dill-Mackay, D. A. Doubledee, A. M. Fakhoury, D. L. Funnell-Harris, N. P. Garber, S. Gold, R. S. Goswami, B. Guo, L. Guo, S. Herrero, D. M. Hinton, R. L. Hirsch, P. Horevay, R. Jaime, H. Kim, M. V. Kolomiets, G. Kuldau, S. Mansouri, H. L. Mehl, T. J. Michailides, G. G. Moore, M. Mukherjee, G. P. Munkvold, R. Noar, A. Ortega-Beltran, E. R. Palencia, J. Palumbo, G. A. Payne, F. Plasencia, C. Probst, R. H. Proctor, J. Ridenour, A. Schaafsma, W. Shim, S. Uppala, C. P. Woloshuk, I. E. Yates, N. C. Zitomer
- Nematology: Chair:* K. Wang. *Immediate Past Chair:* A. D. Ziemis. *Vice Chair:* I. A. Zasada. *Members:* J. Becker, G. W. Bird, J. P. Bond, R. Bulluck, W. Dong, A. Elling, R. N. Huettel, J. Ma, A. E. MacGuidwin, T. L. Niblack, V. Parkunan, L. A. Payan, B. S. Sipes, F. M. Vera-Solis, D. Xavier
- Pathogen Resistance: Chair:* C. A. Wyenandt. *Immediate Past Chair:* F. P. Wong. *Vice Chair:* M. M. Dewdney. *Members:* T. W. Allen, J. L. Beckerman, M. J. Boehm, T. Chandgoyal, K. D. Cox, A. K. Culbreath, O. Fajolu, W. D. Gubler, B. K. Gugino, P. F. Harmon, K. L. Ivors, L. Kanetis, D. B. Langston, S. Livingston, J. Ma, M. T. McGrath, H. Morton, G. H. Musson, G. Olaya, B. D. Olson, N. Peres, B. E. Ruden, K. L. Stevenson, W. L. Wiebe, W. F. Wilcox, Q. Xiang
- Phyllosphere Microbiology: Chair:* V. O. Stockwell. *Immediate Past Chair:* S. A. Lee. *Vice Chair:* J. H. J. Leveau. *Members:* P. J. Balint-Kurti, S. J. Bardsley, S. D. Cohen, J. H. Graham, J. Carol Himmelstein, W. F. Mahaffee, G. W. Sundin, M. S. Torres, V. Toussaint, N. A. Ward, A. Wen
- Plant Pathogen and Disease Detection: Chair:* C. J. Maroon-Lango. *Immediate Past Chair:* M. K. Nakhla. *Vice Chair:* M. R. Sudarshana. *Members:* J. A. Abad, B. Agindotan, R. N. Attanayake, N. B. Bajet, K. Bastas, F. Baysal-Gurel, T. C. Creswell, T. P. Denny, M. D. Doubledee, S. Durairaj, H. M. Fouly, R. K. Genger, S. Glucksman, L. E. Hanson, D. R. Henderson, L. A. Jones, M. Karunakaran, S. Khayyat Binazir, R. Kubota, L. Levy, M. F. Licha, Z. Liu, S. Livingston, D. G. Luster, J. Ma, S. K. Marquardt, F. N. Martin, R. R. Martin, S. J. Mauzey, V. A. Mavrodieva, S. R. May, T. Mekuria, O. Mor, S. W. Mullis, S. Negi, E. Nyaga Njambere, H. R. Pappu, V. Parkunan, K. F. Pedley, D. D. Picton, G. Qiao, D. Quito Avila, N. A. Rayapati, S. Rizvi, R. K. Sampangi, D. Sherman, B. B. Shew, R. Singh, J. P. Stack, P. Sudarshana, J. Sun, B. Tadesse, M. G. Tiffany, I. Wagara, C. A. Webb, J. Xia. *Nominees:* S. Inch, N. Fernandez Magculia
- Postharvest Pathology: Chair:* C. Xiao. *Vice Chair:* W. M. Jurick. *Members:* J. E. Adaskaveg, J. A. Bartz, R. S. Bounds, P. D. Brune, B. D. Bruton, A. Cochran, W. S. Conway, H. C. Forster, B. J. Jacobsen, W. J. Janisiewicz, C. M. Jewell, Y. Kim, C. L. Kohls, M. J. Mahovic, T. J. Michailides, A. M. Poleatewich, D. B. Prusky, T. Reid, P. G. Sanderson, P. L. Sholberg, J. L. Smilanick, D. Sugar, I. Vico, Y. Yin
- Seed Pathology: Chair:* S. A. Heuchelin. *Vice Chair:* G. P. Munkvold. *Members:* A. C. Alcalá, K. S. Arthur, F. M. Assis Filho, A. N. Awurum, N. B. Bajet, H. Bouzar, A. C. Castro, W. Chen, Q. L. Chen, A. Cochran, K. Cochran, S. De la Fuente van Bentem, W. E. Dolezal, B. Dutta, D. S. Egel, A. Fessehaie, R. L. Gilbertson, Y. Ha, G. Hiddink, P. T. Himmel, S. Z. Islam, K. Johnson, N. I. Khan, S. Kim, S. Kim, U. C. Kodira, H. Koenraadt, C. J. Kurowski, D. Lakshman, S. Li, M. E. May, H. Morton, G. Olaya, M. Pagani, L. D. Porter, T. Reid, J. C. Rupe, R. K. Sampangi, C. M. Sandlin, M. Scandiani, T. Seeland, L. M. Shepherd, J. Soto-Arias, A. Terry, D. L. Thomas, D. L. Thomas, S. Thomas, A. B. Thornton, M. S. Torres, J. C. Trolinger, C. M. Vera Cruz, E. Vivoda, P. Vredenburg, A. Vrient, A. L. Vu,

I. Wagara, R. R. Walcott, S. L. Walker, S. K. Walker, W. L. Wiebe, L. P. Woudt, H. L. Ypema, X. Zheng. *Nominee*: S. Parker

Soil Microbiology and Root Diseases: *Chair*: G. E. Weiland. *Immediate Past Chair*: J. Hao. *Vice Chair*: C. D. Garzon. *Members*: Z. Atallah, T. T. Barasubiyi, F. Baysal-Gurel, K. D. Broders, G. T. Browne, R. Bulluck, S. Durairaj, L. E. Hanson, A. Huerta, T. J. Hughes, P. Ji, M. Karunakaran, D. A. Kluepfel, R. G. Linderman, F. J. Louws, L. Ma, J. C. Mertely, S. M. C. Njoroge, L. Ines Santamaria, B. Spakes Richter, M. E. Stanghellini, A. Terry, S. R. Uppalapati, M. C. Velez, L. A. Wanner, W. Wechter, A. Westphal, B. M. Wu, M. J. Wunsch, L. E. Yakabe, X. Zhou

Tropical Plant Pathology: *Chair*: C. A. Angel. *Immediate Past Chair*: R. F. Lee. *Vice Chair*: O. J. Alabi. *Members*: S. S. Arcibal, T. T. Barasubiyi, R. H. Brlansky, A. O. Charkowski, R. A. Coelho Netto, C. D. Cruz, V. D. Damsteegt, C. M. Herron, J. M. Jacobs, L. M. Keith, D. Myhaver, R. Noar, I. Power, R. Raudales Banegas, T. Reid, M. Roca, M. Soledad Benitez, A. Thomas, I. Wagara. *Nominee*: S. Ineh

Turfgrass Pathology: *Chair*: D. L. Smith. *Immediate Past Chair*: J. Patrick Kerns. *Vice Chair*: B. J. Horvath. *Members*: M. L. Agnew, T. D. Blunt, G. T. Cooper, M. Cutulle, P. F. Harmon, Y. Jo, K. E. Kalmowitz, J. E. Kaminski, R. J. Keese, J. L. Koenig, R. Latin, Y. Li, S. B. Martin, L. Miller, D. Mosdell, A. M. Orshinsky, D. H. Perry, B. Rao, T. Reid, M. Tomaso-Peterson, M. S. Torres, L. P. Tredway, R. L. Wick, F. P. Wong, N. Zhang

Vector-Pathogen Complexes: *Chair*: J. K. Brown. *Vice Chair*: A. C. Wayadande. *Members*: S. T. Adkins, R. P. P. Almeida, E. A. Ammar, E. A. Backus, J. D. Barak, R. H. Brlansky, V. D. Damsteegt, J. Figueiredo, F. E. Gildow, E. G. Johnson, A. G. Laney, R. F. Lee, S. W. Mullis, B. Poudel, D. Quito Avila, N. A. Rayapati, M. G. Redinbaugh, P. Rojas, W. Schneider, C. Stafford, L. R. Stewart, I. E. Tzanetakis, D. E. Ullman, N. Wang, S. E. Webb, A. E. Whitfield, W. M. Wintermantel, R. K. Yokomi, A. Mohamed Zaid, Y. Zhao, J. Zhou

Virology: *Chair*: R. W. Hammond. *Immediate Past Chair*: N. A. Rayapati. *Vice Chair*: L. R. Stewart. *Members*: J. A. Abad, R. Acosta-Leal, S. T. Adkins, B. Agindotan, M. Al Rwahnih, O. J. Alabi, A. Ali, C. V. Almeyda, C. A. Angel, F. M. Assis Filho, I. Badillo-Vargas, O. Batuman, O. Batuman, B. Blades, J. K. Brown, E. Campoverde, F. M. Cisneros, V. D. Damsteegt, C. Maria De La Torre Cuba, S. Eid, F. F. Garces, L. R. Gutha, M. R. Hajimorad, J. Hammond, S. F. Hanson, J. S. Hu, S. Jarugula, R. L. Jordan, A. C. Kaye, A. G. Laney, R. T. Lartey, L. Levy, K. Ling, S. Lunden, C. J. Maroon-Lango, N. Mehle, T. Mekuria, U. K. Melcher, S. W. Mullis, B. Murthy Vemulapati, H. R. Pappu, S. Poojari, B. Poudel, F. Qu, D. Quito Avila, S. Rabindran, N. A. Rayapati, N. L. Robertson, D. Rotenberg, S. Sabanadzovic, R. K. Sampangi, W. Schneider, J. E. Schoelz, V. Sengoda Gounder, M. R. Sudarshana, B. Tian, I. E. Tzanetakis, A. C. Wayadande, C. G. Webster, G. Wei, J. F. White, A. E. Whitfield, W. M. Wintermantel, J. Zhou

APS Headquarters Staff

Administration

Steve Nelson, *Executive Vice President*
Amy Hope, *Vice President of Operations*
Barbara Mock, *Vice President of Finance*
Marci Smith

Meetings

Betty Ford, *Director*
Rhonda Wilkie, *Meeting Coordinator*

Membership and Communications

Michelle Bjerkness, *Director*
Amanda Aranowski
Cindy Scheller

Graphics

Joel Berg
Agnes Walker

Marketing

Karen Deuschle

Book & Journal Editorial/Production

Karen Cummings, *Director*
Greg Grahek, *Director*
Kristen Barlage
Patti Ek
Sue Figueroa
Linda Gold
Luca Rescigno
Kris Wilbur

Society Operations

Barbara Herkert
Denise Kessler

Exhibit and Advertising Sales

Barbara Diver

Technology

Erik Uner, *Director*

IAPPS Governing Board

President – Prof. Geoff Norton
Secretary General – Prof. E. A. “Short” Heinrichs
Vice President and Newsletter Editor – Dr. Manuele Tamo
Treasurer – Prof. James Steadman
Journal Liaison – Ursula Culligan, *Elsevier*
2011 IPPC Program Chair – Dr. Bill Tweedy
2011 IPPC Rep. from host country (APS-USA) – Prof. Ray Martyn
2011 IPPC Chair, International Advisory Committee – Prof. Baruch Rubin
Coordinator Region I: Europe – Dr. Gerhard Gündermann
Coordinator Region III: N. Africa/Middle East – Prof. Mohamed Besri
Coordinator Region IV: West/Central Africa – Dr. Francis Nwile

Coordinator Region V: East/Southern Africa – Dr. Segenet Kelemu
Coordinator Region VI: South Asia – Dr. Hari C. Sharma
Coordinator Region VII: East Asia – Dr. Noriharu Ken Umetsu
Coordinator Region VIII: Southeast Asia – Dr. K. L. Heong
Coordinator Region IX: China/NW Asia – Prof. Cheng Zhuo-min
Coordinator Region X: Oceania – Dr. Trevor Jackson
Coordinator Region XI: North America – Prof. Rangaswamy Muniappan
Coordinator Region XII: LA/Caribbean – Dr. Claudia Vieira Godoy
Industry Rep – Dr. Keith Jones
2015 Rep. from host country (Germany) – Dr. Falko Feldmann

Shop APS PRESS and SAVE 20%

Visit the APS PRESS Bookstore in the Exhibit Hall - Kamehameha III

Plant Management Network International

Learn how PMN can assist with the outreach component of your grant.



T-shirts

Shop early for best size & selection.



APS Vintage T-Shirt – As Seen on the BIG BANG THEORY TV show.

Kid's sizes too!



NEW for Newbies!

Hurry! The NEW Hawaii Meeting T-shirt will go fast!

Key for Identification of Common *Phytophthora* Species

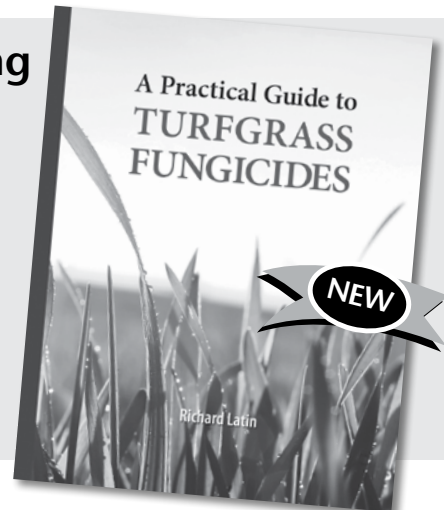
See Demo of this software by Jean Ristaino at 1:30 p.m. on Monday in the bookstore.

NEW

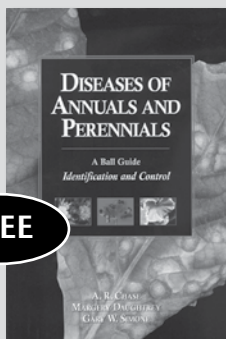
Book Signing

Monday at 3:30 p.m.

New from Rick Latin



FREE copy of *Diseases of Annuals and Perennials*
To first 100 customers who spend \$50 or more on books or CDs



FREE

Check out ALL the New Titles!
Free Shipping on 4 or more!

Shop APS PRESS in the Exhibit Hall!

Sunday 4:30 – 6:30 p.m.
Monday 9:00 a.m. – 7:00 p.m.
Tuesday 7:30 a.m. – 4:30 p.m.
Wednesday 8:00 – 11 a.m.



2011 APS-IPPC JOINT MEETING MEETING EXHIBITORS

Representatives from leading industry suppliers will be at this year's meeting to answer questions and share information on products and services. Exhibitors are listed as of April 22, 2011. Visit www.apsnet.org/meet for updates. Floor plan can be found in the Program Guide and on the Mobile App.

- 104 AC Diagnostics, Inc. (ACDI)**
1131 W. Cato Springs Road, Fayetteville, AR 72701;
Phone: +1.479.595.0320 or +1.479.251.1960;
Fax: +1.479.251.1791; Web: www.acdiainc.com. ACDI, a leading diagnostic company, provides high-quality diagnostic products with affordable rates. ACDI offers ELISA reagents/kits for testing more than 300 plant pathogens and new product immunocapture PCR kits. They also provide testing services and contract research for customer requirements.
- 100/201 Agdia, Inc.**
30380 County Road 6, Elkhart, IN 46514;
Phone: +1.574.264.2615 or 1.800.622.4342;
Fax: +1.574.206.9360; E-mail: info@agdia.com;
Web: www.agdia.com. For 30 years, Agdia, Inc. has provided the agricultural industry with testing solutions to assist in the diagnosis and management of disease-causing plant pathogens. Agdia offers the most comprehensive line of testing options in the industry, including ELISA, ImmunoStrip on-site test kits, molecular diagnostics, and a full-service testing services laboratory. Today, Agdia remains committed to providing industry-leading products and services so that all sizes of growing operations, worldwide, can be more confident at growing healthy and profitable crops. The Agdia team looks forward to meeting with you at our booth to learn more about your diagnostic needs. We are also always available to meet with you outside exhibit hours.
- 313 American Peat Technology LLC**
1132 Airpark Drive, Aitkin, MN 56431; Phone: +1.218.927.7888 or +1.218.831.3893; Fax: +1.218.927.3272; Web: www.AmericanPeatTech.com. American Peat Technology (APT) is a leader in the manufacturing of microbial carriers using reed sedge peat. APT is a leading supplier of media for the rhizobia/soybean inoculant industry. Product is available in granular and powdered forms, has superior shelf life, and has proven to be an excellent microbe carrier.
- 205 APS 2012 Annual Meeting**
3340 Pilot Knob Road, St. Paul, MN 55121;
Phone: +1.651.454.7250; Fax: +1.651.454.0766;
Web: www.apsnet.org. Get a look at everything Providence, Rhode Island, U.S.A. can offer you during the 2012 APS Annual Meeting. Pick up some information to plan your stay in historic and beautiful Providence, and be sure to mark your calendars to join APS again August 4-8, 2012.
- 214 APS Diagnostics**
127 Noble Research Center, Stillwater, OK 74078;
Phone: +1.405.744.9947; Fax: +1.405.744.6039.
Diagnostics Jeopardy: Have fun with your knowledge of plant diseases. Play individually or together with colleagues.
- 216 APS Office of Public Relations and Outreach (OPRO)**
3340 Pilot Knob Road, St. Paul, MN 55121;
Phone: +1.651.454.7250; Fax: +1.651.454.0766;
Web: www.apsnet.org. OPRO's mission is to educate the public on matters related to plant health and plant diseases and demonstrate the value of plant pathology to society. Stop by the OPRO booth view the new plant pathology Career Poster and banner available to members, and to learn about Planting-Sciences.org, see the 2011 video contest winners, and discover how social media can help spread the word about plant pathology.
- 218 APS Public Policy Board (PPB)**
3340 Pilot Knob Road, St. Paul, MN 55121;
Phone: +1.651.454.7250; Fax: +1.651.454.0766;
Web: www.apsnet.org. The PPB provides scientific input on public policy issues to the policy makers and agency personnel, advocates for increased funding for agricultural research, extension, and education, and works with other scientific organizations and coalitions to increase the awareness of the science of plant pathology. Stop by the PPB booth to Become Engaged and discover how easy it is to bring awareness to your members of congress of the importance of maintaining funding for plant pathology related programs.
- 112/213 BASF Corporation**
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. The BASF agricultural products portfolio includes Cabrio, Caramba, Headline, Headline AMP, Endura, Forum, Twinline, and Pristine fungicides in agricultural production; Charter and Stamina fungicides in seed treatment; and Insignia, Emerald, Trinity, and Pag-eant fungicides in turf or ornamentals. These products feature the active ingredients pyraclostrobin, boscalid, dimethomorph, metconazole, or triticonazole.
- 200/301 Bayer CropScience**
2 T. W. Alexander Drive, Research Triangle Park, NC 27709; Phone: +1.919.549.2000; Fax: +1.919.549.2778; Web: www.bayercropscienceus.com. Bayer CropScience is one of the world's leading innovative crop science companies in the areas of crop protection, seeds, and plant biotechnology. Bayer CropScience offers an outstanding range of products and support for modern sustainable agriculture and for nonagricultural applications. Crop protection products to be highlighted at the exhibit include Stratego YLD, Vorivo, Luna brands, Adament, Proceed, Proline, Prosaro, and Scala.

- 221 BigC**
Suite 116, 20655 S. Western Avenue, Torrance, CA 90501; Phone: +1.310.618.9990; Fax: +1.310.618.9996; Web: www.bigc.com. BigC.com offers the portable Dino-Lite digital microscope that provides high-quality microscopy video interfacing to PC with clear and steady imaging and 10X-200X magnification. The included software, DinoCapture, makes it easy and convenient to capture snapshots, take video, manipulate images, and save and e-mail discoveries.
- 220 Bio Chambers Incorporated**
477 Jarvis Avenue, Winnipeg, MB R2W 3A8, Canada; Phone: +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 our booth to tell us your needs and pick up information on our popular products.
- 305 BIOREBA AG/Eurofins STA Laboratories**
1821 Vista View Drive, Longmont, CO 80504; Phone: +1.303.651.6417 or +1.408.846.9964; Fax: +1.303.772.4003; Web: www.stalabs.com/BIOREBA_AG_Products/BIOREBA_AG_Products.php. Eurofins STA Laboratories and BIOREBA AG are partners in providing agro-diagnostic products and services for results you can trust. Eurofins STA Laboratories, a leading independent diagnostic laboratory, is the exclusive distributor of BIOREBA products in the United States. Eurofins STA offers effective seed quality, plant pathogen diagnosis, and disease eradication services for agricultural industries. BIOREBA's R&D laboratory develops and produces reagents and complete ready-to-use kits for the detection of plant pathogens.
- 114 British Society for Plant Pathology**
Marlborough House, Basingstoke Road, Reading RG7 1AG, United Kingdom; Phone: +44 1603 450286; E-mail: publicity@bspp.org.uk; Web: www.bspp.org.uk. The British Society for Plant Pathology supports the professional interests of plant pathologists worldwide. We publish articles in the high-quality journals: *Molecular Plant Pathology* and *Plant Pathology* (no page charges, except color). Members can apply for travel awards, short-term visiting fellowships, summer student funds, and conference support.
- 317 Burkard Manufacturing Co. Ltd., UK**
Unit 7, Woodcock Hill Industrial Estate, Rickmansworth, Hertsfordshire WD3 1PJ, United Kingdom; Phone: +44 1923 773134; Fax: +44 1923 774790; E-mail: sales@burkard.co.uk; Web: www.burkard.co.uk. Burkard Manufacturing Co. Ltd., UK, will display an apparatus for plant pathology together with new instruments for field and laboratory applications utilizing microtiter wells for immunological evaluation. Apparatus for sampling from ground and plant foliage will be on view. Details of our complete range will be available and our representative will answer any enquiries during the meeting.
- 206 CABI**
Nosworthy Way, Wallingford, Oxfordshire OX10 8DE, United Kingdom; Phone +44 (0) 1491 832111; Fax: +44 (0) 1491 833508; Web: www.cabi.org. CABI is a leading not-for-profit publisher with 100 years of experience in scientific information provision. CABI is committed to providing high-value scholarly databases, compendia, and books to meet the needs of the scientific community, including the world-renowned CAB Abstracts database.
- 203 Campbell Scientific**
815 West 1800 North, Logan, UT 84321; Phone: +1.435.753.2342; Fax: +1.435.750.9540; Web: www.campbellsci.com.
- 116 Conviron**
590 Berry Street, Winnipeg, MB R3H 0R9, Canada; Phone: +1.204.786.6451; Fax: +1.204.786.7736; E-mail: info@conviron.com; Web: www.conviron.com. Conviron is a global supplier of controlled environment systems for plant science research. We offer an extensive product portfolio of single and multitier chambers and rooms as well as research greenhouses, much of which is customized to a client's specific requirements. To help ensure project success, we also offer specialized services from early-stage engineering and design through installation, project commissioning, and on-going maintenance and support.
- 106 Dow AgroSciences LLC**
9330 Zionsville Road, Indianapolis, IN 46268-1054; Phone: +1.317.337.1000; Web: www.dowagro.com. Dow AgroSciences LLC, based in Indianapolis, IN, 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.
- 208/309 DuPont Crop Protection**
P.O. Box 30, Newark, DE 19714; Phone: +1.302.366.5704; Web: www2.dupont.com/Agriculture/en_US. DuPont's mission in agriculture is to deliver global nutrition through higher, better-quality crop yields and healthier foods, while developing solutions to help meet the world's energy needs. To help meet these goals, DuPont Crop Protection continues to develop and bring to the market new fungicides, such as penthiopyrad, proquinazid, and picoxystrobin.
- 108/209 EnviroLogix Inc.**
500 Riverside Industrial Parkway, Portland, ME 04103; Phone: +1.866.408.4597; Fax: +1.207.797.7533; E-mail: info@envirologix.com; Web: www.envirologix.com. EnviroLogix Inc. develops immunoassay (ELISA) and DNA-based (DNAbel) test kits for detection of multiple plant pathogens and GMO events. Product lines also include mycotoxin and toxin test kits. EnviroLogix specializes in custom assay development using ELISA and DNAbel technologies, leading the

horticultural market in cutting-edge rapid diagnostic development.

202 Environmental Growth Chambers

510 East Washington Street, Chagrin Falls, OH 44022; Phone: +1.800.321.6854; Fax: +1.440.247.8710; Web: www.egc.com. Environmental Growth Chambers has the largest selection of produce 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.

102 Gylling Data Management, Inc.

405 Martin Boulevard, Brookings, SD 57006; Phone: +1.605.693.4150; Web: www.gdmdata.com. Research management software since 1982. Use ARM software to establish, manage, analyze, and report information for crop protection research trials. Summary Across Trials for multitrail summarization. Psion Workabout Pro data collector with enhanced rating shell for your data collection. ARM Germplasm Manager is for germplasm improvement projects and crop performance trials.

204 IAPPS (International Association for the Plant Protection Sciences)

6517 S. 19th St., Lincoln, NE 68512; Phone +1 402.805.4748; Web: www.plantprotection.org/, Blog: <http://iapps2010.wordpress.com>. Professional association for the plant protection sciences consisting of entomologists, plant pathologists, weed scientists, nematologists, economists, IPM practitioners, agricultural development and technology transfer specialists and plant protection administrators. Sponsor of the International Plant Protection Congress and the Crop Protection journal.

307 LemnaTec

18 Schumanstr., Wuersele 52416, Germany; Phone: +49 2405 4126-12; Fax: +49 2405 4126-26; Web: www.lemnatec.com. LemnaTec's team of scientists develops hard- and software solutions for plant phenomics, high-throughput and high-content screening of plants, seedlings, insects, and other organisms and for the automated evaluation of bio tests in ecotoxicology. Digital images are primarily taken by the Scanalyzer systems PL, HTS, and 3D, all set up in a modular design. Using advanced LemnaTec image-processing algorithms, every visible parameter (e.g., color, shape, size, and architecture) is subsequently measured and correlated with experimental records (e.g., genetic data). Our aim is to visualize and analyze the biology beyond human vision.

120 Microbiology International

5111 Pegasus Court, Suite H, Frederick, MD 21704; Phone: 1.800.396.4276; Fax: +1.301.662.8096; Web: www.800ezmicro.com. Our new automated plate pouring instrument offers flexibility and reliability

never before seen. Prepare up to 120 L of plant media in a single instrument in less than 2 hours and dispense into any container in seconds. Leading agrosience companies use our instruments to save time and money.

219 N.A. Cobb Foundation

P.O. Box 311, Marceline, MO 64658; Phone: +1.660.256.3331; Fax: +1.660.256.3331; Web: www.nemotologists.org.

303 National Plant Diagnostic Network (NPDN)

107 CIPS, Michigan State University, East Lansing, MI 48824; Phone: +1.517.353.8624; Fax: +1.517.353.1781; E-mail: hammersr@anr.msu.edu; Web: www.npdn.org. NPDN is a consortium of plant diagnostic facilities at land-grant universities and several state departments of agriculture. NPDN's mission is to facilitate early detection of plant pathogens and pests through education, perform rapid and accurate diagnoses, and support response through partnerships.

212 Natural Industries

6223 Theall Road, Houston, TX 77066; Phone: +1.281.580.1643; Fax: +1.281.580.4163; Web: www.naturalindustries.com. Natural Industries manufactures beneficial microorganisms for the agriculture, horticulture, and retail markets. The flagship product Actinovate was registered in 2004 with the EPA for control of root diseases such as *Pythium*, *Phytophthora*, and others. Actinovate is also labeled for foliar use against diseases such as powdery mildew, *Botrytis*, and aerial *Sclerotinia*.

315 Percival Scientific, Inc.

505 Research Dr., Perry, IA 50220; Phone: +1.515.465.9363; Fax: +1.515.465.9364; Web: www.percival-scientific.com.

321 Spectrum Technologies, Inc.

12360 S. Industrial Drive E., Plainfield, IL 60585; Phone: 1.800.248.8873 or +1.815.436.4440; Fax: +1.815.436.4460; E-mail: info@specmeters.com; Web: www.specmeters.com. Spectrum offers affordable devices to measure nutrient levels, soil qualities, light, weather, and other factors affecting plant growth. Our WatchDog weather stations and data loggers make it easy to record weather events and conditions. More than 15,000 customers count on Spectrum's easy-to-use, dependable technology for their growing needs.

319 Springer

233 Spring Street, New York, NY 10013; Phone: +1.212.460.1500 or 1.800.777.4643; Fax: +1.212.460.1575; E-mail: service-ny@springer.com; Web: www.springer.com. Springer is a major publisher of books and journals in Life Sciences. Please stop by our booth to order books at a special conference discount and take a closer look at sample issues of journals. Staff will be on hand to answer any questions you might have about publishing with Springer.

2011 APS-IPPC AUTHOR INDEX

- Aba, D., 90-S
 Abad, G. Z., 125-P
 Abad, J., 168-P, 225-P
 Abang, M., 31-P
 Abawi, G. S., 744-P
 Abbas, H., 89-O
 Abbasi, P. A., 15-O
 Abdelkarim, M., 438-P
 Abd-Elmagid, A. W., 942-P
 Abdo, Z., 335-P
 Abdollahi, H., 651-P
 Abdullah, S., 557-P, 867-P
 Abdulsalam, K. S., 430-P
 Abel, C., 89-O
 Abou Ghanem-Sabanadzovic, N., 267-P, 270-P
 Abu-El Samen, F. M., 764-P
 Acevedo, M., 191-P, 953-P
 Achata Bottger, J., 921-P
 Acosta-Leal, R., 76-P
 Adaskaveg, J., 538-P, 637-P, 638-P, 639-P
 Adati, T., 129-S
 Addy, H. S., 446-P
 Adekunle, A. A., 1022-P
 Adesemoye, A., 259-P, 261-P
 Adhikari, T., 119-P, 543-P
 Adkins, S., 7-O
 Adkins, S. W., 51-S
 Afunian, M., 260-P
 Aggarwal, R., 196-S
 Aghamohammadi, V., 101-P
 Agudelo, P., 69-S, 69-S
 Aguilar-Pérez, L. A., 72-P, 668-P, 697-P
 Ahangaran, A., 110-P
 Ahmed, H. U., 179-P
 Aihuan, Z., 413-P
 Aime, M. C., 169-S, 622-P
 Ajlan, A. M., 430-P
 Akahoshi, K., 795-P
 Akamatsu, H., 31-P
 Akami, A., 328-P
 Akridge, R., 283-P
 Akula, N., 130-O
 Al Rwahnih, M., 98-O, 240-P, 976-P, 977-P
 Al Shudifat, A. M., 764-P
 Alabi, O. J., 98-O, 122-P, 241-P, 808-P
 Alagely, A., 829-P
 Alananbeh, K. M., 106-O, 384-P
 Alarcon, P. A., 515-P, 657-P
 Alborn, H. T., 68-S
 Albrecht, A., 652-P
 Albrecht, K. D., 150-O
 Albrigo, G., 81-O
 Alcalá, A. C., 319-P
 Aldrich-Wolfe, L., 26-P
 Alfano, J. R., 72-S
 Alfenas, A. C., 165-S, 545-P, 546-P
 Alfenas-Zerbini, P., 82-P
 Alf, E., 215-P
 Alford, S., 194-S
 Alhudaib, K. A., 160-P, 430-P
 Ali, S., 540-P
 Alicandro, J., 605-P
 Alkharouf, N. W., 96-S
 Allen, C., 146-O, 834-P
 Allen, F. L., 93-P
 Allen, R., 1014-P
 Allen, T., 473-P
 Allen, T. W., 208-P
 Almeyda, C. V., 1010-P
 Alpas, H., 354-P
 Al-Taweel, K., 883-P
 Altenbach, D., 165-P
 Altier, N. A., 475-P
 Alvarado-Rodríguez, M., 1015-P
 Alvarez, A. M., 4-P, 6-P
 Alvarez, E., 124-O
 Alves, F. R., 493-P
 Alwang, J., 182-S
 Amemiya, Y., 276-P
 Ames, K. A., 625-P
 Aminae, M., 282-P
 Ammar, E., 138-O, 504-P
 Amos, O., 441.a-P
 Amyotte, S. G., 93-S
 Anchieta, A., 93-S
 Anco, D. J., 80-S
 Andaloro, J. T., 156-S
 Anders, M., 731-P
 Andersen, P. C., 631-P
 Anderson, B. L., 89-P
 Anderson, R., 196-S
 Andreason, S., 412-P
 Andreeva, K., 904-P
 Angel, C. A., 93-O
 Anna Maria, V., 38-P
 Ansari Dezfouli, N., 581-P
 Antignani, V., 196-S
 Antuniassi, U. R., 598-P, 615-P, 619-P
 Appel, D., 327-P
 Ara, J., 630-P, 747-P, 802-P
 Aradhaya, M. K., 246-P
 Aram, K., 332-P, 461-P
 Arancon, N. Q., 667-P
 Arce-Johnson, P., 913-P
 Arcibal, S. S., 203-P
 Arie, T., 100-S
 Arif, M., 126-P, 128-P, 129-P, 131-P, 942-P
 Ariss, J. J., 315-P
 Aritua, V., 142-O
 Armengol, J., 42-P
 Armstrong, C., 849-P
 Armstrong, J., 711-P
 Armstrong, K. F., 414-P
 Arpacı, B. B., 307-P
 Arredondo, F. D., 196-S
 Arseneault-Labrecque, G., 727-P
 Arseneault, T., 826-P
 Arteaga, H., 397-P
 Arthur, K., 113-S
 Arunan, G., 613-P
 Asaad, S., 143-P, 143-P
 Asaro, C., 465-P
 Ashley-Koch, A., 46-S
 Askew, A., 79-S
 Askew, S. D., 820-P
 Assunção, I. P., 541-P
 Atallah, Z. K., 93-S, 107-O, 245-P
 Athinuwat, D., 839-P
 Atiri, G. 95.a-P, 95.b-P
 Attanayake, R. N., 159-O
 Atumirirava, F., 57-S
 Aubertot, J., 34-S
 Aun, C. P., 546-P
 Avenot, H. F., 172-P
 Avila, L. L., 647-P
 Aye, S., 16-O
 Azarmanesh, N., 106-P, 915-P
 Azevedo, J., 13-O
 Babadoost, M., 39-O, 601-P
 Baccari, G. V., 799-P
 Backhouse, D., 728-P
 Backman, P. A., 819-P
 Bacon, C.,
 Bacon, C. W., 71-P, 629-P, 911-P
 Badebo, A., 706-P
 Badillo-Vargas, I. E., 990-P
 Badji, K., 568-P
 Bae, S., 206-P
 Baeg, J., 145-P
 Baek, E., 1000-P
 Baek, I., 109-P
 Bag, S., 1005-P, 1006-P, 1008-P
 Bagi, F., 585-P
 Bailey, B., 455-P
 Baird, R., 27-P, 70-P
 Baird, R. E., 270-P
 Baird, S. M., 147-O
 Bais, H. P., 215-P, 761-P
 Baker, C. A., 38-O
 Bakkeren, G., 95-S
 Balázs, E., 1012-P
 Balbyshev, N., 384-P
 Baldauf, P. M., 790-P
 Baldwin, T. T., 911-P
 Baley, G., 21-O
 Balidion, J. F., 213-P
 Baloch, G. N., 630-P, 747-P, 802-P
 Bandyopadhyay, R., 134-S
 Banihashemi, Z., 18-P
 Banik, M., 55-O
 Banks, C., 270-P
 Banno, S., 124-P, 699-P
 Bao, X., 28-P
 Barak, J.,
 Barak, J. D., 20-S, 452-P
 Barash, I., 874.a-P
 Barbara, D. J., 93-S
 Barbison, L., 164-O
 Barbosa, A. A., 121-P
 Barbosa, J. C., 444-P
 Barboza, N., 382-P
 Barger, C. T., 398-P
 Barnes, J., 596-P, 597-P, 636-P
 Barouti, S., 164-P
 Barphagha, I. K., 145-O
 Barros, D. R., 82-P
 Barros, V. D., 235-P
 Barsam, S., 282-P
 Barton, W. R., 616-P
 Bartz, J. A., 768-P
 Basi, S., 20-O
 Basky, Z., 54-S
 Basra, S. A., 118-P
 Bates, A. A., 1-P
 Bates, C., 392-P
 Batuman, O., 166-P
 Bau, H., 998-P
 Baucom, D., 8-O, 919-P
 Baughman, T., 672-P
 Baumgartner, K., 160-O, 163-O, 236-P
 Baumgartner, K., 43-O
 Baysal-Gurel, F., 174-P, 751-P
 Becerra, V. C., 73-O
 Becker, J. O., 249-P
 Beckerman, J. L., 24-S, 583-P
 Begley, T. P., 869-P
 Beir, L. A., 152-S, 288-P
 Beitler, J., 90-S
 Bekkaoui, D., 948-P
 Bekoske, K., 237-P
 Bélanger, R. R., 727-P
 Belcher, A. R., 780-P, 786-P, 787-P
 Belfon, R., 8-O
 Belgeri Garcia, A., 51-S
 Beligan, G., 734-P
 Bell, A. A., 136-O
 Belzile, F., 727-P
 Ben M'Barek, S., 92-S
 Benimadhu, S. P., 303-P
 Benitez, M., 521-P, 522-P
 Benson, D. M., 275-P
 Berbegal, M., 42-P
 Berendsen, S., 149-P
 Berg, R., 833-P
 Bergstrom, G., 720-P
 Bernal, A. J., 5-P, 19-P, 857-P
 Bernal Giraldo, A. J., 865-P
 Bernhardt, E., 332-P
 Berrios, J., 654-P
 Berry, S., 692-P
 Bertin, A., 354-P
 Bestor, N. R., 67-O
 Bettiga, L. J., 75-O
 Bhanare, K., 691-P
 Bharti, A., 95-S
 Bhat, R. G., 243-P, 247-P
 Bhatnagar, D., 177-P
 Bhattacharai, M., 133-S
 Bibi, F., 17-O
 Biddle, E., 878-P
 Bird, D. M., 151-O
 Biritia, R., 302-P
 Birun, L., 144-P, 144-P
 Bissonnette, K. M., 158-O
 Bitas, K. M., 523-P
 Bitas, V., 523-P
 Bitterlin, W., 107-S, 165-P
 Black, J., 462-P
 Blades, S., 43-S
 Blagden, T., 171.a-P, 171.b-P
 Blahut-Beatty, L., 892-P
 Blair, J. E., 21-P
 Blanchette, R. A., 342-P, 475-P
 Blanco-Meneses, M., 365-P
 Bledsoe, M. E., 174-P
 Block, C. C., 340-P
 Blom, J., 859-P
 Blood, R. Y., 456-P
 Blough, K., 534-P
 Bluhm, B. H., 907-P, 910-P, 916-P, 918-P, 931-P
 Blunt, T., 297-P
 Boateng, C., 304-P, 305-P
 Bock, C. H., 94-P, 449-P, 644-P, 664-P
 Bockelman, H. E., 191-P
 Bockus, W. W., 205-S, 367-P, 372-P, 708-P
 Bodiroga, D., 403-P
 Boehm, M. J., 725-P
 Bohannon, R. C., 106-S, 113-P
 Bohlmann, H., 683-P
 Bohlmann, J., 960-P
 Boiteux, L. S., 316-P, 323-P
 Boland, G., 164-O
 Bolat, N., 139-S
 Bolton, M. D., 218-P
 Bonanomi, G., 526-P
 Bonants, P. J., 147-S, 170-P, 365-P
 Bond, J. P., 170-S, 106-P, 503-P, 907-P, 908-P, 915-P
 Bonifert, M., 354-P
 Bonman, J., 191-P
 Booker, B., 590-P

- Boonham, N., 189-P, 964-P
 Boonkerd, N., 757-P
 Borchert, D. M., 352-P
 Borneman, J., 249-P
 Borodynko, N., 970-P, 971-P
 Borrego, E., 198-S
 Borth, W., 37-O, 987-P
 Borth, W. B., 40-S
 Borthakur, D., 167-S
 Bost, S. C., 141-P
 Bostock, R. M., 35-P, 897-P
 Boudreau, M., 220-P
 Boulais, V. L., 121-P
 Bowen, K. L., 45-S, 180-P, 221-P, 283-P
 Bowman, H., 171-P
 Bowman, N. D., 204-P
 Boyd, E. C., 989-P
 Boyd, L. A., 209-S
 Boydston, R. A., 717-P
 Boyzo-Marín, J., 701-P
 Bradeen, J. M., 888-P, 903-P
 Bradley, C. A., 35-S, 468-P, 490-P, 620-P, 625-P, 626-P, 627-P, 716-P, 725-P, 1018-P
 Brady, C. R., 51-P
 Brady, J., 445-P
 Bragard, C., 119-P
 Brandão, R. S., 739-P
 Brandl, M. T., 19-S
 Brankatschk, K., 11-P
 Brannen, P. M., 232.b-P
 Brantner, J. R., 217-P
 Brasier, C. M., 4-S
 Braun-Kiewnick, A., 645-P, 658-P
 Brenneman, T. B., 172-P, 606-P, 664-P
 Bressan, A., 141-O, 506-P, 507-P
 Breuil, C., 960-P
 Brewer, M. T., 45-P
 Brewster, C. C., 183-S, 809-P
 Britton, K. O., 2-O, 339-P
 Brlansky, R.,
 Brlansky, R. H., 95-O, 80-P, 855-P, 1020-P
 Broders, K., 164-O
 Brooks, S., 731-P
 Broome, J. C., 75-O
 Broschius, S., 636-P
 Brown, A., 666-P
 Brown, C. J., 91-O
 Brown, H., 121-P
 Brown, J. K., 14-S, 103-P, 412-P, 972-P
 Brown, M. J., 486-P
 Brown, R., 177-P
 Browne, G. T., 243-P, 247-P
 Brown-Guedira, G., 191-P
 Brueggeman, R., 186-P, 953-P
 Bruez, E., 532-P, 646-P
 Brule-Babel, A., 883-P
 Brunk, G., 297-P
 Bruns, T., 177.a-P
 Brust, G. E., 358-P
 Bruton, B., 14-P
 Buah, S., 623-P
 Buchman, J. L., 60-P
 Buchwaldt, L., 948-P
 Buck, J., 279-P, 383-P
 Budakov, D., 585-P
 Buehring, N., 473-P
 Buell, C., 119-P
 Buerling, K., 35-O, 1024-P
 Buhrig, W., 780-P
 Bull, C. T., 11-O, 98-P, 154-P, 439-P
 Bulluck, R., 277-P, 790-P
 Bunderson, T., 298.a-P
 Burans, J. P., 171.a-P, 171.b-P
 Burbank, L. P., 874-P
 Burgos, N., 159-S
 Burgos-Garay, M. L., 6.a-P
 Burr, T. J., 253-P, 839-P, 861-P, 879-P
 Buruchara, R. A., 617-P, 623-P
 Busby, R., 1023-P
 Butler, D., 590-P
 Buzkan, N., 307-P
 Byamukama, E. Z., 724-P
 Cabanas, D., 507-P
 Cabos, R., 569-P
 Cadle-Davidson, L., 60-O, 237-P
 Caesar, A. J., 104-P, 162-P, 527-P
 Caesar-TonThat, T., 104-P, 162-P, 527-P, 721-P
 Cafe-Filho, A. C., 783-P
 Caffi, T., 635-P
 Cai, F., 578-P
 Cai, G., 79-P, 531-P, 927-P
 Cai, J., 25-P
 Cain, S., 355-P
 Çakır, B., 759-P
 Calla, B., 875-P, 892-P
 Campbell, F. T., 5-S
 Campbell, J. B., 954-P
 Campbell-Nelson, K., 156-O
 Campell, L., 221-P
 Campoverde, E. V., 262-P, 271-P
 Canaday, C. H., 70-O
 Cannon, P. G., 167-S, 169-S, 545-P, 546-P
 Canto-Canché, B., 669-P
 Cao, B., 73-P
 Cao, S., 132-P, 198-P
 Cao, X., 197-P
 Capelluto, D. G., 196-S
 Caplan, J. L., 29-O, 148-O
 Capodilupo, M., 526-P
 Carbonari, C. A., 615-P
 Carbone, I., 535-P, 536-P
 Cardenas, M. E., 19-P, 371-P
 Cardwell, K. F., 618-P
 Carey, A. B., 10-P
 Carhuapoma, P., 363-P
 Carisse, O., 471-P
 Carlson, G. R., 196-P
 Carner, G. R., 130-S, 132-S, 176-S
 Carnes, M. E., 681-P
 Carrillo-Tripp, J., 1015-P
 Carris, L., 28-P
 Carroll, A. G., 210-P, 693.b-P
 Carroll, J. E., 253-P
 Carter, D. H., 189-S
 Cartwright, R., 28-O
 Caruso, F. L., 584-P
 Carvalho, D. D., 739-P
 Carvalho, F. K., 619-P
 Carvalho, R. A., 77-O, 417-P, 418-P, 419-P, 420-P, 421-P, 422-P, 423-P, 424-P, 425-P
 Carver, B. E., 711-P
 Casassa, L. F., 241-P, 991-P
 Castañeda-Martínez, T., 281-P
 Castell-Miller, C. V., 552-P, 940-P
 Castillo, J. D., 576-P, 762-P
 Castillo, Y., 19-P
 Castillo-Urquiza, G. P., 541-P
 Castlebury, L., 236-P
 Castro, R. M., 382-P
 Castro Sparks, A., 13-P
 Catchot, A. L., 208-P, 473-P
 Cating, R. A., 273-P
 Cavatorta, J., 686-P
 Cecilio, R. A., 493-P, 494-P
 Cennicola, M., 526-P
 Ceresini, P. C., 207-S
 Cervone, T. R., 12-P
 Ch, R., 613-P
 Cha, B., 86-P, 133-P
 Cha, J., 145-P
 Chakrabarty, P. K., 1011-P
 Chakraborty, S., 495-P
 Chaky, J. L., 352-P
 Chalupowicz, L., 874.a-P
 Chamberlin, E. V., 549-P
 Chamberlin, K., 222-P
 Chambers, D., 460-P
 Champaco, E. R., 889-P
 Chan, C., 982-P
 Chanda, A. K., 917-P
 Chanda, B., 197-S
 Chandrasekar, G., 673-P
 Chandrashekar, K. N., 14-O
 Chang, C., 63-P, 64-P
 Chang, H., 443-P, 982-P
 Chang, K., 178-P
 Chang, K., 950-P
 Chang, P., 138-P
 Chang, T., 138-P
 Chang, Y., 443-P
 Chansler, M. T., 539-P
 Chantha, S., 795-P
 Chao, C., 528-P
 Chapara, V., 626-P
 Chapman, K., 583-P
 Charkowski, A. O., 15-P, 452-P, 775-P
 Chase, T. E., 207-P
 Chastagner, G., 369-P, 385-P, 386-P, 660-P
 Chatnaparat, T., 591-P, 860-P
 Chechetto, R. G., 619-P
 Chellemi, D., 745-P
 Chen, C., 9-P, 803-P
 Chen, C., 440-P
 Chen, C., 713-P
 Chen, C., 884-P
 Chen, F., 295-P
 Chen, F., 632-P
 Chen, G., 850-P, 878-P
 Chen, H., 10-O
 Chen, J., 24-O, 684-P
 Chen, J., 61-P, 62-P, 65-P, 224-P, 380-P
 Chen, J., 310-P
 Chen, K., 147-O
 Chen, K., 981-P
 Chen, K., 994-P, 998-P
 Chen, L., 77-P, 166-P
 Chen, L., 401-P
 Chen, L., 765-P
 Chen, M., 25.a-P, 336.a-P
 Chen, M., 400-P
 Chen, P., 693.a-P
 Chen, T., 685-P
 Chen, W., 159-O, 368-P, 944-P, 945-P, 946-P, 947-P
 Chen, W., 23-P, 572-P
 Chen, X., 95-S, 111-O, 36-P, 41-P, 192-P, 952-P, 954-P
 Chen, X., 56-P
 Chen, X., 893-P, 937-P, 938-P, 939-P
 Chen, X., 979-P
 Chen, Y., 447-P
 Chen, Y., 723-P
 Chen, Y., 981-P
 Chen, Z., 93-S
 Chen, Z., 177-P, 917-P, 956-P
 Cheng, C., 46-P, 48-P
 Cheng, D., 197-P, 431-P, 432-P
 Cheng, H., 994-P
 Cheng, J., 943-P
 Cheng, M., 887-P
 Cheng, P., 36-P, 41-P
 Cheng, Y., 979-P
 Cheong, E., 230-P
 Cheong, S., 147-P, 254-P
 Chiang, C., 998-P
 Chilvers, M., 31-P
 Chitrampalam, P., 153-O
 Chittam, K., 910.a-P
 Chiu, Y., 748-P
 Chiu, Y., 981-P
 Cho, J., 18-O
 Cho, J., 145-P
 Cho, S., 992-P
 Cho, W., 992-P
 Cho, Y., 31-O
 Choi, D., 175-P
 Choi, H., 86-P, 133-P, 374-P, 375-P, 992-P
 Choi, H., 890-P
 Choi, I., 213-P
 Choi, K., 933-P
 Choi, S., 999-P, 1000-P
 Choudhary, N., 95-O, 80-P
 Chowdappa, P., 926.a-P
 Chowpongpan, S., 442-P
 Christ, B. J., 3-P, 1020-P
 Christensen, S., 198-S
 Christiano, R., 843-P
 Chua, K., 1005-P
 Chuaboon, W., 591-P, 861-P
 Chuaqui, H., 518-P
 Chun, S., 375-P
 Chung, E., 17-O
 Chung, W., 661-P
 Chung, W., 447-P, 661-P, 805-P
 Chung, Y., 17-O
 Cilia, M., 508-P
 Cisneros, F., 997-P
 Civerolo, E. L., 59-P, 61-P, 224-P, 842-P
 Clark, R. A., 763-P, 782-P
 Clark, W. D., 211-P
 Clarke, B. B., 152-S, 155-O, 285-P, 288-P
 Clement, D. L., 153-P, 355-P
 Cleveland, K. M., 763-P
 Cline, W. O., 232.b-P
 Clough, S. J., 875-P, 892-P, 909-P
 Cluskey, S. A., 56-O
 Coakley, S. M., 32-S
 Coats, K. P., 369-P, 385-P, 386-P
 Cochran, A., 342.a-P
 Cochran, K., 341-P
 Cody, M., 676-P
 Coers, L. M., 822-P
 Coffey, M. D., 21-P, 900-P
 Cohen, Y., 119-O
 Coker, C. M., 157-P
 Colburn, G., 694-P
 Colburn-Clifford, J., 840-P
 Colgrove, A. C., 204-P
 Collins, D. J., 391-P, 1021-P
 Coly, E. V., 183-S
 Comstock, J. C., 470-P
 Conaway, S. A., 819-P
 Conceição, C. S., 336-P

- Cong, B., 566-P
 Conley, S., 490-P, 716-P
 Connell, J., 639-P
 Conner, R., 178-P
 Constable, F., 495-P
 Constantelos, C., 377-P
 Contreras, F., 405-P
 Conway, W. S., 67-P, 883.a-P
 Cook, D., 473-P
 Cooksey, D. A., 844-P
 Cooper, G. T., 290-P
 Copes, W. E., 480-P
 Cordero, F., 977-P
 Cornejo, M., 868-P
 Corral, R., 167-P
 Correa, M. R., 598-P
 Correll, J. C., 317-P
 Cortés, M. V., 738-P
 Cortes-Barco, A., 153-S
 Cosmi, F. C., 493-P
 Costa, R. V., 722-P
 Costadone, L., 46-O
 Corty, P. J., 134-S, 85-O, 105-O
 Cottyn, B., 441-P
 Couto, M. E., 98-P
 Cox, K. D., 42-O, 63-O, 253-P, 605-P
 Coyne, D. L., 89-S, 135-S
 Craig, A., 868-P
 Cramer, C. S., 1006-P
 Crane, J., 720-P
 Cranshaw, W., 331-P, 361-P, 379-P, 387-P
 Creamer, R., 8-O, 919-P, 921-P, 924-P
 Creary, E., 829-P
 Cromer, J. P., 151-O
 Crosslin, J. M., 91-O
 Crouch, J., 152-S, 288-P
 Crow, J. A., 95-S
 Cruz, C. D., 205-S, 367-P, 372-P
 Cruz-Hernández, M. A., 668-P
 Csinos, A. S., 313-P, 555-P
 Cuellar, W. J., 203-S
 Cui, W., 761-P
 Culbreath, A., 884-P
 Cummings, D., 749-P
 Cunha, F., 126-S
 Cunningham, M., 268-P
 Cuomo, C., 93-S, 95-S
 Curlango-Rivera, G., 832-P
 Cursino, L., 839-P
 Cusicanqui, J., 513-P
 Czymmek, K. J., 29-O, 148-O
 da Graça, J. V., 107-P, 256-P, 257-P
 Dababat, A. A., 139-S
 Dakouo, D., 414.a-P
 Daleo, G. R., 891-P
 Dalio, R. J., 880-P, 885-P, 902-P
 Damayanti, T. A., 808-P
 Damicone, J., 628-P
 Dangl, G. S., 240-P
 Daniels, J., 120-P, 127-P, 134-P, 135-P
 Daniels, J., 286-P
 Danyluk, M. D., 17-S
 Dao, S., 441-P
 Das, M., 194-S
 Daugovich, O., 155-P
 Dave, A., 159-P
 Davelos Baines, A. L., 539-P
 Davenport, F., 7-P
 Davis, C. D., 11-O
 Davis, D. D., 330-P, 929-P
 Davis, E. W., 71-S
 Davis, M., 65-O
 Davis, M. A., 708-P
 Davis, R. M., 116-O
 Davis, R. E., 201-S, 156-P
 Dawson, W. O., 39-S, 986-P
 De Beer, W., 357-P
 de Jonge, R., 93-S
 de Kievit, T., 84-O
 de los Reyes, B., 889-P
 De Moraes, C. M., 199-S, 399-P
 de Sa Snow, P. B., 257-P
 de Vos, S. M., 94-P
 Cordero, F., 977-P
 Deahl, K. L., 314-P
 Deardorff, J. J., 558-P
 DeBauw, A., 369-P
 Debenport, S., 517-P
 Deep, S., 582-P, 926.a-P
 Deepthi, K., 88-O
 Dehne, H., 354-P
 del Río, L., 543-P, 544-P
 del Río, M. L., 159-O
 del Río Mendoza, L. E., 485-P, 499-P
 Delfosse, P., 190-P, 714-P
 Delgado, J. A., 61-O
 Demarino, Y. M., 790-P
 Demirci, F., 30-O
 Deng, J., 648-P
 Deng, W., 63-P, 64-P
 Deng, X., 61-P, 62-P
 Denight, M., 1023-P
 Denny, T., 117-P
 dePamphilis, C., 194-S
 Derera, J., 617-P
 DeSouza, S. P., 614-P
 Detemmerman, L., 441-P
 Dewdney, M. M., 139-O, 378-P, 662-P
 Dewhurst, C. F., 58-S
 Dey, K. K., 40-S, 987-P
 Dhileepan, K., 51-S
 Dhillon, B., 92-S
 Dhiman, C., 663-P
 Di, D., 993-P
 Di, R., 202-S
 Dias, A., 21-O
 Diaz, G. A., 242-P, 518-P
 Diaz-Arias, M., 110-O, 479-P
 Dibiyantoro, A., 416-P
 Dickinson, M., 189-P
 Dickman, M. B., 687-P, 688-P, 941-P
 Dickstein, E. R., 454-P
 Dienelt, M. M., 974-P
 DiGennaro, P. M., 151-O
 DiGuistini, S., 960-P
 Dill, G. M., 771-P
 Dill, J. F., 771-P
 Dinakaran, D., 179-S, 814-P, 815-P
 Dinesh Kumar, V., 951-P
 Ding, M., 346-P
 Dingha, B. N., 408-P
 Dita, M., 29-P, 396-P
 DiTomaso, J. M., 52-S
 Dittapongpitch, V., 122-O
 Djililov, F., 8-P
 Djeddour, D. H., 818-P, 824-P
 Do, H., 934-P
 do Carmo, F. R., 316-P
 Dobbs, J., 763-P
 Dobesh, S., 355-P
 Dobhal, S., 453-P, 534-P
 Dobinson, K. F., 93-S
 Doddapaneni, H., 96-O
 Doerksen, T., 928-P
 Dolezal, W. E., 87-S, 352-P
 Domier, L. L., 984-P
 Donald, P., 70-O
 Dong, D., 588-P
 Dong, H., 566-P
 Dong, J., 105-P, 269-P
 Dong, W., 887-P
 Dong, W. B., 279-P
 Donna, C. R., 130-P
 Donner, M., 74-P
 Donnua, S., 442-P, 442-P
 Donofrio, N. M., 29-O, 30-O, 148-O, 215-P, 912-P, 1020-P
 Dorleku, W., 918-P
 Dornbusch, M. R., 552-P
 Dorrance, A. E., 692-P, 693-P, 693.c-P, 693.d-P, 899-P, 905-P, 906-P
 Dotson, A., 1001-P
 Dou, D., 196-S
 Dou, W., 134-O, 410-P
 Douce, G. K., 326-P, 355-P
 Douhan, G. W., 160-O, 162-O, 440-P
 Doustseddigh, H., 99-P
 Draper, M. A., 355-P, 356-P
 Dreo, T., 451-P, 645-P
 Drew, J. C., 1-P
 Driscoll, W. W., 872-P
 Driver, J. G., 489-P, 498-P, 608-P
 Druffel, K., 136-P, 881-P, 1004-P, 1005-P
 Du, Y., 295-P
 du Toit, L. J., 319-P, 811-P
 Duan, X., 194-P, 197-P
 Duan, Y., 437-P, 607-P, 848-P, 849-P, 850-P
 Dubler, W. D., 47-O
 DuBose, V., 799-P
 Dudley, N. S., 167-S
 Duff-Farrier, C., 964-P
 Duffy, B., 75-S, 44-O, 11-P, 451-P, 645-P, 658-P, 656-P, 859-P
 Dugan, F. M., 368-P
 Duisembekov, B., 564-P
 Dull, A. J., 246-P
 Dumroese, R., 335-P
 Dunfee, A. P., 355-P
 Dung, J. K., 154-O
 Dunkle, R. L., 2-S, 352-P
 Dunlap, C. A., 725-P
 Durairaj, C., 179-S
 Duressa, D., 45-O
 Durham, T., 1020-P
 Durrin, J. S., 967-P
 Dutky, E. M., 153-P
 Dutta, B., 13-P
 Duveiller, E., 34-S, 206-S, 119-P
 Dwyer, J. D., 771-P
 Dyer, A. T., 196-P, 549-P
 Eastburn, D. M., 746-P
 Eberhart, J. E., 337-P
 Ebert, T., 139-O
 Edema, M. J., 147-S
 Edgerton, T., 465-P
 Edwards, J. T., 711-P, 718-P
 Edwards, M. C., 1013-P
 Egel, D., 325-P
 Ehteshamul-Haque, S., 630-P, 747-P, 802-P
 Eid, S., 967-P
 Eigenbrode, S. D., 136-P
 Ejeta, G., 91-S, 190-S
 Ekesi, S., 129-S
 Ekperigin, M. M., 441.a-P
 El Jarroudi, M., 190-P, 714-P
 El Mounadi, K., 914-P
 El Salamouny, S., 131-S
 Elkahky, M. T., 768-P
 El-Kassaby, Y., 329-P
 Elling, A. A., 70-S
 Elliott, M., 369-P, 385-P, 386-P
 Elliott, M., 1020-P
 Elliott, N. C., 711-P
 Ellis, M. A., 80-S, 693.c-P, 693.d-P
 Elmer, W. H., 696-P
 Emerson, M. J., 157-P, 210-P, 693.b-P
 Emmett, R. W., 76-O
 Endo, N., 427-P
 Engelberth, J., 405-P
 Engelberth, M., 405-P
 Engels, R., 93-S
 English, J. T., 710-P, 886-P
 Eni, A. O., 158-P
 Entz, M., 84-O
 Erraitaimuthu, S. R., 49-P, 50-P
 Eskalen, A., 109-O, 258-P, 259-P, 261-P, 469-P
 Esker, P., 27-S, 35-S, 490-P, 626-P, 627-P, 716-P, 1018-P
 Espindola, A. S., 120-P, 127-P, 134-P, 135-P
 Esquivel, J. F., 136-O
 Estevez, C., 350-P
 Estock, M., 204-S
 Etta, C. E., 351-P
 Eujayl, I. A., 219-P
 Evans, H. C., 817-P, 818-P, 824-P
 Evans, R. G., 162-P, 721-P
 Evans, T. A., 912-P
 Everhart, S. E., 79-S
 Everts, K. L., 324-P, 325-P, 577-P, 807-P
 Fabregar, E. G., 690-P
 Fahmeed, F., 161-P, 161-P
 Fajardo, J. E., 109-S
 Fakhoury, A. M., 106-P, 177-P, 503-P, 907-P, 908-P, 910-P, 914-P, 915-P
 Falconi, C. E., 923-P, 923-P
 Faleiro, J. R., 430-P
 Falk, B. W., 364-P
 Falk, K. C., 502-P
 Fan, J., 632-P
 Fan, Z., 978-P, 993-P
 Fang, Q., 269-P
 Fantino, E., 125-P
 Farfan, L. C., 329-P
 Farmer, A. D., 95-S
 Farnham, M., 794-P
 Farzadfar, S., 115-O
 Faske, J., 445-P
 Fassler, N., 596-P
 Fayad, F., 252-P
 Febres, V. J., 862-P
 Fedak, G., 723-P
 Fei, Z., 100-O
 Feldman, E., 196-S
 Feliciano-Rivera, M., 781-P
 Feliziani, E., 129-O
 Fellers, J., 95-S
 Feltes, D., 204-P
 Feng, C., 317-P
 Feng, P., 162-S
 Feng, S., 884-P
 Feria, T. P., 397-P
 Fernandes, J. C., 208-S

- Fernández, M. B., 891-P
 Fernandez-Aparicio, M., 194-S
 Fernando, D. G., 84-O, 883-P
 Ferreira, G., 29-P
 Ferry, A. E., 65-O
 Ficke, A., 36-S
 Fiedler, K., 788-P
 Fiehn, O., 36-O
 Fieland, V. J., 390-P
 Figueira, A. R., 52-O, 92-O, 78-P, 333-P
 Figueiredo, J. F., 831-P
 Figueiredo, R. S., 457-P
 Filho, A. C., 316-P
 Fillion, M., 825-P, 826-P, 837-P
 Filippi, M. C., 457-P, 738-P
 Finlay, K. J., 495-P
 Fish, T., 508-P
 Fisher, T. W., 60-P
 Fjellstrom, R., 28-O
 Flanery, M. C., 408-P
 Flath, K., 707-P
 Fleischmann, F., 880-P, 885-P, 902-P
 Fletcher, J., 14-P, 120-P, 127-P, 128-P, 129-P, 134-P, 135-P, 171.a-P, 171.b-P, 354-P, 412-P, 434-P, 453-P, 1014-P
 Flint, L. J., 189-P
 Florea, S., 957-P, 958-P
 Flores, F. J., 534-P
 Fonseca, M. N., 316-P, 323-P
 Foote, P., 219-P
 Foote, T., 343-P
 Forbes, G. A., 371-P, 521-P, 522-P
 Forry, B., 399-P
 Forster, H., 538-P, 637-P, 638-P
 Forster, H., 639-P
 Foster, G. D., 964-P
 Foster, J. E., 83-S
 Fought, L., 609-P, 610-P
 Fouly, H., 284-P
 Fourie, P. H., 48-O
 Fouts, D. E., 21-S
 Fox, A., 189-P
 Fraire, S., 1015-P
 Fraise, C. W., 680-P
 Franc, G., 1020-P
 Francis, M. I., 858-P
 Frankel, S. J., 337-P, 339-P
 Frantz, G., 7-O
 Frare, G. F., 444-P
 Freeland, E., 379-P, 387-P
 Freeman, A., 495-P
 Freeman, J. H., 767-P
 Freeman, S., 882-P
 French, J. M., 968-P
 French, R., 359-P
 French-Monar, R. D., 348-P
 Frey, J. E., 52-P, 53-P, 451-P
 Fritz, A. K., 708-P
 Fry, W. E., 79-P, 371-P
 Fu, B., 57-P
 Fu, J., 404-P
 Fu, Y., 144-S
 Fu, Y., 311-P
 Fu, Y., 943-P
 Fu, Y. Y., 980-P
 Fuchs, M. F., 120-S, 94-O, 99-O, 98-O
 Fudal, I., 196-S
 Fuji, S., 533-P
 Fujie, M., 446-P, 836-P
 Fujimura, M., 124-P, 699-P
 Fujiyoshi, P., 43-O, 160-O, 236-P
 Fukuda, K., 328-P
 Fulmer, A. M., 220-P
 Fulton, J., 182-P
 Fung, C. H., 980-P
 Furtado, E. L., 444-P
 Furuya, H., 533-P
 Furuya, N., 223-P, 592-P, 750-P, 817-P, 818-P, 824-P
 Fuwa, H., 754-P
 Gadal, L., 409-P
 Gadkar, V. J., 825-P, 826-P, 837-P
 Gadoury, D. M., 36-S, 237-P
 Gai, C. S., 13-O
 Gaitán, A. L., 93-O
 Gajendran, G., 179-S, 814-P, 815-P
 Galagan, J., 93-S
 Gale, L. R., 157-O
 Gallup, C., 108-S
 Galperin, M., 119-O
 Galvani, C., 839-P
 Galvez, L. C., 689-P
 Galvino-Costa, S. B., 52-O, 92-O, 78-P
 Gamarra, H., 363-P
 Gamby, K. T., 183-S, 809-P
 Gamliel, A., 354-P, 579-P
 Gandhi, K., 673-P, 808-P
 Ganiger, M. C., 956-P
 Gao, D., 879.a-P
 Gao, L., 903-P
 Gao, Q., 197-S
 Gao, X., 198-S
 Gao, X., 392-P
 Gao, Y., 62-P
 Gao, Y., 653-P
 García-Mariscal, K., 698-P
 Garcia-Pedrajas, M. D., 93-S
 García-Velasco, R., 281-P, 668-P, 700-P
 Gardener, B. M., 73-S
 Gardner, D., 921-P
 Garibaldi, A., 320-P, 702-P, 755-P
 Garland-Campbell, K., 25-O
 Garrett, K. A., 213-P, 513-P
 Garrett, L. J., 2-O
 Garrett, W., 56-P
 Garrido, P. A., 534-P, 942-P
 Garzon, C. D., 126-P, 134-P, 135-P, 521-P, 522-P, 534-P, 942-P
 Gaskins, V. L., 67-P, 883.a-P
 Gasore, E. R., 441.a-P
 Gast, T., 58-P
 Gasczyk, K., 170-P
 Gautam, D., 14-P
 Gealy, D., 159-S
 Gebben, S. J., 439-P
 Gebhart, D., 1023-P
 Geddens, R. M., 68-O, 594-P, 603-P
 Gelineau van Waes, J., 46-S
 Gellért, Á., 1012-P
 Genger, R., 775-P
 Genin, S., 835-P
 Gent, D., 484-P
 Gent, M. P., 696-P
 George, D., 51-S
 Gerald, M., 362-P
 Geraldine, A. M., 458-P, 739-P
 Geraldino, P. S., 52-O
 Gerami, E., 651-P
 Gerbore, J., 532-P, 646-P
 Gevens, A. J., 17-P, 763-P, 782-P
 Ghabrial, S. A., 973-P, 984-P
 Ghasemi, A., 250-P
 Ghimire, S., 464-P
 Ghimire, S. R., 525-P
 Ghosh, S., 277-P, 758-P
 Ghoshroy, K., 162-P, 721-P
 Ghoshroy, S., 721-P
 Giachetto, P., 29-P
 Giampetruzzi, A., 96-O
 Gibson, D., 720-P
 Gibson, P., 617-P
 Gilardi, G., 320-P
 Gilbert, C., 749-P
 Gilbertson, R. L., 12-S, 183-S, 6-O, 77-P, 166-P, 809-P, 965-P, 966-P
 Gildow, F. E., 969-P
 Giles, K. L., 711-P
 Gillett, J. M., 800-P
 Gilley, M., 176-P, 176-P, 300-P, 300-P
 Gill-Langarica, E. M., 308-P
 Giraud, F., 190-P, 714-P
 Giroux, M. J., 954-P
 Gitaitis, R., 312-P, 555-P
 Glass, K., 183-P
 Glazebrook, J., 95-S
 Glenn, A. E., 911-P
 Glover, K. D., 92-P
 Glynn, J. M., 59-P
 Glynn, N. C., 470-P
 Gmitter, F. G., 862-P
 Goates, B. J., 191-P
 Godonou, I., 129-S
 Godsey, C., 628-P
 Goenaga, R. J., 348-P
 Goesmann, A., 11-P, 859-P
 Goharзад, F., 110-P, 111-P
 Gokte-Narkhedkar, N., 691-P
 Gold, S. E., 93-S, 949-P
 Goldberg, N., 968-P
 Goldberger, E., 40-P
 Goldwasser, Y., 191-S
 Golino, D. A., 240-P, 268-P, 977-P
 Golnaraghi, A., 115-O
 Golod, J., 618-P
 Gomez-Alpizar, L., 365-P
 Gomez-Montano, L., 513-P
 Gonsalves, D., 123-S
 Gonzales, M. A., 513-P
 Gonzalez, A., 159-P, 643-P
 Gonzalez, M. F., 73-O
 González-Díaz, J. G., 281-P
 Gonzalez-Franco, A. C., 118-O, 308-P, 580-P
 Goo, H., 778-P
 Goodwin, P. H., 153-S, 213-P
 Goodwin, S. B., 92-S
 Gopalakrishnan, S., 88-O
 Gordon, T. R., 33-O, 53-O, 69-O, 155-P, 488-P
 Gore, J., 208-P, 473-P
 Gorsoy, G., 307-P
 Goss, E. M., 371-P, 390-P
 Gossen, B. D., 178-P, 179-P
 Goswami, R. S., 61-O, 910.a-P
 Gothandapani, S., 926.a-P
 Goto, T., 735-P
 Gottula, J., 99-O
 Gottwald, T. R., 26-S, 449-P
 Gougherty, A., 81-S, 553-P
 Govaerts, B., 139-S
 Govindarajulu, M., 833-P
 Gowda, S., 848-P, 850-P, 986-P
 Goyer, C., 826-P
 Grabherr, M., 95-S
 Grabowski, M. A., 278-P, 1020-P
 Graça, R. N., 165-S
 Graham, J. H., 58-P, 449-P, 858-P, 863-P
 Graham, M. A., 955-P
 Granke, L., 161-O, 20-P, 550-P, 551-P
 Grant, J. A., 113-O
 Gray, S. M., 91-O, 508-P, 686-P
 Greenwald, C. J., 869-P
 Greenwald, J. W., 869-P
 Greer, A. M., 157-P
 Greer, G., 260-P
 Gregory, S., 46-S
 Griffiths, W., 495-P
 Grigorias, I., 83-P
 Grigoriev, I. V., 92-S
 Grijalba, P. E., 125-P, 394-P
 Grisham, M. P., 91-P
 Grizard, D., 646-P
 Gronenborn, B., 83-P
 Gross, D. C., 869-P
 Gross, N. W., 710-P, 886-P
 Gross, P., 186-P
 Gross, T., 953-P
 Grosser, J. W., 858-P
 Groth, D. E., 22-O
 Grove, G. G., 481-P, 482-P, 491-P, 492-P, 652-P
 Groves, R. L., 364-P, 775-P
 Grünig, C. R., 512-P
 Grunwald, N. J., 371-P, 390-P
 Gu, B., 196-S
 Gu, D., 900-P
 Gu, G., 147-O
 Gubler, W. D., 36-O, 46-O, 75-O, 113-O, 163-O
 Gudmestad, N. C., 106-O, 102-P
 Guenther, J., 775-P
 Guérin-Dubrana, L., 532-P
 Guerrero, J., 964.a-P
 Guevara, J., 382-P
 Guevara, M. G., 891-P
 Gugino, B. K., 744-P, 813-P
 Guilhabert, M., 12-O
 Guimaraes, T. G., 235-P
 Gül, A., 759-P
 Gullino, M., 82-S, 320-P, 354-P, 702-P, 755-P, 796-P
 Gulya, T. J., 106-O, 384-P
 Gunadi, A., 692-P
 Gunasekaran, D., 309-P
 Gundersen, B., 318-P
 Guo, B., 884-P
 Guo, J., 10-O
 Guo, J., 827-P
 Guo, L., 128-O
 Guo, L., 251-P
 Guo, M., 879.a-P
 Guo, Q., 801-P
 Guo, Y., 572-P
 Guo, Y., 856-P
 Guo, Z., 893-P
 Gurr, G. M., 395-P
 Gurung, S., 543-P
 Gutha, L. R., 241-P, 991-P
 Gutierrez, A., 32-S
 Gutting, H., 161-O
 Guzmán-González, S., 669-P
 Gwinn, K. D., 301-P, 403-P, 438-P, 789-P
 Gyawali, S., 948-P
 Ha, Y., 117-P
 Haag, P., 239-P
 Haas, M. W., 157-O
 Hackett, W. P., 246-P
 Hadi, B., 510-P
 Hadwiger, L. A., 881-P

- Hagan, A. K., 180-P, 221-P, 283-P
 Haixia, Z., 821-P
 Hajeri, S., 85-P, 848-P
 Hajmansoor, S., 37-P, 163-P, 529-P, 530-P, 651-P
 Hakuno, F., 897-P
 Halbrendt, N., 605-P
 Hall, D. G., 138-O, 437-P, 504-P
 Halleen, F., 163-O
 Hallett, S. G., 822-P
 Halley, S. A., 719-P
 Halloran, J., 769-P
 Halterman, D., 901-P
 Ham, J. H., 22-O, 145-O
 Hamada, N. A., 252-P
 Hamadoun, A., 414.a-P
 Hambleton, S., 622-P
 Hamelin, R., 329-P
 Hamid, S., 867-P
 Hamilton, C. Y., 93-P
 Hamilton, J., 119-P
 Hammerschmidt, R., 642-P
 Hammig, M. D., 176-S, 177-S
 Hammond, J., 974-P, 1002-P
 Hammond, R. W., 382-P, 1002-P
 Hampton, J. G., 66-O
 Han, C., 81-P, 146-P
 Han, D., 144-S
 Han, E., 778-P
 Han, J., 689-P
 Han, S., 82-O
 Han, S., 847-P
 Han, S., 935-P
 Hand, E. K., 75-O
 Hanif, Z., 51-S
 Hanlon, R., 196-S
 Hanna, J. W., 334-P
 Hanna, L. T., 245-P
 Hansen, E. M., 337-P
 Hanson, S. L., 104-P, 162-P
 Hanson, S., 968-P
 Hao, J. J., 80-O, 116-O, 604-P, 785-P
 Hao, W., 476-P
 Harano, K., 137-O
 Harbertson, J. F., 241-P, 991-P
 Harding, M. W., 64-O
 Hardingham, J., 204-S
 Harker, K. N., 712-P
 Harmon, C. L., 38-O
 Harmon, P. F., 26-O, 102-O, 104-O, 232.b-P, 290-P, 662-P
 Harper, D., 1001-P
 Harrington, M., 948-P
 Harrington, T. C., 3-S
 Harrison, L. A., 812.a-P
 Harrison, R., 524-P
 Harshman, J. M., 229-P
 Hartman, G. L., 212-P, 470-P, 622-P, 746-P
 Hartney, S. L., 866-P
 Hartung, J. S., 13-O, 95-O, 16-P, 855-P
 Harveson, R., 184-P, 216-P
 Hasanzadeh, N., 108-P, 250-P, 581-P
 Hashemi, M., 83-O, 753-P
 Hashimoto, Y., 750-P
 Hasiw-Jaroszewska, B., 970-P, 971-P
 Hassan, G., 51-S
 Hassan, K. A., 71-S, 72-S, 870-P
 Hassan, M., 228-P, 255-P
 Hassanzadeh, N., 651-P
 Haudenschild, J. S., 470-P
 Hausbeck, M., 161-O, 20-P, 550-P, 551-P, 604-P
 Hauxwell, C., 127-S
 Havens, W. M., 973-P
 Hawes, M. C., 832-P
 Hay, F. S., 96-P, 484-P
 Hayes, R. J., 93-S, 45-O, 439-P
 Hayslett, M., 1016-P
 He, H., 134-O
 He, S., 414-P
 He, Z., 81-O
 He, Z., 590-P
 He, Z., 769-P
 He, Z., 972-P
 Heckert, S., 56-O
 Heeb, S., 871-P
 Hegedus, D. D., 948-P
 Heiman, D. I., 93-S
 Heine, G. L., 10-S, 505-P, 724-P
 Heitkamp, E., 384-P
 Held, B., 342-P
 Helder, H., 52-P
 Helliwell, E. E., 32-O
 Hemsanit, N., 591-P
 Henderson, L., 20-P
 Henkels, M. D., 695-P
 Henkes, M., 277-P
 Henne, D. C., 381-P
 Henriquez, J. L., 515-P, 657-P
 Henrissat, B., 93-S
 Henry, C., 354-P
 Herai, R., 29-P
 Herman, M., 513-P
 Hermanto, C., 528-P
 Hernamdez, A. G., 100-O
 Hernandez, E., 382-P
 Hernández-Huerta, J., 118-O, 580-P
 Hernandez-Zepeda, C., 103-P, 972-P
 Herrera, C., 125-P
 Hert, A., 601-P
 Herve, C., 674-P
 Hidayat, S. H., 808-P
 Hidayati, N., 122-O
 Higashi, C. H., 506-P
 Higgins, E., 948-P
 Higuchi, K., 830-P
 Hikishima, M., 458-P
 Hill, J. H., 955-P
 Hillman, B. L., 74-S, 79-P, 531-P, 868-P, 927-P
 Hillnhütter, C., 169-P
 Himmel, P., 749-P
 Himmelstein, J., 324-P
 Hinton, D. M., 71-P, 629-P
 Hipkins, P., 183-S
 Hiromasa, Y., 990-P
 Hirsch, M., 393-P
 Hirsch, R. L., 916-P
 Ho, F., 122-O
 Ho, M., 661-P
 Hoang, H., 592-P, 735-P, 750-P
 Hobbs, S. L., 1-O
 Hoch, H. C., 839-P
 Hodges, A. C., 355-P, 356-P
 Hodson, D., 206-S
 Hodzic, E., 238-P
 Hoenisch, R. W., 355-P
 Hoepfing, C. A., 813-P
 Hoeschle-Zeledon, I., 135-S
 Hoffman, M. T., 437-P
 Hoffman, W., 355-P
 Hoffmann, L., 190-P, 714-P
 Hogg, A. C., 196-P, 549-P
 Holb, I. J., 79-S
 Holbrook, C., 884-P
 Holdcroft, A. M., 792-P
 Holden, D., 135-O
 Holguin, O., 924-P
 Hollaway, G., 495-P
 Hollier, C. A., 38-S
 Holloway, C., 881-P
 Holmes, G., 49-O
 Holterman, M., 52-P
 Honeycutt, E., 1020-P
 Honeycutt, W., 769-P
 Hong, C., 464-P, 465-P, 474-P, 476-P
 Hong, J. C., 388-P
 Hong, L., 202-P
 Hong, S., 374-P, 375-P, 778-P
 Honorato Junior, J., 467-P
 Hopkins, A., 959-P
 Hora-Junior, B. T., 541-P
 Horita, M., 223-P, 754-P
 Horn, B., 89-O
 Horner, K., 948-P
 Horobet, P., 789-P
 Horvath, B. J., 299-P
 Horvath, D., 122-S
 Hosseini, P., 96-S
 Hosseinikhah Choshali, A., 500-P
 Hotchkiss, M. W., 644-P, 664-P
 Hou, X., 57-P
 Hou, Y., 571-P
 Houle, J., 556-P
 Howard, R. J., 64-O
 Howe, G., 195-S, 195-S
 Howe, K., 508-P
 Howell, B., 306-P
 Hoying, S. A., 253-P
 Hoyos, G., 204-S
 Hsiang, T., 153-S
 Hsieh, J., 563-P
 Hsu, S., 63-P, 64-P
 Hsu, Y., 416-P
 Hu, D., 571-P
 Hu, J., 285-P
 Hu, J., 378-P
 Hu, J., 464-P
 Hu, J. S., 40-S, 37-O, 987-P
 Hu, M., 42-O
 Hu, X., 91-O, 92-O
 Hu, X., 864-P
 Huan, J., 887-P
 Huang, C., 478-P
 Huang, C., 713-P
 Huang, H., 65-P
 Huang, J., 138-P
 Huang, J., 138-P
 Huang, J., 887-P
 Huang, J., 939-P
 Huang, K., 194-S
 Huang, K., 29-O
 Huang, L., 954-P
 Huang, Q., 156-P
 Huang, S., 122-O
 Huang, T., 9-P, 64-P, 748-P, 803-P
 Huang, W., 748-P, 803-P
 Huang, Y., 95-P
 Huber, D. M., 33-S, 586-P, 586-P
 Huber, S. C., 833-P
 Hudler, G. W., 28-S
 Hughes, J. D., 158-P
 Hughes, T., 67-S
 Hui, W., 732-P
 Huifang, S., 144-P
 Hulbert, S., 95-S, 952-P
 Huleihal, M., 34-O
 Humann, J. L., 1-P, 881-P
 Humayun, P., 88-O
 Hummel, N. A., 355-P
 Hunger, R. M., 486-P, 711-P, 718-P, 942-P
 Hunsberger, L. K., 59-O
 Hunsche, M., 20-O, 35-O, 1024-P
 Hur, J., 173-P
 Husebye, D., 136-P
 Hwang, B., 9-P
 Hwang, J., 134.a-P
 Hwang, S., 178-P, 179-P
 Hyakumachi, M., 797-P
 Ibikunle, O., 90-S
 Ichinose, Y., 797-P
 Ignatov, A. N., 8-P
 Ikeda, K., 124-P
 Imai, R., 30-S
 Imbor, M. 95.b-P
 Inagaki, Y., 797-P
 Inch, S. A., 108-O, 342-P
 Inderbitzin, P., 93-S, 153-O, 35-P
 Indra, J., 4-O
 Ingelbrecht, I., 441.a-P
 Inglis, D., 318-P, 321-P
 Inguagiato, J. C., 292-P, 294-P
 Ionescu, M., 150-O, 860-P
 Iott, M., 773-P
 Irey, M. S., 58-P, 61-P
 Iriarte, F., 590-P
 Irrig, H. B., 188-S
 Isard, S. A., 819-P
 Ishimaru, C. A., 75-S
 Islam, K. T., 503-P, 908-P
 Islas, C. M., 155-P
 Isozaki, R., 836-P
 Ito, S., 533-P
 Ito, T., 533-P
 Ivors, K., 274-P, 275-P, 365-P
 Jackai, L. E., 408-P
 Jackson, E. W., 191-P
 Jackson, G., 146-S
 Jackson, K. L., 313-P
 Jackson, T. A., 55-S, 60-S, 124-S, 128-S
 Jacobs, J. L., 642-P
 Jacobs, J. M., 146-O
 Jacon, G., 605-P
 Jahn, M., 686-P
 Jahn, M., 715-P
 Jaime-Garcia, R., 85-O, 105-O
 Jain, S., 519-P
 Jakobs-Schönwandt, D., 565-P
 Jalan, N., 142-O
 Jamali, S., 18-P
 James, B., 129-S
 James, C., 414.a-P
 James, M., 171.a-P, 171.b-P
 James, R. L., 167-S
 Jan, F., 63-P, 64-P, 982-P
 Janisiewicz, W. J., 67-P, 703-P, 883.a-P
 Jaraba, J., 181-P
 Jarosz, A. M., 539-P
 Jarrin, F., 522-P
 Jarugula, S., 986-P
 Jaskani, M. J., 118-P
 Jaspers, M. V., 66-O
 Javan-Nikkhah, M., 529-P, 530-P
 Jayabal, V., 814-P, 815-P
 Jean Claude, D., 674-P
 Jee, H., 778-P
 Jeffers, S. N., 134.a-P, 383-P, 694-P, 760-P
 Jefwa, J., 516-P

- Jeon, A., 230-P
 Jeon, M., 109-P
 Jeong, H., 18-O
 Jesus, W. C., 496-P
 Jesus Junior, W. C., 493-P, 494-P
 Ji, L., 187-P, 205-P
 Ji, L., 360-P
 Ji, P., 313-P, 601-P
 Ji, Y., 90-P
 Ji, Z., 489.a-P
 Jia, M. H., 27-O, 28-O
 Jia, M., 993-P
 Jia, Q., 132-P
 Jia, R., 347-P
 Jia, Y., 27-O, 28-O
 Jiang, C., 431-P
 Jiang, D. H., 143-S, 159-O, 943-P
 Jibilian, G., 326-P
 Jiménez, P., 19-P
 Jimenez-Diaz, R. M., 42-P
 Jimenez-Gasco, M., 42-P, 537-P
 Jin, B., 112-P
 Jin, S., 132-P, 198-P
 Jin, X., 89-O, 310-P
 Jin, Y., 191-P, 706-P, 954-P
 Jing, L., 621-P, 624-P
 Jingxin, Z., 732-P
 Jinxue, J., 199-P
 Jinzhong, W., 413-P
 Jo, Y., 18-O, 370-P
 Jochum, C. C., 710-P, 719-P
 Jogi, A., 949-P
 Johnson, C. S., 791-P
 Johnson, D. A., 117-O, 154-O, 1009-P
 Johnson, E. N., 712-P
 Johnson, E. G., 58-P, 863-P
 Johnson, J., 392-P
 Johnson, K. B., 811-P
 Johnson, Q., 1026-P
 Johnson, R. M., 91-P
 Johnson, S. B., 771-P
 Johnson, T., 749-P
 Johnson-Brousseau, S. A., 277-P, 758-P
 Johnson-Cicalese, J., 234-P
 Johnston, B. S., 900-P
 Johnston, J. A., 196-P
 Jonathan, E. I., 179-S, 3-O, 74-O, 673-P
 Jones, D., 61-P
 Jones, J., 180-P
 Jones, J. B., 388-P, 831-P
 Jones, J. L., 208-P
 Jones, J. M., 790-P
 Jones, M. W., 989-P
 Jones, R., 895-P
 Jones, R. A., 11-S
 Jones, T., 167-S
 Jones, T., 509-P
 Joo, J., 403-P
 Jordan, R., 855-P
 Joseph, H., 557-P
 Joshua, J. O., 670-P
 Jossey, S., 984-P
 Juarez, H., 363-P
 Judelson, H., 904-P
 Judice, S., 204-S
 Jumpponen, A., 513-P
 Junarto, 121-O
 Jung, C., 109-P
 Jung, G., 156-O
 Jung, J., 206-P
 Jurick II, W. M., 67-P, 68-P, 229-P, 703-P, 883.a-P
 Juzwik, J., 55-O
 Kabbage, M., 941-P
 Kabe, T., 124-P
 Kachroo, A., 197-S
 Kachroo, P., 197-S
 Kadooka, C., 477-P
 Kaewnum, S., 655-P
 Kajita, H., 836-P
 Kalbande, B., 1011-P
 Kale, S. D., 196-S
 Kalia, P., 926.a-P
 Kalyanasundaram, M., 3-O
 Kamber, T., 75-S
 Kaminski, J. E., 155-S, 292-P, 294-P
 Kammeijer, K. E., 317-P
 Kammerer, S. J., 104-O, 104-O
 Kandel, Y. R., 92-P
 Kandouth, B., 772-P
 Kang, B., 175-P
 Kang, H., 890-P
 Kang, S., 93-S, 389-P, 523-P
 Kang, Z., 36-P
 Kanrar, S., 260-P
 Kantartzi, S. K., 211-P
 Kanto, T., 148-P
 Kaplan, F., 68-S
 Kappenman, M. 115-S
 Karasev, A. V., 43-S, 52-O, 91-O, 92-O, 118-O, 78-P, 136-P, 308-P, 967-P
 Karen, K., 265-P
 Karim, A., 181-S
 Karimi Dehkordi, M., 529-P, 530-P
 Kariyat, R., 399-P
 Karki, H. S., 22-O, 145-O
 Karthikeyan, A., 511-P
 Karthikeyan, G., 179-S, 74-O, 98-O, 814-P, 815-P
 Karuppuachamy, P., 3-O
 Kasson, L. R., 929-P
 Kasson, M. T., 330-P, 929-P
 Kasun, G., 846-P
 Katagiri, F., 95-S, 903-P
 Katan, J., 579-P
 Katori, M., 276-P
 Kaushik, N., 7-S, 180-S
 Kavoo, A. M., 516-P
 Kawasaki, T., 446-P, 836-P
 Kawaura, K., 137-O, 436-P
 Kayentao, M., 90-S
 Kazi, T., 910-P
 Ke, Y., 571-P
 Kebede, Y., 88-S
 Keichinger, C., 99-O
 Keinath, A., 794-P, 799-P
 Keith, L. M., 69-P, 343-P, 344-P
 Kelemen, R., 403-P
 Keller, K. E., 227-P, 228-P, 231-P
 Keller, N., 198-S
 Kelly, M. K., 790-P
 Kema, G. H., 92-S, 29-P, 396-P
 Kemerait, R. C., 203-P, 220-P
 Kemmochi, I., 124-P
 Kendrick, M. D., 955-P
 Kennaway, L., 168-S
 Kennedy, G., 556-P
 Kennelly, M. M., 151-S
 Kepich, D. J., 790-P
 Keremane, M., 85-P
 Kerlan, C., 91-O, 92-O
 Kerns, J. P., 150-S, 34-P, 289-P, 291-P, 293-P
 Keshavarsi, M., 108-P
 Kessler, J. O., 832-P
 Ketelaar, J., 9-S, 178-S
 Khafipour, E., 84-O
 Khalaf, A. A., 862-P
 Khan, A., 17-O
 Khan, A. N., 14-O,
 Khan, I., 51-S
 Khan, I. A., 118-P, 853-P
 Khan, M. F., 614-P
 Khan, N., 51-S
 Khozeini, F. 164-P
 Kiepe, P., 441.a-P
 Kiewnick, S., 90-O, 52-P, 53-P
 Kikawada, T., 5-O
 Kikuchi, S., 213-P
 Kilbourne, K., 524-P
 Kim, D., 147-P, 254-P
 Kim, D. 175-P
 Kim, G., 194-S
 Kim, G. 736-P
 Kim, H., 73-S
 Kim, H., 109-P
 Kim, H., 175-P
 Kim, H., 206-P
 Kim, H., 941-P
 Kim, I., 73-S, 600-P
 Kim, J., 82-O
 Kim, J., 44-P
 Kim, J., 86-P, 133-P, 778-P
 Kim, J., 117-P
 Kim, J., 147-P, 254-P
 Kim, J., 933-P
 Kim, K., 86-P, 992-P, 996-P
 Kim, K., 633-P
 Kim, M., 334-P, 335-P, 545-P, 546-P
 Kim, M., 86-P, 133-P
 Kim, N., 109-P
 Kim, S., 389-P
 Kim, T., 514-P
 Kim, W., 374-P, 375-P
 Kim, Y., 73-S, 82-O
 Kim, Y., 58-O
 Kim, Y., 730-P, 778-P
 Kinard, G., 84-P, 151-P, 152-P
 Kinard, G., 233-P
 Kippley, T., 605-P
 Kirk, W. W., 719-P
 Kirkpatrick, B., 846-P, 847-P
 Kirkpatrick, T. L., 172-S, 181-P
 Kistler, C., 94-S
 Kistler, H. C., 157-O
 Kitajima, E. W., 82-P
 Kitto, S. L., 761-P
 Klaassen, V. A., 240-P
 Klein, E., 579-P
 Klein, J., 211-P
 Klein-Gebbinck, H., 502-P
 Klessig, D. F., 890-P, 983-P
 Kliejunas, J., 120-O
 Klindworth, D., 706-P
 Klingeman, W. E., 438-P
 Klink, V., 54-P
 Kloepper, J. W., 576-P, 737-P, 762-P
 Klopfenstein, N. B., 334-P, 335-P, 545-P, 546-P
 Klosterman, S. J., 93-S, 45-O, 107-O, 920-P
 Klotzbach, K., 813-P
 Kluepfel, D. A., 244-P, 246-P
 Knake, R. P., 558-P, 740-P
 Knezevic, S., 1025-P
 Knudsen, G. R., 514-P
 Ko, J., 109-P
 Ko, S., 86-P, 133-P
 Ko, S., 175-P
 Kobayashi, D. Y., 74-S, 148-O, 868-P
 Kobayashi, S., 87-O
 Koch, A., 521-P, 522-P
 Koch, P. L., 293-P
 Koebnik, R., 441-P
 Kohn, F., 21-O
 Kohn, L., 207-S, 290-P
 Koike, S. T., 11-O, 45-O, 155-P, 317-P, 965-P
 Koita, O., 441-P
 Kokalis-Burelle, N., 590-P, 745-P
 Köller, W., 63-O
 Kolomiets, M. V., 198-S
 Komatsu, M., 328-P
 Komives, T., 49-S, 9-O
 Kon, T., 6-O
 Kong, H., 871-P
 Kong, L., 187-P, 205-P
 Kong, L., 937-P
 Kong, P., 464-P, 465-P, 474-P
 Kopsell, D. A., 299-P
 Kopzhassarov, B., 564-P
 Korban, S., 875-P
 Kosta, K. L., 277-P
 Kouadio, L., 190-P, 714-P
 Koundal, V., 1007-P, 1011-P
 Kousik, C. S., 125-O, 315-P
 Kovacs, S., 204-S
 Koziol, L., 892-P
 Kraus, T. E., 616-P
 Krause, D., 84-O
 Kretzmer, K., 21-O
 Kreuze, J. F., 203-S
 Kriesemer, K., 133-S
 Krishnan, K., 309-P
 Kriss, A. B., 78-S, 1020-P
 Kriticos, D. J., 502-P
 Kroschel, J. E., 137-S, 363-P
 Krugner, R., 435-P
 Ku, H., 982-P
 Kuang, W., 887-P
 Kuehn, S., 871-P
 Kuhn, P., 601-P
 Kulye, M., 88-P
 Kumar, D., 1001-P
 Kumar, J., 511-P
 Kumar, K. K., 737-P
 Kumashiro, S., 436-P
 Kumashiro, T., 441.a-P
 Kund, G., 852-P
 Kung, Y., 995-P
 Kunjeti, S., 912-P
 Kunjeti, S. G., 912-P
 Kunta, M., 107-P, 256-P, 257-P
 Kuo, Y., 965-P
 Kurdyla, T., 327-P
 Kurosawa, Y., 830-P
 Kurose, D., 817-P, 818-P, 824-P
 Kurucheve, V., 79-O, 774-P
 Kusumah, Y. M., 130-S
 Kutcher, H. R., 502-P, 712-P
 Kuykendall, L. D., 7-P, 16-P
 Kwak, H., 86-P, 133-P
 Kwan, G., 452-P
 Kyamanywa, S., 6-S, 184-S
 L. T. Wilson, L. T., 370-P
 Laborte, A., 37-S
 Labrada, R. E., 50-S
 Labun, T., 188-P
 Lacava, P. T., 13-O
 Lafferty, J. 326-P
 LaForest, J. H., 149-S, 355-P, 398-P, 618-P

- Lage, D. A., 783-P
 Lagos Mora, L., 19-P
 Laguetta, S., 142-P
 Lai, P., 138-P
 Lai, W., 803-P
 Lakshman, D. K., 689-P, 871-P
 Lakshmanan, V., 761-P
 Lalancette, N., 248-P
 Lamb, P., 196-P
 Lambert, D., 868-P
 Lamo, J., 441.a-P
 LaMondia, J. A., 744-P
 Lampton, P., 204-S
 Landero-Valenzuela, N., 697-P, 700-P
 Landgren, C., 660-P
 Landi, L., 129-O
 Lane, S., 373-P
 Laney, A. G., 50-O, 255-P
 Langa, M., 441.a-P
 Langham, M. A., 618-P
 Langston, D. B., 561-P, 611-P
 Lannon, K. R., 126-O
 Lanteigne, C., 837-P
 Lara-Viveros, F. M., 72-P, 668-P, 697-P, 700-P
 Larkin, R. P., 519-P, 769-P, 889-P
 Larrey, R. L., 104-P
 Larrey, R. T., 162-P, 721-P
 Latin, R., 286-P
 Latoni, E., 350-P
 Latorre, B. A., 232.a-P, 242-P, 518-P
 Latorre, M., 124-O
 Lau, W., 557-P
 Lava Kumar, P., 95.a-P, 95.b-P
 Lawrence, A., 270-P
 Lawrence, C. B., 196-S
 Lawrence, G., 54-P
 Lawrence, K. S., 54-P, 182-P, 183-P, 576-P, 762-P
 Le, P. T., 797-P
 Leach, J. E., 86-S, 150-O, 119-P, 167-P, 213-P, 935-P, 1020-P
 Lea-Cox, J. D., 464-P, 474-P
 Leadbeater, A. J., 157-S, 157-S
 Leadbetter, C., 531-P, 927-P
 Leandro, L. F., 110-O, 209-P, 479-P, 503-P
 Lebeda, A., 161-O, 602-P
 Lebeis, A., 20-P
 LeBlanc, M., 194-S
 Lecomte, P., 163-O, 532-P
 Lecomte, P.,
 Lee, B., 109-P
 Lee, D., 133-P
 Lee, G., 109-P
 Lee, H., 145-P
 Lee, I., 201-S
 Lee, J., 82-O
 Lee, J., 633-P
 Lee, J., 761-P
 Lee, J., 933-P, 936-P
 Lee, K., 709-P
 Lee, K., 981-P
 Lee, M., 778-P
 Lee, M., 838.a-P
 Lee, R. F., 85-P, 118-P, 852-P, 853-P
 Lee, S., 82-O
 Lee, S., 86-P, 133-P, 935-P
 Lee, S., 109-P
 Lee, S., 633-P
 Lee, S., 633-P
 Lee, S., 693-P
 Lee, S., 933-P
 Lee, T., 803-P
 Lee, W., 147-P
 Lee, Y., 93-S, 933-P, 936-P
 Lee, Y., 9-P
 Lee, Y., 109-P
 Lee, Y., 175-P, 206-P, 374-P, 375-P, 730-P
 Lee, Y., 206-P
 Lehmann, A., 645-P, 658-P
 Lei, L., 993-P
 Lemanceau, P., 866-P
 Leon, G. A., 80-P
 Leppla, N. C., 10-S
 Leslie, C. A., 643-P
 Leslie, J. F., 47-P, 710-P
 Levesque, C., 200-S
 Levy, L., 80-P, 114-P, 115-P, 171-P, 985-P
 Levy, L., 107-P
 Levy, M., 207-S
 Lewers, K., 229-P
 Lewis, K. J., 172-P
 Lewis, R. S., 126-O
 Lewis, S., 373-P
 Lewis Ivey, M. L., 174-P, 779-P
 Leytem, A. B., 823-P
 Li, B., 10-O
 Li, B., 801-P
 Li, B., 943-P
 Li, C., 312-P
 Li, C., 560-P
 Li, D., 81-P, 146-P, 979-P
 Li, F., 168-P, 225-P, 306-P
 Li, G., 943-P
 Li, H., 57-P
 Li, H., 62-P
 Li, H., 924-P
 Li, H., 973-P
 Li, J., 143-O
 Li, J., 137-P, 648-P
 Li, K., 295-P
 Li, M., 489.a-P
 Li, M., 571-P
 Li, M., 641-P, 653-P, 978-P
 Li, Q., 648-P
 Li, Q., 187-P, 205-P
 Li, R., 173-S
 Li, R., 84-O
 Li, R., 84-P, 151-P, 152-P, 168-P, 225-P, 233-P, 306-P, 554-P
 Li, S., 96-S
 Li, S., 310-P, 801-P
 Li, S., 693.a-P
 Li, S., 743-P
 Li, W., 107-P, 114-P
 Li, W., 877-P
 Li, X., 25-P, 33-P, 112-P
 Li, X., 226-P
 Li, X., 497-P
 Li, X., 599-P
 Li, Y., 296-P
 Li, Y., 919-P
 Li, Y., 993-P
 Li, Z., 125-S
 Li, Z., 560-P
 Liang, C., 821-P
 Liang, C., 879.a-P
 Liang, X., 884-P
 Liang, Y., 803-P
 Liangsheng, X., 946-P, 947-P
 Libault, M., 833-P
 Liberti, D., 26-O, 102-O, 290-P, 662-P
 Lichtemberg, P. S., 74-P
 Liess, L., 22-P
 Lim, C. K., 71-S
 Lim, H., 974-P
 Lim, L., 960-P
 Lima, A. T., 82-P
 Lima, G. S., 541-P
 Lima, M. P., 316-P
 Lin, B., 998-P
 Lin, F., 173-S
 Lin, H., 59-P, 102-P, 841-P, 842-P
 Lin, H., 443-P
 Lin, H., 878-P
 Lin, L., 151-P, 152-P
 Lin, M., 416-P
 Lin, S., 981-P
 Lin, Y., 138-P, 447-P, 805-P
 Lin, Y., 1009-P
 Lin, Z., 88-P
 Lindow, S. E., 150-O, 860-P
 Ling, K., 100-O
 Lingmin, M., 202-P
 Linlin, M., 413-P
 Litt, A., 888-P
 Little, C. R., 49-P, 50-P, 51-P
 Liu, A., 147-O
 Liu, B., 489-P, 498-P, 589-P
 Liu, D., 893-P, 978-P
 Liu, G., 27-O
 Liu, H., 134-O, 407-P
 Liu, H., 137-P
 Liu, H., 306-P
 Liu, H., 785-P
 Liu, H., 827-P
 Liu, H., 943-P
 Liu, J., 73-P, 893-P
 Liu, J., 574-P
 Liu, J., 1020-P
 Liu, L., 943-P
 Liu, P., 841-P
 Liu, P., 890-P, 983-P
 Liu, Q., 224-P
 Liu, Q., 481-P, 482-P, 492-P
 Liu, R., 943-P
 Liu, S., 46-P, 578-P, 950-P
 Liu, S., 48-P
 Liu, T., 573-P, 574-P
 Liu, W., 403-P
 Liu, W., 497-P
 Liu, W., 573-P, 574-P, 588-P
 Liu, W., 894-P
 Liu, X., 604-P, 632-P, 765-P
 Liu, Y., 599-P
 Liu, Z., 25-P, 649-P, 650-P
 Liu, Z., 88-P
 Liu, Z., 171-P
 Llop, P., 75-S
 Lloyd, M. G., 69-O
 Lo, C., 46-P, 48-P, 578-P, 950-P
 Lo, C., 563-P
 Lobin, K., 303-P
 Lobo Junior, M., 458-P, 739-P
 Loconsole, G., 96-O
 Lohse, R., 565-P
 Lommel, S. A., 996-P
 Long, D., 12-O
 Lookabaugh, E., 274-P, 1019-P
 Loper, J. E., 71-S, 72-S, 10-P, 695-P, 866-P, 870-P
 Lopes, S. A., 61-P, 444-P
 Lopéz, C. E., 5-P
 Lopez Nicora, H. D., 204-P
 López-Cruz, I., 701-P
 López-Vega, J. R., 580-P
 Loré, A., 796-P
 Lore, J. S., 511-P
 Lorito, M., 526-P
 Louws, F. J., 489-P, 498-589-P, 608-P, 678-P, 681-P, 773-P
 Lowder, C., 780-P
 Lowenstein, F., 2-O
 Loyd, A., 275-P
 Lu, C., 588-P
 Lu, S., 147-O
 Lu, X., 295-P, 604-P, 765-P
 Lu, X., 801-P
 Lu, X. H., 116-O
 Lu, Y., 975-P
 Luck, J. E., 495-P
 Ludwig, G., 186-S
 Luo, C., 42-O
 Luo, H., 198-P
 Luo, L., 137-P
 Luo, M., 177-P
 Luo, Y., 638-P
 Lupien, S. L., 368-P
 Luster, D. G., 8-P, 391-P
 Lustosa, D. C., 336-P
 Luther, G., 133-S
 Lydon, J., 871-P
 Lynch, S., 469-P
 Lynn, N., 643-P
 Lynnes, T. C., 61-O
 Ma, B., 23-O
 Ma, C., 743-P
 Ma, J., 172-S, 181-P
 Ma, L., 93-S
 Ma, L., 94-S
 Ma, L., 14-P, 453-P
 Ma, P., 801-P
 Ma, X., 938-P
 Ma, Z., 478-P
 MacCormack, R., 209-S
 MacDonald, J. D., 897-P
 MacDonald, M., 56-P
 Macedo Pezzopane, J. E., 494-P
 MacGuidwin, A. E., 171-S
 Maciel, J. L., 207-S
 Mackasmiel, L., 39-P, 659-P, 670-P
 MacKenzie, S., 680-P
 MacRae, I. V., 142-P
 Madden, L. V., 62-S, 78-S, 80-P, 463-P, 490-P, 716-P
 Maddox, J., 46-S
 Maeda, K., 797-P
 Maffia, L., 467-P
 Magarey, R. D., 352-P
 Magculia, N. F., 511-P
 Maghsoudi, M., 37-P
 Magill, C. W., 49-P, 50-P
 Magnus, D., 119-S
 Mah, K., 928-P
 Mahaffee, W. F., 75-O, 455-P, 652-P
 Mahalingam, C. A., 3-O
 Mahmoudi, B., 83-O, 753-P
 Mahoney, N., 43-O
 Maia, A. H., 458-P
 Main, D., 1-P
 Makimoto, Y., 152-O
 Malcolm, G. M., 42-P
 Malick, B., 414.a-P
 Malinoski, M. K., 153-P
 Malvick, D., 278-P, 503-P
 Mandal, M. K., 197-S
 Maniania, J. N., 129-S
 Manjunath, K. L., 118-P, 852-P, 853-P
 Manjunath, S. V., 14-O
 Manjunatha, S. M., 726-P
 Manker, D., 12-O
 Mann, H., 888-P

Manoranjitham, S. K., 673-P, 808-P
Manosalva, P., 890-P
Mansfield, M. A., 813-P
Mansouri, S., 503-P, 907-P, 908-P
Mansur, T. O., 333-P
Manulis-Sasson, S., 874.a-P
Manzo-Sánchez, G., 669-P
Maomiao, H., 199-P
Marahatta, S. P., 570-P
Maraite, H., 190-P, 714-P
Mararuai, A. N., 59-S, 59-S
Marasas, C., 353-P, 353-P
Marco, M. L., 18-S
Maredia, K. M., 175-S, 175-S
Marek, S., 129-P
Marelli, F., 354-P
Maria, E., 121-O
Marine, S. C., 57-O
Markell, S. G., 61-O, 106-O, 123-O, 384-P
Marois, J. J., 26-O
Maroon-Lango, C. J., 7-P, 121-P
Marouelli, W. A., 783-P
Marquez-Villavicencio, M., 15-P
Marrero, G., 4-P, 6-P
Marrone, P., 749-P
Marsh, A. G., 912-P
Marshall, J. M., 158-O
Martens, G. M., 616-P
Martin, B., 284-P
Martin, C. A., 1-S
Martin, D., 652-P
Martin, F., 196-S
Martin, F. N., 107-O, 21-P
Martin, J., 708-P
Martin, M. J., 111-S
Martin, M. L., 187-S
Martin, R. R., 140-O, 227-P, 228-P, 231-P, 232-P, 232.b-P
Martínez-Bolaños, L., 669-P
Martins, O. M., 11-O, 98-P
Martyn, R. D., 66-S, 77-S
Maruthachalam, K., 93-S, 45-O, 107-O, 920-P
Marx, B., 168-S
Maryana, N., 402-P
Masamdu, R. T., 55-S, 57-S, 60-S
Masdek, N., 528-P
Massot, M., 646-P
Matheron, M. E., 810-P
Mathew, F., 384-P
Mathews, D. M., 900-P
Mathioni, S., 148-O
Mathiyazhagan, S., 815-P
Matsuguma, Y., 750-P
Matsukura, K., 411-P, 436-P
Matsumoto, M., 16-O
Matsumoto, T., 343-P, 344-P
Matsumura, M., 133-O, 411-P, 436-P
Matsuura, K., 99-S
Matsuura, K., 148-P
Matthews, B. F., 96-S, 56-P
Mattos, C. R., 467-P
Matveeva, E., 8-P
Mauceli, E., 95-S
Mauck, K., 399-P
Maul, J., 324-P
Mauleon, R. P., 213-P
Mauzey, S. J., 11-O
Mavrodi, D. V., 72-S, 704-P, 870-P
Mavrodi, O. V., 704-P, 756-P, 870-P
Mavrodieva, V., 171-P, 985-P
May De Mio, L. L., 252-P, 456-P
Mazurier, S., 866-P
Mazurin, E., 8-P
Mazzola, M., 640-P, 679-P
Mbata, G., 183-S
McAvoy, R. L., 696-P
McAvoy, T., 767-P
McBeath, J. H., 29-S, 105-P
McCabe, K., 36-O
McCall, D. S., 820-P
McCallister, J. E., 121-P
McCarthy, R. L., 355-P
McCartney, N., 523-P
McClean, A. E., 246-P
McClelland, M., 829-P
McClung, A. M., 370-P, 733-P
McClure, M., 298.a-P
McConnachie, A., 51-S
McConnell, M. E., 153-P
McDonald, B. A., 207-S
McDonald, V., 109-O
McDowell, J. M., 196-S
McDuffee, D., 752-P
McFadd, T. K., 204-S
McFarland, K., 248-P
McGhee, G. C., 450-P
McGovern, R. J., 10-S
McGrann, G. R., 209-S
McGrath, M. T., 59-O
McGuire, K., 105-S
McHale, L., 693-P
McKay, A., 538-P
McKee, B., 162-O
McKenzie, D., 342.a-P
McLaren, D., 178-P
McLean, H., 601-P
McMillan, R. T., 272-P
McNally, R. R., 873-P
McOwen, N., 113-P
McRoberts, N., 488-P
McSpadden Gardener, B., 82-O, 517-P, 577-P
Meacham, T. M., 118-O
Meadows, I. M., 760-P
Medford, J. I., 150-O
Medrano, E. G., 136-O
Mehl, A., 65-S
Meinhardt, S. W., 61-O
Mekanya, C. O., 351-P
Mekete, T., 204-P
Mekuria, T., 509-P
Melcher, U. K., 120-P, 128-P, 1014-P
Melgar, J., 365-O
Melgarejo, T. A., 6-O
Melis, R., 617-P
Mellinger, H., 7-O
Melloy, P., 495-P
Melouk, H. A., 222-P, 486-P, 534-P, 942-P
Melzer, M. J., 40-S, 37-O, 987-P
Mena-Ali, J., 40-P, 399-P
Mendes, O., 170-P
Meng, L., 10-O
Meng, Q., 785-P
Mengesha, B. G., 931-P
Mengiste, T. D., 931-P
Mengistu, A., 70-O, 106-P
Menkir, A., 95.a-P, 177-P
Menzies, J. G., 727-P
Meon, S., 867-P
Mera, J., 751-P
Mercier, M., 550-P, 551-P
Mersha, Z., 168-S, 169-S, 311-P, 798-P
Mersie, W., 51-S
Mescher, M. C., 199-S, 399-P
Meshram, M. K., 691-P
Metz, S., 21-O
Meyer, R. S., 888-P
Meyer, S. L., 577-P
Meyers, B. C., 30-O, 912-P
Mian, M., 693-P
Miano, J. L., 73-O
Miao, H., 993-P
Miao, Z., 743-P
Michailides, T. J., 74-P, 456-P
Middleton, G., 901-P
Mideros, M., 19-P
Miedaner, T., 30-P
Mielenz, J. R., 93-P
Miles, T. D., 896-P
Milgroom, M. G., 45-P
Miller, S. A., 183-S, 185-S, 2-P, 174-P, 751-P, 779-P, 809-P
Miller, T. A., 13-O
Milling, A., 146-O, 834-P
Milus, E. A., 157-O, 472-P, 709-P
Min, K., 933-P
Minenkova, O., 855-P
Mingora, C., 898-P
Minz, D., 579-P
Minzhao, Z., 413-P
Mireles, M. S., 241-P, 991-P
Mitchell, F., 445-P
Mitchell, P. D., 23-S
Mitchell, R., 1005-P
Mitchell, T. R., 71-P, 629-P
Mith, O., 835-P
Mitra, A., 689-P
Mitsuhashi, S., 5-O
Mittal, S., 959-P
Mitter, N., 1004-P, 1005-P, 1007-P, 1008-P
Miwa, E., 830-P
Mixon, J. T., 141-P
Miyasaka, S. C., 666-P, 667-P
Mizell III, R. F., 631-P
Mizubuti, E. S., 467-P, 541-P, 546-P
Mlsna, T., 70-P
Mmbaga, M. T., 39-P, 524-P, 659-P, 670-P
Mock, R. G., 84-P, 151-P, 152-P, 230-P, 233-P, 554-P
Moersfelder, J. W., 246-P
Moesch, M., 595-P
Mogrovejo, C., 521-P, 522-P
Mohammadi, E., 110-P, 111-P
Mohan, K., 123-P
Mohankumar, S., 179-S, 74-O, 814-P, 815-P
Molina, A. B., 528-P, 690-P
Molina, M. F., 687-P, 688-P
Molina Risco, M. D., 687-P, 688-P
Moliner, J., 521-P, 522-P
Molnar, T. J., 41-O, 531-P, 927-P
Molyneux, R., 43-O
Momol, T. M., 388-P
Moncrief, I., 171.a-P, 171.b-P
Monfort, W. S., 43-P, 157-P, 210-P, 693.b-P
Monga, D., 1011-P
Mongkolporn, O., 103-O
Montero-Astúa, M., 1003-P
Montpetit, J., 727-P
Mony, S., 863-P
Moon, D., 472-P
Moore, A., 56-S, 168-S
Moore, G. A., 862-P
Moore, S. R., 54-P, 182-P, 576-P
Moorman, G. W., 6.a-P, 464-P, 474-P
Mora, F., 382-P
Moraes, W. B., 493-P, 494-P
Moraes, W. B., 493-P, 494-P
Moraes, W. B., 496-P
Mordechai, S., 34-O
Moreira, E. N., 97-P, 496-P
Moreno-Velázquez, M., 140-P
Morey, K. J., 150-O
Morgan, D. P., 74-P
Mori, S., 460-P
Morid, B., 37-P, 163-P, 529-P, 530-P
Morishita, D., 793-P
Morita, S., 5-O
Moriwaki, J., 148-P
Morrison, J., 204-P
Moscardi, F., 126-S
Moscardi, M. L., 126-S
Moscoso-Ramírez, P. A., 612-P
Mostert, D., 528-P
Mota, A. A., 615-P, 619-P
Motavalli, P., 513-P
Motomura, S. A., 667-P
Mou, B., 45-O
Moury, B., 307-P
Mowery, P., 839-P
Moyer, M., 237-P
Mozaffari, J., 100-P
Mucharromah, 121-O
Mueller, D. S., 67-O
Mueller, E., 775-P
Mueller, T. A., 558-P, 740-P
Mugo, H. M., 429-P
Mukankusi, C., 617-P, 623-P
Mukhlhongo, R., 516-P
Mulinti, P., 958-P
Mullens, T. R., 963-P
Mullins, D. E., 183-S, 809-P
Mullis, S., 555-P
Mumford, J., 354-P
Munkvold, G., 110-O, 177.a-P, 340-P
Munoz, A., 116-P
Munyanza, J. E., 60-P, 224-P
Murali, P. M., 613-P
Murley, V., 628-P
Murolo, S., 129-O
Murray, T. D., 705-P
Musser, F. R., 208-P
Musson, G. H., 609-P, 610-P
Mutege, C. K., 44-S
Muthomi, J., 302-P
Mwangi, E., 516-P
Myers, K., 79-P
Nacro, S., 414.a-P, 567-P
Naeh, K., 47-S
Naidu, R. A., 15-S, 41-S, 98-O, 122-P, 241-P, 509-P, 673-P, 808-P, 986-P, 991-P
Nair, M. G., 896-P
Nakamura, S., 129-S
Nakhla, M. K., 114-P, 115-P
Nam, M., 736-P
Nan, z., 919-P
Nancarrow, N., 495-P
Nancy, G. F., 912-P
Nandwani, D., 169-S
Narla, R., 302-P
Nash, B., 153-S
Nasim, G., 51-S
Natarajan, S., 56-P
Natilla, A., 1002-P
Nauen, R., 156-S

- Nava-Diaz, C., 697-P
Navaneetha, T., 951-P
Navarre, D., 197-S
Navi, S., 621-P, 624-P
Navie, S., 51-S
Nawkarkar, P., 691-P
Nazerian, E., 108-P, 250-P
Neave, S., 133-S
Nechet, K. L., 336-P
Neece, D., 833-P, 892-P
Negi, S., 985-P
Negrisola, E., 598-P
Neher, O. T., 793-P
Neily, W., 135-O
Nelson, A., 37-S
Nelson, B. D., 26-P, 218-P, 499-P
Nelson, M. E., 481-P, 482-P, 491-P, 492-P
Nelson, R., 693.a-P
Nelson, S., 169-S
Nelson, S. D., 256-P
Nemchinov, L. G., 1002-P
Nemes, K., 1012-P
Nepal, A., 543-P, 544-P
Neufeld, K. N., 459-P
Nevárez-Portillo, G., 580-P
Neves Graca, R., 545-P, 546-P
Newcomb, M., 191-P
Ng, J., 85-P
Ngugi, H. K., 25-S, 44-S, 63-O, 537-P, 605-P
Nguyen, K., 639-P
Nguyen, L., 403-P
Nguyen, N., 538-P
Nguyen, T., 51-S
Nguyen, T. C., 689-P
Ni, X., 409-P
Nian, G., 57-P
Nibert, M. L., 973-P
Niblack, T. L., 170-S, 204-P
Nicol, J. M., 139-S
Nielsen, K. A., 216-P
Nieto-Angel, D., 72-P, 281-P, 668-P, 697-P, 698-P, 700-P
Nigatu, L., 51-S
Nikolaeva, E. V., 389-P
Nikolaeva, O. V., 52-O, 91-O, 78-P, 308-P, 967-P
Nischwitz, C., 663-P
Nishijima, K. A., 69-P
Nita, M., 236-P, 509-P
Niu, D., 827-P
Njambere, E. N., 152-S, 155-O
Njau, P., 191-P
Noel, J. T., 22-S, 829-P
Noga, G., 20-O, 35-O, 1024-P
Noling, J. W., 590-P, 675-P, 676-P
Noll, L. W., 51-P
Noorda-Nguyen, K. M., 347-P
Norman, D. J., 388-P, 454-P, 831-P
Norton, G. W., 326-P
Nouri, S., 364-P
Noussourou, M., 809-P
Novinscak, A., 825-P, 837-P
Novy, R. G., 770-P
Nuding, A., 2-O
Nunez, J., 71-O
Nunney, L., 149-O
Nutter, F. W., 76-S, 81-S, 553-P
Nwe, L., 750-P
Nwilene, F. E., 414.a-P, 441.a-P
O'Donnell, C., 51-S
Oak, S., 134.a-P, 465-P
Obando, C., 19-P
Oben, T. T., 351-P
Oberle, C. S., 426-P
Ochoa-Corona, F., 85-S, 126-P, 127-P, 128-P, 129-P, 130-P, 131-P, 412-P
O'Connell, N., 258-P, 259-P
O'Donnell, K., 717-P
O'Donovan, J. T., 712-P
Oda, C., 342.a-P
Oerke, E., 169-P
Ofek, M., 579-P
Ogihara, Y., 137-O, 436-P
O'Gorman, D. T., 239-P
Oguntade, O., 351-P
Oh, I., 175-P, 730-P
Ohshima, K., 115-O
Ohtsu, R., 133-O
Ojiambo, P. S., 25-S, 49-O, 459-P
Oka, Y., 19-O
Okabe, I., 5-O
Okazaki, R., 276-P
O'Keeffe, T. L., 930-P
Okoth, S., 516-P
Oktarina, S., 121-O
Okubara, P. A., 40-O, 122-P, 756-P
Okunowo, W. O., 1022-P
Olanya, M., 519-P, 769-P
Olatinwo, R., 220-P
Olaya, G., 63-S, 64-S, 595-P, 620-P, 742-P
Olfert, O. O., 502-P
Olineka, T., 238-P
Oliveira, M. A., 615-P
Oliveira, R. B., 615-P
Oliver, J. E., 94-O
Olivera Firpo, P. D., 706-P
Olotuah, O. O., 415-P
Olsen, J., 161-O, 550-P, 551-P
Olsen, M., 280-P
Olsen, N., 786-P, 787-P
Olson, B. R., 718-P
Olson, J., 131-P
Olson, M. E., 64-O
Olson, S. M., 767-P
Olson, T. N., 389-P
Omdal, D., 386-P
O'Neal, M., 925-P
O'Neil, W., 528-P
Onasanya, A., 414.a-P
Onasanya, R. O., 441.a-P
Ong, K., 1020-P
Ooshiro, A., 223-P
Oostendorp, M., 112-S, 193-P, 741-P
Oosterhof, J., 149-P
Opperman, C. H., 151-O
Orapa, W., 55-S
Orozco-Santos, M., 72-P, 669-P, 698-P
Orquera, G., 521-P, 522-P
Ortega-Beltran, A., 105-O
Ortiz, B., 182-P
Ortiz-Ribbing, L. M., 822-P
Osborne, L. E., 92-P, 510-P
Osei, M. K., 183-S, 809-P
Osman, F. A., 87-P, 238-P, 240-P, 976-P, 977-P
Osorno, J. M., 123-O
Ospina-Giraldo, M. D., 898-P
Osswald, W., 880-P, 885-P, 902-P
Osterbauer, N., 373-P
Osuntoki, A. A., 1022-P
Otani, H., 804-P
Ottrosina, W., 120-O
Otto, K., 304-P
Oruka, A., 133-O
Oudemans, P., 377-P
Ouedraogo, L., 441-P
Outwater, C. A., 642-P
Ouyang, P., 128-P
Owens, K. J., 115-P
Owens, R. A., 974-P
Ownley, B. H., 141-P, 301-P, 403-P, 438-P, 789-P
Özaktan, H., 759-P
Ozias-Akins, P., 884-P
Ozkilinc, H., 31-P, 32-P
Padasht, F., 37-P
Paetzold, L., 381-P
Paez, P. A., 515-P
Pagliaccia, D., 162-O
Pájtli, É., 139-P
Palencia, E. R., 71-P
Palkovics, L., 139-P
Palm, M. E., 257-P
Palmateer, A. J., 262-P, 271-P, 272-P, 273-P
Palmer, C., 383-P
Palmieri, M., 13-S
Palmucci, H. E., 125-P, 394-P
Palou, L., 612-P
Palukaitis, P., 999-P, 1000-P
Palumbo, J. D., 930-P
Pan, H., 132-O
Pan, J., 957-P
Panaccione, D. G., 957-P, 958-P
Pande, S., 136-S
Pandey, A. K., 955-P
Pandian, K., 4-O
Pandian, V., 673-P
Panijel, M., 874.a-P
Pantoja, M. B., 336-P
Pappu, H. R., 60-P, 136-P, 302-P, 303-P, 587-P, 1004-P, 1005-P, 1006-P, 1007-P, 1008-P, 1009-P, 1010-P, 1011-P
Parac, E. A., 177-S
Parada, R. Y., 804-P
Paradornuwat, A., 442-P
Pardiyak, E., 455-P
Paret, M. L., 767-P
Parikh, P. D., 75-O
Park, E., 67-P
Park, H., 730-P
Park, I., 559-P
Park, J., 93-S
Park, J., 82-O
Park, J., 778-P, 935-P
Park, K., 103-S, 86-P, 133-P
Park, M., 966-P
Park, S., 983-P
Park, S., 992-P, 996-P
Park, Y., 198-S
Parke, J. L., 2-O, 337-P, 339-P, 823-P
Parker, B. O., 204-S
Parker, S. R., 244-P, 806-P
Parkin, I., 948-P
Parkunan, V., 139-O
Paschke, M., 1023-P
Pastor-Corrales, M. A., 123-O
Pastushock, G., 188-P
Patel, A., 582-P
Patel, A. V., 565-P, 575-P
Patel, N., 74-S, 148-O, 868-P
Patil, V. B., 777-P
Patterson, C., 871-P
Paul, P. A., 35-S, 78-S, 2-P, 463-P, 490-P, 626-P, 627-P, 693.c-P, 693.d-P, 716-P, 725-P, 1018-P
Paulitz, T. C., 25-O, 319-P, 466-P
Paulsen, I. T., 71-S, 72-S, 870-P
Pavan, W., 208-S
Pavan, W., 680-P
Payne, A., 78-O
Payne, G. A., 48-S
Payton, M., 1014-P
Paz, Z., 93-S
Peachey, E., 361-P
Pearce, T. L., 66-P
Pearsaul, D., 620-P
Pedersen, D. K., 626-P
Pedersen, P., 742-P
Pedley, K. F., 205-S, 367-P, 372-P, 955-P
Peduto, F., 75-O, 113-O
Peeden, K. A., 489-P, 498-P, 589-P, 678-P
Peever, T. L., 154-O, 1-P, 31-P, 32-P, 545-P, 546-P
Pegues, M., 180-P
Peinado, S. A., 988-P
Peiqian, L., 144-P
Peña, A., 858-P
Pena, J. E., 1-P
Peng, G., 179-P
Peng, J., 95-P, 685-P
Peng, K., 46-P, 48-P, 563-P, 578-P, 950-P
Peng, Y., 937-P, 938-P, 939-P
Peng, Z., 939-P
Pengfei, Z., 413-P
Peper, A., 21-O
Peres, N. A., 680-P
Perez, C. A., 475-P
Perim, L., 598-P
Peros, J., 163-O
Perotin, B., 603-P
Perry, K. L., 7-O
Perumal, R., 49-P, 50-P
Peter, K. A., 67-P, 883.a-P
Peterson, G. L., 205-S, 367-P, 372-P
Pethybridge, S. J., 66-P, 96-P, 484-P
Petzoldt, C. H., 744-P
Pfeiffer, D. G., 183-S, 809-P
Pflueger, V., 44-O
Philmus, B. J., 869-P
Picton, D. D., 115-P
Pierce, B., 847-P
Pierson, E. A., 872-P
Pierson, L. S., 872-P
Pilkington, L. J., 395-P
Pils, J. R., 68-O, 68-O, 594-P, 594-P, 603-P, 603-P
Pimenta, R. S., 703-P
Ping, Y. C., 980-P
Pio-Ribeiro, G., 541-P
Pirahesh, S., 163-P
Pisani, C., 47-O
Pitman, T., 977-P
Plett, J., 196-S
Ploetz, R., 108-O, 342-P, 396-P
Plyler-Harveson, T., 216-P
Pokharel, R., 84-P, 554-P, 816-P
Polashock, J., 234-P, 377-P
Pomerantz, A., 34-O
Pond, E., 162-O
Poojari, S., 98-O, 122-P, 808-P, 986-P
Poole, G., 25-O
Poon, J., 948-P
Popko, J., 156-O
Poplawsky, A. R., 43-S
Poromarto, S., 499-P
Porter, L. D., 319-P, 717-P
Posadas, A., 277-P
Pospieszny, H., 970-P, 971-P
Post, A. R., 820-P
Pothier, J. F., 44-O, 859-P
Potnis, N., 831-P

- Poudel, B., 50-O
 Pourrahim, R., 115-O
 Powell, C. A., 607-P, 849-P, 850-P
 Pozza, E. A., 333-P
 Prabhu, A. S., 457-P, 738-P
 Prabhu, A. S.,
 Prasad, R. D., 951-P
 Prasanna Kumar, M. K., 14-O
 Prathuangwong, S., 591-P, 860-P, 861-P
 Preece, J., 977-P
 Presting, G. G., 4-P, 6-P
 Preuett, J. A., 391-P
 Price, J. F., 682-P
 Proctor, R., 177.a-P
 Prom, L. K., 49-P, 50-P
 Pryor, B., 32-P
 Pscheidt, J. W., 54-O, 56-O, 695-P
 Puehler, A., 859-P
 Pugalendhi, L., 179-S
 Pugliese, M., 755-P
 Pupakdeepan, W., 591-P
 Puppala, N., 671-P
 Puri, K. D., 540-P, 547-P
 Pusey, P., 75-S, 10-P, 656-P
 Putman, A. I., 292-P, 535-P, 536-P
 Putnam, M., 168-S
 Pye, M. F., 897-P
 Qandah, I. S., 485-P
 Qi, F., 588-P
 Qi, M., 875-P
 Qi, Y., 1021-P
 Qian, J., 489.a-P
 Qian, X., 101-S
 Qianfu, S., 201-P, 202-P
 Qiang, Y., 199-P
 Qiming, J., 201-P, 202-P
 Qin, G., 73-P
 Qin, H., 884-P
 Qingyun, G., 199-P, 821-P
 Qiu, D., 127-O, 128-O
 Qiu, D., 944-P, 945-P
 Qiu, J., 573-P, 574-P
 Qiu, W., 97-O
 Qiyun, Y., 732-P, 732-P
 Qodir, H. A., 402-P
 Qu, X., 3-P
 Quemada, H., 121-S
 Quesada-Ocampo, L. M., 161-O, 20-P, 550-P, 551-P
 Quintanilla, M., 168-S
 Quirin, E. A., 888-P
 Quispe, C., 934-P
 Quito-Alva, D. F., 140-O, 232-P
 Quito-Aliva, D. F., 231-P, 232.b-P
 Raczkowski, C. W., 408-P
 Radmer, L. E., 107-O
 Radovich, T., 665-P
 Radwan, O., 833-P, 909-P
 Raghavan, S., 613-P
 Raguchander, T., 74-O
 Rahjoo, V., 529-P
 Rahman, M., 681-P
 Rahmadian, P., 150-P
 Raid, R. N., 470-P
 Rajashekara, G., 2-P
 Rakhshandehroo, F., 99-P, 100-P, 101-P, 150-P
 Ramadugu, C., 85-P, 118-P, 852-P, 853-P
 Ramakrishnan, S., 179-S
 Raman, V., 30-O
 Ramaraj, T., 95-S
 Ramasamy, S., 416-P
 Ramillete, E. G., 690-P
 Ramirez, P., 382-P
 Ramsey-Kroll, A., 386-P
 Randall, J., 968-P
 Randles, J. W., 557-P
 Rane, K. K., 153-P, 358-P
 Rao, V. P., 726-P
 Rappaport, K., 171-P
 Rapusas, H. R., 177-S
 Rascoe, J., 257-P
 Ratcliffe, S. T., 356-P
 Rathe, A. A., 395-P
 Rauf, A., 176-S
 Rauscher, G., 45-O
 Ravanlou, A., 39-O
 Ravel, J., 74-S
 Ravichandran, A., 147-O
 Ravnika, M., 451-P
 Razi, M. F., 118-P, 853-P
 Read, A., 667-P
 Reardon, C. L., 656-P
 Rearick, E., 219-P
 Rebolgar-Alviter, A., 701-P
 Rebouças, T. H., 700-P
 Recendez-Alvarado, M., 1015-P
 Reddy, M. S., 737-P
 Redinbaugh, M. G., 989-P, 997-P
 Reed, D., 791-P
 Reed, D. L., 388-P
 Regnault-Roger, C., 646-P
 Rego, M. J., 336-P
 Reid, J., 813-P
 Reilly, C., 644-P
 Reininger, V., 512-P
 Reinsel, M. D., 974-P
 Reis, A. B., 316-P, 323-P
 Reisinger, P., 49-S, 9-O
 Reitz, S. R., 7-O
 Remenant, B., 146-O
 Rémus-Borel, W., 727-P
 Ren, R., 192-P
 Resende, R. S., 722-P
 Restrepo, S., 5-P, 19-P, 371-P, 857-P
 Restrepo Benavides, M., 865-P
 Restrepo Restrepo, S., 865-P
 Rey, C., 158-P
 Rey, P., 532-P, 646-P
 Reyes Caldas, P. A., 857-P
 Reyna, R., 922-P
 Reynolds, G. J., 142-P, 488-P
 Rezaee, M. B., 581-P
 Rezaee, S., 163-P, 282-P, 500-P
 Rezzonico, F., 75-S
 Rho, J., 18-O
 Ribeiro, P. S., 739-P
 Richard, J. L., 47-S
 Richard, P., 674-P
 Richardson, F., 322-P
 Richardson, P., 464-P, 465-P
 Richman, B., 117-S
 Richman, R., 22-P
 Rida, A. d., 394-P
 Ridenour, J. B., 910-P
 Rideout, S. L., 767-P, 788-P, 812.a-P
 Ridgway, H. J., 66-O
 Riggs, J. L., 558-P, 740-P
 Riley, K., 369-P, 660-P
 Riley, R. T., 46-S, 71-P, 911-P
 Rioux, R., 291-P
 Riquelme, D., 657-P
 Ristaino, J. B., 365-P, 366-P, 366-P
 Ritson, R. M., 925-P
 Ritzenthaler, C., 99-O
 Rivard, C. L., 773-P
 Rivera, L. I., 350-P
 Rivera, M., 363-P
 Rivera-Bustamante, R., 1015-P
 Rivera-Vargas, L. I., 348-P
 Rizzo, D. M., 160-O, 332-P, 461-P
 Rizzotto, M., 265-P
 Roberts, A., 692-P
 Roberts, D., 871-P
 Roberts, P. A., 963-P
 Robertson, A. E., 35-S, 67-O, 626-P, 627-P, 899-P, 925-P, 1018-P
 Robertson, N. L., 231-P, 264-P
 Robinson, J., 341-P
 Robinson, T. L., 253-P
 Robles-González, M., 698-P
 Robles-Hernandez, L., 118-O, 308-P, 580-P
 Rocha, C. S., 82-P
 Rodrigues, F. A., 722-P
 Rodrigues, I., 47-S
 Rodrigues, R. A., 97-P, 496-P
 Rodriguez, C. G., 534-P
 Rodriguez, D. A., 812-P
 Rodriguez, G., 1023-P
 Rodriguez, L., 1017-P
 Rogers, E. E., 838-P, 838.a-P
 Rogers, M., 139-O
 Rogers, S., 1014-P
 Roh, J., 730-P, 736-P
 Rojas, S., 518-P
 Rojas-Martínez, R. I., 140-P
 Roldán-Nestor, O., 701-P
 Rollemberg, C. L., 252-P
 Rollins, J. A., 102-O, 290-P
 Rolshausen, P. E., 43-O, 163-O, 236-P
 Romag, A., 30-O
 Romanazzi, G., 129-O
 Romero, M., 8-O
 Ronald, P., 847-P
 Roose, M., 118-P, 853-P
 Roper, C., 259-P
 Roper, M. C., 840-P, 874-P
 Rosenberger, D. A., 24-S
 Rosenzweig, N., 80-O
 Roskamp, G. K., 822-P
 Ross, D., 464-P
 Ross, R. E., 135-O
 Ross-Davis, A. L., 545-P, 546-P
 Rossi, V., 635-P
 Roskopf, E. N., 590-P, 745-P
 Rotenberg, D., 990-P
 Rothrock, C. S., 172-S, 43-P, 181-P
 Rouse, D., 1016-P
 Roux, J., 164-S
 Rouxel, T., 196-S
 Rowhani, A., 98-O, 238-P, 240-P, 268-P, 976-P
 Roy, A., 95-O, 80-P
 RoyChowdhury, M., 28-O
 Royer, T. A., 711-P
 Rozwalka, L. C., 456-P
 Ruan, H., 295-P
 Rubin, A., 119-O
 Rubin, B., 160-S, 192-S
 Rubio, I., 154-P
 Rucker, K., 606-P
 Rudolph, K., 218-P
 Rueda, A., 8-S
 Ruhl, G. E., 355-P
 Rumore, A., 196-S
 Rundquist, D., 505-P
 Runge, F., 161-O
 Rupe, J. C., 341-P, 520-P, 693.a-P
 Rush, C. M., 381-P
 Rush, M. C., 22-O
 Rush, T. A., 622-P
 Rushanaedy, I., 167-S
 Russell, P. F., 113-P
 Russell, S., 672-P
 Russo, J., 352-P
 Saad, A. T., 245-P
 Saalau Rojas, E., 448-P
 Sabanadzovic, S., 227-P, 228-P, 263-P, 266-P, 267-P, 270-P
 Sabbatini, P., 647-P
 Sable, S. V., 1011-P
 Saeki, T., 817-P
 Saini, M., 915-P
 Sainju, U. M., 162-P
 Saito, H., 124-P
 Saito, S., 60-O
 Sakai, H., 124-P
 Sakthikumar, S., 95-S
 Sakumoto, S., 133-O
 Salamon, P., 139-P
 Salánki, K., 1012-P
 Salas, B., 257-P
 Salaudeen, M., 95.a-P
 Saldarelli, P., 96-O
 Saleh, A. A., 51-P
 Salinari, F., 635-P
 Sall, D. S., 183-S
 Salman, A., 34-O
 Samac, D. A., 552-P, 940-P
 Samiyappan, R., 179-S, 74-O, 673-P
 Sampangi, R., 123-P
 Sanada-Morimura, S., 133-O
 Sances, F., 590-P
 Sánchez-Aguirre, M. D., 72-P
 Sanders, F. H., 203-P, 220-P, 561-P, 611-P
 Sandra, B., 362-P
 Sanogo, S., 22-P, 671-P
 Santhanam, P., 93-S
 Santos, H. T., 235-P
 Santra, D. K., 216-P
 São José, A. R., 72-P
 Saponari, M., 96-O
 Sasaki, R., 427-P
 Sato, E., 533-P
 Sato, T., 148-P
 Satoh, K., 213-P
 Satpute, A., 257-P
 Sattary, M., 100-P
 Sauve, R. J., 39-P, 659-P
 Savary, S., 34-S, 37-S, 511-P, 734-P
 Scala, F., 526-P
 Schaad, N. W., 8-P, 442-P
 Schade-Schütze, A., 193-P
 Schardl, C. L., 957-P, 958-P
 Schaub, T., 924-P
 Schell, M., 117-P
 Scherm, H., 25-S, 79-S, 114-O, 313-P, 843-P
 Schilder, A. M., 647-P, 800-P, 896-P
 Schiller, C. T., 110-S, 766-P
 Schisler, D. A., 719-P, 725-P
 Schlub, K., 168-S
 Schlub, R. L., 168-S, 169-S
 Schmale, D. G., 57-O
 Schmidt, C., 211-P
 Schmidt, F. J., 886-P
 Schmidt, L. S., 243-P, 247-P
 Schmidt, M., 211-P
 Schmitt, M., 298.a-P
 Schnabel, G., 42-O, 72-O, 226-P, 632-P
 Schneider, K., 171.a-P, 171.b-P, 1020-P
 Schneider, K. L., 4-P, 6-P
 Schneider, R. W., 622-P, 917-P

- Schneider, W. L., 120-P, 127-P, 134-P, 135-P, 969-P
- Schoelz, J. E., 93-O, 886-P
- Schoen, C. D., 170-P
- Scholl, E. H., 151-O
- Schrimsher, D. W., 576-P
- Schroeder, B. K., 1-P, 326-P, 657-P
- Schroeder, K. L., 466-P
- Schuenzel, E. L., 397-P
- Schulte-Geldermann, E., 89-S
- Schumann, A. W., 675-P
- Schuster, S. C., 929-P
- Schutte, G. C., 48-O
- Schwartz, H. F., 304-P, 305-P, 326-P, 618-P, 1006-P
- Sciumbato, G., 693.a-P
- Scott, B., 1026-P
- Scott, J. B., 66-P, 96-P
- Scott, T., 183-P
- Scott, T., 469-P
- Sechler, A., 442-P
- Sedlakova, B., 602-P
- See, D. R., 705-P
- Seebold, K. W., 791-P, 792-P
- Seem, R., 237-P
- Seetharaman, S., 4-O
- Seeve, C., 795-P
- Seidl, A. C., 17-P
- Sekine, K., 197-S
- Selote, D., 197-S
- Seng, A., 934-P
- Sengoda, V. G., 60-P
- Seo, S., 559-P, 633-P
- Seo, Y., 966-P
- Sepúlveda, X., 654-P
- Sere, Y., 441.a-P
- Seraji, A., 500-P
- Serfontein, S., 48-O
- Serpi, M., 40-P
- Serrano-Acevedo, J., 913-P
- Serrato-Díaz, L. M., 348-P
- Sessa, G., 874.a-P
- Sétamou, M., 257-P
- Sether, D. M., 40-S, 37-O, 987-P
- Seybold, S., 387-P
- Seymour, L., 79-S
- Shabbir, A., 51-S
- Shaffer, B. T., 695-P
- Shah, D., 463-P
- Shah, K. H., 683-P
- Shaki, N., 108-P
- Shams-Bakhsh, M., 99-P, 101-P
- Shan, W., 196-S
- Shaner, D., 163-S
- Shang, J., 33-P, 112-P
- Shang, Q., 25-P, 146-P, 649-P, 650-P
- Shao, J., 201-S, 16-P, 156-P
- Shao, J. Y., 7-P
- Shao, X., 560-P
- Shaodong, H., 413-P
- Shapiro, M., 131-S
- Sharma, H. C., 138-S
- Sharma, M., 926.a-P
- Sharma, P., 582-P, 926.a-P
- Sharma, P. K., 1004-P
- Sharma, R., 726-P
- Sharma-Poudyal, D., 111-O
- Sharon, M., 882-P
- Shatters, R. G., 138-O
- Shaw, J., 182-P
- Shaw, R., 818-P
- Shell, D. P., 299-P
- Shelver, W. L., 104-P
- Shem, O., 302-P
- Shen, G., 410-P
- Shen, Q., 285-P
- Shen, Y., 89-P
- Sheng, H., 705-P
- Shepard, M. B., 131-S, 176-S, 177-S
- Shepherd, C. P., 68-O, 594-P, 603-P
- Shepherd, L., 340-P
- Shetty, K. K., 188-P, 466-P
- Shew, B., 274-P, 1019-P
- Shew, D., 126-O
- Shi, J., 887-P
- Shi, Q., 862-P
- Shi, X., 844-P
- Shibu, M., 578-P
- Shier, W. T., 89-O
- Shim, C., 778-P
- Shim, H., 109-P
- Shim, H., 175-P, 374-P
- Shimomura, N., 804-P
- Shin, D., 18-O, 730-P
- Shin, D., 736-P
- Shin, S., 559-P
- Shintaku, M., 666-P, 667-P, 795-P
- Shintami, 121-O
- Shiraishi, A., 47-P, 547-P
- Shiraishi, T., 797-P
- Shirinfekr, A., 500-P
- Shishkoff, N., 376-P
- Shock, C., 123-P
- Shrestha, B. K., 22-O
- Shuai, B., 928-P
- Shuker, S., 19-O
- Shuling, S., 413-P
- Sieber, T. N., 512-P
- Sierotzki, H., 65-S, 595-P
- Sikora, R., 139-S, 169-P
- Silva, A. C., 619-P
- Silva, D. D., 722-P
- Silva, F. N., 82-P
- Silva, G. B., 336-P, 457-P
- Silva, J. A., 444-P
- Silva, J. F., 336-P
- Silva, L. P., 738-P
- Silva, R. N., 739-P
- Silva, S. J., 541-P
- Silva-Lobo, V. L., 457-P, 738-P
- Silva-Rojas, H. V., 701-P
- Sim, S. T., 240-P, 268-P
- Simmonds, D., 892-P
- Simmons, R., 811-P
- Simon, S. A., 30-O
- Sims, A., 142-P
- Singh, A. K., 984-P
- Singh, D., 191-P
- Singh, K., 97-O
- Singh, R., 263-P
- Singh, S., 511-P
- Sinohin, V. O., 528-P, 690-P
- Sintim, H. O., 408-P
- Sipes, B., 152-O, 562-P, 570-P, 665-P, 772-P
- Sisterson, M. S., 359-P, 845-P
- Sit, T. L., 996-P
- Skantar, A., 298.a-P
- Skaria, M., 256-P, 257-P
- Skelsey, P., 487-P
- Skinkis, P., 455-P
- Skoda, S. R., 83-S
- Slinski, S. L., 33-O
- Slippers, B., 164-S
- Smiley, R. W., 25-O, 40-O
- Smith, B. J., 677-P
- Smith, D. L., 78-O, 289-P
- Smith, H. R., 473-P
- Smith, J., 693.a-P
- Smith, J. E., 931-P
- Smith, L., 147-O
- Smith, M. E., 160-O
- Smith, P., 794-P
- Smith, R. J., 75-O
- Smith, S. E., 157-P
- Smith, S. G., 68-O, 594-P, 603-P
- Smith, T. J., 10-P
- Smither, M. R., 121-P
- Smits, T. H., 75-S, 11-P, 451-P, 656-P, 658-P, 859-P
- Smythe, B., 671-P
- Sneh, B., 882-P
- Sneizko, R., 167-S
- Sneller, C., 693-P
- Snelling, J., 119-P, 331-P, 935-P, 961-P
- Snook, M. E., 71-P, 629-P
- Snover-Clift, K. L., 355-P
- Soby, S. D., 12-P, 584-P
- Sohn, K., 835-P
- Solé, M., 835-P
- Solorzano-Morales, A., 382-P
- Someya, N., 750-P
- Son, H., 933-P, 936-P
- Sonder, K., 206-S
- Song, Y., 428-P
- Soni, R., 1011-P
- Sosnowski, M. R., 76-O, 163-O
- Soteres, J. K., 158-S, 158-S
- Soumana, S., 90-S
- Soungalo, S., 441-P
- Sousa, M. C., 444-P
- Souza, A. C., 235-P
- Souza, M., 29-P
- Souza, R. M., 333-P
- Souzani, S., 753-P
- Sowmya, P., 951-P
- Spadaro, D., 320-P, 702-P, 796-P
- Spaine, P. C., 169-S, 120-O
- Sparks, A., 37-S
- Sparks, A., 463-P
- Sparks, A. N., 409-P
- Spennlinhauer, T. R., 204-S
- Spiceland, D. R., 768-P
- Springer, J. C., 539-P
- Spurlock, T., 43-P
- Sreedharan, A., 854-P
- Srinivasachary, S., 734-P
- Srinivasan, R., 129-S
- Srivastava, A., 926-P
- Srivastava, P., 631-P
- Srour, A. Y., 503-P
- Sseruwagi, P., 302-P
- St. Martin, S. K., 693.d-P, 905-P, 906-P
- Stacey, G., 833-P
- Stack, J. P., 205-S, 354-P, 355-P, 367-P, 372-P
- Stammler, G., 65-S
- Stangeland, S. K., 157-O
- Stark, J., 780-P
- Steciow, M., 125-P
- Steiner, R., 671-P
- Stenger, D. C., 838.a-P
- Stephenson, A., 399-P
- Steven, C. J., 833-P
- Stevenson, K. L., 172-P
- Stewart, J. E., 28-P, 32-P, 335-P
- Stewart, N., 93-P
- Stewart, S., 899-P
- Stilwell, A. R., 505-P
- Stobbe, A. H., 120-P, 134-P, 135-P
- Stobbe, T., 127-P
- Stocks, I., 437-P
- Stocks, S. D., 355-P, 356-P
- Stockwell, V. O., 75-S, 10-P, 645-P, 656-P, 695-P
- Stoddard, T. J., 95-S
- Stojšin, V., 585-P
- Stoll, R., 455-P
- Stoltzfus, J., 813-P
- Stone, J. K., 56-O
- Strathie, L., 51-S
- Strathmann, S., 597-P
- Strausbaugh, C. A., 219-P
- Strelkov, S. E., 178-P, 179-P, 502-P
- Stromberg, V., 194-S
- Stromberger, M., 1023-P
- Stuart, J. J., 196-S
- Su, C., 63-P, 64-P
- Su, H., 749-P
- Subbarao, K. V., 93-S, 45-O, 107-O, 153-O, 35-P, 920-P
- Subere, C. V., 40-S
- Subramanian, S., 302-P, 362-P
- Sudarshana, M. R., 159-P, 643-P, 976-P
- Suffert, F., 354-P
- Suga, Y., 223-P
- Sugano, J., 37-O
- Sugawara, K., 5-O
- Sugiyama, L., 343-P, 344-P
- Sulaiman, A., 591-P
- Sullivan, J., 229-P
- Sullivan, R. F., 148-O
- Sultana, V., 630-P, 747-P, 802-P
- Sun, C., 489.a-P
- Sun, D., 70-P
- Sun, J., 57-P
- Sun, J., 489-P, 498-P
- Sun, J., 937-P
- Sun, X., 61-P
- Sun, X., 943-P
- Sun, Z., 478-P
- Sundin, G. W., 24-S, 450-P, 605-P, 873-P, 875-P
- Sung, S., 120-O
- Sunter, G., 964.a-P
- Suo, X., 201-S
- Suresh, S., 3-O
- Suslow, K., 277-P
- Sussel, A. A., 235-P, 333-P
- Sutherland, A. M., 36-O, 46-O, 75-O
- Sutton, T., 605-P
- Swart, G., 342.a-P
- Swart, S. H., 48-O
- Sweets, L. E., 719-P
- Swiegard, J. A., 29-O
- Sweet, C. L., 53-O
- Swiecki, T., 332-P
- Sykes, V. R., 93-P
- Sysak, R. W., 800-P
- Szabo, L. J., 95-S
- Szurek, B., 441-P
- Tabien, R. E., 370-P, 733-P
- Tadych, M., 234-P
- Taheri, S., 250-P
- Takach, J., 959-P
- Takamoto, H., 836-P
- Takeshita, M., 592-P, 750-P
- Talas, F., 30-P
- Tale Zari, A., 164-P
- Talley, J., 434-P
- Tally, A., 601-P
- Tamaki, H., 5-O
- Tamo, M., 129-S
- Tanaka, F., 754-P
- Tanaka, S., 137-O
- Tande, C. A., 92-P
- Tang, W., 251-P

- Tang, X., 205-S, 372-P
Taniguchi, G., 665-P
Tanner, J. D., 256-P
Tariq, M. R., 630-P
Tarnowski, T. L., 272-P
Tatalovic, N., 209-P
Tatineni, S., 724-P
Tavantzis, S., 889-P
Taylor, C. G., 756-P, 833-P, 962-P
Taylor, C. R., 390-P
Taylor, P. W., 103-O
Teaumroong, N., 757-P
Teplitski, M., 22-S, 828-P, 829-P
Thakur, R. P., 726-P
Thangavelu, R., 528-P
Thannhauser, T., 508-P
Thaveechai, N., 442-P
Thies, J. A., 315-P
Thines, M., 161-O
Thiruvudainambi, S., 815-P
Thomas, D., 601-P
Thomas, J. E., 354-P
Thomas, K., 31-P
Thomas, S., 114-O
Thomas, S., 671-P
Thomashow, L. S., 72-S, 704-P, 870-P
Thomma, B. P., 93-S
Thompson, D. C., 62-O, 62-O
Thorkelson, J., 18-O
Thornton, M., 780-P
Tian, B., 969-P
Tian, S., 73-P
Tian, T., 306-P
Timchenko, T., 83-P
Timko, M., 194-S
Timmer, L., 32-P
Timmons, C., 453-P
Tisserat, N. A., 150-O, 119-P, 297-P, 331-P, 361-P, 379-P, 387-P, 961-P
Tittabutr, P., 757-P
Tjosvold, S., 460-P
Tkachi, N., 19-O
Toda, T., 533-P
Togola, A., 414.a-P
Toh, R., 51-S
Tojo, M., 87-O
Tokuda, M., 137-O, 436-P
Toleubayev, K., 564-P
Tolin, S. A., 16-S, 618-P
Tomaso-Peterson, M., 176-P, 208-P, 287-P, 298-P, 300-P
Tomich, J. M., 990-P
Tonnang, H., 363-P
Tonolla, M., 44-O
Torres, R. 232.a-P
Torres de Matute, O., 46-S
Torres-Barragan, A., 678-P
Tory, D., 601-P
Toth, I., 875-P
Townshend, J. M., 66-O
Toyota, K., 797-P
Tran, P., 678-P
Traore, H., 90-S
Travadon, R., 43-O, 160-O, 163-O
Travers, S. E., 26-P
Trebecki, P., 495-P
Tredway, L. P., 23-O, 535-P, 536-P
Tremblay, A., 96-S
Triapitsyn, S., 362-P
Tripathi, D., 587-P
Tripathi, M., 582-P
Triplett, E., 1-P
Triplett, L., 441-P
Triplett, L. R., 150-O, 167-P
Trippe, A., 373-P
Trivedi, P., 81-O, 130-O
Trivedi, R. S., 66-O
Tronsmo, A., 30-S
Trouillas, F. P., 113-O
Trujillo, C. A., 5-P
Trumble, J., 852-P
Truong, H., 122-O
Tsai, C., 713-P
Tsuchiya, K., 223-P, 592-P, 735-P, 750-P, 817-P, 818-P, 824-P
Tsuda, K., 95-S
Tsuda, Y., 95-S
Tsui, C., 329-P
Tsujita, N., 87-O
Tsukiboshi, T., 5-O
Tsushima, S., 817-P, 818-P, 824-P
Tu, Z., 903-P, 940-P
Tufan, H. A., 209-S
Tuinstra, M., 90-S
Tulam, V., 613-P
Tumlinson, J. H., 523-P
Tumuluri, R., 613-P
Turini, T. A., 812-P
Turkington, T. K., 502-P, 712-P
Turnbull, G. D., 178-P, 179-P
Turner, J., 189-P
Turner, R. S., 121-P
Turski, C. 116-S
Twieg, E., 171-P
Tychon, B., 190-P, 714-P
Tyler, B. M., 196-S
Tylka, G. L., 170-S, 110-O, 55-P, 209-P
Tymon, L. S., 117-O
Tzanetakis, I. E., 42-S, 50-O, 227-P, 228-P, 255-P, 260-P, 265-P
Tzanetakis, I. E.,
Tzeng, D., 9-P, 748-P, 803-P
Tzeng, K., 9-P, 63-P
Tzeng, Y., 64-P
Uchida, J. Y., 166-S, 47-P, 477-P, 545-P, 547-P
Uematsu, S., 276-P
Ukwungwu, M., 414.a-P
Ulhoa, C. J., 739-P
Ulloa, M., 963-P
Umetsu, N. K., 97-S
Upadhyaya, H. D., 726-P
Urashima, A., 345-P
Urbez Torres, J. R., 239-P
Urushibara, T., 124-P
Usami, T., 148-P, 276-P
Uyemoto, J. K., 159-P, 976-P
Uzuhashi, S., 87-O
Vadamalai, G., 557-P
Vaira, A., 974-P, 1002-P
Valdivia, C., 513-P
Vale, F. X., 97-P, 496-P
Valencia-Botín, A., 24-P, 383-P
Valent, B. S., 205-S, 367-P, 372-P
Valente, A. A., 851-P
Vallance, J., 532-P, 646-P
Valls, M., 835-P
Valverde, R.,
Valverde, R. A., 263-P, 266-P
van der Knaap, E., 517-P
van Dusschoten, D., 169-P
van Heusden, A. S., 923-P
Van Nostrand, J. D., 81-O
Van Ryzin, B., 291-P
Vance, C. P., 940-P
Vandemark, G., 944-P, 945-P
Vandenhiertz, J. 118-S
Vandervoort, C., 896-P
VanGessel, M., 1026-P
VanKirk, J., 326-P
Vannini, A., 38-P, 338-P
VanOverbeke, M., 20-P
Vargas, J., 382-P
Vargas, M., 654-P
Vaughan, L., 568-P
Vázquez-Jiménez, J., 698-P
Vega, B., 662-P
Vega-Arreguin, J., 196-S
Velázquez-Monreal, J., 698-P
Velini, E. D., 598-P, 615-P
Vemmer, M., 575-P
Vemulapati, B. M., 136-P
Venkatesan, S., 3-O
Vera Cruz, C. M., 213-P
Verdier, V. M., 119-P, 167-P, 441-P
Vernaiz, M., 13-P
Veronese, P., 93-S
Verstappen, E., 170-P
Verstraten, J., 322-P
Vetten, H., 83-P
Vick, A., 106-P
Vico, I., 67-P, 68-P, 883.a-P
Vidalakis, G., 85-P, 258-P, 259-P, 260-P
Vigne, E., 99-O
Vilchez, M., 639-P
Vilela, C. M., 619-P
Viljoen, A., 528-P, 690-P
Villamarín, D., 521-P, 522-P
Villani, S. M., 63-O
Vinatzer, B., 476-P
Vitoreli, A., 38-O
Vivancos, J., 727-P
Vogel, G., 44-O
Voldeng, H., 723-P
Von Dahl, C., 983-P
von Tiedemann, A., 206-S
Vorhoelter, E., 859-P
Vorsa, N., 234-P
Voss, K. A., 46-S
Vu, A. L., 141-P, 301-P
Waalwijk, C., 29-P
Wada, T., 427-P
Wade, L., 637-P
Walcott, R., 13-P
Waldstein, D. E., 195-P
Walgenbach, P., 12-O
Walker, D. R., 956-P
Walker, K. L., 148-S
Walker, M. A., 841-P, 842-P
Walker, N. R., 154-S
Walker, S., 596-P, 597-P, 636-P
Wall, M. M., 69-P
Wallis, C., 380-P, 435-P, 845-P
Wallon, T., 837-P
Walse, S., 435-P
Walsh, C. S., 229-P
Walsh, D. B., 122-P, 717-P
Walsh, E. K., 962-P
Walter, A. J., 504-P
Walter, N., 756-P
Walters, T. W., 145-S
Wan, A., 36-P, 952-P
Wan, F., 10-O, 360-P
Wan, Y., 138-P
Wang, C., 805-P
Wang, C., 963-P
Wang, D., 105-P
Wang, D., 261-P
Wang, D., 875-P
Wang, D., 937-P, 938-P, 939-P
Wang, H., 433-P
Wang, H., 478-P
Wang, H., 693-P, 693.c-P, 905-P, 906-P
Wang, I., 562-P
Wang, J., 133-S, 122-O
Wang, J., 134-O, 407-P, 410-P
Wang, J., 88-P
Wang, J., 653-P
Wang, K., 562-P, 569-P, 570-P
Wang, L., 131-O
Wang, L., 187-P, 205-P
Wang, L., 981-P
Wang, M., 36-P, 192-P
Wang, N., 81-O, 130-O, 139-O, 142-O, 143-O, 144-O, 378-P, 851-P, 854-P, 856-P, 863-P, 864-P
Wang, P., 259-P
Wang, Q., 32-O, 894-P
Wang, Q., 765-P
Wang, R., 641-P
Wang, R., 937-P
Wang, S., 140-S
Wang, S., 116-P
Wang, T., 748-P
Wang, T., 960-P
Wang, W., 937-P
Wang, X., 144-S
Wang, X., 61-P, 410-P
Wang, X., 137-P
Wang, X., 566-P
Wang, Y., 34-P
Wang, Y., 960-P
Wang, Z., 407-P
Wanner, L. A., 3-P
Wanobi, O. O., 351-P
Wanyera, R., 191-P
Warburton, M., 177-P
Ward, N. B., 622-P
Wardzynski, M., 322-P
Warkentin, D., 12-O
Warner, F. W., 800-P
Warnstrom, E. L., 642-P
Warren, J., 846-P
Warriner, K., 84-S
Wasala, L., 434-P
Watanabe, H., 735-P
Watanabe, S., 141-O
Watrin, C., 742-P
Watson, A., 312-P
Watters, H., 355-P
Way, M. O., 370-P
Wayadande, A., 412-P, 434-P
Weaver, M., 89-O
Webb, K. M., 213-P
Weber, B., 15-P
Webster, B. J., 782-P
Webster, C. G., 7-O
Wechter, W. P., 100-O, 794-P
Weems, J. D., 625-P
Wegulo, S. N., 724-P
Wei, G., 114-P
Wei, L., 185-P
Wei, S., 854-P
Wei, W., 201-S
Wei, Y., 25-P, 649-P, 650-P
Wei, Z., 950-P
Weiland, J. J., 1013-P
Weinberger, K., 133-S
Weiss, R. M., 502-P
Welker, R. M., 608-P, 773-P
Weller, D. M., 72-S, 704-P, 870-P
Wells, L., 221-P
Wen, A., 102-P
Wen, L., 432-P
Werres, S., 390-P
Westerdahl, B. B., 766-P
Westwood, J., 183-S, 194-S

- Wharton, P. S., 780-P, 784-P, 786-P, 787-P
- Whitaker, B. D., 883.a-P
- White, D., 946-P
- White, J., 234-P
- White, N., 405-P
- Whitfield, A. E., 131-P, 990-P, 1003-P
- Whitham, S. A., 955-P
- Whitworth, J. L., 770-P
- Wickett, N., 194-S
- Wickramasinghe, D., 899-P
- Wicks, T. J., 76-O
- Widmer, T. L., 391-P, 483-P, 758-P
- Wiechel, T. J., 322-P
- Wiggs, S. N., 55-P
- Wijeratne, A., 905-P
- Wijeratne, S., 905-P
- Wilcox, W. F., 61-S, 43-O, 60-O, 76-O
- Wildung, M., 1-P
- Wilkinson, H. T., 284-P
- Williams, B., 941-P
- Williams, K., 985-P
- Williams, S., 1007-P
- Willcoquet, L., 37-S, 734-P
- Willyerd, K. T., 463-P, 490-P, 716-P
- Wilson, A., 426-P
- Wilson, C. M., 289-P, 293-P
- Wilson, R., 934-P
- Windels, C. E., 142-P, 217-P
- Windham, A., 462-P
- Windham, M. T., 93-P, 462-P
- Wingfield, B., 164-S
- Wingfield, M. J., 164-S, 357-P, 475-P
- Wingo, R., 36-O
- Wintemantel, W. M., 51-O, 266-P
- Wise, K., 490-P, 716-P
- Witherell, R. A., 15-P
- Woeste, K., 387-P, 961-P
- Woin, N., 414.a-P
- Wolcan, S. M., 125-P
- Wolf, I., 139-P
- Wolf, S., 53-P
- Wong, F. P., 64-S, 155-O, 440-P
- Wong, M., 867-P
- Wongkaew, S., 757-P
- Wonni, I., 441-P
- Wood, B. W., 94-P, 644-P, 664-P
- Wood, E., 784-P
- Wood, M., 551-P
- Woodell, L., 786-P, 787-P
- Wood-Jones, A. K., 27-P, 70-P
- Woodruff, W., 120-O
- Woodward, J., 672-P
- Worapong, J., 392-P
- Workneh, F., 381-P
- Wrather, A., 693.a-P
- Wright, A. F., 112-O
- Wright, D. L., 26-O, 631-P
- Wu, B., 194-S
- Wu, B., 811-P
- Wu, X., 833-P
- Wu, Z., 998-P
- Wuming, X., 732-P
- Wydra, K., 213-P, 441.a-P
- Xi, K., 712-P
- Xi, Y., 404-P
- Xia, J. Q., 104-S
- Xia, Y., 197-S
- Xiang, H., 81-P, 146-P, 979-P
- Xiang, M., 946-P
- Xiang, M., 131-O
- Xiao, C., 58-O
- Xiao, Q., 404-P
- Xiaoming, P., 144-P
- Xiaoyuan, Z., 732-P
- Xie, J., 943-P
- Xie, J., 943-P
- Xie, X., 98-S, 193-S
- Xinfang, Z., 201-P
- Xing, X., 57-P
- Xiong, R., 975-P
- Xiong, Z., 76-P
- Xiong, Z., 88-P, 89-P, 832-P
- Xu, D., 168-P, 225-P, 233-P, 306-P
- Xu, J., 937-P, 939-P
- Xu, M., 97-O
- Xu, Q., 975-P
- Xu, S., 706-P
- Xu, X., 78-S
- Xu, X., 2-P, 174-P
- Xu, X., 560-P
- Xu, Y., 593-P
- Xue, A., 723-P
- Xue, M., 937-P, 938-P, 939-P
- Xue, Y., 571-P
- Yaacoby, T., 53-S
- Yadav, N. V., 94-P
- Yahyaoui, A., 139-S
- Yajima, W., 910.a-P
- Yakabe, L. E., 244-P, 806-P
- Yamada, T., 446-P, 836-P
- Yamagishi, M., 29-P
- Yamagiwa, Y., 797-P
- Yamaguchi, I., 124-P, 699-P
- Yamamoto, I., 102-S, 102-S
- Yan, G., 40-O
- Yan, H., 33-P
- Yan, H., 491-P, 492-P
- Yan, J., 33-P
- Yan, Q., 144-O, 864-P
- Yan, Y., 198-S
- Yáñez-Morales, M. D., 140-P
- Yang, B., 401-P
- Yang, C., 46-P, 48-P
- Yang, C., 566-P
- Yang, C., 878-P
- Yang, D., 86-O
- Yang, F., 876-P
- Yang, H., 127-O
- Yang, H., 212-P
- Yang, H., 713-P
- Yang, J., 249-P
- Yang, J., 588-P
- Yang, J., 650-P
- Yang, J., 937-P, 938-P, 939-P
- Yang, K., 109-P
- Yang, L., 842-P
- Yang, N., 360-P
- Yang, P., 641-P
- Yang, W., 88-P
- Yang, X., 127-O, 128-O
- Yang, X., 295-P
- Yang, X., 489.a-P
- Yang, Y., 32-O, 894-P
- Yang, Y., 600-P
- Yeater, K., 731-P
- Yeh, S., 685-P, 994-P, 995-P, 998-P
- Yilma, S., 770-P
- Yim, K., 145-P
- Yin, C., 95-S, 952-P
- Yin, J., 313-P
- Yin, K., 404-P
- Yin, L., 599-P
- Yoder, J., 194-S
- Yoder, K. S., 57-O, 605-P
- Yokomi, R. K., 96-O
- Yokota, K., 830-P
- Yolageldi, L., 759-P
- Yoneyama, K., 98-S, 193-S
- Yoneyama, K., 98-S, 193-S
- Yoon, J., 999-P, 1000-P
- Yoon, Y., 109-P
- Yoon, Y., 206-P
- Yoon, Y., 736-P
- Yoshimura, A., 735-P
- Youn, O., 83-S
- Young, C., 957-P, 959-P
- Young, H., 606-P, 609-P
- Young, H., 610-P
- Young, H. M., 26-O
- Young, R., 90-S
- Young, S., 93-S, 95-S
- Young, W., 63-P
- Ypema, H., 114-S
- Yu, J., 81-P, 146-P, 979-P
- Yu, K., 197-S
- Yu, N., 88-P, 89-P
- Yu, T., 998-P
- Yu, X., 943-P
- Yu, Z., 571-P
- Yuan, H., 57-P
- Yuan, M., 140-S
- Yuan, Q., 855-P
- Yuen, G. Y., 710-P, 719-P
- Yuen, J. M., 454-P
- Yuh, J. P., 1001-P
- Yun, H., 109-P
- Yun, S., 776-P
- Yuttavanichakul, W., 757-P
- Zacaroni, A., 235-P, 333-P
- Zamanizadeh, H., 83-O, 37-P, 150-P, 163-P, 164-P, 530-P, 753-P
- Zambino, P., 469-P
- Zapata, N., 654-P
- Zaragoza, W., 828-P
- Zasada, I., 174-S
- Zee, F., 343-P
- Zemetra, R., 392-P
- Zeng, H., 127-O, 128-O
- Zeng, J., 497-P
- Zeng, Q., 93-S, 95-S
- Zeng, Q., 878-P
- Zerbini, F. M., 82-P, 541-P
- Zerillo, M. M., 387-P, 961-P
- Zeun, R., 741-P
- Zhai, J., 30-O
- Zhan, G., 36-P
- Zhang, A., 401-P
- Zhang, C., 955-P
- Zhang, D., 702-P
- Zhang, G., 112-P
- Zhang, G. R., 468-P, 620-P
- Zhang, H., 433-P
- Zhang, J., 141-S
- Zhang, J., 482-P
- Zhang, J., 704-P
- Zhang, J., 975-P
- Zhang, L., 105-P
- Zhang, L., 537-P
- Zhang, M., 401-P
- Zhang, M., 607-P
- Zhang, N., 152-S, 41-O, 101-O, 155-O, 285-P
- Zhang, R., 746-P
- Zhang, S., 311-P, 737-P, 798-P
- Zhang, T., 588-P
- Zhang, T., 887-P
- Zhang, X., 25-P
- Zhang, X., 884-P
- Zhang, Y., 97-O
- Zhang, Y., 132-O
- Zhang, Y., 88-P
- Zhang, Y., 432-P
- Zhang, Y., 937-P
- Zhang, Y., 978-P
- Zhang, Z., 105-P, 269-P, 346-P, 548-P
- Zhang, Z., 401-P
- Zhao, B., 173-S
- Zhao, C., 489.a-P
- Zhao, F., 929-P
- Zhao, S., 101-O, 285-P
- Zhao, W., 937-P, 938-P
- Zhao, X., 25-P, 649-P, 650-P
- Zhao, X., 560-P
- Zhao, X., 649-P
- Zhao, Y., 201-S
- Zhao, Y. F., 873-P, 875-P, 876-P, 877-P
- Zhao, Z., 134-O, 410-P
- Zheng, D., 879-P
- Zhiqiang, C., 732-P
- Zhiyong, Z., 413-P
- Zhong, S., 540-P, 547-P
- Zhongqi, H., 519-P
- Zhou, C., 81-P
- Zhou, C., 807-P
- Zhou, J., 141-S
- Zhou, J., 81-O
- Zhou, J., 265-P
- Zhou, L., 437-P, 849-P
- Zhou, L., 831-P
- Zhou, Q., 179-P
- Zhou, S., 94-S
- Zhou, T., 214-P
- Zhou, T., 993-P
- Zhou, X., 142-S
- Zhou, X., 90-P
- Zhou, X., 192-P
- Zhou, X., 357-P
- Zhou, X., 932-P
- Zhou, X. G., 325-P, 370-P, 733-P, 737-P, 807-P
- Zhou, Y., 90-P, 185-P, 214-P, 975-P
- Zhou, Y., 197-P
- Zhou, Z., 10-O
- Zhu, S., 765-P
- Zhu, Y. J., 347-P
- Ziegler, D., 44-O
- Ziska, L. H., 31-S
- Zitomer, N. C., 911-P
- Zou, H., 850-P
- Zou, L., 878-P
- Zuñiga, L., 654-P
- Zuo, R., 168-P
- Zydenbos, S. M., 128-S

Introducing Our Newest Family of QualiPlate™ Kits...



- **FAST**
Two-hour Protocol
- **RELIABLE**
Pre-coated and Fully Validated
- **CONVENIENT**
Run Three Tests on One Sample

**Your Partner
in Diagnostics.**

ENVIROLOGIX™
Putting Science to the Test

www.envirologix.com
866-408-4597





AmplifyRP™



Real-time and conventional
PCR

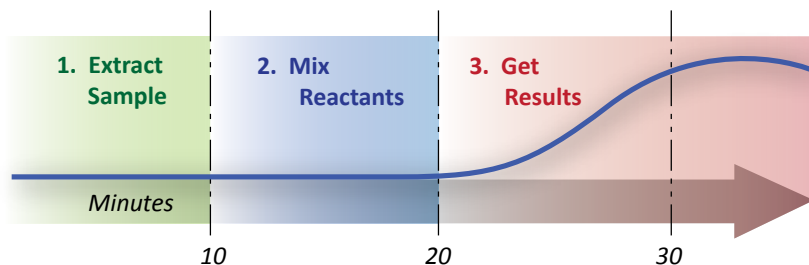
Get results faster with AmplifyRP™

Introducing the future of ultra-rapid, portable DNA amplification technology for plant pathogens.

Leave the extraction columns and the expensive equipment in the lab. AmplifyRP™ can get you DNA or RNA results without the need for complicated extractions or thermocycling.

AmplifyRP sensitivities rival those of most PCR assays, yet can be done from sample prep to results in under 30 minutes.

Using AmplifyRP is simple!

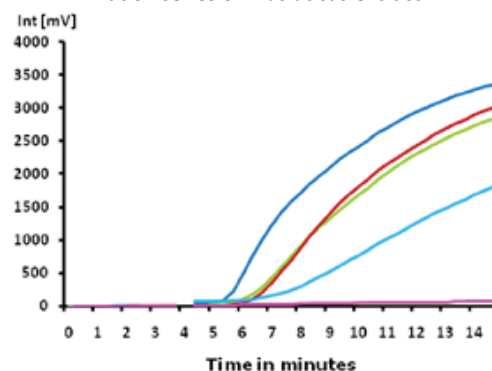


Stop by our booth and learn how AmplifyRP can simplify your DNA testing process.

agdia®
Test with confidence.



Dilution series of *L. asiaticus* extract



- *L. asiaticus* initial extract
- *L. asiaticus* 1:10 dilution of initial extract
- *L. asiaticus* 1:100 dilution of initial extract
- *L. asiaticus* 1:1000 dilution of initial extract
- *L. asiaticus* 1:10,000 dilution of initial extract

Visit us at booth # 100 / 201
for a demo and more information.