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Phytopathology News

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ICPP2018 Session Advocates for the International Year of Plant Health in 2020

Later this year, a proposal to declare 2020 as the International Year of Plant Health (IYPH) will come before the United Nations General Assembly. IYPH could make more collaboration, research, and policy change possible on a global scale. Learn how you can promote, raise awareness, and secure support for IYPH at the ICPP2018 session titled "Plant Health in a Global Economy: Mobilizing Global Support for a Healthy Planet," to be held Monday, July 30, from 14:00 to 16:00.

The session, organized by **Mary Palm**, American Phytopathological Society, and **Stephanie Bloem**, North American Plant Protection Organization (NAPPO), will feature six talks prepared by organizations from around the world. Plant pathologists can learn both how these organizations rely on the scientific data and information they provide and how they can contribute to these organizations' success.

Robert Griffin, USDA–APHIS–Plant Protection and Quarantine, will present "The International Plant Protection Convention (IPPC): Six Decades of International Cooperation for the Protection of the World's Plant Resources." The IPPC is an international treaty for cooperation in plant protection that has evolved into a leading authority for establishing international standards for phytosanitary measures applied in cross-border commerce.

Mary Palm

Stephanie Bloem

Complementing this talk, Bloem offers "The Role of Regional Plant Protection Organizations (RPPOs) in Achieving the Objectives of the IPPC." Ten RPPOs convene annually and discuss ways to cooperate in achieving the objectives of the IPPC. Bloem will provide examples of how NAPPO, which includes the United States, Canada, and Mexico, has helped develop products and activities that have made international plant health standards possible. **Javier Trujillo**, NPPO of Mexico, and **Clemente García-Avila**, SENASICA-DGSV of Mexico,

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Voting to Open for Vice President and Councilor-at-Large

Ballot Will Also Include a Constitutional Amendment

The APS Nominations Committee is pleased to announce that **Mark L. Gleason**, Iowa State University, and **Jean B. Ristaino**, North Carolina State University, are running for vice president of APS. Following a term as vice president, the elected candidate will serve terms as president-elect and president. Candidates for councilor-at-large are **Martin A. Draper**, Kansas State University, and **Katherine L. Stevenson**, University of Georgia. Profiles and statements of vision for the candidates for office begin on page 46 of this issue.

Your election ballot will also ask you to vote on an amendment. The APS Council has proposed an amendment to the constitution and bylaws to change the "Post-Doc" membership category to an "Early Career" category. An "Early Career" member will be defined as any person working professionally, including someone in a post-doctorate position, and within 5 years of graduating with a bachelor's, master's, or doctorate degree. By broadening the definition of this membership category, APS aims to promote and enhance opportunities for engagement of all early career professionals.

APS members will be sent an email on May 1, 2018, with instructions for voting. (Members without email addresses were mailed letters.) Ballots must be submitted by May 31. Remember, all votes are confidential. Please contact APS headquarters (apshq@scisoc.org) if you did not receive an email. Results of the 2018 election will be announced in the July issue of *Phytopathology News* and on the APS website. ■

Mark L. Gleason

Jean B. Ristaino

Martin A. Draper

Katherine L. Stevenson

In This Issue

Phytopathology News

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PLANT PATHOLOGY'S PERPLEXING PAST—THE REST OF THE STORY

Rhizoctonia spp.: The First Documented Root Pathogen

Robert M. Harveson, University of Nebraska, rharveson2@unl.edu

The genus *Rhizoctonia* is composed of a group of highly variable, soilborne, sterile fungi, yet its members have a number of similar characteristics. Most notably, they are long lived in soils, remaining in a vegetative state and rarely producing any reproductive spores. Species of *Rhizoctonia* are highly effective saprophytes and economically important root pathogens on many crops. In fact, the ability of this genus of fungi to aggressively attack a wide range of host roots is responsible for its generic name, *Rhizoctonia.* Derived from Greek, *Rhizoctonia* means "killer of roots" in English.

Rhizoctonia solani

Rhizoctonia solani is the most well known species and thought to be present throughout most if not all of the world's arable land. *R. solani* causes myriad diseases, including seed decay, post- and pre-emergent damping-off, stem cankers, root and crown rot, fruit decay, and in some instances, foliar disease.

The history of *R. solani* is almost as long as that of modern plant pathology. It was first implicated as a root pathogen within the same general time period of the Irish potato famine (1850s). However, it was not the first *Rhizoctonia* pathogen discovered. You may be surprised to learn that a lesser-known species of *Rhizoctonia* was noted to cause a root disease called "violet root rot" 130 years earlier. That's the rest of the story!

Rhizoctonia crocorum

In 1728, Henri-Louis Duhamel du Monceau described a disease of the crocus plant (*Crocus sativus*) in southern France, making the first report of an ailment caused by a species of *Rhizoctonia*. This peculiar plant is a member of the iris family and the source of the spice saffron. du Monceau noted that diseased bulbs were shrouded with a thick, reddish-violet hyphal mat that had knotlike swellings (sclerotia). He also noted that the fungus moved spatially through the soil, infecting and spreading disease from bulb to bulb underground. Fifty years later, another Frenchman, M. Fougeroux de Bondaray, reported a disease that appeared on asparagus after it was grown on land previously cultivated with similarly infected crocus bulbs.

French mycologist Augustin Pyramus de Candolle formally created the genus *Rhizoctonia* in 1815 to accommodate the crocus pathogen and named the species *R. crocorum.* de Candolle also recognized a similar disease of alfalfa that produced a mat of violet mycelium on roots of affected plants; he named the pathogen *R. medicaginis*. The Tulasne brothers, Charles and Louis-René, considered the crocus and alfalfa pathogens to be identical and in 1851 reduced the two species to a single more descriptive name, *R. violacea*. Nevertheless, *R. crocorum* remained the accepted designation, since it had priority over the other species.

Violet Root Rot in Europe

In 1858, Julius Kühn published an account of a Rhizoctonia disease in Germany that was causing serious root rots on alfalfa, carrot, and mangold (early sugar beet) accompanied by purple mold on subterranean plant parts. Disease was distributed in localized clusters within fields yet still caused substantial wilting and rapid death of plants in large areas. This condition was referred to as "Fehlstellen," which translated into English as "dropouts." The disease became well known throughout Europe by various names, such as "violet root rot," "red root rot," and "violet root felt disease," and it afflicted plants in at least 47 genera in 21 families (mostly dicots).

Violet Root Rot in the United States

In the United States, as in Europe, the first Rhizoctonia disease discovered was violet root rot, and it was reported from Nebraska on alfalfa. Curiously, independent reports were made in 1890 from two sites by different individuals, Roscoe Pound and W. J. Webber. Both referred to the causal agent as *R. medicaginis,* additionally remarking that it was rare, of little consequence, and "seemed to be harmless."

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have prepared a talk that emphasizes the importance of regular communication between scientists and the IPPC.

Ralf Lopian, representing Finland's Ministry of Agriculture and Forestry, Animal and Plant Health Unit, Food Department, will speak on the proposal for IYPH. Finland found it necessary to put the IYPH before the United Nations to raise public awareness about plant health and its benefits to global society.

In a talk titled "Role of Quarantine in Exclusion of Transboundary Plant Viruses: A Developing Country's Perspective," prepared by **Celia Chalam Vasimalla, Datta Raj Bhalchandra Parakh, Pooja Kumari, Ashok Kumar Maurya,** and **Sunil Chandra Dubey**, ICAR–National Bureau of Plant Genetic Resources, attendees will learn how India has implemented strategies to exclude and quarantine plant pathogens in imports and what ongoing challenges India faces. In the final talk, **Anthony Young**, Austrailia, will present "The Rough End of the Pineapple: The Sometimes Prickly Relationship Between Science and Policy." Young will discuss how dated and incomplete taxonomic frameworks used by Australian biosecurity industries misidentified the cause of heart rot in pineapple. His talk will highlight the need for increased communication between policy makers and the scientific community.

Get more information on the ICPP2018 program schedule online and in upcoming issues of *Phytopathology News*. ■

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Conversely, G. F. Freeman reported in 1908 that red root disease of alfalfa was spreading rapidly in Nebraska, potentially threatening the alfalfa industry in neighboring Kansas, and he recommended that every effort be made to find a practical means of control. The disease was first reported on potato in Oregon in 1915 and was also found infecting potato throughout western Nebraska between 1916 and 1920, where it was described as "very prevalent."

Violet Root Rot Today

Since that time, violet root rot has been found sporadically across the United States on potato, carrot, sugar beet, alfalfa, and celery, but it is still considered relatively rare, unlike disease caused by the pervasively occurring *R. solani*. It is also interesting to note how the two *Rhizoctonia* species differed in their incidence and distribution. Despite being the first species identified from both Europe and the United States, *R. crocorum* was predominant in Europe while *R. solani* was more habitual in the United States. And now, you know the rest of the story!

Next month, read about an even more obscure Rhizoctonia root disease.

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Peltier, G. L. 1916. Parasitic *Rhizoctonias* in America. Ill. Agric. Exp. Stn. Bull. 189:283-390.

Zadoks, J. C. 1981. Mr. Duhamel's 1728 treatise on the violet root rot of saffron crocus: "Physical explanation of a disease that perishes several plants in the Gastinois [France], and saffron in particular." Meded. Landbouwhogesch. Wag. 81(7):1-31. ■

2018 APS Award Winners Announced

Congratulations to our fellow members and colleagues selected to receive APS awards in honor of their significant contributions to the science of plant pathology! These awards will be presented to the recipients at this year's ICPP2018 meeting in Boston, Massachusetts. More information on each awardee is available online.

Fellows

Scott T. Adkins, USDA ARS USHRL
Richard R. Bélanger, Université Laval
Timothy B. Brenneman, University of Georgia
Thomas A. Evans, University of Delaware
Howard S. Judelson, University of California
Richard Latin, Purdue University
Frank N. Martin, USDA ARS
You-Liang Peng, China Agricultural University
David Shew, North Carolina State University
Brett A. Summerell, Royal Botanic Gardens
Xueping Zhou, Zhejiang University

Excellence in Extension Award

Amanda J. Gevens, University of Wisconsin–Madison

Excellence in Industry Award

Eric C. Tedford, Syngenta Crop Protection

Excellence in International Service Award

John E. Bowman, USAID

Excellence in Regulatory Affairs and Crop Security Award

Georgios Vidalakis, University of California–Riverside

Excellence in Teaching Award

Katherine L. Stevenson, University of Georgia

Ruth Allen Award

Krishna V. Subbarao, University of California–Davis

William Boright Hewitt and Maybelle Ellen Ball Hewitt Award

Suthaparan Aruppillai, Norwegian University of Life Sciences

Lee M. Hutchins Award

Patricia S. McManus, University of Wisconsin–Madison

Noel T. Keen Award

Barbara S. Valent, Kansas State University

Syngenta Award

Melania Figueroa, University of Minnesota ■

Candidate for Vice President

Mark L. Gleason

Professor, Department of Plant Pathology and Microbiology, Iowa State University (ISU), Ames

Area of Specialization: Diseases of fruit and vegetable crops

Academic Record: BA, 1972, Carleton College; MS, 1976, and PhD, 1979, University of Virginia; PhD, 1985, University of Kentucky

Brief Description of Professional Achievements: I joined the Department of Plant Pathology and Microbiology at Iowa State University in 1986. I began with a 100% Extension appointment and then added research and later teaching, so I have experience in all phases of the land-grant university mission.

My research often begins with disease management questions and then branches into exploring pathogens in more depth. For example, my group's work on the sooty blotch and flyspeck (SBFS) fungal disease complex on apples began with warning-system field trials but morphed into extensive surveys of diversity within this group, leading to discovery of more than 75 new SBFS species. We then differentiated species by biogeographic range, environmental biology, phenology, and fungicide sensitivity. Next, we traced the evolutionary origins of the SBFS group to ancestral plant-penetrating parasites. This adventure includes collaborations with scientists in nine countries.

My Extension clientele included commercial fruit and vegetable growers, landscape managers, greenhouse owners, and Master Gardeners. Many research and teaching ideas grew from situations I encountered during Extension visits. A significant outreach accomplishment was co-authoring an APS PRESS book, *Diseases of Herbaceous Perennials*, in 1999.

I now teach six courses, ranging from Lifestyles of Plant-Pathogenic Fungi to Improving Your Professional Speaking Skills. Publications in scholarship of teaching and learning include six case studies for the APS Education Center's *Plant Health Instructor* and a *HortTechnology* article distilling the impact of our reciprocal student-group travel exchanges with the University of Costa Rica. I have advised many graduate students, hosted visiting scientists from 10 countries, been active in interdisciplinary programs at ISU, and taught short courses in China, Malaysia, Serbia, Thailand, and Costa Rica.

I have served on numerous grants panels at the regional and federal levels. For APS, I've had 18 years in editorial roles for *Plant Disease*. I'm currently a senior editor for *The Plant Health Instructor*. Two terms on the APS Foundation Board, which handles the society's endowment, showed me how APS's finances are managed.

Service to APS: APS webinar, "Getting your manuscript accepted by APS journals" (2018). Workshop, "Working smoothly with APS journals," ICPP meeting, Beijing (2013). *Plant Disease:* editor-in-chief (2013–2015), senior editor (2010–2012, 2004–2006, 2002–2004), and feature editor (1994–2000). *The Plant Health Instructor:* senior editor (2016–2018). APS Foundation Board (2004–2009). Symposium organizer, 1997 APS meeting. APS Extension Committee (1993–1995).

Other Professional Service: USDA-NIFA grants panels (2015, 2012, 2009), NIH grants panel (2010), Regional IPM grants panels (1996, 1999, 2004, 2006, 2009, 2011, 2012). Organizer, Midwest Weather Working Group, which met annually at national APS meetings (2008–2016). Multiple university and department committees.

Awards and Honors: Fulbright Specialist Fellowships (Montenegro, 2012; Serbia, 2015–2016), APS Fellow (2013), ISU Outstanding Achievement in International Agriculture (2012), ISU Extension Educational Team Award (2008), ISU Regents Faculty Excellence Award (2006), APS Lee M. Hutchins Award (2004), ISU Outstanding Achievement in Extension and Professional Practice (2001), Merit Award—Iowa State Horticultural Society (1998), APS Excellence in Extension Award (1997).

Statement of Vision for APS: Plant pathologists have never been more essential than we are now. Increasing human population, invasive plant diseases, climate change, and soil degradation make our expertise vital to achieving and maintaining food, fiber, and energy security.

As the leading organization of plant pathologists worldwide, APS can coordinate scientific expertise to address these threats. This coordination requires that our society be energetic, focused, and engaged and that we work together to inspire new generations of professionals in advancing research, teaching, Extension, outreach, agricultural industry, and regulatory policy affecting plant pathology.

Growing our discipline is challenging in an era of budget cuts and skepticism of science, but as a professional society, we have some invaluable assets to draw on. First, we have a robust tradition of volunteering that is part of our organizational DNA. Second, we have a superb headquarters staff. Third, we have a culture of innovation that has been fostered by current and former members.

For example, the APS Foundation Board raised a multimillion-dollar endowment by motivating members to support travel to APS meetings by students and international colleagues. The APS Public Policy Board has become a respected advocate for agricultural science in Washington, DC, by fostering relations with federal agencies, embedding a subject matter expert in the EPA, and supporting a Policy Fellow in federal offices such as the Office of Science, Technology, and Policy. The APS Publications Board recently expanded its portfolio to include the journal *Phytobiomes*, which reflects APS leadership in spotlighting the importance of the whole plant biome in plant disease and plant health.

We need to leverage our strengths to achieve even more. The membership, the committees, APS Council, APS boards and offices, and visioning sessions have identified a range of goals for the society, such as the following:

- Raising the visibility of plant pathology at the undergraduate and high school levels to recruit the next generation of plant pathologists. APS can harness ideas from academic departments and businesses to structure an effective summer internship program for research, outreach, and teaching that puts plant pathology on the "radar screen" of young scientists.
- Engaging international colleagues by raising even more funds to support attendance at APS meetings, purchase APS PRESS materials, and subsidize page charges in APS journals.
- Fully funding an annual APS Public Policy Board Policy Fellow to increase our impact in Washington and student internships with agricultural industries and federal agencies involved in agricultural regulations and policy to broaden training.

Achieving these ambitious goals would require substantial fundraising and organizational effort. But the outstanding fundraising success of the Foundation board and APS members shows that we can succeed. As vice president, I would encourage APS to embrace the ambitious planning and fundraising challenges needed to achieve these goals and others resulting from our common vision. ■

Candidate for Vice President

Jean Beagle Ristaino

William Neal Reynolds Professor, Department of Entomology and Plant Pathology, North Carolina State University (NCSU), Raleigh

Areas of Specialization: Epidemiology and population biology of oomycete plant pathogens; Phytophthora diseases

Academic Record: BS, Biological Sciences, 1979, University of Maryland; MS, Plant Pathology, 1982, University of Maryland; PhD, Plant Pathology, 1987, University of California, Davis.

Brief Description of Professional Achievements: I have been a member of APS since 1980. I started work as an undergraduate research aid at the USDA. After earning my MS degree, I worked in the Biological Control of Plant Diseases lab at USDA Beltsville. I went to UC Davis in 1984 to work on *Phytophthora* on tomatoes and after graduation, I accepted a position at NCSU. I am currently a William Neal Reynolds Distinguished Professor. I work on the population biology and population genetics of *Phytophthora infestans* and other oomycete pathogens. My lab studies the population structure of modern-day and historic late blight outbreaks. I study the impact of migration, recombination, and hybridization on the evolution of *Phytophthora* species. We also manage the late blight disease surveillance network USABlight.org. I teach *Phytophthora* molecular diagnostics workshops globally. I serve as the director of the Emerging Plant Disease and Global Food Security cluster at NC State. I was a Jefferson Science Fellow with USAID and am currently a Fulbright Research Scholar at the University of Catania, Italy.

Service to APS: Co-Editor, *Emerging Plant Disease and Global Food Security,* American Phytopathological Society (2018); Editor, *Pioneering Women in Plant Pathology,* American Phytopathological Society (2008); APS Centennial Celebration timeline materials; A Key to the Common *Phytophthora* species; APS PRESS acquisitions editor (current); APS PRESS senior editor (2014–2017); Chair, Office of Electronic Communication (2002–2005); Member, APS Council (2002–2005); Member, APS Publications Board (Aug. 2002–2005); APSnet homepage feature editor (Dec. 2000–Sept. 2002); Ex-officio member, APS Publications Board–*Plant Health Progress* and *Plant Health Instructor* (1999–2002); Member of Office of Electronic Communications (1997–2005); Member, Office of Public Affairs and Education (1999–2002); Chair, Electronic Technology Assessment Committee (1998); Chair, Soil Microbiology and Root Disease Committee (1994); Member, Epidemiology Committee (1991–1994); Associate editor, *Phytopathology* (Jan. 1995–1997); Associate editor, *Biological and Cultural Tests* (1994–1996); Section editor, Vegetable Diseases, *Biological and Cultural Tests* (1991–1993).

Other Professional Service: Member, ISPP Task Force, Global Food Security; Director, Emerging Plant Disease and Global Food Security Cluster, NCSU; Interagency Working Group on Plant Genomics; Gates Foundation Grand Challenges Exploration (March 2013), Seattle; Gates ARC Partners Meeting in Kenya (Aug. 2013); ESCOP/ACOP Leadership Development Program (1997–1998); Sigma Xi, NCSU Chapter: vice president (2011), president (1998–1999), president-elect (1997–1998), vice president (1996–1997), treasurer (1995–1996), secretary (1994–1995), Research Awards Committee (1994, 1995); Chair, Research Awards Committee (1996).

Awards and Honors: Fulbright Research Award (2018); APS Excellence in International Service Award (Aug. 2016); Jefferson Science Fellow, USAID Bureau for Food Security (Aug. 2012); AAAS Summer Science and Engineering Fellow (1996); Sigma Xi Outstanding Young Researcher Award, NCSU (April 1993); Dennis Hall, Outstanding Graduate Student Award, Department of Plant Pathology, UC Davis (1988).

Statement of Vision for APS: Emerging plant disease outbreaks not only threaten the livelihoods of millions of subsistence farmers in the developing world but also impact growers in the United States who must manage plant diseases in order to sustain profitable yields. To match the projected increase in demand for food by 2050, food production must increase by 60 percent. The American Phytopathological Society (APS) plays a key role in training, educating, and disseminating basic and translational science that can help alleviate global hunger, produce sustainable crop yields, and ensure food security for all.

Plant pathologists are involved in many areas of agricultural research, and our cross-cutting discipline contributes to the economic engine of agriculture not only in the United States but globally. Members of APS conduct science that supports technological development and innovation. As vice president, president-elect, and president of APS, *I pledge to work diligently with policy makers and political leaders in Washington and the public to ensure that they understand the important impact of plant pathology to our nation's national security and the world's food supply.*

I have traveled to many areas of the world during my rewarding career as a plant pathologist, including to some countries with burgeoning population growth and lack of resources to conduct sound science. APS is a global society and our membership is multidisciplinary and far reaching. Our professional society is borderless and welcoming. *I will work to continue to increase the diversity of people in APS and enhance training, education, and capacity-building opportunities for developing-country scientists to collaborate with APS.*

Agriculture production systems will change dramatically in the coming decades with new precision tools, big-data analytics, artificial intelligence, bioinformatics, and weather-based epidemiological and communication tools. Interdisciplinary teams or clusters of scientists and students will work together to solve grand challenges. Our future plant pathology students will not "look" like the students of the past, and neither will our teaching and research programs. *I will work to attract the millennial generation of students to careers in plant pathology.* These students are driven by the determination to make a difference and solve global food problems. Our past APS thought leaders have considered the future need for PhD-level scientists in agriculture, and the market for our graduates at all levels is expanding and excellent.

We have amazing stories to tell of our successes as plant pathologists. APS journals and APS PRESS are thriving. Plant pathologists started the green revolution, helped organize the CGIAR system, developed plant transformation technologies, produced some of the first sustainable transgenic food crops, improved crop disease and drought resistance, and marketed the first biologically based plant disease control products to farmers. *I will work with APS to expand outreach and communication* of our professional impact and success stories to the public. These stories will bring recognition to APS and enhance opportunities for the future for our membership. ■

Candidate for Councilor-at-Large

Martin A. Draper

Professor and Head, Department of Plant Pathology, Kansas State University, Manhattan

Areas of Specialization: Plant disease management; diagnostics; Extension; international agriculture

Academic Record: BS, 1982, Iowa State University; MS, 1985, and PhD, 1999, North Dakota State University

Brief Description of Professional Achievements: My career began as the North Dakota State Seed Department seed potato pathologist, managing disease-free seed production, pathogen screening, and diagnostics for certified seed production. The program evolved with new technologies, scale, and scope for limited-generation seed production. I moved on to manage the seasonal North Dakota State University (NDSU) Plant–Pest Diagnostic Lab and worked to develop a companion Seed Health Testing Lab to allow year-round operation and economic viability of both labs. I moved to South Dakota State University (SDSU) to become the Extension plant pathologist and had responsibilities for Extension programs on all crops in the state. I actively researched about a dozen crops but focused on wheat, soybean, and sunflower. After about nine years, I had the opportunity to become a National Program Leader for Plant Pathology and Integrated Pest Management at what is now the USDA National Institute of Food and Agriculture, beginning my administrative career. In my ten years at the USDA, I directed several programs, focusing on applied and Extension programs in IPM and plant pathology, including Extension IPM, NPDN, and some AFRI programs. In 2016, I moved to Kansas State University (K-State) to become department head.

I'm proud of my involvement or facilitation that has produced some significant accomplishments: assuring an economically viable diagnostic facility; building a strong Extension plant pathology program in a small department; helping lead the U.S. preparation for soybean rust, in part by drafting fungicide Section 18 Quarantine Exemption templates for all states; minimizing unintended impacts to the Extension IPM–Crop Protection programs from ill-conceived legislation; providing sound guidance to the ipmPIPE and NPDN; participating in international activities in Bolivia and Serbia and consulting on projects in Mexico, Argentina, Pakistan, Indonesia, and Australia; and building positive programmatic collaborations with agencies, departments, and stakeholders in every enterprise in which I have worked.

Service to APS: Working with colleagues on committees and symposia are among my favorite experiences. I have coordinated and moderated three symposia, spoken at several other symposia, and served on subject and policy committees: Seed Pathology (1999–2001), Extension (1999–2002; chair 2001–2002); Office of Public Affairs and Education/Public Relations and Outreach (2004–2009); PHP, senior editor (2013–2015); PDMR section editor (2007–2013); Leadership Institute (2012–2014), and Emerging Diseases & Pathogens Committee (2008–present).

Other Professional Service: K-State—College Promotion/Tenure Committee (2017–present); RCM Budget Cost Pool Study Team (2018). U.S. Wheat and Barley Scab Initiative—Steering Committee (2004–2006), Chemical/Biological Control Committee (2002–2005, chair 2004–2005), Management Committee (2005–2007, chair 2005–2006). National Sunflower Association—Research Committee (1999–2004). Sclerotinia Initiative—Sunflower commodity team (2002–2004). SDSU—Four-State Cropping Systems Extension Conference Committee (2000–2006, chair 2004); Sigma Xi Graduate Student Research Committee (1999–2004, chair 2000–2001). CSREES/NIFA—AREERA Plan of Work/Annual report review (2010, 2015); Continuous Process Improvement Team (2015); Education Portfolio Advisory Team (2013–2015); Science Priority Planning Team (2013–2016); National Plant Disease Recovery System team (2012–2016); Infrastructure and Capacity Task Force, co-chair (2011–2016); Interagency Committee on Ug99 and Wheat Stem Rust (2008–2016); Epsilon Sigma Phi–Extension Honor Society (USDA/DC, Mu chapter president 2012–2016); APLU-CSREES/NIFA Systems Integration Task Force (2008–2012); seven program review teams; and an array of departmental, college, university, and regional service activities.

Awards and Honors: Secretary's Award for Excellence–Soybean Rust (2006); Abraham Lincoln Honor Award–Sister Agrosecurity Networks: NPDN and NAHLN (2016); 13 USDA merit awards (2007–2016); International IPM Award of Excellence–ipmPIPE (2012); USDA-NIFA Partnership Award–NPDN (2010); SD Agri-Business Association Achievement Award (2006); SDSU Agriculture and Biological Sciences Dean's Team Awards (2001, 2003, 2005); Distinguished Service Awards, South Dakota Soybean Research and Promotion Council (2004), SDSU Extension Specialists Association (2002); NDSU Extension, Early Career Commendation–Excellence in Extension (1996), Gamma Sigma Delta–Agricultural Honor Society (2000–present), Epsilon Sigma Phi–Extension Honor Society (1994–present), Phi Sigma–Biological Sciences Honor Society (1988–present), Sigma Xi–Scientific Research Honor Society (1985–present).

Statement of Vision for APS: Through my various experiences in Iowa, North Dakota, South Dakota, Virginia, and now Kansas, my perspective has expanded. I have experienced grower losses from Phytophthora root rot on soybeans, the first central-Iowa occurrence of Goss's wilt, and outbreaks of potato late blight and Fusarium head blight. I have first-hand experience improving government efficiency and university outcomes, creating positive impacts by reducing administrative hurdles. I have taken enthusiasm with me into every effort in which I have ever engaged and continue to champion diagnostics, Extension, and the research discoveries that effect real change in agriculture. When I saw growers adopt practices I had promoted through Extension, it was fulfilling to be thanked for helping them. I've had similar experiences in every job I have ever held. Science can improve society. Adopting scientific discoveries can improve lives.

I have worked in regulatory, research, teaching, Extension, and administrative elements of our science, with state and federal governments, interfacing with industry, in higher education, teaching undergraduate and graduate students, parents of students, and elementary school students. Plant diseases can carry a powerful message of food security and profitability to nearly any audience. Addressing the challenge of nine billion people on this planet in the next few years will require messaging the importance of plant diseases. Research and education of the young and old are the best defenses we have to drive the hard decisions to prevent the worst-case scenario. To impact that discussion, APS needs to be effective in engaging both its own members and decision makers at various levels to make good choices going forward. These next few years could be critical, and an active and engaged APS is required for a positive outcome. I hope to be a part of helping engage APS so that together, we can engage the greater society we live in to make a difference. I will serve APS with the same objectivity and enthusiasm that I have brought to every position. If selected by the membership, I would consider it an honor to serve. ■

Candidate for Councilor-at-Large

Katherine L. Stevenson

Professor, Department of Plant Pathology, University of Georgia (UGA), Tifton

Areas of Specialization: Epidemiology and disease management; mechanisms and management of fungicide resistance

Academic Record: BS, MS, and PhD, 1978, 1986, and 1990, Cornell University

Brief Description of Professional Achievements: I joined the Department of Plant Pathology at the University of Georgia in 1992. I am currently a professor with a research and teaching appointment and serve as the research, Extension, and instruction coordinator for my department on the UGA Tifton campus. My research has focused on epidemiology and disease management and the mechanisms and management of fungicide resistance in pathogens of pecan, peanut, and watermelon. I have established baseline sensitivities of several important pathogens of these crops to different fungicides, developed and refined fungicide-sensitivity assay methods, conducted statewide sensitivity-monitoring programs, documented significant shifts in fungicide sensitivity in pathogen populations over time, and investigated underlying mechanisms of fungicide resistance. I have advised or co-advised 18 graduate students and served on the advisory committees of 40 others. I have taught several courses, including a graduate-level course in epidemiology of plant diseases every other year since 1992, a short course on the same topic at the University of Florida (2007–2009), and the same for the USDA APHIS–PPQ (1994). I contributed several chapters to the book *Exercises in Plant Disease Epidemiology* (1997) and co-edited the second edition (2015).

Service to APS: Member of APS since 1982; Epidemiology Committee (1992–1997, 2015–2018 [chair, 1996]); Pathogen Resistance Committee (2001–2003, 2008–present [chair, 2003]); Associate editor, *Plant Disease* (2000); Senior editor, *Plant Disease* (2000–2003); Associate editor, *Phytopathology* (1995–1997), Senior editor, *Plant Health Instructor* (2006–2011); Editor-in-chief, *Plant Health Instructor*/APS Education Center (2012–2017); Publications Board (2012–2017); Office of Education (2012–2017).

Other Professional Service: In addition to serving on numerous committees in my department, college, and university, I have served on the USDA NRI-CGP Biology of Plant Microbe Association Panel (2004). I served terms as president of the Georgia Association of Plant Pathologists (2001), the University of Georgia Chapter of Sigma Xi, The Scientific Research Society (2003), and the University of Georgia chapter of Gamma Sigma Delta, The Honor Society of Agriculture (2002). I also participated in the ESCOP/ACOP Leadership Development Program, Class 10 (2000).

Awards and Honors: Outstanding Presentation Awards from the Georgia Association of Plant Pathologists (1993, 2006); Excellence in Research Award from the Southeastern Pecan Growers Association (1999); Outstanding Presentation Awards from the Southeastern Pecan Growers Association (2000, 2010); Excellence in Teaching Award, UGA Tifton Campus (2015); Donald M. Ferrin Memorial Service Award, APS Southern Division (2017); Outstanding Plant Pathologist Award, APS Southern Division (2018).

Statement of vision for APS: APS has played a major role in my professional development during the course of my career. I want to ensure that APS remains a vibrant and dynamic society that will play a significant role in the professional development of the next generation of plant pathologists, as it has for me. To accomplish this, APS leadership must be sensitive to the changing needs of the next generation of plant pathologists and respond and adapt to meet those needs to ensure continued relevance to its membership. In addition to meeting the needs of current members, APS must be actively engaged in attracting new members (students, early career professionals, etc.) and encourage international members by offering discounted membership dues and other incentives. The challenges of meeting the needs of an increasingly diverse membership are many. I support the efforts of the recently established Professional Development Center, under the auspices of the APS Office of Education, to address issues of importance to early and midcareer professionals, in particular.

APS is and must continue to be the premier source of current, reliable, scientifically sound information pertaining to all aspects of plant health for the membership, the public, and policy makers. This information is available through our meetings, workshops, journals, books, webinars, the APS Education Center and other online resources and through the outreach activities of OPRO, OPSR, OIP, and the PPB. The APS journals are especially important to our society, both financially and scientifically. The APS Publications Board, under the leadership of Nik Grünwald, and the outstanding APS staff have responded to the challenges of a rapidly changing landscape in the publishing world. Their combined efforts have resulted in a publication process that is faster, more cost effective, and more "author friendly" while maintaining the high-quality standards that set our journals apart from many others. APS must continue to invest in revenue-generating innovations that capitalize on new initiatives or funding opportunities to ensure fiscal sustainability in the future.

As a long-time member of APS, I have always benefitted greatly, both personally and professionally, from attending the national and divisional APS meetings. Even in this age of instant electronic communication, there is no substitute for face-to-face meetings. The intellectually stimulating environment always has the effect of rejuvenating my enthusiasm, and I usually come away from the meeting with at least one new idea that can be immediately implemented in my work in the field, the lab, or the classroom. The meetings provide valuable opportunities to share the latest research findings, exchange ideas, establish new collaborations, learn new techniques, and of course, catch up with old friends. I recognize, however, that as our international membership increases and resources decrease, it may not be realistic for all members to attend the annual meetings. APS must work to establish creative new ways to fully engage and foster communication with our international members and promote collaborative efforts to promote plant health around the globe.

As a liaison between the membership and the APS Council to help ensure that all members of APS are being served by the society and their needs and concerns are heard by leadership, I would enthusiastically welcome the opportunity to serve a 3-year term as councilor-at-large. ■

Emerging and Re-Emerging Pathogens: A Constant Threat to Global Agriculture

By Gail Tomimatsu, Chakradhar Mattupalli, and Niklaus Grünwald

As scholars of plant pathology, we recognize the impact of emerging and re-emerging pathogens. Plant diseases and their epidemics have changed the course of human history (e.g., Irish migration resulting from the late blight potato famine); altered natural landscapes (e.g., chestnut blight in the eastern United States and sudden oak death in the western United States); changed crop production, economics, and management practices; and inspired the development of pesticides, pest-resistance gene technologies, and other management approaches for crop protection and sustainable agriculture. We are constantly under the threat of newly emerging and re-emerging pathogens that may affect all of our crops and native plants in the landscape.

The global trade of agricultural products and extensive human migration have greatly enhanced the transport and movement of plant pathogens and their insect vectors, while changes in the climate have further exacerbated changes in the geographical ranges of pathogens, vectors, hosts, and alternative hosts. For example, psyllid insect invasion is responsible for the spread of *Liberibacter* spp. on citrus and potato, and the laurel wilt pathogen, *Raffaelea lauricola*, which is currently threatening Florida's avocado crop, is vectored by an invasive beetle. Contaminated seed may also contribute to global distribution of plant pathogens, as illustrated by wheat blast, caused by the seedborne and seed-transmitted fungal pathogen *Magnaporthe oryzae* pv. *triticum*, which has the potential to devastate U.S. wheat production. Although wheat blast has not been found in the United States, severe epidemics have occurred in South America since the 1980s and in Bangladesh in 2016.

Environmental conditions such as extreme weather events and prolonged periods of cool temperatures and humidity can precipitate disease development and pathogen survival. For example, an unprecedented series of storms in 2004 and 2005 spread the citrus canker bacterium to the point that eradication of diseased trees was no longer possible, despite a 10-year monumental effort to eradicate the disease from Florida. Changes in management practices, reliance on a few plant genotypes, and pathogen resistance to chemicals also contribute to the emergence and re-emergence of plant pathogens.

*APS Public Policy Board members met with USDA NIFA's Deputy Director **Parag Chitnis** during their recent visit to Washington, DC.*

A multifaceted approach is required to prevent the entry of foreign pathogens, minimize pathogen movement within U.S. borders, and mitigate and manage re-emerging and emerging plant pathogens. Effective surveillance and sensitive detection protocols for pathogens in seeds, pollen, root stock, nursery stock, and other plant-propagative materials are all critical, as are predictive disease models, which require knowledge of agricultural practices and evolutionary mechanisms that drive the emergence of these pathogens. These disease models require an improved understanding of the phytobiome, including how the various microbial communities in seeds and other propagative materials influence subsequent disease development. This knowledge can be translated to inform and validate risks of emerging pathogen populations and subsequent disease development and also to support robust, science-based phytosanitary legislation; redesign of trade agreements; and policies to prevent disease epidemics that impact U.S. agriculture and natural resources.

The APS Public Policy Board (PPB) advocated for research, infrastructure, and policies to address the threat of emerging and re-emerging plant diseases during meetings with congressional legislators and various federal agency staff in Washington, DC, from March 12 to 14, 2018. In the wake of the president's fiscal-year 2019 budget, which proposes to eliminate funding for the National Plant Diagnostic Network (NPDN) and reduce funding for agricultural research, the board members stressed the critical need to protect U.S. agriculture and forests in these ways:

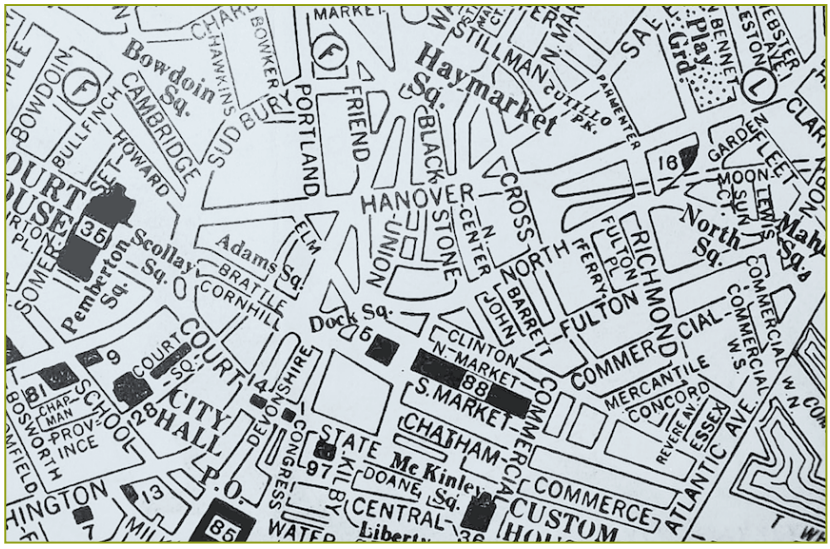
- By increasing funding for applied research to improve testing of seeds and plant-propagation materials by exploiting molecular detection tools, relating knowledge of plant microbiomes to pathogen risk and plant health, and translating this knowledge to public and private plant tissue testing
- By increasing fundamental research to improve understanding of pathogen evolution, spread, and response to other phytobiome components to more effectively predict risks and minimize and mitigate plant disease epidemics
- By increasing support for microbial culture collections with sufficient staff and technical facilities to ensure long-term availability of culture collections as a resource for biological and agricultural research and the industries this research supports
- By assuring sustained and effective surveillance for pathogen emergence via increased support for the NPDN
- By enhancing student and post-doctoral preparation for entering the workforce that includes opportunities for broadening experiences in agricultural industries and public and private systems involved in plant and seed health testing, surveillance, and regulation

In short, the PPB continues to remain a voice for APS in Washington, DC, and would like to encourage members to help advocate for support for these critical areas with their legislators when the opportunity arises. The PPB would also like to encourage members, particularly early career members, to take advantage of workforce training opportunities to ensure that we have continued expertise in detecting and preventing threats from emerging and re-emerging pathogens. These opportunities include career and research development experiences supported by the APS Plant Pathology Experiential awards. ■

Getting Around Boston

Renee Rioux, renee.rioux@bayer.com

Whether you are traveling alone or with family, Boston is a beautiful city with lots to see and do, particularly if you are a history buff or a "Beantown" sports fan. ICPP2018 provides a great opportunity to take some extra weekend time or a free afternoon and explore the sites this city has to offer. However, if you are not familiar with Boston, you may be curious about the best ways to get around town. If that's the case, here are a few ideas—some that are practical, and some that are a bit more fun!



WALKING	The Hynes Convention Center and nearby conference hotels are located in the Back Bay area of Boston and within a 2-mile walk of Faneuil Hall. This landmark is located near a number of great historical attractions and not far from Boston Harbor attractions, such as the New England Aquarium and Long Wharf, and from the city's North End, which features spectacular Italian food and the Paul Revere House. If you walk through the city, which is quite safe and pedestrian friendly, you can stroll the Boston Common/Public Garden area and perhaps snap a photo of your child with the bronze "Make Way for Ducklings" statue. Alternatively, there are nice wooded trails along the Charles River that you can pick up not far from the convention center and follow in toward the harbor or in the opposite direction toward the Boston University Campus. If you or a family member is a Boston Red Sox fan, you're in luck! Fenway Park is located less than a mile's walk from the Hynes Convention Center! The walkBoston website has maps and other useful resources.
THE "T"	Boston's subway system is operated by the Massachusetts Bay Transportation Authority (MBTA) and is colloquially known as the "T." The T is similar to the subways in other cities and provides a great way to get around Boston, particularly if you are traveling outside the commuter rush hour. Depending on how much you plan to use the T during your trip, you can purchase either a paper CharlieTicket or a plastic CharlieCard. Both can be loaded with cash value or purchased as a 1- or 7-day pass, but according to the MBTA website, the standard single ride fare is 50 cents less with the CharlieCard. The Hynes Convention Center has its own stop on what is known as the "Green Line." From there, you can travel straight into downtown on the Green Line or transfer to different lines at other stations to get to other destinations.
UBER/LYFT	In addition to standard taxis, Boston offers both common app-based transportation services. Both services operate similarly, in that you request the ride and pay the fare entirely through an app. As a word of caution when using any taxi or ride service, traffic in Boston can be quite bad, especially around rush hour, and you can expect the kind of city driving that you tend to see in movies.
BOSTON DUCK TOURS	While not necessarily providing a way to get from point A to point B, so-called duck boats—World War II–style amphibious landing vehicles, according to the tour website—offer a fun way to see Boston. Tours start at either the Prudential Center or the New England Aquarium and show you more than 30 sites in the city. Because the vehicle is amphibious, you travel on the road AND in the river, which seems pretty cool for anyone, especially children! This could be a great way to get the lay of the land and decide on destinations to visit later on by walking or using others means of transportation.
PEDICAB	A final fun way to get around Boston is by pedicab. This three-wheeled vehicle is essentially a tricycle with a cart in the back. You sit in the cart, and the driver pedals you to your selected destination. You can reserve a ride like you would with a regular cab, or you can book various tours of the city. Based on the 35 Yelp reviews available when this article was written, the Boston Pedicab service has an average of 4.5 out of 5 stars and reviewers left glowing comments, so this seems like a service that's worth checking out. To learn more about the company and its services, visit their website. ■

New Positions

Seyedmojtaba Mansouripour was recently hired as a postdoctoral research associate at the Strawberry Center located at the California Polytechnic State University (Cal Poly) in San Luis Obispo; he will be working on soilborne pathogen detection and disease-resistance screening. Seyedmojtaba earned his PhD at North Dakota State University working on blackleg of canola with **Luis E. del Rio Mendoza**. The Cal Poly Strawberry Center is a unique partnership between Cal Poly and the California strawberry industry. Its mission is to increase the sustainability of the industry through research and education.

Sudeep Bag joined the Department of Plant Pathology at the University of Georgia, Tifton campus, on March 1, 2018, as an assistant professor in the area of virology of crop plants. Bag earned his MS in biotechnology from the College of Agriculture, Indira Gandhi Agricultural University, and his PhD in plant pathology from Washington State University under the direction of **Hanu Pappu**. Bag's dissertation research focused on biological, epidemiological, and molecular aspects of the thrips–iris yellow spot virus pest complex. He subsequently conducted post-doctoral research with **Mysore Sudarshans** at the University of California, Davis and with Kenneth Frost at Oregon State University, Hermiston Agricultural Research and Extension Center. At the University of Georgia, Bag's work will focus on the biology, vector relations, and management of emerging and re-emerging virus diseases, primarily on vegetables and peanut.

WHAT'S GOING ON?

Have you recently graduated, received an award, or been promoted? Is something noteworthy happening in your department? We want to hear from you! Share your news with the APS community! Submit your news online.

Keynote

Mark Mazzola, USDA-ARS scientist and adjunct professor, recently presented an invited keynote address at the BONARES 2018 Conference Berlin: Soil as a Sustainable Resource. The meeting was held in Berlin, Germany, February 26–28 and focused on sustainable management of soil functions and ecosystems research. Mazzola's presentation was titled "Mobilizing the Rhizosphere Microbiome to Enhance Orchard System Resilience."

In Memory

Dr. Patrick M. Phipps, Emeritus Professor at Virginia Tech, passed away October 15, 2017, at his home from complications of cancer. Pat was a giant among plant pathologists, as well as a great mentor and a caring father and husband.

Dr. Phipps was born in New Martinsville, West Virginia. He earned a BS (1970) in biology from Fairmont State College, a master's degree (1972) in plant pathology from Virginia Tech, and a PhD (1974) in plant pathology from West Virginia University, Morgantown. He accepted a post-doctoral position at North Carolina State University immediately after earning his PhD, and he remained at NCSU until accepting an assistant professorship in the Department of Plant Pathology at Virginia Tech in 1978. At Virginia Tech, he climbed the ranks of the professorship, reaching associate (1983), full (1989), and emeritus (2010). Pat loved hunting, fishing, football, NASCAR, country music, and feeding the deer in his backyard every night. He was a veteran of the U.S. Army.

Dr. Phipps had a distinguished career in research and Extension with a focus on disease control in peanuts—work that is considered the industry standard in the Virginia–Carolina region of peanut production. He received the Excellence in Extension Award in 1994 and the Outstanding Alumnus Award in 2006 from the Virginia Tech College of Agriculture and Life Sciences Alumni Association. He was elected Fellow of the American Peanut Research and Education Society (APRES) in 2002; received the APRES Coyt T. Wilson Distinguished Service Award in 2012; received the American Peanut Council's Peanut Research and Education Award in 2000; was awarded the APRES Wallace K. Bailey Award for best paper presentations in 1985, 1990, and 2007; and received the APRES Dow AgroSciences Award for Excellence in Education in 1999. He received the Excellence in Extension Award from The American Phytopathological Society (APS) in 1994 and was named an APS Fellow in 2009. Dr. Phipps authored or co-authored more than 500 publications, which included refereed journal articles, reviewed research reports, Extension bulletins, and articles in trade journals and farm magazines.

Patrick is survived by his wife, Janet Phipps; his son, Dr. James Patrick Phipps, and his son's wife, Megan, of Sorrento, Florida; two grandchildren, Wyatt and Austin Phipps; his brother, Robert G. Phipps, and his brother's wife, Jean, of Fairmont; several nieces and nephews; and a lifelong friend, Barbara Sprong of Fairmont.

Dr. Yeshwant Laxman Nene, Deputy Director General Emeritus of International Crops Research Institute for Semi-Arid Tropics (ICRISAT) in Patancheru, Telangana, India, died unexpectedly at his home on January 15, 2018. He was born on November 24, 1936, in Gwalior (Madhya Pradesh).

Dr. Nene received a BSc (Ag) from Agriculture College, Gwalior, in 1955; a MSc (Ag) from Government Agriculture College, Kanpur (U.P.), in 1957; and a PhD in plant pathology from the University of Illinois in 1960. Dr. Nene was appointed assistant professor of plant sciences at the U.P. Agriculture University, now G.B. Pant University of Agriculture and Technology (GBPUAT)—India's first land-grant university—at Pantnagar in 1960. He was promoted to associate professor in 1966 and professor and the first head of the plant pathology department in 1969.

At GBPUAT, Dr. Nene developed a reputation as an outstanding teacher, researcher, and administrator. He developed and taught the course Introduction to Plant Pathology and three graduate-level courses. Although respectful, helpful, and fair to his students and staff, he demanded punctuality, discipline, and hard work from them. Dr. Nene supervised MSc and PhD theses of 26 students during his tenure at GBPUAT. Dr. Nene authored or co-authored 440 research articles and wrote or edited three books.

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Dr. Nene's work on viral diseases of warm-weather food legumes resulted in the development of several disease-resistant cultivars. The Food and Agriculture Organization awarded him the International Rice Research Prize in 1967 for his groundbreaking work on the Khaira disease of paddy rice—a disease of unknown etiology that had devastated rice cultivation in the area. Dr. Nene determined that Khaira was caused by a nutritional deficiency and was controlled by application of zinc sulfate. For his wheat improvement work in India, the International Centers for Wheat and Maize (CIMMYT), Mexico, awarded him a silver medal in 1971. In recognition of his "singular contributions to the cause of agricultural research, education, and development," the GBPUAT conferred upon him the honorary Doctor of Science degree in 1991 and named a building in the College of Agriculture Complex after him.

In 1974, Dr. Nene joined ICRISAT as principal plant pathologist in the pulses improvement program. He was appointed leader of the pulses improvement program in 1980, appointed director of the legumes program in 1986, and promoted to deputy director general in 1989. He and his team demonstrated that the chickpea wilt complex was caused by several distinct soilborne pathogens and developed an integrated management system to prevent it.

From 1980 to 1986, Dr. Nene's team developed and released 34 high-yielding and disease-/pest-resistant cultivars of indigenous chickpea, pigeon pea, and peanut and 18 cultivars of garbanzo bean for commercial farming in 14 Asian, African, and European countries. Dr. Nene also established the Asian Grain Legume Network (AGLN), now known as Cereals and Legumes Asia Network (CLAN) at ICRISAT, which has 11 South and Southeast Asian countries as members.

Dr. Nene received the Jeersannidhi Award of the Indian Phytopathological Society for outstanding contributions to Indian Plant Pathology in 1985 and the Om Prakash Bhasin Foundation Award for Science and Technology in the field of agriculture and allied sciences in 1991. In 1994, the Indian Society of Pulses bestowed upon him its Research and Development Award. Dr. Nene was elected a fellow of The American Phytopathological Society in 1990. Following his retirement from ICRISAT in 1996, he dedicated his time and energy to the Asian Agri-History Foundation (AAHF), which he established in 1994. AAHF publishes *Asian Agri-History*, a quarterly international journal, and has published 11 bulletins, five books, and seven proceedings of its national and international conferences. Dr. Nene served as AAHF chairman until 2016 and then as chairman emeritus and a trustee until his death.

Dr. Nene is survived by his wife, Prabha, whom he married in 1962; his son, Sudhanshu (Bindu Malik); his daughter, Purnima Raste (Dinesh); and two grandchildren.

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Graduate Student Spotlight

Bruna Balen Forcelini, University of Florida

Biography

STATUS: PhD student graduating in May 2018; advised by Natalia Peres

APS INVOLVEMENT: I have been an APS member since 2012 and have attended all the APS meetings since then. During most of the meetings, I was fortunate to give oral presentations. Other than APS meetings, I presented my research (poster) at the 2013 ICPP in Beijing, China. I have also published three research articles in APS journals, like *Plant Disease* and *Phytopathology.*

Research Focus

My PhD research focused on the growing challenge of fungicide resistance in strawberry production. I analyzed at-risk fungicide patterns and monitored fungal pathogens' sensitivity to fungicides in strawberry nurseries and commercial fields. I also developed rapid and high-throughput molecular assays for the detection of *Colletotrichum* species and for the detection a mutation associated with QoI resistance.

Rapid Fire Questions

What's something interesting most people don't know about you?
I'm a second-generation plant pathologist. Just like my father, I'm doing my PhD at the University of Florida. I'm also a barre aficionado.

What is your favorite pathogen/plant disease?
Definitely *Colletotrichum acutatum* causing anthracnose. In addition, I love pink, and the chromogenic isolates are my favorite.

If you know you are pursuing a specific career sector and want that shared, what is it?
When I started my PhD, I thought I would only be happy working in the industry. However, with time and maturity, I can now see myself working with Extension or even becoming a professor.

How did you become interested in the field of plant pathology?
My father has always been my role model, and that inspired me not only to pursue plant pathology but also to one day become a successful plant pathologist.

Learn more about the APS Graduate Student Committee initiatives and student opportunities. Connect with the committee on Twitter @plantpathgrads and Facebook.

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Institution Spotlight

WSU Scientists Battle for Spinach

In the Pacific Northwest, spinach seed is a tiny crop with a huge value, and Fusarium wilt is a big problem. This devastating disease takes famers' fields out of commission for decades at a time. Only about 4,000 acres of spinach seed are farmed in this region per year, but with seed bringing more than $2,000 per acre, this is a hugely valuable crop. The cause of Fusarium wilt, *Fusarium oxysporum,* thrives in the Northwest's acidic soils, and at worst, the fungus can cause a total loss.

To escape the fungus, farmers historically sought out fields in which spinach had never been planted. That's a rare opportunity today. "The virgin spinach ground is gone," says **Kirby Johnson**, president of the Puget Sound Seed Growers' Association and a seed farmer for more than 40 years. Since the fungus is next to impossible to eradicate, farmers have to avoid planting spinach in infested soil. It can take a decade or more for spores in the soil to decline to a level safe for new plantings. Some farmers have waited 17-plus years for some of their fields to test as safe, but even when they do, they still suffer losses.

An added challenge comes from the tight cross-pollination controls that seed farmers must follow. Pollen from unrelated varieties can ruin a seed crop. To breed true seeds, spinach fields must be kept apart up to 5 miles. Limited acreage is planned and mapped every year at a meeting of growers to ensure that crops are isolated.

With the demand for seed ever increasing, growers are faced with a "conundrum," according to Skagit County grower **Todd Johnson**. Northwest farmers are simply running out of land. **Lindsey du Toit,** professor and vegetable seed pathologist in the Department of Plant Pathology at Washington State University (WSU), located at the Mount Vernon Research and Extension Center, aims to change the situation. She leads a research project to help growers reduce the impact of Fusarium wilt. **Emily Gatch**, a former WSU student, tested soil samples from farmers' fields to develop a soil test for Fusarium wilt.

To reduce Fusarium damage, du Toit leads Northwest research into Fusarium wilt resistance as part of a $266,000 project funded by the U.S. Department of Agriculture's Specialty Crop Research Initiative. This work is part of a larger $2 million project led by scientists at the University of Arkansas. At Mount Vernon, du Toit's research team is testing more than 600 varieties of spinach, both long-established local varieties and spinach from around the world, including ancient wild germplasm from the crop's lands of origin in Iran, Turkey, and Syria. The team is identifying markers for resistance and mechanisms of resistance.

Leading WSU spinach research for more than 17 years, the team has made important progress. According to du Toit: "This is an opportunity to make a huge difference for growers trying to meet the demand for spinach. By finding resistance and developing resistant varieties, we'll contribute to a healthier Northwest and global spinach industry. That's a win for our farmers and anyone who loves spinach."

(left to right) Shannon Carmody, Lindsey du Toit, and Kathy Lindbloom (Sakata Seed America) discuss results of soil testing for risk of Fusarium wilt. (Photo by Kim Binczewski)

Tanaka's Team at WSU Developing Fast and Inexpensive Soil Pathogen Testing

Soil pathogen testing is critical to farming but can be slow, expensive, and sometimes inaccurate. **Kiwamu Tanaka**'s lab in the Department of Plant Pathology at Washington State University (WSU) has been developing a technique for accurate, quick, inexpensive, and onsite testing.

Until now, conducting soil pathogen tests has required large, expensive equipment or lab tests that take weeks. Polymerase chain reaction- (PCR-) based tests are specific and sensitive but only possible in a laboratory.

The new methods designed by Tanaka's research team are not only portable and fast, but they also utilize testing materials that are readily available. The team has recently published a paper listing all the equipment and materials required to conduct the testing, plus instructions on how to put it all together and conduct soil tests.

Tanaka explains why they started developing the technology: "We've heard from many growers that the time it takes to obtain results from soil samples sent to a lab is too long. The results come back too late to be helpful. But if they can get results on site, they could make informed decisions about treatments or management changes before they even plant their crop." Some diseases from soil pathogens may not be visible until weeks after the crop has sprouted, according to Tanaka. That could be too late to treat the disease or could force farmers to use more treatments.

Joseph DeShields, a graduate student and the first author on the paper, demonstrated the test technique in a video. He said that it took about 6 months to get the device to work in the field. It relies on magnets to capture pathogens' DNA from the soil. "It turns out, it's really hard to separate and purify genetic material from soil because soil contains so much material for PCR tests," said DeShields, "so we were thrilled when we made that breakthrough."

Rachel Bomberger, a diagnostician at the department and one of the co-authors on the paper, helped with the concepts of the machine testing. She said that she is impressed by what Tanaka and the team accomplished. "We removed a huge stumbling block when it comes to soil testing," she said. "We found the missing

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piece that makes the testing systems work in the field without expensive lab equipment or testing materials."

The system was tested on potato fields around eastern Washington, but it will work on soil anywhere in the world. "It's a really versatile method," Tanaka said. "You could use it for nationwide pathogen mapping or look at the distribution of pathogens around the country. We started small, but this could have huge implications for testing soil health and disease." Tanaka added that it was important for this discovery to be available in an open-access video journal. "We're always concerned about helping every grower and the industry as a whole," he said. "We want everybody to look at this and use it, if they think they'll benefit from it."

The results were published in the *Journal of Visualized Experiments*, an open-access journal that includes a video showing assembly.

Oregon State University Graduate Student Association Providing Resources and Contact Points

The Oregon State University Graduate Student Association (GSA) in the Department of Botany and Plant Pathology is providing resources for incoming graduate students and contact points for faculty and staff. The GSA is also involved in the academic and professional development of graduate students. This year's GSA officers are President **Patrick DiBello**, Vice President **Megan OMalley**, Treasurer **Catie Wram**, Webmaster **Shankar K. Shakya**, and Outreach Coordinator **Abby Glauser**. ■


Patrick DiBello


Megan O'Malley


Catie Wram


Shankar Shakya


Abby Glauser

Classifieds

Classified Policy

You can process your job listing at the APS Job Center. PLEASE NOTE: Your online job listing may be edited by newsletter staff to approximately 200 words for the print listing in *Phytopathology News*. Fees for posting online are $25 member/$50 nonmember for graduate or postdoc positions and $200 member/$250 nonmember for all other positions. To have your job listing included in *Phytopathology News*, simply select the option on the online form (there is an additional $55 fee). If you have any questions, contact the APS Placement Coordinator.

Post-Doctoral Researcher

A position is available for studying *Penicillium* spp. comparative genomics and functional genetics of the postharvest pathogen that causes blue mold of pome fruits. This assignment is within the Food Quality Laboratory at the USDA–ARS facility in Beltsville, Maryland. The incumbent will examine how *Penicillium expansum* utilizes its gene repertoires to launch effective decay in apple. A comparative approach using different *Penicillium* spp. with disparities in virulence will be conducted via next-generation sequencing technologies, including comparative genomic, transcriptomic, and functional methodologies.

The qualified applicant should have experience in genomics and bioinformatics, in addition to molecular biology. A recent PhD is required in plant pathology, microbiology, genomics, or a related field. The candidate should have experience working in molecular biology systems at the bench and a strong working knowledge of bioinformatic workflows and systems for the analysis of -omics data. Required molecular skills include gene cloning, PCR, qRT-PCR, and RNA/DNA isolation.

The applicant should send his or her cover letter—including a statement of interest, curriculum vitae, and names/contact information of three references—to Dr. Wayne M. Jurick II. In the cover letter, the applicant should indicate what he or she would like to gain through this post-graduate training experience. Each applicant needs to complete an application package for this opportunity. More about this position is available online.

Assistant Scientist II/Fruit Virologist

The Department of Plant Pathology and Ecology at The Connecticut Agricultural Experiment Station is seeking a full-time plant pathologist at the level of Assistant Agricultural Scientist II. The primary responsibility of this position is to conduct original research on emerging or re-emerging viral diseases of fruit crops (mainly wine grapes) using cutting-edge research approaches that include various applications of genomics. The successful applicant will be expected to develop and maintain a productive, internationally recognized research program through extramural funding. He or she will attend professional meetings, collaborate with colleagues within the department and the experiment station, seek external funding sources, and publish research findings.

The applicant must have a PhD in plant pathology and/or virology or a closely related discipline. Preference will be given to candidates with knowledge of "next-generation" sequencing platforms, bioinformatics, PCR-based detection methods, general molecular biology techniques, and viral plant pathogens. The ideal applicant must show evidence of success in scholarly research addressing the biology and management of viral diseases, along with evidence of effective oral and written communication abilities.

The interested candidate should submit (1) a detailed curriculum vitae; (2) a statement of research, outreach, and career goals; (3) reprints of recent publications; and (4) official university transcripts. Three letters of recommendation with contact information should be sent to Dr. Wade Elmer. More about this position is available online. ■

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ICPP BOSTON

Plant Health in a Global Economy

JULY 29 - AUGUST 3 2018

PLENARY SESSION SPEAKERS

JULY 29 | 17:00
OPENING SPEAKER

Francisco Reifschneider
EMBRAPA

A Healthy Future For Plant Health

AUGUST 3 | 17:00
CLOSING SPEAKER

Helene Dillard
University of California

Global Food and Nutrition Security — From Challenges to Solutions

JULY 30 | 08:30
PLANT HEALTH IS EARTH'S WEALTH

Sophien Kamoun
The Sainsbury Laboratory

The Edge of Tomorrow — Plant Health in the 21st Century

Carolee Bull
The Pennsylvania State University

Taxing Times — Plant Pathogens in a Global Economy

Josie Saul-Maora
Papua New Guinea Cocoa Board

David Guest
University of Sydney

The Answer Is Chocolate: People-Focused Plant Disease Management — Underpinned by Context, Community, and Collaboration

▶▶▶ Learn more about the ICPP2018 program at icpp2018.org

The International Congress of Plant Pathology (ICPP) is hosted by The American Phytopathological Society (APS) on behalf of the International Society for Plant Pathology (ISPP)

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Research Notebook

SPOTLIGHT

Call for Papers: *Phytopathology* Focus Issue

Submit your research on *Xylella fastidiosa*! This focus issue will be widely read and highly cited, giving authors maximum exposure. The deadline for submission is July 15.

Call for Papers: *MPMI* Focus Issue

Submit your research on this topic: "Activation, Regulation, and Evolution of MTI and ETI." We look forward to an issue that highlights some of the best current research in this rapidly advancing area! The deadline for submission is July 15.

Challenges for Managing *Candidatus* Liberibacter spp. (Huanglongbing Disease Pathogen): Current Control Measures and Future Directions

R. A. Blaustein, G. L. Lorca, and M. Teplitski

Understanding Yield Loss and Pathogen Biology to Improve Disease Management: Septoria Nodorum Blotch—A Case Study in Wheat

A. Ficke, C. Cowger, G. Bergstrom, and G. Brodal

OPEN ACCESS

Submit Your Papers to *Phytobiomes* for Reduced APCs

Take advantage of our introductory APC of only $1,350 per paper!

Convergent and Divergent Signaling in PAMP-Triggered Immunity and Effector-Triggered Immunity

Y. Peng, R. van Wersch, and Y. Zhang

EDITORS' PICKS

Frequent Shifts in *Aspergillus flavus* Populations Associated with Maize Production in Sonora, Mexico

A. Ortega-Beltran and P. J. Cotty

***Harald Scherm*, Phytopathology Editor-in-Chief**

Comparative Transcriptomics Reveals How Wheat Responds to Infection by *Zymoseptoria tritici*

X. Ma, B. Keller, B. A. McDonald, J. Palma-Guerrero, and T. Wicker

***John McDowell*, MPMI Editor-in-Chief**

TRENDING

Phytopathology

- An Innovative Root Inoculation Method to Study *Ralstonia solanacearum* Pathogenicity in Tomato Seedlings
  N. Singh, T. Phukan, P. L. Sharma, K. Kabyashree, A. Barman, R. Kumar, et al.
- Genetic Diversity and Virulence of Wheat and Barley Strains of *Xanthomonas translucens* from the Upper Midwestern United States
  R. D. Curland, L. Gao, C. T. Bull, B. A. Vinatzer, R. Dill-Macky, L. Van Eck, and C. A. Ishimaru
- A Type 3 Prophage of '*Candidatus* Liberibacter asiaticus' Carrying a Restriction-Modification System
  Z. Zheng, M. Bao, F. Wu, C. Van Horn, J. Chen, and X. Deng

Plant Disease

- Prevalence of Aflatoxin Contamination in Maize and Groundnut in Ghana: Population Structure, Distribution, and Toxigenicity of the Causal Agents
  D. Agbetiameh, A. Ortega-Beltran, R. T. Awuah, J. Atehnkeng, P. J. Cotty, and R. Bandyopadhyay

OPEN ACCESS

- First Report of *Plum pox virus* Strain M in Japan
  M. Oishi, Y. Inoue, R. Kagatsume, T. Shukuya, R. Kasukabe, H. Oya, et al.

OPEN ACCESS

- Significant Influence of EC_{50} Estimation by Model Choice and EC_{50} Type
  Z. A. Noel, J. Wang, M. I. Chilvers

MPMI

- A *Phytophthora palmivora* Extracellular Cystatin-Like Protease Inhibitor Targets Papain to Contribute to Virulence on Papaya
  R. Gumtow, D. Wu, J. Uchida, and M. Tian
- *Phytophthora parasitica* Effector PpRxLR2 Suppresses *Nicotiana benthamiana* Immunity
  R. J. D. Dalio, H. J. Maximo, T. S. Oliveira, R. O. Dias, M. C. Breton, H. Felizatti, and M. Machado
- Strain-Specific Symbiotic Genes: A New Level of Control in the Intracellular Accommodation of Rhizobia Within Legume Nodule Cells
  B. Gourion and B. Alunni

Phytobiomes

- Ecotype-Dependent Response of Bacterial Communities Associated with *Arabidopsis* to Cold Acclimation
  M. Etemadi, E. Zuther, H. Müller, D. K. Hincha, and G. Berg

OPEN ACCESS

- Microbial Communities Associated with Storage Onion
  S. N. Yurgel, L. Abbey, N. Loomer, R. Gillis-Madden, and M. Mammoliti

OPEN ACCESS

- Cropping History Effects on Pathogen Suppressive and Signaling Dynamics in *Streptomyces* Communities
  P. Vaz Jauri, N. Altier, C. A. Pérez, and L. Kinkel

OPEN ACCESS

Plant Health Progress

- Inoculation Method, Temperature, and Relative Humidity Affect Leaf and Neck Anthracnose, a New Onion Disease in Michigan
  L. M. Rodriguez-Salamanca, R. P. Naegele, L. M. Quesada-Ocampo, and M. K. Hausbeck
- Optimized Yellow Dwarf Virus Multiplex PCR Assay Reveals a Common Occurrence of *Barley yellow dwarf* virus-PAS in Kansas Winter Wheat
  A. G. Laney, R. Acosta-Leal, and D. Rotenberg
- Impact of Summer Flooding on Viability of *Sclerotinia minor* and *S. sclerotiorum* Sclerotia in Soil
  M. E. Matheron and M. Porchas

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ICPP2018 WORKSHOP

6th International Oomycetes Workshop to Celebrate the 50th Anniversary of ISPP

The Subject Matter Committee (SMC) of the Oomycetes of the International Society of Plant Pathology (ISPP) is very pleased to announce the presentation of a satellite meeting on July 28, 2018. This important event will salute and celebrate our science of plant pathology in the 50th anniversary of ISPP and the 11th International Congress of Plant Pathology (ICPP).

This workshop, titled "6th International Workshop: *Phytophthora*, *Pythium*, Downy Mildews, and Related Genera (Oomycetes in the Era of Plant Health in a Global Economy)" and organized by **Gloria Abad**, will provide capacity building on identification and diagnostics, ecology, etiology, population genetics, and advanced technologies; help to build collaborative international and national scientific relations; serve as a catalyst for many to accurately describe new species in the oomycetes and learn about the emerging oomycetes of concern around the world; increase the knowledge to develop molecular diagnostics tools; and obtain information on the current status of identification of plant-pathogenic oomycetes. Many oomycetes are recognized to be high-risk plant pathogens, causing high economic and environmental impacts in different areas of the world. Keynote speakers will be authorities on these topics, and participants are encouraged to contribute oral and poster presentations.

The SMC of the Oomycetes of the ISPP was established in December 2016 and has 34 members from 15 countries. One of the missions of the group is to organize international workshops.

Topics and more information are available online. To register, visit ICPP2018 or contact Gloria Abad. ■

Participate in the OIP Silent Auction

The Office of International Programs (OIP) Silent Auction at ICPP2018 will support scientists from developing economies. The auction has raised more than $30,000 in the last 13 years. Help make the 14th annual auction the most successful yet!

There are multiple ways to get involved: donate an interesting item from your corner of the globe or another exciting treasure, encourage your organization to help sponsor the event, or volunteer to help manage the auction at the congress. ■

Get involved today!

Calendar of Events

APS-SPONSORED EVENTS

JUNE 2018

12–14 North Central Division Meeting, Fargo, ND

25–27 Pacific Division Meeting, Portland, OR

JULY 2018

29–Aug 3 ICPP2018–International Congress of Plant Pathology, Boston, MA

IMPORTANT APS DATES TO REMEMBER

MAY 2018

14 Submissions due for PDMR efficacy trials

15 APS Outstanding Volunteer Award nominations due

15 APS Public Policy Board early career internship applications due

JULY 2018

15 Submissions for *Phytopathology* and *MPMI* focus issues

OTHER UPCOMING EVENTS

MAY 2018

17–19 A Practical Workshop on "Rapid Diagnostic Tools for Phytophthora," University of Catania, Italy

29–Jun 1 XX International Bunts and Smuts Workshop, Logan, UT
Contact: ddavid.hole@usu.edu; jmarshall@uidaho.edu

JUNE 2018

6–7 Biopesticides Europe 2018, Amsterdam, the Netherlands

18–22 18th International Fusarium Laboratory Workshop, Bari, Italy

10–13 15th International *Trichoderma and Gliocladium* Workshop, Salamanca, Spain

19–22 21st Penn State Symposium in Plant Biology: Wild and Tamed Phytobiomes, Pennsylvania State University, State College, PA

27–28 Biopesticides North America 2018, Vancouver, British Columbia, Canada

AUGUST 2018

5–10 6th International Workshop on the Genetics of Tree Parasite Interactions: Tree Resistance to Insects and Diseases, Mount Sterling, OH

7–9 International Clubroot Workshop, Edmonton, Alberta, Canada

SEPTEMBER 2018

4–7 8th ISTA Seed Health Symposium and 6th International Seed Health Conference, Poznań, Poland

4–7 10th Australasian Soilborne Diseases Symposium—Paddock to Plates, Adelaide, South Australia

30–Oct 4 The 15th Solanaceae Conference Communication Coordinator Team, Chiang Mai, Thailand

NOVEMBER 2018

11–16 Cucurbitaceae Conference 2018, Davis, CA

JULY 2019

14–18 IS-MPMI XVIII Congress, Glasgow, Scotland