UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
July 17-20, 2018 NOMMINATIONS OF CANDIDATES TO SERVE AS
AD HOC PANEL MEMBERS TO THE
FEDERAL INSECTICIDE, FUNGICIDE, AND RODENTICIDE ACT (FIFRA)
SCIENTIFIC ADVISORY PANEL (SAP)
Docket Number: EPA-HQ-OPP-2017-0617

Biographical Sketches

Charles T. Allen, Ph.D.

Affiliation: Texas A&M University, College Station, Texas

Expertise: 42 years of field experience in cotton integrated pest management (IPM) in the Southern U.S.

Education: Ph.D., Entomology, Louisiana State University; MS., Entomology, Texas Tech University; B.S., Biology, Texas Tech University

Experience Summary: Dr. Allen currently serves as Extension Specialist and Associate Department Head (Ext. Entomology) with Texas A&M AgriLife Extension Service. At Louisiana State University, Allen's research project investigated bollworm management with sprayable insect pathogens including Bt and studies of natural enemies in several cotton agro-ecosystems in Louisiana. Beginning in 1981, he served as Area Extension Entomologist in the Lower Rio Grande Valley, Texas where he worked on IPM and monitoring of pests in cotton and other crops. In 1983 he relocated to Fort Stockton where he worked on IPM in cotton and other crops. He managed an informally organized program to eradicate boll weevil in Southcentral New Mexico in 1995. In 1996, he accepted a position as Extension/Research Entomologist in Southeastern Arkansas. He taught Field Crop Pest Management at the University of Arkansas at Monticello (4 years), conducted Entomology research on cotton and commercial tomatoes. He worked with producers to educate them on what to expect as they began programs to eradicate boll weevil.

In 2000, Dr. Allen began as Program Director with Texas Boll Weevil Eradication Foundation (TBWEF). He managed field operations, planned with Technical Advisory Committees, Zone Steering Committees and the TBWEF Board of Directors, managed personnel and wrote reports/proposals supporting funding efforts. In 2009, Dr. Allen was named Statewide IPM Coordinator with Texas A&M AgriLife Extension Service. His primary responsibilities were to supervise/manage 14-20 IPM Agents. He worked with them and their IPM Steering Committees to develop programs focused on producer needs. In 2012, he was named Associate Department Head with supervisory responsibility for ~ 30 Entomologists and IPM Agents.

Throughout his career Dr. Allen has conducted Entomology educational programming supporting County Extension programs, written extension and refereed publications, newsletters, and articles for the popular and agricultural press on pest management.

Panel Experience: Dr. Allen has significant experience on Society, Agency, University, Commodity, Regional and National IPM committees throughout his career. He recently served as elected Chair (2018) of the National IPM Coordinating Committee (NIPMCC). The NIPMCC works with the Association of Public Land Grant Universities to provide input to the US Congress on regarding funding National Programs in IPM through USDA. Dr. Allen has not served on a EPA Scientific Advisory Panel.

Zachary S. Brown, Ph.D.

Affiliation: North Carolina State University, Raleigh, North Carolina

Expertise: Economic evaluation of resistance & other evolutionary dynamics (e.g. gene drives); bioeconomics; behavioral economics

Education: Ph.D., Environmental & Resource Economics, Duke University; B.A., Mathematics-Economics, Lawrence University

Experience Summary: Dr. Brown has been an Assistant Professor at NC State University since 2014, before which he worked as an Economist at the Organization for Economic Cooperation and Development (OECD) in Paris (from 2011-2013). He completed his doctoral degree in 2011 at the Nicholas School of the Environment at Duke University.

Dr. Brown's area of expertise is on the empirical and model-based evaluation of linked economic and biological dynamics, with a focus on insecticide resistance and other evolutionary dynamics (e.g. the use of gene drives for insect control). Dr. Brown's dissertation work focused on the economic evaluation of malaria vector control in sub-Saharan Africa, including a substantial component evaluating the economics of vector resistance to prevailing public health insecticides used for malaria control, via indoor residual spraying (IRS) and insecticide-treated nets (ITNs). At the OECD, Dr. Brown led a program assessing the potential for applying behavioral sciences in environmental policy. Since joining NC State, Dr. Brown's research program has focused on insect pest resistance to Bt crops, including the EPA's system of Bt refuge mandates. He has published research using resistance models in economic evaluation, as well as analysis of how grower refuge planting behaviors respond to social marketing interventions. He also has ongoing work analyzing the economic implications of using gene drives for agricultural pest control.

Panel Experience: N/A.

Michael A. Caprio, Ph.D.

Affiliation: Mississippi State University, Mississippi State, Mississippi

Expertise: Population genetics of insect resistance to transgenic crops; the use of molecular markers to identify and document the release of genetically manipulated biological control agents, dispersal of heliothine moths and western corn rootworm, tracking flying insects in three dimensions for behavioral studies.

Education: Ph.D. Entomology. University of Hawaii at Manoa; M.S. Entomology, Michigan State University; B.S., Candidate Magistrate, Terrestrial Ecology, University of Bergen, Norway

Experience Summary: Dr. Caprio has worked extensively since completing his Ph.D. on population genetics of insect resistance to transgenic crops, in particular the impact of dispersal and intra-specific density dependent interactions on the evolution of resistance. Dr. Caprio has worked with the Environmental Protection Agency (EPA) to develop probabilistic risk assessment models to estimate the risk of the evolution of resistance within certain time frames.

Panel Experience: Dr. Caprio has served on numerous EPA Scientific Advisory (SAP) Panels/sub-panels, including the SAP on Bt-potatoes (1995); Final Report of the Subpanel on Bacillus thuringiensis (Bt) Plant-Pesticides and Resistance Management (February 1998); Issues pertaining to the Bt plant pesticides Risk and Benefit Assessments (October 2000); Corn Rootworm Plant-Incorporated Protectant Insect Resistance Management and Non-Target Insect Issues (August 27-29, 2002); and Product Characterization, Human Health Risk, Ecological Risk, and Insect Resistance Management for Bacillus thuringiensis (Bt) Cotton Products (June 8-10, 2004). Since 2004, he has worked directly with the EPA to develop probabilistic risk assessment techniques for the Agency to use in evaluating transgenic crops (2015).

David E. Ervin, Ph.D.

Affiliation: Departments of Environmental Management and Economics, and the Institute for Sustainable Solutions, Portland State University, Portland, Oregon

Expertise: Environmental economics, management and policy; sustainability of genetically engineered crops

Education: Ph.D., Agricultural and Resource Economics, Oregon State University; M.S. and B.S., Agricultural Economics, Ohio State University

Experience Summary: Dr. Ervin is Professor Emeritus of Environmental Management and Economics and Senior Fellow in the Institute for Sustainable Solutions at Portland State University. He has over 35 years of experience in the conduct and administration of interdisciplinary research on agricultural and environmental topics in academic, federal government and non-profit think-tank organizations. His current research focuses on innovative approaches to the management of herbicide resistant weeds and principles to guide the valuation of ecosystem services. Current research activities include collaborations with weed/ecological scientists, sociologists and economists investigating topics surrounding the sustainability of genetically engineered crops. He served as Principal Investigator of the National Science Foundation, Integrative Graduate Education and Research program “Ecosystem Services for Urbanizing Regions,” and a U.S. Department of Agriculture funded project "Public Goods and University-Industry Relationships in Agricultural Biotechnology.” His publications and presentations center on environmental and ecosystem service management, principally related to agriculture. During his career, he has reviewed research proposals for the U.S. Department of Agriculture, the U.S. Environmental Protection Agency and the National Science Foundation.

Panel Experience: Dr. Ervin chaired the 2008-2010 National Research Council’s (NRC) Committee “Impact of Biotechnology on Farm Sustainability in the United States,” participated in two national summits co-sponsored with the NRC on herbicide resistance, and reviewed a 2016 NRC report on genetically engineered crops.

Jeffrey A. Fabrick, Ph.D.

Affiliation: U.S. Department of Agriculture (USDA), Agricultural Research Service (ARS), U.S. Arid Land Agricultural Research Center, Maricopa, Arizona

Expertise: Insect molecular biology, biochemistry, and physiology of *Bacillus thuringiensis* (Bt) mode of action and resistance mechanisms

Education: Ph.D. and B.S., Biochemistry, Kansas State University

Experience Summary: Dr. Jeffrey Fabrick is currently a Research Entomologist within the Pest Management and Biocontrol Research Unit at the USDA, ARS, U.S. Arid Land Agricultural Research Center in Maricopa, Arizona. He received his Ph.D. degree in 2003 from Kansas State University in Biochemistry and subsequently post-doctored for two years within the Department of Entomology at the University of Arizona. In 2005, Dr. Fabrick accepted his position as a Research Entomologist (at the former Western Cotton Research Laboratory in Phoenix, Arizona) and has held that position at the ARS facility in Maricopa for nearly 13 years. His area of expertise is to leverage the fundamental knowledge of insect genetics, genomics, molecular biology, biochemistry, and physiology to develop novel pest management strategies and preserve or improve existing management technologies. He also has been an active reviewer of grant proposals and manuscripts for numerous journals within his area of expertise.

His current research projects focus on deciphering the molecular genetics and biochemical mechanisms of resistance to *Bacillus thuringiensis* (Bt) crops and identifying and for understanding the roles of multiple diverse genes essential for insect survival.

Panel Experience: Dr. Fabrick has served on several committees, including ARS Research Molecular Entomologist position selection committee (2009); U.S. Arid Land Agricultural Research Center (ALARC) and Advancing the Undergraduate Bioscience Engagement Track (AUBET) Committee member (2011-2016); ALARC Genomic Committee (2011-2016); International Lygus Symposium Scientific Advisory Committee (2013); ARS Pacific West Area Institutional Biosafety Committee (2013-present); and ALARC Safety Committee (2017-present).

Richard H. ffrench-Constant, Ph.D.

Affiliation: Biosciences, University of Exeter, Penryn, United Kingdom (UK)

Expertise: Insecticide toxicology; novel insecticidal toxins; population genetics

Education: Ph.D., Insect toxicology, Imperial College, London; M.Sc. Insect Control, University of Southampton, B.Sc., Biology, University of Exeter

Experience Summary: Dr. ffrench-Constant is currently a Professor at the University of Exeter in the UK. He received his Ph.D. in insect toxicology from Imperial College London in 1987. This was followed by two postdoctoral fellowships, one at the London School of Hygiene and Tropical Medicine on insecticide resistance in mosquitoes and one on resistance in Drosophila in the Entomology Department at Cornell. He got tenure in the Entomology Department at the University of Wisconsin-Madison as an Associate Professor and then returned to the UK to join the University of Bath as a full Professor. His expertise is in insect molecular biology and specifically in the novel insecticidal proteins and resistance to them. He has published over 200 scientific papers in this area. His work has been funded by the National Institutes of Health, the Biotechnology and Biological Sciences Research Council (BBRSC), Natural Environmental Research Council (NERC) and the Royal Society of London (Merit Award held at the University of Bath).

Panel Experience: Dr. ffrench-Constant has served on numerous scientific panels including work for the National Institutes of Health (1996-2000), Biological Sciences Research Council (2000-present), Natural Environmental Research Council (2000-present) and the Royal Society of London (2000-2010).

Nicholas A. Friedenberg, Ph.D.

Affiliation: Applied Biomathematics, Setauket, New York

Expertise: Pesticide resistance modeling

Education: Ph.D., Ecology and Evolution, Dartmouth College; B.S., Biology, Carleton College

Experience Summary: Dr. Nicholas A. Friedenberg is a scientist at Applied Biomathematics, a private firm providing research and development services for environmental, engineering, and human health applications. He received his Ph.D. in 2002 at Dartmouth College in Ecology and Evolution and then took a postdoctoral position at the University of Florida working on the role of demographics in adaptation. A second postdoc followed at Dartmouth College, with a focus on forest insect pest population dynamics. Dr. Friedenberg joined Applied Biomathematics in 2007 as a research scientist, then a senior scientist, and now vice president. His work uses quantitative modeling to address questions in conservation biology and agricultural insect pest management. He has developed a commercial software tool to model the evolution of resistance to transgenic pesticidal traits such as Bt and RNAi. His areas of expertise include mathematical modeling, pesticide resistance evolution, insect ecology, and population biology.

Panel Experience: N/A.

George B. Frisvold, Ph.D.

Affiliation: University of Arizona, Tucson, Arizona

Expertise: Economics of agricultural biotechnology, economics of pesticide uses, economics of pesticide regulations

Education: Ph.D., Agricultural & Resource Economics, University of California, Berkeley; B.S., Political Economy of Natural Resources, University of California, Berkeley

Experience Summary: Dr. Frisvold is a professor of agricultural and resource economics at the University of Arizona. Previously, he has been a lecturer at the Johns Hopkins University and Chief of the Resource Policy Branch at U.S. Department of Agriculture's (USDA's) Economic Research Service. He has also served as a senior economist for the President's Council of Economic Advisers with responsibility for agricultural and trade issues. Currently, he serves on the Education Committee of the Weed Science Society of America, as an Associate Editor for *Pest Management Science,* and as President of USDA multi-state research project NC-1034: Impact Analyses and Decision Strategies for Agricultural Research. He is currently working on two multi-disciplinary and multi-state research teams working on managing and preventing herbicide resistance. One project is supported through a USDA AFRI grant, while the other is supported through the USDA-ARS Area Wide Program.

Panel Experience: N/A.

Barry K. Goodwin, Ph.D.

Affiliation: North Carolina State University, Raleigh, North Carolina

Expertise: Economics of agriculture, technology adoption, GM technologies, risk management, policy

Education: Ph.D., Economics, North Carolina State University

Experience Summary: Dr. Barry K. Goodwin is William Neal Reynolds Distinguished Professor in the Department of Agricultural and Resource Economics and Graduate Alumni Distinguished Professor in the Department of Economics at North Carolina State University. He has written extensively on issues related to the economics of agricultural technology, policy, and risk management. Dr. Goodwin's research has received many awards, including outstanding article awards from the American, Canadian, and Western Agricultural Economics Associations. He has received the Holladay Medal, which is the highest honor bestowed on faculty at NC State University. Dr. Goodwin was named Fellow of the Agricultural and Applied Economics Association (AAEA) in 2006. He served as President of this Association in 2015. He is a visiting scholar with the American Enterprise Institute (AEI).

Panel Experience: Dr. Goodwin has served on outside review panels for Virginia Polytechnic University (VPI) [to include: USDA, Cooperative State Research, Education, and Extension Service May 2007], Mississippi State University (most current: April 2018), and the Economic Research Service of the USDA (December 2017). He has also served on many North Carolina State University awards panels as well.

Jeremy K. Greene, Ph.D.

Affiliation: Clemson University, Clemson, South Carolina

Expertise: Applied Field-Crop Entomology (Research and Extension)

Education: Ph.D. and M.S., Entomology, Clemson University, Clemson, SC; B.A., Biology, College of Charleston, Charleston, SC

Experience Summary: Dr. Jeremy Greene has spent the last 12 years as a Professor of Entomology at Clemson University's Edisto Research and Education Center near Blackville, SC, conducting entomological research and providing state-wide Extension programming for insect pests of cotton and soybeans. Prior to his appointment at Clemson University, Dr. Greene was Assistant/Associate Professor at the University of Arkansas from 2001 to 2005. Dr. Greene also held a post-doctoral research appointment with the University of Georgia from 1998 to 2001 at the campus in Tifton, GA, after graduating with his Ph.D. in Entomology from Clemson University in 1998. His area of expertise is in field-crop entomology, with most research and Extension efforts focused on monitoring methods and treatment thresholds for hemipteran pests in cotton and soybeans, evaluation of new insecticide chemistries and delivery systems, alternative control strategies for important insects, field trials with Bt technologies (cotton and soybean), and collaboration with researchers on other potential methods of detecting insect pests.

Panel Experience: Dr. Greene's panel experience includes, Pesticide Advisory Committee, Public Entomologist, State Committee (2016/2017); Member of Boll Weevil Technical Advisory Committee (2002-2005); and Member of Advisory Committee for Pest Management Strategic Plan for Mid-South Cotton, Cotton IPM Committee, UofA Cooperative Extension Service (2001-2005).

Richard L. Hellmich, Ph.D.

Affiliation: U.S. Department of Agriculture - Agricultural Research Service (USDA - ARS), Corn Insects and Crop Genetics Research Unit and Department of Entomology, Iowa State University, Ames, Iowa

Expertise: Corn Insect Ecology and Genetics: transgenic corn, insect resistance management, plant-insect interactions, non-target insects, monarch butterfly conservation

Education: Ph.D., Entomology, The Ohio State University, Columbus, Ohio

Experience Summary: Dr. Richard Hellmich has been a Research Entomologist with the USDA - ARS, Corn Insects and Crop Genetics Research Laboratory in Ames, Iowa for 25 years. His research focuses on European corn borer ecology and genetics, insect resistance management, and evaluation of non-target effects of genetically-engineered maize. Recently he also has focused on restoring habitat for monarch butterflies. Previously, Dr. Hellmich studied Africanized honey bees in Venezuela and Guatemala while working for eight years at the USDA - ARS Honey Bee Laboratory in Baton Rouge, Louisiana. Dr. Hellmich also is a Collaborator Assistant Professor with the Iowa State University Department of Entomology. Dr. Hellmich was co-recipient of a 2002 USDA Secretary's Honor Award for leading a consortium of scientists that investigated Bt corn and monarch butterflies. He authored or co-authored five papers published in the prestigious journal *Proceedings of the National Academy of Sciences USA* related to this topic. Dr. Hellmich also was the Agricultural Research Service, Midwest Area, 2002 Scientist of the Year.

Panel Experience: Dr. Hellmich has served as an *ad hoc* member on seven Scientific Advisory Panels for the U.S. Environmental Protection Agency (U.S. EPA), specifically panels related to plant-incorporated protectant plants on the topics of insect resistance management (1998, 2000, 2001) and non-target organisms (1999, 2002, 2004, 2009).

David A. Hennessy, Ph.D.

Affiliation: Agricultural, Food, and Resource Economics Department,
Michigan State University, East Lansing, Michigan

Expertise: Technology and risk in agricultural and food systems and markets

Education: Ph.D., Economics, Iowa State University, Ames; B.Agric.Sc and M.Agric.Sc, University, College, Dublin

Experience Summary: Dr. David Hennessy has current appointment as Elton R. Smith Professor of Food and Agricultural Policy. His research, teaching and outreach interests concern production agriculture and its interfaces with finance and risk management, industry organization, downstream food processing, and the environment. Specific current interests include crop seed and fertilizer input markets, animal health and invasive species management, cropping systems and technology adoption, land use decisions and policy, crop insurance and other risk management choices, behavioral economics in agriculture, food safety and quality as it relates to on-farm choices, and applied microeconomic theory. Recent research endeavors have included how crop seed technologies affect farmer choice of tillage cultivation practices, the impact of Bt corn seed on aflatoxin incidence, managing demand for antibiotics in production agriculture, assessments of the impacts of climate change and other drivers on grassland conversion and crop production choices in the Northern Great Plains, and decision-making processes underlying demand for crop insurance contracts. His programs emphasize the integration of microeconomic theory with empirics. Dr. Hennessy previously served on faculty at Washington State University and at Iowa State University. Dr. Hennessy had been previously named a Fellow of the Agricultural and Applied Economics Association in 2010.

Panel Experience: Dr. Hennessy has served as Peer Review Panelist for a five-year review of U.S. Department of Agriculture's (USDA) Economic Research Service's Farm and Rural Performance and Policy Program (December 2017); He has served as a Peer Review Panelist for Climate Variability and Land Use Change Request for Proposals by USDA NIFA (February 2017); and currently participates on two Scientific Advisory Boards for the French National Institute for Agricultural Research (INRA); Dr. Hennessy served on the National Academies of Sciences, National Research Council Board on Agriculture and Natural Resources, Committee for the Analysis of the Requirements and Alternatives for Foreign Animal and Zoonotic Disease Research and Diagnostic Laboratory Capabilities (2012). He has previously served on the USDA/EPA Committee on Biologic and Economic Assessment of the Use of Pesticides on United States Apples (1995-1999).

Terrance M. Hurley, Ph.D.

Affiliation: University of Minnesota, Minneapolis, Minnesota

Education: Ph.D., Economics, Iowa State University; B.A., Economics, California State University, Sacramento

Expertise: Profitability, Risk and Regulation of Emerging Agricultural Technologies

Experience Summary: After serving a year as post-doctoral research associate, Dr. Hurley joined the Center for Agricultural and Rural Development (CARD) at Iowa State University in 1996. While at CARD, he began investigating the profitability, risk and regulation of genetically engineered Bt corn. His research on the tradeoffs between agricultural productivity and the risk of European corn borer resistance to Bt played an important role in helping to shape the U.S. Environmental Protection Agency's (U.S. EPA) refuge policy for Bt corn. Professor Hurley continued and expanded this line of research after joining the faculty in Applied Economics at the University of Minnesota in 1999. Most recently, his research efforts have sought to better understand crop protection trends in U.S. corn and soybean production, and the environmental consequences of these trends. Dr. Hurley's researching efforts resulted in an invitation in 2011 to serve on the National Academies, Board on Agriculture and Natural Resources, Steering Committee for a National Summit on Strategies to Manage Herbicide-Resistant Weeds.

Panel Experience: Dr. Hurley has served as an ad hoc member on several FIFRA Scientific Advisory Panels for the U.S. EPA: Risk & Benefits Assessment for Bt Plant-Pesticides: Benefits and Economic Analysis, Arlington, VA (October 20, 2000); Risk & Benefits Assessment for Bt Plant-Pesticides: Insect Resistance Management, Arlington, VA (October 18, 2000); and Analysis of a Natural Refuge of Non-Cotton Hosts for Monsanto's Bollgard II Cotton. Arlington, VA (June 13-16, 2006).

Anthony R. Ives, Ph.D.

Affiliation: University of Wisconsin-Madison, Madison, Wisconsin

Expertise: Modeling resistance evolution

Education: Ph.D., Biology, Princeton University; B.A., Biology and Mathematics, University of Rochester

Experience Summary: Dr. Anthony Ives is a professor of Integrative Biology at the University of Wisconsin-Madison (UW-Madison). He received his Ph.D. degree from Princeton University in Biology and subsequently post-doctored for 3 years at the University of Washington. He has been at the UW-Madison since 1990. His area of expertise includes theoretical modeling of insect population dynamics and resistance evolution. He also conducts field research on insect pests of alfalfa. His work is characterized by the integration of modeling, statistics, and experimental/observational data.

Panel Experience: Dr. Ives has served as an *ad hoc* member on several Scientific Advisory Panels for the U.S. Environmental Protection Agency (U.S. EPA), specifically in 2006: Analysis of a Natural Refuge of Non-Cotton Hosts for Monsanto's Bollgard II Cotton; 2009: Evaluation of the Resistance Risks from Using a Seed Mix Refuge with Pioneers Optimum AcreMax Corn Rootworm-Protected Corn; 2010: Insect Resistance Management for SmartStax Refuge-in-a-Bag. In 2008 Dr. Ives was an external reviewer of EPA's report on resistance modeling: "Insect Resistance Development Models as Tools for Determining Resistance Management Strategies."

David L. Kerns, Ph.D.

Affiliation: Texas A&M University, College Station, Texas

Expertise: Row Crop IPM, Quantifying Field-evolved Resistance in *Helicoverpa zea* and *Spodoptera frugiperda* to Bt

Education: Ph.D., Entomology, Auburn University; M.S., Entomology, Oklahoma State University; B.S., Entomology, Texas A&M University

Experience Summary: Dr. David Kerns held the Jack Hamilton Regents Chair in Cotton Production at Louisiana State University before assuming his current position as Professor and State IPM Coordinator at Texas A&M University. He received his Ph.D. degree in 1992 from Auburn University in Entomology and subsequently worked for 2 years for Sandoz Chemical on an experiment station in Greenville, MS. This was followed by 13 years as an IPM Specialist with the University of Arizona at the Yuma Agricultural Center and then 6 years as an Extension Specialist and State Cotton Entomologist with Texas A&M University in Lubbock, TX. In 2012, he assumed the role as a Research Scientist with Louisiana State University in Winnsboro, LA. In his current role at Texas A&M University, Dr. Kerns serves as Extension Specialist working on IPM concepts in Texas row crops and coordinates the Texas IPM Program. In recent years, he has been involved with monitoring Bt resistance in *Helicoverpa zea*, measuring Bt resistance allele frequency, conducting field Bt efficacy evaluations and describing a field-evolved Vip3A resistance in a strain of *Spodoptera frugiperda*. Other research includes developing economic thresholds for *Helicoverpa zea* in cotton and Melanaphis *sacchari in* grain sorghum, and developing IPM strategies for managing Melanaphis *sacchari in* grain sorghum.

Panel Experience: N/A.

Billy Rogers Leonard, Ph.D.

Affiliation: Associate Vice President/Program Leader for Plants, Soils and Agricultural Water Resources, Louisiana State University (LSU) AgCenter, Baton Rouge, Louisiana

Expertise: Field crops integrated pest management (IPM) systems, pesticide toxicology, insect resistance management (IRM), agricultural biotechnology

Education: Ph.D., Entomology, LSU; M.S., Entomology, LSU; B.S., Agronomy, LSU

Experience Summary: Dr. B. Rogers Leonard currently provides leadership for the LSU AgCenter's research projects and extension programs in the areas of plants, soils, and Ag water resources. In this position, he has oversight for scientists working in the disciplines of agricultural chemistry, agronomy, horticulture, environmental sciences, crop protection, agricultural economics, and renewable and natural resources. He interfaces with State, regional, and National plant commodity organizations; agricultural and environmental resource agencies; and U.S. Department of Agriculture (USDA) programs. Dr. Leonard also holds an appointment as Professor in the Department of Entomology and continues to work with students. Dr. Leonard maintained multi-disciplinary research and extension programs at Research Centers and also in the LSU Department of Entomology for over 27 years. Dr. Leonard has considerable experience evaluating and helping implement a range of arthropod pest management strategies in field corn, cotton, soybean, and grain sorghum. Dr. Leonard was a team member with the Mid-South Entomologists and associated with the development of mitigation plans for insecticide resistance in multiple cotton and field corn pests. In 2006, he was named to the Jack Hamilton Regents Chair in Cotton Production and recently received the G & H Seed Company Endowed Professorship. Dr. Leonard served the Entomological Society of America (ESA) at both regional and national levels and represented the Plant Insect–Ecosystems (P–IE) Section of the ESA as Section President in 2012.

Panel Experience: Dr. Leonard has previously served on several USDA panels and committees during his career including the National Institute of Food and Agriculture–Crop Protection and Pest Management (NIFA–CPPM) Competitive Grants Programs (2015, 2016).

Xinzhi Ni, Ph.D.

Affiliation: U.S. Department of Agriculture-Agricultural Research Service (USDA-ARS) Crop Genetics and Breeding Research Unit, Tifton, Georgia

Expertise: Field entomologist working on insect, disease, and aflatoxin reduction research in the southern U.S. corn production system; conventional corn breeding and germplasm development for fall armyworm and ear-feeding (including corn earworm) insect resistance

Education: Ph.D., Entomology, University of Missouri; M.S., Entomology, University of Idaho; B.S. Plant Protection, Northwest Agriculture and Forestry University, Yangling, Shaanxi, China

Experience Summary: Dr. Xinzhi Ni is a Research Entomologist with the USDA-ARS Crop Genetics and Breeding Research Unit at Tifton, Georgia. He received his Ph.D. degree in 1993 from the University of Missouri, Columbia, and subsequently work as post-doctoral research associate and research faculty member at Montana State University and University of Nebraska-Lincoln, respectively. He joined USDA-ARS in 2003 at Biological Control of Pests Research Unit, Stoneville, Mississippi, and moved to the current location Tifton, GA in 2004. He has been working on host plant resistance, crop germplasm development, and insect ecology in relation to the integrated pest management.

At present, Dr. Ni contributes to three ARS research projects. They include 1) his main ARS research project under National Program 301 entitled “Genetic Improvement of Maize and Sorghum for Resistance to Biotic and Abiotic Stresses” that he serves as the lead scientist; 2) an ARS project under National Program of Invasive Pests of Crops entitled “Area-wide Pest Management of the Invasive Sugarcane Aphid in Grain Sorghum” that he serves as the co-principal investigator and in charge of the research and tech transfer work in five coastal plain states (Alabama, Florida, Georgia, North Carolina, and South Carolina); and 3) an ARS project under National Program 215 entitled “Genetic enhancement and management of warm-season species for forage, turf and renewable energy” that he contributes his entomological expertise to the related entomological research.

In addition to working as a field entomologist with emphasis on crop breeding and developing new maize germplasm with native maize plant resistance to multiple insects and diseases (including the fall armyworm and the corn earworm), Dr. Ni has also conducted considerable amount of collaborative research with colleagues on monitoring and understanding *Bt* resistance in field populations of the corn earworm (or the cotton bollworm) and the fall armyworm in the Southeastern Coastal Plains region of the United States.

Panel Experience: N/A.

Steven W. Martin, Ph.D.

Affiliation: Mississippi State University, Starkville, Mississippi

Expertise: Agricultural Economics

Education: Ph. D. (Agricultural Economics), Mississippi State University; M.B.A. Mississippi State University; B. S. (Agricultural and Extension Education), Mississippi State University

Experience Summary: Dr. Martin is currently the Associate Director of the Mississippi State University Extension Service tasked with Agriculture and Natural Resource programs. Prior to being appointed Associate Director, Dr. Martin spent 8 years as the Head(s) of the Delta Research and Center and the North Mississippi Research and Extension Center directing Research and Extension programs related to row crops, aquaculture, horticulture, forestry and beef cattle. Prior to entering university administration, Dr. Martin was an agricultural economist housed at the Delta Research and Extension Center where his work centered on row crop economics and new technologies both mechanically and biological. He has written many papers and gave many presentations on the cost of production and economic opportunities for row crop producers.

Panel Experience: Dr. Martin has served on the 1890 Multicultural Alliances Capacity Building Grants review panel (2007).

Robert L. Meagher, Jr., Ph.D.

Affiliation: U.S. Department of Agriculture–Agricultural Research Service (USDA–ARS) Center for Medical, Agricultural, and Veterinary Entomology, Gainesville, Florida

Expertise: Field entomology, population biologist

Education: Ph.D., Entomology, Pennsylvania State University; M.S., Entomology, Kansas State University; B.S., Shippensburg State College (University of Pennsylvania)

Experience Summary: Dr. Robert Meagher has been employed at the USDA-ARS since 1996. Previously he was at the University of Minnesota, Texas A&M University, and North Carolina State University. His research at USDA–ARS has centered on behavior and biological control of noctuid moths, especially fall armyworm. Dr. Meagher's research has required predominantly field collecting of adults using pheromone-baited traps and collection of larvae and eggs from host plants. These specimens have been used for molecular analysis of populations for migration and Bt resistance modeling studies and for establishing parasitoid colonies. Since its invasion from the Western Hemisphere, Dr. Meagher is leading a study to collect adult fall armyworm throughout the continent of Africa. Specimens will be used in genetic analysis to identify migratory haplotypes and to determine if Bt resistance genes are present.

Panel Experience: Dr. Meagher has served on two International Advisory Panels in Africa concerning fall armyworm, in Ghana (07/16/2017 – 07/22/2017) and in Uganda (09/14/2017 – 09/18/2017).

Silvana V. Paula-Moraes, Ph.D.

Affiliation: University of Florida, Gainesville, Florida

Expertise: Field crop entomology; development of economic thresholds, sampling plans, cost-benefit analysis, crop environmental manipulation, and characterization of the risk of invasive pests to cropping systems; behavior of insects as applied to Insect Resistance Management (IRM), with a focus on insect movement, host utilization, and differential exposure to Bt toxins

Education: Ph.D., University of Nebraska-Lincoln, Entomology; M.S., Universidade Federal de Viçosa – MG, Brazil, Entomology and M.S., Agronomy

Experience Summary: Dr. Paula-Moraes has a broad background in Integrated Pest Management (IPM) in tropical and temperate areas and my experience comprises research, teaching, and extension in lepidopterans associated with field crops. Since December 2016, Dr. Paula-Moraes is assistant professor at the University of Florida, with an appointment of 70% research, working with field crops in the Florida Panhandle, especially with lepidopterans associated with cotton, peanuts, corn, and soybeans. She has also a 30% teaching appointment, and is an instructor of principles of entomology courses, IPM and IRM seminars. Previously, Dr. Paula-Moraes worked as a researcher at Embrapa (Brazilian Enterprise for Agricultural Research), Brazil. She has coordinated a research portfolio for the recently detected *Helicoverpa armigera* in Brazil: Integrated management of lepidopteron species with focus on *Helicoverpa armigera* in intensive crop production systems. Dr. Paula-Moraes was a member of the Consultative IPM/IRM Group of the Brazilian Agriculture Ministry. I also have experience working in quarantine and plant protection related with exotic insects. As an agricultural inspector in the Brazilian National Plant Protection Organization, at the Brazilian Ministry of Agriculture, Livestock and Food Supply. Dr. Moraes has held the administration position of Pest Risk Analysis chairman of the Brazilian National Plant Protection Organization.

Panel Experience: Dr. Paula-Moraes has served on the National Institute of Food and Agriculture (NIFA)/United States Department of Agriculture (USDA) Panel (2017) and on the NIFA Crop Protection and Pest Management, Applied Research and Development Program Area Panel (105 projects, to include 7 projects as the primary reviewer; 5 projects as the secondary reviewer; and 4 projects as the tertiary reviewer) in Washington, D.C. (07/17/2017-7/21/2017).

Omaththage P. Perera, Ph.D.

Affiliation: Southern Insect Management Research Unit, U.S. Department of Agriculture (USDA) Agricultural Research Service (ARS), Stoneville, Mississippi

Expertise: Insect molecular biology, genetics & population genetics, functional genomics of Bt resistance, resistance management in Bt crops

Education: Ph.D. and M.S., Entomology, University of Florida, Gainesville; B.Sc., Biology, University of Sri Jayawardenepura, Sri Lanka

Experience Summary: Dr. Omaththage Perera is a Research Entomologist for USDA-ARS with 14 years of research experience in insect resistance management. He has served as the Lead Scientists for Bt resistance management projects of Southern Insect Management Research Unit (SIMRU) since 2007. He has over 24 years of research experience in molecular genetics of insects. His research responsibilities at SIMRU include genetics, genomics, and population genetics of insect pests of southern row crops (e.g. cotton, corn, and soybean), functional genomics of Bt and chemical insecticide resistance, and mechanisms of resistance to Bt toxins. In his capacity as the Lead Scientist for Bt resistance management projects, Dr. Perera collaborates with colleagues in developing research programs, monitors the research progress, and reports the project progress to line management. He has a broad network of national and international collaborators with research interests in genomics, functional genomics, and resistance management. These collaborative research projects include sequencing of *Helicoverpa armigera* and *H. zea* genomes (CSIRO, Australia), alkaline phosphatase and ABCC2 transporter as receptors for Bt mode of action (Jurat-Fuentes lab, University of Tennessee, Knoxville, TN), and strategic response plan to minimize the impact of *H. armigera* on agriculture in USA (USDA-APHIS [Animal and Plant Health Inspection Service]). Most recently Dr. Perera optimized CRISPR/Cas9 genome editing system in *H. zea* and *Spodoptera frugiperda* to recover greater than 80% mutation rates and successfully mutated the Cry1Ac receptor ABCC2 transporter to evaluate the functions of different peptide domains in Bt toxin susceptibility. Dr. Perera has and active research program that led to obtaining research grants exceeding one million dollars during last 10 years.

Panel Experience: Dr. Perera served as a member of a coordinated research project on “Genetics application to improve the SIT for tsetse control/eradication” sponsored by International Atomic Energy Agency from 1999 to 2003. He was a member of the International *Helicoverpa* Genome Sequencing Consortium and has served in several USDA ARS committees and work groups on subjects ranging from safety to big data. In 2016, he was invited to participate in a work group organized by USDA-APHIS to develop a strategic plan to mitigate the impact of invasive *H. armigera* on agriculture of USA.

Julie A. Peterson, Ph.D.

Affiliation: University of Nebraska-Lincoln, Lincoln, Nebraska

Expertise: entomology and applied ecology; integrated pest management and resistance management for field crop pests; western bean cutworm; biological control of crop pests; transgenic *Bacillus thuringiensis* crops

Education: Ph.D., Entomology, University of Kentucky; B.A., Zoology, Ohio Wesleyan University

Experience Summary: Dr. Julie Peterson received her Ph.D. degree in Entomology in 2012 from the University of Kentucky, studying risk-assessment of genetically modified crops, and subsequently worked as a post-doctoral associate for two years at the University of Minnesota on conservation biological control in soybean systems. Dr. Peterson has been an Assistant Professor and Extension Specialist at the University of Nebraska-Lincoln since March 2014. She is the leader of the Agroecosystems Entomology Lab, located at the West Central Research & Extension Center in North Platte. Dr. Peterson and her lab pursue research questions addressing the ecology and management of agricultural pests with an emphasis on practical applications for integrated pest management in field crops. Current research projects may address a variety of themes, such as food web dynamics, insect behavior, compatibility of pest control strategies (including biological control by natural enemies), and resistance management.

Her research supports extension programming to develop proactive educational programs in Integrated Pest Management and Resistance Management of arthropod pests of field crops grown in west central Nebraska. Dr. Peterson has developed expertise in studying the western bean cutworm, a critical pest of corn and dry beans not just in its historic range of Nebraska, but also in its dramatically expanded range in the eastern U.S. and Canadian Corn Belt. Her program includes research on the biology, ecology, population dynamics, larval movement, feeding behavior, and management of the western bean cutworm, including biological control, chemical control, transgenic control, cultural control, and resistance management for this pest.

Panel Experience: N/A.

Susan Ratcliffe, Ph.D.

Affiliation: Department of Crop Sciences, University of Illinois at Urbana-Champaign

Expertise: Integrated Pest Management and Entomology

Education: Ph.D., M.S. in Entomology and A.B. in Political Science, University of Illinois at Urbana-Champaign

Experience Summary: Dr. Susan Ratcliffe is the director of the North Central Integrated Pest Management Center that is co-hosted by the University of Illinois and Michigan State University. Her research has focused on pest management issues involving livestock, agronomic crops and structuresusing molecular-based and traditional tools. Dr. Ratcliffe's educational efforts to promote the adoption of integrated pest management concepts and reduce pest resistance include presentations, peer reviewed and Extension-based publications, and the National Pest Alert series. She teaches a graduate level integrated pest management course and recently chaired a publication as part of the Council for Agricultural Science and Technology series "The Need for Agricultural Innovation to Sustainably
Feed the World in 2050."

Panel Experience: Dr. Ratcliffe has served as an ad hoc member on several FIFRA Scientific Advisory Panels for the U.S. Environmental Protection Agency (U.S. EPA) relating to corn rootworm and plant-incorporated protectants (2008, 2010, and 2013).

Dominic Reisig, Ph.D.

Affiliation: North Carolina State University, Raleigh, North Carolina

Expertise: Southern U.S. Extension and research entomologist in corn, cotton, soybean; research expertise for ecology and Bt resistance of both bollworm and fall armyworm

Education: Ph.D., Entomology, University of California, Davis; M.S., Integrated Pest Management, University of California, Davis; B.A., Biology, Point Loma Nazarene University

Experience Summary: Dr. Dominic Reisig is an Associate Professor and Extension Specialist at North Carolina State University with nearly nine years of experience in southern row-crop agriculture. Previous to this position, he worked with field crops in California, as a graduate student, in both “cotton” (M.S.) and “Timothy hay” (Ph.D). His research in North Carolina has focused on field crop insect pests that have become a problem since boll weevil eradication and the introduction of Bt crops. These pests include piercing sucking insects (stink bugs, thrips, tarnished plant bugs), bollworm, and fall armyworm. He also has Extension responsibilities for field crops across North Carolina. Recent efforts have focused on increasing non-Bt structured refuge compliance to delay Bt resistance in Lepidopteran pests. Furthermore, since bollworm has developed practical resistance to Cry toxins, he has worked to develop an egg-based threshold for two-toxin Bt cotton. During 2017, this was adopted by 75% of independent crop consultants and saved North Carolina cotton growers nearly $9 million in potential losses from bollworm.

Panel Experience: Dr. Reisig served as panel-reviewer for USDA-ARS (NP 304 Panel 4: IPM Cotton 2015).

Roderick M. Rejesus, Ph.D.

Affiliation: North Carolina State University, Raleigh, North Carolina

Expertise: Economics of Agricultural Technologies; Risk Management and Crop Insurance

Education: Ph.D., Agricultural Economics, University of Illinois at Urbana-Champaign

Experience Summary: Dr. Rod M. Rejesus is Full Professor and Extension Specialist in the Department of Agricultural and Resource Economics at North Carolina State University. He received his Ph.D. in Agricultural Economics from the University of Illinois at Urbana-Champaign. Dr. Rejesus has an active research and extension program that focuses on the general area of applied production economics, with special emphasis on: (a) economic impact assessment of agricultural technologies, and (b) economic analysis of agricultural policies related to risk management (e.g., crop insurance and other safety-net programs for farmers). He has extensive domestic and international experience evaluating economic impacts of various agricultural technologies, policies, and programs. His work on agricultural technologies included economic evaluation of genetically-modified (GM) crops that have resistance to lepidopteran insects (i.e., GM crops with the *Bacillus thuringensis* (Bt) trait) and/or tolerance to herbicides (i.e., *Roundup Ready*). Dr. Rejesus has also conducted economic analysis of a wide variety of other agricultural innovations and issues, such as: precision technologies (e.g., yield monitors, variable rate technologies), modern rice varieties with tolerance to abiotic stresses (e.g., drought, floods), Integrated Pest Management (IPM) practices, and irrigation water-saving techniques for rice. With respect to his research in risk management and crop insurance, Dr. Rejesus' work in this area has encompassed issues related to compliance, fraud behavior, and crop insurance premium-rate setting procedures.

Panel Experience: Dr. Rejesus has served on review panels for the National Academy of Sciences (NAS) Board on Agriculture and Natural Resources, as well as the US Department of Agriculture (USDA). Specifically, he was a member of the NAS "Citrus Greening Proposal Review Panel: Epidemiology/Production Economics/Production Systems" (2008). In addition, he has been a panel member for the USDA Agricultural Food and Research Initiative (USDA-AFRI) program on "Agricultural Economics and Rural Communities: Markets and Trade" (2014). Dr. Rejesus' research experience on risk management and crop insurance also allowed him to be selected as an Expert Reviewer for the Board of the Federal Crop Insurance Corporation (FCIC), which is the governing body of the US crop insurance program administered by the USDA Risk Management Agency (USDA-RMA) (2014-present).

Richard T. Roush, Ph.D.

Affiliation: The Pennsylvania State University, State College, Pennsylvania

Expertise: Computer modeling and experiments to develop and test strategies for delaying the evolution of resistance in insects and weeds to insecticidal crops and pesticides.

Education: Ph.D., Entomology, University of California, Berkeley; B.S., Entomology, University of California, Davis

Experience Summary: Dr. Roush's career in sustainable agriculture spans research, teaching, extension, regulation, and administration in both the USA and Australia. Prior to joining the College of Agricultural Sciences at Penn State in October 2014, Dr. Roush served as Dean of the Melbourne School of Land and Environment at the University of Melbourne (Australia, 2006-2014), Director of the University of California (UC) Integrated Pest Management and Sustainable Agriculture Programs (2003-2006), and Director of the Cooperative Research Centre on Australian Weed Management based at the University of Adelaide (Australia, 1998-2003). Prior to his tenure at the University of Adelaide, Dr. Roush served as an Associate Professor at Mississippi State and Cornell Universities. His research has focused on strategies to slow insect pests and weeds from evolving resistance to genetically modified insect resistant crops and pesticides. Dr. Roush was the first to show with both mathematical modeling and experiments that the most effective and robust strategy for delaying the evolution of resistance to insecticidal "Bt" transgenic crops would be the use of refuges of non-Bt host plants and multiple-toxin Bt crops, in which each toxin causes greater than 95% kill of the pests. With colleagues in Australia, Dr. Roush has developed and applied strategies to delay resistance to the herbicide glyphosate in weeds. His research has demonstrated for over 15 years that there have been no issues with resistance to glyphosate associated genetically modified crops planted in Australia.

Panel Experience: Dr. Roush has served on the Australian Regulatory Genetic Manipulation Advisory Committee (GMAC) from 1998-2001 and its successor, the Gene Technology Technical Advisory Committee (GTTAC), as Adviser from 2001- 2003. Dr. Roush has served on at least 3 Scientific Advisory Panels during 2004-2011 for the U.S. Environmental Protection Agency (U.S. EPA) on delaying resistance to crops with insecticidal toxin genes modeled on those from *Bacillus thuringiensis*.

Jocelyn L. Smith, Ph.D.

Affiliation: University of Guelph, Guelph, Ontario, Canada

Expertise: Entomology, Integrated pest management in field crops, insect resistance management

Education: Ph.D., Plant Agriculture, University of Guelph, Chapel Hill; M.Sc., Crop Science, University of Guelph, B.Sc., Biological Sciences, University of Guelph

Experience Summary: Dr. Smith's Ph.D. and recent research has documented the establishment and primary pest status of western bean cutworm, (WBC) *Striacosta albicosta* (Smith) (Lepidoptera: Noctuidae) in Ontario. Dr. Smith's research has confirmed the overwintering of WBC in Ontario which is the first report outside of its native range in the southwestern US. She successfully established a rearing program for WBC that has supported resistance monitoring studies for Cry1F and Vip3A Bt events and insecticides in Canada. These studies provided evidence for the first report of field-evolved resistance to a Bt event in Canada and the first for WBC resulting in industry-wide removal of WBC control claims for Cry1F Bt corn. Her research has also confirmed the association between WBC injury to corn and deoxynivalenol mycotoxin contamination and has demonstrated effective management strategies for this pest complex. Ongoing research includes further evaluation of integrated pest management and resistance management strategies for WBC. Dr. Smith has also managed the insect resistance monitoring (IRM) program for key corn pests and transgenic corn in Canada since 2006. European corn borer (ECB), *Ostrinia nubilalis* Hübner (Lepidoptera: Crambidae) and corn rootworm (CRW), *Diabrotica* spp. (Coleoptera: Chrysomelidae) field populations are collected annually. Monitoring is conducted using concentration-response diet-overlay bioassays with relevant *Bacillus thuringiensis* (Bt) proteins expressed in transgenic corn events. Dr. Smith's research team is prepared to respond to cases of unexpected damage to Bt-corn events by evaluating field injury, confirming gene expression, and collecting insect populations for use in diagnostic bioassays.

Panel Experience: Dr. Smith has been consulted by the Canadian Food Inspection Agency for scientific advice regarding proposed IRM plans for plants with novel traits as an academic member of the Canadian Corn Pest Coalition. Dr. Smith has also been consulted regarding management of WBC by the Ontario Ministry of the Environment and Climate Change (2017). She has also been consulted regarding policy development for neonicotinoid regulations and a plant health diagnostic framework in Ontario Canada by the Ontario Ministry of Environment and Climate Change (2015) and the Ontario Ministry of Agriculture, Food and Rural Affairs (2015), respectively.

Bruce E. Tabashnik, Ph.D.

Affiliation: University of Arizona, Tucson Arizona

Expertise: Management of insect resistance to Bt crops and insecticides

Education: Ph.D., Biological Sciences, Stanford University; B.S., Zoology, University of Michigan

Experience Summary: Dr. Tabashnik's area of expertise is management of insect resistance to Bt crops and insecticides using a range of techniques including computer simulation modeling, molecular biology, classical genetics, and bioassays. He pioneered the field of resistance management, starting with a landmark modeling paper in 1982 that evaluated how interactions between biological and operational factors affect evolution of resistance. His team documented the first case of field-evolved resistance to Bt sprays and contributed to the eradication of pink bollworm from the U.S. using a combination Bt cotton, sterile moth releases, and other tactics.

Panel Experience: Dr. Tabashnik served as a steering committee member for the National Research Council's Workshop on Genetically Engineered Organisms, Wildlife, and Habitat (2007).

James E. Todd, Ph.D.

Affiliation: National Alliance of Independent Crop Consultants, Plainview, Texas

Expertise: Integrated pest management (IPM); agronomy; resistance management; insect control

Education: B.S., Agronomy, Texas Tech University

Expertise: Field crop entomology as it pertains to the southern United States with a strong background in control of Lepidoptera insects including fall armyworms, corn earworm/cotton boll worm, beet armyworm, true armyworms, and western bean cutworm.

Experience Summary: Dr. James Todd owns and operates Todd Agricultural Consulting, LLC in Plainview, Texas. As a crop consultant, he is an expert on the agronomic, entomological and biological aspects of corn, cotton, grain sorghum, wheat, alfalfa, and sunflowers as well as vegetable crops that include sweet corn, green beans, dry peas, lettuce, and radishes. Dr. Todd provides integrated pest management services to 30 growers on the Texas High Plains. More specifically, he consults on approximately 30,000 acres of cotton, 10,000 acres of corn, and 5,000 acres of wheat in 6 counties north of Lubbock, Texas. Dr. Todd also spent two years consulting on vegetable crops in South Florida when working for Glades Crop Care.

Panel Experience: Dr. Todd has presented on various IPM topics at National Alliance of Independent Crop Consultants Resistance Management Conference (2018); Louisiana Association of Crop Consultants Annual Meeting (2013); High Plains Association of Crop Consultants Annual Meeting (2014); New Mexico Crop Production Association Annual Meeting (2018); Association of Applied IPM Ecologists Annual Meeting (2013); Alliance of Independent Crop Consultants Annual Meeting (United Kingdom-2013); and Beltwide Cotton Conference (1998, 2005).

Rick Welsh, Ph.D.

Affiliation: Department of Public Health, Food Studies & Nutrition, Syracuse University, Syracuse, New York

Expertise: Social Scientists with expertise in human problem with resistance management issues

Education: Ph.D., Development Sociology, Minors: Agronomy and Entomology, Cornell University, Ithaca, New York, 1995; M.S., Food and Resource Economics, University of Florida, Gainesville, 1988; B.A., Economics, The College of William and Mary, Williamsburg, Virginia, 1983

Experience Summary: Rick Welsh is currently the chair of the Department of Public Health, Food Studies and Nutrition and a Professor of Food Studies at Syracuse University. He joined the department in in August 2012. Prior to taking this position, he worked at Clarkson University as a Professor of Sociology from 2000-2012. Previous positions have included Policy Analyst with the Henry A. Wallace Institute for Alternative Agriculture (1995-1996; 1998-2000) and the Director of the U.S. Department of Agriculture's Sustainable Agriculture Research and Education Program for the Southern Region (1996-1998). He also serves as editor-in-chief for the journal Renewable Agriculture and Food Systems published by Cambridge University Press. His research and teaching focus on social change and development with emphases on agri-food systems, science and technology studies and environmental sociology. Specific specialization includes food and agricultural policy; rural development policy; and social, economic and environmental aspects of technological change in agriculture with including farm nutrient and pest management, anaerobic digesters, genetically engineered crops, and integrated pest and nutrient management.

Panel Experience: Dr. Welsh has served on several scientific advisory panels, to include Panel Manager for U.S. Department of Agriculture's National Institute of Food and Agriculture Programs on Rural Development and Entrepreneurship (2011); Panel Member for U.S. Department of Agriculture's National Institute of Food and Agriculture Programs on Regional Approaches to Climate Change and Agricultural Prosperity for Small and Moderate-sized Farms and Rural Development (2010); Technical committee member for the Sustainable Community Grant Program of the Northeast Sustainable Agriculture Research and Education Program (2009); and Panel member for the U.S. Department of Agriculture's National Research Initiative Agricultural Prosperity for Small to Moderate Sized Farms (2005 and 2006).

Wenwei Xu, Ph.D.

Affiliation: Texas A&M University, College Station, Texas

Expertise: Corn Breeding and Genetics

Education: Ph.D., Genetics, University of Missouri-Columbia

Experience Summary: Dr. Wenwei Xu is a corn breeder and professor at the Texas A&M University Agricultural Research and Extension Center in Lubbock. He also has a joint appointment with Texas Tech University where he teaches undergraduate and graduate courses and advises graduate students. He has been in the current position since 1998. He received his B.S. in agronomy from Gansu Agricultural University in 1982, M.S. degrees in plant breeding and genetics from the Chinese Academy of Agricultural Sciences in 1985, and Ph.D. degree in genetics from the University of Missouri-Columbia in 1992. He did his postdoctoral research at University of Missouri-Columbia from 1992-1993 and Texas Tech University from 1993-1996. He worked for DeKalb Genetics Corporation in 1996-1998. He was awarded the Sears-Longwell Award for contribution to genetics in agriculture through scholarship and research from University of Missouri, 1992. In his professional career, he has conducted genetics and breeding research on corn, sorghum, sunflower, tall fescue and forage grasses. Since 1998, he has established a nationally and internationally recognized corn breeding program that focuses on improving drought tolerance, heat tolerance, insect resistance, and mycotoxin resistance by introgressing desired genes from tropical germplasm and wild species with conventional and molecular breeding methodologies.

Panel Experience: Dr. Xu is a member of the USDA Maize Crop Germplasm Committee and Texas Crop Testing Advisory Board, the chair-elect of Plant Genetic Resources Division of Crop Science Society of America, and the chair-elect of Northcentral Corn Breeding Committee (NCCC167). He also served on the Technical Steering Group of USDA Germplasm Enhancement of Maize Project (2003-2009).