



## Invited Sessions and Special Programming

### **Writing a Successful World Food Prize Application**

Monday, July 17 – 9:45AM-10:45AM

Moderator: Dr. Kenneth Quinn

### **Opportunities in the Food – Energy – Water Nexus – Invited Speakers**

Monday, July 17 – 11:00am-12:30pm

Moderator: Rabi H Mohtar, Texas A&M University, College Station, TX

This session will include guest speakers / panelist to explore the water – energy – food system that ASABE has and will continue to have in understanding the nexus between these primary resources.

### **Session 118**

#### **NRES Distinguished Lecture Series – Invited Speakers**

Monday, July 17 – 9:30AM-11:00PM

Sponsored by NRES

Moderator: Christopher Hay, Iowa Soybean Association, Ankeny, IA

9:30AM Introduction – Christopher Hay

9:35AM **Copula-Entropy Theory for Multivariate Stochastic Modeling in Water Engineering**  
Vijay Singh, Texas A&M University, College Station, TX

10:00AM **Modernizing Surface Irrigation**  
Eduardo Bautista, USDA ARS, Maricopa, AZ

10:25AM **Agricultural and Biological Engineering as a Critical Public Health Intervention**  
Leigh Ann Krometis, Virginia Tech, Blacksburg, VA

### Session 119

#### **Plant, Animal and Facility Systems Distinguished Lecture**

Monday, July 17 – 9:30am-12:00pm

Sponsored by PAFS

Moderator: Tim Shepherd, Iowa State Univ, Ames, IA

This session will host a series of invited presentations from Major Award Recipients, Fellow Inductees, and Superior Paper Award Winners from 2016. The format for this series differs from general technical session, providing invited speakers with the flexibility to deliver a presentation which highlights their views and vision of the past, present and/or future on a subject area relative to the PAFS Community and highlight the research and development of award winning research published with the *Transactions of ASABE* and *Applied Engineering in Agriculture*.

### Session 123

#### **Current Trends in Grain Drying and Storage – Invited Presentations**

Monday, July 17 – 9:30am-12:00pm

Sponsored by PRS-702

Moderator: Johnselvakumar Lawrence, Kansas State Univ, Manhattan, KS

Increased capacities and speed grain movement are the current trends in grain drying and storage industries. Due to these trends, there are many challenges involved in managing grains including maintaining grain quality through the storage period. Many recent technological innovations developed and used in the management of grains. Each grain has its own unique challenges, particularly peanut, rice and oilseeds. Silo bag is a recent temporary storage option available for the industry. It has many advantages as well as challenges. Taking these challenges in account, USDA (United States Department of Agriculture) involved in many research projects finding new solutions for these challenges. The grain quality also affects the animal feed formulation as grain is one of the main ingredients. In this session, overall picture of recent trends in grain drying and storage management are analyzed and discussed.

**9:30AM**

**Introduction**

**9:35AM**

**Opportunities and Innovations in Drying and Storage of Grains and Oilseeds for Food Security**

Dr. Dirk E Maier, Iowa State Univ, Ames, IA

**9:55AM**

**Challenges and Innovations in Peanut Drying, Storage, and Handling**

Dr. Chris Butts, USDA ARS, Dawson, GA

**10:15AM**

**Grain Quality and Value Enhancement in Rice Breeding Postharvest Processing Research: Current Tools and Technologies Utilization**

Dr. Rusty Bautista, Ricetec, Alvin, TX

**10:35AM**

**BREAK**

**10:45AM**

**Current Trends and Research Needs in Management of Cereals Grains, Oilseeds and Pulses**

Dr. Digvir S. Jayas, Univ of Manitoba, Winnipeg, MB, Canada

**11:05AM**

**Impact of Recent Grain Storage and Handling Research at USDA-ARS Center for Grain and Animal Health Research**

Dr. Mark Casada, USDA ARS CGAHR, Manhattan, KS

**11:25AM**

**Technological Improvement in Grain Storage Using Silo Bags and Information and Communication Technologies (ICTs)**

Dr. Ricardo Bartosik, INTA, Balcarce, Argentina

### Session 142

#### **Explanatory Time Series Analysis in NRES – Invited Presentations**

Monday, July 17 – 2:30PM-5:00PM

Sponsored by NRES

Moderator(s): Rafael Muñoz-Carpena, University of Florida, Deb Sahoo, Woolpert

- 2:30PM** **“Introduction”. Dynamic Factor Analysis of Environmental Systems**  
Rafael Muñoz-Carpena, University Florida
- 2:45PM** **Diagnosing and Reconstructing Real-World Hydroclimatic Dynamics from Time Sequenced Data**  
Ray Huffaker, University of Florida
- 3:00PM** **Statistical and Machine Learning Methods Using Large Space-Time Data: Forecasting Urban Water Demand**  
Nikolay Bliznyuk, University of Florida
- 3:15PM** **A Novel Quantile Method Reveals Spatiotemporal Shifts in Phytoplankton Biomass Descriptors between Bloom and Non-Bloom Conditions in a Subtropical Estuary**  
Natalie Nelson, University of Florida
- 3:30PM** **Granger Causality Analysis of Vegetation Dynamics in the Southwestern Amazon**  
Geraldine Klarenberg, University of Florida
- 3:45PM** **BREAK**
- 3:55PM** **Mosquito Dynamics with Time Series Analysis: 30 Years of Mosquito Data in the Chesapeake Bay Maryland (USA)**  
Ismael Rodea-Palomares, University of Florida
- 4:10PM** **Data-driven Analysis of Environmental NonCompliance: Distinguishing Between Systematic and Random Volatility in Treatment Wetland Performance**  
Miles Medina, University of Florida
- 4:25PM** **Dynamic Linear Models to Explore Time-Varying Sediment-Discharge Rating Curves**  
Scott Steinschneider, Cornell University
- 4:40PM** **Challenges to Water Quality Conservation Measures within Western Lake Erie Basin**  
Lawrence Sekaluvu, Kansas State Univ
- 5:05PM** **Variability of E. coli in Stream Bottom Sediments and the Implications for Sediment Sampling**  
Sadia Salam, South Dakota State University
- 5:20PM** **Effects of Watershed Characteristics on Temporal Trends of Dissolved Nutrients in Low-Gradient Agricultural Streams**  
William Ford, University of Kentucky

### Session 151

#### **AOCABFE and NERCITA China Exchange Forum – Invited Presentations**

Monday, July 17 – 2:30PM-5:00PM

Moderator: Zhiming Qi

Sponsored by E-2050

The AOCABEF & NERCITA China Exchange Forum's theme in this year is "Bridging ABE Programs in the World". Under this theme, we will be hosting invited speakers from China, U.S., and Canada to introduce their institutions, professionals, international collaboration, as well as policies and programs that support research staff and student exchange.

### Session 153

#### **Perspectives on Cogeneration on the 21<sup>st</sup> Century – Invited Presentations**

Monday, July 17 – 5:00PM-7:00PM

Sponsored by ES-210

Moderator: Jaime Theisen, University of Illinois, Urbana, IL

Target Audience: Students, graduate students, entrepreneurs, academics and anyone interested in modern energy development!

Objectives: To inform interested parties on combined efforts for energy generation from the perspectives of the public and private sector

Benefits: Audience will learn about innovations and some of the latest research in power cogeneration, especially in terms of renewable energy.

Description: In era of increasing global demand for energy use and more sustainable energy, efforts in both the public and private sector of various scales have sought to meet demand in the 21<sup>st</sup> Century. However, cogeneration is a concept that all-too frequently slips under the radar.

### SESSION 154

#### **Opportunities in the Food – Energy – Water Nexus – Invited Speakers**

Monday, July 17 – 11:00am-12:30pm

Moderator: Rabi H Mohtar, Texas A&M University, College Station, TX

This session will include guest speakers / panelist to explore the water – energy – food system that ASABE has and will continue to have in understanding the nexus between these primary resources.

### Session 155

#### **Equipment for Commercial Post Harvest Processing of Biomass – Invited Speaker**

Tuesday, July 18 – 2:30pm-5:00pm

Sponsored by ES

Moderator(s): Shahab Sokhansanj, Oak Ridge National Lab, Oak Ridge, TN

Quang Nguyen, Idaho National Lab, Idaho Falls, ID

How do we develop the equipment and technology to support an industry with the potential to account for 30% of US petroleum consumption? This session will explore some of the challenges and solutions to post harvest processing transport and storing one billion tons of biomass. The session will cover the 2016 Billion-Ton Report and look at how process equipment manufacturers (size reduction, drying, ad densification) are equipped to meet the projections of the report with conventional and advanced equipment.

### Session 219

#### **Watershed Management and Water Availability: Flood versus Drought – Invited Presentations**

Tuesday, July 18 – 9:30am-12:00pm

Moderator: Sherry Hunt, USDA-ARS, Stillwater, OK

- 9:30AM Introduction**
- 9:35AM TBA**
- 10:00AM History of USDA-Assisted Dams**  
Steve Durgin, USDA NRCS, Washington DC
- 10:20AM What a mess! – Sedimentation Issues in Reservoirs**  
Jon Fripp, USDA NRCS NDCSMC, Fort Worth, TX
- 10:40AM From Detention to Retention - Dam Rehabilitation Issues when Water Storage is added to Flood Control Dam**  
Thomas Brown, USDA NRCS NDCSMC, Fort Worth, TX
- 10:55AM Break**
- 11:00AM Converging Stepped Chutes for Embankment Dams**  
Sherry Hunt, USDA ARS, Stillwater, OK
- 11:15AM Evolution of USDA Hydrology**  
Claudia Hoeft, USDA NRCS, Washington DC
- 11:30AM Spatial Evaluation of Lost Water Holding Capacity of Watersheds**  
Bhavna Sharma, Iowa State Univ, Ames, IA
- 11:45AM A simulation model for optimal sizing of water harvesting structures in rainfed agricultural regions**  
Vamsikrishna Vema, Indian Institute of Technology Madras, Chennai, Tamil Nadu India

### Session 222

#### **Challenges and Opportunities for Food Process Engineers – Panel Discussion**

Tuesday, July 18 – 9:30AM-12:00PM

Sponsored by PRS, Organized by task Force for Food Engineering

Moderator: Litha Sivanandan, West Virginia Univ, Morgantown, WV

Speakers include the Recipient of the 2017 ASABE International Food Engineering Award as well as leading engineers from academia, industry, and government. Speakers will address challenges, solutions, and opportunities encountered by food processing engineers.

- 9:30AM Introduction**
- 9:35AM TBA**  
Yrio Roos, Ph.D, University College Cork, Cork, Ireland
- 10:10AM TBA**  
Bradley P. Marks, Ph.D, P.E., Michigan State University, East Lansing, MI
- 10:35AM BREAK**
- 10:45AM TBA**  
Brady P. Carter, Ph.D, Decagon Devices, Pullman, WA
- 11:10AM TBA**  
Hongda Chen, Ph.D, USDA National Institute of Food and Agriculture, Washington, DC

### Session 223

#### **Fostering African-Chinese and Indian Partnerships Toward Delivering Mutually Beneficial Solutions in Agriculture – Panel Discussion**

Tuesday, July 18 – 2:30pm-5:00pm

Sponsored by E-2050 –Global Engagement

Moderator(s): Klein Ileleji, Purdue Univ, West Lafayette, IN

Nourredine Abdoumoumine, Univ of Tennessee, Knoxville, TN

China, India and countries in Africa have one of the largest numbers of smallholder farmers who still utilize low input and low level technologies in their farming operations. Farmer sizes are characteristically small (2 ha on average) with productivity less than the potential when compared to the west. However, smallholder assistance, infrastructure and support from research and higher institutions differ in these three places. This session will provide an opportunity for African, Chinese and Indian ASABE members to present opportunities to foster collaboration between these three communities today the goal of uplifting the level of agricultural productivity of smallholders in their countries.

Panelists:

Dr. Gajendra Singh, Formerly with Asian Institute of Technology, Bangkok, Thailand

Dr. Joseph Mpagalile, FAO, Rome, Italy

Dr. Xiongkui He, China Agricultural University, Beijing, China

Dr. Alan Hansen, University of Illinois, Urbana, Champaign, Illinois

### Session 232

#### **William J. Chancellor Memorial Session on Soil Tillage, Traction, and Compaction – Invited Presentations**

Tuesday, July 18 – 2:30PM-5:00PM

Moderator: Dick Godwin

ASABE Fellow William Chancellor, Davis, Calif., passed away peacefully on February 16, surrounded by his family. He was 85 years old.

Chancellor received a bachelor of engineering degree from the University of Wisconsin-Madison, and masters and doctoral degrees from Cornell University. He joined the University of California-Davis in 1957, and he worked and taught topics relating to soil mechanics, soil-machine relations, vehicle stability and traction, forage harvesting and handling, rice production and processing, economic optimization of farm equipment use, agricultural technology for developing nations, energy relations in agricultural production, and many others. He was a global authority on smallholder-farm mechanization. Following on his early interests in information theory, he was one of the first to recognize the interconnection and substitutability of information and energy in developing more advanced, efficient, and sustainable food production systems.

With an encyclopedic knowledge of everything in the agricultural engineering field, and many other fields as well, he was also the author of a pioneering searchable database of articles and other information that earned him a Presidential Citation from ASABE in 1996. Without his untiring support as a key member of the Editorial Board, the three volume *Advances in Soil Dynamics* published by ASABE would have been impossible to accomplish. He held a deep concern for the needs and welfare of his students, who have continued his work and influence around the world. Few would have noticed his retirement, in 1994 after 37 years with the university, as he remained a notable presence in the department and on campus, and if approached for advice or assistance, selflessly provided the benefit of his experience, insight, and wisdom. He continued to actively participate in the Annual International ASABE meetings on a regular basis until recently.

Chancellor was the recipient of numerous awards serving as testament to the wide recognition and significance of his work, including election to the National Academy of Engineering in 2005. In honor of his great service to the campus, he was recently informed he would be presented with the UC-Davis Medal.

Chancellor was a brilliant scholar, teacher, and mentor. His passing is a great loss for the department and the University. He is survived by his wife and daughter and the rest of his family and friends who have been steadfast in their support.

He was a 63-year member of ASABE. He was awarded Kishida International Award in 1984, inducted as ASABE Fellow in 1985 and received John Deere Gold Medal in 2004 from ASABE.

- 2:30PM Introduction**
- 2:35PM Prof. William J. Chancellor Memorial Session on Soil Tillage, Traction and Compaction**  
Shrini Upadhyaya, Univ of California, Davis, CA
- 3:05PM Laboratory Investigations on Draft and Power Requirements of a Front Active and Rear Passive Set Combined Offset Disc Harrow**  
Ganesh Upadhyaya, India
- 3:20PM Operational analyses of walking tractors fitted with rubber tracks and pneumatic wheels**  
Showkat Rasool, India
- 3:35PM Impact of Machine Mass on Agricultural Productivity Compared to Soil Cone Penetrometer Data**  
Andrew A Klopfenstein, Ohio State University, Columbus, OH
- 3:50PM BREAK**
- 4:00PM An investigation into the effect of traffic and tillage on soil properties using X-ray computed tomography**  
William Millington, Harper Adams University, Shropshire, United Kingdom
- 4:15PM System design and economics for Controlled Traffic Farming (CTF) in grass silage production**  
Sven Peets, Harper Adams University, Edgmond, Newport, United Kingdom
- 4:30PM Soil stresses beneath tire traffic as affected by stress state transducer burial method**  
Thomas Way, USDA ARS, Auburn, AL
- 4:45PM Modelling the Influence of Incorporating Inorganic Fertilizer on the Recovery Pattern of Two Agricultural Soils After Load Application**  
Eli Mamman, Univ of Maiduguri, Maiduguri, Borno, Nigeria
- 5:00PM Mechanics of a Model Chisel Furrower**  
Eli Mamman, Univ of Maiduguri, Maiduguri, Borno, Nigeria

### Session 242

#### **Manure and Liability Issues in PNW – Invited Speakers**

Tuesday, July 18 – 2:30PM-5:00PM

Sponsored by: NRES-27

Moderator(s): Joseph Harrison, Washington State Univ, Puyallup, WA

Teng Teeh Lim, Univ of Missouri, Columbia, MO

This session will provide a case study of air and water related liability issues in the Pacific Northwest, Washington State.

### Session 243

#### **Finalizing Model Calibration and Validation Guidelines – RAP SESSION**

Tuesday, July 18 – 5:00pm-7:00PM

Sponsored by NRES-21

Moderator: Claire Bauffaut, USDA ARS, Columbia, MO

This session will learn about the final version of model calibration and validation guidelines. Interested persons will become or stay involved in the process for developing and updating these guidelines.

### Session 249

#### **Vulnerability Assessment of Land Resources for Sustainable Development – Invited Presentations**

Tuesday, July 18 – 2:30pm-5:00pm

Sponsored by NRES-26

Moderator: Aavudai Anandhi Swamy, Florida Agr & Mechanical Univ, Tallahassee, FL

This invited technical session addresses developing vulnerability assessments for land resources and also explores ways to link these assessments for sustainable development of the land resources. These speakers will address soil and water components of land resources; their vulnerability and sustainability to changes in climate and land-use. The invited presentations are given by multi-disciplinary professionals (e.g. engineers, agronomists, soil scientists, economists) who share case studies, lessons learned, overviews of cutting-edge technologies and design strategies, and best practices that are aimed at improving the land resources sustainability through vulnerability assessments. This multi-disciplinary approach through a series of talks can open up avenues to explore climate and land-use stressors important for vulnerability assessments and how the stressors can be represented using indicators.

- 2:30PM Introduction**
- 2:35PM Vulnerability Assessment of Land Resources for Sustainable Development: Overview of the Lessons Learned and Next Steps**  
Dr. Aavudai Anandhi, Florida Agricultural & Mechanical University, Tallahassee, FL
- 2:50PM Modeling of the Integrated Water Cycle: Insights on the Energy-Water-Land Nexus**  
Dr. L. Ruby Leung, Pacific Northwest National Laboratory, Richland, WA
- 3:05PM Winter Wheat Yield Responses to Climate Variation in the U.S. Central Great Plains**  
Dr. Robert Aiken, Kansas State University, Manhattan, KS (Robert Aiken, Xiaomao Lin, Zachary Zambreski)
- 3:20PM Climate-Induced Vulnerability of Land Resources and Approaches for Sustainable Development**  
Dr. Puneet Srivastava, Auburn University, Auburn, AL
- 3:35PM BREAK**
- 3:45PM Adaptation Strategies and Tools to Increase the Climate Resilience of the Agricultural Industry in the Southeastern U.S.**  
Dr. Clyde W. Fraisse, University of Florida, Gainesville, FL
- 4:00PM Crop Consumptive use – A Complex Link Between Climate Change and Crop Productivity**  
Dr. George Paul, Formation Environmental, LLC, Sacramento, CA
- 4:15PM Ecohydrological Modeling Can Measure Surface Hydrological and Ecological Response to Land Use and Climate Change**  
Kyle R. Douglas-Mankin, USGS New Mexico Water Science Center, Albuquerque, NM
- 4:30PM To Come**  
Dr. Indrajeet Chaubey, Purdue University, West Lafayette, IN



### Session 250

#### **Technical Trends and Career Opportunities in the U.S. and Korea – AKABFE Invited Presentations**

Sponsored by E-2050

Tuesday, July 18 – 5:00pm-7:30pm

Moderator: Seung-Chul Yoon, USDA ARS, Fayetteville, AR

This session is intended to facilitate communication between Korean and U.S. professionals and students in the field of agricultural, biological and food engineering. Discussions will center on ‘Technical Trends and Career Opportunities in the U.S. and Korea,’ and the invited speakers will address a wide range of topics covering trends both past and present as well as directions the profession will likely take in the future. Speakers will also offer practical advice on pursuing professional careers.

**5:00PM Introduction**

**5:05PM Bio/Nano Technology for Advanced Hybrid Materials and Devices**

Jin-Woo Kim, University of Arkansas, Fayetteville, AR

**5:25PM Trends of Precision Agriculture in Korea**

Sun-ok Chung, Chungnam National University, Daejeon, Republic of Korea

**5:45PM Research and Development Direction and Prospect of Korean Agricultural Tractor**

Ji-hoon Yu, LS Mtron Ltd., Republic of Korea

**6:05PM Research Spotlights (Student/Postdoctoral competition)**

AKABFE students/postdoctoral members

### Session 251

#### **Incentivizing and Facilitating Undergraduates to Take the Fundamentals of Engineering (FE) Exam – Invited Presentations**

Tuesday, July 18 – 2:30pm-5:00pm

Sponsored by EOPD-414, EOPD-205, EOPD-211

Moderator: Thomas Bon, North Dakota State Univ, Fargo, ND

This is intended to be an interactive session between the invited panel members from several universities and the audience. Our goal is to share ideas and methods that are currently being used to encourage and/or assist undergraduates to take the Fundamentals of Engineering Exam. It is hoped that this session will be the starting point to great discussion in ASABE in methods to encourage more students to consider becoming registered Professional Engineers, especially in the Agricultural and Biological Engineering discipline.

### Session 252

#### **Brock Faulkner Memorial Session on Agricultural Air Quality – Invited Presentations**

Tuesday, July 18 – 2:30PM-5:00PM

Sponsored by PAFS-50, MS-23/7/3

Moderator: Russell McGee, Texas A&M Univ, College Station, TX

W. Brock Faulkner, PhD, PE, ASABE member was an Assistant Professor of Biological and Agricultural Engineering at Texas A&M University from 2008 until his death February 17, 2016. He was an active member of the society, in research, publications, and especially a student favorite in teaching. This memorial session will commemorate his life and service to his profession.

- 2:30PM**      **Introduction**
- 2:35PM**      **Career in Review**  
Bryan Shaw, Texas Commission on Environmental Quality, Austin, TX
- 2:50PM**      **Personal Remembrances**  
John Wanjura, USDA ARS, Lubbock, TX
- 3:05PM**      **Professional Impact:**
- **Air Quality Research:** Kelley Green, Texas Cotton Ginners Assoc, Austin TX
  - **USDA AAQTF:** Bill Norman, National Cotton Council, Cordova, TN
  - **Teaching:** TBA
  - **Cotton Research:** Derek Whitelock, USDA ARS Southwestern Cotton Ginning Research Laboratory, Mesilla Park, NM
- 4:30PM**      **Mentoring Impact:** Selected former grad students (Lauren Hazelrigs, Raleigh Smith, etc.)
- 4:50PM**      **Wrap up**  
Russell McGee, Texas A&M Univ, College Station, TX

### Session 253

#### **Student Success: Prediction and Enhancement**

Sponsored by EOPD-203, EOPD-211

Session Organizer: Jennifer Keshwani, University of Nebraska-Lincoln, Lincoln, NE

Moderator: David Jones, Raj Raman & Evan Curtis,

Presenters will share examples of strategies used to enhance student success. Following the examples, there will be an open dialogue among attendees to discuss ways student data can be leveraged to guide student success programming.