

# MONDAY, JULY 17

## TECHNICAL PROGRAM MONDAY, JULY 17 9:30AM-12:00PM

The purpose of these Sessions is the open exchange of ideas, therefore, remarks made by a participant or member of the audience cannot be quoted or attributed to either the individual or the individuals' company. No recording of the participants' remarks or discussion is permitted. Pictures of any material shown here are not permitted.

In respect for the presenters and the people attending the conference, ASABE would request that anyone having a pager, cell phone, or other electronic device please turn them off. If your situation does not allow for these devices to be turned off, please reseat yourself close to an exit such that everyone can benefit from the information presented here without disruption.

Monday, July 17 – 9:30AM-12:00PM

### SESSION 101

#### TEACHING AND LEARNING IN ABE

– Sponsored by EOPD-205, EOPD-203, EOPD-01

Moderator: Deepak Keshwani, University of Nebraska, Lincoln

**LOCATION: 102A/B**

| Time     | Paper # | Title/Author                                                                                                                                                                                                                                                      |
|----------|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 9:30AM   |         | <b>Introduction</b>                                                                                                                                                                                                                                               |
| 9:35AM   | 1700293 | <b>Understanding the Varying Academic Landscape Inhabited by ASABE-Umbrella Engineering Degree Programs: A Preliminary Reconnaissance</b><br>D. Raj Raman, Iowa State University, Ames, IA United States (D. Raj Raman, David D. Jones)                           |
| 9:50AM   | 1700439 | <b>Assessing Active Learning Techniques in Agricultural and Biological Engineering</b><br>Ganesh Bora, Mississippi State University, Mississippi State, MS United States (Presenter: Dr. Ganesh Bora) (Ganesh Bora, Prem Parajuli)                                |
| 10:05AM  | 1700227 | <b>Teaching Problem Solving: An Individualized Scalable Approach</b><br>Ashim Datta, Cornell University, Ithaca, NY United States (Ashim Datta)                                                                                                                   |
| 10:20AM  | 1701205 | <b>Hands-on Approach to Teaching J1939 Controller Area Network (CAN) bus Communication and Embedded Controls</b><br>John Evans, University of Nebraska, Lincoln, NE United States (John Evans, Santosh Pitla)                                                     |
| 10:35AM  | 1700088 | <b>Student Identification of Challenges and Success in Agricultural and Biological Engineering</b><br>Jennifer Keshwani, University of Nebraska, Lincoln, NE United States (Jennifer Keshwani, Deepak Keshwani, Evan Curtis)                                      |
| 10:50AM  |         | <b>BREAK</b>                                                                                                                                                                                                                                                      |
| 11:00AM  | 1700307 | <b>Evaluation of Student Understanding of Design in Core Biological Systems Engineering Courses</b><br>David Mabie, University of Nebraska, Lincoln, NE United States (David Mabie, Evan Curtis, Jennifer Keshwani, Tareq Daher)                                  |
| 11:15AM  | 1700858 | <b>Engineering education for Generation Z</b><br>Kevin Moore, Oklahoma State University, Stillwater, OK United States (Kevin Moore, Carol Jones, Robert Frazier)                                                                                                  |
| 11:30AM  | 1701553 | <b>A Content Review of Precision Agriculture Courses Across the United States</b><br>Leon Schumacher, University of Missouri, Columbia, Missouri United States (Leon Schumacher, Danielle Skouby, Matthew Yost)                                                   |
| 11:45 AM | 1701491 | <b>Exploring the Effectiveness of Resource Modules for Multidisciplinary Sustainability Engineering Project Implementation</b><br>Bhavna Sharma, Oak Ridge National Laboratory, Oak Ridge, TN United States (Bhavna Sharma, Brian Steward, S.K. Ong, F.E. Miguez) |

Monday, July 17 – 9:30AM-12:00PM

### SESSION 102

#### APPLICATION OF PRECISION AGRICULTURAL DATA TO SUPPORT GROWER PARTICIPATION

– Sponsored by ASE-16, MS-54, ITSC-254

Moderator: Timothy D. Wodrich, John Deere

**Location: 102C/D**

| Time    | Paper # | Title/Author                                                                                                                                                                                                                                                                                                                                  |
|---------|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 9:30AM  |         | <b>Introduction</b>                                                                                                                                                                                                                                                                                                                           |
| 9:35AM  | 1701239 | <b>Food Security and Sustainable Livelihoods in Nigeria: A Critical Analysis of the Theoretical and Practical Perspectives</b><br>Mohammed Khalid Othman, Nigerian University, Samaru Zaria, Kaduna Nigeria (Mohammed Khalid, Honwen Li)                                                                                                      |
| 9:50AM  | 1701615 | <b>A Site Suitability Approach to Sustainable Urban Agriculture Using GIS and Decision Analysis</b><br>Robert Stwalley, III, Purdue University, West Lafayette, Indiana United States (Robert Stwalley, III)                                                                                                                                  |
| 10:05AM | 1700192 | <b>Design of a Field Scouting Robot for Autonomous Abiotic Stress Detection</b><br>Gary McMurray, Georgia Tech Research Institute, Atlanta, GA United States (Gary McMurray, Ai-Ping Hu, Glen Raines)                                                                                                                                         |
| 10:20AM | 1701202 | <b>Weed Identification Rate Analysis for Different Growing Period</b><br>Lin Chen, Washington State University, Prosser, WA United States (Lin Chen, Karkee Manoj, Long He, Qin Zhang)                                                                                                                                                        |
| 10:35AM | 1700231 | <b>Verification of Temperature Sensor Readings Obtained from Game and Trail Cameras Used for Crop Monitoring</b><br>Peter Larbi, Arkansas State University, College of Agriculture, Engineering, and Technology, State University, Arkansas United States (Presenter: Peter Larbi) (Cyrus Marbaniang, Kumar Bade, Chin Nee Vong, Peter Larbi) |
| 10:50AM |         | <b>BREAK</b>                                                                                                                                                                                                                                                                                                                                  |
| 11:00AM | 1701457 | <b>Evaluation of Crop Coefficients and Evapotranspiration in English Walnut</b><br>Allan Fulton, University of California Cooperative Extension, Red Bluff, CA United States (Allan Fulton)                                                                                                                                                   |
| 11:15AM | 1701226 | <b>Water stress based deficit irrigation scheduling using RZWQM2 model for maize in Colorado</b><br>Zhe Gu, Jiangsu University, Zhenjiang, Jiangsu China, People's Republic of (Zhe Gu) (Zhe Gu, Zhiming Qi, Liwang Ma, Shouqi Yuan)                                                                                                          |
| 11:30AM | 1700923 | <b>Weight Prediction for Dairy Cows Based on Machine Vision</b><br>Niu Jinyu, , Yangling, Shaanxi China, People's Republic of (Niu Jinyu)                                                                                                                                                                                                     |
| 11:45AM | 1700963 | <b>Hyperspectral image segmentation for maize stubble in no-till field</b><br>Wanzhi Chen, China Agricultural University, Beijing, China, People's Republic of (Presenter: Wanzhi Chen) (Wanzhi Chen, Peter Larbi)                                                                                                                            |

# MONDAY, JULY 17

Monday, July 17 – 9:30AM-12:00PM

## SESSION 103

### KEY PERFORMANCE INDICATORS TO EVALUATE THE SUSTAINABILITY OF AGRICULTURAL SYSTEMS –

Sponsored by ASE-16, NRES-26  
Moderator: Edward Barnes, Cotton Inc.

**Location: 201A**

| Time    | Paper # | Title/Author                                                                                                                                                                                                                                                                                                                                                       |
|---------|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 9:30AM  |         | <b>Introduction</b>                                                                                                                                                                                                                                                                                                                                                |
| 9:35AM  | 1700327 | <b>A Site Suitability Approach to Sustainable Urban Agriculture Using GIS and Decision Analysis</b><br>Gareth Lagerwall, University of KwaZulu-Natal, Pietermaritzburg, Kwazulu Natal South Africa (Gareth Lagerwall)                                                                                                                                              |
| 9:50AM  | 1700328 | <b>A Comparison of Large and Small Scale Agriculture</b><br>Gareth Lagerwall, University of KwaZulu-Natal, Pietermaritzburg, Kwazulu Natal South Africa (Gareth Lagerwall)                                                                                                                                                                                         |
| 10:05AM | 1701561 | <b>Using Stable Isotope Data to Assess Soil Evaporation from Potato Fields with Contrasting Irrigation Schedules.</b><br>Luis Rodriguez, University of Illinois, Urbana, Illinois United States (Luis Rodriguez, Wei-Ting Liao)                                                                                                                                    |
| 10:20AM | 1700405 | <b>Regional Agricultural Planning - A Mesh Network Approach</b><br>Hossein Sadeghi, Washington State University, Pullman, WA United States (Sayed Hossein Sadeghi) (Claudio Stockle, Stewart Higgins, Rogert Nelson, Hossein Sadeghi)                                                                                                                              |
| 10:35AM |         | <b>BREAK</b>                                                                                                                                                                                                                                                                                                                                                       |
| 10:45AM | 1701082 | <b>Efficacy of Different Nanoparticles in Mitigating Gaseous Emissions from Liquid Dairy Manure Stored Under Anaerobic Condition</b><br>Firas Aloqailli, Oregon State University, Corvallis, Oregon United States (Firas Aloqailli, Stephen Good, Kenneth Frost)                                                                                                   |
| 11:00AM | 1700994 | <b>Determining Greenhouse gas emissions (GHGs) and N losses from beef-manure applied on Fargo-Clay soils under corn (Zea Mays L.) production</b><br>Niloy Chandra Sarker, North Dakota State University, Fargo, ND United States (Niloy Chandra Sarker) (Niloy Chandra Sarker, Shafiqur Rahman, Md. Borhan, Parthiban Rajasekaran, Swadeshmukul Santra, Ali Ozcan) |
| 11:15AM | 1700920 | <b>Climate Change Impacts on Regional Greenhouse Gas Emission and Soil Organic Carbon Dynamics in the US Pacific Northwest</b><br>Suresh Niraula, North Dakota State University, Fargo, ND United States (Suresh Niraula)                                                                                                                                          |

Monday, July 17 – 9:30AM-12:00PM

## SESSION 104

### SAFETY CONSIDERATIONS FOR AGRICULTURE – Sponsored by ESH

Moderator: Veronica Mbane, North Carolina State Univ

**Location: 201B**

| Time   | Paper # | Title/Author                                                                                                                                                                                            |
|--------|---------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 9:30AM |         | <b>Introduction</b>                                                                                                                                                                                     |
| 9:35AM | 1700389 | <b>Characterizing grain dust dispersion and dust cloud formation</b><br>Kingsly Ambrose, Purdue University, West Lafayette, IN United States (Presenter: Yumeng Zhao) (Yumeng Zhao, Kingsly Ambrose)    |
| 9:50AM | 1700112 | <b>Improving Air Quality in Swine Farrowing Operations: Engineering Intervention Results</b><br>Renee Anthony, University of Iowa College of Public Health, Iowa City, IA United States (Renee Anthony) |

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|---------|---------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 10:05AM | 1700223 | <b>Accessing and Operating Agricultural Machinery with Impaired Mobility: Advancements in Assistive Technology</b><br>Shawn Ehlers, Purdue University, Lafayette, IN United States (Shawn Ehlers)                                                                                                                                                                                |
| 10:20AM | 1701424 | <b>Measured spine tensile force limits for extracting grain entrapped victim</b><br>Salah Issa, Purdue University, West Lafayette, IN United States (Presenter: William Field) (Salah Issa, William Field, Eric Nauman, Carl Wassgren, Charles Schwab, Zahab Ahsan)                                                                                                              |
| 10:35AM |         | <b>BREAK</b>                                                                                                                                                                                                                                                                                                                                                                     |
| 10:45AM | 1700200 | <b>Application of Risk Analysis Tools in Agricultural Safety: A Paper Review</b><br>Nurhaizan Mohd Zainudin, Iowa State University, Ames, Iowa United States (Nurhaizan Mohd Zainudin, Gretchen Mosher)                                                                                                                                                                          |
| 11:00AM | 1700099 | <b>Network Analysis of Optimal Illinois Grain Supply Chain Flows: A Topological Perspective</b><br>Sai Ramaswamy, Iowa State University, Ames, Iowa United States (Sai Ramaswamy, Gretchen Mosher)                                                                                                                                                                               |
| 11:15AM | 1700229 | <b>Exploring the Likelihood of Entanglements and Interactions with a PTO Knuckle</b><br>Charles Schwab, Iowa State University, Ames, IA United States (Presenter: Isaac Rempe) (Charles Schwab, Isaac Rempe)                                                                                                                                                                     |
| 11:30AM | 1701574 | <b>A statistical analysis of feedback surveys from The Grain Handling Safety Coalition Train the Trainer Program to determine preferred teaching methods to grain bin safety educators</b><br>Jaime Thissen, University of Illinois, Champaign, IL United States (Jaime Thissen, Dr. Bob Aherin, Brandi Shanata)                                                                 |
| 11:45AM | 1701114 | <b>Effects of Epidermal Growth Factor-Loaded Radially Oriented Nano-patterned Patch on Chronic Tympanic Membrane Perforation.</b><br>Jong Hoon Chung, Seoul National University, Seoul, South Korea (Presenter: Kyoung-Je Jang) (Kyoung-Je Jang, Seonwoo Hoon, Myoungchul Lee, Sangbae Park, Jongbeom Ku, Bog Hee Kim, Hongbae Kim, Yun-HoonChoung, Jong HoonChung, Jaewoon Lim) |

Monday, July 17 – 9:30AM-12:00PM

## SESSION 105

### CATALYTIC & THERMOCHEMICAL CONVERSIONS OF BIOMASS-TORREFACTION AND PYROLYSIS

– Sponsored by ES-220  
Moderator: Veronica Mbane, North Carolina State University

**Location:**

| Time    | Paper # | Title/Author                                                                                                                                                                                                                                                                               |
|---------|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 9:30AM  |         | <b>Introduction</b>                                                                                                                                                                                                                                                                        |
| 9:35AM  | 1701161 | <b>Devolatilization kinetics of high ash containing switchgrass and pine bark by differential thermogravimetry (DTG)</b><br>Nourredine Abdoulmoumine, University of Tennessee, Knoxville, Tennessee United States (Miles Ownby, Mourredine Abdoulmoumine, Qiaoming Liu, Oluwafemi Oyedeji) |
| 9:50AM  | 1700111 | <b>Role of Oligomeric Liquid Intermediate on the Pyrolysis of Lignocellulosic Materials</b><br>Manuel Garcia-Perez, Washington State University, Pullman, WA United States (Manuel Garcia-Perez)                                                                                           |
| 10:05AM | 1700614 | <b>Kinetic investigation of the formation of biomass syngas precursors</b><br>Oluwafemi Oyedeji, University of Tennessee, Knoxville, Tennessee United States (Oluwafemi Oyedeji, Nourredine Abdoulmoumine)                                                                                 |

# MONDAY, JULY 17

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|---------|---------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 10:20AM | 1701563 | <p><b>Economic and Environmental Aspects of Pyrolysis and Electrocatalysis Depots</b><br/>Christopher Saffron, Michigan State University, East Lansing, Michigan United States (Christopher Saffron, Peyman Fasahati, Sabyasachi Das, Rachael Sak, Mahlet Garedeew, James Jackson)</p> |
| 10:35AM |         | <b>BREAK</b>                                                                                                                                                                                                                                                                           |
| 10:45AM | 1700392 | <p><b>A lignin-first approach to biomass fractionation utilizing Fenton's reagent and supercritical ethanol for the production of monomeric aromatics and free sugars.</b><br/>Joe Sagues, University of Florida, Gainesville, FL United States (Joe Sagues)</p>                       |
| 11:00AM | 1701489 | <p><b>Understanding the Effect of Catalytic Pyrolysis Bio-Oil Produced using CaO during Hydrotreatment</b><br/>KC Sanjeev, Auburn University, Auburn, Alabama United States (KC Sanjeev, Sushil Adhikari)</p>                                                                          |
| 11:15AM | 1700572 | <p><b>Effects of solvents on the yield and quality of bio-crude in sawdust catalytic hydrothermal liquefaction (HTL)</b><br/>Lin Wei, South Dakota State University, Brookings, South Dakota United States (Shouyun Chen) (Shouyun Cheng, Lin Wei)</p>                                 |

Monday, July 17 – 9:30AM-12:00PM  
**SESSION 106**  
**TECHNO-ECONOMIC AND LIFE CYCLE ASSESSMENT OF BIOENERGY OF AGRICULTURAL SYSTEMS**  
 – Sponsored by ES-220  
 Moderator: Deepak Kumar, Univ of Illinois  
 Ganti Murthy, Oregon State Univ

| Time    | Paper#  | Title/Author                                                                                                                                                                                                                                                            |
|---------|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 9:30AM  |         | <b>Introduction</b>                                                                                                                                                                                                                                                     |
| 9:35AM  | 1700284 | <p><b>Using spatial data to assess environmental impacts of energy crops</b><br/>Seyed Mohammad Hossein Tabatabaie, Oregon State University, Corvallis, Oregon United States (Seyed Mohammad Hossein Tabatabaie, Ganti S. Murthy)</p>                                   |
| 9:50AM  | 1700835 | <p><b>Impact of Biofuel System on Land Use Change and Food Price</b><br/>Dev Shrestha, University of Idaho, Moscow, ID United States (Dev Shrestha)</p>                                                                                                                 |
| 10:05AM | 1701564 | <p><b>Uncertainty in Life Cycle GHG Emissions of Biofuels Due to Coproduct Utilization</b><br/>Nafisa Mahbub, University of Alberta, Edmonton, Alberta Canada (Nafissa Mahbub)</p>                                                                                      |
| 10:20AM | 1701079 | <p><b>Techno-economic comparative assessment of production of oxymethylene ethers (OME) from renewable and non-renewable feedstocks</b><br/>Adetoyese Olajire Oyedun, University of Alberta, Edmonton, Alberta Canada (Adetoyese Olajire Oyedun, Amit Kumar)</p>        |
| 10:35AM |         | <b>BREAK</b>                                                                                                                                                                                                                                                            |
| 10:45AM | 1700672 | <p><b>Advanced biofuels and biochemicals from lignocelluloses: a systems analysis perspective</b><br/>Karthik Rajendran, Oregon State University, Corvallis,</p>                                                                                                        |
| 11:00AM | 1700623 | <p><b>Techno-economic analysis of bio-refinery process for producing jet fuel and ethanol from lipid-producing sugarcane</b><br/>Deepak Kumar, University of Illinois, Urbana, IL United States (Deepak Kumar, Stephen Long, Vijay Singh)</p>                           |
| 11:15AM | 1700187 | <p><b>Environmental Tradeoffs of Alternative Scenarios for Swine Waste Management Technologies: A Life Cycle Perspective</b><br/>Shannon Banner, North Carolina State University, Raleigh, NC United States (Shannon Banner, John Classen, Prince Dugba, Mark Rice)</p> |

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|---------|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 11:45AM | 1701559 | <p><b>Life cycle assessment of biochemical conversion routes for biofuel and bioenergy production from seaweed</b><br/>Peyman Fasahati, Michigan State University, East Lansing, Michigan United States (Peyman Fasahati, Jay Liu, Christopher Saffron)</p> |
|---------|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Monday, July 17 – 9:30AM-12:00PM  
**SESSION 107**  
**ENERGY SYSTEMS POSTER SESSION**  
 – Sponsored by ES  
 Moderator: Deepak Kumar, Univ of Illinois  
 Ganti Murthy, Oregon State Univ

**Location: 111ABC**

| Poster# | Paper#  | Title/Author                                                                                                                                                                                                                                                                                        |
|---------|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1       | 1700083 | <p><b>Investigation of torrefaction reaction on high moisture content biomass using dairy manure</b><br/>Sitty Nur Syafa Bakri, Hokkaido University, Sapporo, Hokkaido Japan (Presenter: Sitty Nur Syafa Binti Bakri) (Sitty Nur Syafa Bakri, Kazunori Iwabuchi, Kioto Ito, Katsumori Taniguro)</p> |
| 2       | 1700096 | <p><b>Esterification of organic acids in bio-oil using solid acid catalysts generated from biochar and activated carbon</b><br/>Shuangning Xiu, North Carolina A&amp;T State University, Greensboro, NC United States (Presenter: Bo Zhang) (Shuangning Xiu, Abolghasem Shahbazi, Bo Zhang)</p>     |
| 3       | 1700110 | <p><b>Bio-oil Refineries: Challenges and Opportunities</b><br/>Manuel Garcia-Perez, Washington State University, Pullman, WA United States (Manuel Garcia-Perez)</p>                                                                                                                                |
| 4       | 1700226 | <p><b>Energy Production from Fluidized Bed Gasification of Cotton Gin Trash</b><br/>Walter Oosthuizen, Texas A&amp;M University, College Station, TX United States (Walter Oosthuizen)</p>                                                                                                          |
| 5       | 1700232 | <p><b>Kinetic modeling and sensitivity analysis of butanol production by Clostridium Saccharoperbutylacetonicum with furfural inhibition</b><br/>Quan Zhou, North Carolina State University, Raleigh, NC United States (Quan Zhou, Wayne Yuan)</p>                                                  |
| 6       | 1700264 | <p><b>Temperature variations with various enclosure material thermal property for a Chinese solar greenhouse</b><br/>David Christopher, Beijing, China, People's Republic of (Presenter: Guohong Tong) (David Christopher, Guohong Tong)</p>                                                        |
| 7       | 1700286 | <p><b>Continuous hydrothermal liquefaction of microalgae</b><br/>Seyed Mohammad Hossein Tabatabaie, Oregon State University, Corvallis, Oregon United States (Seyed Mohammad Hossein Tabatabaie, Ganti S. Murthy)</p>                                                                               |
| 8       | 1700316 | <p><b>Assessment and spatial analysis of the bioenergy technical potentials from rice straw in Republic of Korea</b><br/>Jimin Lee, Seoul National University, Seoul, Korea, South (Presenter: Jimin Lee) (Jimin Lee, Kyo Suh)</p>                                                                  |
| 9       | 1700317 | <p><b>Effect of oxygen on the decomposition of dairy manure at low-temperature carbonization</b><br/>Takanori Itoh, Hokkaido University, Sapporo, Hokkaido Japan (Presenter: Takanori Itoh) (Takanori Itoh, Kazunori Iwabuchi, Kumpei Ota, Katsumori Taniguro)</p>                                  |
| 10      | 1700347 | <p><b>Algal Treatment of Wastewater Generated during Hydraulic Fracturing for Natural Gas and Oil Production</b><br/>Nurhan Dunford, Oklahoma State University, Stillwater, OK United States (Nurhan Dunford, Giovanni Lutzu)</p>                                                                   |
| 11      | 1700365 | <p><b>Techno-economic Analysis of Algae Biomass Production</b><br/>Lauren Jabusch, University of California-Davis, Davis, CA United States (Presenter: Lauren Jabusch) (Lauren Jabusch, Jean vanderGheynst)</p>                                                                                     |

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|----|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|---------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12 | 1700418 | <p><b>Modeling of photosynthetic aeration for energy-efficient wastewater treatment and reduced greenhouse gas emissions</b></p> <p>Brendan Higgins, Auburn University, Auburn, AL United States (Presenter: Brendan Higgins) (Brendan Higgins, Shannon Ceballos)</p>                                        | 25 | 1700722 | <p><b>Primary reactions in pyrolysis of milled wood lignin: The effect of vacuum on product distributions</b></p> <p>Evan Terrell, Washington State University, Pullman, WA United States (Presenter: Evan Terrell) (Evan Terrell, Brennan Pecha, Jorge Montoya, Farid Chejne-Janne, Manuel Garcia-Perez)</p>                                  |
| 13 | 1700516 | <p><b>The effect of roll-milling on the physicochemical characteristics of wheat straw</b></p> <p>Xiaopeng Bai, China Agricultural University, Beijing, China, People's Republic of (Presenter: Xiaopeng Bai) (Xiaopeng Bai, Guanghui Wang, Decheng Wang, Zhiqin Wang)</p>                                   | 26 | 1700734 | <p><b>Heating load analysis of the pit greenhouse</b></p> <p>Seounghee Kim, National Institute of Horticultural and Herbal Science, Gyeongsangnam-do Korea, South (Seounghee Kim) (Seounghee Kim)</p>                                                                                                                                          |
| 14 | 1700521 | <p><b>Impact of torrefaction on reactivity of wheat straw</b></p> <p>Xiaopeng Bai, China Agricultural University, Beijing, China, People's Republic of (Presenter: Xiaopeng Bai) (Xiaopeng Bai, Guanghui Wang)</p>                                                                                           | 27 | 1700815 | <p><b>Fertilization of greenhouse-grown marigolds with extruded, slow-release biobased pellets</b></p> <p>Darren Jarboe, Iowa State University, Ames, Iowa United States (Presenter: Austin Gimondo) (Austin Gimondo, William Graves, Darren Jarboe, James Schrader, Martin Gross, Zhiyou Wen, Show-Ling Lee, Jake Behrens, David Grewell)</p> |
| 15 | 1700564 | <p><b>Development of a low-cost syngas cleaning technology using heat exchanger and vegetable oil bubbler</b></p> <p>Sunil Thapa, Oklahoma State University, Stillwater, OK United States (Sunil Thapa, Prakash Bhoi, Ajay Kumar, Raymond Huhnke)</p>                                                        | 28 | 1700838 | <p><b>Life cycle analysis (LCA) for corn stover pellet in comparison with baled corn stover</b></p> <p>Nurun Nahar, North Dakota State University, Fargo, ND United States (Presenter: Scott Pryor) (Nurun Nahar, Scott Pryor)</p>                                                                                                             |
| 16 | 1700565 | <p><b>Life cycle assessment and performance of oil bubble-based syngas cleaning technology</b></p> <p>Sunil Thapa, Oklahoma State University, Stillwater, OK United States (Sunil Thapa, Ajay Kumar, Robert Frazier, Raymond Huhnke)</p>                                                                     | 29 | 1700870 | <p><b>Evaluation of the Potential Fermentable Sugars Yield of Pedigreed Sorghum Mutants</b></p> <p>Bairen Pang, Kansas State University, Manhattan, KS United States (Presenter: Bairen Pang) (Bairen Pang, Ke Zhang, Zhanguo Xin, Donghai Wang)</p>                                                                                           |
| 17 | 1700574 | <p><b>Effects of bifunctional Ni/HZSM-5 and zinc hydrolysis on the yield and quality of bio-crude in sawdust catalytic hydrothermal liquefaction (HTL)</b></p> <p>Lin Wei, South Dakota State University, Brookings, South Dakota United States (Presenter: Lin Wei) (Shouyun Cheng, Lin Wei)</p>            | 30 | 1700884 | <p><b>Development of greenhouse cooling and heating technology by using seasonal thermal storage for alluvial aquifer</b></p> <p>Jongpil Moon, National Institute of Agricultural Sciences, Jeonju, Jeollabuk-do Korea, South (Geumchun Kang, Jongpil Moon, Yee Baek, Taeseok Lee, Sungsik Oh)</p>                                             |
| 18 | 1700613 | <p><b>Effects of structure of die hole in ring-die briquetting machine on <i>Leymus chinensis</i> open compression characteristics</b></p> <p>Hongxiang Shen, China Agricultural University, Beijing, China, People's Republic of (Presenter: Jinkui Feng) (Hongxiang Shen, Decheng Wang, Guanghui Wang)</p> | 31 | 1700897 | <p><b>Non-thermal plasma (NTP) catalytic approach for distributed ammonia synthesis</b></p> <p>Peng Peng, University of Minnesota, St Paul, Minnesota United States (Peng Peng, Yanling Chen, Raymond Hatzenbeller, Dongjie Chen, Roger Ruan)</p>                                                                                              |
| 19 | 1700633 | <p><b>Utilization of Smart Control Software to Achieve Required Particle Size in 2 Stage Grinding Processes for Corn Stover</b></p> <p>Neal Yancey, Idaho National Laboratory, Idaho Falls, Idaho United States (Neal Yancey)</p>                                                                            | 32 | 1700907 | <p><b>Development of Environmental improvement system of Poultry buildings by Air conditioning and Drinking water</b></p> <p>Yee, Paek, National Institute of Agricultural Sciences, Jeonju, Jeollabuk-do South Korea (Yee Paek, Geumchun Kang, Jongpil Moon, Taeseok Lee, Sungsik Oh)</p>                                                     |
| 20 | 1700647 | <p><b>Purification and characterization of an autolytic enzyme for optimized hydrolysis of microalgae for multiple bioproduct extraction</b></p> <p>Chelsea Dixon, Kansas State University, Manhattan, Kansas United States (Presenter: Chelsea Dixon) (Chelsea Dixon, Lisa Wilken)</p>                      | 33 | 1700993 | <p><b>Starch Production from Duckweed as a Feedstock for the Advancement of Bioethanol</b></p> <p>Bingjun He, University of Idaho, Moscow, Idaho United States (Presenter: Kevin Kruger) (Kevin Kruger, Lide Chen, Bingjun He)</p>                                                                                                             |
| 21 | 1700673 | <p><b>Effect of Polyethylene glycol (PEG) on adsorption with lignin for enhanced conversion of lignocelluloses to ethanol</b></p> <p>Karthik Rajendran, Oregon State University, Corvallis, OR United States (Karthik Rajendran, Haider J. Kadhum, Ganti S. Murthy)</p>                                      | 34 | 1701058 | <p><b>Production of Renewable Diesel from Woody Biomass and Agricultural Residue: A Techno-economic Analysis Comparative Study</b></p> <p>Amit Kumar, University of Alberta, Edmonton, Alberta Canada (Madhumita Patel, Adetoyese Oyedun, Amit Kumar)</p>                                                                                      |
| 22 | 1700679 | <p><b>Hydrothermal carbonization of swine manure for hydrochar production</b></p> <p>Zachary Lentz, North Carolina State University, Raleigh, NC United States (Zachary Lentz, John Classen, Praveen Kolar)</p>                                                                                              | 35 | 1701077 | <p><b>Characterization of Astaxanthin Production from Marine Protist <i>Thraustochytrium Striatum</i></b></p> <p>Rui Xiao, Clemson University, Central, SC United States (Rui Xiao Yi Zheng)</p>                                                                                                                                               |
| 23 | 1700701 | <p><b>An integrated Techno-economic and Life Cycle Analysis of a Multi-Stage Algal Bioprocess for Wastewater Treatment</b></p> <p>Durga Madhab Mahapatra, Oregon State University, Corvallis, Oregon United States (Durga Madhab Mahapatra, Ganti S. Murthy)</p>                                             | 36 | 1701081 | <p><b>Techno-economic analysis of ammonia production from black liquor gasification and co-gasification with pulp and waste sludges</b></p> <p>Adetoyese Olajire Oyedun, University of Alberta, Edmonton, Alberta Canada (Maryam Akbari, Adetoyese Olajire Oyedun, Amit Kumar)</p>                                                             |
| 24 | 1700708 | <p><b>Preparation of Nanocellulose Crystals via Microwave-assisted Acid Hydrolysis</b></p> <p>Zixu Yang, Washington State University, Pullman, WA United States (Zixu Yang)</p>                                                                                                                              | 37 | 1701083 | <p><b>Comparative techno-economic analysis of bio-coal production through dry and wet torrefaction of biomass feedstocks</b></p> <p>Adetoyese Olajire Oyedun, University of Alberta, Edmonton, Alberta Canada (Maryam Akbari, Adetoyese Olajire Oyedun, Amit Kumar)</p>                                                                        |

# MONDAY, JULY 17

| 38     | 1701117 | <b>Design of ring type die of briquetting machine based on a nested structure</b><br>Hongxiang Shen, China Agricultural University, Beijing, China, People's Republic of (Presenter: Jinkui Feng) (Hongxiang Shen, Decheng Wang, Guanghui Wang, Xiaoming Zhang)                                     | 52                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1701524 | <b>Microalgae Cultivation on Processed Anaerobic Digestates</b><br>Tyler Barzee, University of California Davis, Davis, CA United States (Tyler Barzee, Cody Yothers, Abdolhossein Edalati, Joshua Rapport, Hamed El-Mashad, Annaliese Franz, Rhuihong Zhang)         |      |         |              |        |  |                     |        |         |                                                                                                                                                                                                                |        |         |                                                                                                                                                                 |
|--------|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|---------|--------------|--------|--|---------------------|--------|---------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 39     | 1701193 | <b>Modeling to improve harvest and logistical operations for corn stover</b><br>Magen Shedden, Oak Ridge Associated University, Oak Ridge, TN United States (Magen Shedden, Erin Webb, Mahmood Ebadian, Shahabaddine Sokhansanj)                                                                    | 53                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1701545 | <b>Life Cycle Assessment of mixed-species forest and short rotation woody crop plantation in Michigan</b><br>Yingqian Lin, Michigan State University, East Lansing, MI United States (Yingqian Lin, Zach Carter, Chris Safiron, Fei Pan)                              |      |         |              |        |  |                     |        |         |                                                                                                                                                                                                                |        |         |                                                                                                                                                                 |
| 40     | 1701201 | <b>Feasibility and Economic Analysis for Creating a Viable Cogeneration Design for the Campus Wood-Fired Boiler</b><br>Chad Dunkel, University of Idaho, Sandpoint, ID United States (Chad Dunkel, Dev Shrestha, Steven Beyerlein)                                                                  | 54                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1701550 | <b>Hydrothermal Fractionation of Slash Pine Biomass into Sugar and Energy-dense Hydrochar</b><br>Umakanta Jena, New Mexico State University, Las Cruces, New Mexico United States (Umakanta Jena, Kent Hoekman)                                                       |      |         |              |        |  |                     |        |         |                                                                                                                                                                                                                |        |         |                                                                                                                                                                 |
| 41     | 1701213 | <b>Microwave-assisted carbonization of phosphoric acid activated biomass</b><br>Elmar Villota, Washington State University, Richland, Washington United States (Elmar Villota, Hanwu Lei, Moriko Qian, Gayatri Yadavalli, Zixu, Yayun Zhang, Lei Zhu, Shiela Marie Villota)                         | 55                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1701554 | <b>Technoeconomic analyses of new pretreatment processes for lignocellulosic biomass and impact of lignin valorization</b><br>Peyman Fasahati, Michigan State University, East Lansing, Michigan United States (Peyman Fasahati, Sabyasachi Das, Christopher Saffron) |      |         |              |        |  |                     |        |         |                                                                                                                                                                                                                |        |         |                                                                                                                                                                 |
| 42     | 1701215 | <b>Modeling Biomass Supply Chain Disruptions in the US</b><br>Devita Amal, Virginia Tech, Blacksburg, VA United States (Devita Amal, Bhavna Sharma, Erin Webb, Craig Brandt, Laurence Eaton, Alejandro Salado)                                                                                      | 56                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1701605 | <b>Seawater Desalination: From Classical Mechanisms to Emerging Solar Energy Powered Techniques</b><br>Yaseen Al-Mulla, Sultan Qaboos University, Al-Khod, Oman (Yaseen Al-Mulla)                                                                                     |      |         |              |        |  |                     |        |         |                                                                                                                                                                                                                |        |         |                                                                                                                                                                 |
| 43     | 1701270 | <b>Investigation of White Rot Fungus as a Pretreatment Strategy for Switchgrass for Subsequent Thermochemical Processing</b><br>Czarena Crofcheck, University of Kentucky, Lexington, KY United States (Czarena Crofcheck)                                                                          | 57                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1701616 | <b>Thermal Modeling and Simulation of a Photovoltaic Greenhouse Prototype</b><br>Jonathan Maisonneuve, Oakland University, Rochester, MI United States (Jonathan Maisonneuve, Pouyan Pourmovahed)                                                                     |      |         |              |        |  |                     |        |         |                                                                                                                                                                                                                |        |         |                                                                                                                                                                 |
| 44     | 1701287 | <b>Ethanol yield calculation method – “an unaccounted factor” responsible for yield variations</b><br>Deepak Kumar, University of Illinois, Urbana, IL United States (Deepak Kumar, Kaylin Moy, Vijay Singh)                                                                                        | 58                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1701670 | <b>Comparison of Pyrolysis Products Derived from Poplar Tree and Switchgrass</b><br>Pranjali Muley, Louisiana State University, Baton Rouge, Louisiana United States (Pranjali Muley)                                                                                 |      |         |              |        |  |                     |        |         |                                                                                                                                                                                                                |        |         |                                                                                                                                                                 |
| 45     | 1701322 | <b>Catalytic oxidation of ionic liquid pretreatment black liquor in a biphasic system</b><br>Lalitendu Das, University of Kentucky, Lexington, KY United States (Lalitendu Das, Siqun Xu, Jian Shi)                                                                                                 | 59                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1701682 | <b>Demonstration of Water Purification/Treatment/Recycling and Power Generation in a Commercial Dairy</b><br>Sergio Capareda, Texas A&M University, College Station, Texas United States (Sergio Capareda)                                                            |      |         |              |        |  |                     |        |         |                                                                                                                                                                                                                |        |         |                                                                                                                                                                 |
| 46     | 1701324 | <b>Biofuels and bioproduct potentials of industrial hemp in comparison with kenaf, switchgrass and sorghum</b><br>Lalitendu Das, University of Kentucky, Lexington, KY United States (Lalitendu Das, Enshi Liu, Areez Saeed, David Williams, Chenlin Li, Allison Ray, Jian Shi)                     | 60                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1701703 | <b>Cost Prediction and Life Cycle Assessment of Woody Biomass Supply Chain in Michigan</b><br>Yingqian Lin, Michigan State University, East Lansing, MI United States (Yingqian Lin, Fei Pan)                                                                         |      |         |              |        |  |                     |        |         |                                                                                                                                                                                                                |        |         |                                                                                                                                                                 |
| 47     | 1701357 | <b>Life cycle assessment of drop-in biofuels from prairie cordgrass</b><br>Isaac Emery, Air Force Institute of Technology, Wright-Patterson AFB, OH United States (Isaac Emery, Eric Mbonimpa, Sandeep Kumar, Kasiviswanathan Muthukumarappan, Lin Wei, Arash Jahndideh, Shikha Singh, Vance Owens) | 61                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1701704 | <b>A new approach to synthesize bio-polycarbonate from soybean oil and CO</b><br>Shaoqing Cui, Ohio State University, Wooster, Ohio United States (Shaoqing Cui)                                                                                                      |      |         |              |        |  |                     |        |         |                                                                                                                                                                                                                |        |         |                                                                                                                                                                 |
| 48     | 1701363 | <b>Determining Material and Energy Uncertainty Impact on Biofuel Production</b><br>Lindsay Anderson, Cornell University, Ithaca, New York United States (Madhur Srivastava) (Madhur Srivastava, Lindsay Anderson)                                                                                   | 62                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1701707 | <b>Evaluation of Bio-refinery Alternatives for the Production of Alternative Jet Fuels in a Dry Corn Ethanol Plant</b><br>Abid Tanzil, Washington State University, Pullman, Washington United States (Abid Tanzil)                                                   |      |         |              |        |  |                     |        |         |                                                                                                                                                                                                                |        |         |                                                                                                                                                                 |
| 49     | 1701364 | <b>Improving biorefinery economic viability, through optimization under uncertainty</b><br>Lindsay Anderson, Cornell University, Ithaca, New York United States (Madhur Srivastava) (Lingfeng Cheng, Lindsay Anderson)                                                                              | <div style="border: 1px solid black; padding: 5px;"> <b>Monday, July 17 – 9:30AM-12:15PM</b><br/> <b>SESSION 108</b><br/> <b>PRODUCTION, PROCESSING AND CONVERSION OF ALGAE</b><br/>                     – Sponsored by ES-220<br/>                     Moderator: Sudhagar Mani, Univ of Georgia<br/> <b>Location: 202B</b> </div> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Time</th> <th style="text-align: left;">Paper #</th> <th style="text-align: left;">Title/Author</th> </tr> </thead> <tbody> <tr> <td>9:30AM</td> <td></td> <td><b>Introduction</b></td> </tr> <tr> <td>9:35AM</td> <td>1700390</td> <td><b>Effects of C5 organic carbon and light on growth and cell activity of Haematococcus pluvialis under mixotrophic conditions</b><br/>Na Pang, Washington State University, Pullman, WA United States (Na Pang)</td> </tr> <tr> <td>9:50AM</td> <td>1701526</td> <td><b>Fungal-Assisted Harvesting of Algae and Bacteria</b><br/>Tyler Barzee, University of California Davis, Davis, CA United States (Tyler Barzee, Rhuihong Zhang)</td> </tr> </tbody> </table> |         |                                                                                                                                                                                                                                                                       | Time | Paper # | Title/Author | 9:30AM |  | <b>Introduction</b> | 9:35AM | 1700390 | <b>Effects of C5 organic carbon and light on growth and cell activity of Haematococcus pluvialis under mixotrophic conditions</b><br>Na Pang, Washington State University, Pullman, WA United States (Na Pang) | 9:50AM | 1701526 | <b>Fungal-Assisted Harvesting of Algae and Bacteria</b><br>Tyler Barzee, University of California Davis, Davis, CA United States (Tyler Barzee, Rhuihong Zhang) |
| Time   | Paper # | Title/Author                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |         |                                                                                                                                                                                                                                                                       |      |         |              |        |  |                     |        |         |                                                                                                                                                                                                                |        |         |                                                                                                                                                                 |
| 9:30AM |         | <b>Introduction</b>                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |         |                                                                                                                                                                                                                                                                       |      |         |              |        |  |                     |        |         |                                                                                                                                                                                                                |        |         |                                                                                                                                                                 |
| 9:35AM | 1700390 | <b>Effects of C5 organic carbon and light on growth and cell activity of Haematococcus pluvialis under mixotrophic conditions</b><br>Na Pang, Washington State University, Pullman, WA United States (Na Pang)                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |         |                                                                                                                                                                                                                                                                       |      |         |              |        |  |                     |        |         |                                                                                                                                                                                                                |        |         |                                                                                                                                                                 |
| 9:50AM | 1701526 | <b>Fungal-Assisted Harvesting of Algae and Bacteria</b><br>Tyler Barzee, University of California Davis, Davis, CA United States (Tyler Barzee, Rhuihong Zhang)                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |         |                                                                                                                                                                                                                                                                       |      |         |              |        |  |                     |        |         |                                                                                                                                                                                                                |        |         |                                                                                                                                                                 |
| 50     | 1701378 | <b>Techno-economic analysis of corn stover pelletization for cellulosic biorefinery feedstock transportation</b><br>Ashish Manandhar, The Ohio State University, Wooster, Ohio United States (Ashish Manandhar, Ajay Shah)                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |         |                                                                                                                                                                                                                                                                       |      |         |              |        |  |                     |        |         |                                                                                                                                                                                                                |        |         |                                                                                                                                                                 |
| 51     | 1701406 | <b>Flash Distillation of Bio-Oil Produced via Tail-Gas Reactive Pyrolysis</b><br>Thomas McVey, Pennsylvania State University, State College, PA United States (Thomas McVey)                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |         |                                                                                                                                                                                                                                                                       |      |         |              |        |  |                     |        |         |                                                                                                                                                                                                                |        |         |                                                                                                                                                                 |

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|---------|---------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 10:05AM | 1701012 | <p><b>Hydrothermal Liquefaction of Galdieria sulphuraria Grown on Municipal Wastewater</b><br/>Catherine Brewer, New Mexico State University, Las Cruces, NM United States (Catherine Brewer, Kwonit Mallick, Feng Cheng, Zheng Cui, Shanka Henkanatte Gedara, Mohsen Karbakhshravari, Tanner Schaub, Umakanta Jena, Nagamany Nirmalakhandan)</p> |
| 10:20AM | 1701535 | <p><b>Hydrothermal Treatment of Lipid Extracted Algae and Evaluation of the Produced Hydrochar</b><br/>Umakanta Jena, New Mexico State University, Las Cruces, New Mexico United States (Umakanta Jena, Kent Hoekman)</p>                                                                                                                         |
| 10:35AM | 1701425 | <p><b>Effects of Residence Time and CO2 Partial Pressure on Catalytic Upgrading of Bio-Oil Produced from Hydrothermal Liquefaction of Algae</b><br/>Rajdeep Shakya, Auburn University, Auburn, AL United States (Rajdeep Shakya, Sushil Adhikari, Zhouhong Wang, Ravishankar Mahadevan, Nikhil Jain, KC Sanjeev)</p>                              |
| 10:50AM |         | <b>BREAK</b>                                                                                                                                                                                                                                                                                                                                      |
| 11:00AM | 1701059 | <p><b>Techno-economic Analysis of the Production of Hydrogen from Hydrothermal Gasification of Algal Biomass</b><br/>Amit Kumar, University of Alberta, Edmonton, Alberta Canada (Mayank Kumar, Adoteyese Oyedun, Amit Kumar)</p>                                                                                                                 |
| 11:15AM | 1700810 | <p><b>Development of extruded algal-based fertilizer pellets</b><br/>Darren Jarboe, Iowa State University, Ames, Iowa United States (Jake Behrens, David Grewell, Darren Jarboe, Martin Gross, Zhiyou Wen, Austin Gimondo, William Graves, James Schrader)</p>                                                                                    |
| 11:30AM | 1700848 | <p><b>Manufacture of slow-release fertilizer pellets from wastewater-grown microalgae</b><br/>Martin Gross, Iowa State University, Ames, Iowa United States (Darren Jarboe) (Martin Gross)</p>                                                                                                                                                    |
| 11:45AM | 1700688 | <p><b>A novel biorefinery approach for producing biofuel from fermented microalgae</b><br/>Quazi Rahman, North Carolina A&amp;T State University, Greensboro, NC United States (Quazi Rahman, Lijun Wang)</p>                                                                                                                                     |
| 12:00PM | 1700703 | <p><b>Three Stage Dairy Effluent Wastewater Treatment and Bioproduct Generation using Green Algae</b><br/>Durga Madhab Mahapatra, Oregon State University, Corvallis, Oregon United States (Durga Madhab Mahapatra, Ganti S Murthy)</p>                                                                                                           |

**Monday, July 17 – 9:30AM-12:00PM**  
**SESSION 109 SPECTROSCOPIC SENSING PART 1**

– Sponsored by ITSC-348  
Moderator: Carol Jones, Oklahoma State Univ  
**Location: 202C**

| Time    | Paper#  | Title/Author                                                                                                                                                                                                                             |
|---------|---------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 9:30AM  |         | <b>Introduction</b>                                                                                                                                                                                                                      |
| 9:35AM  | 1700195 | <p><b>Nondestructive measurement of tomato maturity using a new spatially-resolved hyperspectral imaging probe</b><br/>Yuping Huang, Michigan State University, East Lansing, MI United States (Yuping Huang, Renfu Lu, Kunjie Chen)</p> |
| 9:50AM  | 1700590 | <p><b>Assessment of spectral vegetation indices for mapping water stress in vegetable crops</b><br/>Samuel Ihuoma, McGill University, Montreal, Quebec Canada (Samuel Ihuoma) (Samuel Ihuoma, Chandra Madramootoo)</p>                   |
| 10:05AM | 1701042 | <p><b>Rapid assessment of minced pork freshness using portable NIR spectroscopy</b><br/>Christopher Kucha, McGill University, Montreal, Quebec Canada (Michael Ngadi) (Christopher Kucha, Michael Ngadi)</p>                             |
| 10:20AM |         | <b>BREAK</b>                                                                                                                                                                                                                             |

|         |         |                                                                                                                                                                                                                                                                                      |
|---------|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 10:30AM | 1701261 | <p><b>Discriminant Analysis of the Geographical Origins of Oolong Tea Using Surface-Enhanced Raman Spectroscopy</b><br/>Yu-Wei Liao, National Taiwan University, Taipei, China, Republic of (Taiwan) (Yu-Wei Liao, Shih-Fang Chen)</p>                                               |
| 10:45AM | 1701031 | <p><b>Development of a Tryptophan Fluorescence Sensor for Process Control in the Dairy Industry</b><br/>Fred Payne, University of Kentucky, Lexington, KY United States (Fred Payne, Michael Sama)</p>                                                                               |
| 11:00PM | 1701248 | <p><b>SIMCA Model Applied to Plant Canopy Reflectance Accurately Identifies Three Weed Species</b><br/>Alimohammad Shirzadifar, North Dakota State University, Fargo, ND United States (Alimohammad Shirzadifar, Sreekala Bajwa, Seyed Ahmad Mireei, Kirk Howatt, John Nowatzki)</p> |

**Monday, July 17 – 9:30AM-12:00PM**  
**SESSION 110 COMPUTATIONAL FLUID DYNAMICS (CFD) APPLICATIONS IN AGRICULTURE**

– Sponsored by ITSC-217, ITSC-230, PAFS-305, PAFS-405, NRES-244, NRES-265  
Moderator: Christopher Choi, Univ of Wisconsin  
**Location: 203**

| Time    | Paper#  | Title/Author                                                                                                                                                                                                                                                        |
|---------|---------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 9:30AM  |         | <b>Introduction</b>                                                                                                                                                                                                                                                 |
| 9:35AM  | 1701617 | <p><b>Recent Advances of Computational Fluid Dynamics (CFD) in Agriculture</b><br/>Christopher Choi, University of Wisconsin, Madison, WI United States (Christopher Choi)</p>                                                                                      |
| 10:05AM | 1701141 | <p><b>CFD Simulations of Fate and Transport of Pesticide Droplets Discharged from Air-assisted Sprayers in Orchards</b><br/>Se-Woon Hong, The Ohio State University, Columbus, OH United States (Se-Woon Hong, Lingying Zhao, Heping Zhu)</p>                       |
| 10:35AM | 1700902 | <p><b>Computational Fluid Dynamics (CFD) to Zoning Horticultural Greenhouses in Mexico</b><br/>Jorge Flores-Velazquez, Mexican Institute of Water Technology, Morelos, Mexico (Jorge Flores-Velazquez, Ernesto Aguilar, Waldo Ojeda, Abraham Jesus Arzeta Rios)</p> |
| 11:00AM | 1701220 | <p><b>Particle image velocimetry measurement of non-Newtonian fluid flow in stirred reactors</b><br/>Keqiang Chen, China, People's Republic of (Presenter: Tao Lang) (Tao Lang, Keqiang Chen. Binxin Wu)</p>                                                        |
| 11:15AM | 1701658 | <p><b>A computational fluid dynamics model of a dairy holding area</b><br/>Jessica Drewry, University of Wisconsin, (Jessica Drewry) (Jessica Drewry, Mario R. Mondaca)</p>                                                                                         |
| 11:30AM | 1700655 | <p><b>CFD simulation of non-Newtonian fluid mixing by a pitched blade turbine in</b><br/>Binxin Wu, Zhenjiang, Jiangsu China, People's Republic of (Binxin Wu)</p>                                                                                                  |
| 11:45AM | 1700951 | <p><b>Numerical Assessment of a Precision Air Supply System (PASS) Targeting for a Single Cow Partition</b><br/>Xiaoshuai Wang, Aarhus University, Viborg, Denmark (Xiaoshuai Wang, Guoqiang Zhang, Christopher Choi)</p>                                           |

# MONDAY, JULY 17

Monday, July 17 – 9:30AM-12:00PM

## SESSION 111

### ADVANCED COMPUTATIONAL APPROACHES FOR SOLVING AGRICULTURAL AND BIOLOGICAL ENGINEERING PROBLEMS - PART 1

– Sponsored by ITSC-217, ITSC-230, PAFS-305, PAFS-405, NRES-244, NRES-265, ES-200  
Moderator: Nourredine Abdoulmoumine, Univ of Tennessee

**Location: 205**

| Time    | Paper#  | Title/Author                                                                                                                                                                                                                                                                         |
|---------|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 9:30AM  |         | <b>Introduction</b>                                                                                                                                                                                                                                                                  |
| 9:35AM  | 1700180 | <b>General Formulation of Transmission-Line Modeling (TLM) Method Applied to Bio-Energetics of Endotherms</b><br>Hugo Milan, Cornell University, Ithaca, NY United States (Hugo Milan Kifle Gebremedhin)                                                                             |
| 9:50AM  | 1700222 | <b>A methodology for predicting the relative illumination intensity in apple canopy based on the three-dimensional point clouds</b><br>Cailling Guo, China Agricultural University, Beijing, China, People's Republic of (Cailling Guo, Gang Liui, Ze Zong, Weijie Zhang, Zhang Xue) |
| 10:05AM | 1700313 | <b>AgroClimate: Simulating and Monitoring the Risk of Extreme Weather Events from a Crop Phenology Perspective</b><br>Clyde Fraisse, University of Florida, Gainesville, Florida United States (Clyde Fraisse)                                                                       |
| 10:20AM | 1700325 | <b>An Engineering Approach to the Prevalent Problem of Stalk Lodging</b><br>Daniel Robertson, (Daniel Robertson, Douglas Cook)                                                                                                                                                       |
| 10:35AM | 1700411 | <b>Establishing an Automatic System for Identifying the Stems of Salted Plums</b><br>Yi-Chich Chiu, National Ilan University, Yi-Lan, China, Republic of Taiwan (Yi-Chich Chiu, Chia-Cheng Tung)                                                                                     |
| 10:50AM | 1700464 | <b>Head and body motion tracking of caged chicken in video</b><br>Linfang Xiao, Zhejiang University, Hangzhou, China, People's Republic of (Linfang Xiao, Xiuqin Rao, Chenbo Song)                                                                                                   |
| 11:05AM |         | <b>BREAK</b>                                                                                                                                                                                                                                                                         |
| 11:15AM | 1700475 | <b>Greenhouse environment modeling and simulation to monitor micro-climate issues</b><br>Dongdong Ma, Purdue University, West Lafayette, IN United States (Dongdong Ma, Libo Zhang, Suraj Amaty, Jian Jin)                                                                           |
| 11:30AM | 1700604 | <b>Research on spray delay control of a variable-rate orchard sprayer based on a laser-scanning system</b><br>Jichen Cai, China Agricultural University, Beijing, China, People's Republic of (Jichen Cai, Xiu Wang, Songlin Wang, Shuo Yang, Chunjiang Zhao)                        |
| 11:45AM | 1700729 | <b>Modeling branch pattern and shoot length for predicting apple tree response to pruning</b><br>Ying-Tsui Wang, Washington State University, Richland, WA United States (Ying-Tsui Wang, Gerrit Hoogenboom)                                                                         |
| 12:00PM | 1700735 | <b>Virtual Operator Models for Off-highway Machine Virtual Prototyping</b><br>Brian Steward, Iowa State University, Ames, Iowa United States (Yu Du, Michael Dorneich, Brian Steward)                                                                                                |
| 12:15PM | 1700752 | <b>Sea fish identification using convolutional neural network</b><br>Chen Tung, , Keelung City, China, People's Republic of (Chen Tung, Ching-Lu Hsieh, Yan-Fu Kuo)                                                                                                                  |

Monday, July 17 – 9:30AM-12:00PM

## SESSION 112

### IMAGING TECHNOLOGIES FOR HIGH THROUGHPUT PHENOTYPING

– Sponsored by ITSC-312, ITSC-348, MS-48  
Moderator: Changying Li, Univ of Georgia

**Location: 206A**

| Time    | Paper#  | Title/Author                                                                                                                                                                                                                                                                                                            |
|---------|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 9:30AM  |         | <b>Introduction</b>                                                                                                                                                                                                                                                                                                     |
| 9:35AM  | 1700092 | <b>Studying floral shape variations in 3D for genus <i>Sinningia</i></b><br>Wen-Chieh Chou, , New Taipei City, Taiwan China (Wen-Chieh Chou, Hao-Chun Hsu, Yan-Fu Kuo)                                                                                                                                                  |
| 9:50AM  | 1700170 | <b>Three Dimensional Phenotype Quantitative System of Seedling Root</b><br>Tsung-Han Han, National Taiwan University, Taipei, Taipei China, Republic of (Taiwan) (Tsung-Han Han, Yan-Fun Kuo)                                                                                                                           |
| 10:05AM | 1700890 | <b>Measuring Chlorophyll Content of Soybean Leaves with Image Processing technique</b><br>Oveis Hassanijalilian, North Dakota State University, Fargo, North Dakota United States (Oveis Hassanijalilian, Sreekala Bajwa, Alimohammad Shirzadifar, Ted Helms, John Nowatzki, Curt Doetkott, Seyed Mojtaba Mansouripour) |
| 10:20AM | 1700402 | <b>Fire blight disease resistance assessment in apple breeding program using sensing techniques</b><br>Sanaz Jarolmasjed, Washington State University, Pullman, WA United States (Sanaz Jarolmasjed, Sarah Kostick, Kate Evans, Sindhuja Sankaran)                                                                      |
| 10:35AM | 1700438 | <b>GPhenoVision: A Ground Mobile System with Multimodal Imaging for Field-based High Throughput Phenotyping of Cotton</b><br>Yu Jiang, University of Georgia, Athens, GA United States (Yu Jiang, Shangpeng Sun, Rui Xu, Changying Li, Andrew Peterson)                                                                 |
| 10:50AM |         | <b>BREAK</b>                                                                                                                                                                                                                                                                                                            |
| 11:00AM | 1700404 | <b>High-throughput phenotyping for assessing <i>Aphanomyces</i> root rot disease resistance in lentils</b><br>Afeef Marzougui, Washington State University, Pullman, Washington United States (Afeef Marzougui, Ma Yu, Chongyuan Zhang, Rebecca McGee, Singhuja Sankaran)                                               |
| 11:15AM | 1701245 | <b>Phenocam color image calibration using image analysis</b><br>Sunoj Shajahan, North Dakota State University, Fargo, ND United States (Sunoj Shajahan, Igathinathan Canayen, John Hendrickson)                                                                                                                         |
| 11:30AM | 1701080 | <b>Cotton flower detection using aerial color images</b><br>Rui Xu, University of Georgia, Athens, GA United States (Rui Xu, Changying Li, Andrew Paterson)                                                                                                                                                             |
| 11:45AM | 1700948 | <b>Development of High-resolution 3D Phenotyping System Using Depth Camera and RGB Camera</b><br>Myongkyoon Yang, Seoul National University, Seoul, South Korea (Myongkyoon Yang, Seong In Cho, Jinshi Cui, Eun Seong Jeong)                                                                                            |
| 12:00PM | 1700781 | <b>Phenotyping of Arabidopsis for drought stress response using kinetic chlorophyll fluorescence imaging</b><br>Jieni Yao, Zhejiang University, Hangzhou, Zhejiang China, People's Republic of (Jieni Yao, Haiyan Cen, Haiyong Weng)                                                                                    |

# MONDAY, JULY 17

Monday, July 17 – 9:30AM-12:00PM

## SESSION 113

**DRIFT REDUCTION TECHNOLOGIES / ADVANCES IN PESTICIDE APPLICATION & FORMULATION** – Sponsored by MS-23/6  
Moderator: Adam Barlow, John Deere

**Location: 206B**

| Time    | Paper#  | Title/Author                                                                                                                                                                                                                                                           |
|---------|---------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 9:30AM  |         | <b>Introduction</b>                                                                                                                                                                                                                                                    |
| 9:35AM  | 1701409 | <b>Evaluation of On-board Swath Displacement Systems Used in Aerial Pesticide Application</b><br>Harold Thistle, US Forest Service, Morgantown, WV United States (Harold Thistle, Jane Bonds, Gerry Cormier, Gary Kees, Bob Mickle, Dave Davies, Bill Reynolds)        |
| 9:50AM  | 1700750 | <b>Development and evaluation of an automated vertical spray patternator for calibration of vineyard air-assist sprayer</b><br>Haitham Bahlol, Washington State University, Prosser, Washington United States Haitham Bahlol, Gwen-Alyn Hoheisel, Lav Khot)            |
| 10:05AM | 1700383 | <b>Versatile Laser-guided Spray Control System to Implement Variable-rate Functions for Conventional Air-blast Sprayers</b><br>Heping Zhu, USDA ARS, Wooster, Ohio United States (Heping Zhu, Yegang Li, Yue Shen, Hui Liu)                                            |
| 10:20AM |         | <b>BREAK</b>                                                                                                                                                                                                                                                           |
| 10:30AM | 1700709 | <b>Leaf-Wetness Sensor Based Drift Quantification in Tree-Fruit Production</b><br>Parish Nalavade, Maharashtra, India Parish Nalavade, Lav Khot, Gwen-Alyn Hoheisel)                                                                                                   |
| 10:45AM | 1700711 | <b>Evaluation of Two Over-The-Row Grapevine Sprayers for Both-Side Single-Pass Versus One-Side Multi-Pass Spray Application</b><br>Parish Nalavade, Maharashtra, India (Parish Nalavade, Margaret McCoy, Haitham Bahlol, Gwen-Alyn Hoheisel, Lav Khot, Michelle Moyer) |
| 11:00AM | 1700290 | <b>Targeted aerial spraying for urban pest eradication</b><br>Brian Richardson, Scion (NZ Forest Research Institute), Rotorua, New Zealand (Brian Richardson, Tara Strand, Liam Wright, Carol Rolando, Clint Hoffmann)                                                 |

Monday, July 17 – 9:30AM-12:00PM

## SESSION 114

**ADVANCES IN SOIL-PLANT-MACHINE DYNAMICS** – Sponsored by MS-45, MS-54, ITSC-254  
Moderator Diogenes Antille, Univ of Southern Queensland

**Location: 206C**

| Time    | Paper#  | Title/Author                                                                                                                                                                                                                                                                                                                     |
|---------|---------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 9:30AM  |         | <b>Introduction</b>                                                                                                                                                                                                                                                                                                              |
| 9:35AM  | 1700095 | <b>Simulation of Planter Row Cleaner in Corn Residue Using Discrete Element Modeling</b><br>Mark Barker, John Deere, Ankeny, IA United States (Mark Barker, Carol Plouffe)                                                                                                                                                       |
| 9:50AM  | 1700137 | <b>Modeling Free and Forced Vibration of a Ford New Holland TT55 Tractor Seat during Farm Operations</b><br>Eli Mamman, University of Maiduguri, Maiduguri, Borno Nigeria (Eli Mamman)                                                                                                                                           |
| 10:05AM | 1700217 | <b>Finite Element Modeling and Simulations to Investigate the Relationship Between the Cone Index Profile and Draft Requirements of a Compaction Profile Sensor with Depth</b><br>Qingsong Zhang, University of California Davis, Davis, CA United States (Qingsong Zhang, Shrini Upadhyaya, Qingxi Liao, Pedro Andrade-Sanchez) |

10:20AM 1700394

**Measurement and evaluation of vertical stress distribution at soil-tire interface in cultivated soil under static conditions**

Chunxia Jiang, University of California Davis, Davis, CA United States (Chunxia Jiang, Zhixiong Lu, Shrini Upadhyaya)

10:35AM 1700777

**Calibration of soil compaction behavior using Discrete Element Method (DEM)**

Mohammad Sadek, Buhler Industries Inc., Winnipeg, Manitoba Canada (Presenter: Mehari Tekeste) (Mohammad Sadek, Mehari Tekeste, Majtaba Naderi-Boldaji)

10:50AM

11:00AM 1700924

**BREAK**

**Effects of topdressing depth and row spacing on the SPAD and plant height of winter wheat**

Huimin Feng, Shanxi Agricultural University, Beijing Research Center for Information Technology in Agriculture, Beijing, China, People's Republic of (Huimin Feng, Nana Gao, You Li)

11:15AM 1701001

**A Procedure for Evaluation of Tillage Power Requirements as a Function of Speed and Depth using CANbus Data**

Brittany Schroeder, The Ohio State University, Cloverdale, OH United States (Brittany Schroeder, Andrew Klopfenstein, Scott Shearer)

11:30AM 1701280

**Impacts of Large Central Fill Planters on Pinch Rows**

Brittany Schroeder, The Ohio State University, Cloverdale, OH United States (Andrew A. Klopfenstein, Brittany A. Schroeder, Richard T. Colley, Sami Khanal, John P. Fulton, Scott A Shearer)

11:45AM 1701608

**Discrete Element Modeling (DEM) of Soil-Cone Penetrometer Interaction**

Mehari Tekeste, Iowa State University, Ames, Iowa United States (Mehari Tekeste, Thomas Way)

12:00AM 1701652

**Summary of the effects of three tillage and three traffic systems on cereal yields over a four-year rotation**

Richard Godwin, Dick Godwin Associates Ltd, Bedford, United Kingdom (R J Godwin, P A Misiewicz, E K Smith, W A J Millington, D R White, E T Dickin, K Chaney)

Monday, July 17 – 9:30AM-12:00PM

## SESSION 115

**ADVANCES IN TILLAGE, SEEDING AND TRANSPLANT TECHNOLOGY PART 1** – Sponsored by MS-49, MS-45

Moderator: Ajay Sharda, Kansas State Univ

**Location: 206D**

Time Paper#  
9:30AM  
9:35AM 1700173

**Introduction**  
**Exploration of Planter Performance For Cotton and Peanut in Coastal Plains Soils**  
Wesley Porter, University of Georgia, Tifton, Georgia United States (Wesley Porter, John Snider, Scott Monfort, Simerjeet Virk)

9:50AM 1700263

**Development and tests of a transplanting machine in plant factory**

Weinan Shirzadifar, North Dakota State University, Fargo, ND United States (Presenter: Weinan Shi) (Weinan Shi, Huanyu Jiang, Le Wang)

10:05AM 1700440

**Field scale row unit vibration affecting planting quality**

Changyuan Zhai, Northwest A&F University, Oklahoma State University, Yangling, Shaanxi, China, People's Republic of (Changyuan Zhai, John Long, Randal Taylor, Paul Weckler, Ning Wang)

10:20AM 1700546

**Zone Delineation and Assessment of Hybrid Management Zones for Multi-Hybrid Planting**

Rachel Stevens, University of Nebraska Lincoln, Lincoln, NE United States (Rachel Stevens, Joe Luck, Richard Ferguson, Loren Giesler, Santosh Pitla, Keith Glewen, Nathan Mueller, Laura Thompson)



# MONDAY, JULY 17

|         |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|---------|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 10:35AM | 1700751 | <p><b>Development of a Semiautomatic Chili Pepper Transplanter for females and the elderly</b><br/>Giyoung Kweon, Gyeongsang National University, Jinju, Korea, South (Giyoung Kweon, Chelwoo Han, Changjun Oh)</p> <p><b>BREAK</b></p> <p><b>Options for Rice Transplanting in Puddled and Unpuddled Soil</b><br/>Muhammad Ashik-E-Rabbani, Bangladesh Agricultural University, Mymensingh Sadar, Mymensingh Bangladesh (Presenter: Md. Monjurul Alam) (Md. Mosharraf Hossain, Muhammad Ashik-E-Rabbani, Hasan Mohammad Towfiq Elahi, Surajit Sarkar, Chayan Kumar Saha, Md. Monjurul Alam, Prosanta Kumar Kalita, Alan C. Hansen)</p> |
| 10:50AM |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 11:00AM | 1700771 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 11:15AM | 1701283 | <p><b>Logistics of Multi-Hybrid/Variety Planting</b><br/>Andrew A Klopfenstein, The Ohio State University, Columbus, OH United States (Andrew A Klopfenstein, John P. Fulton, Scott A. Shearer)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 11:30AM | 1701285 | <p><b>Operational Challenges and Impacts of Increasing Planter Speed on Corn Yield</b><br/>Brittany Schroeder, The Ohio State University, Cloverdale, OH United States (Andrew A. Klopfenstein, Brittany Schroeder, Richard T. Colley, Sami Khanal, John P. Fulton, Scott A. Shearer)</p>                                                                                                                                                                                                                                                                                                                                               |
| 11:45AM | 1701571 | <p><b>Influence of Planter Downforce Setting and Ground Speed on Seeding Depth, Plant Spacing and Emergence Uniformity of Corn</b><br/>Ajay Sharda, Kansas State University, Manhattan, Kansas United States (Ajay Sharda, Sylvester Badua, Ignacio Ciampitti, Daniel Flippo, Ryan Strasser, Terry Griffin)</p>                                                                                                                                                                                                                                                                                                                         |
| 12:00PM | 1701572 | <p><b>Development of a Planter Automatic Downforce Evaluation Test Stand to Quantify System Response and Accuracy</b><br/>Ajay Sharda, Kansas State University, Manhattan, Kansas United States (Ryan Strasser, Ajay Sharda, Naiqian Zhang)</p>                                                                                                                                                                                                                                                                                                                                                                                         |

Monday, July 17 – 9:30AM-12:00PM  
**SESSION 116**

**AUTONOMOUS VEHICLES AND SYSTEMS** – Sponsored by MS-58, ITSC-318, ITSC-353  
Moderator: Bryan Hrnicek, Hagie Manufacturing  
**Location: 207**

| Time    | Paper#  | Title/Author                                                                                                                                                                                                                                    |
|---------|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 9:30AM  |         | <b>Introduction</b>                                                                                                                                                                                                                             |
| 9:35AM  | 1700276 | <b>Automated Pest Sampling using Unmanned Aerial Systems</b><br>Phillip Dix, Kansas State University, Manhattan, KS United States (Daniel K. Flippo) (Phillip Dix, Dan Flippo)                                                                  |
| 9:50AM  | 1700321 | <b>Multi-Combine Robot System for Rice Harvesting Operation</b><br>Michihisa Iida, Kyoto University, Kyoto, Kyoto Japan (MICHIHISA IIDA) (Michihisa Iida, Syota Harada, Ryosuke Sasaki, Yifan Zhang, Ryo Asada, Masahiko Suguri, Ryohei Masuda) |
| 10:05AM | 1700544 | <b>Platform Stability for a high clearance citrus harvester using nonlinear controlled PWM based leg leveling: modeling and validation</b><br>Yongmin Chung, University of Florida, Gainesville, FL United States (Yongmin Chung)               |
| 10:20AM | 1700927 | <b>Fuzzy logic-based Robust Steering Controller for an Autonomous Head Feed Combine Harvester</b><br>Chan Woo Jeon, Seoul National University, Seoul, South Korea (Chan Woo Jeon, Hak-Kin Kim, Xiongzhe Han, Jung-Hun Kim)                      |
| 10:35AM |         | <b>BREAK</b>                                                                                                                                                                                                                                    |
| 10:45AM | 1701056 | <b>A Multi-Layer Shake and Catch Platform for Apple Harvesting</b><br>Long He, Washington State University, Pullman, WA United States (Long He, Xin Zhang, Yunxiang Ye, Manoj Karkee, Qin Zhang)                                                |

|         |         |                                                                                                                                                                                                                                              |
|---------|---------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 11:00AM | 1701300 | <p><b>Electro-Hydraulic Steering Control System for Automated Steering of an Agricultural Tractor</b><br/>ChangJoo Lee, Seoul National University, Seoul, South Korea (ChangJoo, Lee) (ChangJoo Lee)</p>                                     |
| 11:15AM | 1701352 | <p><b>Development of a UAV-Assisted Water Quality Measurement System</b><br/>Cengiz Koparan, Clemson University, Clemson, SC United States (Cengiz Koparan, Bulent Koc)</p>                                                                  |
| 11:30AM | 1701498 | <p><b>Design of on-site water collecting system and on-line pesticide premixing system for sprayer in paddy fields</b><br/>Xinhua Wei, Jiangsu University, Zhenjiang, China, People's Republic of (Xinhua Wei, Xiaokai Liu, Xuejin Shen)</p> |

Monday, July 17 – 9:30AM-12:00PM  
**SESSION 117**

**MACHINERY SYSTEMS FOR CROP PRODUCTION** – Sponsored by MS-49  
Moderator: Wesley Porter, Univ of Georgia  
**Location: 300D**

| Time    | Paper#  | Title/Author                                                                                                                                                                                                                                                                                                                                                                                |
|---------|---------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 9:30AM  |         | <b>Introduction</b>                                                                                                                                                                                                                                                                                                                                                                         |
| 9:35AM  | 1700234 | <b>Design, Fabrication and Evaluation of motorized and pedal operated Soybean thresher for small holder farmers in Ghana.</b><br>Gabriel Abdulai, University of Missouri, Columbia, Missouri United States (Gabriel Abdulai, Kerry Clark)                                                                                                                                                   |
| 9:50AM  | 1700552 | <b>Impact of base cutter blade design on sugarcane cut quality</b><br>Md Abdul Momin, University of Illinois, Urbana, IL United States (Md Abdul Momin, Paul Wempe, Tony Griff, Alan Christopher Hansen)                                                                                                                                                                                    |
| 10:05AM | 1700094 | <b>Considerations of Dry Fertilizer Material Properties on Distribution Uniformity in a Segregated Bin, Spinner - Disc Spreader Fertilization System</b><br>Richard Colley III, The Ohio State University, Columbus, OH United States (Richard Colley III, John Fulton, Elizabeth Hawkins, Simerjeet Virk)                                                                                  |
| 10:20AM | 1701230 | <b>The Impact of Precision Agriculture Technology on the Productivity of Farm Machinery</b><br>Justin Maughan, Brigham Young University, Rexburg, ID United States (Justin Maughan, Stuart Birrell)                                                                                                                                                                                         |
| 10:35AM | 1700609 | <b>Effects of Contra-rotating Basecutters on Cutting Quality and Energy Consumption</b><br>Shaochun Ma, China Agricultural University, Beijing, China, People's Republic of (Wanhao Zhang, Ming Liu, Guangyou Yang, Xiuheng Wu, Zhenghe Song, Shaochun Ma)                                                                                                                                  |
| 10:50AM |         | <b>BREAK</b>                                                                                                                                                                                                                                                                                                                                                                                |
| 11:00AM | 1701421 | <b>Linear Reachability of Fruits in Orchard Trees with Actuator Constraints</b><br>Rajkishan Arikapudi, University of California-Davis, Davis, California United States (Rajkishan Arikapudi, Stavros G. Vougioukas)                                                                                                                                                                        |
| 11:15AM | 1700596 | <b>Mechanized Rice Harvesting Opportunity in Southern Delta of Bangladesh</b><br>Md Rostom Ali, Bangladesh Agricultural University, Mymensingh, Bangladesh (Presenter: Chayan Kumer Saha) (Md Rostom Ali, Md Kamrul Hasan, Chayan Kumer Saha, Md Monjurul Alam, Prasanta Kumar Kalita, Alan Christopher Hansen)                                                                             |
| 11:30AM | 1700660 | <b>Appropriate Scale Agricultural Mechanization in Southern Delta of Bangladesh: A Methodical Approach</b><br>Md. Monjurul Alam, Bangladesh Agricultural University, Mymensingh, Bangladesh (Md. Monjurul Alam, Chayan Kumer Saha, Md. Mosharraf Hossain, Md. Rostom Ali, Md. Ashik-E Rabbani, Md. Ayub Hossain, Md. Israil Hossain, Md. Nurul Amin, Prasanta Kumar Kalita, Allan C Hansen) |

# MONDAY, JULY 17

|         |         |                                                                                                                                                                                                                                                                    |
|---------|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 11:45AM | 1700905 | <p><b>The Fundamental Study on Onion Stem Cutting Devices</b><br/>                     Giyoung Kweon, Gyeongsang National University, Jinju, South Korea (Giyoung Kweon, Sangyoon Lee, Youngguen Kim)</p>                                                          |
| 12:00PM | 1700999 | <p><b>Development and Performance Evaluation of Laboratory Model of Stripper Grain Harvester for Paddy Crop</b><br/>                     shekhar kumar sahu, India Performance University, Kharappur, west Bengal India (Shekhar Kumar Sahu, E. Vareed Thomas)</p> |

Monday, July 17 – 9:30AM-11:00AM

## SESSION 118 NRES DISTINGUISHED LECTURE SERIES-INVITED SPEAKERS –

Sponsored by NRES  
 Moderator: Christopher Hay, Iowa Soybean Association

**Location: 300A**

| Time    | Paper#  | Title/Author                                                                                                                                                                                                     |
|---------|---------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 9:30AM  |         | <b>Introduction</b>                                                                                                                                                                                              |
| 9:35AM  | 1701675 | <p><b>Copula-Entropy Theory for Multivariate Stochastic Modeling in Water Engineering</b><br/>                     Vijay Singh, Texas A&amp;M University, College Station, Texas United States (Vijay Singh)</p> |
| 10:00AM | 1701674 | <p><b>Modernizing Surface Irrigation</b><br/>                     Eduardo Bautista, USDA ARS, Maricopa, Arizona United States (Eduardo Bautista)</p>                                                             |
| 10:25AM | 1701673 | <p><b>Agricultural and Biological Engineering as a Critical Public Health Intervention</b><br/>                     Leigh Anne Krometis, Virginia Tech, Blacksburg, VA United States (Leigh Anne Krometis)</p>   |

Monday, July 17 – 9:30AM-12:00PM

## SESSION 119 PAFS DISTINGUISHED LECTURE SERIES-INVITED SPEAKERS

– Sponsored by PAFS  
 Moderator: Tim Shepherd, Iowa State Univ

**Location: 300B**

| Time    | Paper# | Title/Author                                                                                                                                                                                                                                                                                                                                                           |
|---------|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 9:30AM  |        | <b>Introduction</b>                                                                                                                                                                                                                                                                                                                                                    |
| 9:35AM  |        | <p><b>Agricultural and Biological Engineering Extension Programming - Challenges and Opportunities</b><br/>                     Robert Burns, University of Tennessee, Institute of Agriculture, Knoxville, TN</p>                                                                                                                                                     |
| 9:55AM  |        | <p><b>Towards Precision Livestock Farming</b><br/>                     Hongwei Xin, Iowa State University, Ames, IA</p>                                                                                                                                                                                                                                                |
| 10:25AM |        | <p><b>Odor and Odorous Chemical Emissions from Animal Buildings: Part 3. Chemical Emissions</b><br/>                     Jacek Koziel, Iowa State University, Ames, IA (L. Cai, J.A. Koziel, S. Zhang, A.J. Heber, E.L. Cortus, D.B. Parker, S.J. Hoff, G. Sun, K.y. Heathcote, L.D. Jacobson, N. Akdeniz, B.P. Hetchler, S.D. Bereznicki, E.A. Caraway, T.T. Lim)</p> |

Monday, July 17 – 9:30AM-12:00PM

## SESSION 120 FOOD PROCESS ENGINEERING

– Sponsored by PRS-703  
 Moderator: Akinbode A. Adedeji, Univ of Kentucky  
 Michael Ngadi, McGill Univ

**Location: 301**

| Time    | Paper#  | Title/Author                                                                                                                                                                                                                                                                                                                                        |
|---------|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 9:30AM  |         | <b>Introduction</b>                                                                                                                                                                                                                                                                                                                                 |
| 9:35AM  | 1700996 | <p><b>Sensory Evaluation of Stored Rice by the Application of Fuzzy Logic Approach.</b><br/>                     Lakshmi Jayachandran, Indian Institute of Technology, Kharappur, West Bengal India (Lakshmi E. Jayachandran, Srinivasa Rao)</p>                                                                                                    |
| 9:50AM  | 1700371 | <p><b>Determination of the Effect of Extrusion Parameters on the Properties of Ready-to-Eat Expanded Millet Snack Enriched with Arthropod (Cricket) Flour</b><br/>                     Akinbode Adedeji, University of Kentucky, Lexington, Kentucky United States (Presenter: Francis Agbali) (Francis Agbali, Joseph Woome, Akinbode Adedeji)</p> |
| 10:05AM | 1700536 | <p><b>Investigating the Effect of Choke Gap and Speed of a Screw Press on Palm Kernel Oil Yield</b><br/>                     Sunday Ezeoha, Nsukka, Enugu Nigeria (Sunday Louis Ezeoha, Clement Akubuo)</p>                                                                                                                                         |
| 10:20AM | 1701599 | <p><b>Development of novel food products using finger millets and cowpea</b><br/>                     Kasiviswanathan Muthukumarappan, South Dakota State University, Brookings, SD United States (Kasiviswanathan Muthukumarappan, Shanmugam Ganapathy)</p>                                                                                        |
| 10:35AM |         | <b>BREAK</b>                                                                                                                                                                                                                                                                                                                                        |
| 10:45AM | 1701601 | <p><b>Development of novel food products using barney millets and cowpea</b><br/>                     Kasiviswanathan Muthukumarappan, South Dakota State University, Brookings, SD United States (Kasiviswanathan Muthukumarappan, Shanmugam Ganapathy)</p>                                                                                        |
| 11:00AM | 1700225 | <p><b>Testing a Prototype for Improved Carbonation of Beer</b><br/>                     Scott Osborn, University of Arkansas, Fayetteville, Arkansas United States (Scott Osborn, Josef Dalaeli)</p>                                                                                                                                                |
| 11:15AM | 1700319 | <p><b>High Pressure Processing Technique and Its Application for Shelf Life Extension of Aronia Berry Puree</b><br/>                     Bo Yuan, University of Nebraska, Lincoln, NE United States (Bo Yuan, Mary-Grace Danao, Mei Lu, Steve Weier, Jayne Stratton)</p>                                                                            |

Monday, July 17 – 9:30AM-12:00PM

## SESSION 121 PHYSICAL AND CHEMICAL PROPERTIES OF BIORESOURCE PRODUCTS, CO-PRODUCTS AND WASTE PRODUCTS – Sponsored by

PRS-707  
 Moderator: Rafael A. Garcia, USDA ARS

**Location: 302A**

| Time   | Paper#  | Title/Author                                                                                                                                                                                                                                                                                                                           |
|--------|---------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 9:30AM |         | <b>Introduction</b>                                                                                                                                                                                                                                                                                                                    |
| 9:35AM | 1701065 | <p><b>Compostable Characteristics of Reject Materials produced during Industrial-Scale Corn Stover Biomass to Ethanol Conversion</b><br/>                     Kapil Arora, Iowa State University, Nevada, Iowa United States (Kapil Arora, Daniel Andersen)</p>                                                                        |
| 9:50AM | 1701276 | <p><b>Impact of moisture content, particle size on the physical properties and energy consumption of corn stover, switchgrass and lodgepole pine blend briquettes</b><br/>                     Jaya Shankar Tumuluru, Idaho National Laboratory, Idaho Falls, Idaho United States (Jaya Shankar Tumuluru, Criag Conner, Ty Dansie)</p> |

# MONDAY, JULY 17

|         |         |                                                                                                                                                                                                                                                                                                       |
|---------|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 10:05AM | 1700511 | <p><b>Effect of high pressure treatment on density, mechanical properties and microstructure of low-density hybrid poplar</b><br/>Fengming Zhang, Zhejiang university, Hangzhou, Zhejiang province China, People's Republic of (Fengming Zhang, Yong Yu)</p>                                          |
| 10:20AM | 1700186 | <p><b>Evaluation of Waste Eggshells as Heavy Metal Adsorbent for use in Swine Lagoons</b><br/>Brianna Hess, North Carolina State University, Raleigh, NC United States (Brianna Hess, Praveen Kolar)</p>                                                                                              |
| 10:35AM |         | <b>BREAK</b>                                                                                                                                                                                                                                                                                          |
| 10:45AM | 1700455 | <p><b>Plant Based Production of Polyshaped Gold Nanoparticles: Exploration of Physical and Chemical Properties along with Process Optimization</b><br/>Nirlipta Saha, IIT Kharagpur, Khargapur, West Bengal India (Nirlipta Saha, Snehasish Dutta Gupta)</p>                                          |
| 11:00AM | 1700126 | <p><b>Analysis on forming process of extruded corn as feed material affected by thermal condition</b><br/>Xiao Chen, China Agricultural University, Beijing, Beijing China, People's Republic of (Xiao Chen) (Xiao Chen, Dandan Kong, Hongying Wang, Peng Fang, Nan Jin, Enze Duan, Zhongxian Qi)</p> |
| 11:30AM | 1700034 | <p><b>Design of air-stream impulse threshing device based on the law of grain arrangement</b><br/>Zhe Du, Jiangsu University, Zhenjiang, China, People's Republic of (Zhe Du, Xinping Li, Lei Ma, Yongguang Hu)</p>                                                                                   |

Monday, July 17 – 9:30AM-12:00PM  
**SESSION 122 BIOPROCESSING FOR VALUE ADDED PRODUCTS** – Sponsored by PRS-280  
 Moderator: Ganti Murthy, Oregon State Univ  
**Location: 302B**

| Time    | Paper#  | Title/Author                                                                                                                                                                                                                                                                              |
|---------|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 9:30AM  |         | <b>Introduction</b>                                                                                                                                                                                                                                                                       |
| 9:35AM  | 1700617 | <p><b>Separation of proteins from aqueous phase to a water immiscible organic solvent using ionic poly-electrolytes</b><br/>Varun Gejji, Texas A&amp;M University, College Station, TX United States (Varun Gejji, Sandun Fernando)</p>                                                   |
| 9:50AM  | 1700563 | <p><b>Effect of pH and pH-shifting on lignin-protein interactions and adhesion performance of lignin-protein polymer</b><br/>Sarochoa Pradywong, Kansas State University, Manhattan, Kansas United States (Sarochoa Pradywong, Ningbo Li, Meng Zhang, Xiuzhi Susan Sun, Donghai Wang)</p> |
| 10:05AM | 1701310 | <p><b>Using High Carbon Dioxide Concentration to Induce Astaxanthin Production in the Microalgae Haematococcus pluvialis</b><br/>Ching-An Peng, University of Idaho, Moscow, ID United States (Ching-An Peng, Alicia Sawdon)</p>                                                          |
| 10:20AM | 1701400 | <p><b>Alkaline and Enzymatic Treatments to Improve the Extraction of Natural Rubber from Taraxacum kok-saghyz (TK) Roots</b><br/>David A Ramirez Cadavid, The Ohio State University, Wooster, Ohio United States (David A Ramirez Cadavid, Frederick Michel Jr, Katrina Cornish)</p>      |
| 10:35AM | 1701367 | <p><b>Purification of Recombinant Human Serum Albumin from Transgenic Rice Extract</b><br/>Kseniya Sheshukova, Kansas State University, Manhattan, KS United States (Kseniya A. Sheshukova) (Kseniya Sheshukova, Lisa Wilken)</p>                                                         |
| 10:50AM |         | <b>BREAK</b>                                                                                                                                                                                                                                                                              |
| 11:00AM | 1700183 | <p><b>Reduction of melanin formation during aryl alcohol oxidase production by an Aspergillus nidulans cell overproducing mutant</b><br/>Mark Wilkins, University of Nebraska-Lincoln, Lincoln, NE United States (Mark Wilkins, Oscar Pardo-Planas, Rolf Prade, Hasan Atiyeh)</p>         |

|         |         |                                                                                                                                                                                                                                |
|---------|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 11:15AM | 1701414 | <p><b>Microbiology of Ethnic Indian Fermented Foods Made for Millets</b><br/>Satyanarayan Dev, Florida A&amp;M University, Tallahassee, FL United States (Satyanarayan Dev, Valerie Orsat, Vijaya Raghavan)</p>                |
| 11:30AM | 1701163 | <p><b>Metabolic Engineering of Clostridium pasteurianum for Enhanced Biobutanol Production</b><br/>Sheng Dong, Auburn University, Auburn, AL United States (Sheng Dong, Shaohua Wang, Yi Wang)</p>                             |
| 11:45AM | 1701229 | <p><b>Selective extraction of carotenoids and proteins from Chlorella vulgaris</b><br/>Sayali Kulkarni, Texas A&amp;M University, College Station, Texas United States (Sayali Kulkarni, Zivko Nikolov, Laura Soto Sierra)</p> |

Monday, July 17 – 9:30AM-12:00PM  
**SESSION 123 CURRENT TRENDS AND INNOVATIONS IN GRAIN DRYING AND STORAGE-INVITED SPEAKERS** – Sponsored by PRS-702  
 Moderator: Johnselvakumar Lawrence, Kansas State Univ  
**Location: 300C**

| Time    | Paper#  | Title/Author                                                                                                                                                                                                                    |
|---------|---------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 9:30AM  |         | <b>Introduction</b>                                                                                                                                                                                                             |
| 9:35AM  | 1701693 | <p><b>Opportunities and Innovations in Drying and Storage of Grains and Oilseeds for Food Security</b><br/>Dirk Maier, Iowa State University, Ames, Iowa United States (Dirk Maier)</p>                                         |
| 9:55AM  | 1700084 | <p><b>Challenges and Innovations in Peanut Drying, Storage, and Handling</b><br/>Christopher Butts, USDA, ARS, Dawson, GA United States (Christopher Butts)</p>                                                                 |
| 10:15AM | 1701694 | <p><b>Grain Quality and Value Enhancement in Rice Breeding Postharvest Processing Research: Current Tools and Technologies Utilization</b><br/>Rustico Bautista, Ricetec Inc, Alvin, Texas United States (Rustico Bautista)</p> |
| 10:35AM |         | <b>BREAK</b>                                                                                                                                                                                                                    |
| 10:45AM | 1701695 | <p><b>Current Trends and Research Needs in Management of Cereals, Grains, Oilseeds and Pulses</b><br/>Digvir Jayas, University of Manitoba, Winnipeg, Manitoba Canada (Digvir Jayas)</p>                                        |
| 11:05AM | 1701696 | <p><b>Impact of Recent Grain Storage and Handling Research at USDA-ARS Center for Grain and Animal Health Research</b><br/>Mark Casada, USDA ARS CGAHR, Manhattan, KS United States (Mark Casada)</p>                           |

Monday, July 17 – 2:30PM-5:00PM  
**SESSION 124 INNOVATIONS AND INTEGRATION OF INSTRUCTION** – Sponsored by EOPD-205, EOPD-203, ITSC-353, MS-54  
 Moderator: Joel Peterson, Univ of Wisconsin F Richard Beard, Utah State Univ  
**Location: 102A/B**

| Time   | Paper#  | Title/AUthor                                                                                                                                                                                                   |
|--------|---------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2:30PM |         | <b>Introduction</b>                                                                                                                                                                                            |
| 2:35PM | 1700977 | <p><b>Using biodiesel production to teach process engineering</b><br/>Edwin Brokesh, Kansas State University, Manhattan, KS United States (Edwin Brokesh)</p>                                                  |
| 2:50PM | 1701532 | <p><b>Missouri Secondary Agriculture Teacher Perceptions of Personal Protective Equipment</b><br/>Curtis Langley, Tarleton State University, Stephenville, TX United States (Curtis Langley, Jeffery Reed)</p> |

# MONDAY, JULY 17

|        |         |                                                                                                                                                                                                                                                                                                                |
|--------|---------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 3:05PM | 1701534 | <p><b>Availability and Cost of Secondary Agricultural Mechanics Teaching Aids</b><br/>Curtis Langley, Tarleton State University, Stephenville, TX United States (Curtis Langley, Jeffery Reed)</p>                                                                                                             |
| 3:20PM | 1701508 | <p><b>Using Arduino as a Tool to Teach Basic Instrumentation and Control to Technology Students</b><br/>Santosh Pitla, University of Nebraska, Lincoln, Nebraska United States (Santosh Pitla)</p>                                                                                                             |
| 3:35PM | 1701567 | <p><b>University of Missouri Precision Agriculture Certificate Program</b><br/>Leon Schumacher, University of Missouri, Columbia, Missouri United States (Leon Schumacher, Kent Shannon, Brian Robertson)</p>                                                                                                  |
| 3:50PM |         | <b>BREAK</b>                                                                                                                                                                                                                                                                                                   |
| 4:00PM | 1700358 | <p><b>Workforce Education for Agricultural/Biological Systems Operators and Technicians</b><br/>Jason Selwitz, Walla Walla Community College, Walla Walla, WA United States (Jason Selwitz) (Jason Selwitz)</p>                                                                                                |
| 4:15PM | 1700280 | <p><b>Learning to Golf is the Same as Learning to Manage Projects</b><br/>Thomas Brumm, Iowa State University, Ames, IA United States (Thomas Brumm, Steven Bell, Gretchen Mosher)</p>                                                                                                                         |
| 4:30PM | 1700052 | <p><b>Students' Information Processing in Agricultural Systems Technology Laboratories: Utilizing External Representation While Solving Word Problems</b><br/>Michael Pate, Utah State University, Logan, Utah United States (Michael Pate, Donald Johnson, Bruce Miller, F. Richard Beard, Jennifer Long)</p> |
| 4:45PM | 1700011 | <p><b>Tractor Disassembly and Modification for Engineering Experiential Learning</b><br/>John Schueller, University of Florida, Gainesville, FL United States (John Schueller, Bruce Carroll, John Ab-bitt)</p>                                                                                                |

Monday, July 17 – 2:30PM-5:00PM

## SESSION 125

### VALUE-ADDED CHEMICALS AND PRODUCTS FROM BIOMASS

– Sponsored by ES-220

Moderator: Ajay Shah, Ohio State Univ  
Sushil Adhikari, Auburn Univ

**Location: 102C/D**

| Time   | Paper#  | Title/Author                                                                                                                                                                                                                                                                                              |
|--------|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2:30PM |         | <b>Introduction</b>                                                                                                                                                                                                                                                                                       |
| 2:35PM | 1700387 | <p><b>A Comparative Study of Ru-doped ZSM-5, Activated Carbon, and Biochar Catalysts for Hydrogen Production by Thermocatalytic Decomposition of Methane</b><br/>Khalida Binte Harun, Auburn University, Auburn, AL United States (Khalida Binte Harun, Sushil Adhikari, Zhouhong Wang)</p>               |
| 2:50PM | 1700802 | <p><b>An example of commercializing biobased coatings and binders</b><br/>Darren Jarboe, Iowa State University, Ames, Iowa United States (Darren Jarboe, Tong Wang, Tao Fei)</p>                                                                                                                          |
| 3:05PM | 1701446 | <p><b>Lowering the carbon foot print of the automobile industry through the in-mixing of modified biorefinery lignin for producing durable interior materials in cars</b><br/>Jinxue Jiang, Washington State University, Richland, WA United States (Jinxue Jiang, Keerthi Srinivas, Brigitte Ahring)</p> |
| 3:20PM | 1701447 | <p><b>Effects of Structure and Composition of Lignin on the Derived Activated Carbon Materials for Supercapacitor Application</b><br/>Wenqi Li, University of Kentucky, Lexington, KY United States (Wenqi Li, Jian Shi)</p>                                                                              |
| 3:35PM |         | <b>BREAK</b>                                                                                                                                                                                                                                                                                              |

|        |         |                                                                                                                                                                                                                                                                                                                       |
|--------|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 3:45PM | 1701122 | <p><b>Fast Pyrolysis of Canola Meal Derived N-doped Mico/Mesoporous Activated Biochars for Li-S Battery</b><br/>Sourov Kar Sajib, Auburn University, Auburn, AL United States (Sourov Kar Sajib, Sushil Adhikari, James Radich)</p>                                                                                   |
| 4:00PM | 1701459 | <p><b>Catalytic Hydrogenation of Ethyl Lactate to produce n-Propanol for Use as an Intermediate for Producing Biomass-based Jet Fuels</b><br/>Keerthi Srinivas, Washington State University, Tri-Cities, Richland, WA United States (Keerthi Srinivas, Peifan Yan, Zhongchao Zhang, James White, Birgitte Ahring)</p> |
| 4:15PM | 1700707 | <p><b>Enhanced Production of Phenols-rich Bio-oil from Biomass via Catalysis over Biochar-derived Activated Carbon</b><br/>Zixu Yang, Washington State University, Pullman, WA</p>                                                                                                                                    |

Monday, July 17 – 2:30PM-5:00PM

## SESSION 126

### ERGONOMICS, SAFETY AND HEALTH POSTER SESSION

– Sponsored by ESH

Moderator: Gretchen Mosher, Iowa State Univ

**Location: 111ABC**

| Poster# | Paper#  | Title/Author                                                                                                                                                                                                                                                                                |
|---------|---------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1       | 1700015 | <p><b>Distributing Best Practices for Lighting and Marking: Translating Research Regarding Farm Equipment Signage into Practice</b><br/>Jenna Gibbs, University of Iowa College of Public Health, Iowa City, IA United States (T. Renee Anthony) (Jenna Gibbs)</p>                          |
| 2       | 1700155 | <p><b>Measuring foldable ROPS actuation forces</b><br/>Paul Ayers, University of Tennessee, Knoxville, TN United States (Paul Ayers, Farzaneh Khorsandi)</p>                                                                                                                                |
| 3       | 1700197 | <p><b>Risk Assessment of a Tractor Based on Accident Cases: Estimation of Consequence Severity and Risk Evaluation</b><br/>Byounggap Kim, NAS, RDA, Jeonju-si, Jeollabuk-do Korea, South (Byounggap Kim)</p>                                                                                |
| 4       | 1700519 | <p><b>Effect of tractor cultivation on heart rate and electrocardiogram RR intervals</b><br/>Hidehiko Inoue, Nasushiobara, Tochigi Japan (Hidehiko Inoue)</p>                                                                                                                               |
| 5       | 1700883 | <p><b>Fabrication of a Sensor Array Based on Quartz Crystal Microbalance and the Application in Egg Shelf Life Evaluation</b><br/>Fanfei Deng, Zhejiang University, Hangzhou, Zhejiang Province China, People's Republic of (Fanfei Deng) (Fanfei Deng, Jun Wang, Zhenbo Wei, Wei Chen)</p> |
| 6       | 1701147 | <p><b>Do additional locking screws increase the strength of bone plates?</b><br/>Christopher Dodson, MidState Orthopaedic and Sports Medicine Center, Alexandria, LA United States (Christopher Dodson) (Christopher Dodson)</p>                                                            |
| 7       | 1701626 | <p><b>A regression model for fuel consumption</b><br/>Dingding Li, (Presenter: Jinkui Feng) (Dingding Li, Liangdong Liu)</p>                                                                                                                                                                |

Monday, July 17 – 2:30PM-5:00PM

## SESSION 127

### SPECTROSCOPIC SENSING PART 2

– Sponsored by ITSC-348

Moderator: Seung-Chul Yoon, USDA ARS

**Location: 206B**

| Time   | Paper#  | Title/Author                                                                                                                                                                                                                                                                                                         |
|--------|---------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2:30PM |         | <b>Introduction</b>                                                                                                                                                                                                                                                                                                  |
| 2:35PM | 1700499 | <p><b>Visible–near infrared spectroscopy based Grapevine leafroll–associated virus–3 detection from undetached leaves under field condition</b><br/>Rajeev Sinha, Washington State University, Prosser, WA United States (Rajeev Sinha) (Rajeev Sinha, Lav Khot, Anura Rathnayake, Rayapathi Naidu, Zongmei Gao)</p> |

# MONDAY, JULY 17

|        |         |                                                                                                                                                                                                                                                                                                                  |
|--------|---------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2:50PM | 1700500 | <p><b>Spectrometric sensing of Burkholderia cepacia caused sour skin in onions under bulk storage condition.</b><br/>Rajeev Sinha, Washington State University, Prosser, WA United States (Rajeev Sinha) (Rajeev Sinha, Lav Khot, Brenda Schroeder)</p>                                                          |
| 3:05PM | 1700654 | <p><b>Measurement of the optical properties of pork meat using steady-state diffuse reflectance hyperspectral technology</b><br/>Hongwei Sun, , Beijing, China, People's Republic of (Hongwei Sun) (Hongwei Sun, Yankun Peng, Wenxiu Wang)</p>                                                                   |
| 3:20PM |         | <b>BREAK</b>                                                                                                                                                                                                                                                                                                     |
| 3:30PM | 1700625 | <p><b>Grading of Green tea and quantitative determination of beta-carotene and lutein based on hyperspectral imaging</b><br/>Ruiqing Zhou, Zhejiang University, Hangzhou, Zhejiang China, People's Republic of (Ruiqing Zhou) (Ruiqing Zhou, Xiaoli Li, Yong He)</p>                                             |
| 3:45PM | 1700493 | <p><b>Effect of grain density to near infrared spectra and design of a laboratory evaluation system for combine harvester</b><br/>Shengjie Yang, Zhejiang University, Hangzhou, Zhejiang Province China, People's Republic of (Shengjie Yang) (Shengjie Yang, Qifang Wu, Han Chang, Qingqing Li, Huirong Xu)</p> |
| 4:00PM | 1700423 | <p><b>Optical properties of healthy and bruised blueberry tissues in the near-infrared spectral region</b><br/>Mengyun Zhang, University of Georgia, Athens, GA United States (Mengyun Zhang) (Mengyun Zhang, Changying Li)</p>                                                                                  |

Monday, July 17 – 2:30PM-5:00PM

**SESSION 128**

**SENSING FOR HIGH-THROUGHPUT PHENOTYPING** – Sponsored by ITSC-348, ITSC-312

Moderator: Sindhuja Sankaran, Washington State Univ

**Location: 206C**

| Time   | Paper#  | Title/Author                                                                                                                                                                                                                                                                 |
|--------|---------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2:30PM |         | <b>Introduction</b>                                                                                                                                                                                                                                                          |
| 2:35PM | 1700407 | <p><b>Development of a flexible phenomic field platform for high-throughput phenotyping in Palouse region of Washington State</b><br/>Yasin Osroosh, Washington State University, Pullman, WA United States (Yasin Osroosh, Sindhu Sankaran)</p>                             |
| 2:50PM | 1700581 | <p><b>Development of Automated High-throughput Phenotyping System for Controlled Environment Studies</b><br/>Chongyuan Zhang, Washington State University, Pullman, WA United States (Chongyuan Zhang, Jianfeng Zhou, Michael Pumphrey, Qin Zhang, Sindhuja Sankaran)</p>    |
| 3:05PM | 1701180 | <p><b>Applicability of 3D Imaging for measuring grapevine plant growth under subsurface drip irrigation</b><br/>Anura Rathnayake, University of Ruhuna, Hapugala, Galle Sri Lanka (Anura Rathnayake, Carlos Zuniga, Lav Khot Ramchandra, Sindhuja Sankaran, Pete Jacoby)</p> |
| 3:20PM | 1701204 | <p><b>360-degree view point cloud generation for the characterization of plant morphological traits</b><br/>Suresh Thapa, University of Nebraska - Lincoln, Lincoln, NE United States (Suresh Thapa, Yufeng Ge, Hongfeng Yu)</p>                                             |
| 3:35PM | 1701002 | <p><b>Crop canopy measurement using laser and ultrasonic sensing integration</b><br/>Roberto Buelvas, McGill University, Sainte-Anne-de-Bellevue, Quebec Canada (Roberto Buelvas, Viacheslav Adamchuk)</p>                                                                   |
| 3:50PM |         | <b>BREAK</b>                                                                                                                                                                                                                                                                 |
| 4:00PM | 1701407 | <p><b>High throughput field plant phenotyping facility at University of Nebraska-Lincoln</b><br/>Yufeng Ge, University of Nebraska, Lincoln, NE United States (Yufeng Ge, Geng Bai, Suat Irmak, Tala Awada)</p>                                                              |

|        |         |                                                                                                                                                                                                                                                               |
|--------|---------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4:15PM | 1701227 | <p><b>Volatile organic compounds (VOCs) based phenotyping for disease resistance in dry peas</b><br/>Sindhuja Sankaran, Washington State University, Pullman, Washington United States (Sindhuja Sankaran, Chongyuan Zhang, Jianfeng Zhou, Rebecca McGee)</p> |
| 4:30PM | 1701210 | <p><b>In-field high throughput phenotyping and phenotype data analysis for cotton plant growth using LiDAR</b><br/>Shangpeng Sun, University of Georgia, Athens, GA United States (Shangpeng Sun, Changying Li)</p>                                           |
| 4:45PM | 1701291 | <p><b>Quantify allelic variations of salinity tolerance gene in soybean using image-based phenotyping</b><br/>Jianfeng Zhou, University of Missouri, Columbia, MO United States (Jianfeng Zhou) (Jianfeng Zhou, Huatao Chen)</p>                              |
| 5:00PM | 1700724 | <p><b>Field Phenotyping for Soybean Iron Deficiency Chlorosis</b><br/>Geng Bai, University of Nebraska - Lincoln, Lincoln, NE United States (Geng Bai, Yufeng Ge, Shawn Jenkins, George Graef, Xiaohua He)</p>                                                |

Monday, July 17 – 2:30PM-5:00PM

**SESSION 129**

**BIG DATA AND DATA ANALYSIS / AGRICULTURAL DATA STANDARDS PROJECTS REPORTS-SPADE, PAIL AND ADAPT** – Sponsored by ITSC-254, ITSC-217

Moderator: Bo Liu, Cal Poly State Univ

**Location: 206A**

| Time   | Paper#  | Title/Author                                                                                                                                                                                                                                                                                                                                                                                                                            |
|--------|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2:30PM |         | <b>Introduction</b>                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 2:35PM | 1700525 | <p><b>Antibiotics discrimination in terahertz spectral database</b><br/>Jianxiang Du, Zhejiang university, Hangzhou, Zhejiang Province, China, People's Republic of (Jianxiang Du) (Jianxiang Du, Yuxin Huang, Lijuan Xie)</p>                                                                                                                                                                                                          |
| 2:50PM | 1700249 | <p><b>Toward Interoperability of Observations &amp; Measurements Data in Production Agriculture: AgGateway's Implementation of ISO 19156</b><br/>R. Andres Ferreyra, Ag Connections, LLC, Murray, KY United States (Richard S Andrus, Aaron W Berger, Daniel T Berne, M. Eugenia Durang, R. Andres Ferreyra, Charles C. Hillyer, Kiyoshi Honda, Eric Hudish, Bart K. Nef, Kyohei Ohtsuka Stuart T. Rhea, James A. Wilson, James A.)</p> |
| 3:05PM | 1700878 | <p><b>Helping machines and people agree on what things mean in production agriculture: AgGateway's Glossary and Semantic Infrastructure</b><br/>R. Andres Ferreyra, Ag Connections, LLC, Murray, KY United States (Dennis Daggett, R. Andrew Ferreyra, Rachel Garrett, Arren Mund, Joseph M. Russo, James A. Wilson)</p>                                                                                                                |
| 3:20PM | 1701020 | <p><b>A rising tide lifts all the boats: AgGateway's Collaborative Model for Identification in Field Operations</b><br/>R. Andres Ferreyra, Ag Connections, LLC, Murray, KY United States (Daniel T Berne, R. Andres Ferreyra, Stuart T Rhea, Ben E Craker, Charles C. Hillyer, Joe W. Tevis, Jeremy W. Wilson, James A Wilson)</p>                                                                                                     |
| 3:35PM | 1700816 | <p><b>Determining Harvesting Efficiency via Multiple Combine GPS Logs</b><br/>Alex Layton, Purdue University, West Lafayette, IN United States (Presenter: Yaguang Zhang) (Alex Layton, Yaguang Zhang, James Krogmeier, Dennis Buckmaster)</p>                                                                                                                                                                                          |
| 3:50PM | 1701503 | <p><b>Use of Digital Imagery to Evaluate the Relationship between Vegetative Index (NDVI) and Crop Production Field Data</b><br/>Rohit Pathak, Mississippi State University, Starkville, MS United States (Rohit Pathak, Ganesh Bora, John Nowatzki, Anne Denton)</p>                                                                                                                                                                   |
| 4:05PM |         | <b>BREAK</b>                                                                                                                                                                                                                                                                                                                                                                                                                            |

# MONDAY, JULY 17

|        |         |                                                                                                                                                                                                                              |
|--------|---------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4:15PM | 1701085 | <b>PARAM- A Platform for Managing Agricultural Data</b><br>Dharmendra Saraswat, Purdue University, West Lafayette, Indiana United States (Dharmendra Saraswat)                                                               |
| 4:30PM | 1700813 | <b>Activity Recognition for Harvesting via GPS Tracks</b><br>Yaguang Zhang, Purdue University, West Lafayette, IN United States (Yaguang Zhang, Aaron Ault, James Krogmeier, Dennis Buckmaster, Joe Krogmeier)               |
| 4:45PM | 1701646 | <b>Application of the Precision Ag Irrigation Language (PAIL) (this work is being handed off to ASABE committee X6323 soon, BTW)</b><br>Charles Hillyer, Texas A&M AgriLife, Amarillo, TX United States (Charles C. Hillyer) |
| 5:00PM | 1701643 | <b>Where did this data come from and how was it made? Introducing a provenance model into ADAPT</b><br>Nick Carr, Murray, KY United States (Nick Carr)                                                                       |
| 5:15PM | 1701645 | <b>Enabling interoperability in the Irrigation Sector: PAIL (this work is being handed off to ASABE committee X632 soon, BTW)</b><br>Diganta Adhikari, Irrrometer Co Inc, Riverside, CA United States (Diganta Adhikari)     |
| 5:30PM | 1701644 | <b>A scalable Implementation of metrics-based sustainability evaluation in field operations: ADAPT and the FieldToMarket API</b><br>Edward Barnes, Cotton Inc, Cary, NC United States (Edward M. Barnes)                     |

Monday, July 17 – 2:30PM-5:00PM  
**SESSION 130**

**ADVANCED COMPUTATIONAL APPROACHES FOR SOLVING AGRICULTURAL AND BIOLOGICAL ENGINEERING PROBLEMS - PART 2**

– Sponsored by ITSC-217, ITSC-230, PAFS-305, PAFS-405, NRES-244, NRES-2656, ES-200  
Moderator: Nourredine Abdoulmoumine, Univ of Tennessee

**Location: 206D**

| Time   | Paper#  | Title/Author                                                                                                                                                                                                                                                                                    |
|--------|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2:30PM |         | <b>Introduction</b>                                                                                                                                                                                                                                                                             |
| 2:35PM | 1700807 | <b>Development of an Electro-Mechanical Controller for Adjusting Pump Stroke On-the-Go</b><br>Dr. Ali Mirzakhani Nafchi, Clemson University, Blackville, SC United States (Ali Mirzakhani Nafchi, Ahmad Khalilian, Young Han, Nicholas Rogers)                                                  |
| 2:50PM | 1700849 | <b>Development of sensor-based algorithms to determine the mid-season nitrogen requirements in irrigated corn production</b><br>Dr. Ali Mirzakhani Nafchi, Clemson University, Blackville, SC United States (Ahmad Khalilian, Nicholas Rogers, Young Han, Ali Mirzakhani Nafchi, Joe Mari Maja) |
| 3:05PM | 1700953 | <b>A methodology for predicting the relative illumination intensity in apple canopy based on the three-dimensional point clouds</b><br>Cailing Guo, China Agricultural University, Beijing, China, People's Republic of (Cailing Guo, Gang Liu, Ze Zong, Weijie Zhang, Xue Zhang)               |
| 3:20PM | 1700954 | <b>A method for 3D reconstruction of apple tree LB based on point cloud data</b><br>Weijie Zhang, China Agricultural University, Beijing, China, People's Republic of (Weijie Zhang, Gang Liu, Cailing Guo, Ze Zong, Xue Zhang)                                                                 |
| 3:35PM |         | <b>BREAK</b>                                                                                                                                                                                                                                                                                    |
| 3:45PM | 1701148 | <b>A Universal Spray Drift Model for Estimating Spray Efficacy and Off-target Drifts from Orchard Spray Applications</b><br>Se-Woon Hong, The Ohio State University, Columbus, OH United States (Se-Woon Hong, Lingying Zhao, Heping Zhu)                                                       |

|        |         |                                                                                                                                                                                                                                                                                                      |
|--------|---------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4:00PM | 1701222 | <b>METRIC-CSM a remote sensing based simple crop model to estimate crop growth and yields at regional scale</b><br>M. Azeem Khan, Washington State University, Pullman, WA United States (M. Azeem Khan, Claudio Stockle, Roger Nelson, Faheem Ulqadir)                                              |
| 4:15PM | 1701250 | <b>Greenhouse Study to Identify Glyphosate-Resistant Weeds Based on Canopy Temperature</b><br>Alimohammad Shirzadifar, North Dakota State University, Fargo, ND United States (Alimohammad Shirzadifar, Sreekala Bajwa, Mohammadmehdi Maharlooei, Oveis Hassanijalilian, Kirk Howatt, Jhon Nowatzki) |
| 4:30PM | 1701318 | <b>Model Predictive Control Coupled with Economic and Environmental Constraints for Optimum Algal Production</b><br>Ankita Juneja, University of Illinois, Urbana, IL United States (Ankita Juneja, Ganti Murthy)                                                                                    |

Monday, July 17 – 2:30PM-5:00PM  
**SESSION 131**

**CROP AND SOIL SENSING –**  
Sponsored by MS-54, MS-45  
Moderator: Lav Khot, Washington State Univ  
**Location: 401A**

| Time   | Paper#  | Title/Author                                                                                                                                                                                                                                                                                         |
|--------|---------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2:30PM |         | <b>Location</b>                                                                                                                                                                                                                                                                                      |
| 2:35PM | 1700903 | <b>Remote Field Crop Water Stress Monitor</b><br>Kelley Drechsler, University of California - Davis, Davis, CA United States (Kelley Drechsler, Shrinivasa Upadhyaya, Channing Ko-Madden)                                                                                                            |
| 2:50PM | 1700201 | <b>A comparison between reflectance index and machine learning algorithms for moisture estimation from spectral data</b><br>Ali Hamidisepehr, University of Kentucky, Lexington, KY United States (Ali Hamidisepehr, Michael Sama, Aaron Turner, Ole Wndroth)                                        |
| 3:05PM | 1701179 | <b>Characterizing the spatial and temporal variability of crop vigor and yield using high-resolution remote sensing image and ground-based data</b><br>Sami Khanal, Ohio State University, Wooster, OH United States (Sami Khanal, John Fulton, Andrew Klopfenstein, Nathan Douridas, Scott Shearer) |
| 3:20PM | 1700062 | <b>Development and test of a low cost portable soil apparent electrical conductivity sensor using a Beaglebone Black</b><br>Daniel Queiroz, Universidade Federal de Vicosa, Vicosa, MG Brazil (Daniel Queiroz, Wonsuk Daniel Lee, John Schueller, Emanoel Sousa)                                     |
| 3:35PM | 1700765 | <b>An integrated VNIR penetrometer system for vertical soil sensing</b><br>Nuwan Wijewardane, University of Nebraska - Lincoln, Lincoln, NE United States (Nuwan Wijewardane)                                                                                                                        |
| 3:50PM |         | <b>BREAK</b>                                                                                                                                                                                                                                                                                         |
| 4:00PM | 1700862 | <b>Comparison of tractor-mounted sensors with airborne imaging sensors for monitoring cotton growth</b><br>Chenghai Yang, USDA ARS, College Station, Texas United States (Chenghai Yang)                                                                                                             |
| 4:15PM | 1700962 | <b>Design of the Cross-Board Type Shear Strength Measuring Instrument</b><br>Guozhong Zhang, Huazhong Agricultural University, Wuhan City, Hubei China, People's Republic of (Zhang Guozhong) (Guozhong Zhang, Zhiqiang Lei, Ming Yang, Kang Lu, Ya Zhou, Jiwei Fu)                                  |
| 4:30PM | 1700675 | <b>Crop stress monitoring to evaluate sub-surface irrigation treatments in wine grapes using sensors</b><br>Carlos Zuniga, Washington State University, Pullman, Washington United States (Carlos Zuniga, Lav Khot, Pete Jacoby, Sinhuja Sankaran)                                                   |

# MONDAY, JULY 17

**4:45PM 1700556 Evaluation of arsenic uptake in lentil genotypes using phenomics**  
Chongyuan Zhang, Washington State University, Pullman, WA United States (Chongyuan Zhang, Md Nurul Amin, Rebecca McGee, Yasin Osroosh, Sindhuja Sankaran)

**Monday, July 17 – 2:30PM-5:00PM  
SESSION 132**

**INNOVATIONS IN PRECISION AGRICULTURE PART 1** – Sponsored by MS-54, MS-23/6  
Moderator: Dharmendra Saraswat, Purdue Univ  
**Location: 401B**

| Time          | Paper#         | Title/Author                                                                                                                                                                                                                                             |
|---------------|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>2:30PM</b> |                | <b>Introduction</b>                                                                                                                                                                                                                                      |
| <b>2:35PM</b> | <b>1701281</b> | <b>Late-Season N Evaluation with Remote Sensing</b><br>Richard Colley III, The Ohio State University, Columbus, OH United States (Andrew A Klopfenstein, Richard T. Colley III, Sami Khanal, John P. Fulton, Scott A Shearer)                            |
| <b>2:50PM</b> | <b>1701284</b> | <b>Nitrogen Timing and Placement Evaluation</b><br>Richard Colley III, The Ohio State University, Columbus, OH United States (Andrew A Klopfenstein, Richard T. Colley III, Sami Khanal, John P. Fulton, Scott A Shearer)                                |
| <b>3:05PM</b> | <b>1701385</b> | <b>Instrumented picking bag for measuring fruit weight during harvesting</b><br>Zhenghao Fei, University of California, Davis, Davis, California United States (Zhenghao Fei, John Shepard, Stavros Vougioukas)                                          |
| <b>3:20PM</b> | <b>1700086</b> | <b>Adoption of Precision Agriculture Technology Bundles on Kansas Farms</b><br>Terry Griffin, Kansas State University, Manhattan, KS United States (Presenter: Ajay Sharda) (Terry Griffin, Ajay Sharda, Noah Miller, Ignacio Ciampitti, Jason Bergtold) |
| <b>3:35PM</b> | <b>1701598</b> | <b>Directed Rx: A Novel Method for Developing Site-Specific Prescriptions</b><br>Kendall Kirk, Clemson University, Blackville, SC United States (Kendall Kirk, David Free)                                                                               |
| <b>3:50PM</b> |                | <b>BREAK</b>                                                                                                                                                                                                                                             |
| <b>4:00PM</b> | <b>1701604</b> | <b>Evaluation of Variable Rate Nitrogen Application on an Irrigated Tifton-85 Hay Field</b><br>Kendall Kirk, Clemson University, Blackville, SC United States (Perry Loftis, Kendall Kirk)                                                               |
| <b>4:15PM</b> | <b>1700061</b> | <b>Estimation of Soybean Leaf Area, Edge, and Defoliation Using Color Image Analysis</b><br>Wei-zhen Liang, Clemson University, Blackville, SC United States (Wei-zhen Liang, Kendall Kirk, Jeremy Greene)                                               |
| <b>4:30PM</b> | <b>1700324</b> | <b>A Precision Agriculture Approach to Stalk Lodging</b><br>Daniel Robertson, (Daniel Robertson, Douglas Cook)                                                                                                                                           |
| <b>4:45PM</b> | <b>1700881</b> | <b>Performance benchmark of yield monitors for mechanical and environmental influences</b><br>Jason Schuster, Iowa State University, Ames, IA United States (Jason Schuster) (Jason Schuster, Matthew Darr)                                              |

**Monday, July 17 – 2:30PM-5:00PM  
SESSION 133**

**MACHINERY DATA AND TASK OPTIMIZATION PART 1** – Sponsored by MS-49  
Moderator: Santosh Pitla, Univ of Nebraska  
**Location: 401C**

| Time          | Paper#         | Title/Author                                                                                                                                                                                                                                                                                                     |
|---------------|----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>2:30PM</b> |                | <b>Introduction</b>                                                                                                                                                                                                                                                                                              |
| <b>2:35PM</b> | <b>1700481</b> | <b>Influence of planter width, planting speed and field characteristics on field efficiency for row crop planters</b><br>Michael Buschermohle, University of Tennessee, Knoxville, TN United States (Presenter: Colburn Condra) (Colburn Condra, Michael Buschermohle, Randy Taylor, Wesley Porter, Aaron Amith) |

**2:50PM 1701203 In-Field Harvest Logistics Modeling for Single Combine/ Grain Cart Operations**  
John Evans, University of Nebraska, Lincoln, NE United States (John Evans, Santosh Pitla, Joe Luck)

**3:05PM 1700901 Safety factor of PTO gear of 105 hp agricultural tractor using measured field data**  
Jeong Hoon Jang, Chungnam National University, Daejeon, South Korea (Jeong Hoon Jang, Chang-Hyun-Choi, Kang-Min Lee, Yong-Joo Kim, Kang-Min Lee)

**3:20PM 1700873 Development of working cycle for an agricultural tractor during plow tillage**  
Wansoo Kim, Chungnam National University, Daejeon, South Korea (Wansoo Kim, Yongloo Kim, SunOk Chung, ChangHyun Choi)

**3:35PM BREAK**  
**3:45PM 1701600 Impact of Ground Speed and Conveyor Speed on Peanut Digging Losses**  
Kendall Kirk, Clemson University, Blackville, SC United States (Kendall Kirk, Andrew Warner)

**4:00PM 1700961 Analysis of the engine torque of a small multi-purpose cultivator by ditching rotor operation**  
Paul Lee, Chungnam National University, Daejeon, Korea, South (Paul Lee, Yeon Jun Jung, Chang Hyun Choi, Young Soo Choi, Li Jung Lee Hee Jong Jung, Yong Joo Kim)

**4:15PM 1701517 A case study of a commercial dairy and a custom harvest operation to evaluate forage harvest efficiency**  
Brian Luck, University of Wisconsin-Madison, Madison, WI United States (Brian Luck, Joshua Harmon)

**4:30PM 1700105 Influencing Factors on Infield Path Planning of different Farm Types**  
Michael Mederle, Technical University of Munich, Agricultural Systems Engineering, Freising, Bavaria Germany (Prof. Dr. Heinz Bernhardt) (Michael Mederle, Heinz Bernhardt)

**Monday, July 17 – 2:30PM-5:00PM  
SESSION 134**

**COUPLING OF HUMAN SOCIETY AND NATURAL SYSTEMS** – Sponsored by NRS-21  
Moderator: Rabin Bhattari,  
**Location: 201A**

| Time          | Paper#         | Title/Author                                                                                                                                                                                                                                                                                                           |
|---------------|----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>2:30PM</b> |                | <b>Location</b>                                                                                                                                                                                                                                                                                                        |
| <b>2:35PM</b> | <b>1700032</b> | <b>Multilevel Spatial Modeling in Environmental Justice and Stream Health</b><br>Fariborz Daneshvar, Michigan State University, East Lansing, MI United States (Fariborz Daneshvar, A. Pouyan Nejadhashemi, Zhen Zhang, Matthew R. Herman, Ashton Shortridge, Sandy Marquart-Pyatt)                                    |
| <b>3:20PM</b> | <b>1700219</b> | <b>Strategic behavior and governance challenges in self-organized coupled natural-human systems</b><br>Rachata Muneeppeerakul, University of Florida, Gainesville, FL United States (Rachata Muneeppeerakul)                                                                                                           |
| <b>4:30PM</b> | <b>1700265</b> | <b>Water Management and Habitat Suitability Study Along the Ocmulgee River</b><br>Ernest Tollner, University of Georgia, Athens, Georgia United States (Ernest Tollner)                                                                                                                                                |
| <b>3:45PM</b> | <b>1700291</b> | <b>Painful and painless realities of reducing nitrate-nitrogen export from tiled cropland in the Des Moines Lobe</b><br>D. Raj Raman, Iowa State University, Ames, IA United States (D. Raj Raman, Matthew J. Helmers)                                                                                                 |
| <b>4:15PM</b> | <b>1700360</b> | <b>Characterizing stream solutes dynamics at storm event and seasonal scales in an agricultural coastal plain stream in pre-restoration period</b><br>Chiao-Wen Lin, North Carolina State University, Biological and Agricultural Engineering, Raleigh, North Carolina United States (Chiao-Wen Lin, Francoix Birgand) |

# MONDAY, JULY 17

|        |         |                                                                                                                                                                                                                                              |
|--------|---------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4:00PM | 1701560 | <p><b>NitroSHED: Using Supercomputing for Agriculture Management</b><br/>Luis Rodriguez, University of Illinois, Urbana, Illinois United States (Luis Rodriguez, Bridget Curren, Vaskar Dahal, Rabin Bhattari, Graham Kent)</p>              |
| 2:50PM | 1701370 | <p><b>Downstream water availability consequences of investment on new irrigation technologies</b><br/>Keyvan Malek, Washington State University, Pullman, WA United States (Keyvan Malek, Jennifer Adam, Claudio Stockle, Michael Brady)</p> |

|        |              |                                                                                                                                                                                                                                                                                                                        |
|--------|--------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2:50PM | 1700348      | <p><b>Variable Rate Irrigation Fundamentals Impact of Variable Rate Irrigation and Fertigation on Maize Yield, Evapotranspiration and Water Productivity</b><br/>Vasudha Sharma, University of Nebraska, Lincoln, Nebraska United States (Vasudha Sharma Suat Irmak)</p>                                               |
| 3:05PM | 1700224      | <p><b>Variable Rate Irrigation Management for Corn and Cotton</b><br/>Ken Stone, USDA ARS, Florence, South Carolina United States (Ken Stone, Philil Bauer)</p>                                                                                                                                                        |
| 3:20PM | 1700386      | <p><b>Variable Rate Irrigation for Improving Water Use Efficiency</b><br/>Ruixiu Sui, USDA ARS, Stoneville, Mississippi United States (Ruixui Sui)</p>                                                                                                                                                                 |
| 3:35PM | 1700016      | <p><b>Cotton Yield and Water Use Response to Variable Irrigation Rate and Timing</b><br/>Kelly Thorp, USDA ARS, Maricopa, AZ United States (Kelly Thorp, Kevin Bronson)</p>                                                                                                                                            |
| 3:50PM | <b>BREAK</b> |                                                                                                                                                                                                                                                                                                                        |
| 4:00PM | 1701365      | <p><b>Variable Rate Irrigation Management of Corn and Soybeans Using a Remote-Sensing-Based Water Balance</b><br/>J. Burdette Barker, University of Nebraska-Lincoln, Lincoln, NE United States J. Burdette Barker, Derek M. Heeren, Christopher M. Neale, Derrel L. Martin, Trenton E. Franz, William R. Kranz)</p>   |
| 4:15PM | 1701354      | <p><b>Variable rate irrigation: The potential for profitability.</b><br/>Troy Peters, Washington State University, Prosser, Washington United States (Troy Peters, Markus Flury)</p>                                                                                                                                   |
| 4:30PM | 1700462      | <p><b>Water use and productivity of maize under different variable rate irrigation managements in sub-humid climates</b><br/>Weixia Zhao, China Institute of Water Resources &amp; Hydropower Res, Beijing, China, People's Republic of (Presenter: Yanfeng Li) (Weixia Zhao, Xiumei Li, Jiusheng, Li, Yanfeng Li)</p> |
| 4:45PM | 1700875      | <p><b>Application of deficit irrigation management to variable rate irrigation for winter wheat in sub-arid climates</b><br/>Weixia Zhao, China Institute of Water Resources &amp; Hydropower Res, Beijing, China, People's Republic of (Presenter: Yanfeng Li) (Xiumei Li, Weixia Zhao, Yanfeng Li, Jiusheng Li)</p>  |

Monday, July 17 – 2:30PM-5:00PM

**SESSION 135**

**ONSITE WATER REUSE** – Sponsored by NRES-26  
Moderator: Anish Jantrania, Texas A&M Univ  
**Location: 201B**

| Time   | Paper#       | Title/Author                                                                                                                                                                                                                                                                                                                                                      |
|--------|--------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2:30PM |              | <b>Introduction</b>                                                                                                                                                                                                                                                                                                                                               |
| 2:35PM | 1701351      | <p><b>Onsite Treatment and Dispersal Technologies for Variety of Wastewater Sources</b><br/>A R Rubin, North Carolina State University, Raleigh, NC United States (A. R. Rubin) (A R Rubin)</p>                                                                                                                                                                   |
| 2:55PM | 1700469      | <p><b>Identifying the Locations of On-Site Sewage Facilities: Methodologies and Challenges to Create and Manage a Real-Time Spatial Database for the Coastal Counties of Texas.</b><br/>Anish Jantrania, Texas A&amp;M University, Temple, TX United States (Presenter: Gabriele Bonaiti) (Gabriele Bonaiti, Askarali Karimov, Ryan Gerlich, Anish Jantrania)</p> |
| 3:15PM | 1700568      | <p><b>Onsite Energy Efficient Waste Water Recycling by Distillation</b><br/>Scott Newquist, Indian Health Service, OEH&amp;E, Salem, NH United States (Presenter: Scott Newquist) (Scott Newquist)</p>                                                                                                                                                            |
| 3:35PM | 1701672      | <p><b>Reducing Dependency upon Private Well and Septic Water Systems Through On-Site Direct Potable Reuse</b><br/>Philip Schmidt, Tangent Company LLC, Chagrin Falls, OH United States (Phillip Schmidt, Aaron Arnold)</p>                                                                                                                                        |
| 3:55PM | <b>BREAK</b> |                                                                                                                                                                                                                                                                                                                                                                   |
| 4:05PM | 1700236      | <p><b>Quantifying airflow passively generated by the differential venting of onsite systems</b><br/>Kevin Sherman, On Site Management Consultants Inc., Jefferson, NH United States (Kevin Sherman)</p>                                                                                                                                                           |
| 4:25PM | 1700382      | <p><b>Decentralized Wastewater Treatment and Reuse System in Rural India Case Study</b><br/>Wilf Stefan, Clearford Water Systems Inc., Ottawa, Ontario Canada (Wilf Stefan, Yuxin Wang, Gillian Dumencu)</p>                                                                                                                                                      |
| 4:45PM | 1700085      | <p><b>Reusing Water Onsite - Opportunities and Challenges</b><br/>Anish Jantrania, Texas A&amp;M University, Temple, TX United States (Anish Jantrania, Askarali Karimov, Gabriele Bonaiti, Ryan Gerlich)</p>                                                                                                                                                     |

Monday, July 17 – 2:30PM-5:00PM

**SESSION 136**

**PRECISION IRRIGATION AND VARIABLE-RATE IRRIGATION**  
– Sponsored by NRES-24, NRES-244  
Moderator: Charles Hillyer, Texas A&M Univ  
**Location: 201C**

| Time   | Paper#  | Title/Author                                                                                                                                                                                                                                                                                                                                              |
|--------|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2:30PM |         | <b>Introduction</b>                                                                                                                                                                                                                                                                                                                                       |
| 2:35PM | 1701199 | <p><b>Use of long term weather data and spatially delineated field attributes to predict water and energy conservation from variable rate irrigation</b><br/>William Kranz, University of Nebraska - Lincoln, Lincoln, NE United States (Presenter: Sahil Sharma) (William Kranz, Sahil Sharma, Tsz Lo, Suat Irmak, Haishun Yang, Richard Uhrenholdt)</p> |

Monday, July 17 – 2:30PM-5:00PM

**SESSION 137**

**SUSTAINABLE WATER USE IN AGRICULTURE** – Sponsored by NRES-26, NRES-21  
Moderator: Yongping Yuan, USEPA  
**Location: 202A**

| Time   | Paper#  | Title/Author                                                                                                                                                                                                                                                                        |
|--------|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2:30PM |         | <b>Introduction</b>                                                                                                                                                                                                                                                                 |
| 2:35PM | 1700805 | <p><b>Water Stewardship: A Sustainable Perspective for Agriculture</b><br/>Clifford Fedler, Texas Tech University, Lubbock, TX United States (Clifford Fedler) (Clifford Fedler)</p>                                                                                                |
| 2:50PM | 1701325 | <p><b>Analyzing the impacts of watershed characteristics on sedimentation quality and quantity in small ponds</b><br/>Ameneh Tavakol, Kansas State University, Manhattan, KS United States (Ameneh Tavakol, Vahid Rahmani)</p>                                                      |
| 3:05PM | 1701522 | <p><b>Commercial Home Gardens under Conservation Agriculture and Drip Irrigation for Small Holder Farming in sub-Saharan Africa</b><br/>Manoj Jha, North Carolina A&amp;T State University, Greensboro, North Carolina United States (Tewodros Assefa, Manoj Jha, Manuel Reyes)</p> |
| 3:20PM | 1701154 | <p><b>Reducing the Yield Gap of Rainfed Corn in Humid/Temperate Regions</b><br/>Axel Garcia y Garcia, University of Minnesota, Lamber-ton, MN United States (Axel Garcia y Garcia) (Axel Garcia y Garcia, Paulo Pagliari, Jeffrey A. Coulter, Benjamin Davies)</p>                  |



# MONDAY, JULY 17

|        |         |                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|--------|---------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 3:35PM | 1700748 | <p><b>DESIGN AND CONSTRUCTION OF SIX LONG-THROATED FLUMES FOR IRRIGATION DISTRICT NUMBER 33 IN THE STATE OF MEXICO</b><br/>Mauricio Carrillo, Chapingo Autonomous University, Texcoco, Mexico Mexico (Mauricio Carrillo) (Mauricio Carrillo, Yessica A. Gomez, Humberto Ivan Navarro, J. Victor Prado, Roberto Arellano)</p>                                                                                                                 |
| 3:50PM |         | <b>BREAK</b>                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| 4:00PM | 1701174 | <p><b>Evaluation of CERES-Wheat model for wastewater irrigation and fertilizer interactions in wheat cultivation</b><br/>Atikur Rahman, Mayville State University, Mayville, ND United States (Atikur Rahman) (Atikur Rahman, M.A. Mojid, Akter Monika)</p>                                                                                                                                                                                  |
| 4:15PM | 1700755 | <p><b>Evaluation of the DSSAT CSM CROPGRO-Cotton Module for the Texas High Plains Using In-Season Data</b><br/>Victoria Garibay, Texas A&amp;M University, Bryan, TX United States (Victoria Garibay, Srinivasulu Ale, Dennis Gitz, Clyde Munster)</p>                                                                                                                                                                                       |
| 4:30PM | 1701369 | <p><b>Impact of a Multiple Species Cover Crop on Soil Water Content in Corn and Soybean Rotations in Nebraska</b><br/>J. Burdette Barker, University of Nebraska-Lincoln, Lincoln, NE United States (J. Burdette Barker) (J. Burdette Barker, Derek M. Heeren, Charles A. Shapiro, Katja Koehler-Cole, Suat Irmak, Ali T. Mohammed, Roger W. Elmore, Humberto Blanco-Canqui, Timothy M. Shaver, Charles A. Francis, Richard B. Ferguson)</p> |
| 4:45PM | 1701127 | <p><b>Treated Domestic wastewater irrigation as a viable option for improving crop productivity in the wasteland regions of Madurai, Tamil Nadu, India</b><br/>Chandran S, Thiagarajar College of Engineering, Madurai, Tamilnadu India (Kumar Veluswamy) (S. Chandran, Bala Murugan Prasher, ElSayed Kumar, Dhanasekarpandian Dhanasekarpandian)</p>                                                                                        |
| 5:00PM | 1701139 | <p><b>Uptake of Female Sex Hormones and Heavy Metals by Potato Irrigated with Wastewater in Hydrogel and Biochar Amended Soils</b><br/>Jaskaran Dhiman, McGill University, Ste Anne de Bellevue, Quebec Canada (Jaskaran Dhiman, Shiv Prasher, Eman ElSayed, Christopher Nzediegwu, Ali Mawof)</p>                                                                                                                                           |

**Monday, July 17 – 2:30PM-5:00PM**  
**SESSION 138**  
**SURFACE WATER AND GROUNDWATER MODELING**  
– Sponsored by NRES-21  
Moderator: Heidi Peterson, Minnesota Dept of Agriculturer  
**Location: 202B**

| Time   | Paper#  | Title/Author                                                                                                                                                                                                                                                                                                             |
|--------|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2:30PM |         | <b>Introduction</b>                                                                                                                                                                                                                                                                                                      |
| 2:35PM | 1700202 | <p><b>Assessing the effects of canal operations on groundwater flow using coupled surface-subsurface hydrologic modelling in an agriculture area in South Florida</b><br/>Meijing Zhang, University of Florida, Homestead, Florida United States (Meijing Zhang, Kati Migliaccio, Yong gu Her)</p>                       |
| 2:50PM | 1700122 | <p><b>Annual baseflow variations as influenced by climate variability and agricultural land use change in the Missouri River Basin</b><br/>Laurent Ahiablame, South Dakota State University, Brookings, SD United States (Laurent Ahiablame, Aleksey Sheshukov, Vahid Rahmani, Daniel Moriasi, Aleksey Y. Sheshukov)</p> |
| 3:05PM | 1700852 | <p><b>Effect of floodplain restoration on hyporheic flow in Yakima Watershed, WA</b><br/>Harsh Vardhan Singh, Environmental Protection Agency, Ada, OK United States (Harsh Vardhan Singh, Bart Faulkner, Ann Keeley, Ken Forshay)</p>                                                                                   |

|        |         |                                                                                                                                                                                                                                                                           |
|--------|---------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 3:20PM | 1700566 | <p><b>Integrated process-based modeling of channelized flow and soil erosion in small watersheds</b><br/>Vladimir Karimov, Kansas State University, Manhattan, KS United States (Vladimir Karimov, Aleksey Sheshukov)</p>                                                 |
| 3:35PM |         | <b>BREAK</b>                                                                                                                                                                                                                                                              |
| 3:45PM | 1700118 | <p><b>Size Matters: Balancing Spatial Resolution and Hydrologic Model Performance</b><br/>Ian Hahus, University of Florida, Gainesville, FL United States (Ian Hahus, Kati Migliaccio, Rafael Munoz-Carpena, Matthew Cohen, David Kaplan, Gregory Kiker)</p>              |
| 4:00PM | 1701477 | <p><b>Comparison of daily and sub-daily simulation of streamflow using SWAT in Gully Creek watershed in Ontario, Canada</b><br/>Sadananda Phurailatpam, McGill University, St-Anne-de-Bellevue, Quebec CA (Sadananda Phurailatpam, Golmar Golmohammadi, Shiv Prasher)</p> |
| 4:15PM | 1701465 | <p><b>Estimating Annual Maximum and Minimum Flows at Ona River Gauging Station in Ibadan, Nigeria Using a Modified Mixed Gamma Distribution</b><br/>Temitayo Ewemoje, University of Ibadan, Ibadan, Oyo Nigeria (Temitayo Ewemoje, Sunday Ewemooje)</p>                   |

**Monday, July 17 – 2:30PM-5:00PM**  
**SESSION 139**  
**MANURE MANAGEMENT PART 1**  
– Sponsored by NRES-27  
Moderator: Teng Lim, Univ of Missouri  
**Location: 202C**

| Time   | Paper#  | Title/Author                                                                                                                                                                                                                                                                         |
|--------|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2:30PM |         | <b>Introduction</b>                                                                                                                                                                                                                                                                  |
| 2:35PM | 1701089 | <p><b>Survivability of the PED Virus in Manure and Manure Amended Soil</b><br/>Amy Schmidt, University of Nebraska - Lincoln, Lincoln, NE United States (Amy Schmidt, Daniel Miller, J. Dustin Loy, Erin Stevens)</p>                                                                |
| 2:50PM | 1700691 | <p><b>Manure treatment strategies for reduction of antimicrobial resistance</b><br/>Michelle Soupir, Iowa State University, Ames, IA United States (Michelle Soupir, Antionette Fowlkes, Daniel Anderson, Adina Howe, Thomas Moorman)</p>                                            |
| 3:05PM | 1700836 | <p><b>Antibiotic Resistance and Fecal Source Tracking of Surface and Tile Drainage Waters in the South Fork Iowa River Watershed</b><br/>Elizabeth Luby Rieke, Iowa State University, Ames, IA United States (Elizabeth Luby Rieke, Michelle Soupir, Thomas Moorman, Adina Howe)</p> |
| 3:20PM | 1700353 | <p><b>GHG Emissions from Dairy Manure Management</b><br/>Horacio Aguirre-Villegas, University of Wisconsin-Madison, Madison, Wisconsin United States (Horacio Aguirre-Villegas, Rebecca Larson)</p>                                                                                  |
| 3:35PM | 1701273 | <p><b>Urease Inhibition in Solutions and Urine</b><br/>Mark Rice, North Carolina State University, Raleigh, NC United States (Presenter: Alison Deviney) (Alison Deviney, John Classen, Mark Rice)</p>                                                                               |
| 3:50PM |         | <b>BREAK</b>                                                                                                                                                                                                                                                                         |
| 4:00PM | 1700692 | <p><b>Comparison of GHG emissions during manure, biosolids and yard trimmings composting</b><br/>Frederick Michel, Ohio State University, Wooster, OH United States (Presenter: Jianfei Zeng) (Jianfei Zeng, Frederick Michel, Xiuli Shen)</p>                                       |
| 4:15PM | 1700966 | <p><b>Replacing hydroponic nutrient solution with compost tea made from animal manure</b><br/>Peter Tikasz, McGill University, Montreal, Qc Canada (Peter Tikasz, Mark Lefsrud)</p>                                                                                                  |
| 4:30PM | 1701523 | <p><b>Electrochemical removal of aqueous sulfide from swine manure</b><br/>Yuchuan Wang, University of Minnesota, St Paul, MN United States (Yuchuan Wang, Hongjian Lin, Bo Hu)</p>                                                                                                  |

# MONDAY, JULY 17

- 4:45PM 1701558 **Evaluation of Mechanical Scraper System Finishing Barn for Solid-Liquid Separation**  
Joshua Brown, University of Missouri-Columbia, Columbia, Missouri United States (Joshua Brown, Teng Lim, Joseph Zulovich, Christine Costello, Ali Taleghani, Allen Wang)
- 5:00PM 1701029 **The electrocoagulation pretreatment of biogas slurry from swine farm prior to producing the high-concentrated liquid fertilizer by nanofiltration**  
Zhiying Han, Zhejiang University, Hangzhou, China, People's Republic of (Zhiyang Han)

Monday, July 17 – 2:30PM-5:00PM

## SESSION 140 **NUTRIENT REMOVAL, RECOVERY AND RECYCLE**

– Sponsored by NRES-28  
Moderator: Lordwin Jeyakumar, Agriculture & Agri-Food Canada

**Location: 203**

- | Time   | Paper#  | Title/Author                                                                                                                                                                                                                                                                                                                                    |
|--------|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2:30PM |         | <b>Introduction</b>                                                                                                                                                                                                                                                                                                                             |
| 2:35PM | 1700629 | <b>Nutrient Recovery Membrane Technology: Pilot-Scale Evaluation</b><br>John Classen, North Carolina State University, Raleigh, NC United States (John Classen, Mark Rice, Alison Deviney)                                                                                                                                                      |
| 2:50PM | 1700845 | <b>Wastewater-grown Microalgae Pellets and Paste as Slow-release Fertilizers in Container Grown Corn, Marigold, and Tomato</b><br>Martin Gross, Iowa State University, Ames, Iowa United States (Austin Gimondo) (Martin Gross)                                                                                                                 |
| 3:05PM | 1700628 | <b>Performance evaluation of four field-scale denitrification wood chip bioreactors treating agricultural tile drainage water in a cold climate</b><br>Lordwin Jeyakumar, Agriculture & Agri-Food Canada, St Johns, NL Canada (Lordwin Jeyakumar) (Lordwin Jeyakumar, David McKenzie, Peter Murphy, Shabtai Bittman, Dena Wiseman, Evan Derald) |
| 3:20PM | 1701030 | <b>Phosphorus Partitioning in Dairy Manure Management Systems Using Anaerobic Digestion and Solid-Liquid Separation</b><br>Kathryn Lawson, Ohio State University, Clifton Springs, NY United States (Kathryn Lawson) (Kathryn Lawson, Fuqing Xu, Adam Khalaf, Yebo Li, Harold Keener)                                                           |
| 3:35PM |         | <b>BREAK</b>                                                                                                                                                                                                                                                                                                                                    |
| 3:45PM | 1700490 | <b>Nutrient and Energy Recovery from Aqueous Phase of Bio-Oil Generated via Hydrothermal Liquefaction of Algae</b><br>Saravanan Ramiah Shanmugam, Auburn University, Auburn, Alabama United States (Saravannan Ramiah Shanmugam, Sushil Adhikari, Rajdeep Shakya)                                                                               |
| 4:00PM | 1701050 | <b>Biological nitrogen removal of stormwater</b><br>yewei sun, Virginia Tech, Manassas, VA United States (Yewei Sun) (Yewei Sun, Zhi-Wu Wang, Dian Zhang)                                                                                                                                                                                       |
| 4:15PM | 1701371 | <b>Method for extraction of proteins and phosphate minerals from swine manure</b><br>Matias Vanotti, USDA-ARS, Florence, SC United States (Matias Vanotti, Ariel Szogi)                                                                                                                                                                         |
| 4:30PM | 1701515 | <b>A pilot-scale study of electrocoagulation for phosphorus separation in liquid animal manure</b><br>Xin Zhang, University of Minnesota, St Paul, Minnesota United States (Xin Zhang) (Xin Zhang, Hongjian Lin, Bo Hu)                                                                                                                         |

Monday, July 17 – 2:30PM-5:00PM

## SESSION 142 **EXPLANATORY TIME SERIES ANALYSIS IN NRES**

– Sponsored by NRES  
Moderator: Rafael Muñoz-Carpena, Univ of Florida

**Location: 205**

- | Time   | Paper#  | Title/Author                                                                                                                                                                                                                                                                                                                                   |
|--------|---------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2:30PM | 1701687 | <b>"Introduction": Dynamic Factor Analysis of Environmental Systems</b><br>Rafa Munoz-Carpena, University of Florida, Gainesville, Florida United States (Rafa Muñoz-Carpena)                                                                                                                                                                  |
| 2:45PM | 1701688 | <b>Reconstructing System Dynamics and Causal Interactions from Complex Time Series Data</b><br>Ray Huffaker, University of Florida, Gainesville, Florida United States (Ray Huffaker)                                                                                                                                                          |
| 3:00PM | 1701691 | <b>Statistical and Machine Learning Methods Using Large Space-Time Data: Forecasting Urban Water Demand</b><br>Nikolay Bliznyuk, University of Florida, Gainesville, Florida United States (Nikolay Bliznyuk)                                                                                                                                  |
| 3:15PM | 1701689 | <b>A Novel Quantile Method Reveals Spatiotemporal Shifts in Phytoplankton Biomass Descriptors between Bloom and Non-Bloom Conditions in a Sub-tropical Estuary</b><br>Natalie Nelson, University of Florida, Gainesville, Florida United States (Natalie Nelson)                                                                               |
| 3:30PM | 1701690 | <b>Granger Causality Analysis of Vegetation Dynamics in the Southwestern Amazon</b><br>Geraldine Klarenberg, University of Florida, Gainesville, Florida United States (Geraldine Klarenberg)                                                                                                                                                  |
| 3:45PM |         | <b>BREAK</b>                                                                                                                                                                                                                                                                                                                                   |
| 3:55PM | 1701692 | <b>Mosquito Dynamics with Time Series Analysis: 30 Years of Mosquito Data in the Chesapeake Bay Maryland (USA)</b><br>Ismael Martin Rodea Palomares, University of Florida, Gainesville, Florida United States (Ismael Martin Rodea Palomares)                                                                                                 |
| 4:10PM | 1701254 | <b>Data-driven analysis of environmental noncompliance: Distinguishing between systematic and random volatility in treatment wetland performance</b><br>Miles Medina, University of Florida, Gainesville, FL United States (Miles Medina, Ray Huffaker, James Jawitz)                                                                          |
| 4:35PM | 1700158 | <b>Challenges to water quality conservation measures within Western Lake Erie basin.</b><br>Lawrence Sekaluvu, Purdue University, West Lafayette, IN United States (Lawrence Sekaluvu)                                                                                                                                                         |
| 4:50PM | 1701111 | <b>Variability of E. coli in stream bottom sediments and the implications for Sediment sampling</b><br>Sadia Salam, South Dakota State University, Brookings, South Dakota United States (Sadia Salam, Graduate Student, Agricultural and Biosystems Engineering, South Dakota State University) (Sadia Salam Rachel McDaniel, Bruce Bleakley) |
| 5:05PM | 1700020 | <b>Effects of Watershed Characteristics on Temporal Trends of Dissolved Nutrients in Low-Gradient Agricultural Streams</b><br>William Ford, University of Kentucky, Lexington, Kentucky United States (William Ford, Kevin King)                                                                                                               |

# MONDAY, JULY 17

Monday, July 17 – 5:00PM-7:00PM

## SESSION 143

### NATURAL RESOURCES & ENVIRONMENTAL SYSTEMS

#### POSTER SESSION – Sponsored by NRES

Moderator: Christopher Hay, Iowa Soybean Association

**Location: 111ABC**

| Poster# | Paper#  | Title/Author                                                                                                                                                                                                                                                                                                                         |
|---------|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1       | 1700012 | <b>Automated Passive Capillary Lysimeters for Estimating Water Fluxes in the Vadose Zone</b><br>Jay Jabro, USDA ARS, Sidney, MT United States (Jay Jabro, William Ivesen, Williams Stevens)                                                                                                                                          |
| 2       | 1700017 | <b>Response of guayule biomass and rubber yield to variable water inputs using subsurface drip irrigation</b><br>Diaa Eldin Elshikha, Mansoura Univ, Al Dakahlia, Egypt (Presenter: Douglas J. Hunsaker) (Diaa Eldin Elshikha, Douglas Hunsaker, Kevin F. Bronson)                                                                   |
| 3       | 1700024 | <b>Co-digestion of Food Waste with Dairy Manure at Varying Ratios</b><br>Jonathan Masih-Das, SUNY College of Environmental Science and Forestry, Syracuse, NY United States (Jonathan Masih-Das, Wendong Tao)                                                                                                                        |
| 4       | 1700046 | <b>Assessing the impacts of climate change on water resources in the Fort Cobb Reservoir Experimental Watershed</b><br>Juan Sebastian Acero Triana, University of Illinois at Urbana-Champaign, Urbana, Illinois United States (Juan Sebastian Acero Triana)                                                                         |
| 5       | 1700047 | <b>Evaluation of hydrologic models for Texas Flash Flood Alley</b><br>Nikhil Bhatia, Texas A&M University, Bryan, Texas United States (Nikhil Bhatia, Vijay Singh)                                                                                                                                                                   |
| 6       | 1700064 | <b>Feeding schemes and COD of a lab-scale step-fed sequencing batch reactor for liquid swine manure treatment</b><br>Jun Zhu, University of Arkansas, Fayetteville, Arkansas United States (Sarah (Xiao) Wu, Jun Zhu, Lide Chen)                                                                                                     |
| 7       | 1700072 | <b>Role of Hydrolysis in Two-phase Anaerobic Digestion System for Poultry Litter</b><br>Jiacheng Shen, University of Arkansas, Fayetteville, AR United States (Presenter: Jun Zhu) (Jiacheng Shen, Jun Zhu)                                                                                                                          |
| 8       | 1700073 | <b>Simulation of Unstable Kinetics of Continuously Mixed Anaerobic Digester with Biological Solid Recycle using Parameters Obtained from Batch Experiments</b><br>Jiacheng Shen, University of Arkansas, Fayetteville, AR United States (Presenter: Jun Zhu) (Jiacheng Shen, Jun Zhu)                                                |
| 9       | 1700125 | <b>Comparison of Direct Outflow Calculated by Modified NRCS-CN Methods for Mountainous and Highland Catchments in Upper Vistula Basin, Poland and Lowland Catchment in South Carolina, U.S.A.</b><br>Andrzej Walega, , Krakow, Poland (Presenter: Devendra M. Amatya) (Andrzej Walega, Devendra Amatya)                              |
| 10      | 1700132 | <b>Data Analysis Protocol for Using Resistivity Array as an Early-Warning Wastewater Pond Leak Detector</b><br>Bryan Woodbury, USDA-ARS, Clay Center, NE United States (Bryan Woodbury, Roger Eigenberg Mindy Spiehs)                                                                                                                |
| 11      | 1700143 | <b>Assessment of groundwater recharge with implementation of BMPs in a semi-arid watershed in Southern Africa</b><br>Esther Mosase, South Dakota State University, Brookings, South Dakota United States (Esther Mosase, Laurent Ahiablame, Ryan Bailey)                                                                             |
| 12      | 1700157 | <b>Analysis of the Impact of Land Use/Land Cover Change on Land Surface Temperature Using Remote Sensing Techniques: A Case Study in Greater Cairo Region, Egypt</b><br>Mohamed Aboelnour, Purdue University, West Lafayette, IN United States (Mohamed Aboelnour, Bernard Engel)                                                    |
| 13      | 1700169 | <b>Assessing Hydrologic and Water Quality Impacts of Grassland Establishment in Skunk Creek Watershed</b><br>Esther Mosase, South Dakota State University, Brookings, South Dakota United States (Jiyeong Hong, Esther Mosase, Laurent Ahiablame)                                                                                    |
| 14      | 1700171 | <b>WATER QUALITY IN THE TEXCOCO AQUIFER</b><br>Jorge Víctor Prado Hernández, Universidad Autónoma Chapingo, Texcoco, México Mexico (Jorge Víctor Prado Hernandez, Anaid Hernandez, Oscar Tellez, Mauricio Carrillo, Natalio Gutierrez, Antonio Vazquez)                                                                              |
| 15      | 1700172 | <b>Development of Control Release Urea Fertilizer Model for Simulating Water and Nitrogen Transport in Flooded Rice</b><br>Alpna Dubey, Indian institute of Technology kharagpur, Kharagpur, West Bengal India (Alpna Dubey, Damodhara Rao Mailapalli)                                                                               |
| 16      | 1700174 | <b>Assessing climate change impacts on winter cover crop nitrate uptake efficiency on the Coastal Plain of the Chesapeake Bay Watershed using SWAT model</b><br>Sangchul Lee, University of Maryland, College Park, MD United States (Sangchul Lee, Ali Sadeghi, In-Young Yeo, Greg McCarty, Wells Hively, Megan Lang, Amir Sharifi) |
| 17      | 1700185 | <b>Oyster habitat suitability in the Northern Gulf of Mexico</b><br>Anna Linhoss, Mississippi State University, Starkville, Mississippi United States (Anna Linhoss, Rene Rincon)                                                                                                                                                    |
| 18      | 1700193 | <b>Hormone Identification in Superficial Waters at Brazilian Municipalities and Synthesis of Adsorbents for Hormone Removal</b><br>Eduardo Lordelo Volpato, Universidade Lederal de Lavras, Lavras, Minas gerais Brazil (Eduardo Lordelo Volpato, Ronaldo Fia, Isael Aparecido Rosa)                                                 |
| 19      | 1700199 | <b>Integrating Data Mining into Rapid Geomorphic Assessments for Streambank Erosion</b><br>Abigail Parnell, Oklahoma State University, Stillwater, OK United States (Abigail Parnell, Garey Fox, Daniel Storm)                                                                                                                       |
| 20      | 1700210 | <b>Estimating nitrate retention in a large constructed wetland using high-frequency, continuous monitoring and hydrologic modeling</b><br>Chad Drake, University of Iowa, Iowa City, Iowa United States (Chad Drake, Antonio Arenas Amado, Larry Weber, Chris Jones)                                                                 |
| 21      | 1700214 | <b>Experiments and reasearch of key Parameters about Wheat-Straw Painting</b><br>Pingyi Liu, China Agricultural University, Beijing, China, People's Republic of (Presenter: Ran Yi) (Pingyi Liu)                                                                                                                                    |
| 22      | 1700216 | <b>Soil properties and winter wheat performance as influenced by post-sowing compaction in North China Plain</b><br>Caiyun Lu, China Agricultural University, Beijing, China, People's Republic of (Caiyun Lu, Zhijun Meng, Xiu Wang, Jian Song, Xiaofei An, Liwei Li)                                                               |
| 23      | 1700235 | <b>A Comparative Study of Stream Restoration Projects in the Upstate, Piedmont of South Carolina</b><br>Rebeckah Hollowell, Clemson University, Clemson, South Carolina United States (Rebeckah Hollowell, Charles Privette, III)                                                                                                    |
| 24      | 1700259 | <b>Assessment of Anaerobic Digesters and Solid Liquid Separators in Wisconsin: tracking nutrients and assessing emissions</b><br>Rebecca Larson, University of Wisconsin-Madison, Madison, WI United States (Rebecca Larson, Horacio Aguirre-Villegas, Michael Holly)                                                                |

# MONDAY, JULY 17

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|----|---------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|---------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 25 | 1700298 | <b>Soil Moisture Sensor Networks to Assist with Grazing Management and Soil Compaction Prevention</b><br>Joshua Faulkner, University of Vermont, Burlington, VT United States (Joshua Faulkner)                                                                                                                              | 39 | 1700488 | <b>Degree of contamination between Vertisols and Entisols in agricultural regions of Guanajuato (Mexico)</b><br>Gabriela Zanon, Universidade de Guanajuato, Irapuato, Guanajuato Mexico (Gabriela Zanon, María Gabriela Garcia, María de Jesús Puy-Alquiza, Raúl Miranda-Avilés, José de Jesús N. Segoviano-Garfias, Luis Eduardo Venegas-Aguilera)  |
| 26 | 1700303 | <b>Assessment of the Effects of Riparian Buffer Zones on the Water Quality in the Jinghe Catchment Using the AnnAGNPS and REMM Models</b><br>Cong Liu, University of Connecticut, Tolland, CT United States (Cong Liu, Junya Wu, Xiusheng Yang)                                                                              | 40 | 1700494 | <b>Coupled Description of Water Flow and Solute Transport in the Unsaturated and Saturated Soil Zones using the HYDRUS Package for MODFLOW and MT3DMS</b><br>Sahila Beegum, EWRE, Opposite to C.L.R.I, Sardar Patel Road, Adyar, Chennai, Tamil Nadu India (Sahila Beegum, Indumathi Manivannan Nambi, K P Sudheer, Jirka Šimůnek, Adam Szymkiewicz) |
| 27 | 1700308 | <b>Modified biochar derived from carrot to remove phosphate in aqueous solution</b><br>Demetrius Silva, Universidade Federal de Vicosa, Viçosa, Minas Gerais Brazil (Marina Eufrasio Pinto, Demetrius Silva, Ana Luiza Amorim Gomes, Frederico Garcia Pinto, Jairo Tronto, Roberto Novais)                                   | 41 | 1700495 | <b>Improving Hydrologic Model performance by Dynamically varying the Sensitive Parameters : A Preliminary Investigation</b><br>Lakshmi Girija, EWRE, Chennai, Tamil Nadu India (Lakshmi Girija, K.P. Sudheer)                                                                                                                                        |
| 28 | 1700309 | <b>Lab Investigation of Nitrogen Application Timing and NZoneMax Addition on Nitrate Leaching</b><br>Dan Andersen, Iowa State University, Ames, IA United States (Dan Andersen, Caleb Polson)                                                                                                                                | 42 | 1700508 | <b>Study of the USLE P factor in USLE Equation</b><br>Yunsoo Sung, Kangwon National University, Chuncheon-si, Gangwon-do Korea, South (Yunsoo Sung, Jonggun Kim, Jeong Ho Han, Kyoung Jae Lim)                                                                                                                                                       |
| 29 | 1700335 | <b>Enhanced Denitrification in Road Ditches with Bioreactors</b><br>Will Plier, Cornell University, Ithaca, NY United States (Will Plier, Rebecca Schneider, Roxanne Marino, M Todd Walter)                                                                                                                                  | 43 | 1700547 | <b>Modeling Effectiveness of Best Management Practices to Reduce Phosphorus and Nitrogen Losses</b><br>Palki Arora, Auburn University, Auburn, Alabama United States (Palki Arora, Jasmeet Lamba, Puneet Srivastava, Latif Kalin)                                                                                                                    |
| 30 | 1700352 | <b>Detection of hydrologic trends in the Wabash River Basin</b><br>Johann Vera, Purdue University, Agricultural and Biological Engineering, West Lafayette, IN United States (Presenter: Johann Alexander Vera Mercado) (Johann Vera, Bernard Engel)                                                                         | 44 | 1700548 | <b>Analysis on Influencing Factors of Total Agricultural Output Value in China</b><br>Lina zhang, , Beijing, China, People's Republic of (Presenter: Huang Huang) (Lina Zhang, Zhi Chen, Minli Yang, Huang Huang, Phakwipha Sutthiwaree, Qiong He, Chun Ye, Adnan Abbas)                                                                             |
| 31 | 1700359 | <b>Uncertainties estimation associated with UV-Visual spectrophotometers in measuring nutrient concentrations and loads in an agricultural watershed</b><br>Chiao-Wen Lin, North Carolina State University, Biological and Agricultural Engineering, Raleigh, North Carolina United States (Chiao-Wen Lin, Francois Birgand) | 45 | 1700554 | <b>Application of SWAT in Assessing the Effects of Land Use – Cover Change in the Murchison Bay Catchment in Uganda</b><br>Nicholas Kiggundu, Makerere University, Kampala, Uganda (Nicholas Kiggundu)                                                                                                                                               |
| 32 | 1700422 | <b>Identification of potential near infrared spectral bands for rapid sensing of dairy manure nutrients</b><br>Gopi Kafle, Washington State University, Pullman, WA United States (Gopi Kafle, Lav Khot, Pius Ndegwa, Iftikhar Zeb)                                                                                          | 46 | 1700560 | <b>Analysis of publication trends in ecosystem services research</b><br>Kelsey McDonough, Kansas State University, Manhattan, KS United States (Kelsey McDonough, Stacy Hutchinson, Trisha Moore)                                                                                                                                                    |
| 33 | 1700446 | <b>Field studies on the value of nutrient-enriched biosolids granules as amendments for winter cereal crops</b><br>Diogenes Antille, University of Southern Queensland, Toowoomba, QLD Australia (Diogenes Antille)                                                                                                          | 47 | 1700600 | <b>The efficacy of anaerobic digestion in inactivating pathogen indicator Escherichia coli levels in flushed dairy manure</b><br>Yi Wang, University of California Davis, Davis, CA United States (Yi Wang, Pramod Pandey)                                                                                                                           |
| 34 | 1700454 | <b>Effect of fertigation on crop and soil established to cotton (Gossypium hirsutum L.) under furrow and overhead irrigation</b><br>Diogenes Antille, University of Southern Queensland, Toowoomba, QLD Australia (Diogenes Antille)                                                                                         | 48 | 1700611 | <b>An Improved Multi Model Flood Forecasting System</b><br>Cicily Kurian, IIT Madras, Chennai, Tamilnadu India (Cicily Kurian) (Cicily Kurian, K.P. Sudheer, Debabrata Sahoo)                                                                                                                                                                        |
| 35 | 1700459 | <b>Development of QAPEX module using QGIS</b><br>Jayoung Koo, Kangwon National University, Kangwon-do, Chun cheon Korea, South (Jayoung Koo, Seoro Lee, Kyoungjae Lim)                                                                                                                                                       | 49 | 1700615 | <b>Quantifying Land-Use Change Associated with US Agricultural Production</b><br>Gurdeep Singh, The Climate Corp, St Louis, MO United States (Gurdeep Singh, Mansoor Leh, Greg Thoma)                                                                                                                                                                |
| 36 | 1700474 | <b>Quantifying Ephemeral Gully Erosion with Photogrammetry Surveying</b><br>Aleksey Sheshukov, Kansas State University, Manhattan, Kansas United States (Presenter: Chinthaka Bandara) (Chinthaka Bandara, Aleksey Sheshukov)                                                                                                | 50 | 1700621 | <b>Gas Permeable Membrane Selection Methodology</b><br>John Classen, North Carolina State University, Raleigh, NC United States (Presenter: Jacqueline Welles) (Jacqueline Welles, Mark Rice, John Classen)                                                                                                                                          |
| 37 | 1700482 | <b>Capillary Movement of Water in Two Agricultural Soils Incorporated with N PK Fertiliser after Load Applications in Borno State of Nigeria</b><br>John Ohu, University of Maiduguri, Maiduguri, Borno State Nigeria (John Ohu)                                                                                             | 51 | 1700635 | <b>Nutrient Recovery Membrane Technology: Best Applications and Role in Conservation</b><br>John Classen, North Carolina State University, Raleigh, NC United States (Presenter: Mark Rice) (John Classen, Mark Rice, Kelly Zering)                                                                                                                  |
| 38 | 1700483 | <b>Evaluation and application of Nutrient Tracking Tool in Northwestern Ohio</b><br>Tian Guo, Heidelberg University, Tiffin, OH United States (Tian Guo, Remegio B. Confesor Jr., Ali Saleh, Kevin W. King)                                                                                                                  | 52 | 1700642 | <b>Combining Sediment Fingerprinting and SWAT Modeling to Apportion the Stream Bed Sediment Sources in an Urban Watershed</b><br>Kritika Malhotra, Auburn University, Auburn, Alabama United States (Kritika Malhotra.)                                                                                                                              |

# MONDAY, JULY 17

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|----|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|---------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 53 | 1700656 | <p><b>Understanding Water and Energy Fluxes over Global Land in the GFDL High-resolution Climate Model Simulations</b></p> <p>Di Tian, Auburn University, Auburn, Alabama United States (Di Tian, Ming Pan, Liwei Jia, Gabriel Vincci, Eric F. Wood)</p>                                                                                                    | 67 | 1700957 | <p><b>Influence of Chlorine Injection on Growth and Yield of Maize under drip irrigation with secondary sewage effluent</b></p> <p>Jiusheng Li, China Institute of Water Resources &amp; Hydropower Res, Beijing, China, People's Republic of (Jiusheng Li, Fengzhen Hao, Zhen Wang, Yanfeng Li)</p>                                     |
| 54 | 1700659 | <p><b>Cradle – to – farm gate environmental impact assessment of beef production systems in the Western U.S.</b></p> <p>Senorpe Asem - Hiablie, USDA ARS, University Park, PA United States (Senorpe Asem-Hiablie, C. Alan Rotz, Robert Stout)</p>                                                                                                          | 68 | 1701003 | <p><b>Analysis of Yield Response with Deficit Drip Irrigation Strategies, Remote Sensing with UAVS and Thermal Image Processing</b></p> <p>Travis Ford, University of Maryland Eastern Shore, Princess Anne, MD United States (Travis Ford, Madhumi Mitra, Abhijit Nagchaudhuri, Chris Hartman, Abhijit Nagchaudhuri)</p>                |
| 55 | 1700715 | <p><b>Experimental study on corn stalks pyrolysis characteristics in northeast China</b></p> <p>Yang Xu, China Agricultural University, Beijing, China, People's Republic of (Presenter: Guan Wang) (Guan Wang, Haibo Meng, Lixin Zhao, Zonglu Yao, Yang Xu)</p>                                                                                            | 69 | 1701025 | <p><b>Hydrological modeling of conjunctive use of groundwater and surface water in unified river-lake-aquifer systems</b></p> <p>Shima Soleimani, Kansas State University Manhattan, Kansas United States (Shima Soleimani, Vahid Rahmani)</p>                                                                                           |
| 56 | 1700716 | <p><b>Study on Element Transfer in Corn Stalk Pyrolysis</b></p> <p>Yang Xu, China Agricultural University, Beijing, China, People's Republic of (Presenter: Guan Wang) (Guan Wang, Haibo Meng, Lixin Zhao, Zonglu Yao, Yang Xu)</p>                                                                                                                         | 70 | 1701035 | <p><b>Impact of Tannins on Nitrogen Cycling and the Potential to Reduce Ammonia and Greenhouse Gas Emissions</b></p> <p>Rhonda Miller, Utah State University, Logan, UT United States (Presenter: Jennifer Long) (Jenny Long, Rhonda Miller)</p>                                                                                         |
| 57 | 1700743 | <p><b>Influence of chlorine injection on growth and yield of maize under drip irrigation with secondary sewage effluent</b></p> <p>Jiusheng Li, China Institute of Water Resources and Hydropower Research, Beijing, Beijing China, People's Republic of (Jiusheng Li, Fengzhen Hao)</p>                                                                    | 71 | 1701052 | <p><b>Evaluation of the Geomorphological Adjustment of Meandering Rivers Subject to Streambank Stabilization Structures in Kansas, United States</b></p> <p>Kari Bigham, Kansas State University, Manhattan, Kansas United States (Kari Bigham, Trisha Moore, Tim Keane)</p>                                                             |
| 58 | 1700744 | <p><b>Scale effect of water saving in a rice-based irrigation system in Sanjiang Plain, Northeast China</b></p> <p>Chen Haorui, State Key Laboratory of Simulation and Regulation of Water Cycle in River Basin, China Institute of Water Resources and Hydropower Research, Beijing, Beijing China, People's Republic of (Haorui Chen, Pingjin Jiaoin)</p> | 72 | 1701060 | <p><b>Evaluation of sediment contamination and trophic state in the La Purisima water reservoir (central Mexico)</b></p> <p>Gabriela Zanor, Universidad de Guanajuato, Irapuato, Guanajuato Mexico (Gabriela Zanor, Melina Garcia-Flores, Andrea Pasquini, Karina Lecomte, Jaqueline Gonzalez-Castaneda, Maria de Jesus Puy-Alquiza)</p> |
| 59 | 1700790 | <p><b>Techno-economic analysis of value-addition to agricultural organic residues through anaerobic digestion and composting</b></p> <p>Yangyang Li, Ohio State University, Wooster, Ohio United States (Yangyang Li)</p>                                                                                                                                   | 73 | 1701063 | <p><b>Impact of Water and Nitrogen Management Strategies on Sugarbeet Yield, Evapotranspiration and Crop Water productivity</b></p> <p>Vivek Sharma, University of Wyoming, Powell, Wyoming United States (Vivek Sharma)</p>                                                                                                             |
| 60 | 1700831 | <p><b>Diagnosis and quantification of Cyclospora cayatensis oocysts in the environment using molecular techniques</b></p> <p>Nora Onstad, University of Illinois, Urbana, IL United States (Nora Onstad, William Witola, Michelle Green, Paul Davidson)</p>                                                                                                 | 74 | 1701076 | <p><b>Assessment the practicability of soil aggregate stability as a indicator for soil erodibility in a purple soil hilly region</b></p> <p>Xinjun Huang, Chinese Academy of Agricultural Sciences, Beijing, China, People's Republic of (Xinjun Huang, Qingwen Zhang, Shanghong Chen, Yuequn Dong, Meijia Xiao)</p>                    |
| 61 | 1700842 | <p><b>Utilization of Woody Biomass and Manure as Agricultural Soil Amendments in Nebraska</b></p> <p>Linda Schott, University of Nebraska-Lincoln, Lincoln, NE United States (Linda Schott, Amy Schmidt, Humberto Blanco, Amy Timmerman)</p>                                                                                                                | 75 | 1701087 | <p><b>Assessing Phosphorus Pollution Potential in the Increasingly Urbanized Puget Sound Region</b></p> <p>Nannette Huber, Washington State University, Puyallup, WA United States (Nannette Huber, Joan Wu)</p>                                                                                                                         |
| 62 | 1700887 | <p><b>Enhancement of biogas production by anaerobic digestion of lignocellulosic biomass through biological pre-treatment and recovery of energy, nutrients and water</b></p> <p>Gail Joseph, North Carolina A&amp;T State University, Greensboro, NC United States (Gail Joseph)</p>                                                                       | 76 | 1701095 | <p><b>Combined Effect of Elevated CO2 and Nitrogen Fertilizer Management on Wheat Yield in Sub-tropical India</b></p> <p>Swati Hazra, Indian Institute of Technology, Kharagpur, Kharagpur, West Bengal India (Swati Hazra, Dillip Kumar Swain Pratabhanu Singh Bhadoria)</p>                                                            |
| 63 | 1700904 | <p><b>The effects of rainfall and irrigation on cherry root water uptake under drip irrigation</b></p> <p>Xiaoqing Cao, Purdue University, West Lafayette, IN United States (Xiaoqing Cao, Yang Peiling)</p>                                                                                                                                                | 77 | 1701128 | <p><b>Site suitability for bioenergy crops on abandoned fields using Farm manager registration information in Korea</b></p> <p>Yungyeong Oh, Seoul National University, Gwangju, South Korea (Presenter: Jimin Lee) (Yungyeong Oh, Jimin Lee, Seung-Hwan Yoo, Sang-Hyun Lee)</p>                                                         |
| 64 | 1700921 | <p><b>The Water Footprint perspective to address environmental sustainability of water use in Sichuan basin of southwest China</b></p> <p>Dingwang Zhou, Zhejiang University, Hangzhou, Zhejiang China, People's Republic of (Zong-lou Guo, Dingwang Zhou, Wang Yitong)</p>                                                                                 | 78 | 1701130 | <p><b>Effects of different fertilizer treatments on crop yield and irrigation water use under different saline soils</b></p> <p>Tingting Chang, Hohai University, Nanjing, Jiangsu China, People's Republic of (Tingting Chang, Xiaohou Shao, Hengji Qin, Yujie Zhang)</p>                                                               |
| 65 | 1700936 | <p><b>Poria cocos Soil-transfer Cultivation Experiment and Its Impact on Yield</b></p> <p>Zusongying Zhao, China Agricultural University, Beijing, China, People's Republic of (Presenter: Pengtao Li) (Zhi'an, Zheng, Zusongying Zhao, Ping Zhang, Qingwu Jiang, Bo Lin, Pengtao Li)</p>                                                                   |    |         |                                                                                                                                                                                                                                                                                                                                          |
| 66 | 1700942 | <p><b>Comparative Analysis of Land Use Change Model at Gapcheon Watershed in Korea</b></p> <p>PilJu Kwon, Kangwon National University, Kangwon-do, Chun cheon Korea, South (PilJu Kwon)</p>                                                                                                                                                                 |    |         |                                                                                                                                                                                                                                                                                                                                          |

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|    |         |                                                                                                                                                                                                                                                                                                                       |     |         |                                                                                                                                                                                                                                                                                                                         |
|----|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 79 | 1701132 | <b>Effect of subsurface drainage on soil salinity and crop yield under greenhouse in China</b><br>Tingting Chang, Hohai University, Nanjing, Jiangsu China, People's Republic of (Presenter: Yujie Zhang) (Yujie Zhang, Xiaohou Shao, Tingting Chang, Xu Yang)                                                        | 93  | 1701493 | <b>Soil particle size distribution and critical shear stress responses to experimental manipulation of snow cover in a silt loam soil, Wisconsin, USA.</b><br>Edward Boswell, University of Wisconsin, Madison, WI United States (Edward Boswell, Anita Thompason, Nick Balster)                                        |
| 80 | 1701150 | <b>Dominant mechanisms for nutrient delivery across nested headwater watersheds in the Western Lake Erie Basin</b><br>Mark Williams, USDA ARS, West Lafayette, Indiana United States (Mark Williams, Stan Livingston, Chad Penn, Doug Smith, Kevin King, Chi-Hua Huang)                                               | 94  | 1701505 | <b>Compact Bed Geometry for Improved Plasticulture Sustainability</b><br>Kira Hansen, University of Florida, Gainesville, FL United States (Kira Hansen, Sanjay Shukla, Nathan Holt, Rajendra Sishodia)                                                                                                                 |
| 81 | 1701152 | <b>Evaluation of denitrifying bioreactor performance with use of flow-routing baffles</b><br>Laura Christianson, University of Illinois, Urbana, IL United States (Laura Christianson, Hannah Dougherty)                                                                                                              | 95  | 1701506 | <b>Movement of Phosphate and Sediment under Different Erosion Control Practices</b><br>Hitarth Patel, University of Illinois, Urbana, IL United States (Hitarth Patel)                                                                                                                                                  |
| 82 | 1701153 | <b>Integrated Modeling of Water and Energy Use in Postharvest Operations for Florida Tomatoes</b><br>Ratna Suthar, University of Florida, Lakeland, FL United States (Ratna Suthar, Jasmeet Judge, Jeffrey K. Brecht, William Pelletier)                                                                              | 96  | 1701513 | <b>Relating Microplastic Concentrations over time to Potential Sources in Freshwater Streams</b><br>Lisa Watkins, Cornell University, Ithaca, NY United States (Lisa Watkins, M. Todd Walter)                                                                                                                           |
| 83 | 1701249 | <b>Planting time adaptation to avoid temperature stress at sensitive rice growth stage in subtropical India</b><br>Pallavi Singh, Indian Institute of Technology, Kharagpur, India, Kharagpur, West Bengal India (Pallavi Singh, Dillip Kumar Swain)                                                                  | 97  | 1701530 | <b>Assessing Climate Change Impact on Rice Yield under Different Climate Change Scenarios using CERES and ORYZA2000</b><br>Madhuri Dubey, Indian Institute of Technology-Kharagpur, Kharagpur, West Bengal India (Ashok Mishra, Madhuri Dubey, Rajendra Singh)                                                          |
| 84 | 1701326 | <b>Evaluation of NASA SMAP soil moisture data in wet and dry spells using in situ observations</b><br>Ameneh Tavakol, Kansas State University, Manhattan, KS United States (Ameneh Tavakol, Vahid Rahmani)                                                                                                            | 98  | 1701547 | <b>Investigating the Barriers of Animal Manure Thermochemical Conversion Techniques</b><br>Sammy Sadaka, University of Arkansas, Little Rock, AR United States (Sammy Sadaka)                                                                                                                                           |
| 85 | 1701349 | <b>Climate Change Impact on Yield Gap of Rice in India for Past Three Decades</b><br>Subhankar Debnath, ERNET AGFE.IITKGP, Kharagpur, West Bengal India (Subhankar Debnath, Ashok Mishra, Damodhar Rao Mailapalli, Narendra Singh Raghuan-shi)                                                                        | 99  | 1701551 | <b>Monitoring on-farm Dairy Anaerobic Digestion Biogas H<sub>2</sub>S Scrubber Performance and Economics</b><br>Timothy Shelford, Cornell University, Ithaca, NY United States (Timothy Shelford, Curt Gooch)                                                                                                           |
| 86 | 1701360 | <b>Grow Microalgae Using Dry Dairy Manure Pellets as Nutrient Substrates</b><br>Zong Liu, Texas A&M University, College Station, TX United States (Zong Liu, Ana Caroline Costa de Lima, John Primm, Troy Runge)                                                                                                      | 100 | 1701597 | <b>Performance Evaluation of TANK Model Parameter Optimization According to Data Intervals</b><br>Do Gil Lee, Seoul National University, Seoul, South Korea (Do Gil Lee, Moon Seong Kang, Jung-Hun Song, Sang Min Jun)                                                                                                  |
| 87 | 1701382 | <b>Spatially-distributed calibration of SWAT for an ungauged watershed using upstream streamflow and remotely sensed evapotranspiration estimates</b><br>Rasika Burghate, McGill University, Montreal, Quebec Canada (Rasika Burghate, Zhiming Qi, Adnan Rajib)                                                       | 101 | 1701628 | <b>Evaluating the Effectiveness of Agricultural Management Practices under Climate Change for Water Quality Improvement in Oklahoma Watershed</b><br>Solmaz Rasoulzadeh Gharibdousti, Oklahoma State University, Stillwater, Oklahoma United States (Solmaz Rasoulzadeh Gharibdousti) (Solmaz Rasoulzadeh Gharibdousti) |
| 88 | 1701388 | <b>Urbanisation Effects on Surface and Groundwater Resources: An Assessment of Approved Dumpsite in Ibadan, Nigeria</b><br>Temitayo Ewemoje, University of Ibadan, Ibadan, Oyo Nigeria (Temitayo Abayomi Ewemoje) (Temitayo Ewemoje, Sunday Majolagbe, Oluseyi Elizabeth Ewemoje)                                     | 102 | 1701630 | <b>xx</b><br>Pierre-Yves Gasser, Agriculture & Agri-Food Canada, Ottawa, Ontario Canada (Pierr-Yves Gasser)                                                                                                                                                                                                             |
| 89 | 1701399 | <b>The Effect of Planting Date on Accumulated Temperature and Maize Growth under Mulched Drip Irrigation in Middle-latitude Area with Frequent Chilling Injury</b><br>Dan Wang, China Agricultural University, Beijing, China, People's Republic of (Yu Liu) (Dan Wang)                                               | 103 | 1701631 | <b>A Summary of Potential Future Climate Change Effects on Waterborne Pathogens</b><br>Rory Coffey, Oak Ridge Associated Universities, Arlington, VA United States (Rory Coffey, Thomas Johnson)                                                                                                                        |
| 90 | 1701426 | <b>Nutrient Content of Wheat and Corn in Response to the Application of Urea and the Urease Inhibitor</b><br>Marty Rhoades, West Texas A&M University, Canyon, TX United States (Marty Rhoades, Chalone Hefley, Brock Blaser, David Parker)                                                                           | 104 | 1701632 | <b>Evaluation of Climate Variability Impact on Drought Occurrence in an Agricultural Watershed</b><br>Sagar Gautam, University of Missouri, Columbia, MO United States (Sagar Gautam)                                                                                                                                   |
| 91 | 1701452 | <b>Climate change impact on soil organic carbon and crop yield under conservation tillage and conservation agriculture: An EPIC application</b><br>Kieu Le, North Carolina A&T State University, Greensboro, NC United States (Presenter: Manoj Jha) (Kieu Le, Manoj Jha, Manuel Reyes, Jaehak Jeong, Philip Gassman) | 105 | 1701633 | <b>xx</b><br>Vaishali Kandpal, University of Arkansas, Fayetteville, AR United States (Vaishali Kandpal)                                                                                                                                                                                                                |
| 92 | 1701471 | <b>Evaluation of biogas performance of saturated and unsaturated fatty acids content</b><br>Minjee Kim, Kangson National Univ, Chuncheon-si, South Korea (Presenter: Sanghun Kim) (Minjee Kim, Soo Ah Kim, Yeon Guy Bang, Sang Hun Kim)                                                                               | 106 | 1701634 | <b>xx</b><br>Fangle Chang, Pennsylvania State University, University Park, PA United States (Fangle Chang)                                                                                                                                                                                                              |
|    |         |                                                                                                                                                                                                                                                                                                                       | 107 | 1701667 | <b>The Research of Farmland Precision Irrigation Automation System Based on Wireless Network</b><br>Yiren Zhou, Taiyuan University of Technology, Taiyuan, China, Republic of (Taiwan) (Yiren Zhou)                                                                                                                     |
|    |         |                                                                                                                                                                                                                                                                                                                       | 108 | 1701669 | <b>Research on Water Distribution Characteristics of Orifice Water Dispenser Under Gated Pipe Irrigation</b><br>Yongye Li, Taiyuan University, Taiyuan, China, Republic of (Taiwan) (Yongye Li)                                                                                                                         |
|    |         |                                                                                                                                                                                                                                                                                                                       | 109 | 1701705 | <b>Evaluation of land use development and climate change on Raritan Basin coupling with SWAT and Agent based model</b><br>Subhasis Giri, Rutgers University, New Brunswick, NJ United States (Subhasis Giri)                                                                                                            |



# MONDAY, JULY 17

Monday, July 17 – 2:30PM-5:00PM

## SESSION 144

### PM2.5, VOC, AND OTHER EMISSION FACTORS FOR THE LIVESTOCK AND POULTRY INDUSTRY

– Sponsored by PAFS-50  
Moderator: Shafiqur Rahman, North Dakota State Univ

**Location: 300C**

| Time   | Paper#  | Title/Author                                                                                                                                                                                                                                                                    |
|--------|---------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2:30PM |         | <b>Introduction</b>                                                                                                                                                                                                                                                             |
| 2:35PM | 1700699 | <b>Solid Aerosol Formation from the Reaction of Ammonia with Greenhouse gases (GHG)</b><br>El Jirre Baticados, United States Formation University, College Station, Texas United States (El Jirre Baticados, Sergio Capareda, Calvin Parnell, Russell McGee)                    |
| 2:50PM | 1701348 | <b>Diurnal Variability in Nitrous Oxide Flux from Simulated Open-Lot Beef Cattle Feedyard Pen Surfaces</b><br>Ken Casey, Texas A&M AgriLife Research, Amarillo, TX United States (Kenneth Casey, David Parker, Heidi Waldrip, Richard Todd)                                     |
| 3:05PM | 1700540 | <b>Responses of secondary inorganic PM2.5 to the changes of precursor gases in the southeastern U.S.</b><br>Lingjuan Li, North Carolina State Univ, Raleigh, NC United States (Bin Cheng, Lingjuan Li)                                                                          |
| 3:20PM | 1700542 | <b>Spatiotemporal variations of PM2.5 in Jiangsu Province and North Carolina State: comparison, evaluation and implication</b><br>Lingjuan Li, North Carolina State Univ, Raleigh, NC United States (Xiuguo Zou, Bin Cheng, Lingjuan Li)                                        |
| 3:35PM | 1700645 | <b>Process-based mathematical models to predict ammonia emissions from in-house windrowing poultry litter</b><br>Kyoung Ro, USDA ARS, Florence, South Carolina United States (Kyoung Ro, Ariel Szogi, Philip Moore, Jr.,)                                                       |
| 3:50PM |         | <b>BREAK</b>                                                                                                                                                                                                                                                                    |
| 4:00PM | 1700385 | <b>Effect of calcium hydroxide application to feedlot pen surface material on ammonia, odor, and greenhouse gas emissions</b><br>Mindy Spiehs, USDA ARS U.S. Meat Animal Research Center, Clay Center, NE United States (Mindy Spiehs, Bryan Woodbury, Elaine Berry, Jim Wells) |
| 4:15PM | 1700478 | <b>Comparison of PM Instruments for Measurement of PM Concentrations at Manure-Belt Layer Houses</b><br>Ryan Knight, The Ohio State University, Columbus, OH United States (Ryan Knight, Lingying Zhao)                                                                         |
| 4:30PM | 1701671 | <b>Spatial and Temporal Variations of PM Concentration and Size Distribution in Manure-Belt Poultry Layer Houses</b><br>Ryan Knight, The Ohio State University, Columbus, OH United States (Ryan Knight)                                                                        |
| 4:45PM | 1700420 | <b>Apportionment of visibility degradation to sources of PM2.5 in rural and urban Kansas</b><br>Yang Liu, Kansas State University, Manhattan, KS United States (Yang Liu, Zifei Liu)                                                                                            |

Monday, July 17 – 2:30PM-5:00PM

## SESSION 145

### ANIMAL RESPONSE TO ENVIRONMENTS – Sponsored by PAFS-40

Moderator: Angela Green, Univ of Illinois

**Location: 300D**

| Time   | Paper#  | Title/Author                                                                                                                                                                                                                                                                                                           |
|--------|---------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2:30PM |         | <b>Introduction</b>                                                                                                                                                                                                                                                                                                    |
| 2:35PM | 1700889 | <b>A system simulation approach for estimating the integrated effect between swine growth performance and swine barn management: a dynamic model and its sensitivity analysis</b><br>Shang-Jen Yang, University of Illinois, Urbana, Illinois United States (Shang-Jen Yang, Xinlei Wang, Richard Gates, Hayes Morgan) |

|        |         |                                                                                                                                                                                                                                                   |
|--------|---------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2:50PM | 1700631 | <b>Modeling skin temperature to assess the effect of air velocity to mitigate heat stress among growing pigs</b><br>Bjarne Bjerg, University of Copenhagen, Frederiksberg C, Denmark (Bjarne Bjerg, Poul Pedersen, Svend Morsing, Guoqiang Zhang) |
| 3:05PM | 1701186 | <b>Modeling Conductive Heat Transfer Through and Around Grow-Finish Pigs</b><br>Joseph Darrington, South Dakota State University, Brookings, SD United States (Joseph Darrington, Erin Cortus)                                                    |
| 3:20PM | 1700981 | <b>Climate Dependent Heat Stress Mitigation Modeling for Dairy Housing</b><br>Katlyn DeVoe, Iowa State University, Ames, IA United States (Katlyn DeVoe, Steven Hoff, Lance Baumgard, Brett Ramirez)                                              |
| 3:35PM |         | <b>BREAK</b>                                                                                                                                                                                                                                      |
| 3:45PM | 1701584 | <b>Equilibrium Surface Temperature and Cooled Surface Area in Conductive Cooling Systems for Dairy Cattle</b><br>Kristen Perano, Cornell University, Ithaca, NY United States (Kristen Perano, Kifle Gebremedhin)                                 |
| 4:00PM | 1700305 | <b>Heat and Moisture Production of Beef Cattle Based on Acclimation Period and Modern Genetics</b><br>Jiangong Li, University of Illinois, Urbana, Illinois United States (Jiangong Li, Angela R. Green, Daniel W. Shike, Luis F. Rodriguez)      |
| 4:15PM | 1700029 | <b>Choice between LED and Fluorescent Lights by Pullets and Laying Hens</b><br>Kai Liu, Iowa State University, Ames, Iowa United States (Kai Liu, Hongwei Xin, Lilong Chai, Jordan Keck)                                                          |
| 4:30PM | 1700301 | <b>Impact of feeder space on laying hen feeding behavior and feed intake</b><br>Jofran Oliveira, Iowa State University, Ames, Iowa United States (Jofran Oliveira, Hongwei Xin, Yang Zhao, Huaqing Wu, Kaesey Glaess)                             |

Monday, July 17 – 2:30PM-5:00PM

## SESSION 147

### BIOCHEMICAL CONVERSION AND BIOPROCESS MODELING

– Sponsored by PRS-280, ES-220  
Moderator: Hasan Atiyeh, Oklahoma State Univ

**Location: 302A**

| Time   | Paper#  | Title/Author                                                                                                                                                                                                                                                                                                                   |
|--------|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2:30PM |         | <b>Introduction</b>                                                                                                                                                                                                                                                                                                            |
| 2:35PM | 1700211 | <b>Enhanced Biological Ethanol Production from Syngas with Various Medium Formulations</b><br>Hasan Atiyeh, Oklahoma State University, Stillwater, OK United States (Xiao Sun, Hasan Atiyeh)                                                                                                                                   |
| 2:50PM | 1700345 | <b>Developing an Integrated Model for the Corn-Water-Ethanol-Beef Nexus System</b><br>Ryan Anderson, University of Nebraska-Lincoln, Lincoln, NE United States (Ryan Anderson, Ashu Guru, Deepak Keshwani, Jeyam Subbiah)                                                                                                      |
| 3:05PM | 1701212 | <b>Disconnected Metabolic Pathways in the Conversion of Sugar Mixtures towards Biofuel Precursors in Clostridial Species</b><br>Ludmilla Aristilde, Cornell University, Ithaca, NY United States (Ludmilla Aristilde)                                                                                                          |
| 3:20PM | 1701463 | <b>Bio-organosolv pulping of pine chips with Trametes versicolor for enhanced enzymatic hydrolysis and lignin extraction</b><br>Angele Djioleu, University of Arkansas, Fayetteville, AR United States (Presenter: Kandhola Gurshagan) (Gurshagan Kandhol, Kalavathy Rajan, Nicole Labbe, Danielle Julie Carrier, Jin-woo Kim) |
| 3:35PM |         | <b>BREAK</b>                                                                                                                                                                                                                                                                                                                   |
| 3:45PM | 1700093 | <b>Techno-economic Implications of Fed-batch Enzymatic Hydrolysis</b><br>Ellen Emanuel, University of Nebraska-Lincoln, Gretna, NE United States (Ellen Emanuel)                                                                                                                                                               |

# MONDAY, JULY 17

|        |         |                                                                                                                                                                                                                                                                                                                        |
|--------|---------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4:00PM | 1701293 | <p><b>A Novel Horizontal Reactor Design for High Solid Biomass Conversion</b><br/>Ganti Murthy, Oregon State University, Corvallis, OR United States (Haider Kadhum, Ganti Murthy)</p>                                                                                                                                 |
| 4:15PM | 1701362 | <p><b>Respirometric analysis by sequential mass measurements: a simple modeling approach for quantification of fungal biomass in solid substrate fermentations</b><br/>Alex Taylor, Washington State University, Olympia, WA United States (Alex Taylor, Sonya Slater, David Sumerlin, Morgan Wolff, Paul Stamets)</p> |

|        |         |                                                                                                                                                                                                                                                                                              |
|--------|---------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 5:00PM | 1700063 | <p><b>Cyclic voltammetry-based sweet sorghum “redox ladder”</b><br/>Minori Uchimiya, USDA ARS, New Orleans, LA United States (Minori Uchimiya)</p>                                                                                                                                           |
| 5:15PM | 1701359 | <p><b>Key Polyhydroxyalkanoates Biosynthesis Processes Revealed by Transcriptome and Metabolic Flux Analysis of Pseudomonas putida KT2440</b><br/>Zhangyang Xu, Washington State University, Richland, WA United States (Zhangyang Xu, Xiaolu Li, Seema Verma, John H. Miller, Yang Bin)</p> |

Monday, July 17 – 2:30PM-5:30PM

## SESSION 148

### ADVANCES IN BIO-BASED PLASTICS, COMPOSITES AND PRODUCTS – Sponsored by PRS-701

Moderator Dilpreet Bajwa, North Dakota State Univ

**Location: 302B**

| Time   | Paper#  | Title/Author                                                                                                                                                                                                                                                                                                 |
|--------|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2:30PM |         | <b>Introduction</b>                                                                                                                                                                                                                                                                                          |
| 2:35PM | 1700323 | <p><b>Enhancement on the properties of polypropylene using bamboo particles: Effect of particle sizes and loadings</b><br/>Huanhuan Zhang, Zhejiang University, Hangzhou City, Zhejiang Province China, People’s Republic of (Huanhuan Zhang, Wenchao Yao, Shaoping Qian, Xiangqun Qian, Kuichuan Sheng)</p> |
| 2:50PM | 1700038 | <p><b>Evaluating the Shape and Size Characteristics of Sweetpotatoes Using Digital Image Analysis</b><br/>Michael Boyette, NC State University, Raleigh, NC United States (Michael Boyette, Amber L. Tsrinika)</p>                                                                                           |
| 3:05PM | 1700786 | <p><b>Development and characterization of pectin/vinasse films for agriculture applications</b><br/>Mariana Altenhofen da Silva, Federal University of São Carlos, Araras, São Paulo Brazil (Debora D’Angelo Pa-paiz, Silvia Raquel Bettani, Reinaldo Gaspar Bastos, Mariana Altenhofen da Silva,)</p>       |
| 3:20PM | 1700886 | <p><b>Development of Antimicrobial Film using Bio-nanocomposite</b><br/>Jayeeta Mitra, Indian Institute of Technology, Kharag-pur, West Bengal India (Jayeeta Mitra, Mohit Batra)</p>                                                                                                                        |
| 3:35PM | 1701189 | <p><b>Effect of Field Retting in Manitoba and Maceration on Fibre Yield of Hemp (Cannabis sativa L.) Stalks</b><br/>Jean-Christophe Habeck, University of Manitoba, Win-nipeg, Manitoba Canada (Jean-Christophe Habeck, Tasneem Vahora, ShawnaDuCharme, Lin-Ping Choo-Smith, Jason Morrison)</p>             |
| 3:50PM |         | <b>BREAK</b>                                                                                                                                                                                                                                                                                                 |
| 4:00PM | 1701000 | <p><b>Antimicrobial Hydrogels Derived from Lignocellu-losic Compounds</b><br/>Ryan Kalinoski, University of Kentucky, Lexington, KY United States (Ryan Kalinoski)</p>                                                                                                                                       |
| 4:15PM | 1701200 | <p><b>Use of a 3D Finite Element Model for Prediction of Post Fumigation Phosphine Desorption from Stored Wheat</b><br/>Benjamin Plumier, Kansas State University, Ames, Iowa United States (Benjamin Plumier, YongLin Ren, Dirk Maier, Matt Schramm)</p>                                                    |
| 4:30PM | 1701090 | <p><b>Selection, pretreatment, and use of wheat bran for making thermoplastic composites</b><br/>Atikur Rahman, North Dakota State University, Mayville, ND United States (Atikur Rahman, Chad Ulven, Cheyenne Durant, Maren Johnson, Khwaja Hossain, Joseph Fehrenbach)</p>                                 |
| 4:45PM | 1700638 | <p><b>Life Cycle Assessment (LCA) and Techno-Economic Analysis (TEA) of Polylactic Acid-Based Compos-ites</b><br/>Kurt Rosentrater, Iowa State University, Ames, Iowa United States (Kurt Rosentrater)</p>                                                                                                   |

Monday, July 17 – 2:30PM-5:00PM

## SESSION 149

### PHYSICAL PROPERTIES AND EFFECTS ON DRYING, HANDLING AND PROCESSING – Sponsored by PRS-702, PRS-701

Moderator: Johnselvakumar Lawrence, Kansas State Univ

**Location: 303A**

| Time   | Paper#  | Title/Author                                                                                                                                                                                                                                                                            |
|--------|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2:30PM |         | <b>Introduction</b>                                                                                                                                                                                                                                                                     |
| 2:35PM | 1701495 | <p><b>Effect of Chemical Pretreatment on Quality Param-eters of Solar Dried Potato Cylinders</b><br/>Kshanaprava Dhalsamant, Indian Institute of Technol-ogy Kharagpur, Kharagpur, Kharagpur India (Kshanaprava Dhalsamant, Punyadarshini Punam Tri-pathy, Shanker Lal Shrivastava)</p> |
| 2:50PM | 1701267 | <p><b>Drying Rate of Taraxacum kok-saghyz Roots and Impacts on Rubber Yield and Quality</b><br/>Harold Keener, Ohio State University, Wooster, OH United States (H.M. Keener, F.C. Michel, R. Fioritto, S. Wolfe, D. Zabroski, M. Klingman)</p>                                         |
| 3:05PM | 1701171 | <p><b>Flow characteristics of different hybrids of corn and its effects on moisture content and temperature</b><br/>Johnselvakumar Lawrence, Kansas State University, Manhattan, KS United States (Johnselvakumar Lawrence)</p>                                                         |
| 3:20PM |         | <b>BREAK</b>                                                                                                                                                                                                                                                                            |
| 3:30PM | 1700498 | <p><b>Relative Impact of Kernel Thickness and Moisture Content on Rice Fissuring During Drying</b><br/>Zephania Odek, University of Arkansas, Fayetteville, Arkansas United States (Zephania Odek, Terry Sieben-morgen)</p>                                                             |
| 3:45PM | 1700980 | <p><b>Biocompounds retention after drying of raspberry fruits by infrared energy and hot air</b><br/>Maria E Sosa-Morales, Universidade De Las Americas, Irapuato, Guanajuato Mexico (Michele Palacio-Toledo, Julian A. Gomez-Salazar, Abel Ceron-Garcia, Maria E. Sosa-Morales)</p>    |
| 4:00PM | 1700896 | <p><b>Simulation of deformation behavior of beef based on Mooney-Rivlin model</b><br/>Yanlei Li, China Agricultural University, Beijing, China, People’s Republic of (Presenter: Hubo Xu) (Yanlei Li, Xiuying Tang, Lu Qiao, Huanru Shi, Hubo Xu)</p>                                   |

Monday, July 17 – 2:30PM-5:00PM

## SESSION 150

### FOOD SAFETY ENGINEERING

– Sponsored by PRS-703

Moderator: Krishnamoorthy Pitchai, Univ of Ne-braska

**Location: 303B**

| Time   | Paper#  | Title/Author                                                                                                                                                                                                                                                |
|--------|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2:30PM |         | <b>Introduction</b>                                                                                                                                                                                                                                         |
| 2:35PM | 1700538 | <p><b>Grain Sampling Protocols for Aflatoxin Analysis and Associated Challenges</b><br/>Griffiths Atungulu, University of Arkansas, Fayetteville, Arkansas United States (Presenter: Zeinab Mohammadi Shad) (Zeinab Mohammadi-Shad, Griffiths Atungulu)</p> |

# MONDAY, JULY 17

|        |         |                                                                                                                                                                                                                                                                                            |
|--------|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2:50PM | 1700539 | <p><b>Evaluation of Feeds for Occurrence of Aflatoxin and Safety</b><br/>Griffiths Atungulu, University of Arkansas, Fayetteville, Arkansas United States (Presenter: Zeinab Mohammadi Shad) (Zeinab Mohammadi-Shad, Griffiths Atungulu)</p>                                               |
| 3:05PM | 1701064 | <p><b>Electroflotation of Escherichia coli Improves Detection Rates by Loop-mediated Isothermal Amplification</b><br/>Lena Diaz, University of Hawaii at Manoa, Honolulu, Hawaii United States (Lena Diaz, Daniel Jenkins, Yong Li, Tamara McNealy, Tzueng-Rong Tzeng, Natalie Walker)</p> |
| 3:20PM | 1701434 | <p><b>Handheld non-instrumented incubator for field-based pathogen enrichment</b><br/>Daniel Jenkins, University of Hawaii, Honolulu, HI United States (Ryo Kubota, Jaimie Obatake, Lena Diaz, Yong Li, Daniel Jenkins)</p>                                                                |
| 3:35PM | 1700152 | <p><b>Mechanistic understanding of internalization of bacteria into leafy greens during a vacuum cooling process</b><br/>Mohsen Ranjbaran, Cornell University, Ithaca, New York United States (Mohsen Ranjbaran, Ashim K. Datta)</p>                                                       |
| 3:50PM |         | <b>BREAK</b>                                                                                                                                                                                                                                                                               |
| 4:00PM | 1700818 | <p><b>Kinetics of Mold Growth and Rice Quality Metrics during Storage As Affected By Pre-Harvest Fungicide Application</b><br/>Soraya Shafiekhani, University of Arkansas, Fayetteville, Arkansas United States (Soraya Shafiekhani, Griffiths G. Atungulu)</p>                            |
| 4:15PM | 1700115 | <p><b>Rice Microbial Community Responses to Drying by Microwave at 915 MHz Frequency</b><br/>Deandrae Smith, University of Arkansas, Fayetteville, AR United States (Deandrae Smith, Griffiths Atungulu)</p>                                                                               |
| 4:30PM | 1701274 | <p><b>Selectivity of Infrared treatment on Inactivation of Fungi on Corn</b><br/>Shantae Wilson, University of Arkansas Fayetteville, Fayetteville, Arkansas United States (Shantae Wilson, Griffiths Atungulu)</p>                                                                        |
| 4:45PM | 1700090 | <p><b>Using freeze-dried Enterococcus faecium NRRL B-2354 as a surrogate of Salmonella to validate Radio-frequency pasteurization for low moisture foods</b><br/>Jie Xu, Washington State University, Pullman, Washington United States (Jie Xu)</p>                                       |

Monday, July 17 – 2:30PM-5:00PM

## SESSION 151 AOCABFE AND NERCITA CHINA EXCHANGE FORUM - INVITED PRESENTATIONS

– Sponsored by E-2050

Moderator: Ziming Qi, McGill Univ

**Location: 300B**

| Time   | Paper# | Title/Author                                                                                                                                                                                                          |
|--------|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2:30PM |        | <b>Introduction</b>                                                                                                                                                                                                   |
| 2:30PM |        | <b>Canada-China: Past, Current and Future</b><br>Dr. Vijaya Raghavan, President Canadian Society of Bioengineering, McGill University, Sainte-Anne-de-Bellevue, QC, Canada                                            |
| 2:50PM |        | <b>Sino-US Cooperation in Water Saving Technologies: Essential International Problems</b><br>Dr. Steven Evett, USDA ARS, (Representative to USDA-China Most Water Saving Technologies Flagship Project), Bushland, TX |
| 3:10PM |        | <b>Agricultural Engineering at Zhejiang University</b><br>Dr. Songming Zhu, Dean of the Biosystems Engineering and Food Science, Zhejiang University, Hangzhou, China                                                 |
| 3:30PM |        | <b>BREAK</b>                                                                                                                                                                                                          |
| 3:50PM |        | <b>US-China Partnerships: from Individuals to Professional Societies</b><br>Dr. Mary Leigh Wolfe, Past President ASABE, Chair and Professor Biosystems Engineering Dept, Virginia Tech, Blacksburg, VA                |

|        |                                                                                                                                                                                                                                                              |
|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4:10PM | <p><b>Water Crisis in North China Plain and Collaboration Opportunities in Agricultural Water Saving and Environmental Restoration</b><br/>Dr. Yanjun Shen, Center for Agricultural Resources Research, Chinese Academy of Sciences, Shijiazhuang, China</p> |
| 4:30PM | <p><b>IJABE Based on Open Access: Past, Present, and Prospect</b><br/>Dr. Yingkuan Wang, Director of Information Center, Chinese Academy of Agricultural Engineering, Beijing, China</p>                                                                     |
| 4:50PM | <b>Question and Discussion</b>                                                                                                                                                                                                                               |

Monday, July 17 – 5:00PM-7:00PM

## SESSION 153 PERSPECTIVES ON COGENERATION ON THE 21ST CENTURY - INVITED SPEAKERS

– Sponsored by ES-210

Moderator: Jaime Thissen, Univ of Illinois

**Location: 300A**

| Time   | Paper# |
|--------|--------|
| 5:00PM |        |
| 5:05PM |        |
| 5:20PM |        |
| 5:35PM |        |
| 5:50PM |        |
| 6:05PM |        |

Title/Author

**Introduction**

**Jaime Thissen**

**Dr. Gary Hawkins**

**Dr. Sergio Capareda**

**Dr. Adetoyese Oydeun**

**TBA**

Monday, July 17 – 11:00AM-12:30PM

## SESSION 154 OPPORTUNITIES IN THE FOOD - ENERGY - WATER NEXUS - INVITED SPEAKERS

Sponsored by E-2050

Moderator: Rabi Mohtar, Texas A&M Univ

**Location: Conference Theater**

| Time | Paper# |
|------|--------|
|------|--------|

Title/Author

Panelist: Jim Jones, National Science Foundation, Kenneth Quinn, World Food Prize  
John Verboncoeur, Michigan State Univ  
Hongda Chen, USDA NIFA  
Heriberto Cabezas, Environmental Protection Agency

Monday, July 17 – 2:30PM-5:00PM

## SESSION 155 EQUIPMENT FOR COMMERCIAL POST HARVEST PROCESSING OF BIOMASS - INVITED SPEAKERS –

Sponsored by ES

Moderator: Shahab Sokhansanj, Oak Ridge

National Lab

Quang Nguyen, Idaho National

Lab

**Location: 402A**

| Time   | Paper# |
|--------|--------|
| 2:30PM |        |

Title/Author

**Introduction**