Technical Session Schedule

Listed below are all of the technical sessions and presentations scheduled at 2024 AIM, ordered by day and time.

Poster Sessions = Presenters will be at their printed poster in the common area ready to discuss their work individually or in small groups. A great opportunity to connect with the authors.
Oral Sessions = Standard 12-minute talk time with 2- to 3-minute question and answer period.
Hybrid Sessions = a mix of guest speaker and submitted abstract talks.
Lightning Talks = 2 to 3-minute summary talks with the full video presentation available on the 24AIM platform, available before July 25. The audience is encouraged to watch the videos in advance of the session. During the session, you can take the opportunity to interact with the presenter.

This document now includes all presenters, co-authors (as submitted), and room locations.
Updated on 8/15/2024 to reflect those presentations that did not appear to give their talks.

SUNDAY – 8:00AM-6:30PM

CBSI Symposium-Advancing CBS-PANEL

Sunday, 7/28/2024 8:00am - 4:30pm

Location: Marquis Ballroom North
Technical Community: CBSI - Circular Bioecomony Systems Institute
Session Type: Panel Discussion
Description: This will be an all day event on Sunday and will be an invited session. View the full program here.
Organizer: Oladiran Fasina, Auburn University
Sponsoring Committee: Circular Bioecomony Systems
Moderators: Brahm Verma, University of Georgia; Jim Jones, University of Florida

Circular Bioeconomy Systems Research, Instruction and Outreach POSTER SESSION

Sunday, 7/28/2024 5:15pm - 6:30pm

Location: Platinum Ballroom
Technical Community: CBSI - Circular Bioecomony Systems Institute
Session Type: Poster Technical Session
Description: This poster session includes topics related to circular bioeconomy systems especially those that deal with constituent systems of production, processing, packaging, and supply of bioproducts, entire value chains, and waste recovery and use, including examples that describe work completed or analyses of proposed systems that would increase circularity relative to existing systems.
Organizer: Oladiran Fasina, Auburn University
Sponsoring Committee: Circular Bioecomony Systems
Moderators: Sudhagar Mani, University of Georgia; Anne Cidreira, SDSU

Poster No	Abstract ID	*Presentation Title* – Presenter; Co-authors
1	2400946	*Characterization of Municipal Solid Wastes using Machine Learning-Based Imaging and Chemical Analyses* - Presented by: **Enyonam Ahadzi, University of Kentucky, Lexington, Kentucky;** Ahamed Ullah, Emon Das, Jin Chen, Jian Shi
2	2401561	*Potential for using Paper Mill Biosolids Compost to Remediate Petroleum Hydrocarbon Contaminated Soil* - Presented by: **Mano Krishnapillai, Memorial University of Newfoundland, Corner Brook, Newfoundland;** Allison Groenen, Lakshman Galagedara
3	2401560	*Characterization and environmental footprint of faba bean starch-based ecofilms crosslinked and reinforced with tunicate cellulose nanocrystals* - Presented by: **Kehinde Falua;** Amin Babaei-Ghazvini, Bishnu Acharya
4	2400405	*Circular Bioeconomy Approaches for the Poultry Manure Management* - Presented by: **Humeera Tazeen, Department of Agricultural and Biosystems Engineering, North Dakota State University, Fargo, North Dakota;** Astina Joice, Talha Tufaique, C. Igathinathane
5	2400697	*The Evaluation of Radish and Broccoli Microgreens Irrigated with Hydrothermal Liquefaction Aqueous Phase* - Presented by: **Liam P. Reynolds;** Brandon Hollenback
6	2400914	*The Impact of Manure Storage on the Value and Circularity of Nitrogen in Livestock Operations: An Economic and Environmental Analysis* - Presented by: **Jacob Willsea, Iowa State University, Ames, Iowa;** Daniel Andersen
7	2400294	*Design and Engineer Cellulose/Metal-organic Frameworks Hybrids for Functional Adsorbents and Luminescent Sensors* - Presented by: **Mi Li, University of Tennessee, Knoxville, Tennessee;** Kailong Zhang
8	2400920	*A Self-Sustaining In-Situ Anaerobic Digestion Stripping Evaporation System for Water Recovery and Value-Added Products* - Presented by: **Sarah Witherrite, Department of Biological Systems Engineering Washington State University, Pullman, Washington;** Liang Yu
9	2401078	*Understanding Circularity in Natural and Man-Made Systems, a New Direction in Waste Management Extension* - Presented by: **Douglas W. Hamilton;** Samantha Phelps, Sydnee Sisneros, Craig Woods, Parizaad Mohammadi
10	2400480	*Upcycling Nutrients from Abattoir Wastewater into Nutritional Yeast Cultivation* - Presented by: **Saravanan Ramiah Shanmugam, Auburn, Alabama;** Saravanan Ramiah Shanmugam, Rachel Schorer, Wellington Arthur, Brendan Higgins, Marko Rudar
11	2400361	*Pilot Scale Co-pelletization of Gin 'Trash' and Beef Manure: A Circularity Perspective* - Presented by: **Femi Peter Alege, USDA-ARS Cotton Ginning Research Unit, Stoneville, Mississippi;** Sean P. Donohoe, Joe W. Thomas, Christopher D. Delhom
12	2400357	*Color removal from fermentation broth using powder activated carbon for the recovery of succinic acid* - Presented by: **Chandan Mahata, Agricultural and Biological Engineering, University of Illinois Urbana-Champaign, Urbana, Illinois;** Somesh Mishra, Vijay Singh
13	2401223	*Life cycle assessment of biobased coating material derived from spent coffee grounds* - Presented by: **Ashish Manandhar, The Ohio State University, Columbus, Ohio;** Sriloy Dey, Emmanuel Hatzakis, Yael Vodovotz, Ajay Shah
14	2400406	*Microgreens and Organic Waste Management through Circular Bioeconomy* - Presented by: **Humeera Tazeen, Department of Agricultural and Biosystems Engineering, North Dakota State University, Fargo, North Dakota;** Talha Tufaique, Astina Joice, C. Igathinathane
15	2401200	*Transforming Bourbon Thin Stillage into Valuable Fungal Pellets for Effective Stillage Treatment and Resource Recovery* - Presented by: **Suvro Talukdar, Biosystems and Agricultural Engineering, University of Kentucky, Lexington, Kentucky;** Tyler J. Barzee
16	2401210	*Swine Manure Anaerobic Digestion Impact on Carbon & Macronutrient Fate Including Changes in Air & Odor Emissions in Iowa and North Carolina* - Presented by: **Daniel Andersen**
17	2401156	*Bacterial, Fungal, and Viral Population Dynamics of activated sludge wastewater treatment* - Presented by: **Emilia M Emerson, Michigan State University, East Lansing, Michigan**

MONDAY – 9:30AM-12:00PM

101 Cultural Diversity in ASABE: International Perspectives-RAP

Monday, 7/29/2024 9:30am - 12:00pm

Location: Grand Ballroom B
Technical Community: ASABE Special Interest
Session Type: Rap Session
Description: Join us for a facilitated group discussion organized by E-03 IDEA (Inclusion, Diversity, Equity, and Access) to explore the nuanced perspectives of the international community of ASABE, including members of the African Network Group of ASABE (ANGASABE), Association of Agricultural, Biological, and Food Engineers of Indian Origin Community (AABFEIO), Association of Korean Agricultural, Biological, and Food Engineers (AKABFE), the Association of Overseas Chinese Agricultural, Biological, and Food Engineers (AOCABFE), and ASABE BIPOC.
Organizer: Mikela Pryor, USDA
Sponsoring Committee: General ASABE Program
Moderators: Mikela Pryor, USDA
Panelists: Sushant Mehan, South Dakota State University, Brookings, South Dakota; Ebenezer Kwofie, McGill University, Sainte-Anne-de-Bellevue, Quebec, Canada

102 Clean Energy and Agrivoltaics

Monday, 7/29/2024 9:30am - 12:00pm

Location: Grand Ballroom C
Technical Community: ASE - Applied Science & Engineering
Session Type: Oral Technical Session
Description: Advancements in the co-location of solar energy production and crops.
Organizer: Paul Funk, USDA Agricultural Research Service
Sponsoring Committee: ASE-16 Engineering for Sustainability **Co-Sponsors:** ES-210 Renewable Power Generation
Moderators: Paul Funk, USDA Agricultural Research Service

Start Time	Abstract ID	*Presentation Title* – Presenter; Co-authors
9:35am	2401496	*Considering Land Use Impacts under the Clean Energy Transition* - Presented by: **C. Lindsay Anderson, Cornell University, Ithaca, New York;** M. Vivienne Liu
9:50am	2400763	*Determining the market potential of agricultural energy management systems in Germany* - Presented by: **Christoph Bader, Technical University of Munich, Freising, Germany;** Heinz Bernhardt, Jörn Stumpenhausen
10:05am	2401314	*Geospatial Analysis of Biomass Supply and Energy Need to Increase Resiliency in Rural Mississippi* - Presented by: **Kaitlyn Gordon, Starkville, Mississippi;** Mary Love Tagert
10:20am	2400785	*High-efficiency CO2 capture using a porous double-network gel coated with microalgal amino acid salt solution* - Presented by: **Annaliese Marks, Michigan State University, East Lansing, Michigan;** Sibel Uludag-Demirer, Shengqiang Cai, Wei Liao
10:35am-10:45am		BREAK
10:45am	2401015	*Relating Biomass Characteristics with Bio-oil Yields from Pyrolysis of Various Agricultural Residues* - Presented by: **Angeli Castalone;** Sergio Capareda
11:00am	2400536	*USDA Agrivoltaics Research Plans Update* - Presented by: **Paul Funk**
11:15am	2401557	*The Potential of the Floating Photovoltaic System in Agricultural Reservoirs in South Korea as a Renewable Energy Source* - Presented by: **Suhyun Lee;** Yooan Kim, Geraldine Baylon, Hakkwan Kim, Suh Kyo

103 Opportunities and Challenges to Circular Bioeconomy Systems-PANEL

Monday, 7/29/2024 9:30am - 12:00pm

Location: Marquis Ballroom North
Technical Community: CBSI - Circular Bioecomony Systems Institute
Session Type: Panel Discussion

Description: Topics covered by the panel include opportunities and barriers with regards to technical, regulations, financial, environmental, infrastructure and public perception and support.

Organizer: Oladiran Fasina, Auburn University

Sponsoring Committee: Circular Bioecomony Systems

Moderators: Sudhagar Mani, University of Georgia

Panelists: KC Ting, University of Illinois at Urbana-Champaign; David Jones, University of Nebrask-Lincoln; Kauslandra Singh, USDA NIFA; Michele Wallace, Cotton Inc.

104 Harvesting Innovation Globally: Engineering Solutions for Agricultural Challenges-PANEL

Monday, 7/29/2024 9:30am - 12:00pm

Location: Gold Key I/II

Technical Community: E-2050 - Global Engagement

Session Type: Panel Discussion

Description: Join us on Monday morning for a dynamic panel discussion where experts will explore how engineers worldwide are tackling agricultural challenges through innovative solutions, from sustainable practices such as circular bioeconomy to cutting-edge technologies such as artificial intelligence.

Organizer: Ebenezer Miezah Kwofie, McGill University; Akinbode A. Adedeji, University of Kentucky; Shubham Subrot Panigrahi, Lethbridge College; Chang Chen, Cornell University; Yin Bao, University of Delaware; Lilong Chai, University of Georgia; Yeyin Shi, University of Nebraska-Lincoln

Sponsoring Committee: E-2050 Global Engagement **Co-Sponsors:** AOCABFE, ANGASABE, and ANGASABE

Moderators: Yeyin Shi, University of Nebraska

Panelists (A-Z): Kingsly Ambrose, Purdue University; Griffith Atungulu, University of Arkansas; Satyanarayan Dev, Florida A&M University; Zhongli Pan, University of California, Davis; Ruihong Zhang, University of California, Davis

105 Technology Trends and Career Opportunities in the U.S. and Korea-GUEST SPEAKERS

Monday, 7/29/2024 9:30am - 12:00pm

Location: Orange County 1

Technical Community: E-2050 - Global Engagement

Session Type: Guest Speaker Session

Description: This session is proposed to help understand the current technology trends in agricultural and biological engineering and seek career opportunities in the U.S. and Korea. The session is expected to promote collaboration between agricultural and biological engineers in the U.S. and Korea and international collaboration between Korea and other countries.

Organizer: Jaehak Jeong, Texas A&M University

Sponsoring Committee: E-2050 Global Engagement

Moderators: Jaehak Jeong, Texas A&M University

Start Time	Abstract ID	*Presentation Title* – Presenter
9:35am	Guest Speaker	*Trends of Smart Agriculture Policy and Transition to Digital Agriculture in Korea* - Presented by: **Ghiseok Kim, Seoul National University, Seoul, South Korea**
10:05am	Guest Speaker	*Recent Advances in Agricultural Civil Engineering in South Korea* - Presented by: **Wonho Nam, Hankyong National University, Gyeonggi, South Korea**

106 Generative AI: Ethical Implications for Engineering and Technology Professionals-PANEL

Monday, 7/29/2024 9:30am - 12:00pm

Location: Grand Ballroom D

Technical Community: EOPD - Education, Outreach, & Professional Development

Session Type: Panel Discussion

Description: The emergence of generative AI technologies such as ChatGPT, DALLE2 offers both opportunities and challenges to society. This session seeks to explore the ethical implications of these technologies on the engineering profession. An expert in AI will provide an overview of the current capabilities of generative AI technologies. This will be followed by a panel discussion that includes an educator, practicing engineer, and an ethicist.

Organizer: Deepak Keshwani, University of Nebraska Lincoln

Sponsoring Committee: EOPD-412 Professional Ethics **Co-Sponsors:** ITSC-254 Emerging Information Systems, EOPD-203 Undergraduate & Graduate Instruction

Moderators: Deepak Keshwani, University of Nebraska Lincoln

Panelists: Joshua Peschel, Iowa State University; John Shutske, University of Wisconsin; Dave Lanning, Forest Concepts, LLC; Gayle Baker, Maurer-Stutz, Inc; Kevin Moore, Oklahoma State University

107 Advances in Biomass Preprocessing and Pretreatment

Monday, 7/29/2024 9:30am - 12:00pm

Location: Grand Ballroom G
Technical Community: ES - Energy Systems
Session Type: Oral Technical Session
Organizer: Nitesh Kasera, North Carolina State University
Sponsoring Committee: ES-220 Bio-based Energy, Fuels and Products
Moderators: Nitesh Kasera, North Carolina State University; Tirath Raj, University of Illinois at Urbana-Champaign

Start Time	Abstract ID	*Presentation Title* – Presenter; Co-authors
9:35am	2401023	*Effect of ultrasound treated laccase on the delignification of Zea maize: An impact study on characterization of degraded lignin* - Presented by: **Subhodeep Banerjee, Research Scholar ATDC IIT Kharagpur, Kharagpur, West Bengal, India;** Subhara Dey, Anusha, Tapas Kumar Bandyopadhyay, Rintu Banerjee
9:50am	2400152	*Variability in the interparticle friction and adhesion between biomass particles* - Presented by: **Hojae Yi, Pennsylvania State University, Pennsylvania;** James C. Slosson, Yiming Li, Sena Atsyo, Heather Burkholder, Dave Lanning, Chris Lanning, James H. Dooley
10:05am	2400362	*Physical and flow properties of woodchip, bituminous coal, and plastic blend* - Presented by: **Edith Laure Yonguep Ngoupeyou, Auburn University, Auburn, Alabama;** Mason, H., Fasina, O., Sushil, A.
10:20am	2400574	*Optimization of Anaerobic Digestion of Defatted Soybean Meal for Biogas and Biofertilizer Productions* - Presented by: **Francisca Kyei;** Xiaoyu Feng, Ademola Ajayi-Banji
10:35am-10:45am		BREAK
NO-SHOW	2401035	*Removal of Tar from Synthesis Gas Produced from a Walnut Shell Downdraft Fixed Bed Gasifier: A Comparison between Different Absorption Fluids* - Presented by: **Ali Zabihi**
11:00am	2400379	*Using Response Surface Methodology to Optimize Lignin Quality via Cosolvent-Enhanced Lignocellulosic Fractionation* - Presented by: **Stephen Chmely, Penn State University, University Park, Pennsylvania;** James A. Godwin, Hojae Yi
11:15am	2401490	*Green extraction of anthocyanin from metabolically engineered bioenergy crops using Natural Deep Eutectic Solvents (NADES)* - Presented by: **Tirath Raj, DOE Center for Advanced Bioenergy and Bioproducts Innovation, University of Illinois at Urbana-Champaign, Urbana, Illinois;** Tirath Raj, Vijay Singh

108 Value-Added Chemicals, Products and Materials Towards Circular Bioeconomy

Monday, 7/29/2024 9:30am - 12:00pm

Location: Grand Ballroom H
Technical Community: ES - Energy Systems
Session Type: Oral Technical Session
Organizer: Stephen Chmely, Penn State University
Sponsoring Committee: ES-220 Bio-based Energy, Fuels and Products
Moderators: Stephen Chmely, Penn State University; Toufiq Reza, Florida Institute of Technology

Start Time	Abstract ID	*Presentation Title* – Presenter; Co-authors
9:35am	2400409	*Evaluation of loblolly pine wood biochar properties derived from pyrolysis process for the synergetic benefit of carbon sequestration and soil conditioning* - Presented by: **Vivian Chimezie Usha, Auburn University, Auburn, Alabama;** Hossein Jahromi, Dale Hartman, Bijoy Biwas, Sushil Adhikari, Deb P. Jaisi, Keshav A. Kishor
9:50am	2400793	*Strategy for Haloferax Mediterranei-based Polyhydroxyalkanoate (PHA) production from food waste* - Presented by: **Xueyao Zhang, Virginia Tech, Blacksburg, Virginia, USA;** Amro Hassanein, Naresh Kumar Amradi, Stephanie Lansing, Zhi-Wu Wang

10:05am	2400135	*Evaluating the potential of bioenergy crops for growing oleaginous yeasts for biofuels production* - Presented by: **Shivali Banerjee, Department of Agricultural and Biological Engineering, University of Illinois Urbana Champaign, Urbana, Illinois and Center for Advanced Bioenergy and Bioproducts Innovation (CABBI), University of Illinois Urbana Champaign, Urbana, Illin;** Bruce S. Dien, Vijay Singh
10:20am	2400818	*Utilizing nanocellulose obtained from agricultural byproducts as stabilizers in emulsions containing essential oils with antifungal properties* - Presented by: **Lingling Liu, Department of Agricultural and Biosystems Engineering, Iowa State University, Ames, Iowa;** K.A.E. Abiol, M.A. Friest, K.D. Fisher
10:35am-10:45am		BREAK
10:45am	2400632	*Effect of C/N ratio for polyhydroxybutyrate production from Shrub Willow using recombinant Escherichia coli LSBJ* - Presented by: **Kalyani Ananthakrishnan, SUNY ESF, Syracuse, New York;** Kalyani Ananthakrishnan, Ankita Juneja, Erica L.-W. Majumder, Timothy Volk, Obste Therasme, Deepak Kumar
11:00am	2400828	*Production of polyhydroxybutyrate (phb) from insdutrial hemp* - Presented by: **Asmita Mahara;** Mark Wilkins
11:15am	2400799	*Upcycling of pine and sodium silicate composites through pyrolysis: Effects of pyrolysis temperature and sodium silicate content* - Presented by: **Manish Sakhakarmy, Auburn University, Auburn, Alabama;** Sagar Kafle, Sushil Adhikari
11:30am	2401030	*Reinforcement of PLA-Natural Fiber biocomposite as an upgraded inking material for advanced 3D printing using Fused Deposition Modelling* - Presented by: **Rintu Banerjee, Dean, R&D , IIT Kharagpur**
11:45am	2401073	*Development of biochar-based control release nitrogen fertilizers coated by polypropylene* - Presented by: **Kasiviswanathan Muthukumarappan**

109 Agricultural Automation, Robotics, and Technology: New Risks & Safety Opportunities

Monday, 7/29/2024 9:30am - 12:00pm

Location: Grand Ballroom J

Technical Community: ESH - Ergonomics, Safety & Health

Session Type: Oral Technical Session

Description: Safety and Risk management focus is needed on research or development projects involving various forms of electronic/digital technology in agriculture. This includes, but is not limited to, field and farmstead automation, robotics, driverless systems, and the associated safety and risk implications for the public and operators.

Organizer: John Shutske, The University of Wisconsin, Madison

Sponsoring Committee: ESH-04 Technology Exchange **Co-Sponsors:** ESH-04/1 Journal of Agricultural Safety and Health, ESH-04/2 Farmers With Disabilities Technology Exchange, ESH-01 POSTER SESSION

Moderators: Aaron Etienne, Utah State University

Start Time	Abstract ID	*Presentation Title* – Presenter; Co-authors
9:35am	2400827	*Feasibility of Integrating Electromyography and Computer Vision for Occupational Safety during Tractor Ingress and Egress* - Presented by: **Bethany Lowndes, University of Nebraska Medical Center, Omaha, Nebraska;** Ana L. Pineda-Gutierrez, Salem Rumuri Nyacyesa, Ka-Chun Siu, Santosh Pitla, Aaron Yoder
NO-SHOW	2401390	*Robotic Pesticide Delivery Vehicle for Enhanced Food Safety in Processing Facilities* - Presented by: **Igor Sheshukov, Kansas State University, Manhattan, Kansas;** Daniel Flippo
10:05am	2400542	*Assessment of technologies and response strategies for lone agriculutral worker incidents* - Presented by: **Aaron Etienne, Purdue University, West Lafayette, Indiana;** Bill Field
10:20am	2401024	*Developing an AI-Enhanced Data Pipeline for Automated FAIC and OIICS Code Assignments in Agricultural Injury Surveillance* - Presented by: **Salah Issa, University of Illinois Urbana-Champaign, Urbana, Illinois;** Sihan Li
10:35am-10:45am		BREAK
10:45am	2400822	*Developing the setup for evaluating the static stability of agricultural All-Terrain Vehicles* - Presented by: **Fernando Ferreira Lima dos Santos, University of California, Davis;** Farzaneh Khorsandi

11:00am	2401176	*Safety priorities and practices in agricultural operators: Challenge for injury prevention* - Presented by: **Risto Rautiainen**
11:15am	2400790	*Analysis of Roadway Incidents Involving Farm Vehicles in Illinois from 2012-2021* - Presented by: **Sean Tormoehlen, University of Illinois Urbana-Champaign, Urbana, Illinois;** Josie M. Rudolphi
11:30am	2400137	*Design and Evaluation of a Miniaturized Recirculating Ventilation System (mRVS) for Controlling Dust and Bioaerosol in Swine Production Buildings* - Presented by: **Matthew Nonnenmann, Omaha, Nebraska;** M. Wei
11:45am	2400060	*Enhancing Stability through Passive Axle Suspension in Nonlinear Bouncing Agricultural Tractors* - Presented by: **Masahisa Watanabe, Tokyo University of Agriculture and Technology, Tokyo, Japan;** Keisuke Kazama, Kenshi Sakai
12:00pm	2400691	*Assessing the protection provided by the N95 filtering facepiece respirators in grain dust environments: A case study of Ohio farmers* - Presented by: **Yang Geng, The Ohio State University, Columbus, Ohio;** Dee Jepsen, Lingying Zhao, Tina Reponen

110 3D Machine Vision for Sensing and Automation

Monday, 7/29/2024 9:30am - 12:00pm

Location: Grand Ballroom K

Technical Community: ITSC - Information Technology, Sensors & Control Systems

Session Type: Oral Technical Session

Description: Focuses on the development and application of 3D imaging technologies for agricultural sensing and automation.

Organizer: Seung-Chul Yoon, USDA-ARS

Sponsoring Committee: ITSC-312 Machine Vision

Moderators: Daniel Morris, Michigan State University

Start Time	Abstract ID	*Presentation Title* – Presenter; Co-authors
9:35am	2400850	*Line-scan hyperspectral 4D imaging for agricultural nondestructive evaluation* - Presented by: **Beiwen Li, Iowa State University, Ames, Iowa;** Jiaqiong Li
9:50am	2401248	*Advancing 3D Shape and Microstructure Analysis with Automated Macro-Scale OCT for Assessing Woody Breast in Poultry* - Presented by: **Seung-Chul Yoon, USDA-ARS, Athens, Georgia;** Nader Ekramirad, Pratik Parajuli, Brian Bowker, Hong Zhuang
10:05am	2400204	*High-throughput detection of tomato architectural traits using UGV plant phenotyping system* - Presented by: **Pengyao Xie, Zhejiang University, Hangzhou, Zhejiang Province, China;** Xin Yang, Leisen Fang, Haiyan Cen
10:20am	2400298	*SegFormer-Based 3D Peanut Canopy Foliage Density Measurement for Precision Spray Applications* - Presented by: **Muhammad Asif, Department of Plant Pathology, University of Georgia, Athens, Georgia;** Muhammad Asif, Hasan Jahanifar, Aleena Rayamajhi, Md Sultan Mahmud
10:35am-10:45am		BREAK
10:45am	2401203	*3D Phenotyping of Wheat Architectural Traits* - Presented by: **Afef Marzougui, ETH Zurich, Department of Environmental Systems Sciences, Institute of Agricultural Sciences, Zurich, Switzerland;** Remo Hengartner, Nicola Storni, Luca Autunno, Norbert Kirchgessner, Lukas Roth, Achim Walter, Andreas Hund
11:00am	2400545	*Simulated Data Enhances Three-dimensional Segmentation-based Characterization of Real Apple Trees* - Presented by: **Ruiming Du, Cornell University, Ithaca, New York;** Tian Qiu, Kenong Xu, Yu Jiang
11:15am	2401054	*Skeletonization of Apple Trees Using Semantic-Enhanced Reconstruction* - Presented by: **Dawood Ahmed, Washington State University, Prosser, Washington;** Ranjan Sapkota, Martin Churuvija, Manoj Karkee
11:30am	2400883	*Real-Time Maize Field Mapping Using VSLAM on a Differential Drive Tracked Robot* - Presented by: **Sainath Reddy Gummi**

11:45am 2401298 *Grape Cluster and Canopy Volume Estimation Using Smartphone-based 3D Imaging in Wine Grapes* - Presented by: **Priyanka Upadhyaya, Washington State University, Pullman, Washington;** Manoj Karkee

111 Connectivity, Cloud Computing, and Internet of Things in Agriculture and Natural Resources- LIGHTNING TALKS

Monday, 7/29/2024 9:30am - 12:00pm

Location: Elite 1

Technical Community: ITSC - Information Technology, Sensors & Control Systems

Session Type: Lightning Oral Technical Session

Description: Focuses on the development and application of internet of things (IoT) and sensing networks for agriculture and natural resources.

Organizer: Joshua Peschel, Iowa State University

Sponsoring Committee: ITSC-254 Emerging Information Systems

Moderators: Shirin Ghatreshamani, Penn State

Start Time	Abstract ID	*Presentation Title* – Presenter; Co-authors
9:35am	2401184	*Maximally Interoperable Models (MIMs): A Heuristic Approach for Evaluating Interoperability* - Presented by: **Yaguang Zhang, Purdue University, West Lafayette, Indiana;** Aaron Ault, Yaguang Zhang, James Krogmeier, Dennis Buckmaster
9:42am	2400833	*Integration & testing of wireless data communication system for autonomous liquid application platform* - Presented by: **Ketan Shende, Kansas State University, Manhattan, Kansas;** Ajay Sharda
9:49am	2400705	*Design of a Smart Small Farm Testbed* - Presented by: **Thirawat Bureetes, Purdue University, West Lafayette, Indiana;** Ankita Raturi
9:56am	2401344	*IoT-Based Time-Series Multispectral Imagery Analysis Using Machine Learning Techniques for Yield Prediction in Winter and Spring Wheat Breeding Programs* - Presented by: **Worasit Sangjan, USDA-ARS, Columbia, Missouri;** Arron H. Carter, Michael O. Pumphrey, Vadim Jitkov, Kyall E. Hagemeyer, Sindhuja Sankaran
10:03am	2401198	*Bok Choy Growth Monitoring Using IoT Technology and a Recurrent Segmentation Model* - Presented by: **Chenchen Kang, Penn State University, Biglerville, Pennsylvania;** Chenchen Kang, Xinyang Mu, Aline Novaski Seffrin, Francesco Di Gioia, Long He
10:10am	2400934	*Elevating Data Synergy: Merging Agricultural IoT Streams with Public Data Repositories* - Presented by: **Md. Samiul Basir, PhD Student, Agricultural and Biological Engineering, West Lafayette, Indiana;** Fabio A. Castiblanco Rubio, Andrew Balmos, Dennis Buckmaster, James V. Krogmeier
10:17am	2400811	*Comparison Between Jetson Nano and Jetson Xavier NX for Ag Data Security* - Presented by: **Mohammad Ashik Alahe, South Dakota State University, Brookings, South Dakota;** James Kemeshi, Young Chang, Kwanghee Won
10:24am	2400570	*Changing the Game: Agricultural Technologies for Drought Resilience in Australia* - Presented by: **Michael Scobie, University of Southern Queensland, Toowoomba, Australia;** Justine Baillie, Toni Gillis, Sayma Shammi, Corey Plant
10:31am	2401170	*Integrate IoT and renewable energy in a crop monitoring system for sustainable smart precision agriculture* - Presented by: **Manish Man Shrestha, South Dakota State University, Brookings, South Dakota;** Lin Wie
10:38-10:50am		BREAK
10:50am	2400198	*IoT based Robust Agro-Farm Security System in Bangladesh* - Presented by: **Mohammed Kamruzzaman, Department of Agricultural and Biological Engineering, University of Illinois at Urbana-Champaign, Urbana, Illinois;** Md. Rostom Ali, Nafis Sadique Sayem, Sagor Chowdhury, Mohammed Kamruzzaman
10:57am	2401537	*Precision yield mapping in strawberry fields using instrumented picking carts* - Presented by: **Uddhav Bhattarai, University of California Davis, Davis, California;** Uddhav Bhattarai, Rajkishan Arikapudi, Dennis Lee Sadowski, Dario Racano, Frank Martin, Steven Fennimore, Stavros George Vougioukas
11:03am	2400655	*Uncovering Patterns in Bee Hive Daily Weight Variations through Machine Learning Analysis* - Presented by: **Yih-Lin Liu, Department of Biomechatronics Engineering, National Taiwan University, Taipei, Taiwan (R.O.C.);** Young-Fa Chen, Cheng-Kuan Wei, Ta-Te Lin

11:10am	2401544	*Web-based Visualization and Data Sharing Tools for Unoccupied Aerial System (UAS) Images in Agriculture* - Presented by: **Anjin Chang**
11:17am	2401499	*Development of a wireless, multi-modal wearable IoT system to monitor wellbeing of dairy cows* - Presented by: **Christopher Choi**
11:24am	2400213	*Enhancing Irrigation Water Management through Integration of Internet of Things (IoT) and Machine Learning (ML) Techniques* - Presented by: **Bryan Nsoh**
11:31am	2401168	*IoT-Enabled Smart Irrigation Management System for Sustainable Urban Food Production* - Presented by: **Mike Ojo**
11:38am	2401524	*RhinoCam: deployment progress and outcomes of a distributed surveillance system for Coconut Rhinoceros Beetle* - Presented by: **Mohsen Paryavi**

112 Hyperspectral Imaging: Advances in Technologies, Analytics, and Applications

Monday, 7/29/2024 9:30am - 12:00pm

Location: Elite 2

Technical Community: ITSC - Information Technology, Sensors & Control Systems

Session Type: Oral Technical Session

Description: Focuses on submissions addressing the use of hyperspectral imaging technologies for agrifood applications. Topics cover from hardware design, to algorithm development and validation, and to research and production applications.

Organizer: Nader Ekramirad, USDA-ARS

Sponsoring Committee: ITSC-348 Electromagnetics & Spectroscopy

Moderators: Sierra Young, Utah State University; Pratik Parajuli, USDA

Start Time	Abstract ID	*Presentation Title* – Presenter; Co-authors
9:35am	2400642	*Assessing the positional accuracy of orthorectified airborne hyperspectral imagery with concurrently acquired multispectral imagery* - Presented by: **Chenghai Yang**
9:50am	2401112	*Enhancing Real-Time Detection of Foreign Materials in Poultry Meat Using Post Training Quantization on a Semi-Supervised GAN Model with Hyperspectral Imaging* - Presented by: **Zirak Khan, University of Georgia, Athens, Georgia;** Seung-Chul Yoon, Suchendra M Bhandarkar
10:05am	2401397	*Herschel Vision: An Open-source Proximal Hyperspectral Image Analysis Application* - Presented by: **Billy G. Ram, North Dakota State University, Fargo, North Dakota;** Xin Sun
10:20am	2401195	*Optimizing Almond Cultivation by building a multi-temporal Almond Nitrogen estimation model* - Presented by: **Momtanu Chakraborty, UC Davis, Davis, California;** Alireza Pourreza
10:35am-10:45am		BREAK
10:45am	2400824	*Development of Sensing Platform for Fruit Sorting* - Presented by: **Ahyeong Lee, Researcher, Department of Agricultural Engineering, National Institute of Agricultural Sciences, RDA, Jeonju-si, Jeollabuk-do, Republic of Korea;** Insuck Baek, Suk-Ju Hong, Jinse Kim, Moon S. Kim
NO-SHOW	2400977	*Non-Invasive Detection of Defense Proteins in Tomato Plants Using Hyperspectral Imaging and Machine Learning* - Presented by: **Yanqiu Yang, Penn State University, University Park, Pennsylvania;** Paul Heinemann, Christina Grozinger, Shirin Ghatrehsamani, Chenchen Kang
11:15am	2401230	*Early Detection of Branched Broomrape in Tomato by Hyperspectral Sensing* - Presented by: **Mohammadreza Narimani, Ph.D. Student, Davis, California;** Alireza Pourreza, Ali Moghimi, Mohsen Mesgaran, Parastoo Farajpoor, Hamid Jafarbiglu
11:30am	2400397	*Assessing Drought Tolerance in plants with Statistical and Probabilistic Deep Learning Models on Hyperspectral Images for High-Throughput Plant Phenotyping* - Presented by: **Md Hasibur Rahman, Graduate assistant, Department of Biosystems Engineering, Auburn, Alabama**
11:45am	2401134	*A Decision Support Tool Based on Hyperspectral Imaging and Machine Learning for Pecan Quality Assessment* - Presented by: **Christopher Kucha;** Ebenezer O. Olaniyi

113 Information Technology, Sensors & Control Systems POSTER SESSION A

Monday, 7/29/2024 9:30am - 12:00pm

Location: Platinum Ballroom

Technical Community: ITSC - Information Technology, Sensors & Control Systems

Session Type: Poster Technical Session

Description: Poster session for submissions to the ITSC division.

Organizer: Sierra Young, Utah State University
Sponsoring Committee: ITSC-01 POSTER SESSION
Moderators: Sierra Young, Utah State University

Poster No	Abstract ID	*Presentation Title* – **Presenter; Co-authors**
1	2400162	*Automated broiler behaviors measurement through deep learning models* - Presented by: **Amin Nasiri;** Yang Zhao, Hao Gan
2	2401545	*Forecasting Surface water and Groundwater Level in Florida using Advanced Machine Learning Approaches* - Presented by: **Golmar Golmohammadi;** Rohith Nedhunuri Reddy, Saman Javadi, Kourosh Mohammadi
3	2400531	*Development of a smart system for image collection in greenhouse environments* - Presented by: **Cristhian Perdigon**
4	2400507	*A Frost Damaged Flower Detection Platform based on Convolutional Neural Network (CNN) for Fast Determination of Apple Flower Survival Rate* - Presented by: **Weiyun Hua, Penn State Univeristy, State College, Pennsylvania;** Long He, Paul Heinemann
5	2400178	*Wood Chip Moisture Content Assessment Using Infrared Image-Based Machine Learning* - Presented by: **Jason Street, Mississippi State University, Starkville, Mississippi;** Abdur Rahman, Amirhossein Eskorouchi, James Wooten, Mohammad Marufuzzaman, Haifeng Wang
6	2401563	*The Efficacy of UAS RGB Imagery and Deep Learning for Cereal Crop Lodging Detection* - Presented by: **Aliasghar Bazrafkan, Department of Agricultural and Biosystems Engineering, North Dakota State University, Fargo, North Dakota;** Aliasghar Bazrafkan, Anup Kumar Das, Andre Miranda, Ramita Shah, Andrew Green, Paulo Flores
7	2400942	*UAV-based Hyperspectral Imaging for Field-Scale Detection and Quantification of Multiple Wheat Pathogens* - Presented by: **Alireza Sanaeifar, University of Minnesota, St. Paul, Minnesota;** Alireza Sanaeifar, Nicholas Padilla, Ruth Dill-Macky, Rebecca Curland, Susan Reynolds, Matthew N Rouse, Shahryar Kianian, Franklin Xavier, Ce Yang
8	2400807	*A machine vision system for broiler body weight estimation* - Presented by: **Ahmad Amirivojdan, University of Tennessee, Knoxville, Tennessee;** Amin Nasiri, Yang Zhao, Hao Gan
9	2400514	*Drone hyperspectral imaging accurately predicts wheat stem rust disease severity* - Presented by: **Jaafar Abdulridha, Assistant professor University of Arkansas, Pine Bluff, Arkansas;** An Min, Matthew N Rouse, Shahryar Kianian, Volkan Isler, Ce Yang
10	2401372	*Enhancing Fusarium Head Blight Disease Severity Classification: Training ML Models for Lightweight Devices* - Presented by: **Jithin Mathew, Department of Agriculture and Biosystems Engineering, North Dakota State University, Fargo, North Dakota;** Andrew Green, Andre Miranda, Paulo Flores
11	2400952	*Estimating Sorghum Anthracnose Severity from Unmanned Aircraft Systems with Machine Learning Methods* - Presented by: **Yan Zhu, University of Illinois Urbana-Champaign, Urbana, Illinois;** Anna Ondrejckova, Dylan Allen, Sebastian Varela, Jeremy Ruhter, Kayla Beechinor, Delroy Collins, William Rooney, Andrew Leakey
12	2401395	*Hyperspectral Reflectance Variability Due to Leaf Angle: Understanding and Solution in Vineyard Sensing* - Presented by: **Atif Bilal Asad, Washington State University, Prosser, Washington;** Atif Bilal Asad, Achyut Paudel, Safal Kshetri, Manoj Karkee
13	2401391	*Nitrogen Assessment in Grapevine Leaves using ground-based hyperspectral imaging* - Presented by: **Atif Bilal Asad, Washington State University, Prosser, Washington;** Atif Bilal Asad, Achyut Paudel, Safal Kshetri, Salik Khanal, Manoj Karkee, Markus Keller, Nataliya Shcherbatyuk, Pierre Davadant, Paul Schreiner, Santosh Kalauni
14	2401220	*Development of an advanced gantry imaging system for comprehensive plant health monitoring* - Presented by: **Insuck Baek, Environmental Microbial & Food Safety Laboratory USDA ARS, Beltsville, Maryland;** Aubrie O'Rourke, Kristine Wilson, Blake Costine, Mary Hummerick, Lashelle Spencer, Jianwei Qin, Moon Kim Diane Chan, Matthew A. Mickens, Natasha J. Haveman
15	2400143	*Instance segmentation method for weed detection using UAV imagery in soybean fields* - Presented by: **Lang Qiao, Biological Systems Engineering, University of Wisconsin-Madison, Madison, Wisconsin;** Beibei Xu, Jiahao Fan, Jun Chao, Nikola Arsenijevic, Rodrigo Werle, Zhou Zhang

16	2400195	*Using Machine Vision to Monitor Dustbathing Behavior of Cage-free Hens Automatically* - Presented by: **Lilong Chai, University of Georgia, Athens, Georgia;** Bidur Paneru, Ramesh Bist, Xiao Yang, Lilong Chai
17	2400048	*Total Soluble Solids, pH, and Titratable Acidity Prediction in Wine Grape Bunch from Veraison to Harvest using Hyperspectral Imaging* - Presented by: **Masaya Mori, Kubota Corporation, Fremont, California;** Bo Liu, Jim Shumate, Taryn M. Liu, John J. Urrutia, Susumu Morimoto, Kenta Nakamura
18	2400519	*A Mobile Device App for Fruit Yield Estimation* - Presented by: **Duke M. Bulanon;** Brandon Duncan, Joseph Ichiro J. Bulanon, Josh Nelson
19	2400725	*A YOLO v8n Insect Identification model for a smartphone application to empower beginning raspberry farmers* - Presented by: **Gautam Takoo, Central State University, Wilberforce, Ohio;** Cahliel Osama, Rajveer Dhillon, Deng Cao
20	2400510	*Early Detection of Stress in Greenhouse-Grown Industrial Hemp Plants by Hyperspectral Imaging* - Presented by: **Jaafar Abdulridha, Assistant professor, University of Arkansas, Pine Bluff, Arkansas;** Ce Yang
21	2400892	*Preliminary evaluation of an open-source wide-range multispectral sensor for precision agriculture* - Presented by: **Benjamin R.K. Runkle, University of Arkansas – Department of Biological and Agricultural Engineering, Fayetteville, Arkansas;** Cengiz Koparan, Riasad Mahbub, Samuel Carroll, Kaiyu Guan, Will Richardson
22	2401400	*Synthetic Data Augmentation for Chicken Carcass Instance Segmentation with Mask Transformer* - Presented by: **Yihong Feng, University of Arkansas, Fayetteville, Arkansas;** Chaitanya Kumar Reddy Pallerla, Pouya Sohrabipour Sr., Siavash Mahmoudi, Amirreza Davar
23	2400501	*Citrus pest detection using computer vision and deep learning* - Presented by: **Congliang Zhou, University of Florida, Immokalee, Florida;** Congliang Zhou, Dylan Pullock, Yiannis Ampatzidis, Christopher Weldon, Aruna Manrakhan
24	2400561	*In-Field Estimation of Potato Yield using Computer Vision* - Presented by: **Jung-sang Yoo, Seoul National University, Seoul, Gwanak-gu, South Korea;** Daehyun Kim, Taehyeong Kim, JoongYong Rhee
25	2401151	*Rapid Detection of Monkeypox A29 Protein Using an Electrochemical Impedance Spectroscopy Based Biosensor* - Presented by: **Kamila Sagdat, Department of Biology, School of Sciences and Humanities, Nazarbayev University, Astana, Kazakhstan;** Damira Kanayeva
26	2401212	*Automatic Detection of Piling in Poultry* - Presented by: **Daniel Morris, Michigan State University, East Lansing, Michigan;** Daniel Morris, Yunfei Long, Janice Siegford, Ahmed Ali
27	2401275	*Saffron Flower Identification with Deep Neural Nets for Optimal Harvesting* - Presented by: **Carter Noh;** Douglas Cook, Nathan Jones
28	2401265	*UAV Remote Sensing for Blackberry Flower Intensity Assessment* - Presented by: **Cengiz Koparan, University of Arkansas, Fayetteville, Arkansas;** Elkin Alexander Silva Cordoba, Jackie Amber Lee, Margaret Leigh Worthington
29	2400117	*Computer Vision-Based Measurement of Stormwater Systems Discharge* - Presented by: **François Birgand, North Carolina State University - Department of Biological and Agricultural Engineering, Raleigh, North Carolina;** François Birgand, Kenneth Chapman, Sierra Young, Mohammad Nooshzadi Motlagh
30	2401185	*A light-weight Deep learning Model of Stormwater Flow Measurement* - Presented by: **Mohammad Nooshzadi Motlagh, North Carolina State University - Department of Biological and Agricultural Engineering, Raleigh, North Carolina;** François Birgand, Kenneth Chapman, Sierra Young
31	2400841	*Predicting fresh-market tomato yield using UAV-based RGB images* - Presented by: **Mehran Homayounfar;** Hadi Ghaderian, Gregory Hendricks, Sanjay Shukla, Vijay Santikari, Justin Schabow
32	2401459	*Enhancing High-Throughput Phenotyping and Biomass Assessment of Poplar Trees through Seam Carving Integration in Drone Imagery and LiDAR Data* - Presented by: **Hamid Jafarbiglu;** Hamid Jafarbiglu, Mohammadreza Narimani, Alireza Pourreza, Jack Bailey-Bale, Gail Taylor

33	2400688	*From Pixels to Harvests: Corn Biomass Estimation through Satellite Imagery Normalized Difference Texture Index Driven Machine Learning* - Presented by: **Astina Joice, Doctoral graduate research assistant, Fargo, North Dakota;** Humeera Tazeen, Talha Tufaique, Igathinathane Cannayen
34	2400100	*Cotton water stress classification with CNN-LSTM deep learning architecture* - Presented by: **Haoyu Niu, Texas A&M University, College Station, Texas;** Janvita Reddy, Nick Duffield
35	2400094	*Inversion of Relative Chlorophyll Content in Maize Leaves Using Aerial and Ground Spectral Sensors* - Presented by: **Fengkai Tian, University of Missouri - Columbia, Columbia, Missouri;** Jianfeng Zhou, Curtis J. Ransom
36	2400314	*Enhanced Transformer Framework for Multi-label Fine-grained Apple Leaf Disease* - Presented by: **Alireza Sanaeifar, Department of Bioproducts and Biosystems Engineering, University of Minnesota, Saint Paul, MN 55108;** Ke-Jun Fan, Wen-Hao Su, Bo-Yuan Liu, Ce Yang
37	2400421	*Automatic Detection and Scoring of Footpad Dermatitis in Laying Hens Using Machine Learning Models* - Presented by: **Ramesh Bahadur Bist, University of Georgia, Athens, Georgia;** Keshav Bist, Xiao Yang, Bidur Paneru, Lilong Chai
38	2400911	*YOLOv5 Deep Learning Model for Mixed Seed Detection, Classification and Counting* - Presented by: **Karishma Kumari, Graduate Student, Departments of Agronomy, Horticulture, & Plant Science, Brookings, South Dakota;** Kwanghee Won, Ali Mirzakhani Nafchi
39	2400764	*Predicting caladium tuber weight from canopy traits through high-throughput aerial imagery* - Presented by: **Liyike Ji, University of Florida, Wimauma, Florida;** Liyike Ji, Xu Wang, Gasselle Cordova, Zhanao Deng
40	2401360	*Integrating satellite and unmanned aerial system (UAS) data for assessing soybean crop growth stages using image processing and machine learning techniques* - Presented by: **Sushma Katari, The Ohio State University, Columbus, Ohio;** Luke Waltz, Sami Khanal, Laura Lindsey
41	2400873	*Hyperspectral Imaging and Optimized Convolutional Neural Network for Quality Assessment of Sweetpotato* - Presented by: **Md Toukir Ahmed, PhD Student, Department of Agricultural and Biological Engineering, University of Illinois Urbana-Champaign, Urbana, Illinois;** Md. Toukir Ahmed, Mohammed Kamruzzaman
42	2400948	*Improving Detection of Matrix Barcode Ground Control Points for UAS-Based Remote Sensing* - Presented by: **Karla S. Ladino, University of Kentucky, Lexington, Kentucky;** Michael P. Sama
44	2400597	*Aptamer-Based Surface Plasmon Resonance for Carcinoembryonic Antigen Detection* - Presented by: **Zhazira Zhumabekova, Department of Biology, School of Sciences and Humanities, Nazarbayev University, Astana, Kazakhstan;** Nigara Yunussova, Damira Kanayeva
45	2401429	*Hessian fly infestation assessment with Stress Indicator based on Multispectral Imaging* - Presented by: **Kwaku Opoku-Ware, University of Idaho, Moscow, Idaho;** Odubiyi Steven, Eigenbrode Sanford, Liujun Li
46	2400975	*Presymptomatic Detection of Fire Blight in Apple Orchards Using Portable Diffuse Reflectance Spectroscopy: A Machine Learning Approach* - Presented by: **Yanqiu Yang, Penn State University, University Park, Pennsylvania;** Paul Heinemann, Kari Peter, Zhiwen Liu, Perry Edwards
47	2400336	*Defect Detection of Labyrinthine Drip Heads Based on lmproved YOLOv7* - Presented by: **Renzhong Niu, Shihezi University, Shihezi, Xinjiang, China;** Peilin Jin, Qi Zhang, Zhigang Li
48	2401312	*Weed identification using U-Net machine learning model and SAM segmentation* - Presented by: **James Kim, USDA-ARS Edward T. Schafer Agricultural Research Center, Fargo, North Dakota;** Ridhanya S. Balamurugan, Madhava S. Vemuri, Umamaheswara R. Tida
49	2401252	*Using Deep Learning regression models on multispectral UAS images to estimate cereal rye biomass and nitrogen concentration* - Presented by: **Kushal KC, The Ohio State University, Columbus, Ohio;** Sami Khanal, Andrew Perrault
50	2401132	*Estimating the availability of coal refuse in abandoned mine lands using remote sensing* - Presented by: **Sandeep Dhakal, Department of Food Agricultural and Biological Engineering, The Ohio State University, Wooster, Ohio;** Sami Khanal, Ashish Manandhar, Ajay Shah

51	2400842	*Mapping crop residue cover by integrating satellite time-series imagery and machine learning* - Presented by: **Leticia Santos, Biological & Agricultural Engineering, North Carolina State University, Raleigh, North Carolina;** Santos, L.B., Jones, D., Lamb, B., Hively, W. D., Jennewein, J., Thieme, A., Reberg-Horton, C.
52	2400331	*Temporal Analysis of Tea Shoot Growth Based on Canopy Imaging and Deep Learning* - Presented by: **Hsin-Cheng Chen, Department of Biomechatronics Engineering, National Taiwan University, Taipei, Taiwan, ROC;** Shih-Fang Chen, Shiou-Ruei Lin, Ta-Te Lina
53	2401296	*Ground robot based multi-class weed and crop species identification using YOLO object detectors* - Presented by: **Arjun Upadhyay, North Dakota State University (NDSU), Fargo, North Dakota;** Sunil G C, Kirk Howatt, Xin Sun
54	2400901	*ET estimation using a dual smart camera* - Presented by: **Joaquin J. Casanova, USDA ARS, Pullman, Washington;** Susan A. O'Shaughnessy, Paul D. Colaizzi, Colin S. Campbell
55	2400081	*Classification of herbicide-resistant and susceptible kochia weed in sugar beet crop with hyperspectral and machine learning techniques* - Presented by: **Bright Mensah, North Dakota State University, Fargo, North Dakota;** Thomas Peters, Kelvin Betitame, Yu Zhang, Xin Sun, Billy Graham Ram, Mian Jalal
56	2400408	*LiDAR-Based Point Cloud Classification and Tree Extraction for Citrus Crops* - Presented by: **Wenhao Liu, University of Florida, Gainesville, Florida;** Wenhao Liu, Yiannis Ampatzidis
57	2400577	*Analysis of Physiological Disorders of Strawberry Leaves using Hyperspectral Imaging and Various Artificial Intelligence Algorithms* - Presented by: **Seong-hawn Lee, Jeonbuk National University, Jeonju, Jeonbuk, Republic of Korea;** Yeong-Jin Kim, Dokyoon Jeong, Myongkyoon Yang
58	2400969	*Current Challenges and Issues of using Unmanned Aerial Systems based Hyperspectral Imaging for Precision and Digital Agriculture* - Presented by: **Santosh S. Palmate, Texas A&M AgriLife Research and Extension, El Paso, Texas;** Yohtaro Kobayashi, Saurav Kumar, Girisha K. Ganjegunte
59	2400987	*Creating Thermographic Profiles of Blueberry Plants using Open-Source Thermal Imaging and RGB Cameras* - Presented by: **Jack Chappuies, Michigan State University, East Lansing, Michigan;** Younsuk Dong
60	2400988	*Utilising 360 Plant Image Capturing System Method for Object detection and localisation* - Presented by: **Ahmed Abdalla, Department of Agronomy, Horticulture and Plant Science, College of Agriculture, Food & Environmental Sciences, South Dakota State University, Brookings, South Dakota**
61	2401422	*Implementation of Smartphone-based Crop Scouting System* - Presented by: **Mazhar Sher**
62	2400696	*Implementing Image-Based Phenotyping in Lab-Scale CEA R&D* - Presented by: **Jeffrey Bates, UbiQD, Inc., Los Alamos, New Mexico**
63	2401543	*Identificaiton of Imported Fire Ants (IFA) Mound using UAS Imagery* - Presented by: **Anjin Chang**
64	2400895	*A Computational Approach for Automated Detection and Characterization of Poultry Farms* - Presented by: **Rana Das, University of Missouri, Columbia, Missouri**
65	2401022	*Development and Preliminary Evaluation of a Deep Learning-based Fruit Counting Mobile Application for High-bush Blueberries* - Presented by: **Yuzhen Lu**
66	2401475	*Hyperspectral Imaging for Wheat Aluminum Toxicity Assessment and Liming Treatment* - Presented by: **Kwaku Opoku-Ware, University of Idaho, Moscow, Idaho**
67	2401310	*Hyperspectral imaging and Machine learning algorithms for foreign material detection on the chicken surface* - Presented by: **Chaitanya Kumar Reddy Palleria**
68	2400515	*Strawberry Plant Biomass Estimation via Precision 3D Phenotyping* - Presented by: **Kai Shen**
69	2400938	*Early Detection of Northern Corn Leaf Blight Disease with Handheld Confocal Digital Microscopy* - Presented by: **Tianzhang Zhao**
70	2400146	*Evaluating soil health and fertility under different soil treatments and cropping systems using UAV imagery* - Presented by: **Jianfeng Zhou**
71	2401163	*Protein Content Prediction of Paddy Rice (Oryza sativa L.) based on Near-Infrared Spectroscopy and Deep-Learning Algorithm* - Presented by: **Changyeun Mo**

72	2401435	*Developing an Automatic Screening Pipeline for Fusarium Oxysporum and Rhizoctonia Solani in Sugar Beets with Hyperspectral Imaging and Machine Learning* - Presented by: **Phuong D. Dao, Department of Agricultural Biology, Colorado State University, Fort Collins, Colorado;** Sai V.P.K. Pennam, Olivia Todd, Kevin Dorn

114 Agricultural Autonomy-GUEST SPEAKERS

Monday, 7/29/2024 9:30am - 12:00pm

Location: Platinum 8

Technical Community: MS - Machinery Systems

Session Type: Guest Speaker Session

Description: Agricultural machinery systems continue to become more automated. This invited session discusses the current state-of-the-art, how technological advancements enable future development, and technical and social barriers to greater autonomy in agriculture.

Organizer: Madison Dixon, Mississippi State University

Sponsoring Committee: MS Technical Community

Moderators: Madison Dixon, Mississippi State University

Start Time	Abstract ID	*Presentation Title* – Presenter
9:35am	Guest Speaker	*Background on Agricultural Equipment Automation* - Presented by: **Alex Thomasson, Mississippi State University, Mississippi State, Mississippi**
9:50am	Guest Speaker	*An Original Equipment Manufacturer Perspective on Agricultural Equipment Automation* - Presented by: **Joe Flaugher, John Deere, Johnston, Iowa**
10:10am	Guest Speaker	*An Emerging Autonomy Company Perspective on Agricultural Equipment Automation* - Presented by: **Cory Spaetti, Sabanto, Ames, Iowa**
10:30am	Guest Speaker	*Terrestrial Agricultural Equipment Automation* - Presented by: **Manoj Karkee, Washington State University, Prosser, Washington**
10:50am	Guest Speaker	*Aerial Agricultural Equipment Automation* - Presented by: **Madison Dixon, Mississipi State University**
11:10am	Guest Speaker	*Key Technologies and Considerations for Agricultural Equipment Automation* - Presented by: **John Reid, University of Illinois, Lake Forest, Illinois**
11:30am		*Panel Discussion on the Scope of ASABE MS-58: Agricultural Equipment Automation* - **Panelists: Madison Dixon, Mississippi State University; Mike Sama, University of Kentucky; Yu Jiang, Cornell University**

115 Innovations in Crop Protection Product and Application Equipment Development

Monday, 7/29/2024 9:30am - 12:00pm

Location: Platinum 9

Technical Community: MS - Machinery Systems

Session Type: Oral Technical Session

Description: Innovations in crop protection product and application equipment development are the key to utilize new novel research outcomes in practical applications to provide its benefits to growers. This session hosts industry engineers or scientists to highlight their innovation during product development, and exchanges idea and opinions, and promotes the discussion and collaborations between industry and academia.

Organizer: Rex Ruppert, CNH Industrial

Sponsoring Committee: MS-23/6 Application Sys & US TAG ISO TC23/SC6

Moderators: Adam Barlow

Start Time	Abstract ID	*Presentation Title* – Presenter; Co-authors
9:35am	2400388	*Microwave Treatment Techniques for Managing Weedy Rice while Preserving Soil Ecosystem* - Presented by: **Kaushik Luthra, University of Arkansas Division of Agriculture, Fayetteville, Arkansas;** Griffiths Atungulu
9:50am	2400766	*Characterization and Analysis of a Self-Propelled Sprayer Hydraulic Lift Arm Suspension* - Presented by: **Theodore Bockhop, Iowa State University, Ames, Iowa;** Dr. Bailey Adams, Kyle Blaylock, Dr. Robert McNaull

10:05am	2401437	*Turn Performance Analysis for a Self Propelled Sprayer* - Presented by: **Joel Huerta-Musil, Digital Ag Innovation Lab - Iowa State University, Ames, Iowa;** Bailey Adams
10:20am	2401299	*Determining Spray Volume Rates for Apple Trees Applied with Laser-guided Variable-Rate Sprayers* - Presented by: **Javier Campos, Ohio State University, Wooster, Ohio;** Heping Zhu, Hongyoung Jeon, Carla Román, Erdal Ozkan
10:35am-10:45am		BREAK
10:45am	2400648	*Selection of least-drifting spray nozzles for ground-based pesticide applications to protect insect pollinators* - Presented by: **Narayanan Kannan**
11:00am	2401087	*Developing Next Generation Functional Anti-Drift Adjuvant for Sustainable Agriculture Sprays* - Presented by: **Joseph Heng, University of Massachusetts Amherst, Amherst, Massachusetts;** David Julian McClements, Jiakai Lu
11:15am	2400748	*Updates and continued development of a high reading resolution patternator2.0 table* - Presented by: **Benjamin Smith;** Julia E. Bowman, Matthew J. Darr
11:30am	2400485	*Utilization of High Resolution Patternator Data to Establish Methods and Analytics to Determine Nozzle Spray Angle* - Presented by: **Julia E. Bowman, Iowa State University - Digital Ag, Ames, Iowa;** Benjamin C. Smith
11:45am	2401301	*Performance of hollow-cone nozzles coupled with high-frequency PWM valves operated at high pressures* - Presented by: **Javier Campos, Ohio State University, Wooster, Ohio;** Heping Zhu, Hongyoung Jeon, Carla Román, Erdal Ozkan
12:00pm	2400235	*Surface engineering of biobased microcarriers for enhancing agrochemical delivery and minimizing spray loss* - Presented by: **Kang Huang, Washington State University, Pullman, Washington;** Meihan Tao

133 Advances in Cotton Engineering

Monday, 7/29/2024 9:30am - 12:00pm

Location: Platinum 10

Technical Community: MS - Machinery Systems

Session Type: Oral Technical Session

Description: The Advances in Cotton Engineering Session invites presentations focused on engineering research advancing cotton production, processing, and ginning.

Organizer: Sean Donohoe, USDA-ARS

Sponsoring Committee: MS-23/7/3 Cotton Engineering

Moderators: Sean Donohoe, USDA-ARS

Start Time	Abstract ID	*Presentation Title* – Presenter; Co-authors
9:35am	2401233	*An Improved Cotton Gin Dryer Temperature Controller* - Presented by: **R.G. Hardin IV, Biological and Agricultural Engineering Department, Texas A&M University, Texas;** Adeyemi Adeleke
9:50am	2400363	*Changes in Properties of Cotton Gin Byproducts during Windrow Composting* - Presented by: **Femi Peter Alege, USDA-ARS Cotton Ginning Research Unit, Stoneville, Mississippi;** Sean P. Donohoe, Joe W. Thomas, Christopher D. Delhom
10:05am	2400016	*Codifying workflows for cotton data organization, management, and curation: The Maricopa example* - Presented by: **Kelly Thorp, USDA-ARS, Temple, Texas**
10:20am	2401101	*Determining Moisture Diffusivity of Seed Cotton at Round Module Densities* - Presented by: **Caleb Riehl**
10:35am-10:45am		BREAK
10:45am	2400057	*Enhancing Cotton Contamination Detection: Developing Vision-Transformer AI-Based Vision Systems for High-Speed Machine-Vision Applications* - Presented by: **Greg A. Holt;** Mathew G. Pelletier, Greg A. Holt, John D. Wanjura
11:00am	2401143	*Harvesting Performance of a Robotic Multi-Boll Cotton Harvester* - Presented by: **Shekhar Thapa, University of Georgia, Tifton, Georgia;** Glen C. Rains, Wesley M. Porter, Guoyu Lu, Xianqiao Wang, Canicius Mwitta, Simerjeet S. Virk

11:15am	2401140	*Multi-Position Round Module Moisture Sensor* - Presented by: **Max Hooks, North Carolina State University, Raleigh, North Carolina;** Dr. Jason Ward, Dr. Ed Barnes, Dr. Wesley Porter, Dr. Grant Ellington
11:30am	2400984	*Smart Moisture Monitoring for Round Cotton Modules: Development and Testing* - Presented by: **Md Zafar Iqbal**
11:45am	2400389	*Standardizing, Integrating, and Automating Cotton Supply Chain Data from Field to Market: Filling in the Data Gaps* - Presented by: **Christopher Delhom, USDA-ARS, Stoneville, Mississippi;** Tina Teague, Michael Buser, John Wanjura, Jason Ward, Robert Hardin, Ed Barnes
12:00pm	2400375	*Storing Seed Cotton in Round Modules – Progress Report* - Presented by: **John D. Wanjura;** C.D. Delhom, S. Donohoe, F. Alege, J. Thomas, M.H.J. van der Sluijs, G.A Holt, M.G. Pelletier
12:15pm	2400626	*Belt Feeding A 10-Saw Gin Stand* - Presented by: **Sean P. Donohoe, USDA-ARS Cotton Ginning Research Unit, Stoneville, Mississippi;** Femi Peter Alege, Joe W. Thomas

117 NRES Distinguished Lecture Series

Monday, 7/29/2024 9:30am - 12:00pm

Location: Grand Ballroom F

Technical Community: NRES - Natural Resources & Environmental Systems

Session Type: Guest Speaker Session

Description: This session invites prominent experts and thought leaders from various fields related to natural resource management and environmental systems to share their insights, research findings, and experiences with ASABE members and the broader community.

Organizer: Laurent Ahiablame, CMAP

Sponsoring Committee: NRES-04 Program

Moderators: Laurent Ahiablame, CMAP; Derek Heeren, UNL

Start Time	Abstract ID	*Presentation Title* – Presenter
9:35am	Guest Speaker	*Soil for Sustainable Development* - Presented by: **Rabi H. Mohtar, Texas A&M University;**
9:50am	Guest Speaker	*Community-Based Mechanized Irrigation for Smallholder Agriculture: Lessons from Sub-Saharan Africa* - Presented by: **Ankit Chandra, University of Nebraska Lincoln**
10:05am	Guest Speaker	*Implications for Water Resources Decision Making and Management* - Presented by: **Margaret Gitau, Purdue University**
10:20am	Guest Speaker	*Understanding Resilience in the Context of International Development* - Presented by: **Amirpouyan Nejadhashemi, Michigan State University**

118 Agri-Industrial Facility Design and Operation

Monday, 7/29/2024 9:30am - 12:00pm

Location: Elite 3

Technical Community: PAFS - Plant, Animal, & Facility Systems

Session Type: Oral Technical Session

Description: This session is provided to gather researchers, educators, and industry experts to share experiences and innovations in designing and operating efficient agri-industrial facilities.

Organizer: Craig Smallegan, Nucor Buildings Group

Sponsoring Committee: PAFS-20 Structures Group **Co-Sponsors:** PRS-701 Physiochemical Properties of Biological Pr, PRS-702 Crop & Feed Processing & Storage, PRS-703 Food Processing

Moderators: Craig Smallegan, Nucor Buildings Group; Gregory Williams

Start Time	Abstract ID	*Presentation Title* – Presenter; Co-authors
9:35am	2401109	*Operational and Design Practices in Rending Plants* - Presented by: **Gregory Williams**
9:50am	2400142	*Fan Operation Characteristics in Tunnel Ventilated Broiler Houses* - Presented by: **Joseph Purswell, USDA-ARS, Mississippi State, Mississippi;** Matthew Rowland, Jessica Drewry, Jonathan Moon
10:05am	2400097	*The Importance of Canopy Ventilation in Controlled Environment Agriculture* - Presented by: **Walter Stark**
10:20am	2400724	*Utilizing Coagulation and Flocculation to Treat Food Processing Wastewater* - Presented by: **Gregory Rouland, Ph.D student, Lansing, Michigan;** Younsuk Dong, Steven Safferman

10:35am-10:45am		BREAK
10:45am	2400456	*Distiller's grains impact on feedlot surface integrity* - Presented by: **Bobbi Stromer, US Meat Animal Research Center, Clay Center, Nebraska;** Mindy Spiehs, Bryan Woodbury
11:00am	2400525	*Ventilation Modeling of Cage-free Hen Houses with Outdoor Access* - Presented by: **Hojae Yi, Pennsylvania State University, Pennsylvania;** Eileen Fabian, Michael Lee Hile, Angela Nguyen, John Cimbala
11:15am	2401047	*Enhancement of solid waste removal due to fish and flow rate interactions in a recirculating aquaculture system* - Presented by: **Runguo Xiao, Zhejiang University, Hangzhou, Zhejiang, China;** Zhangying Ye, Jian Zhao
11:30am	2400664	*Ventilation Design for Automated Milking System (AMS) Buildings* - Presented by: **Li Jiang, UIUC, Urbana, Illinois;** Neslihan Akdeniz
11:45am	2401374	*Effectiveness of an innovative biosecurity entrance system with air shower and disinfectant spraying on superficial pathogen removal* - Presented by: **Rana Das, University of Missouri, Columbia, Missouri;** Rana Das, Moh Moh Thant Zin, Manobendro Sarker, Teng Teeh Lim, Zonggang Li

119 Animal Response to Environment

Monday, 7/29/2024 9:30am - 12:00pm

Location: Platinum 7

Technical Community: PAFS - Plant, Animal, & Facility Systems

Session Type: Oral Technical Session

Description: This session invites researchers, students, and industry exports to share research updates on advanced methods to quantify animals responses to their environment, improve current understanding of animal and human interactions, and methods to enhance welfare and productivity.

Organizer: Erin Cortus, University of Minnesota

Sponsoring Committee: PAFS-40 Facilities & Systems Group

Moderators: Yi Liang, University of Arkansas

Start Time	Abstract ID	*Presentation Title* – Presenter; Co-authors
9:35am	2401504	*Monitoring Responses to Heat Stress and Corresponding Resting Behavior of Dairy Cows using Ultra-wideband (UWB) Sensors* - Presented by: **Hanwook Chung**
9:50am	2400272	*Evaluating Cobb 700 and Ross 708 broiler production performance as affected by stocking density and welfare* - Presented by: **Shengyu Zhou**
10:05am	2400035	*Engineering Design of an Energy Efficient Prototype Piglet Warming Pad* - Presented by: **Jemima Baributsa;** Camden M. Cesare, Mandar Bagade, Mekenzie R. Cecil , Tyler C. Field, Samantha M. Neeno, Brian T. Richert, Jay S. Johnson, Allan P. Schinckel, Robert M. Stwalley III
10:20am	2401177	*Continuous monitoring of thermoregulation in humans and animals using wearable technology* - Presented by: **Daniel Berckmans, Full Prof. Biosystems KU Leuven & Adj. Distinguished Prof. Univ. of Tennessee, Leuven, Vlaams-Brabant, Belgium;** Alberto Pena Fernandez, Agustin G. Rius
10:35am-10:45am		BREAK
10:45am	2400247	*Automatic Analysis of Group-level Activity of Broilers with Heat Stress Operations* - Presented by: **Guoming Li, University of Georgia, Athens, Georgia;** Oluwadamilola Moyin Oso, Nicolas Mejia-Abaunza, Chongxiao Chen, Samuel E Aggrey, Guoming Li
11:00am	2400036	*Hourly flushing rates and temperature trends for electronically controlled grouped floor cooling pads trends during the summer heat stress in a boar stud* - Presented by: **Jemima Baributsa;** D.A. Licuan, R.M. Stwalley K.R. Stewart, J. Hundley, R. Nepomuceno, M. Robins, R, Crasto, B. Didion, M. Kleve-Feld, J. Y. Sung, A. P. Schinckel
11:15am	2400847	*Sprinkler cooling maintains feed efficiency of late phase broilers* - Presented by: **Yi Liang;** Mitchell Vaught
11:30am	2400732	*Improving an innovative ventilation and cooling strategy based on thermal comfort of finishing pigs* - Presented by: **Remi Quirion, Université Laval, Québec, Québec, Canada;** Turgeon, J-G, Ruiz-Gonzalez, A., Larios, A., Turcotte, S., Godbout, S., Rousseau, A. N., Fournel, S.
11:45am	2400171	*Comparison of cooling methods for gestating sows in different climate conditions* - Presented by: **Bjarne Bjerg, University of Copenhagen, Denmark;** Bjarne Bjerg, Poul Pedersen

12:00pm	2401001	*Evaluating the use of commercially available software to predict the lighting environment in broiler houses providing natural light* - Presented by: **Joshua A. Etherton, Auburn University, Auburn, Alabama;** John E. Linhoss, Jeremiah D. Davis, Joseph L. Purswell, Jessica D. Starkey
12:15pm	2400815	*Impact of pen width on sow dynamic space usage* - Presented by: **Suzanne Leonard, North Carolina State University, Raleigh, North Carolina;** Wyatt Kendall

120 Emerging Techniques for Measuring Properties of Biological Materials

Monday, 7/29/2024 9:30am - 12:00pm

Location: Grand Ballroom A
Technical Community: PRS - Processing Systems
Session Type: Oral Technical Session
Organizer: Ewumbua Monono, North Dakota State University
Sponsoring Committee: PRS-701 Physiochemical Properties of Biological Pr **Co-Sponsors:** PRS-703 Food Processing
Moderators: Kurk Rosentrater, Iowa State University; Roselle Barretto, Kansas State University

Start Time	Abstract ID	*Presentation Title* – Presenter; Co-authors
9:35am	2400254	*Non-destructive prediction of eggshell strength using FT-NIR spectroscopy combined with PLS Regression* - Presented by: **Md Wadud Ahmed, Department of Agricultural and Biological Engineering, University of Illinois Urbana-Champaign, Urbana, Illinois;** Alin Khaliduzzaman, Jason Lee Emmert, Mohammed Kamruzzaman
9:50am	2400796	*Nondestructive assessment of woody breast myopathy in chicken fillets based on data fusion of optical coherence tomography and hyperspectral imaging* - Presented by: **Nader Ekramirad**
NO-SHOW	2400659	*A Wearable Glove for Real-Time Assessment of Woody Breast Myopathy in Poultry Meat* - Presented by: **Pratik Parajuli, USDA-ARS, Athens, Georgia;** Seung-Chul Yoon, Brian Bowker, Hong Zhuang
10:20am	2401508	*Assessment of texture of fried products based on spatial frequency domain imaging* - Presented by: **Michael Ngadi**
10:45am	2401207	*Quantification of chemical preservatives in corn masa flour by near infrared spectroscopy* - Presented by: **Keith J. Scott, University of Nebraska-Lincoln, Lincoln, Nebraska;** Christopher Updegraff, Mary-Grace C. Danao

121 Healthy Production, Healthy Food, and Healthy People-GUEST SPEAKERS

Monday, 7/29/2024 9:30am - 12:00pm

Location: Orange County 2
Technical Community: PRS - Processing Systems
Session Type: Guest Speaker Session
Description: The health and well-being of generations can be traced back to the foods they consume, the way the food is processed, and the way it is originally produced through existing practices. As there is a rightful and growing trend of "healthy foods" and "healthy eating habits," the improvements and impact should start from the production aspects rather than upgrading the final food quality by fortification. Doing activities from the "ground up" in an acceptable manner, keeping in view the side-effects on the product, at each stage (crop production, processing, consumption, and derived health benefits) will be an efficient approach where product quality is preserved, and excessive processing is eliminated. There is a clear nexus among crop production practices, food processing, and the final well-being of the people. Concepts of sustainability in food production, storage, and consumption will also be discussed in this session.
Organizer: Igathinathane Cannayen, North Dakota State University
Sponsoring Committee: PRS-06 General Program **Co-Sponsors:** PRS-702 Crop & Feed Processing & Storage, PRS-703 Food Processing
Moderators: Igathinathane Cannayen, North Dakota State University; Humeera Tazeen, North Dakota State University

Start Time	Abstract ID	*Presentation Title* – Presenter
9:35am	Guest Speaker	*Healthy Soils, Healthy Food, Healthy People Initiative* - Presented by: **Rocky Bateman, Progressive Farmer, New Salem, North Dakota**
10:05am	Guest Speaker	*Linkages Between Healthy Soils and Food and Nutrition Security* - Presented by: **Michael Grusak, USDA, Fargo, North Dakota**

10:35am-10:45am		BREAK
10:45am	Guest Speaker	*Building a Foundation: Utilizing Microbial Community Responses Under Differing Crop Management Strategies to Bridge Knowledge Gaps Between Soil, Plant, and Human Health in the Northern Great Plains* - Presented by: **Billi Petermann, USDA, NGPRL, Mandan, North Dakota**
11:15am	Guest Speaker	*Making the Connections Between Soil-Health Management Practices, Crop Physiology, and Grain Quality in the Northern Great Plains* - Presented by: **Craig Whippo, USDA, NGPRL, Mandan, North Dakota**
11:45am	Guest Speaker	*Food Authenticity and Safety Through the Supply Chain* - Presented by: **Rosalee Hellberg, Chapman University, Orange, California**

122 Physical and Chemical Properties of Food, Agricultural, and Biological Materials

Monday, 7/29/2024 9:30am - 12:00pm

Location: Platinum 1
Technical Community: PRS - Processing Systems
Session Type: Oral Technical Session
Organizer: Ewumbua Monono, North Dakota State University
Sponsoring Committee: PRS-701 Physiochemical Properties of Biological Pr **Co-Sponsors:** PRS-703 Food Processing
Moderators: Fuji Jian, University of Manitoba; Md Sanaul Huda, North Dakota State University

Start Time	Abstract ID	*Presentation Title* – Presenter; Co-authors
9:35am	2401351	*Effect of Degumming and Bleaching on the Yield and Quality of Epoxidized Hempseed Oil* - Presented by: **Tosin Oyewole, North Dakota State University, Fargo, North Dakota;** Emily Biggane, Ewumbua Monono
9:50am	2401304	*Proposed Title: Optimization of Bleaching Parameters for Distillers Corn Oil* - Presented by: **Niloy Chandra Sarker, Research Specialist, North Dakota State University, Fargo, North Dakota;** Ewumbua Monono, Sanaul Huda, Preston Wilson
10:05am	2400797	*Effect of Wheat Bran Antioxidants on Human Stem Cells Growth Performance and Differentiation Potentials* - Presented by: **Md Sharifur Rahman, Department of Grain Science and Industry, Kansas State University, Manhattan, Kansas;** Guangyan Qi, Quan Li, Cheng Li, Xuming Liu, Yonghui Li, Jianfa Bai, Weiqun Wang, Xiuzhi Susan Sun
10:20am	2400462	*Development of hemp-protein adhesives for plywood applications* - Presented by: **Roselle Barretto, Kansas State University, Manhattan, Kansas;** Guangyan Qi, Ruoshi Xiao, Christopher Jones, Xiuzhi S. Sun, Yonghui Li, Donghai Wang
10:35am-10:45am		BREAK
10:45am	2400464	*Bulk Density of Dry Wheat mixed with Different Sizes and Percentages of Dockage* - Presented by: **Fuji Jian, Department of Biosystems Engineering, University of Manitoba, Winnipeg, Manitoba, Canada;** Hamideh Faridi
11:00am	2400050	*Combustibility of walnut huller and sheller facility dust* - Presented by: **Derek Whitelock, USDA-ARS Southwestern Cotton Ginning Research Laboratory, Las Cruces, New Mexico;** Jaya Tumuluru, Carlos Armijo
11:15am	2400166	*Instantization Potential and Product Quality Attributes in Hybrid and Pureline Rice Cultivars* - Presented by: **Faith Ouma, University of Arkansas, Fayetteville, Arkansas;** Kaushik Luthra, Bindu Regonda, Griffiths G. Atungulu
11:30am	2400322	*Optimizing of Parboiling Process for Contemporary Rice Cultivars using a Custom-made Parboiling Unit* - Presented by: **Evans Ameyaw Owusu**

123 Tips for Success in Grant Funding-GUEST SPEAKERS

Monday, 7/29/2024 9:30am - 12:00pm

Location: Grand Ballroom E
Technical Community: ASABE Special Interest
Session Type: Guest Speaker Session

Description: Presenters will go over grant funding opportunities at USDA-NIFA and suggest concepts for writing a strong grant proposal. Particular emphasis will be placed on opportunities and options for New Investigators. Several awardees of the NIFA grants will be invited to share their perspectives in preparing winning proposals.

Moderators: Steven Thomson, USDA-NIFA; Hongda Chen, USDA-NIFA

Start Time	Abstract ID	*Presentation Title* – Presenter
9:35am	Guest Speaker	*Overview of NIFA's Funding Opportunities, New Programs, and Tips for Success* - Presented by: **Hongda Chen, USDA-NIFA, Washington, DC**
10:20am	Guest Speaker	*New Investigators - Rules for Applying and Tips for Success* - Presented by: **Steven Thomson, USDA-NIFA, Washington, DC**
11:05am		*Panel of Successful Grantees and Q&A* - Presented by: **Hongda Chen, USDA-NIFA, Washington, DC**

124 NRES Community Update and Orientation

Monday, 7/29/2024 12:00pm - 1:00pm

Location: Grand Ballroom F

Technical Community: NRES - Natural Resources & Environmental Systems

Session Type: Guest Speaker Session

Description: Updates from committees and groups. This community focuses on addressing critical issues related to natural resource management and environmental sustainability.

Organizer: Anita Thompson, Univ of Wisconsin

Sponsoring Committee: NRES-02

Moderators: Anita Thompson, Univ of Wisconsin; Laurent Ahiablame, CMAP

MONDAY – 2:30PM-5:00PM

125 Exploring Safety in the Era of Autonomous Agriculture-HYBRID

Monday, 7/29/2024 2:30pm - 5:00pm

Location: Grand Ballroom B

Technical Community: ASABE Special Interest

Session Type: Hybrid Session-submitted abstracts and guest speakers

Description: Autonomous agriculture is expected to change the way we farm our lands. It will help us increase our yields and efficiency while decreasing our inputs and labor. New technology comes with new challenges, safety, and health concerns for farmworkers. This session aims to explore the new challenges and opportunities in agricultural robotic and automation safety.

Organizer: Salah Fuad Issa, University of Illinois Urbana-Champaign

Sponsoring Committee: ESH-04 Technology Exchange **Co-Sponsors:** ESH-03 Standards, ESH-04/1 Journal of Agricultural Safety and Health, ITSC-318 Mechatronics & Biorobotics, ITSC-348 Electromagnetics & Spectroscopy

Moderators: Salah Fuad Issa, University of Illinois Urbana-Champaign; Farzaneh Khorsandi, The University of California, Davis

Start Time	Abstract ID	*Presentation Title* – Presenter; Co-authors
2:35pm	Guest Speaker	*Navigating Automation and Safety in Agriculture* - Presented by: **John Reid, University of Illinois at Urbana-Champaign**
3:05pm	Guest Speaker	*Harnessing Innovation: Steering Safety in the Autonomous Agriculture Landscape* - Presented by: **Jennifer Lincoln, NIOSH**
3:35pm-3:45pm		BREAK
3:45pm	2400686	*Agricultural Robotics and Safety Regulations in California: A Case Study* - Presented by: **Farzaneh Khorsandi;** Kent Pinkerton
4:00pm	Guest Speaker	*Standards Development for Automation & Autonomy in Agriculture* - Presented by: **Joe Flaugher, John Deere**
4:15pm	Guest Speaker	*Grain Weevil: The Path to Safety* - Presented by: **Trent Johnson**
4:30pm	2401530	*Identification of advantages and limitations of current risk assessment and hazard analysis methods when applied on autonomous agricultural machineries* - Presented by: **Guy Aby, Department of Agricultural and Biological Engineering, University of Illinois at Urbana-Champaign, Urbana, Illinois;** Guy R. Aby, John F. Reid, John M. Shutske, Salah F. Issa
4:45pm	2401124	*Concepts and Applications of Generative Artificial Intelligence to Support Innovation in Agricultural Safety and Health* - Presented by: **John M. Shutske, University of Wisconsin—Madison, Madison, Wisconsin;** Anmol Sharma

126 Biomass Preprocessing and Logistics for Biofuels and Bioproducts

Monday, 7/29/2024 2:30pm - 5:00pm

Location: Grand Ballroom C

Technical Community: ASE - Applied Science & Engineering

Session Type: Oral Technical Session

Description: Updates and research on use of tools and equipment to scale up and automate components of biomass processing.

Organizer: Christopher Lanning, Forest Concepts

Sponsoring Committee: ASE-12 Forest Engineering **Co-Sponsors:** MS-23/7/2 Forage & Biomass Engineering

Moderators: Christopher Lanning, Forest Concepts

Start Time	Abstract ID	*Presentation Title* – Presenter; Co-authors
2:35pm	2401403	*The impact of flow parameters and pipe slopes on the frictional behaviour of Agricultural residue biomass-water slurries in uphill and downhill flows* - Presented by: **Kashif Javed, Post doctoral research fellow, Edmonton, Alberta, Canada;** Amit Kumar
2:50pm	2400365	*Utilize Bayesian statistics to predict inter-particle mechanical coefficients of biomass particles* - Presented by: **Hojae Yi, Assistant Research Professor of Agricultural and Biological Engineering at Penn State University, Advisor, University Park, Pennsylvania;** Hojae Yi, Heather Burkholder
3:05pm	2401318	*Integrated Assessment of a Biorefinery for Production of Bioenergy and Bioproducts* - Presented by: **Md. Mashum Billal, University of Alberta, Edmonton, Alberta, Canada;** Md. Mashum Billal, Alivia Mukherjee, Amit Kumar
3:20pm	2401136	*Integrated GIS-based Decision Support Model for Optimal Biomass Preprocessing Site Identification Using Sociodemographic, Economic, and Environmental Analysis* - Presented by: **Mohammad Uzair Shah, The Bredsen Center, University of Tennessee, Knoxville, Tennessee;** Nourredine Abdoulmoumine
3:35pm-3:45pm		BREAK
3:45pm	2401399	*Efficient harvest and logistics models for optimized switchgrass and willow integrated supply chain* - Presented by: **Jude Liu;** Tim Volk, Mark Eisenbies, Nate Anderson, Yu Wei, Jingxin Wang
4:00pm	2401236	*Techno-economic analysis of hemp production, logistics and processing in the U.S.* - Presented by: **Asmita Khanal**
4:15pm	2401237	*Techno-economic analysis of camelina production and logistics for hydroprocessed renewable diesel production in the U.S.* - Presented by: **Asmita Khanal**
4:30pm	2401547	*Life Cycle Assessment of Pelletized Duckweed Soil Amendment Derived from Farm Manure Wastewater* - Presented by: **Divya Pant**

127 Advances in Circular Bioeconomy Systems

Monday, 7/29/2024 2:30pm - 5:00pm

Location: Platinum 8

Technical Community: CBSI - Circular Bioecomony Systems Institute

Session Type: Oral Technical Session

Description: Our current linear systems of use, make, and waste may be profitable on the short run but are not sustainable and will not address the environmental challenges. Circular bioeconomy represents a promising and effective strategy for addressing these challenges.

Organizer: Oladiran Fasina, Auburn University

Sponsoring Committee: Circular Bioecomony Systems

Moderators: Sudhagar Mani, University of Georgia

Start Time	Abstract ID	*Presentation Title* – Presenter; Co-authors
2:35pm	2400407	*An Index for Quantifying Circularity of Bioeconomy Systems* - Presented by: **Yuanhui Zhang, Department of Agricultural and Biological Engineering University of Illinois Urbana-Champaign, Urbana, Illinois;** Sabrina Summers, John Reid, James Jones
2:50pm	2401409	*Enabling a Circular Bioeconomy Through Data: Identifying Business Capabilities and Data Flows in the Context of ISO Standardization Opportunities* - Presented by: **R. Andres Ferreyra**

3:05pm 2401099 *Redesigning tomato plasticulture with sustainable intensification and circularity* - Presented by: **Adam Fuerst, University of Florida, Gainesville, Florida;** Sanjay Shukla, Ziynet Boz

3:20pm	2401093	*Holistic Methodology to Guide the Evolution of Sustainable Aviation Fuel Production Technologies* - Presented by: **Manuel Garcia-Perez**
3:35pm-3:45pm		BREAK
3:45pm	2400547	*Don't stop at circular bioenergy systems; we need a re-carbonized bioeconomy* - Presented by: **Steph Herbstritt, Clean Air Task Force, Boston, Massachusetts;** Kathy Fallon
4:00pm	2400978	*Stochastic Trade-off Assessment for Sustainability and Resilience in Circular Food Systems: A case Study in the Midwestern Beef Production* - Presented by: **Tinn-Shuan Uen, University of Illinois Urbana Champaign, Urbana, Illinois;** Luis F. Rodríguez
4:15pm	2401042	*Future scenarios for arable and livestock agriculture in New Zealand* - Presented by: **Thomas A. Cochrane, University of Canterbury, Christchurch, New Zealand;** Thomas A. Cochrane, Clemence Vannier, Larry Bellamy, Tipene Merritt, Herve Quenol, Baptiste Hamon
4:30pm	2400613	*Roads to Removal: A National Assessment of Biomass Carbon Removal & Storage (BiCRS)* - Presented by: **Joe Sagues, North Carolina State University, Raleigh, North Carolina;** Nicolas Clauser, Wenqin Li, Alvina Aui, Matthew Langholtz, Ingrid Busch, Mark Wright, Sarah Baker, Jennifer Pett-Ridge, Joe Sagues

128 ASM/AST Capstone Discussion-HYBRID

Monday, 7/29/2024 2:30pm - 5:00pm

Location: Grand Ballroom D

Technical Community: EOPD - Education, Outreach, & Professional Development

Session Type: Hybrid Session-submitted abstracts and guest speakers

Description: In this session we will highlight the contributions of ASM/AST programs, specifically through capstone projects, to the broader ASABE society.

Organizer: Shawn Ehlers, Purdue University

Sponsoring Committee: EOPD-205 Engineering Technology & Management Education **Co-Sponsors:** EOPD-01 POSTER SESSION, EOPD-206 Ag Technology & Mgmt Curriculum Review & Pgm Recog

Moderators: Shawn Ehlers, Purdue University; Aaron Turner, Clemson University

Start Time	Abstract ID	*Presentation Title* – Presenter; Co-authors
2:35pm	2400144	*Performance evaluation of an electric tractor in agricultural production* - Presented by: **Jianfeng Zhou;** Kent Shannon
2:50pm	2401507	*Strengthening Student Skills in Evaluating Technical and Economic Aspects of Ag Technology Systems through Capstone Projects* - Presented by: **Rick Stowell, University of Nebraska, Lincoln, Nebraska;** Derek Heeren, Deepak Keshwani
3:05pm	2400384	*Bringing Students and Rural Fijian Communities Together to Provide Safe Drinking Water* - Presented by: **Peter Livingston;** Dr. Dawn Neill, Jillian Buteau, Cami Lowrey, Geneva Newell, Elana Ryan
3:20pm	2400618	*Clemson's Agricultural Mechanization and Business Capstone Experience* - Presented by: **Aaron Turner, Clemson University, Clemson, South Carolina;** Hunter F. Massey, Kendall R. Kirk, Kevin Royal, Virginia Wayt
3:35pm	2401467	*Putting a Cap on a new Agricultural Systems Technology Program: Lessons Learned* - Presented by: **John M Long, Oklahoma State University, Stillwater, Oklahoma;** Kevin Moore

129 AI-Driven Tools and Technologies for High Throughput Phenotyping-LIGHTNING TALKS

Monday, 7/29/2024 2:30pm - 5:00pm

Location: Grand Ballroom E

Technical Community: ITSC - Information Technology, Sensors & Control Systems

Session Type: Lightning Oral Technical Session

Description: Focuses on recent innovations in artificial intelligence-based systems for high throughput phenotyping for crops and animal production systems.

Organizer: Shih-Fang Chen, National Taiwan University

Sponsoring Committee: ITSC-348 Electromagnetics & Spectroscopy

Moderators: Shih-Fang Chen, National Taiwan University

Start Time	Abstract ID	*Presentation Title* – Presenter; Co-authors
2:35pm	2400848	*Development of a Coordinated Robot Squad for High-throughput and High-accuracy Leaf-level Proximal Phenotyping for Indoor Applications* - Presented by: **Xuan Li;** Ziling Chen, Tianzhang Zhao, Jinnuo Zhang, Raghava Sai Uppuluri, Yu She, Jian Jin
2:42pm	2400251	*Closing the Real2Sim Gap Between Real Images and Simulation Models of Cowpea* - Presented by: **Heesup Yun, University of California, Davis, Davis, California;** Ioannis Droutsas, Brian Bailey, Christine Diepenbrock, Mason Earles
2:49pm	2400619	*Multi-Object Tracking for Cotton Boll Counting in Ground Videos Based on Transformer* - Presented by: **Chenjiao Tan, Bio-Sensing Automation and Intelligence Laboratory, Department of Agricultural and Biological Engineering, University of Florida, Gainesville, Florida;** Chenjiao Tan, Changying Li, Jin Sun, Huaibo Song
2:56pm	2401108	*Effective integration of vision foundational models for semantic segmentation to quantify grape foliage powdery mildew infection* - Presented by: **Yiyuan Lin, School of Electrical and Computer Engineering, College of Engineeing, Cornell University, Ithaca, New York;** Yiyuan Lin, Anna Underhill, Lance Cadle-Davison, Ana Jimenez, Summaira Riaz, Yu Jiang
3:03pm	2400398	*Assessing Salt Stress Tolerance in Kale Plants Grown in an Aquaponics Environment Using a High-Throughput Phenotyping System* - Presented by: **Md Hasibur Rahman, Graduate assistant, Department of Biosystems Engineering, Auburn, Alabama**
3:10pm	2400960	*Leaf Angle Estimation using Mask R-CNN and LETR Vision Transformer* - Presented by: **Venkat Margapuri, Villanova, Pennsylvania;** Prapti Thapaliya, Trevor Rife
3:17pm	2400615	*Robotic Plot-scale Peanut Counting and Yield Estimation using LoFTR-based Image Stitching and Improved RT-DETR* - Presented by: **Zhengkun Li, University of Florida, Gainesville, Florida;** Rui Xu, Changying Li, Barry Tillman, Nino Brown
3:24pm	2401224	*Performance Evaluation of Raspberry-Pi Sensor System with Multispectral and Thermal Cameras for Monitoring Drought Effects in Wheat* - Presented by: **Kesevan Veloo, Washington State University, Pullman, Washington;** Milton Valencia-Ortiz, Michael O. Pumphrey, Arron H. Carter, Kimberly Garland-Campbell, Sindhuja Sankaran
3:31pm	2401414	*Field-scale maize leaf angle characterization using stereo vision and deep learning* - Presented by: **Xuan Liu, Iowa State University, Ames, Iowa;** Lirong Xiang, Aditya Raj, Nathan Butler, Jianming Yu, Patrick S. Schnable, Lie Tang
3:38pm-3:50pm		BREAK
3:50pm	2400258	*Integrating UAV-Based Multispectral Data and Deep Learning for Automated High Throughput Phenotyping in Peanut Breeding Fields* - Presented by: **Javier Rodriguez-Sanchez, School of Electrical and Computer Engineering, University of Georgia, Athens, Georgia;** Kyle Johnsen, Juliet Chu, Jing Zhang, Peggy Ozias-Akins, Changying Li
3:57pm	2401473	*Synthetic Meets Authentic: Leveraging Text-to-Image Generated Datasets for Apple Detection in Orchard Environments* - Presented by: **Ranjan Sapkota, Center for Precision & Automated Agricultural Systems, Washington State University, Prosser, Washington;** Ranjan Sapkota, Dawood Ahmed, Manoj Karkee
4:03pm	2401271	*Ground Penetrating Radar (GPR) Non-destructive Sensing and Deep Learning Approach for In-field Tuber Detection* - Presented by: **Liujun Li, University of Idaho, Moscow, Idaho;** Benqi Zhang, Kwaku Opoku-Ware, Huilin Cai, Liujun Li
4:10pm	2400607	*Active Learning for Real-Time Flower Counting with a Ground Mobile Robot* - Presented by: **Daniel Petti;** Changying Li
4:17pm	2401161	*Latent Embeddings from Multispectral Imagery for Enhanced Crop Phenotyping* - Presented by: **Afef Marzougui, ETH Zurich, Department of Environmental Systems Sciences, Institute of Agricultural Sciences, Zurich, Switzerland;** Rebecca J. McGee, Arron H. Carter, Michael O. Pumphrey, Sindhuja Sankaran
4:24pm	2400383	*Identification and Quantification of Strawberry Runners for Breeding Using Image-Based Deep Learning* - Presented by: **Xue Zhou, University of Florida, Wimauma, Florida;** Xue Zhou, Xu Wang, Vance Whitaker, Kai Shen, Kaitlyn Vondracek, Liyike Ji

4:31pm	2400956	*Yield Estimation of Corn from Domain Guided Neural Networks Using Multimodal Data from UAV imagery and In-Situ IoT Soil and Climate Data* - Presented by: **Luke Waltz, Ohio State, Columbus, Ohio;** Luke Waltz, Sushma Katari, Canaan Porter, Taylor Dill, Laura Lindsey, Arnab Nandi, Sami Khanal
4:38pm	2401342	*Analysis of UAV-Based Temporal Data to Predict Wheat Heading Date and Grain Yield Using Time Series Machine and Deep Learning Models* - Presented by: **Worasit Sangjan, USDA-ARS, Columbia, Missouri;** Arron H. Carter, Michael O. Pumphrey, Vadim Jitkov, Kyall E. Hagemeyer, Sindhuja Sankaran
4:45pm	2400689	*Conv1D-BiLSTM-Attention Model: Crop Yield Prediction via Time-Series Adaptive Semantic Segmentation on UAS-based Spatio-Spectral Fusion Data* - Presented by: **Suraj A. Yadav, Department of Agriculture and Biological Engineering, Mississippi State University, Mississippi State, Mississippi;** Xin Zhang, Nuwan K Wijewardane, Max Feldman, Ruijun Quin, Yanbo Huang, Sathishkumar Samiappan, Wyatt Young, Daniel O. Wall

130 Biosensors and Bioinstrumentation for One Health

Monday, 7/29/2024 2:30pm - 5:00pm

Location: Grand Ballroom F

Technical Community: ITSC - Information Technology, Sensors & Control Systems

Session Type: Oral Technical Session

Description: This session provides attendees with the latest information on biosensor development and bioinstrumentation applications in One Health.

Organizer: Jianhan Lin, China Agricultural University

Sponsoring Committee: ITSC-230 Biosensors

Moderators: Jianhan Lin, China Agricultural University; Juhong Chen, Virginia Tech

Start Time	Abstract ID	*Presentation Title* – Presenter; Co-authors
2:35pm	2400286	*CRISPR/Cas14 and G-quadruplex DNAzyme-driven biosensor for paper-based colorimetric detection of African swine fever virus* - Presented by: **Juhong Chen;** Xue Zhao, Yawen He
2:50pm	2400309	*Simultaneous Dual-Gene Detection of Escherichia coli O157:H7 Based on CRISPR/Cas13-Mediated Biosensor* - Presented by: **Yawen He, Department of Biological Systems Engineering, Virginia Tech, Blacksburg, Virginia;** Xuemei Zhang, Juhong Chen
3:05pm	2400834	*Co-Detection of Salmonella and E. coli using a label-free plasmonic genosensor* - Presented by: **Anthony James Franco, Nano-biosensors Laboratory, Department of Biosystems and Agricultural Engineering, Michigan State University, East Lansing, Michigan;** Tina Conklin, Roger Stearns, Woubit Abebe, Evangelyn Alocilja
3:20pm	2400667	*Assessing Antibiotic Resistance in E. coli, K. pneumoniae, and E. cloacae Using Zeta Potential* - Presented by: **Jocelyn Cayen, Michigan State University, East Lansing, Michigan;** Danielle Gregory, Dr. Evangelyn C. Alocilja
3:35pm-3:45pm		BREAK
3:45pm	2400188	*Fluorescent Detection of Salmonella in Food Systems Using a Graphene-Oxide-CRISPR (GO-CRISPR) System* - Presented by: **Tom Kasputis, Virginia Tech Biological Systems Engineering, Blacksburg, Virginia;** Yawen He, Qiaoqiao Ci, Juhong Chen
NO-SHOW	2401412	*Development of a Fully Integrated Biosensor for Monitoring of Soil Nutrients in Tile Drainage* - Presented by: **Mazhar Sher**
4:15pm	2400120	*A Smartphone-based, MOFs-powered, Amine-responsive, Traceability (SMART) Label for Non-contact and Real-time Freshness Monitoring in the Aqua-food Supply Chain* - Presented by: **Yawen He, Department of Biological Systems Engineering, Virginia Tech, Blacksburg, Virginia;** Di Zhang, Zunying Liu, Fei Jia

131 Machine Vision for Robotic Systems

Monday, 7/29/2024 2:30pm - 5:00pm

Location: Grand Ballroom G
Technical Community: ITSC - Information Technology, Sensors & Control Systems
Session Type: Oral Technical Session
Organizer: Yuzhen Lu, Michigan State University
Sponsoring Committee: ITSC-312 Machine Vision
Moderators: Yuzhen Lu, Michigan State University

Start Time	Abstract ID	*Presentation Title* – Presenter; Co-authors
NO-SHOW	2401238	*A robotic precision smart sprayer based on machine vision and PI-controlled spraying system for specialty crops* - Presented by: **Vinay Vijayakumar, SWFREC - University of Florida, Immokalee, Florida;** Yiannis Ampatzidis
2:50pm	2400252	*Depth-Fused Amodal Segmentation for Enhanced Detection and Sizing of Occluded Oriental Melons in Automated Harvesting Systems* - Presented by: **Sungjay Kim, MR., Seoul, South Korea;** Sang-Yeon Kim, Chang-Hyup Lee, Jiwon Ryu, Ghiseok Kim
3:05pm	2400416	*Efficient Eye Detection in Seed Potato Tubers Using Deep-Learning for Robotic High-Throughput Diagnostic Sampling* - Presented by: **Manoj Karkee, Washington State University, Prosser, Washington;** Divyanth Loganathan Girija, Salik Ram Khanal, Achyut Paudel, Chakradhar Mattupalli
3:20pm	2400353	*The compensation algorithm of distance measurement errors for orange picking manipulater in hilly orchard* - Presented by: **Yifan Wang, Huazhong Agricultural University, Wuhan, Hubei, China;** Yifan Wang, Baoqin Yang, Yue Yu, Weiqi Li, Rubel Rana, Jie Liu
3:35pm-3:45pm		BREAK
3:45pm	2401468	*Spline-Based Visual Path Prediction for Autonomous Under the Canopy navigation* - Presented by: **Rahul Harsha Cheppally**
4:00pm	2401187	*Stereoscopic Morphometry in Forages: Predicting Pasture Quantity with Field Robotics* - Presented by: **Jasanmol Singh, Clemson University, Clemson, South Carolina;** Ali Bulent Koc, Matias Jose Aguerre, John P. Chastain, Shareef Shaik
4:15pm	2401277	*Vision-based Relative Navigation and Drone Swarming Control for Inspection in GPS-denied Environment* - Presented by: **Johnny Li, University of Idaho, Moscow, Idaho;** Fethi Candan, Muhammet Emre Sanci
4:30pm	2400747	*High-Throughput Robotic Phenotyping for Quantifying Tomato Disease Severity Enabled by Synthetic Data and Domain-Adaptive Semantic Segmentation* - Presented by: **Weilong He, Department of Biological and Agricultural Engineering, NC Plant Science Initiative, North Carolina State University, Raleigh, North Carolina;** Xingjian Li, Dilip Panthee, Zhenghua Zhang, Yuxi Chen, Lirong Xiang

132 Spectroscopic Sensing and Imaging for Agriculture and Food Systems

Monday, 7/29/2024 2:30pm - 5:00pm

Location: Grand Ballroom H
Technical Community: ITSC - Information Technology, Sensors & Control Systems
Session Type: Oral Technical Session
Description: Development and applications of spectroscopic sensing and imaging technologies for agrifood uses.
Organizer: Micah Lewis, USDA-ARS
Sponsoring Committee: ITSC-348 Electromagnetics & Spectroscopy
Moderators: Micah Lewis, USDA-ARS

Start Time	Abstract ID	*Presentation Title* – Presenter; Co-authors
2:35pm	2400039	*A new multisource optical and SAR satellite remote sensing data fusion framework toward capturing fine-scale alfalfa growth* - Presented by: **Jiang Chen, Biological Systems Engineering, University of Wisconsin-Madison, Madison, Wisconsin;** Zhou Zhang
2:50pm	2400249	*Band-by-Band Real-Time Radiometric Correction for UAV Multispectral Images Based on a Downwelling Spectrometer* - Presented by: **Yutao Shen, Zhejiang University, Hangzhou, Zhejiang Province, China;** Jiayang Xie, Haiyan Cen

3:05pm	2401320	*Spatial Variability of Volatile Organic Compounds Profiles in Potato Bulk Storage measured using Developed Sampling Unit* - Presented by: **Kingsley Umani, Department of Biological Systems Engineering, Washington State University, Pullman, Washington;** Milton Valencia-Ortiz, Sindhuja Sankaran
NO-SHOW	2400602	*Overcoming the Impact of Size Variations on Online Fruit Internal Quality Detection with Spectral Correction and Modelling Optimization* - Presented by: **Yingjie Zheng, Zhejiang University, Hangzhou City, Zhejiang Province, China;** Yingjie Zheng, Lijuan Xie
3:35pm-3:45pm		BREAK
3:45pm	2400972	*Development of a Raman and Infrared Dual-Modality Sensing System for Food Authentication* - Presented by: **Jianwei Qin, USDA ARS, Beltsville, Maryland;** Kuanglin Chao, Feifei Tao, Hyun Jung Min, Insuck Baek, Moon S. Kim
4:00pm	2400127	*Predictive performance of portable and benchtop infrared spectrometers for macro and micronutrient estimations in fresh and dry leaf tissues* - Presented by: **Chamika A. Silva, Department of Agricultural & Biological Engineering, Mississippi State University, Starkville, Mississippi State;** Nuwan K. Wijewardane, Raju Bheemanahalli, Xin Zhang
4:15pm	2401519	*A Microwave Method for Rapid and Nondestructive Determination of Quality Attributes of In-Shell Nuts* - Presented by: **Samir Trabelsi, USDA-ARS, Athens, Georgia;** Micah Lewis
4:30pm	2400852	*Using A Distributed Network of Microwave Moisture Sensors to Monitor In-shell Kernel Moisture Content in Real-time During Drying and Storage* - Presented by: **Micah A. Lewis, USDA-ARS, Athens, Georgia;** Samir Trabelsi

116 Robotics and Mechanization for Specialty Crops

Monday, 7/29/2024 2:30pm - 5:00pm

Location: Gold Key I/II

Technical Community: MS - Machinery Systems

Session Type: Oral Technical Session

Description: The Robotics and Mechanization for Specialty Crops session will cover all possible robotic and mechanical technology innovations and adoptions for specialty crops including fruits, vegetables, and many other horticultural crops including floriculture.

Organizer: Hao Gan, University of Tennessee

Sponsoring Committee: MS-48 Specialty Crop Engineering

Moderators: Hao Gan, University of Tennessee

Start Time	Abstract ID	*Presentation Title* – Presenter; Co-authors
2:35pm	2400346	*Measuring Ornamental 3D Canopy Volume and Trunk Diameter Using Stereo Vision for Precision Spraying and Assessing Tree Maturity* - Presented by: **Aleena Rayamajhi, School of Environmental, Civil, Agricultural, and Mechanical Engineering, College of Engineering, University of Georgia, Athens, Georgia;** Aleena Rayamajhi, Hasan Jahanifar, Muhammad Asif, Md Sultan Mahmud
2:50pm	2400537	*Design and Evaluation of a Novel Band-Steam Applicator for Controlling Soilborne Pathogens and Weeds in Lettuce Crops* - Presented by: **Mark C. Siemens, University of Arizona, Yuma, Arizona;** Barry Pryor, Victor Godinez, Jr., Nicholas Bahr, Steven A. Fennimore
3:05pm	2400074	*Human-Assisted Robotic Trials to Nature-Assisted Strategies for feasibility of Automated Fruitlet Thinning in Commercial Orchards* - Presented by: **Ranjan Sapkota, Center for Precision and Automated Agricultural Systems, Washington State University, Washington;** Dawood Ahmed, Martin Churuvija, Syed Usama Bin Sabir, Safal Kshetri, Manoj Karkee
3:20pm	2401139	*Development and Evaluation of a Dual-arm Robotic Apple Harvesting System* - Presented by: **Kyle Lammers, Michigan State University, Okemos, Michigan;** Kaixiang Zhang, Keyi Zhu, Pengyu Chu, Zhaojian Li, Renfu Lu
3:35pm-3:45pm		BREAK
3:45pm	2400734	*Active Laser-Camera Scanning for Apple Localization in Dual-Arm Robotic Harvesting* - Presented by: **Kaixiang Zhang, Michigan State University, East Lansing, Michigan;** Kaixiang Zhang, Kyle Lammers, Keyi Zhu, Pengyu Chu, Zhaojian Li, Renfu Lu

4:00pm	2400981	*Design End-effector for Automatic Mushroom Harvesting* - Presented by: **Kittiphum Pawikhum, The Pennsylvania State University, University Park, Pennsylvania;** Long He, John Pecchia
4:15pm	2400401	*Development of an End-effector for Robotic Harvesting of Hydroponic Lettuce* - Presented by: **Al Bashir;** Yaqoob Majeed, Azlan Zahid
4:30pm	2401145	*Deep Learning-based Plant Spacing Estimation for Efficient Resources Utilization in Controlled Environment Agriculture* - Presented by: **Yaqoob Majeed, Texas A&M AgriLife Research, Dallas, Texas;** Yaqoob Majeed, Azlan Zahid
4:45pm	2401062	*Automated Asparagus Harvesting Technology: A Review of the Past 60 Years of Research and Developments in the United States and Beyond* - Presented by: **Yuzhen Lu**
5:00pm	2400869	*Development of a decision-making algorithm to identify picking strategies for robotic mushroom harvesting* - Presented by: **Sadjad Mahnan**

134 Advances in Seeding and Tillage Technology

Monday, 7/29/2024 2:30pm - 5:00pm

Location: Platinum 1

Technical Community: MS - Machinery Systems

Session Type: Oral Technical Session

Description: Session focusing on new technologies for planting and tillage.

Organizer: Mark Siemens, University of Arizona

Sponsoring Committee: MS-49 Crop Production Systems, Machinery, and Logistics **Co-Sponsors:** MS-54 Precision Agriculture

Moderators: Mark Siemens, University of Arizona

Start Time	Abstract ID	*Presentation Title* – Presenter; Co-authors
2:35pm	2400412	*Digitized Soil Tilth Quality for Seed-Bed Precision Management Impact On Corn Yield* - Presented by: **Jong-Myung Noh, Mehari Z. Tekeste, Soil Machine Dynamics Laboratory, Iowa State University, Ames, Iowa;** Mehari Z Tekeste, Eisenmann David, Hatfield Jerry
2:50pm	2400215	*Experimental study on the impact of planter toolbar position on row unit behavior* - Presented by: **Jose Peiretti, Kansas State University, Manhattan, Kansas;** Sylvester Badua, Ajay Sharda
3:05pm	2400894	*In-Field Planter Row Unit Draft Force Measurement and Analysis* - Presented by: **Chase Bethany, Iowa State University, Ames, Iowa**
3:20pm	2401559	*Test Procedure Advancements For Measuring the Performance in Seed Placement and Monitoring/Sensing Accuracy of Singulated Planting System* - Presented by: **Jason Werning, Senior Engineer John Deere, Blue Grass, Iowa;** Mike Kocher, John Smith, Mark Hanna, Greg Arnett, Mark Siemens
3:35pm-3:45pm		BREAK
3:45pm	2400540	*Performance Monitoring of Peanut Seed Plates with Computer Vision for State-of-the-Art Vacuum Seed Meters* - Presented by: **Manuel Blaser, Crop and Soil Sciences Department, University of Georgia, Tifton, Georgia;** Wesley Porter, Simmerjeet Virk, Glen Rains, Thirimachos Bourlai, Adrian Koller
4:00pm	2401311	*Precision Wildflower Seeder* - Presented by: **Spencer Corkins**
4:15pm	2400332	*Development of a remotely controlled self-propelled drum seeder for paddy seeds* - Presented by: **Hifjur Raheman, Indian Institute of Technology Kharagpur, India;** Vennapusa Pavan Kumar Reddy, Sunny Kumar Sharma
4:30pm	2401008	*Android App-Assisted Electronically Controlled System for Precision Pneumatic Planter* - Presented by: **Professor Virendra Kumar Tewari, Director, Indian Institute of Technology Kharagpur, Kharagpur, West Bengal, India;** Chaitanya Madhaw Pareek

135 In-Field Agricultural Machinery Automation

Monday, 7/29/2024 2:30pm - 5:00pm

Location: Platinum 9

Technical Community: MS - Machinery Systems

Session Type: Oral Technical Session

Description: Accelerated by both resource challenges and technology evolution, automation in the agricultural space is evolving at a rapid pace. This session will focus on the application of technology to in-field systems and their associated challenges. It will include systems ranging the spectrum from automated through fully autonomous.

Sponsoring Committee: MS-58 Agricultural Equipment Automation

Moderators: Mark Dilts, CNH Industrial

Start Time	Abstract ID	*Presentation Title* – Presenter; Co-authors
NO-SHOW	2400173	*Dynamic balancing and optimum performance of a melon depodding and washing machine* - Presented by: **Joshua Olanrewaju Olaoye, Department of Agricultural and Biosystems Engineering, University of Ilorin, Ilorin, Kwara State, Nigeria;** A. A. Adebayo, M. O. Olaoye
2:50pm	2400149	*Safe and Optimal Motion Planning for Autonomous Agricultural Vehicles in Cluttered Agricultural Fields* - Presented by: **Peng Wei, Department of Biological and Agricultural Engineering, University of California Davis, Davis, California;** Chen Peng, Stavros Vougioukas
3:05pm	2400589	*Performance Test of Sweet Potato Harvester for a Two-stage Conveyor-type* - Presented by: **Jinho Won, Jeonbuk National University, Jeonju-si, Republic of Korea;** Dae-Cheol Kim
NO-SHOW	2401474	*Autonomous Cutting Mechanisms Required for Competitive Harvest by an Intelligent Vegetable Harvester* - Presented by: **Aidan Vicente Fischer, California Polytechnic University, San Luis Obispo, California;** Dr. Mohammad Sadek
3:35pm-3:45pm		BREAK
3:45pm	2401469	*Optimal design and research of banana self-adaptive profiling de-handing device based on automatic feeding system* - Presented by: **Jie Guo, Zhejiang University, Hangzhou City, Zhejiang Province, China;** Jie Guo, Yong He, Zhou Yang, Manoj Karkee, Jieli Duan, Yufei Liu, Zichen Huang, Wenkai Zhang
4:00pm	2400880	*Development of a cotton boll detection system to enhance autonomous picking using YOLOv8 and SAM* - Presented by: **Thevathayarajh Thayananthan, Department of Agricultural and Biological Engineering, Mississippi State University, Starkville, Mississippi State, Mississippi;** Xin Zhang, Yanbo Huang, Jingdao Chen, Wenbo Liu
4:15pm	2400650	*Development of A Bionic Hexapod Robot with Adaptive Gait and Clearance for Enhanced Agricultural Field Scouting* - Presented by: **Zhenghua Zhang, Department of Biological and Agricultural Engineering, North Carolina State University, Raleigh, North Carolina;** Zhenghua Zhang, Weilong He, Fan Wu, Lina Quesada, Lirong Xiang

136 Latest Developments in Precision Crop Protection and Fertilizer Applications

Monday, 7/29/2024 2:30pm - 5:00pm

Location: Platinum 10

Technical Community: MS - Machinery Systems

Session Type: Oral Technical Session

Description: Precision application becomes a more important research and technical area as it is a key tool to reduce environmental impact while maximizing the agricultural production. Precision crop protection or fertilizer applications can provide great benefits by optimizing agricultural inputs while maximizing its output. This session accommodates research work in precision crop protection product and fertilizer application to optimize crop protection product or fertilizer use in agriculture.

Organizer: Rex Ruppert, CNH Industrial

Sponsoring Committee: MS-23/6 Application Sys & US TAG ISO TC23/SC6 **Co-Sponsors:** MS-54 Precision Agriculture

Moderators: Dan Cederberg

Start Time	Abstract ID	*Presentation Title* – Presenter; Co-authors
2:35pm	2400909	*Enhancing Nitrogen Use Efficiency and Crop Yields Integrating Biosensors-rich Spots and Remote Sensing* - Presented by: **Salman Mirzaee, Departments of Agronomy, Horticulture and Plant Science and Agricultural & Biosystem Engineering, College of Agriculture, Food & Environmental Sciences, South Dakota State University, Brookings, South Dakota;** Salman Mirzaee
2:50pm	2400161	*Performance Evaluation of Variable Rate Sprayer Equipped with Variable Air Assist System* - Presented by: **Hongyoung Jeon, USDA-ARS, Wooster, Ohio;** Heping Zhu
NO-SHOW	2400026	*Research on leaf area detection model of whole growth cycle of fruit trees for orchard precise variable-rate spraying* - Presented by: **Hanjie Dou, National Engineering Research Center of Intelligent Equipment for Agriculture (NERCIEA), Beijing, China;** Mengmeng Wang, Changyuan Zhai, Chunjiang Zhao, Xiu Wang
3:20pm	2400349	*Needle-based, automated trunk injection system for HLB-affected citrus trees* - Presented by: **Israel Ojo**
3:35pm-3:45pm		BREAK
3:45pm	2400891	*Sustainable Weed Management through Precision Cover Cropping System* - Presented by: **Yashar Askarzadeh, South Dakota State University, Brookings, South Dakota;** Eric Jones, Maryam Sahraei, Ahmed Abdalla, Ali Mirzakhani Nafchi
4:00pm	2400832	*Design of a Variable Rate Applicator Controller* - Presented by: **Ahmed Abdalla, Department of Agronomy, Horticulture and Plant Science, College of Agriculture, Food & Environmental Sciences, South Dakota State University, Brookings, South Dakota;** Ali Mirzakhani Nafchi
4:15pm	2400806	*Machine vision based nozzle control system to optimize chemical use efficacy for vertical spray applications* - Presented by: **Prashanta Pokharel, University of Kentucky, Lexington, Kentucky;** Michael P. Sama
4:30pm	2401144	*Mechanosynthesis of Urea Cocrystal for Slower Dissolution* - Presented by: **Vidya Nagaraju**

137 Advances in Agrohydrological Sustainability – Process Based Modeling

Monday, 7/29/2024 2:30pm - 5:00pm

Location: Grand Ballroom J
Technical Community: NRES - Natural Resources & Environmental Systems
Session Type: Oral Technical Session
Organizer: Rebecca Muenich, University of Arkansas
Sponsoring Committee: NRES-21 Hydrology Group **Co-Sponsors:** NRES-22 Soil Erosion and Water Quality, NRES-24 Irrigation Group
Moderators: Sayantan Samanta, Texas A&M AgriLife Research; Arun Bawa, Texas A&M AgriLife Research

Start Time	Abstract ID	*Presentation Title* – Presenter; Co-authors
2:35pm	2401498	*Community-Centered Climate Resilience Strategies for Agriculture in Chile's Los Lagos Region* - Presented by: **Mark C. Stone, University of Nebraska-Lincoln, Lincoln,Nebraska;** Asa B. Stone, Cristián Kremer F., Mark C. Stone
2:50pm	2400881	*Evaluation of Climate Adaptation Strategies for Cotton Production in the Texas High Plains* - Presented by: **Srinivasulu Ale, Texas A&M AgriLife Research, Vernon, Texas;** Bhupinder Singh, Sayantan Samanta, Srinivasulu Ale, Edward Barnes
3:05pm	2401451	*Field Scale Assessment of Conservation Practices Effectiveness in Mitigating Nitrate Leaching to Groundwater using APEX* - Presented by: **Floyid Nicolas, University of California, Davis, Davis, California;** Iael Raij-Hoffma, Seonggyu Park,Luca Doro, Jaehak Jeong, Hellen Dahlke, Thomas Harter, Thomas Harter, Isaya Kisekka
3:20pm	2401315	*Impacts of Conservation Agricultural Practices on Flood Reduction at the Watershed Scale* - Presented by: **John McMaine, South Dakota State University, Brookings, South Dakota;** John McMaine, Kristen Blann, Umar Javed, Philip Adalikwui
3:35pm-3:45pm		BREAK
3:45pm	2400991	*High-resolution assessment of projected future changes in weather and climate extremes in the Chesapeake Bay Watershed of the mid-Atlantic US* - Presented by: **Puneet Srivastava;** Puneet Srivastava, Majid Mirzaei, Adel Shirmohammadi, Ritesh Karki

4:00pm	2400860	*Simulated effects of potential improvements in physical soil health properties on dryland crop production in the Texas High Plains* - Presented by: **Srinivasulu Ale, Texas A&M AgriLife Research, Vernon, Texas;** Sayantan Samanta, Srinivasulu Ale, Darren Hudson, Tim S. Goebel, Katie Lewis, Robert J. Lascano, R. Louis Baumhardt, Steven A. Mauget, Dennis C. Gitz III
4:15pm	2401006	*Development of A Real-Time Decision Support System for Generating and Relaying Irrigation Schedule Forecasts for Lowland Rice* - Presented by: **Nicholas Kiggundu**

138 Advances in Drainage Design, Monitoring, and Modeling

Monday, 7/29/2024 2:30pm - 5:00pm

Location: Grand Ballroom K
Technical Community: NRES - Natural Resources & Environmental Systems
Session Type: Oral Technical Session
Description: This session includes the latest research in drainage.
Organizer: Vinayak Shedekar, Ohio State University
Sponsoring Committee: NRES-23 Drainage Group **Co-Sponsors:** NRES-21 Hydrology Group, NRES-225 Conservation Systems, NRES-28 Ecological Engineering
Moderators: Vinayak Shedekar, Ohio State University; Babak Dialameh, Michigan State University

Start Time	Abstract ID	*Presentation Title* – Presenter; Co-authors
2:35pm	2401216	*Evaluate the performance of SWAT+ for simulating Drainage Water Management (DWM) and model parameters transferability spatially in Eastern SD* - Presented by: **Sushant Mehan, Assistant Professor of Water Resources Engineering at South Dakota State University, Brookings, South Dakota;** Abhinav Sharma, Rachel Mc Daniel, Jeff Arnold, Todd Trooien, Nancy Sammons, Louis Amegbletor
2:50pm	2400126	*Modeling water table dynamics under Onsite Wastewater Systems in the presence and absence of Engineered Drainage* - Presented by: **Ahmed Awad, Department of Food, Agricultural and Biological Engineering, College of Food, Agriculture and Envi-ronmental Sciences, The Ohio State University, Columbus, Ohio;** Manal Askar, Chinchar Toni, Ryan Winston, Mohammed Youssef, Ehsan Ghane, Vinayak Shedekar
3:05pm	2400131	*Water Quality Benefits of On-Farm Water Capture and Use in Eastern North Carolina* - Presented by: **Laurie Pisciotta, North Carolina State University, Raleigh, North Carolina;** Mohamed A. Youssef, Chad A. Poole, Hossam A. Moursi
3:20pm	2400130	*Corn and cotton yield responses to supplemental irrigation from an on-farm water capture and use system in Eastern North Carolina* - Presented by: **Laurie Pisciotta, North Carolina State University, Raleigh, North Carolina;** Mohamed A. Youssef, Chad A. Poole, Hossam A. Moursi
3:35pm-3:45pm		BREAK
3:45pm	2400113	*Evaluation of DRAINMOD in predicting nitrogen and phosphorus losses from a drained field in northcentral Ohio* - Presented by: **Manal Askar, The Ohio State University, Columbus, Ohio;** Mohamed Youssef, Kevin King, Vinayak Shedekar
4:00pm	2400882	*DRAINMOD-MACROPORE: A model for simulating macropore flow in the subsurface-drained field* - Presented by: **Negar Sharifi-Mood, PhD Candidate, Department of Bioresource Engineering, McGill University, Sainte-Anne-de-Bellevue, Quebec, Canada;** Shiv Prasher, Ramesh Rudra
4:15pm	2400381	*RZWQM2-Phosphours: a new model for the management of phosphorus losses in tile-drained fields* - Presented by: **Zhiming Qi;** Zhiming Qi
4:30pm	2400600	*Modeling effects of conservation drainage practices using DRAINMOD - current and future capabilities* - Presented by: **Vinayak Shedekar**
4:45pm	2400601	*Modeling effects of conservation drainage practices using DRAINMOD - challenges and opportunities* - Presented by: **Vinayak Shedekar**
5:00pm	2400859	*Evaluating the water quality impacts of a drainage water recycling system with a small reservoir: Results of a five-year field study in eastern North Carolina* - Presented by: **Mohamed Youssef**

139 Advances in Irrigation Management: Drip Irrigation and Water Management

Monday, 7/29/2024 2:30pm - 5:00pm

Location: Elite 1

Technical Community: NRES - Natural Resources & Environmental Systems

Session Type: Oral Technical Session

Description: Advances in irrigation management, particularly irrigation systems such as mobile drip, drip irrigation, center pivot irrigation, soil moisture sensing techniques, and other sensors used for irrigation management, have shown a potential to improve crop water use efficiency. Adopting these technologies is essential for optimizing water usage, reducing wastage, reducing leaching, and promoting healthier plant growth, leading to increased crop yields and enhanced agricultural productivity.

Organizer: Vivek Sharma, University of Florida

Sponsoring Committee: NRES-244 Irrigation Management **Co-Sponsors:** NRES-24 Irrigation Group

Moderators: Vivek Sharma, University of Florida; Sandra Guzman, University of Florida

Start Time	Abstract ID	*Presentation Title* – Presenter; Co-authors
2:35pm	2401167	*Reducing Water Use with Low-Volume Sprinklers during Establishment and Freeze Protection of Strawberries in Florida* - Presented by: **Josue St Fort, University of Florida, Gainesville, Florida;** Carlene A. Chase, Vivek Sharma, Michael Dukes, Shinsuke Agehara, Davie Kadyampakeni
2:50pm	2400004	*The Impact of Gravity Drip and Flood Irrigation on Development, Water Productivity, and Fiber Yield of Cotton in Semi-Arid Conditions of Arizona* - Presented by: **Diaa Eldin Elshikha, The University of Arizona, Maricopa, Arizona;** Diaa Eldin Elshikha, Said Attalah, Elsayed A. Elsadek, Peter Waller, Kelly R. Thorp, Debankur Sanyal, Eduardo Bautista, Randy Norton, Douglas Hunsaker, Clinton Williams, Gerard Wall, Ed Barnes, Ethan Orr
3:05pm	2401050	*Precision Irrigation for Greenhouse Tomatoes based on Real-time Estimation of Water Requirements using a Rail-based Depth Camera Imaging System* - Presented by: **Min-Seok Gang, Seoul National University, Seoul, South Korea;** Hak-Jin Kim, Sung Kwon Park, Sanghyun Lee
3:20pm	2400129	*Development of suitability sites for shallow tube wells in Bongao, Tawi-tawi using geographic information systembases water resources assessment model* - Presented by: **Mark Jude F. Trondillo, Davao del Sur State College, Digos City, Davao del Sur, Philippines;** Ryan Art M. Tuling, Marvin T. Lopez, Jeah A. Bejarasco
3:35pm-3:45pm		BREAK
3:45pm	2400968	*Digital Agriculture Essentials: Equipping Small-Scale Farmers with Key Knowledge* - Presented by: **Chi Zhang, University of Florida, Gainesville, Florida**
4:00pm	2400079	*Enhancing Crop Water Productivity in Vineyards with Soil Water Sensors to Schedule Sub-surface Drip Irrigation* - Presented by: **Pete Jacoby**
4:15pm	2401493	*Soil Moisture Sensor Optimization for Improving Soil Moisture Parameters for Irrigation Scheduling in the Great Plains of North America* - Presented by: **Ishani Lal**
4:30pm	2400876	*Simulation of Soil Water Distribution for Subsurface Drip-Irrigated Corn with Deficit Irrigation Strategies* - Presented by: **Rocio Reyes Esteves**

140 Integrating Comprehensive Water Resource Management Through Planned Reuse-HYBRID

Monday, 7/29/2024 2:30pm - 5:00pm

Location: Elite 2

Technical Community: NRES - Natural Resources & Environmental Systems

Session Type: Hybrid Session-submitted abstracts and guest speakers

Description: The Circular economy relies on recycling and reuse as integral to resource management to meet increasing demands for food, water, and energy. Natural systems are based on this circular logic – water, nutrients, and energy have recycled through natural systems for millennia. Rainwater capture, wastewater reclamation and reuse, nutrient and energy recovery through water and wastewater residual treatment offer technically sound and economically attractive mechanisms to meet future needs. Harnessing these natural systems to meet future needs is a mandate, application of the circular economy to issues critical for sustaining human populations is no longer voluntary – it is a mandate.

No living organisms can survive without water and nutrients and this session is intended to reinforce the need for comprehensive and circular approaches to biological resources, nutrient resources, economic resources and most critically our common, shared water resources. Integral to this effort are efforts such as the USEPA Reuse Action Plan, USDA Nutrient

Management Programs and Basin-wide Water Management Programs. Biological and agricultural systems constitute the core of this mandate, and this session is intended to explore the application of current cutting-edge thinking to address this mandate by inviting leaders to present their research and education programs related to water reuse projects.

Organizer: Anish Jantrania, Texas A&M University
Sponsoring Committee: NRES-26 Sustainable Land Resources **Co-Sponsors:** NRES-21 Hydrology Group
Moderators: Rabi Mohtar, Texas A&M University; Albert Rubin, North Carolina State University

Start Time	Abstract ID	*Presentation Title* – Presenter; Co-authors
2:35pm	2400271	*Developing a One-Water Approach to Manage Onsite and Small Community Water Reuse Programs* - Presented by: **A. R. Rubin;** Anjantrania, Frederick, Crawford, Alpin, Wolfe
2:50pm	2400865	*Introducing the nontraditional water sources for irrigation to ensure water conservation and best management practices in Maryland* - Presented by: **Masoud Negahban-Azar, University of Maryland, College Park, Maryland;** Azbina Rahman, Adel Shirmohammadi
3:05pm	2401217	*Production of Agricultural Water and Nutrients from Saline Water Sources* - Presented by: **William Wright, California State University, Fresno, California;** Walter Mizuno, Karl Longley, Sankha Banerjee, Mike Waite, Enrique Alameda
3:20pm	2400037	*Evaluating Swine Wastewater Reuse for Forage Bermudagrass Production* - Presented by: **Clement Sohoulande**

141 Nutrient Transport and Cycling: Measurement and Data Synthesis

Monday, 7/29/2024 2:30pm - 5:00pm

Location: Elite 3
Technical Community: NRES - Natural Resources & Environmental Systems
Session Type: Oral Technical Session
Organizer: Rabin Bhattarai, University of Illinois at Urbana-Champaign
Moderators: Rabin Bhattarai, University of Illinois at Urbana-Champaign; Rishabh Gupta, University of Florida

Start Time	Abstract ID	*Presentation Title* – Presenter; Co-authors
2:35pm	2400064	*Ecoregion Analysis of Nutrient Runoff from Agricultural Land Uses in North America* - Presented by: **Daren Harmel, USDA-ARS, Fort Collins, Colorado;** Austin Hopkins, Peter Kleinman, Deb Sahoo, Jim Ippolito
2:50pm	2401260	*Using Modified Zero-Tension Lysimeters to Determine Nutrient Leaching in a Field Setting* - Presented by: **Rhonda Miller, Ph.D., Utah State University, Logan, Utah;** Bruce Miller, Ph.D.
3:05pm	2401090	*Investigating the impact of biochar application on P leaching in agricultural soils fertilized with poultry litter* - Presented by: **Gurparshad Singh Brar, Biosystems Engineering Department, Auburn University, Auburn, Alabama;** Jasmeet Lamba, Kritika Malhotra, Sushil Adhikari
3:20pm	2400364	*Nutrients transport and cycling in anerobic co-digestion of soybean biomass, cover crops, and swine manure* - Presented by: **Shelby Stoner, Illinois State University, Normal, Illinois;** Liangcheng Yang, Robert L. Rhykerd
3:35pm-3:45pm		BREAK
3:45pm	2400728	*Crop Nitrogen Uptake Response to Nitrogen Inputs: Assessing Systems-level Performance of U.S. Agroecosystems* - Presented by: **CANCELED**
4:00pm	2400729	*How is Nitrogen Use Efficiency impacted by Varying Contributions from Fertilizer, Manure, and Biological Fixation in U.S. and Global Croplands?* - Presented by: **CANCELED**
4:15pm	2400922	*Preferential flow of phosphorus and nitrogen under steady-state saturated conditions* - Presented by: **Kritika Malhotra**

142 Constructed Wetlands-GUEST SPEAKERS

Monday, 7/29/2024 2:30pm - 5:00pm

Location: Platinum 7
Technical Community: NRES - Natural Resources & Environmental Systems
Session Type: Guest Speaker Session
Description: Natural and constructed wetlands are now used extensively across the United States as a means for mitigating nutrient losses to both surface and groundwater. Further, constructed treatment wetlands are a potential sustainable, low-cost alternative for treating nonpoint source and providing secondary wastewater treatment in rural, low-income

communities. While the use of wetlands as a treatment approach for nitrogen and phosphorus is well known, nutrients are not the sole constituent entering these systems.

Therefore, this session will be in invited session from contributors from the special collection and invited wetlands specialists in the region.

Organizer: Tiffany Messer, Univesrity of Kentucky

Sponsoring Committee: NRES-25 Streams, Reservoirs, and Wetlands Group **Co-Sponsors:** NRES-28 Ecological Engineering

Moderators: Tiffany Messer, Univesrity of Kentucky; Bill Hunt, North Carolina State University

Start Time	Abstract ID	*Presentation Title* – Presenter
2:35pm	Guest Speaker	*29 Years of Carbon Sequestration and Water Quality Improvement in Two Constructed Wetlands in Ohio* - Presented by: **Jay Martin, Ohio State University, Columbus Ohio;**
3:05pm	Guest Speaker	*Detritus Removal in Surface Flow Constructed Wetlands - The Fountain of Youth to Extend N Treatment Performance?* - Presented by: **Michael Burchell, North Carolina State University, Raleigh, North Carolina**
3:35pm-3:45pm		BREAK
3:45pm	Guest Speaker	*Hybrid Constructed Wetlands for Wastewater Treatment* - Presented by: **Natasha Bell, Virginia Tech, Blacksburg, Virginia**
4:15pm	Guest Speaker	*Constructed Wetlands for Wastewater Treatment: 25 Years of Experience with 1-2 Cubic Meters per Second Flows in 500-Acre Prado Wetland, Southern California* - Presented by: **Alex Horne, UC Berkeley, Berkeley, California**
4:45pm		*Panel Discussion*

143 PAFS - R.S. Gates Memorial Lecture Series

Monday, 7/29/2024 2:30pm - 5:00pm

Location: Orange County 2

Technical Community: PAFS - Plant, Animal, & Facility Systems

Session Type: Guest Speaker Session

Description: Richard S. Gates, PhD, PE, ASABE Fellow and recipient of the Henry Giese Structures and Environment Award, was a Professor of Agricultural & Biosystems Engineering at Iowa State University from 2020 until his passing in November 2023. Over his 40-year career in ABE, he mentored and influenced over 110 graduate students and authored over 200 refereed publications. His legacy in the PAFS community is everlasting and his transformative contributions reshaped the engineering landscape for plants and animal production systems. This memorial session commemorates his life and service to our profession.

Organizer: Brett Ramirez, Iowa State University

Sponsoring Committee: PAFS-40 Facilities & Systems Group **Co-Sponsors:** PAFS-50 Environmental Air Quality

Moderators: Brett Ramirez, Iowa State University; Robert Burns

Start Time	Abstract ID	*Presentation Title* – Presenter
2:30pm	Guest Speaker	*Introduction* - Presented by: **Robert Burns, The University of Tennessee; Brett Ramirez, Iowa State University**
2:40pm	Guest Speaker	*Career in Review* - Presented by: **Hongwei Xin, The University of Tennessee; Norm Scott, Cornell University**
3:10pm	Guest Speaker	*Professional Impact & Global Influence* - Presented by: **Lingjuan Wang-Li, North Carolina State University; Daniel Berckmans, Catholic University Leuven; Ilda Ferreira Tinoco, Federal University of Viçosa**
3:50pm	Guest Speaker	*Mentoring Legacy* - Presented by: **Jody Purswell, USDA; Erin Webb, Oak Ridge National Laboratory; Brett Ramirez, Iowa State University**
4:20pm	Guest Speaker	*Personal Remeberance* - Presented by: **Robert Burns, The University of Tennessee; Yijie Xiong, University of Nebraska-Lincoln**
4:35pm	Guest Speaker	*Memorial Video*
4:50pm	Guest Speaker	*Prayer and Closing* - Presented by: **Robert Burns, The University of Tennessee**

144 Innovations in Sustainable Technologies for Grain Postharvest Management-GUEST SPEAKERS

Monday, 7/29/2024 2:30pm - 5:00pm

Location: Orange County 1
Technical Community: PRS - Processing Systems
Session Type: Guest Speaker Session
Organizer: Marvin Petingco, Kansas State University
Sponsoring Committee: PRS-702 Crop & Feed Processing & Storage
Moderators: Marvin Petingco, Kansas State University; Kaliramesh Siliveru, Kansas State University

Start Time	Abstract ID	*Presentation Title* – Presenter
2:35pm	Guest Speaker	*Challenges in Grain Drying and Storage Management* - Presented by: **Kenneth Hellevang, North Dakota State University, Fargo, North Dakota**
3:05pm	Guest Speaker	*Mathematical Models as Management Tools for Sustainable Grain Storage* - Presented by: **Fuji Jian, University of Manitoba, Manitoba, Canada**
3:35pm-3:45pm		BREAK
3:45pm	Guest Speaker	*Sustainable Solutions to Revitalize Grain Storage Management in Developing Countries* - Presented by: **Ma Cristine Concepcion Ignacio, University of the Philippines Los Banos, Philippines**
4:15pm	Guest Speaker	*Data Based Grain Management* - Presented by: **Johnselvakumar Lawrence, AGI Digital, Lenexa, Kansas**
4:45pm	Guest Speaker	*AI-Harnessing Infestation Detection for Postharvest Loss Reduction* - Presented by: **Ronnie Serfa Juan, Oak Ridge Institute of Science & Education; USDA-ARS, Manhattan, Kansas**

145 Management of Food, Organic Wastes, and Byproducts for Improving Circularity

Monday, 7/29/2024 2:30pm - 5:00pm

Location: Grand Ballroom A
Technical Community: PRS - Processing Systems
Session Type: Oral Technical Session
Description: Organic wastes and byproducts may cause environmental damage or economic loss without careful management and treatment. Further, many of these materials have unexploited value. This session will focus on engineering solutions for waste and byproduct streams from agriculture, food, municipal, and bioenergy operations.
Organizer: Toufiq Reza, Florida Institute of Technology
Sponsoring Committee: PRS-707 Food & Organic Waste Management & Utilization
Moderators: Haibo Huang, Virginia Tech

Start Time	Abstract ID	*Presentation Title* – Presenter; Co-authors
2:35pm	2401287	*Sequential bioprocessing of crop residue and food wastes into dairy feed for enhanced sustainability* - Presented by: **Xiao Sun, University of Minnesota, St. Paul, Minnesota;** Zhengxia Dou, Dipti Pitta, Linda Baker, Gerald Shurson, Bo Hu
2:50pm	2401368	*Characterization of Polyhydroxyalkanoates (PHA) Produced from Cheese Byproducts by Halophilic Microbes* - Presented by: **Kelly Graff, UC Davis, Davis, California;** Melanie Siu, Alexander Hobby, Joel Martinez, Charles Lee, Hamed El-Mashad, Ruihong Zhang
3:05pm	2400654	*Polyhydroxybutyrate production from fibrous stalk and leafy waste admixtures of industrial hemp in a circular bioeconomy context* - Presented by: **Anindita Paul, PhD student, SUNY-ESF, Syracuse, New York;** Anindita Paul, Ankita Juneja, Erica L.-W. Majumder, Chang G. Yoo, Deepak Kumar
3:20pm	2400318	*Harnessing filamentous fungi and fungal-bacterial co-culture for biological treatment and valorization of hydrothermal liquefaction wastewater* - Presented by: **Meicen Liu, Kansas State University, Manhattan, Kansas;** Jiefu Wang, Isamu Umeda, Sandeep Kumar, Zhiwu Wang, Yi Zheng
3:35pm-3:45pm		BREAK
3:45pm	2400674	*Characterizing Mosquito Repellency of Steam Distillation Extracts as Value-Added Products from Plant Wastes* - Presented by: **Catherine Brewer, New Mexico State University, Las Cruces, New Mexico;** Ilse D. Tolentino, Hailey Luker, Immo A. Hansen

4:00pm	2400386	*HTC of Animal Manure: Evaluation of nutrient characteristics in hydrocar and process liquid* - Presented by: **Bilash Devnath, Florida Institute of Technology, Melbourne, Florida;** M. Toufiq Reza
4:15pm	2400855	*Production of polyhydroxybutyrate from non-recyclable fiber rejects and acid whey as mixed substrate by recombinant Escherichia coli* - Presented by: **Linjing Jia, SUNY College of Environmental Science and Forestry, Syracuse, New York;** Linjing Jia, Gundeep Kaur, Erica L.-W. Majumder, Ankita Juneja, Deepak Kumar
4:30pm	2401123	*Demonstration of a Digestate Processing System to Maximize Food Waste Diversion and Create Valuable Biofertilizer Products* - Presented by: **Ian Nielsen, UC Davis PhD Student, Davis, California;** Ian A. Nielsen, Kelly M. Graff, Abdolhossein Edalati, Michael Smith, Hamed El-Mashad, Ruihong Zhang, Joseph Yonkoski
4:45pm	2401449	*Optimizing briquetting conditions of shredded rice straw by Response Surface Methodology via Desirability Functions* - Presented by: **Bethany Grace S. Calixto, Mariano Marcos State University, City of Batac, Ilocos Norte, Philippines;** Ernesto P. Lozada, Engelbert K. Peralta, Jessie C. Elauria

146 NRES-Natural Resources: Advances in Research and Practice POSTER SESSION A

Monday, 7/29/2024 5:00pm - 7:00pm

Location: Platinum Ballroom

Technical Community: NRES - Natural Resources & Environmental Systems

Session Type: Poster Technical Session

Description: This session provides a platform for researchers, scholars, students, and professionals to showcase their cutting-edge research, projects, and innovations. It fosters knowledge sharing, collaboration, and networking among attendees, helping to bridge the gap between research and real-world solutions.

Organizer: Derek Heeren, UNL

Sponsoring Committee: NRES-04 Program

Moderators: Derek Heeren, UNL; Laurent Ahiablame, CMAP

Poster No	Abstract ID	*Presentation Title* – Presenter; Co-authors
1	2401012	*Long-term application of manure to enhance soil nutrient conservation and availability in rainfed agriculture* - Presented by: **Yanbo Huang, USDA-ARS, Genetics and Sustainable Agricultural Research Unit, Mississippi State, Mississippi;** Wei Dai, Gray Feng, Yanbo Huang, Haile Tewolde, Mark W. Shankle, Dennis B. Reginelli
2	2401367	*Water Salinity Monitoring in the Upper Red River Basin* - Presented by: **Kasra Khodkar, Department of Biosystems and Agricultural Engineering, Oklahoma State University, Stillwater, Oklahoma;** Ali Mirchi, Kevin Wagner, Josephus Borsuah
3	2400634	*Monitoring Soil Conditions under Varied Conservation Management Practices* - Presented by: **Elizabeth M. Hawkins;** Amanda R. Douridas
4	2401458	*Evaluating the Impact of Groundwater Level Declines on Micro-sprinkler Irrigation System Performance in Almond Orchards* - Presented by: **Liyuan Yang, Graduate Student, Davis, California;** Brian N. Bailey, Isaya Kisekka
5	2400505	*Modeling the Hydrodynamic Impact of Floating Oyster Aquaculture: A Case Study in Ward Creek, North Carolina* - Presented by: **Sam Holberg, North Carolina State University, Raleigh, North Carolina;** Celso Castro-Bolinaga, Swarna Chowdhury, Steven Hall, Sierra Young, John-Paul Ore, Natalie Nelson
6	2400498	*Enhanced identification of spatiotemporal dynamics of critical source areas* - Presented by: **Binyam Workeye Asfaw, Virginia Tech - BSE, Blacksburg, Virginia;** Daniel Fuka, Amy Collick, Robin White, Zachary M. Easton
7	2400596	*Potential of Machine Learning Algorithms for Timely and Adaptive Variable Rate Irrigation Management* - Presented by: **Precious N. Amori, University of Nebraska-Lincoln, Lincoln, Nebraska;** Derek M. Heeren, Yeyin Shi, Eric Wilkening, Guillermo R. Balboa, Ivo Z. Goncalves, Daran Rudnick

8	2401307	*Quantifying corn grain quality and soil health relationship using proximal sensing, laboratory measurements, and machine learning* - Presented by: **Kabindra Adhikari;** Douglas R. Smith, Chad Hajda
9	2400474	*Actual evapotranspiration insights for an irrigation district using energy balance algorithms through time series analysis* - Presented by: **Naresh Arumuga, Doctoral Candidate, McGill University, Montreal, Quebec, Canada;** Dr. Chandra Madramootoo
10	2400546	*Dynamics of Phosphorus Loss from Subsurface Free-Drainage Fields* - Presented by: **Emeka Franklin Felix Aniekwensi;** Dr. Eshan Ghane
11	2400393	*Modeling the Emergence of Irrigation Best Management Practices: A Socio-technical Agent-Based Model (ABM) for the Zekiah and Greensboro Watersheds in Maryland* - Presented by: **Emma Gray, University of Maryland, College Park, Maryland;** Dr. Masoud Negahban-Azar, Dr. Adel Shirmohammadi
12	2400718	*Impact of surface inlet density on sediment loading and source provenance in midwestern tile-drained landscapes* - Presented by: **Tyler Botts, University of Kentucky Biosystems and Agricultural Engineering, Lexington, Kentucky;** Dr. William Ford, Dr. Mark Williams, Rose Mumbi
13	2400025	*Subsurface Drainage Design and Subirrigation as Climate-smart Strategies for Resilient Crop Production* - Presented by: **Babak Dialameh, The Ohio State University, Columbus, Ohio;** Ehsan Ghane
14	2400466	*Evaluating the performance of controlled drainage for flow and nitrate load in a sandy loam soil* - Presented by: **Ashkan Tehrani, Michigan State University, East Lansing, Michigan;** Ehsan Ghane
15	2401471	*Evaluating Soil Nitrate Sensing Protocols Based on Electrochemical and Spectroscopic Sensors* - Presented by: **Cassandra Bonfil, UC Davis, Davis, California;** Felix A. Ogunmokun, Isaya Kisekka
16	2400957	*A Complete Water Balance Study of Pecan Orchards in Arid Region of Far-West Texas* - Presented by: **Santosh S. Palmate, Texas A&M AgriLife Research and Extension, El Paso, Texas;** Girisha K. Ganjegunte, Saurav Kumar, Abbey S. Johnson, Margueritz E. Mauritz-Tozer, Lixin Jin
17	2400075	*Enhancing evapotranspiration retrieval through integrating remote sensing and optimization* - Presented by: **Ali Karbalaye Ghorbanpour, Department of Biological and Agricultural Engineering, University of California, Davis, California;** Isaya Kisekka, Srinivasa Rao Peddinti
18	2400404	*Simulated Carbon, Nitrogen, and Soil Water Dynamics in Cover Crop Based Cotton Production Systems of the Southern High Plains* - Presented by: **Rene Francis Simbi Mvuyekure, Texas A&M University, College Station, Texas;** Jasdeep Singh, Srinivasulu Ale, Katie Lewis, Joseph Burke, Christopher Cobos, Edward Barnes, Rabi Mohtar
19	2401521	*Effects of Soil Water and Canopy Temperature Variability on Maize Yield in a Humid Continental Climate* - Presented by: **Axel Garcia y Garcia, University of Minnesota, Saint Paul, Minnesota;** Jeffrey S. Strock, Andry Ranaivoson
20	2401335	*Aggregate Stability and Agricultural management: A Story of Soil in Eastern South Dakota* - Presented by: **Umar Javed, Agricultural & Biosystems Engineering, South Dakota State University, Brookings, South Dakota;** John McMaine
21	2401392	*Analyzing Plant Cover Trends Using NDVI Time Series in the Maroun River Watershed in Southwest Iran* - Presented by: **Farzaneh Khorsandi;** Khorsandi Kouhanestani, Zohreh, Mokhtari, Farhad, Khorsandi, Farzaneh
22	2401323	*Curve Numbers and Agricultural Practices: A Soil Story in Eastern South Dakota* - Presented by: **Umar Javed, Agricultural & Biosystems Engineering, South Dakota State University, Brookings, South Dakota;** Kristen Blann, Philip Adalikwu, Maryam Sahraei, John McMaine
23	2400902	*Climatic and Seasonal Variation in ETr to ETo Ratios Calculated Using ASCE Standardized Penman-Monteith Model Across the Contiguous U.S.* - Presented by: **Dinesh Gulati, Graduate Student, The Pennsylvania State University, State College, Pennsylvania;** Meetpal S. Kukal
24	2401465	*Application of DRAINMOD model to optimize design of subsurface drainage system and increase soybean production in Mississippi state* - Presented by: **Rui Peng, Mississippi State University, Starkville, Mississippi;** Peng, R., G. Feng, G. Bi, D. Reginelli, J. Jenkins

25	2401452	*Assessing the effect of tile depth and spacing of subsurface drainage systems on water balance in Mississippi State* - Presented by: **Rui Peng, Mississippi State University, Starkville, Mississippi;** Peng, R., G. Feng, G. Bi, J. Jenkins, D. Reginelli
26	2400673	*Challenges and Potential Solutions for Forecasting Reference Crop ET Globally* - Presented by: **Mamata Pandey, Oklahoma State University, Stillwater, Oklahoma;** Saikumar Payyavula, Adeyinka Ogunbajo, Jeffrey Sadler
27	2400116	*Evaluating the long-term impacts of rainwater harvesting for landscape irrigation with rain barrels/cisterns* - Presented by: **Yaoze Liu, University at Albany-State University of New York, Albany, New York;** Siyu Li, Anh Nguyen, Younggu Her
28	2400557	*Assessing the watershed-scale impacts of long-term adoption of pasture cropping on ecosystem services in north central Texas* - Presented by: **Hardev Singh, Department of Biological and Agricultural Engineering, Texas A&M University, College Station, Texas;** Srinivasulu Ale, JungJin Kim, Sayantan Samanta, Bhupinder Singh, Rabi Mohtar
29	2400369	*Characterizing the inter-replicate variability of soil water tension from watermark sensors in Lower Mississippi River Basin* - Presented by: **Vivek Venishetty;** Tsz Him Lo, Stacia L Davis Conger, Jacob P. Rix, Drew M. Gholson
30	2400063	*Proof-of-Concept Testing for a Novel Well Pipe Coupler Used in Shallow Tube Wells* - Presented by: **Robert M. Stwalley III, Purdue University Agricultural & Biological Engineering, West Lafayette, Indiana;** Tyler J. McPheron, Grace L. Baldwin Kan-uge, Robert M. Stwalley III
31	2400733	*Experiential Learning on Digital Agriculture and Image Analysis Using Machine Learning Techniques* - Presented by: **Shomar Bullen, Biological Systems Engineering, College of Agriculture and Food Sciences, Florida Agricultural and Mechanical University, Tallahassee, Florida;** Wei-zhen Liang, Violeta Tsolova, Jingqiu Chen
32	2400762	*Global-scale historical weather pattern variations detected in local station-based records* - Presented by: **Donghyeon Kim, University of Florida, Tropical Research and Education Center, Homestead, Florida;** Younggu, Her
33	2400819	*Estimating nitrate dynamics in sandy soil using electrical conductivity sensors* - Presented by: **Mia Dagati, Michigan State University, East Lansing, Michigan;** Younsuk Dong
34	2400457	*Hybrid Modelling of Leaf-scale Latent Heat Flux: A Combined Data- and Knowledge-driven Approach* - Presented by: **Srishti Gaur**
35	2401068	*Evapotranspiration responses to drainage district improvements* - Presented by: **Eric Henning;**
36	2400197	*Estimating agricultural resilience during drought-heat extremes in North and South Korea under different agricultural, energy, and food systems* - Presented by: **Won-Ho Nam, Hankyong National University, Anseong-si, Gyeonggi-do, Republic of Korea**
37	2400522	*Investigating the effects of controlled drainage on nutrient load in the Western Lake Erie Basin* - Presented by: **Samantha Smith**
38	2400676	*Relationship between Water Use Efficiency, Daily Stomatal Conductance Trend and Evaporation of Maize and Soybean Crops* - Presented by: **Junzxiao Zhang**

TUESDAY – 9:30AM-12:00PM

201 Forest Soil, Water, and Air Ecosystems

Tuesday, 7/30/2024 9:30am - 12:00pm

Location: Grand Ballroom A

Technical Community: ASE - Applied Science & Engineering

Session Type: Oral Technical Session

Description: Research related to the ecosystems for production and management of forest biomass.

Organizer: Johnny Grace, U.S. Forest Service Southern Research Station

Sponsoring Committee: ASE-12 Forest Engineering **Co-Sponsors:** NRES-21 Hydrology Group, NRES-22 Soil Erosion and Water Quality, NRES-25 Streams, Reservoirs, and Wetlands Group, NRES-28 Ecological Engineering

Moderators: Johnny Grace, U.S. Forest Service Southern Research Station

Start Time	Abstract ID	*Presentation Title* – Presenter; Co-authors
9:35am	2400949	*Understanding the effect of climate and land use on sedimentation rates in geographically isolated wetlands with Modified Universal Soil Loss Equation (MUSLE)* - Presented by: **Suranjana Chatterjee, Auburn University, Auburn, Alabama;** Frances C. O'Donnell, Steven T. Brantley, Coleman J. Barrie, Matthew N. Waters
9:50am	2400038	*Revitalizing Ecosystems: Investigating Efficiency of Energycane-Mediated Nutrient Bioremediation on the U.S. Coastal Plane with Hyperspectral Imaging and LiDAR* - Presented by: **Moses Chilenje, University of Florida, Gainesville, Florida;** Hardev Sandhu, Aditya Singh
10:05am	2400993	*Coupling SWAT-C with a new forestry module based on 3PG for improving land-atmosphere exchange in forest dominated watersheds* - Presented by: **Ritesh Karki;** Junyu Qi, Xuesong Zhang, Puneet Srivastava
10:20am	2401522	*Use of 2D Multispectral Data Extended to 3D by Overlaying LiDAR Data to Identify Forest Ecological Changes and Environmental Stresses in LLP Ecosystems* - Presented by: **Satyanarayan Dev**
10:35am-10:45am		BREAK
10:45am	2400701	*Projecting Influence of Intensifying Precipitation on Forest Road Soil Erosion* - Presented by: **Johnny M. Grace III, USDA Forest Service-Southern Research Station, Tallahassee, Florida;**
11:00am	2400559	*Analysis of sediment and phosphorus loads transport during threshold events in agricultural watersheds* - Presented by: **Manpreet Kaur**
11:15am	2401305	*The Influence of Drum Chopping and Prescribed Fire on Wood Debri Carbon and Nutrient Release in the Chipola Forest* - Presented by: **Maia Woodard,Tallahassee, Florida;** Dr.Lucy Ngatia, Dr.Edwin Duke, Dr.Michee Lachaud, Dr. Johnny Grace, Dr.Chris Oishi, Dr.Jason Vogel

202 Innovation & Integration in Education-LIGHTNING TALKS

Tuesday, 7/30/2024 9:30am - 12:00pm

Location: Grand Ballroom B

Technical Community: EOPD - Education, Outreach, & Professional Development

Session Type: Lightning Oral Technical Session

Description: This session provides opportunity for many individuals to share new and interesting infusing of ideas into teaching. The lightning round provides more opportunity to many individuals to participate in the session.

Organizer: David Mabie, University of Nebraska Lincoln

Sponsoring Committee: EOPD-203 Undergraduate & Graduate Instruction **Co-Sponsors:** EOPD-205 Engineering Technology & Management Education

Moderators: David Mabie, University of Nebraska Lincoln

Start Time	Abstract ID	*Presentation Title* – Presenter; Co-authors
9:35am	2401376	*AG-AI: A Bootcamp for Agriculture with Generative Artificial Intelligence* - Presented by: **Joshua Peschel**
9:42am	2400784	*An Agricultural Informatics Learning Community; Open Courseware for the Future of Work* - Presented by: **Ankita Raturi**
9:49am	2400435	*Development and Implementation of Virtual and Take-home Laboratory Kits for Enhanced Food Engineering and Packaging Education* - Presented by: **Yao Olive Li, Cal Poly Pomona, Pomona, California;** Shyam Sablani, Julie Goddard, Melvin Pascall, Kit Yam, Olusola Adesope
9:56am	2401201	*Drones, Robotics and Tractors – Creating an Agricultural Mechatronics Curriculum for use in High School Agricultural Classrooms* - Presented by: **Roger L. Tormoehlen, Purdue University, West Lafayette, Indiana;** Richard J. Fox, Robert M. Stwalley, III, Dharmendra Saraswat
10:03am	2400617	*Employability Skills of University-Level Agricultural Engineering Technology Students: Are Students Ready for Success in The Agriculture Industry?* - Presented by: **Chad Reynolds, Sam Houston State University, Huntsville, Texas;** Phillip Ryan Saucier
10:10am	2401325	*Evaluating Student Growth in Project Management: A Major-to-Major Comparison* - Presented by: **Brandon Hollenback, Agricultural and Biological Engineering, University of Illinois Urbana-Champaign, Champaign, Illinois;** Travis Johnson, Molly Goldstein, Paul Davidson

10:17am	2400177	*Impact of a problem-centered, flipped classroom approach on students' motivation, self-efficacy, and performance in an introductory computing course* - Presented by: **Lucie Guertault, NC State University, Raleigh, North Carolina;** Yan Chen, Chris Willis
10:24am	2400687	*One is the Loneliest Number: Intercollegiate and departmental collaboration for creating precision agriculture certificates* - Presented by: **Michael L. Pate, Utah State University, Logan, Utah;** Aaron Etienne, Matt Yost, Burdette Barker, Sierra Young
10:31am	2401262	*Should We Eat Bugs? Integrating Systems Thinking and Complex Problem Solving into a General Education Curriculum* - Presented by: **Angela Green-Miller;** Angela Green-Miller, Christina Tucker, Luis Rodriguez
10:38-10:50am		BREAK
10:50am	2400032	*Stimulating 4-H youth for future workforce development through hands-on nonformal STEM learning in rural settings* - Presented by: **Jae Ryu, University of Idaho, Boise, Idaho**
10:57am	2401114	*Student perceptions of ChatGPT in a computer programming class* - Presented by: **Kevin Moore, Oklahoma State University, Stillwater, Oklahoma;** Jeff Sadler
11:03am	2401284	*Understanding employability characteristics of Agricultural Engineering Technology students* - Presented by: **Philip Ryan Saucier, Sam Houston State University, Huntsville, Texas;** Chad A. Reynolds, Mackenzie Foster
11:10am	2400241	*Using Dance to Communicate STEM Research* - Presented by: **Layla El-Khoury, North Carolina State University, Raleigh, North Carolina**
11:17am	2400571	*Using Programmatic Assessment to Design an Integrated Curriculum* - Presented by: **Justine Baillie, University of Southern Queensland, Toowoomba, QLD, Australia;** Alexander Kist, Catherine Hills
11:24am	2401480	*Skill Needs for Sustainable Agri-Food and Forestry Sectors: Assessment through European and National Focus Groups* - Presented by: **Remigio Berruto, University of Turin, Turin, TO, Italy;** Luis Mayor, Ana Ramalho, Alessandro Sopegno, Maria Cristina Uberti, Luisa Tibiletti, Emanuele Rovera, Martino Fenoglio, Patrizia Busato
11:31am	2400854	*A capstone approach to non-capstone course projects* - Presented by: **Gretchen A. Mosher, Iowa State University, Ames, Iowa;** Esther Y. Akoto
11:38am	2400303	*The Development of Assessment Tools for Evaluating the Extent of Attainment of ABET Learning Outcomes in ABE Students* - Presented by: **David Mabie**

203 Current Achievements and New R&D Trends in Renewable Energy Resources and Technologies-GUEST SPEAKERS

Tuesday, 7/30/2024 9:30am - 12:00pm

Location: Grand Ballroom C
Technical Community: ES - Energy Systems
Session Type: Guest Speaker Session
Description: This is an invited session to be organized by the ES-210 Committee.
Organizer: Jaime Thissen, Bemidji State University
Sponsoring Committee: ES-210 Renewable Power Generation Committee
Moderators: Jaime Thissen, Bemidji State University

Start Time	Abstract ID	*Presentation Title* – Presenter
9:35am	Guest Speaker	*Biomass in the US: Overview of the Billion-Ton Report* - Presented by: **Mark Elless, DOE, Washington, DC**
10:35am	Guest Speaker	*DOE-BETO's Sustainable Feedstock Innovations and Funding Opportunities* - Presented by: **Chelin Li, DOE, Washington, DC**

204 Fast Pyrolysis and Catalytic Conversion of Biomass to Bio-Oil and Sustainable Aviation Biofuels

Tuesday, 7/30/2024 9:30am - 12:00pm

Location: Grand Ballroom D
Technical Community: ES - Energy Systems
Session Type: Oral Technical Session
Organizer: Mi Li, University of Tennessee

Sponsoring Committee: ES-220 Bio-based Energy, Fuels and Products

Moderators: Sushil Adhikari, Auburn University; Stephen Chmely, Penn State University

Start Time	Abstract ID	*Presentation Title* – Presenter; Co-authors
9:35am	2401443	*Development of machine learning models to predict biomass pyrolysis performances* - Presented by: **Sudhagar Mani, University of Georgia, Athens, Georgia;** Ehsan Vasefi, Syed Danish Ali, Rick Bergman
9:50am	2401331	*Mapping Biomass Fast Pyrolysis Reaction Pathways using Heterotrophic Arabidopsis thaliana Cell Culture* - Presented by: **Christopher M. Saffron, Michigan State University, East Lansing, Michigan;** Zhongyu Zhang, James E. Jackson
10:05am	2401141	*Valorizing Polycyclic Aromatic Hydrocarbons from BTX Production: a Pathway for Lithium-Ion Anode Materials and Sustainable Aviation Fuel* - Presented by: **Lillian Lower, North Carolina State University, Raleigh, North Carolina;** Steven M. Rowland, Michael Regula, Tijem Vries, Ton Vries, Mark R. Nimlos, William Joe Sagues
10:20am	2401133	*Catalytic Solvolysis, Fractionation, and Hydroprocessing of Lignin from Hybrid Poplar into Sustainable Aviation Fuel Hydrocarbons* - Presented by: **Yang Li, The University of Tennessee, Knoxville, Tennessee;** Nourredine Abdoulmoumine
10:35am-10:45am		BREAK
10:45am	2400237	*Production of aviation fuel-range hydrocarbons through the catalytic co-pyrolysis of polystyrene and Southern Pine* - Presented by: **Ayden Kemp, Auburn University, Auburn, Alabama;** Sushil Adhikari, Hossein Jahromi, Tawsif Rahman
11:00am	2401334	*Non-Catalyzed Hybrid Intermediate Pyrolysis for the Efficient Conversion of Source-Separated Organics into High-Quality Bio-Oil and Hydrogen-Rich Syngas* - Presented by: **Neelanjan Bhattacharjee, University of Alberta, Edmonton, Alberta Canada;** Benjamin Martinez Castellanos, Unnikrishna Menon, Neelanjan Bhattacharjee, Amit Kumar
11:15am	2400627	*Sulfur Profile and Fate Study of Loblolly Pine using Pyrolysis-GC/MS-FPD* - Presented by: **Gary Lopez, University of Kentucky, Lexington, Kentucky;** Jian Shi
11:30am	2401222	*Municipal Solid Waste Valorization for Sustainable Aviation Fuel: Characterization and Pyro-GC/MS Analysis of the Feedstocks* - Presented by: **Emon Das, University of Kentucky, Lexington, Kentucky;** Ahamed Ullah, Yuxuan Zhang, Jian Shi

205 Safety Modifications and Assistive Technologies for Agricultural Production

Tuesday, 7/30/2024 9:30am - 12:00pm

Location: Grand Ballrooom E

Technical Community: ESH - Ergonomics, Safety & Health

Session Type: Oral Technical Session

Description: Agriculture is one of the most hazardous industries. Injury and illness prevention efforts are the primary effort in the field of ergonomics, safety, and health. However, many employees, operators, and families often experience life-altering injuries or illnesses requiring worksite modifications. Research, Engineering Design, and Educational programming are needed to ensure worksites are safe and that modifications or assistive technologies do not present new risks for injury or death.

Organizer: Farzaneh Khorsandi, University of california Davis

Sponsoring Committee: ESH-04/2 Farmers With Disabilities Technology Exchange **Co-Sponsors:** ESH-04 Technology Exchange, ESH-04/1 Journal of Agricultural Safety and Health

Moderators: Farzaneh Khorsandi, The University of California, Davis; Fernando Ferreira Lima Santos, The University of California, Davis

Start Time	Abstract ID	*Presentation Title* – Presenter; Co-authors
9:35am	2401538	*Effectiveness of Compressed Air in Preventing Grain Entrapment: A Mid-Scale Study* - Presented by: **Salah Issa, University of Illinois Urbana-Champaign, Urbana, Illinois;** Daniel Gaither, MM Sajid Raza, Mei Tessum, Andrew Nicholas Miller
9:50am	2401363	*Agricultural All-terrain vehicle safety: research overview* - Presented by: **Farzaneh Khorsandi;** Fernando Ferreira Lima dos Santos, Minyoung Hong, Jordan Wong, Aliya Abla
10:05am	2401470	*Ergonomic Evaluation of Alternative Compact Bed Plasticulture for Fresh Market Vegetables* - Presented by: **Fadi Fathallah**

10:20am	2400973	*Ergonomic Evaluation of Scoop Shovels and Pitchforks Design, Usage, and Body Mechanics Impact on Women in Agriculture* - Presented by: **Felix Michael Oguche, University of Missouri, Columbia, Missouri;** Jianfeng Zhou, Karen Funkenbusch, Marcia C. Shannon
10:35am-10:45am		BREAK
10:45am	2400572	*Investigating the Use of Large Language Models in Agricultural Injury Surveillance* - Presented by: **Jacob Muller, University of Florida, Gainesville, Florida;** Daniel Petti, Changying Li, Serap Gorucu, Matthew Pilz, Bryan Weichelt
11:00am	2400140	*Effects of different load types on the static stability of agricultural All-Terrain Vehicles: A comparative analysis using two distinct models* - Presented by: **Fernando Ferreira Lima dos Santos, University of California, Davis;** Farzaneh Khorsandi
11:15am	2400104	*A Summary of Fatalities and Injuries Involving Horizontal Bunk or Open Pile Silos Used in Agricultural Production* - Presented by: **Noah Haslett, Purdue University, West Lafayette, Indiana;** Mahmoud Nour, Noah Haslett, William Field, James Carrabba, Marty Huseman
11:30am	2400940	*Development of empirical algorithm that estimate Wet Bulb Globe Temperature (WBGT) from meteorological sources* - Presented by: **Minyoung Hong, University of California, Davis, California;** Farzaneh Khorsandi Kouhanestani
11:45am	2401389	*Evaluating the Safety of Women Operating Utility ATVs* - Presented by: **Aliya Abla, UC Davis, Davis, California;** Farzaneh Khorsandi, Jordan Wong
12:00pm	2401094	*Tractor Operators Exposure to Whole Body Vibration: An Overview* - Presented by: **Faezeh Molaei, Department of Agricultural and Biological Engineering, Pennsylvania State University, State College, Pennsylvania;** Faezeh Molaei, Priyanka Rajendra Mali, Shirin Ghatrehsamani

206 Digital Twins, DEM, and CFD Applications in Agriculture

Tuesday, 7/30/2024 9:30am - 12:00pm

Location: Grand Ballroom G

Technical Community: ITSC - Information Technology, Sensors & Control Systems

Session Type: Oral Technical Session

Description: This session focuses on developing and applying computational simulations (DEM, FEM, etc.) for modeling and addressing current issues in agricultural and biological engineering.

Organizer: Mehari Tekeste, Iowa State University

Sponsoring Committee: ITSC-217 Computational Methods, Simulations & Applications

Moderators: Mehari Tekeste, Iowa State University; Mohammad Sadek, Cal Poly State

Start Time	Abstract ID	*Presentation Title* – Presenter; Co-authors
9:35am	2400941	*Densification Characteristics of corn silage using discrete element method* - Presented by: **Mohammad Sadek, California Polytechnic State University, San Luis Obispo, California;** Kanat Khazimov
9:50am	2401503	*Staggered Stall Design to Mitigate Heat Stress of Dairy Cattle in Mechanically Ventilated Dairy Barns using CFD* - Presented by: **Dimuth Panditharatne, University of Wisconsin-Madison, Madison, Wisconsin;** Hanwook Chung, Seunghyeon Jung, Christopher Choi
10:05am	2400452	*Discrete element modeling of granular pine residues in an FT4 rheometer* - Presented by: **Qiushi Chen, Clemson University, Clemson, South Carolina;** Zakia Tasnim, Yidong Xia
10:20am	2401500	*CFD-based System Design and Optimization of a Positive-Pressure Precision Ventilation Design to Mitigate Heat Stress for Dairy Cattle* - Presented by: **Sahitha Karapitiya;** Hanwook Chung, Dimuth Panditharatne, Christopher Choi
10:35am-10:45am		BREAK
10:45am	2400560	*Numerical evaluation of water distribution on the cow's skin surface and water efficiency under a spray system* - Presented by: **Ruimin Yang, Zhejiang University, HangZhou, ZheJiang, China;** Xiaoshuai Wang
11:00am	2400509	*A CFD-based precision spraying model for optimizing canopy coverage and minimizing drift* - Presented by: **Weiyun Hua, Penn State Univeristy, State College, Pennsylvania;** Chenchen Kang, Long He, Paul Heinemann

11:15am	2400776	*Observational and Computational Analysis of the Structural Failure Process of Maize Stalk Lodging* - Presented by: **Douglas Cook;** Addison McClure, Andrew Tagg, Cole Dunn, Kirsten Steele, Douglas Cook
11:30am	2400413	*DEM Elasto-Plastic with Cohesion Soil Modeling Calibration for DEM Simulation of Soil-To-Bulldozer Interaction* - Presented by: **Mehari Z. Tekeste, Soil Machine Dynamics Laboratory, Iowa State University, Ames, Iowa;** Mehari Z. Tekeste

207 Imaging Technologies for High Throughput Phenotyping

Tuesday, 7/30/2024 9:30am - 12:00pm

Location: Grand Ballroom H
Technical Community: ITSC - Information Technology, Sensors & Control Systems
Session Type: Oral Technical Session
Description: Focuses on recent innovations in imaging systems and approaches for high throughput phenotyping for crops and animal production systems.
Organizer: Jianfeng Zhou, University of Missouri
Sponsoring Committee: ITSC-312 Machine Vision
Moderators: Shih-Fang Chen, National Taiwan University

Start Time	Abstract ID	*Presentation Title* – Presenter; Co-authors
9:35am	2400723	*Phenotyping by image registration to reveal spatiotemporal changes of grape disease resistance at the microscopic level* - Presented by: **Rafael Bidese, Cornell University, Geneva, New York;** Anna Underhill, Lior Gur, Lance Cadle-Davidson, Dani Martinez, Javier Moreno, Yu Jiang
9:50am	2400954	*Measuring Emergence Uniformity of Maize from Time-Lapse Images using Computer Vision Techniques* - Presented by: **Luke Waltz;** Luke Waltz, Ryan Waltz, Laura Lindsey, Arnab Nandi, Sami Khanal
10:05am	2400533	*Controlled Hydroponics Imaging and Data Platform for Spatiotemporal Pattern Recognition in Plant Growth* - Presented by: **Mohamed Debbagh, McGill University, Montreal, Quebec, Canada;** Mark Lefsrud, Shangpeng Sun
NO-SHOW	2401401	*Hyperspectral Imaging for Grapevine Nutrition: Integrating Ground and Aerial Data for Nitrogen Sensing* - Presented by: **Chenchen Kang;**
10:35am-10:45am		BREAK
10:45am	2401154	*Estimation of root phenotypic traits through computer vision and deep learning: A case study on soybean* - Presented by: **Muhammad Usman, Mississippi State University, Starkville, Mississippi;** Xin Zhang, Bala S. Sivarathri, Raju Bheemanahalli, Yanbo Huang, Nuwan K. Wijewardane
11:00am	2400584	*Tree-level Almond Yield Mapping Using a High-resolution Laser for Commercial Harvesting Machinery* - Presented by: **Juan Villacres, University of California Davis, Davis, California;** Stavros Vougioukas, Dennis Sadowski
11:15am	2400936	*Developing a multimodal information fusion framework for alfalfa yield prediction based on low-cost UAV RGB imagery* - Presented by: **Lang Qiao, University of Wisconsin–Madison, Madison, Wisconsin;** Lang Qiao, Jiahao Fan, Jose G. Franco, Alison J. Duff, Emily J. Diaz-Vallejo, Zhou Zhang

208 Information Technology, Sensors & Control Systems POSTER SESSION B

Tuesday, 7/30/2024 9:30am - 12:00pm

Location: Platinum Ballroom
Technical Community: ITSC - Information Technology, Sensors & Control Systems
Session Type: Poster Technical Session
Description: Poster session for submissions to the ITSC division.
Organizer: Sierra Young, Utah State University
Sponsoring Committee: ITSC-01 POSTER SESSION
Moderators: Sierra Young, Utah State University

Poster No	Abstract ID	*Presentation Title* – Presenter; Co-authors
1	2401364	*Salinity dynamics modeling in the Upper Red River Basin via SWAT-Salt and AI-based synthetic salinity data* - Presented by: **Kasra Khodkar, Department of Biosystems and Agricultural Engineering, Oklahoma State University, Stillwater, Oklahoma;** Ali Mirchi, Jeffery M Sadler, Kevin Wagner, Saleh Taghvaeian
2	2400261	*Tree reconstructions for enabling digital environments* - Presented by: **Andrew Kibor, Michigan State University, East Lansing, Michigan;** Andrew Kibor, Ayooluwaposi Olomo, Daniel Uyeh
3	2400708	*Data Governance in Community-Level Food Security Policymaking* - Presented by: **Megan Low, Purdue University, West Lafayette, Indiana;** Ankita Raturi
4	2400503	*Simultaneous Isolation of Foodborne Pathogens Using Carbohydrate-Coated Magnetic Nanoparticles* - Presented by: **Katherine Heinecke, Michigan State University, Saint Paul, Minnesota;** Anthony James Franco, Evangelyn C. Alocilja
5	2400871	*Using Sap Flow Data to Predict Pistachio Kernel Development* - Presented by: **Arash Toudeshki, Department of Mechanical Engineering, School of Engineering, University of California, Merced, California;** Arash Toudeshki, Reza Ehsani
6	2400471	*Enhancing Dietary Analysis: Using Machine Learning for Food Caloric and Health Risk Assessment* - Presented by: **Toby A. Adjuik, Iowa State University, Ames, Iowa;** Bababode A. Kehinde, Naa Adzoa Adzeley Boi-Dsane
7	2400330	*Research on Real-Time Location Recognition Algorithm for Autonomous Implement in Soil Fertilizer Component Map-Based Variable Fertilization Operations* - Presented by: **Changju Yang, National Institute of Agricultural Sciences, Jeonju-si, Jeollabuk-do South Korea;** Changju Yang, Gookhwan Kim, Kyoung-chul Kim, Kyung-do Kwon, Ki-Beom Lee, Kangjin Lee, Youngki Hong
8	2400526	*The Development of Machine Learning Models for the Assessment of In-season Sweetpotato Root Growth and Crop Yield Estimates* - Presented by: **Shana McDowell, North Carolina State University Dept. of Biological and Agricultural Engineering, Raleigh, North Carolina;** Daniela Jones, Michael Kudenov, Shelly Hunt
9	2400105	*Autonomous Variable Rate Nitrogen Application Robot: Machine-Vision-Based Tree-Focused Decision Using Canopy Characteristics* - Presented by: **Achyut Paudel;** Deven Biehler, Jostan Brown, Manoj Karkee, Joesph Davidson, Cindy Grimm, Ashley Thompson
10	2400284	*Rapid Detection of Carbapenem-Resistant Genes in E. coli Using Plasmonic Biosensor* - Presented by: **Anthony James Franco, Michigan State University, East Lansing, Michigan;** Dr. Evangelyn Alocilja, Kaily Kao
11	2400488	*Characterization of Capacitive Sensors for In-Flow Cotton Moisture Sensing* - Presented by: **Sushma Perati, Mississippi State University, Starkville, Mississippi;** Dr. S.D. Filip To, Dr. Sean Donohoe, Dr. Xin Zhang, Dr. Xinyuan Chen
12	2400896	*Enhancing Soil Health Monitoring in Precision Agriculture: A Comparative Analysis of avDAQ Vibration Data Collection System and Traditional Soil Sensors* - Presented by: **Shaghayegh JanbaziAlamdari, Kansas State University, Manhattan, Kansas;** Edwin Brokesh
13	2400722	*How GIS Can Improve Community Decision Making in the American Southwest* - Presented by: **Connor LaSalle, UIUC, Urbana, Illinois;** Emily Lawson-Bulten, Connor LaSalle
NO-SHOW	2400072	*Development of closed type artificial sunlight drying system: Drying characterisitics, modelling and color kinetics of asian white radish* - Presented by: **Pratik Nayi, Department of Tropical Agriculture and International Cooperation, National Pingtung University of Science and Technology, Neipu, Pingtung, Taiwan;** Fu-Yuan Ma, Tzou-Chi Huang, Yun-Cheng Lee, Navneet kumar, Ho-Hsien Chen
15	2400290	*Using machine learning methods to evaluate the effect of climate change scenarios on Ohio Maize and Soybean yield* - Presented by: **Rajveer Dhillon, Central State University, Ohio;** Gautam Takoo, Vivek Sharma, Marcus Nagle
16	2401160	*A Discussion on the Operation and Benefits of a Novel Automatic Nozzle Selector* - Presented by: **Christian Becerra;** Geoffrey Shimotsu, Peter Ako Larbi

17	2401515	*Investigation on the Concentration of Salmonella using Glycan-Coated Magnetic Nanoparticles* - Presented by: **Leah Wilson, Michigan State University, East Lansing, Michigan;** James Anthony Franco
18	2400738	*AgriLearn: An Intuitive and Adaptable Machine Learning Graphical User Interface System for Agricultural Uses* - Presented by: **Jing Yang, USDA ARS Genetics and Sustainable Research Unit, Mississippi State, Mississippi;** Jing Yang, Yanbo Huang, Katelyn Jett, Johnie Jenkins
19	2400995	*Deep learning-enabled visual servoing for a mobile robot: precise identification and aiming of abnormal chickens in poultry environments* - Presented by: **Chung-Liang Chang, Department of Biomechatronics Engineering, National Pingtung University of Science and Technology, Neipu, Pingtung County, Taiwan;** Jing-Yun Ke
20	2401352	*Low-Cost Mobile Environmental Chamber* - Presented by: **Dabira Ogunbiyi, Oklahoma State University, Stillwater, Oklahoma;** Kevin Moore, Ning Wang
21	2400065	*ANOVA Analysis of Particulate Sensors from the Environmental Protection Agency's Wildfire Sensor Challenge* - Presented by: **Robert M. Stwalley III, Purdue University Agricultural & Biological Engineering, West Lafayette, Indiana;** Lucas D. Paz, Maximillian F. Francis, Andrew S. Glassman, Tayler A. Zajeski, Grace L. Baldwin Kan-uge, Carol S. Stwalley, Robert M. Stwalley III
22	2400492	*Development of an Intelligent Power Distribution Module for Supervisory Safety in Small Off-road Vehicles* - Presented by: **Mason O. Bradley, University of Kentucky, Lexington, Kentucky;** Michael P. Sama
NO-SHOW	2400277	*CFD–DEM Modeling and Numerical Analysis of Municipal Solid Waste Gasification* - Presented by: **Oluwafemi Oyedeji, Oak Ridge National Laboratory, Oak Ridge, Tennessee;** Oluwafemi Oyedeji, Yupeng Xu, Mehrdad Shahnam, Anne Starace, James Parks
24	2400278	*Automated Environmental Swabbing: A Robotic Solution for Enhancing Food Safety in Poultry Processing* - Presented by: **Siavash Mahmoudi, Department of Biological and Agricultural Engineering, University of Arkansas, Fayetteville, Arkansas;** Pouya Sohrabipour, Dongyi Wang
25	2400422	*Comparative Assessments of Cage-free Pullet Age, Activities, and Impacts on Dust Concentration Using Accelerometer-Based Activity Sensors* - Presented by: **Ramesh Bahadur Bist, University of Georgia, Athens, Georgia;** Prafulla Regmi, Xiao Yang, Sachin Subedi, Bidur Paneru, Lilong Chai
26	2401455	*Integrating On-Farm Data with Multivariate LSTM Models for Enhanced Crop Yield Prediction* - Presented by: **Robert G. Hardin, Texas A&M University, College Station, Texas;** Raul Sebastian Martinez, Robert G. Hardin, Edward M. Barnes
27	2400377	*Modeling Climate Change Impacts on Cattle Behavior Using Generative Artificial Intelligence: A Pathway to Adaptive Livestock Management* - Presented by: **Heinz Bernhardt, Technical University of Munich, Freising, Bavaria, Germany;** Reza Arablouei, Kieren McCosker, Heinz Bernhardt, Regina Eckhardt
28	2400714	*Developing in situ soil biosensors for precision fertilizer management* - Presented by: **Mahmoud Shehata, North Carolina State University, Raleigh, North Carolina;** Riley Lawson, Chadi Sayde, Amy Grunden
29	2401416	*Assessment of OCT (Optical Coherence Tomography) as a Non-Destructive Method for Seed Coat Thickness Measurement* - Presented by: **Kiana Karimi Shahmarvandi, University of Saskatchewan, Saskatoon, Saskatchewan, Canada;** Scott D. Noble, Kirstin E. Bett
30	2401020	*Density map estimation for evaluating the control performance of agricultural drone* - Presented by: **Baek-gyeom Seong, Department of Biosystems Machinery Engineering, Chungnam National University, Daejeon, Yuseong-gu, Republic of Korea;** Seung-woo Kang, Soo-hyun Cho, Seung-hwa Yu, Chun-gu Lee, Dae-hyun Lee
31	2401321	*Genotype-by-Environment Interaction Analysis of Chickpea Performance using Remote Sensing and Yield Data with Multi-Environment Trials* - Presented by: **Kingsley Umani, Department of Biological Systems Engineering, Washington State University, Pullman, Washington;** Sintayehu Daba, Rebecca J. McGee, George J. Vandemark, Sindhuja Sankaran
32	2400849	*Smart Inventory Management and Quality Assessment in the Ornamental Nursery Industry* - Presented by: **Hamid Syed, Graduate Student, Auburn, Alabama;** Tanzeel Rehman, Jeremy Pickens

33	2400229	*Smarter stormwater: Harnessing RTC and IoT for urban stormwater management* - Presented by: **Savannah A. Roth, North Carolina State University, Raleigh, North Carolina;** Vinicius J. Taguchi, William F. Hunt
34	2401157	*Synergistic approach for drought classification of beans: Harnessing the potential of multisource datasets using machine learning* - Presented by: **Muhammad Usman, Mississippi State University, Starkville, Mississippi;** Xin Zhang, Timothy Porch, Suraj A. Yadav, Nuwan K. Wijewardane, Yanbo Huang, Raju Bheemanahalli, Siddhrajsinh Padhiyar
35	2400755	*Leveraging Generative AI for Data Analysis in Farm Management* - Presented by: **Joshua K. Bailey, Purdue University, West Lafayette, Indiana;** Yaguang Zhang, Andrew D. Balmos, Fabio A. Castiblanco, Sneha Jha, Dennis R. Buckmaster, James V. Krogmeier
36	2400187	*Estimating Pre-Harvest Alfalfa Quality Traits Using Multi-Type Features and Machine Learning* - Presented by: **Jing Zhou, Department of Crop and Soil Science, Oregon State University, Corvallis, Oregon;** Yijia Xu, Jing Zhou, Zhou Zhangm Tong Yu
NO-SHOW	2400119	*Carbon Dioxide Levels in Wheat Storage across Varied Environmental Conditions* - Presented by: **Yonggik Kim, Kyungpook National University, Deagu, South Korea;** Yujin Han, Seokho Kang, Hyunggyu Park, Jinho Son, Yeongsu Kim, Seungmin Woo, Yushin Ha
38	2401273	*Whole Chicken Pushing Manipulation via Imitation Learning* - Presented by: **Yu She, Purdue University, West Lafayette, Indiana;** Zhengtong Xu, Raghava Uppuluri, Wan Shou, Dongyi Wang, Yu She
39	2400583	*An Intelligent Robotic Hand for Online Detection and Grading of Apple Quality Classification* - Presented by: **Tianzhen Yin, China Agricultural University, Beijing, Beijing, China;** Zhenhao Ma, Yankun Peng, Bin Zhang, Tianzhen Yin, Jiewen Zuo
40	2401148	*Enhancing Fresh Produce Shelf Life Through Integration of Segmentation-Based Droplet Detection and Physics-Based Spoilage Models* - Presented by: **Spencer Serrano, University of Florida, Gainesville, Florida;** Ziynet Boz, Mert Canatan, Zijing Huang, Niteesh Takkellapati
41	2401410	*Modification of Screen-Printed Graphene sensor by using Cobalt Oxide (Co3O4) for Nitrate and Nitrite Sensing* - Presented by: **Mazhar Sher**
42	2400089	*Development and Preliminary Evaluation of a Vision-Guided Smart Sprayer Prototype towards Precision Vegetable Weeding* - Presented by: **Boyang Deng**
43	2400217	*Enhancing Spray Control in Unmanned Aerial Systems for Challenging Environments Based on Spray Distribution Variability* - Presented by: **Xiongzhe Han, Kangwon National University, Chuncheon, South Korea**
44	2401525	*Lighting preferences of Coconut Rhinoceros Beetle in pheromone-based panel traps* - Presented by: **Mohsen Paryavi**
45	2400538	*Can Natural Language Processing aid in deciphering agricultural data rights in legal contracts?* - Presented by: **Songzi Wu**
46	2401551	*Station-specific weather and inversion forecast models development and verification for abiotic stress management in fruit crops* - Presented by: **Basavaraj Amogi, Washington State University AgWeatherNet, Pullman, Washington**
47	2400565	*Assessing dry pea stands using deep learning models in ArcGIS Pro* - Presented by: **Aliasghar Bazrafkan, Department of Agricultural and Biosystems Engineering, North Dakota State University, Fargo, North Dakota;** Aliasghar Bazrafkan, JeongHwa Kim, Harry Navasca, Nonoy Bandillo, Paulo Flores

209 Machine Vision Applications for Agricultural Products

Tuesday, 7/30/2024 9:30am - 12:00pm

Location: Grand Ballroom J
Technical Community: ITSC - Information Technology, Sensors & Control Systems
Session Type: Oral Technical Session
Organizer: Young Chang, South Dakota State University
Sponsoring Committee: ITSC-312 Machine Vision
Moderators: Yuzhen Lu, Michigan State University

Start Time	Abstract ID	*Presentation Title* – Presenter; Co-authors
9:35am	2400102	*Design, Prototyping, and Evaluation of A Machine Vision-Based Automated Sweetpotato Grading and Sorting System* - Presented by: **Jiajun Xu;** Yuzhen Lu, Boyang Deng
9:50am	2401061	*Detecting E. coli concentration levels on leafy greens using UV-C fluorescence imaging and Yolov8 deep learning* - Presented by: **Thomas Burks, University of Florida, Gainesville, Florida;** T.F. Burks, P.K. Yadav, S. Vaddi, J. Qin, M. Kim, M.A. Ritenour, F. Vasefi
10:05am	2400447	*Detection of Bruises near Calyx/Stem of Pears Using Polarization Imaging Technology* - Presented by: **Zheyuan Wu, College of Biosystems Engineering and Food Science, Zhejiang University, Hangzhou, Zhejiang, China;** Zheyuan Wu, Xinyao Huang, Tao Xu,Xiaomin Zhang, Chenghui Lv, Xiuqin Rao
10:20am	2400329	*Development of an Image Processing and Semantic Segmentation Model for External Quality Assessment of Oriental Melons* - Presented by: **Sang-Yeon Kim, Seoul National University, Seoul, Seoul, Republic of Korea;** Eungchan Kim, Sungjay Kim, Seung-Woo Roh, Harin Jang, Mingyu Baek, Ghiseok Kim
10:35am-10:45am		BREAK
10:45am	2400313	*Depth image guided Mask-RCNN model for chicken detection in poultry processing line* - Presented by: **Pouya Sohrabipour;** Siavash Mahmoudi, Yihong Feng, Chaitanya Kumar Reddy Pallerla, Ammirreza Davar, Dongyi Wang
11:00am	2400744	*A Machine Learning Approach to Assess the Development of Blue Stain Fungi in Wood Across Varied Storage Treatments* - Presented by: **Eduardo Bidese Puhl, Auburn University, Auburn, Alabama;** Eduardo Bidese Puhl, Timothy Mcdonald, John Klepac, Mathew Smidt, Rafael Bidese Puhl, Tanzeel Rehman
11:15am	2400310	*Development of a Defect Detection Technology on Apple Fruits Using Semantic Segmentation Models* - Presented by: **Jiwon Ryu, Seoul National University, Seoul, Seoul, Republic of Korea;** Sang-Yeon Kim, Sungjay Kim, Kyumin Kim, Dae Young Kim, Harin Jang, Ghiseok Kim
11:30am	2400333	*Development of Nondestructive Detection Algorithm for Internal Defects in Citrus Fruits using X-ray and Artificial Neural Network* - Presented by: **Chang-Hyup Lee, Seoul National University, Seoul, Seoul, South Korea;** Sang-Yeon Kim, Sungjay Kim, Gyumin Kim, Harin Jang, Min-gyu Baek, Ghiseok Kim
11:45am	2401005	*Size estimation of sampled potato tubers in real-time using field-deployable machine vision system* - Presented by: **Ahmad Al-Mallahi, Dalhousie University, Halifax, Nova Scotia, Canada;** Ighodaro Emwinghare
12:00pm	2400321	*SMCTransUNet: Segmentation model for citrus surface defects based on prior knowledge embedding* - Presented by: **Xufeng Xu, Zhejiang University, Hangzhou, Zhejiang Province, China;** Zichao Wei, Xiuqin Rao

210 Spectroscopic Sensing for Quality Assessment of Agricultural Commodities-LIGHTNING TALKS

Tuesday, 7/30/2024 9:30am - 12:00pm

Location: Grand Ballroom K
Technical Community: ITSC - Information Technology, Sensors & Control Systems
Session Type: Lightning Oral Technical Session
Organizer: Micah Lewis, USDA-ARS
Sponsoring Committee: ITSC-348 Electromagnetics & Spectroscopy
Moderators: Micah Lewis, USDA-ARS

Start Time	Abstract ID	*Presentation Title* – Presenter; Co-authors
9:35am	2401523	*Measurement and Modeling of Dielectric Properties of Sugarcane Juice at Microwave Frequencies* - Presented by: **Samir Trabelsi, USDA-ARS, Athens, Georgia;** Paul White
9:42am	2400190	*Develop Portable Near-infrared Sensing Devices for Rapid Seed Moisture Measuring in Grass Seed Crops* - Presented by: **Jing Zhou, Oregon State University, Corvallis, Oregon;** Jing Zhou, Nicole Anderson, David Maliszewski, Marshall Garrett, Logan Snell, Thomas Chastain

9:49am	2400182	*Potential of calibration transfer between lab and portable mid-infrared spectrometers in soil spectroscopy* - Presented by: **Yasas Gamagedara, Mississippi State University, Starkville, Mississippi;** Nuwan Wijewardane, Mary Tagert, Vitor Martins, Gary Feng
9:56am	2401371	*Yield estimation in Spring wheat (Triticum aestivum L) crop using machine learning and drone imagery to aid with nitrogen application in soil* - Presented by: **Maria Villamil-Mahecha, North Dakota State University, Fargo, North Dakota;** Nitin Rai, Xin Sun
10:03am	2400590	*A novel winter wheat yield prediction framework via fused spatial-temporal-spectral (sts) information using improved pix2pix* - Presented by: **CANCELED**
10:10am	2401424	*Advancing Grapevine Nutrient Sensing through a Deep Learning-Based Multi-trait Analytical Approach* - Presented by: **Parastoo Farajpoor, Ph.D. Student, Davis, California;** Alireza Pourreza, Matthew W. Fidelibus, Ashraf El-kereamy
10:17am	2400323	*Use of Fourier-transform infrared spectroscopy to identify gluten-free flour* - Presented by: **Feifei Tao, University of Florida and USDA-ARS, Beltsville, Maryland;** Kuanglin Chao, Jianwei Qin, Moon Kim, Thomas Burks
10:24am	2400699	*Corn chlorophyll content detection based on spectral reflectance inversion absorptance* - Presented by: **Di Song, Department of Agricultural and Biological Engineering, University of Illinois at Urbana-Champaign, Urbana, Illinois;** Mohammed Kamruzzaman
10:31am	2400335	*Sweet basil abiotic stress classification using bioimpedance and machine learning model* - Presented by: **Daesik Son, Seoul National University, Seoul, Republic of Korea;** Junyoung Park, Siun Lee, Jae Joon Kim, Soo Chung
10:50am	2400467	*Detecting Sweetpotato Potyvirus through Visible and Near Infrared Spectroscopy* - Presented by: **Amarsinghe Arachchige Praveen Shalika Amarasinghe, Departmenet of Agricultural and Biological Engineering, Mississippi State University, Starkville, Mississippi;** Wijerwadene, N.K., Harvey, L. M.
10:57am	2400989	*Integrating Hyperspectral Imaging and Machine Learning for Non-Destructive Damage Detection of Grapes* - Presented by: **Jinhong Yu, Department of Food Science, Cornell AgriTech, Cornell University, Geneva, New York;** Chang Chen, Rhiann Jakubowski, Terry Bates, Jiang Yu

233 Innovations in Precision Agriculture

Tuesday, 7/30/2024 9:30am - 12:00pm

Location: Platinum 8

Technical Community: MS - Machinery Systems

Session Type: Oral Technical Session

Description: Precision agriculture is integral to modern production practices. This session features novel research and development in precision agriculture.

Organizer: Alex Thomasson, Mississippi State University

Sponsoring Committee: MS-54 Precision Agriculture

Moderators: Alex Thomasson, Mississippi State University

Start Time	Abstract ID	*Presentation Title* – Presenter; Co-authors
9:35am	2400475	*Development of the Digital Agriculture Technology Readiness Level (DATRL): A Comprehensive Framework for Assessing Digital Agricultural Technologies* - Presented by: **Sandesh Poudel, University of Georgia, Athens, Georgia;** Sudhagar Mani
9:50am	2400122	*Optimizing billing practices in agricultural enterprises by the use of PTO based measurements* - Presented by: **Fredrik Regler, Research Associate/PhD candidate, Freising, Bavaria, Germany;** Heinz Bernhardt
10:05am	2400910	*Pros and Cons of Yield Goal-Based Variable Rate Nitrogen Prescription Maps* - Presented by: **Salman Mirzaee, Departments of Agronomy, Horticulture and Plant Science and Agricultural & Biosystem Engineering, College of Agriculture, Food & Environmental Sciences, South Dakota State University, Brookings, South Dakota;** Ali Mirzakhani Nafchi
10:20am	2400845	*In Field Evaluation of Precision Planting SmartFirmer Sensors* - Presented by: **Luke Fuhrer;**
10:35am-10:45am		BREAK
NO-SHOW	2400455	*Field-scale evaluation of corn yield on varying planter downforce settings and apparent soil electrical conductivity zones* - Presented by: **Sylvester Badua**

11:00am	2400585	*Research of the Nitrogen Fertilization Mapping on Rice Fields using Spatial Statistics* - Presented by: **Juneyoung Han, Jeonbuk National University, Jeonju-si, Jeonbuk-do, Republic of Korea;** Ju Won Shin, Dae-Cheol Kim, Myoungkyoon Yang
11:15am	2400021	*Alfalfa yield mapping through hay mass flow monitoring in large hay balers* - Presented by: **Ahmed Kayad, University of California, Tulelake, California**
11:30am	2400180	*High Clearance Robotic Irrigation Impacts on Corn Yield and Nutrient Application* - Presented by: **Andrew Klopfenstein, The Ohio State University, Columbus, Ohio;** J. Koch, K. Arora, D. Anderson, M. Helmers, K. Leibold, C.J. Tkach, C.R. Dean, R. Venkatesh, E.M. Hawkins, J.P. Fulton, S.A. Shearer
11:45am	2400587	*Comparing Regression Models based on Soil Moisture States using NIR Spectroscopy* - Presented by: **In Seop Jang, Jeonbuk National University, Jeonju, Jeonbuk, Republic of Korea;** Ju Won Shin, Woo Jae Cho, Dae-Cheol Kim

212 Application Technology Innovations for Crop Protection Product and Fertilizer

Tuesday, 7/30/2024 9:30am - 12:00pm

Location: Platinum 9

Technical Community: MS - Machinery Systems

Session Type: Oral Technical Session

Description: Innovations in application technologies are important to protect crops from its harms by suppressing or controlling weeds/pests/diseases and promote growth and production by providing better growing environments and conditions. Innovations are keys to improve crop protection product and fertilizer applications while reducing their impact in the environment. This session hosts innovation in application technologies to advance crop protection product and fertilizer applications.

Organizer: Rex Ruppert, CNH Industrial

Sponsoring Committee: MS-23/6 Application Sys & US TAG ISO TC23/SC6

Moderators: Hongyoung Jeon

Start Time	Abstract ID	*Presentation Title* – Presenter; Co-authors
9:35am	2400068	*Evaluation of an electric air assist system for tree crop spray applications* - Presented by: **Hongyoung Jeon, USDA-ARS, Wooster, Ohio;** Heping Zhu
9:50am	2401408	*Canopy Modeling for Spray Deposition and Drift Simulations: A novel approach* - Presented by: **Peter Ako Larbi**
10:05am	2400434	*Quantifying nitrogen fertilizer response of various nutrient application methods on crop vigor and yield* - Presented by: **Rahul Singh**
10:20am	2400390	*Field Performance Validation of Rate Control Systems on Agricultural Sprayers for Site-Specific Pesticide Applications* - Presented by: **Ravi Meena, University of Georgia, Tifton, Georgia;** Simerjeet Virk, Coleman Byers, Glen Rains, Wesley Porter
10:35am-10:45am		BREAK
10:45am	2401309	*Modified Design of Open-Circuit, Centrifugal-Fan Driven Wind Tunnel to Produce Uniform Laminar Air Flows* - Presented by: **Heping Zhu;** Heping Zhu, Erdal Ozkan, Jose Theodoro, Hongyoung Jeon, Javier Campos, Lingying Zhao
11:00am	2401291	*Wind tunnel evaluation of droplet size effects on spray penetration and deposition inside soybean plants* - Presented by: **Jose Gabriel Castilho Theodoro, Ohio State University, Wooster, Ohio;** Erdal Ozkan, Heping Zhu, Hongyoung Jeon, Alvin Womac
11:15am	2401206	*Development and Evaluation of Directed Energy Systems for Precision Weed Control* - Presented by: **Muhammad Usama Yaseen, Oklahoma State University, Stillwater, Oklahoma;** John M. Long

213 Machinery Systems Data and Task Optimization

Tuesday, 7/30/2024 9:30am - 12:00pm

Location: Platinum 10

Technical Community: MS - Machinery Systems

Session Type: Oral Technical Session

Description: Session focusing on machinery systems data and task optimization.

Organizer: Jason Werning, Deere
Sponsoring Committee: MS-49 Crop Production Systems, Machinery, and Logistics
Moderators: Jason Werning, Deere

Start Time	Abstract ID	*Presentation Title* – Presenter; Co-authors
9:35am	2400944	*Scheduling of Robotic or Machinery Operations in Agricultural Fields: A Review* - Presented by: **Yunjun Xu, University of Central Florida, Orlando, Florida;** Andrea I. Rivera Palma, Yunjun Xu, Luis Tituaña, Marc Fritts
9:50am	2401057	*Development of a low-cost telematics system for smart farming operations* - Presented by: **Antti Lajunen, University of Helsinki, Helsinki, Finland;** Henrik Hovio
10:05am	2400469	*Modeling of Off-Road Electric Vehicle Efficiency* - Presented by: **Chris Tkach, The Ohio State University, Columbus, Ohio;** C.R. Dean, A.A. Klopfenstein, G. Rizzoni, S.A. Shearer
10:20am	2401091	*Development and Validation of Simulation Model of an Electric All-Wheel-Drive Vehicle for Agricultural Work* - Presented by: **Min-jong Park, Master's Course Student, Daejeon, Daejeon, Republic of Korea;** Mo-A Son, Cheol-Woo Yang, Jong-Dae Park, Jang-Young Choi, Yong-Joo Kim
10:35am-10:45am		BREAK
10:45am	2401105	*Performance Analysis of 18 kW Single Motor Electric Tractor According to Agricultural Work* - Presented by: **Cheol-Woo Yang, Chungnam National University, Daejeon, Korea;** Mo-A Son, Seung-Yun Baek, Seung-Min Baek, Nyun-Ki Chung, Yong-joo Kim
11:00am	2400539	*Analysis of characteristics for e-powertrain of 55 kW class tractor using agricultural workload data* - Presented by: **Seungmin Baek**
11:15am	2401082	*Analysis of Power Required for 100 kW-class Agricultural Tractor during Agricultural Operations* - Presented by: **Hyeon-Ho Jeon, Dept. of Smart Agriculture Systems, Chungnam National University, Daejeon;** Jong-Dae Park, Min-Jong Park
11:30am	2401111	*Analysis of Power Requirement of Self-Propelled Underground Crop Harvester During Potato Harvest Operation* - Presented by: **Jong Dae Park , Chungnam National University, Daejeon, South Korea;** Min Jong Park, Cheol-Woo Yang , Min-Jae Park, Yong-Joo Kim
11:45am	2400424	*Development of an Embedded System for Maximum Utilization of Tractor Engine Power While Carrying Out Tillage Operation* - Presented by: **Anshu Kumari, IIT Kharagpur, Kharagpur, West Bengal, India;** Hifjur Raheman

214 Advances in Agrohydrological Sustainability – Remote Sensing and Machine Learning Applications

Tuesday, 7/30/2024 9:30am - 12:00pm

Location: Platinum 1
Technical Community: NRES - Natural Resources & Environmental Systems
Session Type: Oral Technical Session
Description: In the pursuit of sustainable agricultural practices, the integration of cutting-edge modeling techniques and Unmanned Aerial System (UAS) technologies has emerged as a powerful approach to enhance agrohydrological sustainability. This technical session aims to explore the latest developments, methodologies, and applications that harness the potential of modeling and UAS tools to address critical challenges in agricultural water management under the present and changing future climate.
Moderators: Arun Bawa; Sayantan Samanta

Start Time	Abstract ID	*Presentation Title* – Presenter; Co-authors
9:35am	2400658	*Advancing Water Quality Modeling and Management Through a Focus on Misfit Data* - Presented by: **Rebecca Logsdon Muenich, University of Arkansas, Department of Biological and Agricultural Engineering, Fayetteville, Arkansas;** Danna Villarreal, Brian Haggard
9:50am	2400203	*Evaluating the controls of Flow Duration Curves using Machine Learning* - Presented by: **Shubham Jain, Texas A&M University, College Station, Texas;** Dhruva Kathuria, Raghavan Srinivasan, Michael Schramm, Arun Bawa

10:05am	2400156	*Integration of the remote sensing techniques with crop modeling using Bayesian inferences to predict cotton production under various irrigated conditions* - Presented by: **Farzam Moghbel, Postdoctoral Research Fellow, Southwest Research Extension Center, Kansas State University, Garden City, Kansas;** Forough Fazel, Jonathan Aguilar
10:20am	2400301	*Application of a Machine Learning Approach to Estimate Constituent Loads in the Mid-Atlantic Region* - Presented by: **Arun Bawa, Assistant Professor, Texas A&M AgriLife Research, Temple, Texas;** Shubham Jain, Katie Mendoza, Raghavan Srinivasan, Rajbir Parmar, Kurt Wolfe, Daren Smith, John M. Johnston, Joel Corona
10:35am-10:45am		BREAK
10:45am	2400716	*Improving Machine Learning-Based Identification of Animal Feeding Operations on a Parcel-Scale for Improved Nutrient Management* - Presented by: **Arghajeet Saha, University of Arkansas, Fayetteville, Arkansas;** Ting Liu, Barira Rashid, Rebecca Muenich
11:00am	2400719	*Modeling Groundwater Fluctuations in the Coastal Plain of Maryland: An Artificial Neural Network (ANN) Powered Strategy* - Presented by: **Jennifer Steeple, University of Maryland, College Park, Maryland;** Masoud Negahban-Azar, Adel Shirmohammadi, Azbina Rahman, Ritesh Karki

215 Applications of Remote Sensing and UAVs in Irrigation Management

Tuesday, 7/30/2024 9:30am - 12:00pm

Location: Elite 2

Technical Community: NRES - Natural Resources & Environmental Systems

Session Type: Oral Technical Session

Description: The role of remote sensing and UAS is crucial in efficient irrigation management. As larger efficiency in irrigation water use is always desirable, these technologies can play a key role in developing precise management zones and strategies to achieve that. A lot of new research focuses on these technologies to predict plant water stress and it would be great to dedicate a separate session to their applications in irrigation management.

Organizer: Burdette Barker, Utah State University

Sponsoring Committee: NRES-241 Sprinkler Irrigation **Co-Sponsors:** NRES-24 Irrigation Group

Moderators: Mitch Maguire; Sandeep Bhatti

Start Time	Abstract ID	*Presentation Title* – Presenter; Co-authors
9:35am	2401464	*Assessment of Satellite-Derived Crop Evapotranspiration (ET) in Comparison to Weather Stations Based ET in Almond and Walnut for Precision Irrigation Management* - Presented by: **Abdelmoneim Mohamed**
9:50am	2400295	*Application of multispectral and thermal UAV-based remote sensing for alfalfa management zone delineation and yield prediction* - Presented by: **Amir Verdi**
10:05am	2401259	*Unraveling Alfalfa Root Dynamics under Water Stress with the Integration of Ground Penetrating Radar for Non-Invasive Parameter Estimation* - Presented by: **Uriel Cholula, University of Nevada, Reno, Department of Agriculture, Veterinary and Rangeland Sciences, Reno, Nevada;** Robert Washington-Allen, Manuel A. Andrade, Khushi Khushi, Mahipal Reddy Ramireddy
10:20am	2400768	*Diurnal trends of maize canopy cover imaging under water stress, and estimation of evapotranspiration coefficients* - Presented by: **Kendall DeJonge**
10:35am-10:45am		BREAK
10:45am	2400270	*Using multi-spectral indices derived from sUAS photogrammetry to assess the cotton growth under limited irrigation conditions* - Presented by: **Farzam Moghbel, Postdoctoral Research Fellow, Southwest Research-Extension Center, Kansas State University, Garden City, Kansas;** Forough Fazel, Jonathan Aguilar
11:00am	2400704	*Irrigation Map Explorer: A Remote Sensing App on Google Earth Engine for Irrigation Monitoring and Water Use Assessment* - Presented by: **Muhammad Umar Akbar, Department of Biosystems and Agricultural Engineering, Oklahoma State University, Stillwater, Oklahoma;** Ali Mirchi, Sara Alian

11:15am	2400875	*Using Unmanned Aerial Vehicle (UAV) Imagery to Select the Most Efficient Irrigated Cabbage Varieties* - Presented by: **Juan Enciso, Professor at Texas A&M AgriLife Research Center, Weslaco, Texas;** Juan Enciso, Jose C. Chavez, Ayrton Laredo, Allen Berthold, Ali Ajaz, Ittipon Khuimphukhieo, Carlos Avila

216 California Perspective on Sustainable Manure Management and Circular Manure-PANEL

Tuesday, 7/30/2024 9:30am - 12:00pm

Location: Grand Ballrooom F

Technical Community: NRES - Natural Resources & Environmental Systems

Session Type: Panel Discussion

Description: This invited panel session brings expert speakers from relevant agencies and groups to discuss unique challenges and activities to improve manure management in Western US (primarily California). Themes addressed in this session include state-run programs to enhance sustainability, climate-related initiatives, water use and recycling, and nutrient conservation and circularity.

Organizer: Femi Alege, USDA - ARS

Sponsoring Committee: NRES-27 Ag By-products & Animal Mortality Management Systems

Moderators: Teng Lim, University of Missouri; Richard Stowell, University of Nebraska - Lincoln

Start Time	Abstract ID	*Presentation Title* – Presenter
9:35am	Guest Speaker	*CDFA Dairy and Livestock Methane Reduction Programs – Efforts in Manure Management and GHG Reduction Update* - Presented by: **Roberta Franco, CA Dept. of Food and Ag. (CDFA), Sacramento, California**
10:00am	Guest Speaker	*Comprehensive Research and Data to Consider Manure Management and Treatment Technologies* - Presented by: **Deanne Meyer, UC-Davis, Davis, California**
10:25am-10:35am		BREAK
10:35am	Guest Speaker	*Efforts of California Dairy Industry in Environmental and Economic Sustainability* - Presented by: **J.P. Cativiela, Dairy Cares Coalition, Sacramento, California**
11:05am	Guest Speaker	*Manure Tech Decision Support Tool for Dairy and Swine: Development, Function, and Optimization* - Presented by: **Varma Vempalli; Erin Scott; Jacob Hickman, University of Arkansas, Fayetteville, Arkansas**
11:30am	Guest Speaker	*Application and Potential of Manure Tech Decision Support Tool* - Presented by: **Rick Stowell, University of Nebraska, Lincoln, Nebraska; Teng Lim, University of Missouri, Columbia, Missouri**
11:45am		*Panel Discussion/Q&A*

217 Circular Bioeconomy Water Systems under Changing Climate-HYBRID

Tuesday, 7/30/2024 9:30am - 12:00pm

Location: Platinum 7

Technical Community: NRES - Natural Resources & Environmental Systems

Session Type: Hybrid Session-submitted abstracts and guest speakers

Organizer: Whitney Lisenbee, University of Georgia

Sponsoring Committee: NRES-26 Sustainable Land Resources **Co-Sponsors:** NRES-21 Hydrology Group

Moderators: Whitney Lisenbee, University of Georgia; Tushar Sinha

Start Time	Abstract ID	*Presentation Title* – Presenter; Co-authors
9:35am	2400803	*Preserving Water Quality in Circular Agricultural Systems: Case Studies in Manure Management and Anaerobic Digestion* - Presented by: **Whitney Pagan, University of Georgia, Athens, Georgia;** Joseph Usack
9:50am	Guest Speaker	*Circular Water Economy Technologies: Principles and Applications* - Presented by: **Shu-Yuan Pan, College of Bio-Resources & Agriculture, National Taiwan University, Taipei, Taiwan;** Yu-I Lin, Aishwarya Rani, Po-Chih Tseng
10:20am	2400449	*Responses of the Kissimmee River – Lake Okeechobee System's Water Quality to Projected Climate Change, External Loading, and Internal Hydrodynamic Process* - Presented by: **Young Gu Her**
10:35am-10:45am		BREAK

NO-SHOW	2400622	*Frost forecasting for cranberry during spring in Eastern Massachusetts* - Presented by: **Sandeep Bhatti, University of Massachusetts Cranberry Station, East Wareham, Massachusetts;** Sandeep Bhatti, Peter Jeranyama, Casey Kennedy, Anthony Buda, David Millar, Adrian Wiegman
11:00am	2400760	*Historical trends in station-based air temperature and precipitation and their agricultural implications in Florida* - Presented by: **Donghyeon Kim, University of Florida, Tropical Research and Education Center, Homestead, Florida;** Younggu, Her
11:15am	Guest Speaker	*Recycled Water in Water Supply Transitons in Aridifying Regions* - Presented by: **Greg Pierce, UCLA Water Resources Group, Los Angeles, California**

218 Emerging Contaminants, Pathogens, and Antibiotics Resistance

Tuesday, 7/30/2024 9:30am - 12:00pm

Location: Elite 3

Technical Community: NRES - Natural Resources & Environmental Systems

Session Type: Oral Technical Session

Description: Emerging contaminants (i.e., personal care products, antibiotics, pesticides, PFAS, microplastics) have become ubiquitous in freshwater ecosystems due to land use practices. These contaminants have critical environmental (i.e., antibiotic resistance) and human health implications. Further, pathogens continue to be a challenge particularly in rural communities, where water infrastructure investments are often limited. Therefore, this session will include and assess detection, fate and transport, and treatment of Emerging contaminants, pathogens, and antibiotics resistance in water systems.

Organizer: Tiffany Messer, University of Kentucky

Sponsoring Committee: NRES-25 Streams, Reservoirs, and Wetlands Group **Co-Sponsors:** NRES-22 Soil Erosion and Water Quality, NRES-28 Ecological Engineering

Moderators: Michelle Soupir, Iowa State University; Emily Nottingham, University of Kentucky

Start Time	Abstract ID	*Presentation Title* – Presenter; Co-authors
9:35am	2401118	*Integrating Natural Resources Management into Antimicrobial Resistance Education and Prevention* - Presented by: **Nafisa Lubna**
9:50am	2400603	*Comparing the Occurrence of Antibiotic Resistance Genes in Septage and Wastewater Influent in Southwest Virginia* - Presented by: **Sarah Price, Biological Systems Engineering Dept - Virginia Tech, Blacksburg, Virginia;** Leigh-Anne Krometis, Jessica Magee, Amanda Darling, Amy Pruden
10:05am	2400185	*Evaluating the fate of Salmonella in a Pilot-Scale Wastewater Treatment System for Hydroponic Irrigation in Controlled Environment Agriculture* - Presented by: **Wellington Arthur, Auburn University, Biosystems Engineering Department, Alabama;** Daniel E. Wells, D. V. Bourassa, Brendan T. Higgins
10:20am	2401146	*Vector-Borne Disease Assessment and Prevention among Agriculture and Forestry Workers* - Presented by: **Wayne T. Sanderson, Biosystems and Agricultural Engineering Department, University of Kentucky, Lexington, Kentucky;** Reddy Pally, PhD
10:35am-10:45am		BREAK
10:45am	2400670	*Wetland Treatment Systems for Municipal Wastewater at a Bourbon Distillery and Potential Value of Incorporating Stillage for Water Treatment Enhancment* - Presented by: **Katherine J. Ristola, University of Kentucky, Lexington, Kentucky;** Dr. Tiffany L. Messer
11:00am	2401169	*Predicting per- and polyfluoroalkyl substances (PFAS) incidence in Virginia private drinking water systems* - Presented by: **Kathleen Hohweiler**
11:15am	2401483	*Evaluating A Continuous Liquid-phase Plasma Discharge Process for Destroying PFAS in Water* - Presented by: **Ekow Agyekum-Oduro, University of Idaho, Moscow, Idaho;** Alia Nasir, Celiannie Rivera, Sidra Siqab, Dinithi Mohotti, Shaobo Deng, Sarah Wu
11:30am	2400787	*Effects of Wastewater Irrigation on PFAS in Forage Crops: Insights from Field and Greenhouse Studies* - Presented by: **Kelly Kosiarski, Graduate Student, University Park, Pennsylvania;** Heather Preisendanz, Hlengilizwe Nyoni, Odette Mina, Suat Irmak
11:45am	2400517	*Impacts of Nanopesticides in Mississippi River Water: Photodegradation Rates, Byproducts Formations, and Degradation Pathways* - Presented by: **William Rud**
12:00pm	2400528	*Nanopesticide Fate and Transport in Agroecosystems: A Field Study* - Presented by: **Caleb Stickney;** Tiffany L. Messer, Manuel Montano

219 Innovation and Practical Applications of Agricultural Conservation Practices

Tuesday, 7/30/2024 9:30am - 12:00pm

Location: Elite 1

Technical Community: NRES - Natural Resources & Environmental Systems

Session Type: Oral Technical Session

Organizer: Vinayak Shedekar, Ohio State University

Sponsoring Committee: NRES-23 Drainage Group **Co-Sponsors:** NRES-21 Hydrology Group, NRES-22 Soil Erosion and Water Quality, NRES-223 Erosion Control Research, NRES-225 Conservation Systems, NRES-28 Ecological Engineering

Moderators: Mark Williams, USDA ARS; Maryam Sahraei, South Dakota State University

Start Time	Abstract ID	*Presentation Title* – Presenter; Co-authors
9:35am	2400808	*Agricultural Practices to Improve Soil Moisture for Corn and Soybeans in Eastern South Dakota* - Presented by: **Murad Ellafi, Postdoc Research Associate at South Dakota State University, Brookings, South Dakota;** Ajoy Kumar Saha, Peter Sexton, Chris Graham, Todd Trooien, John McMaine
9:50am	2400685	*Bioreactor-Biochar (B2) Treatment System: A novel design to remove and capture nutrients from agricultural drainage water* - Presented by: **Haribansha Timalsina, University of Illinois at Urbana Champaign, Urbana, Illinois;** Haribansha Timalsina, Hongxu Zhou, Wei Zheng, Richard A.C. Cooke, Rabin Bhattarai
10:05am	2400758	*Impact of Water Stress on Corn Yield, Water Quality and Economic Implications in NC, US* - Presented by: **Jill Dana Mugisa, NCSU, Raleigh, North Carolina;** John Classen, Chad Poole
10:20am	2400201	*Integrative Analysis of Policy Changes for a Coastal Watershed: Implications for Agriculture and Ecosystem Health* - Presented by: **Randall Etheridge, East Carolina University, Greenville, North Carolina;** Mahesh Tapas, Gregory Howard, Matthew Mair
10:35am-10:45am		BREAK
10:45am	2400567	*Consumptive Water Use of Subsurface-Drip-Irrigated Alfalfa: A Pioneer Study in the Intermountain West* - Presented by: **Burdette Barker, Utah State University, Logan, Utah;** Nishchal Tamang, Justin Clawson, Michael Pace, Alfonso Torres-Rua, Scott Jones
11:00am	2400040	*Evaluating the efficacy of best management practices (bmps) in agricultural dominated river basin under climate change scenarios* - Presented by: **Ashish Pandey, Indian Institute of Technology Roorkee, Haridwar, Uttarakhand, India;** Praveen Kalura, VM Chowdary
11:15am	2401194	*Effect of vegetative filter strip on sediment erosion and deposition in agricultural ditches of Canada's Lacustrine Coast* - Presented by: **Youjia Li, McGill University, Montreal, Canada;** Xuechao Chen, Zhiming Qi, Monique Poulin, Shiv Prasher
11:30am	2400417	*The effect of agronomic practices on maize production and carbon emission: An integrated evaluation with DNDC and LCA* - Presented by: **Yueying Wang, Zhejiang University, Hangzhou, Zhejiang, China;** Yueying Wang, Yong He, Qianjing Jiang
11:45am	2400044	*A Synthesis of SWAT Model Applications in the Western Lake Erie Basin for Agricultural Conservation Practice Evaluation* - Presented by: **Youngping Yuan**

220 Urban Water Management

Tuesday, 7/30/2024 9:30am - 12:00pm

Location: Gold Key I/II

Technical Community: NRES - Natural Resources & Environmental Systems

Session Type: Oral Technical Session

Description: Many researchers are now working on landscape irrigation and urban farming, and it has also recently become a hot topic. It's a very relevant topic for the ASABE AIM 2024 location too.

Organizer: Vivek Sharma, University of Florida

Sponsoring Committee: NRES-244 Irrigation Management **Co-Sponsors:** NRES-24 Irrigation Group

Moderators: Amir Haghverdi, UC Riverside

Start Time	Abstract ID	*Presentation Title* – Presenter; Co-authors
9:35am	2401384	*Simulating Combined Sewer Overflows for Enhanced Flood Resilience Under Increased Threat of Extreme Climate* - Presented by: **Mahekpreet Kaur, Kansas State University, Manhattan, Kansas;** Alireza Monavarian, Emma Russin, Jude H Kastens, Justin M Hutchison, Vaishali Sharda

9:50am	2400549	*Advancing landscape irrigation management in inland southern California using field trials, numerical modeling, and optimization* - Presented by: **Zahra Amiri;** Amir Verdi
10:05am	2401506	*Effects of Land Use Change and Strategic Urban Development on Flooding in a Semi-arid Basin in South Texas* - Presented by: **Tushar Sinha, Texas A&M University-Kingsville, Kingsville, Texas;** Danielle A Maynard
10:20am	2400308	*Assessing the Multiplex Effect of Irrigation Strategies on Turfgrass CO2 efflux in Urban Arid Environment using a Path Analysis and Remote Sensing* - Presented by: **Jean Claude Iradukunda, University of California Riverside, Riverside, California;** Dr. Amir Verdi
10:35am-10:45am		BREAK
10:45am	2400267	*Winter performance of paving systems associated with temperature during snow events* - Presented by: **Lu-Ming Chen, University of Illinois Urbana-Champaign, Urbana, Illinois;** Paul C. Davidson, Timothy J. Lecher
11:00am	2400802	*Impacts of Bioretention Cell Design Characteristics on Hydrologic and Water Quality Performance: Results from Field-Scale Runoff Testing in Columbus, Ohio* - Presented by: **Kathryn Boening-Ulman, The Ohio State University, Columbus, Ohio;** Ryan Winston, Jay Martin
11:15am	2400051	*Influence of silicon in the nutrient solution for growing cucumber in NFT in a greenhouse in central Mexico* - Presented by: **Jorge Flores-Velazquez, Colegio de Postgraduados, Texcoco Edo de Mexico, Mexico;** Vania Gomez Morgan, Abraham Rojano Aguilar
11:30am	2400221	*Measuring and modeling the impact of tire wear particles on the soil water retention curve of soils with different textures* - Presented by: **Amir Verdi**

221 Plant, Animal, & Facility Systems POSTER SESSION

Tuesday, 7/30/2024 9:30am - 12:00pm

Location: Platinum Ballroom
Technical Community: PAFS - Plant, Animal, & Facility Systems
Session Type: Poster Technical Session
Description: This is the poster session for all Plant, Animal, & Facility Systems Committees.
Organizer: Yijie Xiong, University of Nebraska-Lincoln
Sponsoring Committee: PAFS-40 Facilities & Systems Group **Co-Sponsors:** PAFS-20 Structures Group, PAFS-30 Plant Systems Group, PAFS-50 Environmental Air Quality
Moderators: Yijie Xiong, University of Nebraska-Lincoln; Felipe Rodrigues, Iowa State University

Poster No	Abstract ID	*Presentation Title* – Presenter; Co-authors
48	2400564	*A machine learning extension built on ArcGIS for the detection of weeds in cornfields* - Presented by: **Aliasghar Bazrafkan, Department of Agricultural and Biosystems Engineering, Fargo, North Dakota;** Aliasghar Bazrafkan, Yoko Kosugi, Paulo Flores
49	2401383	*Microbial composition of swine barn bioaerosol using next-generation sequencing* - Presented by: **Xufei Yang**
NO-SHOW	2400426	*Revolutionizing Food Safety: Non-Thermal Plasma Technology for Effective Microbial Inactivation and Quality Assurance in Food Processing* - Presented by: **Lin Wei, Department of Agricultural & Biosystems Engineering, South Dakota State University, Brookings, South Dakota;** Kasiviswanathan Muthukumarappan, Lin Wei, Abdus Sobhan
51	2400191	*Detecting Perching Behavior of Cage-Free Laying Hens with Machine Vision Technologies* - Presented by: **Lilong Chai;** Bidur Paneru, Ramesh Bist, Xiao Yang, Lilong Chai
52	2400712	*Real-Time Anomaly Detection: Integrating and Analyzing Streaming Data* - Presented by: **Felipe Rodrigues Picchi, Iowa State University, Ames, Iowa;** Brett. C. Ramirez, Bufei Guo, Somak Dutta
53	2400372	*Energy Use Efficiency for Indoor Plant Environment: A Comprehensive Review* - Presented by: **Jérôme Trudel-Brais, ETS-Montreal, Montreal, Quebec, Canada;** Didier Haillot, Danielle Monfet
54	2401122	*Quantifying greenhouse gas emissions from dairy pastures using a "flying" air analyzer* - Presented by: **Nesli Akdeniz, Biological Systems Engineering, University of Wisconsin-Madison;** Doee Yang

55	2400731	*Audio-Based Anomaly Detection for Cattle Respiration* - Presented by: **Jonathan Yoder, University of Tennessee, Knoxville, Tennessee;** Hao Gan, Sai Swaminathan, Matthew Bringle

56	2400428	*Verification test for harvest supplement by post-sowing of garlic in South Korea* - Presented by: **Seokho Kang, Kyungpook National University, Daegu, South Korea;** Hyunggyu Park, Yonggik Kim, Jinho Son, Seungmin Woo, Yushin Ha
57	2400034	*Experimental Design to Simulate the Transient Effect of an Animal Standing or Laying on a Cooling Pad* - Presented by: **Jemima Baributsa;** Jemima D. Baributsa, E. Danae Youngstedt, Daphne A. Licuan, Allan P. Schinckel, Robert M. Stwalley III
58	2401269	*An Intelligent Modeling of The Green House Based On Narma-L2 System Modelling* - Presented by: **Liujun Li, University of Idaho, Moscow, Idaho;** Muhammet Emre Sanci, Fethi Candan
59	2400484	*Effect of precipitation on ammonia emissions from a beef cattle feedlot* - Presented by: **Myeongseong Lee, Texas A&M University, College Station, Texas;** Myeongseong Lee, Brent W. Auvermann, Kenneth D. Casey, K. Jack Bush, Greg B. Ferguson, Zach Hilliard, Carolina B. Brandani, Vinicius Gouvea, Will Willis, David B. Parker, Jacek A. Koziel
60	2400446	*Effects of Different Storage Temperatures and Modified Atmosphere Packaging on the Quality of Lamb Meat* - Presented by: **Qi Zhang, Shihezi University, Shihezi, Xinjiang, China;** Peilin Jin, Renzhong Niu, Zhigang Li, Xiaoshuan Zhang
61	2401033	*Formulation of Protein Enriched Meat Analogues with Added Vitamin D: A Sustainable Solution towards Global Hunger* - Presented by: **Priyadharshini Jayaseelan, Agricultural and Food Engineering Department IIT Kharagpur, Kharagpur, West Bengal, India;** Rintu Banerjee
62	2400340	*Enhanced Strawberry Yield Prediction: Exploring Growth Patterns based on Fruit, Inflorescence, and Plant Levels in Plant Factories* - Presented by: **Rongmei Fu, Zhejiang University, Hangzhou, Zhejiang, China;** Rongmei Fu, Fulin Xia, Wei Liu, K.C. Ting, Tao Lin
63	2401353	*Nutrient Dosing Algorithms to Mitigate Ion Imbalance in Closed-Loop Hydroponic Systems* - Presented by: **Md Shamim Ahamed, University of California Davis, Davis, California;** Saeed Karimzadeh, Zhian Li, Md Shamim Ahamed
64	2401150	*Measurement and Mitigation of Fugitive Airborne Contaminants from Solid Manure Spreading* - Presented by: **Patrick Brassard, IRDA, Quebec City, Quebec, Canada;** Samantha Leclerc, Valérie Létourneau, Nathalie Turgeon, Laura Daniela Mila, Azin Zand Miralvand, Caroline Duchaine, Stéphane Godbout
NO-SHOW	2401438	*Grasses in Hydroponics-Oats and Barley* - Presented by: **Jasmine Brar, McGill University, Ste-Anne-De-Bellevue, Quebec, Canada;** Sarah MacPherson, Philip Wiredu Addo, Mark Lefsrud
66	2400155	*Effects of Different Salinity Levels and Light Intensity on Growth, Yield, and Nutrient Content of Hydroponically-grown Kale in Controlled Conditions* - Presented by: **Christopher S. Pascual, North Carolina State University, Raleigh, North Carolina;** Steven G. Hall, John J. Classen, Lirong Xiang, Ricardo Hernandez
67	2400903	*Development of Force Sensing Nipple for Describing Changes in Suckle Behavior Between Healthy & Sick Dairy Breed Calves* - Presented by: **Zoe Mallorie Chen, Department of Electrical and Computer Engineering, College of Engineering, Cornell University, Ithaca, New York;** Taika E. von Konigslow, Tapomayukh Bhattacharjee
68	2401121	*Computational Fluid Dynamics Simulations of Deep Winter Greenhouses* - Presented by: **Nesli Akdeniz, Biological Systems Engineering, University of Wisconsin-Madison;** Yoonhong Yi
69	2401100	*Hybrid Ground Source Heat Pump for Effectively Cooling and Dehumidifying Greenhouse Indoor Climate* - Presented by: **T M Abir Ahsan**
70	2400680	*Short-term Impacts of Manure Application and Cover Crop on Soil Properties and Crop Yield* - Presented by: **Manobendro Sarker**

222 Cellular Agriculture-GUEST SPEAKERS

Tuesday, 7/30/2024 9:30am - 12:00pm

Location: Orange County 1

Technical Community: PRS - Processing Systems

Session Type: Guest Speaker Session

Description: The manufacturing of animal-sourced foods by cell culture, an alternative to the animal-sourced meat, seafood, dairy, and egg industries.

Organizer: Juliana Vasco-Correa, Penn State University

Sponsoring Committee: PRS-06 General Program
Moderators: Juliana Vasco-Correa, Penn State University; Ana Martin-Ryals, University of Florida

Start Time	Abstract ID	*Presentation Title* – Presenter
9:35am	Guest Speaker	*The Future Role of Biosystems and Agricultural Engineers in Cellular Agriculture* - Presented by: **Tyler Barzee, University of Kentucky, Lexington, Kentucky**

223 Drying, Handling, Storage of Grain Crop

Tuesday, 7/30/2024 9:30am - 12:00pm
Location: Orange County 2
Technical Community: PRS - Processing Systems
Session Type: Oral Technical Session
Organizer: Ma Cristine Concepcion Ignacio, University of the Philippines Los Baños
Sponsoring Committee: PRS-702 Crop & Feed Processing & Storage
Moderators: Ma Cristine Concepcion Ignacio, University of the Philippines Los Baños; Marvin Petingco, Kansas State University

Start Time	Abstract ID	*Presentation Title* – Presenter; Co-authors
9:35am	2400888	*Environmental Influences on Milled Rice Breakage, Physicochemical Trails, and Functionality* - Presented by: **Devisree Chukkapalli**
9:50am	2400465	*Investigating the impact of sub-zero temperatures on stored canola seeds: Moisture, germination, and beyond* - Presented by: **Fuji Jian, Department of Biosystems Engineering, University of Manitoba, Winnipeg, Manitoba, Canada;** Abhinav Tiwari, Chyngyz Erkinbaev
10:20am	2400740	*Method Development and Determination of Relative Composition of Samples Collected with Open Head Spiral Grain Sampling Probe* - Presented by: **Jaden Tatum, Ohio State University, Columbus, Ohio;** Ajay Shah
10:35am-10:45am		BREAK
10:45am	2400652	*Evaluating the Allowable Storage Time of Selected Soybean Varieties* - Presented by: **Ibukunoluwa Ajayi-Banji**
11:00am	2400293	*Optimizing Radiofrequency Exposure Parameters for One-Pass Drying of High-Moisture Paddy Rice* - Presented by: **Deandrae Smith**
11:15am	2400382	*Exploring the potential of microwave heating for tempering rice during high temperature drying* - Presented by: **Kaushik Luthra, University of Arkansas Division of Agriculture, Fayetteville, Arkansas;** Bindu Regonda, Griffiths Atungulu
11:30am	2400521	*Atmospheric Cold Plasma Treatment and it's Impact on DNA Endoreplication in Stored Product Pests: Cowpea Bruchid Examined through Rapid Flow Cytometry* - Presented by: **Nahndi Kirk-Bradley, Texas A&M University, College Station, Texas;** Megan Burciaga, Keyan Zhu Salzman, Janie Moore

TUESDAY – 2:30PM-5:00PM

224 Next Generation BAE Programs: What Does BAE look like in 2030?-PANEL

Tuesday, 7/30/2024 2:30pm - 5:00pm
Location: Grand Ballroom C
Technical Community: EOPD - Education, Outreach, & Professional Development
Session Type: Panel Discussion
Description: This panel discussion for engineering programs builds on a similar panel discussion of AST/ASM programs that was held during AIM 2023. We will discuss the future of our engineering programs across ASABE disciplines.
Organizer: Kevin Moore, Oklahoma State University
Sponsoring Committee: EOPD-203 Undergraduate & Graduate Instruction **Co-Sponsors:** EOPD-204 Engineering & Technology Accreditation, EOPD-205 Engineering Technology & Management Education
Moderators: Kevin Moore, Oklahoma State University
Panelists: Terry Howell, Jr., University of Arkansas; Bradley Marks, Michigan State University; Scott Shearer, The Ohio State University; Mark Stone, University of Nebraska-Lincoln; J. Alex Thomasson, Mississippi State University

225 Hydrothermal Liquefaction and Gasification of Biomass to Biofuels

Tuesday, 7/30/2024 2:30pm - 5:00pm

Location: Grand Ballroom D
Technical Community: ES - Energy Systems
Session Type: Oral Technical Session
Moderators: Jaya Shankar Tumuluru, Southwestern Cotton Research Laboratory

Start Time	Abstract ID	*Presentation Title* – Presenter; Co-authors
2:35pm	2400153	*Hydrothermal liquefaction of food waste for sustainable aviation fuel* - Presented by: **Sabrina Summers, Department of Agricultural and Biological Engineering University of Illinois Urbana-Champaign, Urbana, Illinois;** Siyu Yang, Yuanhui Zhang
2:50pm	2400387	*Co-Hydrothermal Carbonization of Corn Stover and Animal Manure: Enhancement in Fuel Characteristics* - Presented by: **Bilash Devnath, Florida Institute of Technology, Melbourne, Florida;** M. Toufiq Reza
3:05pm	2400319	*A comparative study on the biodegradability of wastewater from hydrothermal liquefaction of corn stover under varied reaction conditions* - Presented by: **Meicen Liu, Kansas State University, Manhattan, Kansas;** Isamu Umeda, Sandeep Kumar, Zhiwu Wang, Yi Zheng
3:20pm	2400789	*Understanding the Effect of Solvents on Phenol Hydrodeoxygenation Pathways* - Presented by: **Randy L. Maglinao, Montana State University-Northern, Havre, Montana;** Amos Taiswa, Evan T. Davison, Jessica M. Andriolo, Gary Succaw, Jack Skinner, Sandeep Kumar
3:35pm-3:45pm		BREAK
3:45pm	2400638	*Hydrothermal liquefaction of tomato waste residue: Effect of reaction temperatures, solvents and catalysts on product yield and bio-oil characterizations* - Presented by: **Bipasyana Dhungana, Biosystems Engineering Department, Auburn University, Auburn, Alabama;** Bijoy Biswas, Manis Sakhakarmy, Hossein Jahromi, Sushil Adhikari
4:00pm	2400647	*Gasification of low-grade wastes: Investigating the effects of blending and CO2 on syngas composition and contaminants* - Presented by: **Sagar Kafle**
4:15pm	2400219	*Hydrothermal liquefaction of southern yellow pine with downstream processing for improved fuel grade chemicals production* - Presented by: **Tawsif Rahman, Auburn University, Auburn, Alabama;** Hossein Jahromi, Poulami Roy, Bijoy Biswas, Sushil Adhikari
4:30pm	2400534	*A comparative investigation of bio-lubricants synthesized via esterification, epoxidation, and Friedel-Crafts reaction using oleic acid as feedstocks* - Presented by: **Noor Fatima**
4:45pm	2400174	*Fluidized Bed Gasification Kinetics Model Development using Genetic Algorithm for Biomass, Coal, Municipal Plastic Waste, and their Blends* - Presented by: **Ashish Bhattarai**

226 Energy Systems POSTER SESSION

Tuesday, 7/30/2024 2:30pm - 5:00pm

Location: Platinum Ballroom
Technical Community: ES - Energy Systems
Session Type: Poster Technical Session
Organizer: Jaya Shankar Tumuluru, Southwestern Cotton Research Laboratory
Sponsoring Committee: ES-220 Bio-based Energy, Fuels and Products
Moderators: Jaya Shankar Tumuluru, Southwestern Cotton Research Laboratory; Sushil Adhikari, Auburn University

Poster No	Abstract ID	*Presentation Title* – Presenter; Co-authors
1	2401183	*A nationwide analysis of an oilseed supply chain for Sustainable Aviation Fuel* - Presented by: **Juliana Pin, NC State, Raleigh, North Carolina;** Daniela Jones, Damon Hartley, Pralhad H. Burli, Matthew Langholtz, Chad Hellwinckel, David Thompson
2	2400695	*Bioethanol production potential from cotton gin residues* - Presented by: **Gundeep Kaur, SUNY-ESF, Syracuse, New York;** Gundeep Kaur, Jaya Shankar Tumuluru, Carlos Armijo, Derek Whitelock, Deepak Kumar
3	2400098	*Bioethanol Production from a Residential Backyard Garden as a Sustainable Waste-to-Energy Continuum in the Modern Era* - Presented by: **Tyler Carlisle, Department of Natural Resources and Society, University of Idaho, Boise/Idaho Falls, Idaho;** Ming-Hsun Cheng

4	2400630	*Understanding the Variability of Sulfur Content in Loblolly Pine Residues Across Age, Soil Type, and Harvest Method* - Presented by: **Gary Lopez, University of Kentucky, Lexington, Kentucky;** Jian Shi
5	2400781	*Bioethanol production from Brewers Spent Grains (BSG) using low severity pretreatment and engineered Saccharomyces Cerevisiae* - Presented by: **Kalyani Ananthakrishnan, SUNY ESF, Syracuse, New York;** Kalyani Ananthakrishnan, Yongqi Sun, Yong-Su Jin, Deepak Kumar
6	2400380	*Evaluation of Animal Fat as Phase Change Materials for Thermal Energy Storage Applications* - Presented by: **Nazlim Aktay, Oklahoma State University, Stillwater, Oklahoma;** Dr. Nurhan Turgut Dunford, Dr. Sourabh Chakraborty
NO-SHOW	2400276	*Exploring Biofiber Properties and Their Influence on Critical Biocomposite Quality Attributes* - Presented by: **Oluwafemi Oyedeji, Oak Ridge National Laboratory, Oak Ridge, Tennessee;** Oluwafemi Oyedeji, Jocelyn Hess, Xianhui Zhao, Luke Williams, Rachel Emerson, Erin Webb
8	2401243	*Hard Carbon Production from Enzymatically Fractionated Switchgrass for Lithium-Ion Batteries* - Presented by: **Yilin Li, Virginia Tech, Blacksburg, Virginia;**
9	2400798	*Hydrodeoxygenation of Waste Cooking Oil Into Bio Hydrogenated Diesel Using Ethanol as Hydrogen Donor* - Presented by: **Peerawat Wongsurakul, Department of Chemical Engineering, Faculty of Engineering and Industrial Technology, Silpakorn University, Nakhon Pathom, Thailand;** Worapon Kiatkittipong, Tawsif Rahman, Surendar Moogi, Bijoy Biswas, Sushil Adhikari
10	2401063	*Improved fermentation strategies for enhancing poly(3-hydroxybuyrate) production from paper mill fiber rejects* - Presented by: **Linjing Jia, SUNY College of Environmental Science and Forestry, Syracuse, New York;** Linjing Jia, Gundeep Kaur, Ankita Juneja, Bandaru Ramarao, Erica L.-W. Majumder, Deepak Kumar
11	2401038	*Innovative Pyrolytic Strategies for Bambusa Bambos Valorization: Biooil, Biochar, and Biogas Synthesis* - Presented by: **Anusha, Indian Institute of Technology Kharagpur, Kharagpur, West Bengal, India;** Rintu Banerjee
12	2400279	*Investigating the catalytic effects of industrial byproducts – gypsum and red mud – on bio-oils during the rotary kiln pyrolysis of pine wood chips* - Presented by: **Dale Hartmann, Auburn University Biosystems Engineering Department, Auburn, Alabama;** Tawsif Rahman, Sushil Adhikari
13	2401509	*Plasma-Assisted Reforming of Methane with Water into Liquid Fuels Using a Liquid Phase Plasma Process* - Presented by: **Ekow Agyekum-Oduro, University of Idaho, Moscow, Idaho;** Md. Mokter Hossain, Robinson Junior Ndeddy Aka, Ahmad Mukhta, Sidra Saqib, Yuan Yuan, Sarah Wu
14	2400236	*Production of aviation fuel-range hydrocarbons through the catalytic co-pyrolysis of polystyrene and Southern Pine* - Presented by: **Ayden Kemp, Auburn University, Auburn, Alabama;** Sushil Adhikari, Hossein Jahromi, Tawsif Rahman
15	2400516	*Renewable Fuels Production from Palm Oil Deoxygenation using Glycerol as an In-situ Hydrogen Source* - Presented by: **Nitchakul Hongloi, Department of Chemical Engineering, Faculty of Engineering, Kasetsart University, Bangkok, Thailand;** Chaiwat Prapainainar, Tawsif Rahman, Bijoy Biswas, Surendar Moogic, Paweena Prapainainar, Sushil Adhikari
16	2401045	*Phyco-myco-bacteria mediated mixed-cultivation for enhanced lipid production* - Presented by: **Sarveshwaran Saravanabhupathy, Indian Institute of Technology Kharagpur, Kharagpur, West Bengal, India;** Rintu Banerjee
17	2401196	*Flow performance of southern pine forest residue tissue fractions* - Presented by: **Sudhagar Mani, University of Georgia, Athens, Georgia;** Osayuwamen Osagie, Sudhagar Mani
18	2401326	*Life Cycle Assessment and Economic Analysis of an Anaerobic Biofilter-Microalgae Symbiotic System for Recycling Agricultural Wastewater and Algal Production* - Presented by: **Jewel Das;** Lijun Wang, Jewel Das, Suleiman Elhorry
19	2401288	*Development of an Anaerobic Digestion Methodology for Biogas Production from Deproteinized Fermentation Residues* - Presented by: **Michael Smith, UC Davis, Davis, California;** Ian Nielsen, Abdolhossein Edalati, Kelly Graff, Hamed Elmashad, Ruihong Zhang

20	2400727	*Techno-Economic Analysis of Industrial Enzyme Production and Purification* - Presented by: **Julia Cunniffe, North Carolina State University, Raleigh, North Carolina;** Vanessa Rondon Berrio, Sonja Salmon, Amy Grunden, Thuan Nguyen, Nathan Crook, William Joe Sagues
21	2400649	*Linear regression model to predict the feeding rate in a laboratory-scale gasifier* - Presented by: **Sagar Kafle**
22	2401380	*Policies to Support Biomass Intercropping to Feed Fast Pyrolysis and Electrocatalysis Depots that Produce Hydrocarbon Fuels* - Presented by: **Christopher M. Saffron, Michigan State University, East Lansing, Michigan;** Christopher M. Saffron, Rachel Sak
23	2400548	*A Decision Support System To Evaluate The Economic Feasibility of Solar Technology on Dairy Farms* - Presented by: **Helen Miller, Michigan State University, East Lansing, Michigan;**
24	2400134	*Assessing the Feasibility of Alternative Powertrains in Agricultural Logistics: A Case Study on Milk and Sugar Beet Transportation* - Presented by: **Simon Grebner, TU Munich, Freising, Bavaria, Germany;** Heinz Bernhardt
25	2400651	*CO, CO2 AND HC Emissions Analysis of a diesel engine fueled with diesel, residual oil biodiesel and liquified petroleum gas mixtures* - Presented by: **Ronald Leite Barbosa, IFMG, Betim, Minas Gerais State, Brazil;** Diego José Carvalho Alonso, Carlos Eduardo Silva Volpato, Diego Thadeu Guimarães Lima

227 Ergonomics, Safety, & Health POSTER SESSION

Tuesday, 7/30/2024 2:30pm - 5:00pm

Location: Platinum Ballroom

Technical Community: ESH - Ergonomics, Safety & Health

Session Type: Poster Technical Session

Description: Agriculture is one of the most hazardous industries. Injury and illness prevention efforts are the primary effort in the field of ergonomics, safety, and health. However, many employees, operators, and families often experience life-altering injuries or illnesses requiring worksite modifications. Posters are welcomed for safety education programming, technologies, and program efforts that highlight objective evaluation of these efforts.

Organizer: Farzaneh Khorsandi, The university of California, Davis

Sponsoring Committee: ESH-01 POSTER SESSION **Co-Sponsors:** ESH-04 Technology Exchange, ESH-04/1 Journal of Agricultural Safety and Health, ESH-04/2 Farmers With Disabilities Technology Exchange

Moderators: Farzaneh Khorsandi, The University of California, Davis; Fernando Ferreira Lima Santos, The University of California, Davis

Poster No	Abstract ID	*Presentation Title* – Presenter; Co-authors
26	2400692	*A Capstone Approach to Designing Assistive Technology within a Skid Loader* - Presented by: **Alex Parsio, The Ohio State University, Columbus, Ohio**; Ashley Bergman
27	2400569	*Embedding ATV and Farm Safety Competencies in an Australian Ag Tech Management program* - Presented by: **Justine Baillie;** Michael Scobie
NO-SHOW	2400108	*Leveraging Artificial Intelligence for Enhanced Investment and Poverty Alleviation in Africa* - Presented by: **Juan Diego, UGA, Athens, Georgia;** Juan Diego, Xiao Yang
29	2400141	*Developing a Framework for Assessing the Dynamic Stability of Agricultural ATVs* - Presented by: **Fernando Ferreira Lima dos Santos, University of California, Davis;** Farzaneh Khorsandi
30	2400937	*Comparison of directly measured and forecasted Wet Bulb Globe Temperature (WBGT) in California* - Presented by: **Minyoung Hong, University of California, Davis, California;** Farzaneh Khorsandi Kouhanestani
31	2400289	*Investigating Respirator Types And Their Impact On Behavioral And Physiological Responses While Performing Simulated Grain Handling Activities* - Presented by: **Dabira Ogunbiyi;** Kevin Moore, Ning Wang, Rob Agnew
32	2400677	*Tractor and Machinery Safety Instructor Professional Development Needs Assessment* - Presented by: **Michael L. Pate, Utah State University, Logan, Utah;** Rebecca G. Lawver, Scott W. Smalley, Dustin K. Perry, Jim Hafer, Don Edgar, Marvin Young, Celina Wille

33	2400392	*Agricultural Data Analytics Approach to Examine Agriculture Machine Injuries: A Surveillance Study of Hospital Data in Pakistan* - Presented by: **Mian Muhammad Sajid Raza, University of Illinois Urbana Champaign, Urbana, Illinois;** Salah F. Issa, Zamir Hussain Tunio, Ikram Din Ujjan, Rizwan Ali Jhatiyal, Sarfraz Ahmad

228 Analytical, Computational and Instrumentation Advances for Biosensing

Tuesday, 7/30/2024 2:30pm - 5:00pm

Location: Grand Ballroom E

Technical Community: ITSC - Information Technology, Sensors & Control Systems

Session Type: Oral Technical Session

Description: This session provides attendees with the latest information on analytical, computational, and instrumentation advances for biosensor development for food and agriculture.

Organizer: Juhong Chen, Virginia Tech

Sponsoring Committee: ITSC-230 Biosensors

Moderators: Juhong Chen, Virginia Tech; Jianhan Lin, China Agricultural University

Start Time	Abstract ID	*Presentation Title* – Presenter; Co-authors
2:35pm	2401117	*Testing a novel nitrogen oxide sensor and measuring in-ground greenhouse gas emissions from fertilizer application* - Presented by: **Noah Bevers, Ohio State University, Columbus, Ohio;** Chris Tkach, Prabir K. Dutta, Solomon Ssenyange, Darby Makel, Sami Khanal
2:50pm	2400783	*High-Throughput Measurement of Maize Flexural Stiffness* - Presented by: **Christian Shamo;** Christian Shamo, Carter T. Noh, Kenny Smith, Christian Shamo, Jordan Porter, Kirsten Steele, Nathan Ludlow, Ryan Hall, Douglas Cook
3:05pm	2400437	*Non-destructive Detection Method for Lamb Meat Shelf Life Based on Flexible Impedance Sensor* - Presented by: **Peilin Jin, Shihezi University, Xinjiang, China;** Qi Zhang, Renzhong Niu, Zhigang Li, Xiaoshuan Zhang
3:20pm	2401512	*A lab-on-a-tube colorimetric biosensor for Salmonella Typhimurium* - Presented by: **Yawen He;** Xinge Xi, Yawen He, Jianhan Lin
3:35pm-3:45pm		BREAK
3:45pm	2401552	*Comparative analysis of localized vs. mesoscale weather-driven approaches for heat stress monitoring in dairy calves* - Presented by: **Keshawa Dadallage, Department of Biological Systems Engineering, Washington State University, Prosser, Washington;** Basavaraj Amogi
4:00pm	2401219	*Cellphone for bees* - Presented by: **G. Ali Miarkiani, University of Hawaii, Honolulu, Hawaii;**
4:15pm	2401303	*Characteristics of Chlorophyll Fluorescence in Light-adapted State as Indicators of Plant Water Loss* - Presented by: **Junqing Chen**
4:30pm	2401292	*Enhancing SIF-based Prediction of Gross Primary Production by Estimating Non-Photochemical Quenching* - Presented by: **Lijiang Fu**

229 Cybersecurity, Social Impacts and Risks of Emerging Information Systems-HYBRID

Tuesday, 7/30/2024 2:30pm - 5:00pm

Location: Grand Ballroom H

Technical Community: ITSC - Information Technology, Sensors & Control Systems

Session Type: Hybrid Session-submitted abstracts and guest speakers

Description: Focuses on the social and ethical issues of the management and governance of agricultural data and associated information systems.

Organizer: Brian Steward, Iowa State University

Sponsoring Committee: ITSC-254 Emerging Information Systems

Moderators: Ziwen Yu, University of Florida

Start Time	Abstract ID	*Presentation Title* – Presenter; Co-authors
2:35pm	Guest Speaker	*Smart Agricultural Systems and Potential Cybersecurity Challenges in Perennial Specialty Crops* - Presented by: **Lav Khot, Washington State University, Pullman, Washington**
3:05pm	Guest Speaker	*Assessing Cybersecurity Risks and Strategies for Robotics and AI in Precision Agriculture* - Presented by: **Upinder Kaur, Purdue University, West Lafayette, Indiana**
3:35pm-3:45pm		BREAK

3:45pm	Guest Speaker	*Cybersecurity Security Attack Surfaces in Autonomous Agricultural Systems* - Presented by: **Santosh Pitla, University of Nebraska Lincoln, Lincoln, Nebraska**
4:15pm	2401436	*Cybersecurity Testbed for Agricultural Machinery* - Presented by: **Brian L. Steward, Agricultural and Biosystems Engineering Department, Iowa State University, Ames, Iowa;** Manimaran Govinderasu, Ranuka Gallolu Kankanamalage, Souradeep Bhattacharya, Hounandan Ravichandran
4:30pm	2401308	*Traceability systems and its role in regulatory compliance for agricultural products: lessons learned from the Honduran coffee value chain* - Presented by: **Claudina Padilla Quiñonez, Oklahoma State University Student, Stillwater, Oklahoma;** Claudina Padilla-Quinonez, Karl Rich, Scott Frazier, Kevin Moore, Jenny Melo-Velasco, Miriam Colindres, Federico Ceballos-Sierra, Jennifer Wiegel
4:45pm	2400998	*Review of Blockchain Technology Applications Examining Social Risk Perspective in Agriculture* - Presented by: **Younghoo Cho, University of Florida, Gainesville, Florida;** Ziwen Yu, Yiannis Ampatzidis
5:00pm	2400441	*Shaping Agricultural Data Rights and Obligations: The Influence of Business Structures among Technology Providers* - Presented by: **Ziwen Yu, University of Florida, Gainesville, Florida**

230 Machine Vision for Precision Agriculture and Robotics-LIGHTNING TALKS

Tuesday, 7/30/2024 2:30pm - 5:00pm

Location: Grand Ballroom K

Technical Community: ITSC - Information Technology, Sensors & Control Systems

Session Type: Lightning Oral Technical Session

Description: Focuses on all machine vision innovation and applications in precision agriculture and agricultural robotics.

Organizer: Gan Hao, University of Tennessee

Sponsoring Committee: ITSC-312 Machine Vision **Co-Sponsors:** ITSC-318 Mechatronics & Biorobotics

Moderators: Jianfeng Zhou, University of Missouri

Start Time	Abstract ID	*Presentation Title* – Presenter; Co-authors
2:35pm	2401000	*The effect of different toys on the behavior and activity levels of group-housed pigs based on machine vision* - Presented by: **Kaixuan Cuan, Zhejiang University, Hangzhou, Zhejiang, China;** Kaixuan Cuan, Kaiying Wang
2:42pm	2401130	*ViLAD: Video-based Lettuce Association and Detection* - Presented by: **Amir Etefaghi-Daryani, University of Florida, Gainesville, Florida;** Dr. Henry Medeiros
2:49pm	2401520	*Enhancing Autonomy in Flex-Ro with UNL Farm Scene Dataset for Advanced Object Classification* - Presented by: **Ankita Kalra**
2:56pm	2401516	*Multimodal Machine Learning for Comprehensive Plant Stress Detection Integrating Ultrasonic Sensing and RGBD Imaging* - Presented by: **Ankita Kalra**
3:03pm	2401396	*Semi-Supervised Panoptic Segmentation for Apple Picking Robots* - Presented by: **Jiajia Li, Michigan State University, East Lansing, Michigan**
3:10pm	2400495	*Enhanced Weed Detection Using YOLOv9 on Open-Source Datasets for Precise Weed Management* - Presented by: **Muneeb Elahi Malik, University of Georgia, Athens, Georgia;** Md Sultan Mahmud
3:17pm	2401016	*Obstacle Perception for Korean Autonomous Tractor Safeguarding* - Presented by: **Chulwhan Yoon, Seoul National University, Seoul, Seoul, South Korea;** Hak-Jin Kim, Changho Yun, Yong-Hyun Kim, Jungun Lee
3:24pm	2400592	*CAM-based pose estimation for robotic harvesting of oriental melon* - Presented by: **Seung-Woo Kang, Department of Biosystems Machinery Engineering, Chungnam National University, Daejeon, Republic of Korea;** Soo-Hyun Cho, Baek-Gyeom Seong, Kyung-Chul Kim, Dae-Hyun Lee
3:31pm	2400774	*Integration of Depth Images and Deep Learning Algorithm for Automated Size Estimation and Maturity Assessment in White Button Mushroom Cultivation* - Presented by: **Namrata Dutt, ASABE Graduate student member, University of Florida, Wimauma, Florida;** Dr. Dana Choi
3:38pm-3:50pm		BREAK

3:50pm	2400898	*Estimation of Cotton Boll Number and Main Stem Length Based on 3D Gaussian Splatting* - Presented by: **Lizhi Jiang, Bio-Sensing, Automation, and Intelligence Laboratory, Department of Agricultural and Biological Engineering, University of Florida, Gainesville, Florida;** Lizhi Jiang, Changying Li, Jin Sun, Peng Chee, Longsheng Fu
3:57pm	2400145	*Evaluation of a machine-vision based estrus detection system* - Presented by: **Jianfeng Zhou;** Ziteng Xu
4:03pm	2401379	*Enhancing Seeding Efficiency: Evaluating Row Cleaners with Computer Vision in Precision Agriculture* - Presented by: **Sidharth Rai**
4:10pm	2401110	*Using Boll Images and Numerical Data to Predict the Number of Growing Degrees Remaining Until a Cotton Boll is Open* - Presented by: **Caleb M. Lindhorst, Texas A&M University, College Station, Texas;** Robert G Hardin IV, Joshua Peeples
4:17pm	2400256	*Automated Identification of Tomato Pests, Diseases, and Disorders Using Convolutional Neural Networks* - Presented by: **Yun Lin, National Taiwan University, Taipei, Taipei, Taiwan;** Wei-Chun Gao, Chu-Ping Lin, Hsuan-Ju Tsai, Yi-Ju Chen, Yan-Fu Kuo
4:24pm	2401550	*Quantized deep learning object detection model enabled smartphone application for Spotted Wing Drosophila larval detection and classification* - Presented by: **Dattatray G. Bhalekar , Center for Precision and Automated Agricultural Systems, Department of Biological Systems Engineering, Washington State University, Prosser, Washington;** Dattatray G. Bhalekar, Srikanth Gorthi, Gwen A. Hoheisel, Lav R. Khot
4:31pm	2401040	*Unified Deep Learning Models for Strawberry Maturity Detection in plant factory* - Presented by: **Rongmei Fu, Zhejiang University, Hangzhou, Zhejiang, China;** Jiandong Pan, Tongpeng Chen, Wei Liu, Rongmei Fu, Tao Lin

231 Mechatronics and Actuation in Agricultural Robots

Tuesday, 7/30/2024 2:30pm - 5:00pm

Location: Grand Ballroom G
Technical Community: ITSC - Information Technology, Sensors & Control Systems
Session Type: Oral Technical Session
Description: Focuses on the development of mechatronics and actuation components in agricultural robots.
Organizer: Piyush Pandey, USDA-ARS
Sponsoring Committee: ITSC-318 Mechatronics & Biorobotics
Moderators: Hemanth Narayan Dakshinamurthy, Utah State University

Start Time	Abstract ID	*Presentation Title* – Presenter; Co-authors
2:35pm	2400296	*Robotic mower-assisted drip irrigation system for small-scale specialty crop farms* - Presented by: **Rajveer Dhillon, Central State University, Ohio;** Alcinda Folck, Brian Kampman, Jon Jackson, Isaiah Walkine, Gautam Takoo
2:50pm	2401246	*Distance Estimation and Object Tracking using a Multi-camera System for a Soft Manipulator* - Presented by: **Syed Usama Bin Sabir, Washington State University, Washington;** Ariel Nicole Ramos, Manoj Karkee
3:05pm	2400562	*Harnessing Stereo Vision Systems on a Multipurpose Intelligent Ground Rover for Precision Cotton Growth Monitoring* - Presented by: **Peter Cosmas Ngimbwa, University of Georgia, Tifton, Georgia;** Canicius Joseph Mwitta, Wesley M Porter, Simerjeet Virk, Javad Mohammadpour Velni, Glen C Rains
3:20pm	2400427	*Biomimetic pneumatic soft gripper for grasping umbrella-shaped mushrooms* - Presented by: **Yongkai Ye, College of Biosystems Engineering and Food Science of Zhejiang University, Hangzhou, Zhejiang, China;** Dongdong Du
3:35pm-3:45pm		BREAK
3:45pm	2401004	*Autonomous four-wheel drive electric vehicle for site-specific weed control* - Presented by: **James Y. Kim, USDA - ARS, Fargo, North Dakota;** James Y. Kim, Sulaymon Eshkabilov
4:00pm	2400970	*Temporal-Logic-Based Coordination for a Dual-Arm Robotic Harvesting System* - Presented by: **Keyi Zhu, Michigan State University, East Lansing, Michigan;** Kaixiang Zhang, Kyle Lammers, Pengyu Chu, Zhaojian Li, Renfu Lu

4:15pm	2400454	*A Digital Twin-Enabled Approach for Precision Weed Management in Specialty Crops using a 4-DoF Robotic System* - Presented by: **Muneeb Elahi Malik, University of Georgia, Athens, Georgia;** Md Sultan Mahmud
4:30pm	2401413	*Development of a machine vision system and an end-effector for robotic apple harvesting* - Presented by: **Aakash Basnet**
4:45pm	2400809	*R2B2 Project: Design and Development of a Low-cost and Efficient Semi-Autonomous UGV For Row Crop Monitoring* - Presented by: **James Kemeshi, South Dakota State University, Brookings, South Dakota**

232 Advances in Soil-Plant-Machine Dynamics and Systems Simulation

Tuesday, 7/30/2024 2:30pm - 5:00pm

Location: Orange County 2

Technical Community: MS - Machinery Systems

Session Type: Oral Technical Session

Description: This session is focused on the use of modeling and simulation to investigate interactions at the interface of soil, plant, and machine associated with machine systems.

Organizer: Mehari Tekeste, Iowa State University

Sponsoring Committee: MS-45 Soil-Plant-Machine Dynamics **Co-Sponsors:** MS-23/7/2 Forage & Biomass Engineering, MS-48 Specialty Crop Engineering, MS-58 Agricultural Equipment Automation

Moderators: Mehari Tekeste, Iowa State University

Start Time	Abstract ID	*Presentation Title* – Presenter; Co-authors
2:35pm	2400568	*Agricultural performance evaluation of the all-wheel-drive e-axle type electric tractor* - Presented by: **Seung-Yun Baek, Chungnam National University, Daejeon, South Korea;** Jong-Dae Park, Cheol-Woo Yang and Yong-Joo Kim
2:50pm	2400439	*An Artificial Intelligence-Based Approach for Predicting Contact Characteristics of Tube-Type and Tubeless Tyres* - Presented by: **Rajesh Yadav, Indian Institute of Technology Kharagpur, Kharagpur, West Bengal, India;** Hifjur Raheman
3:05pm	2400453	*Development of Soil Health Dashboard for Soil Tillage Quality Assessment as an Essential Component of Tillage Tool Automation* - Presented by: **Christopher Dean, The Ohio State University, Columbus, Ohio;** A.A. Klopfenstein, C.J. Tkach, and S.A. Shearer
3:20pm	2400418	*Standardization of Soil Compaction Studies for Tractive Devices Design, Traffic Management, Soil Health and Crop Yield* - Presented by: **Mehari Z. Tekeste, Soil Machine Dynamics Laboratory, Iowa State University, Ames, Iowa;** Diogenes, L. Antille; Dickin, Edward; Godwin, Richard; Hanna, H. Mark; Bernhardt, Heinz; Kaczorowska-Dolowy, Magdalena; Klopfenstein, Andrew; Misiewicz, Paula; Shearer, Scott; Way, Thomas R.; White, David; Chen, Ying; Shaheb, Rayhan D.
3:35pm-3:45pm		BREAK
3:45pm	2401043	*Study on Development of a Workload Prediction Model based on Tillage Type for Rotary Tillage Operations* - Presented by: **Bomin Bae, Pusan National University, Miryang, Gyeongsangnam-do, Republic of Korea;** Yeon-Soo Kim, Se-O Seo, Yong-Joo Kim
4:00pm	2400444	*Mapping system for soil physical properties-tractor performance* - Presented by: **Yi-Seo Min, Kyungpook National University, Buk-gu, Daegu, Republic of Korea;** Wan-Soo Kim
4:15pm	2400566	*A Comparative Study between Constant-rate IoT-enabled Penetrometer and Conventional Penetrometer for Soil Compaction Assessment* - Presented by: **Vijay Mahore, Agricultural and Food Engineering Department Indian Institute of Technology Kharagpur, Kharagpur, West Bengal, India;** Peeyush Soni
4:30pm	2401442	*Simulating road conditions for agricultural vehicle testing* - Presented by: **Brian Steward;** Ario Kordestani, Stuart Birrell, Eric Jacobson, Anna Lammi

211 AI in Field Applications

Tuesday, 7/30/2024 2:30pm - 5:00pm

Location: Orange County 1
Technical Community: MS - Machinery Systems
Session Type: Oral Technical Session
Description: Artificial intelligence (AI) is finding increased use in agricultural field applications. This session highlights the use of AI in machinery systems for agricultural production.
Organizer: Andres Ferreyra, Syngenta
Sponsoring Committee: MS-54 Precision Agriculture
Moderators: Andres Ferreyra, Syngenta

Start Time	Abstract ID	*Presentation Title* – Presenter; Co-authors
2:35pm	2401172	*Leveraging Deep Learning for Multi-Step-Ahead Greenhouse Microclimate Prediction* - Presented by: **Mike Ojo**
2:50pm	2400693	*LeafGuard AI: Innovating Corn Health with Raspberry Pi-Powered Site-Specific Disease Detection* - Presented by: **Astina Joice, Doctoral graduate research assistant, Fargo, North Dakota;** Talha Tufaique, Humeera Tazeen, Igathinathane Cannayen
3:05pm	2400402	*Edge AI-enabled Cutting Point Localization for Robotic Harvesting of Hydroponic Lettuce* - Presented by: **Al Bashir;** Mike Ojo, Yaqoob Majeed, Azlan Zahid
3:20pm	2400092	*Optimizing Cotton Emergence Uniformity Under Different Environmental Conditions Using Multi-Year Remote Sensing Data* - Presented by: **Fengkai Tian, University of Missouri - Columbia, Columbia, Missouri;** Jianfeng Zhou, Tianqi Yao
3:35pm-3:45pm		BREAK
3:45pm	2400287	*Enhancing Agricultural Feedback Analysis through VUI and Deep Learning Integration* - Presented by: **Sahaj Kaushal, Kansas State University, Manhattan, Kansas;** Ajay Sharda
4:00pm	2400963	*Optimizing Precision Herbicide Application in Apple Orchards: A YOLO-CBAM Based Decision-Making Algorithm for Weed Detection and Classification* - Presented by: **Lawrence Arthur;**
4:15pm	2400338	*AI-based Cloud-Infused Serverless Advisory System to Maximise Fuel Efficiency and Field Performance of the Tractor for Optimum Tillage* - Presented by: **Harsh Nagar, Agricultural and Food Engineering Department, Indian Institute of Technology Kharagpur, West Bengal, India;** Rajendra Machavaram, Peeyush Soni
4:30pm	2400095	*Real-time Grid Mapping Algorithm for Perceiving Canopy Contour of Hybrid Rice* - Presented by: **Huaiqu Feng;** Huaiqu Feng, Te Xi, Dunhong Yang, Yulei Pan, Bo Chen, Rongkai Shi, Yongwei Wang, Jun Wang

234 Machinery Systems for Crop Production

Tuesday, 7/30/2024 2:30pm - 5:00pm

Location: Grand Ballroom A
Technical Community: MS - Machinery Systems
Session Type: Oral Technical Session
Description: General session focusing on equipment and machinery systems for crop production.
Organizer: Mark Siemens, University of Arizona
Sponsoring Committee: MS-49 Crop Production Systems, Machinery, and Logistics
Moderators: Mark Siemens, University of Arizona

Start Time	Abstract ID	*Presentation Title* – Presenter; Co-authors
2:35pm	2400703	*Performance Sensitivity Analysis of Ballast and Machine Speed Configurations on a Large-scale Tractor Chassis Suspension System* - Presented by: **Benjamin Means, Iowa State University, Ames, Iowa;** Dr. Bailey Adams, Andrew Hansen
2:50pm	2400929	*Utilizing super capacitors to improve battery performance in electric mobile machinery* - Presented by: **Joseph Dvorak, University of Kentucky, Lexington, Kentucky**
3:05pm	2401096	*Durability Analysis of Hydraulic Components of a Tractor-Mounted Potato Harvester* - Presented by: **Md Abu Ayub Siddique, Dept. of Biosystems Machinery Engineering, Chungnam National University, Daejeon, Republic of Korea;** Hyeon-Ho Jeon, Jong Dae Park, Minjae Park, Yong-Joo Kim

3:20pm	2400633	*Design and research of anti-winding device for sugarcane top mixtures machine* - Presented by: **Shaochun Ma, China Agricultural University, Beijing, China**
3:35pm-3:45pm		BREAK
3:45pm	2400423	*Evaluation of Load Factors for Tractor, Combine Harvester and Cultivator* - Presented by: **Si-Eon Lee, Kyungpook National University, Daegu, Korea;** Yong-Joo Kim, Wan-Soo Kim
4:00pm	2400433	*Analysis of Emission Factor of Agricultural Machinery using Engine Load Factor by working conditions* - Presented by: **Young-Woo Do, Department of Smart Bio-Industrial Machinery Engineering, Kyungpook National University, Daegu, Republic of Korea;** Yong-Joo Kim, Wan-Soo Kim
4:15pm	2401106	*Research on The Hydraulic System of Self-Propelled Machine with Square Press and Wrapper* - Presented by: **Min-Jae Park, Dept. of Biosystems Machinery Engineering, Chungnam National University, Daejeon, Republic of Korea;** Cheol-Woo Yang, Min-Jong Park, Md Abu Ayub Siddique, Yong-Joo Kim

235 Recent Developments in Crop Protection Product and Fertilizer Unmanned Applications

Tuesday, 7/30/2024 2:30pm - 5:00pm

Location: Grand Ballroom B

Technical Community: MS - Machinery Systems

Session Type: Oral Technical Session

Description: UAS has the potential of increasing the resolution of agricultural data and the efficiency of agricultural data collection operations. Additionally, UAS crop protection product or fertilizer applications could address the need of niche applications and substantially optimize or improve the efficiency of the operations. This session hosts UAS research in enhancing crop protection product and fertilizer applications.

Organizer: Rex Ruppert, CNH Industrial

Sponsoring Committee: MS-23/6 Application Sys & US TAG ISO TC23/SC6 **Co-Sponsors:** MS-60 Unmanned Aerial Systems

Moderators: Rex Ruppert, CNH Industrial

Start Time	Abstract ID	*Presentation Title* – Presenter; Co-authors
2:35pm	2400345	*Determination of canopy characteristics of ornamental trees with drone technology for precision spraying using an unsupervised segmentation approach* - Presented by: **Aleena Rayamajhi, School of Environmental, Civil, Agricultural, and Mechanical Engineering, College of Engineering, University of Georgia, Athens, Georgia;** Aleena Rayamajhi, Hasan Jahanifar, Md Sultan Mahmud
2:50pm	2400544	*Assessment of Spray Patterns and Efficiency of an Unmanned Sprayer Used in Planar Growing Systems* - Presented by: **Chenchen Kang;** Chenchen Kang, Long He, Heping Zhu
3:05pm	2401051	*Performance Evaluation of a Solar Energy Operated Unmanned Liquid Chemical Applicator* - Presented by: **Sunny Kumar Sharma, IIT Kharagpur, Begusarai, Bihar, India;** Hifjur Raheman, Rahul K Sundaram, Priyabrata Pradhan
3:20pm	2400614	*Rate and Uniformity Assessment of Dry Material Applications with Unmanned Aerial Systems (UAS)* - Presented by: **Simerjeet Virk, Auburn University, Auburn, Alabama;** Joao Santos, Coleman Byers, Ravi Meena
3:35pm-3:45pm		BREAK
3:45pm	2401209	*An update on developing a prototype of intelligent unmanned aerial application system* - Presented by: **Md Didarul Islam, Department of Biological Systems Engineering, University of Nebraska-Lincoln, Lincoln, Nebraska;** Md Didarul Islam, Kevin Steele, Yeyin Shi, Santosh Pitla, Joe Luck, Yufeng Ge, Kuan Zhang, Benjamin Riggan, Amit Jhala, Stevan Knezevic
4:00pm	2400640	*UAS Sprayer Pattern Evaluation Under Different Operational Parameters* - Presented by: **Kevin Steele, University of Nebraska-Lincoln, Lincoln, Nebraska;** Milos Zaric, Jae Sung Park, Joe Luck, Yeyin Shi
4:15pm	2400830	*Spray Deposition and In-Swath Uniformity of Unmanned Aerial Application Systems (UAAS) equipped with Rotary Atomizers at Varying Operational Parameters* - Presented by: **Coleman Byers, University of Georgia, Athens, Georgia;** Simerjeet Virk, Ravi Meena, Glen Rains
4:30pm	2401487	*Design and Development of spraying system for under canopy rover and its integration with computer vision system* - Presented by: **Nirajan Piya**

236 Advances in Irrigation Management: Climate Change and Adaptation Strategies

Tuesday, 7/30/2024 2:30pm - 5:00pm

Location: Platinum 8

Technical Community: NRES - Natural Resources & Environmental Systems

Session Type: Oral Technical Session

Description: Advances in irrigation management, particularly irrigation systems such as mobile drip, drip irrigation, center pivot irrigation, soil moisture sensing techniques, and other sensors used for irrigation management, have shown a potential to improve crop water use efficiency. Adopting these technologies is essential for optimizing water usage, reducing wastage, reducing leaching, and promoting healthier plant growth, leading to increased crop yields and enhanced agricultural productivity.

Moderators: Vasudha Sharma, University of Minnesota

Start Time	Abstract ID	*Presentation Title* – Presenter; Co-authors
2:35pm	2401149	*Water and Nitrogen Management Effects on Soil CO2 Emissions from Semi-Arid Grain Sorghum Cultivation* - Presented by: **Atikur Rahman, Cooperative Agricultural Research Center, College of Agriculture, Food, and Natural Resources, Prairie View A&M University, Prairie View, Texas;** Anoop Veettil, Malani Clark, Binita Thapa, Almoutaz El Hassan, Ripendra Awal, Ali Fares
2:50pm	2400870	*Field-scale greenhouse gas emissions in Mid-South rice-soybean rotation* - Presented by: **Michele L Reba, USDA-ARS-Delta Water Management Research Unit, Jonesboro, Arkansas;** Colby Reavis, Yin-Lin Chiu, Joseph Massey
3:05pm	2400743	*Sensitivity of canopy temperature-based thermal indices to soil water dynamics in deficit irrigated maize under semi-arid environments* - Presented by: **Hope Njuki Nakabuye, Texas A&M AgriLife Research, Lubbock, Texas;** Daran Rudnick, Kendall DeJonge, Abia Katimbo, Jiaming Duan
3:20pm	2400580	*Comparative Analysis of Agricultural Water Management in California and Korea: Current Status and Future Perspectives* - Presented by: **Jongwon Do, Korea Rural Community Corporation, Ansan, South Korea;** Jongwon Do, Mingi Jeon, Wonho Nam, Hyungjin Shin, Heesung Lim, Kwangya Lee, Isaya Kisekka
3:35pm-3:45pm		BREAK
3:45pm	2400163	*Variable Thermal Crop Water Stress Index Reference Temperatures for Irrigated Spring Malt Barley in a Semi-Arid Climate* - Presented by: **King, Bradley A.;** Rogers, Christopher W., Tarkalson, David D., Bjorneberg, David, J.
4:00pm	2400554	*Reclaimed Water as an Alternative Water Source for Florida Citrus Production* - Presented by: **Neus Alcon-Bou, University of Florida, Fort Pierce, Florida;** Sandra Guzman, Lorenzo Rossi
4:15pm	2400874	*Fine-Scale Spatial Assessment of Climate Change Impacts on Maize Productivity and Water Use Dynamics in the US Great Plains* - Presented by: **Ikenna Onyekwelu, Kansas State University, Manhattan, Kansas;** Vaishali Sharda, Sam Zipper, Stephen Welch, Xiaomao Lin
4:30pm	2400711	*Adapting deficit irrigation management strategies to extreme climate conditions* - Presented by: **Kelechi Igwe, Carl and Melinda Helwig Department of Biological and Agricultural Engineering, Kansas State University, Manhattan, Kansas;** Vaishali Sharda, Trevor Hefley
4:45pm	2400265	*Assessment of Corn Irrigation and Nitrogen Needs Through UAV-Based Multispectral and Thermal Remote Sensing of Nitrogen and Water Status* - Presented by: **Ayoub Kechchour, Ph.D Student Precision Agriculture Center University of Minnesota, Saint Paul, Minnesota;** Vasudha Sharma, Yuxin Miao, Lorena lacerda

237 Circular Manure and Agricultural Byproducts Management

Tuesday, 7/30/2024 2:30pm - 5:00pm

Location: Grand Ballroom F

Technical Community: NRES - Natural Resources & Environmental Systems

Session Type: Oral Technical Session

Description: This session will include talks on technologies, strategies, and modeling/simulation studies to enhance the circularity of manure, agricultural byproducts.

Organizer: Femi Alege, USDA - ARS
Sponsoring Committee: NRES-27 Ag By-products & Animal Mortality Management Systems
Moderators: Linda Schott, University of Idaho; Richard Stowell, University of Nebraska - Lincoln

Start Time	Abstract ID	*Presentation Title* – Presenter; Co-authors
2:35pm	2400479	*Valorization of Poultry Slaughterhouse Solid Wastes into Animal Feed Using Black Soldier Fly Larvae Cultivation* - Presented by: **Saravanan Ramiah Shanmugam, Auburn, Alabama;** Brendan Higgins, Dianna Bourassa
2:50pm	2400885	*Enhancing Animal/Food Waste Management through Composting: A Comparative Analysis of Quality Improvement with Biochar/Additive* - Presented by: **Ruiji Cheng, PhD Student, College Station, TX;** Danadhi Liyanage, Amirhossein Mahdaviarab, Katayoun Pahlavanyali, Yali Zhang, Xiao Wang, Zong Liu
3:05pm	2401031	*Demonstration of A Full-Scale Pellet Mill on a California Dairy* - Presented by: **Abdolhossein Edalati;** Ian Nielsen, Allan Chio, Hamed M. El Mashad, Ruihong Zhang
3:20pm	2400967	*Impermeable manure storage covers and their impact on dairy manure and emissions* - Presented by: **Jason P. Oliver, Cornell University, PRO-DAIRY, Ithaca, New York;** Lauren Ray
3:35pm-3:45pm		BREAK
3:45pm	2400552	*Mitigating Phosphorus Runoff Risk and Enhancing Bioavailability in Dairy manure via Hydrothermal Carbonization with CaO addition* - Presented by: **Mohammad Nazrul Islam, Department of Chemical and Biological Engineering, University of Idaho, Moscow, Idaho;** Lide Chen, B Brian He
4:00pm	2401083	*Cost Benefit Analysis of a Novel Nitrogen Management System in Swine Production Farms* - Presented by: **Kristina Jones;** Mahmoud Sharara, PhD, Kelly Zering, PhD
4:15pm	2401354	*Comparison of Traditional and Rapid Testing of Biological Oxygen Demand in Meat Processing Wastewater* - Presented by: **Gregory Rouland, Department of Biosystems Engineering, Michigan State University, East Lansing, Michigan;** Steven Safferman, Younsuk Dong, Jeannine Schweihofer, Oluyemi Adetule
4:30pm	2401166	*Soil chemical properties and microbial community composition in a year-round corn production field treated with anaerobic digestate* - Presented by: **Julie Celini, Michigan State University, East Lansing, Michigan;** Yan Liu, Wei Liao, Shaney Rump
4:45pm	2401215	*Pursuing the Carbon Neutral Pig: A Holistic Approach to Mitigating Emissions in Midwestern Swine Finishing Farms* - Presented by: **Daniel Andersen**

238 Ecosystem Services – Assessment, Decision Support Tools, Funding, and Case Studies

Tuesday, 7/30/2024 2:30pm - 5:00pm
Location: Elite 1
Technical Community: NRES - Natural Resources & Environmental Systems
Session Type: Oral Technical Session
Description: Recent research, outreach, and policy efforts have heavily invested into payments for different ecosystem services such as nutrient reductions to achieve water quality goals, soil carbon sequestration and greenhouse gas accounting for climate-smart agriculture and increased agricultural productivity.
Organizer: Rebecca Muenich, University of Arkansas
Sponsoring Committee: NRES-21 Hydrology Group **Co-Sponsors:** NRES-22 Soil Erosion and Water Quality, NRES-26 Sustainable Land Resources
Moderators: Asmita Murumkar, The Ohio State University

Start Time	Abstract ID	*Presentation Title* – Presenter; Co-authors
2:35pm	2400817	*Improving Soil Health Test Data Comparability: A Cross-Sector Case Study* - Presented by: **Juliet Norton, Purdue University, Martinez, California;** Adie Pregenzer, Greg Austic, Ankita Raturi
2:50pm	2400288	*Simulating Hydrologic Responses to Grazing Practices Using Virtual Fencing* - Presented by: **Afsaneh Kaghazchi;** Afsaneh Kaghazchi, Ali Mirchi, Javier M. Osorio Leyton, Kevin Wagner, Chris Zou

3:05pm	2401418	*Building high-resolution SWAT models for conservation planning and assessment in Western Lake Erie Basin* - Presented by: **Asmita Murumkar, Assistant Professor, The Ohio State University, Columbus, Ohio;** Anna Apostel, Margaret Kalcic, Jay Martin, Vinayak Shedekar, Haley Kujawa, Lourdes Arrueta Antequera, Kevin King, Kevin Czajkowski, Kimberly Panozzo, Ishfaq Rahman
3:20pm	2401423	*Agroecosystems services modeling of conservation practices for farmers incentive program in Ohio watershed using geospatial tool and watershed model* - Presented by: **Asmita Murumkar, Assistant Professor, The Ohio State University, Columbus, Ohio;** Emmitt Higgins, Jay Martin, Margaret Kalcic, Brian Brandt, Mark Wilson
3:35pm-3:45pm		BREAK
3:45pm	2401011	*In situ soil infiltration capacity influenced by no-till, crop rotation, and cover crops in Beresford, South Dakota* - Presented by: **Ajoy Kumar Saha, University of Arkansas at Pine Bluff, Pine Bluff, Arkansas;** John McMaine
4:00pm	2400054	*Data-Driven Decision-Support Framework for Optimizing the Iowa Food-Energy-Water Nexus: A Multi-Criteria Decision-Making Approach* - Presented by: **Dr Amy Kaleita, Iowa State University, Ames, Iowa;** Júlia Brittes Tuthill
4:15pm	2400269	*A Grid-Based Modeling for Soil Organic Carbon Dynamics on Agro-ecosystems* - Presented by: **Sanghyup Lee, University of Illinois at Urbana-Champaign, Urbana, Illinois;** Maria L. Chu, Jorge A. Guzman
4:30pm	2400675	*Roles of Production Agriculture in Resilience Planning* - Presented by: **Catherine Brewer, New Mexico State University, Las Cruces, New Mexico;** Sharmin Akhter Tania, Katie Howard, Blake Atkerson, Nicholas Goeser
4:45pm	2400715	*Understanding carbon stocks under different crop management, soil and climate using observed field data and farm-scale decision tools* - Presented by: **Prasanna Oruganti;** Vinayak Shedekar, Elizabeth Hawkins, Rattan Lal, Scott Demyan, Alec Ogg, Mike Estadt, Heather Neikirk, Asmita Murumkar

239 Evaluation and Assessment of Agricultural Conservation Practices

Tuesday, 7/30/2024 2:30pm - 5:00pm

Location: Grand Ballroom J
Technical Community: NRES - Natural Resources & Environmental Systems
Session Type: Oral Technical Session
Organizer: Laxmi Prasad, University of Winconsin
Sponsoring Committee: NRES-22 Soil Erosion and Water Quality **Co-Sponsors:** NRES-23 Drainage Group, NRES-26 Sustainable Land Resources, NRES-28 Ecological Engineering
Moderators: Laxmi Prasad, University of Winconsin

Start Time	Abstract ID	*Presentation Title* – Presenter; Co-authors
2:35pm	2401378	*Simulating nutrient and sediment load and crop production from commercial cotton fields with conservation practice using apex* - Presented by: **Arjun Thapa, NC A&T State University, Greensboro, North Carolina;** Aryal, N, Reba, M.L, Teague, T.G, Payne, G, Pieri, A.
2:50pm	2401477	*Assessing the Impact of Rotational Production on Reducing Nitrate-Nitrogen Leaching* - Presented by: **Vivek Sharma, Assistant Professor, Agricultural and Biological Engineering Department, University of Florida, Gainesville, Florida;** Bibek Acharya
3:05pm	2400904	*Management practices and field characteristics that drive nutrient loss in tile drainage in eastern South Dakota* - Presented by: **Maryam Sahraei, South Dakota State University, Brookings, South Dakota;** Myranda Hentegs, John McMaine, Todd Trooien, Sushant Mehan, Kristopher Osterloh, Hossein Moradi
3:20pm	2401249	*Assessing the relationship between soil nitrogen dynamics and management practices in fields planted with cereal rye cover crop using mixed modeling approach* - Presented by: **Kushal KC, The Ohio State University, Columbus, Ohio;** Sami Khanal, Nora M. Bello, Steve W. Culman
3:35pm-3:45pm		BREAK
3:45pm	2400115	*Evaluating the impacts of nutrient management on agroecosystem sustainability* - Presented by: **Yaoze Liu, University at Albany-State University of New York, Albany, New York;** Siyu Li, Anh Nguyen, Bernard Engel, Jingqiu Chen, Dennis Flanagan

4:00pm	2401454	*Re-evaluation of Phosphorus Fertilizer BMP for Potatoes in Florida* - Presented by: **Justin Schabow, Agricultural and Biological Engineering Department, University of Florida, Southwest Florida Research and Education Center, Immokalee, Florida;** Vijay P. Santikari, Ibukun T. Ayankojo, Mehran Homayounfar, João Cardoso de Souza Jr, Aleyda Maritza Acosta Rangel, Sanjay Shukla, Shinsuke Agehara
4:15pm	2400003	*Predicting the discharge reducing performance of controlled drainage under future climate conditions* - Presented by: **Ehsan Ghane**
NO-SHOW	2400445	*Characterization of soil pores in strip-tilled and conventionally-tilled soil using X-ray computed tomography* - Presented by: **Preetika Kaur**
4:45pm	2400139	*Evaluation of the Effects of Potential Landuse Changes at a Watershed Scale* - Presented by: **Prem Parajuli**
5:00pm	2400599	*Performance and future implications of Automated Drainage Water Management* - Presented by: **Vinayak Shedekar**

240 Extreme Event Hydrologic and Water Quality Modeling

Tuesday, 7/30/2024 2:30pm - 5:00pm

Location: Platinum 1

Technical Community: NRES - Natural Resources & Environmental Systems

Session Type: Oral Technical Session

Description: Extreme events induced by climate change, including heavy precipitation, wildfires, droughts, frosts, storms, and rising sea levels in coastal areas, are profound in many parts of the globe and may pose a serious threat to water quality. For example, more intense and frequent precipitation events due to climate change increase soil erosion, which may significantly degrade water quality through increased turbidity and lead to deterioration of aquatic ecosystem health. Modeling-based approaches can help scientists understand and project the impact of extreme events on water quality. This proposed session will provide new scientific knowledge that can be employed by policymakers and practitioners to ameliorate the water quality impacts of extreme events.

Organizer: Jasmeet Lamba, Auburn University

Sponsoring Committee: NRES-22 Soil Erosion and Water Quality **Co-Sponsors:** NRES-21 Hydrology Group, NRES-23 Drainage Group, NRES-26 Sustainable Land Resources, NRES-28 Ecological Engineering

Moderators: Jasmeet Lamba, Auburn University; Hemendra Kumar, Auburn University

Start Time	Abstract ID	*Presentation Title* – Presenter; Co-authors
2:35pm	2400741	*Assessing Future Rainfall Variability and Drought Risks: An Integrated Approach with Socioeconomic Pathways and Climate Modeling* - Presented by: **Majid Mirzaei, Department of Environmental Science and Technology, University of Maryland, College Park, Maryland;** Fatemehsadat Mortazavizadeh, Ritesh Karki, Adel Shirmohammadi, Puneet Srivastava
2:50pm	2400840	*Developing future design storms using climate change projections to evaluate existing stormwater networks* - Presented by: **Fouad Jaber;** Bardia Heidari, Samantha Murray, Haoyu Niu, Nicholas Duffield
3:05pm	2400742	*Climate Change Effects on the Spatial and Temporal Distribution of Extreme Precipitation in Maryland* - Presented by: **Majid Mirzaei, Department of Environmental Science and Technology, University of Maryland, College Park, Maryland;** Alferdo Ruiz-Barradas, Lars Olson, Masoud Negahban-Azar, Adel Shirmohammadi
3:20pm	2400994	*Evaluating the performance of gridded in-situ and reanalysis precipitation and temperature data products for the Chesapeake Bay Watershed of the mid-Atlantic US* - Presented by: **Ritesh Karki;** Puneet Srivastava
3:35pm-3:45pm		BREAK
3:45pm	2400983	*Impacts of Seawater Flooding on Soil: Insights from Greenhouse Experiment and Modeling* - Presented by: **Haimanote Bayabil;** Niguss Hilegaw, Girma Awoke, Mulatu Berihun, Getachew Kefelegn, Yuncong Li
4:00pm	2401532	*Improving the Resiliency of Storm Water Control Measures in Anticipation of Climate Change* - Presented by: **Naomi Pitts, North Carolina State University, Raleigh, North Carolina**

4:15pm	2401518	*Satellite-Based Rainfall Datasets and Autocalibration Techniques' Effects on SWAT+ Flow Prediction* - Presented by: **Randall Etheridge, East Carolina University, Greenville, North Carolina;** Mahesh Tapas, Randall Etheridge, Thanh-Nhan-Duc Tran, Manh-Hung Le, Brian Hinckley, Van Tam Nguyen, Venkataraman Lakshmi
4:30pm	2400359	*Potential Impacts of Climate Change on Groundwater Level Variations in the Mississippi Delta* - Presented by: **Mohsen Nekooei, Department of Agricultural and Biological Engineering, Mississippi State University, Starkville, Mississippi;** Joel O. Paz

241 Nutrient Removal, Recovery, and Recycle: Manure and Wastewater Treatment-LIGHTNING TALKS

Tuesday, 7/30/2024 2:30pm - 5:00pm

Location: Elite 2

Technical Community: NRES - Natural Resources & Environmental Systems

Session Type: Lightning Oral Technical Session

Description: Nutrient recycling in water and wastewater systems are an important part of sustainable management of watershed management, agricultural management, and production systems. Novel approaches for recovery and reuse of nutrients in aquatic waste streams is fundamental for future sustainability in these systems.

Organizer: Rachel Schlais, USDA NRCS

Sponsoring Committee: NRES-28 Ecological Engineering **Co-Sponsors:** NRES-21 Hydrology Group, NRES-22 Soil Erosion and Water Quality, NRES-23 Drainage Group, NRES-25 Streams, Reservoirs, and Wetlands Group, NRES-262 Onsite Water Reuse

Moderators: Rachel Schlais, USDA NRCS; Eban Bean, University of Florida

Start Time	Abstract ID	*Presentation Title* – Presenter; Co-authors
2:35pm	2400491	*A combined electrocoagulation and electrodialysis process for decentralized treatment of high-strength wastewater* - Presented by: **Blake Smerigan, Michigan State University, East Lansing, Michigan;** Benjamin Thomas, Sibel Uludag-Demirer, Wei Liao
2:42pm	2400022	*Pollutants removal from anaerobically digested dairy wastewater by electro-oxidation process: A RSM optimization and modeling* - Presented by: **Ashish Kumar Das, PhD Student, Environmental Science, University of Idaho, Moscow, Idaho;** Ashish Kumar Das, Arif Reza, Lide Chen
2:49pm	2400023	*Ammonia removal from dairy waste stream using combined chemical coagulation and photoelectro-fenton process: A RSM and ANN based optimization and modeling* - Presented by: **Ashish Kumar Das, PhD Student, Environmental Science, University of Idaho, Moscow, Idaho;** Ashish Kumar Das, Lide Chen
2:56pm	2400844	*Identifying and Characterizing Animal Wastewater Lagoons via Satellite Remote Sensing* - Presented by: **Amirhossein Mahdaviarab, Graduate student Texas A&M University, College Station, Texas;** Ruiji Cheng, Danadhi Liyanage, Nathan Kincaid, Ruiren Zhou, Yuanhong Li, Xiao Wang, Zong Liu
3:03pm	2401486	*Effect of Acid-mediated Pre-treatment and Seeding for Struvite Precipitation from Anaerobic Digested Poultry Manure Using an Electrolytic Reactor* - Presented by: **Robinson Junior Ndeddy Aka, University of Idaho, Moscow, Idaho;** Md. Mokter Hossain, Alia Nasir, Yuanhang Zhan, Xueyao Zhang, Jun Zhu, Zhi-Wu Wang, Sarah Wu
3:10pm	2401153	*Bacterial, Fungal, and Viral Population Dynamics of activated sludge wastewater treatment* - Presented by: **Emilia M Emerson, Michigan State University, East Lansing, Michigan;** Wei Liao, Yan (Susie) Liu, Joan B. Rose
3:17pm	2400511	*Technological Development of a Continuous-flow System for Hydrochar Production from Dairy Manure* - Presented by: **Imran Hussain Mahdy, University of Idaho, Moscow, Idaho;** B.Brian He
3:24pm	2400494	*Hydrothermal carbonization of poultry litter for production of high-quality hydrochar and recovery of nutrients and minerals* - Presented by: **Jewel Das, North Carolina Agricultural and Technical State University, Greensboro, North Carolina;** Dorcas D. Amoh, Maurice Mayo, Lijun Wang

3:31pm	2400523	*Effect of Biochar on Methane production and Odor Reduction During Anaerobic Digestion of DAF solids collected from Poultry Slaughterhouse Facility in Alabama* - Presented by: **Navid Farahmandzad, Biosystems engineering Auburn university Alabama, Auburn, Alabama;** Saravanan Ramiah Shanmugam, Brenden Higgins
3:38pm-3:50pm		BREAK
3:50pm	2400682	*Silver-Enhanced Hemp Fiber Mats: Eco-Friendly Solution for Phosphate Adsorption* - Presented by: **Fidelina T. Flores, University of Illinois Urbana-Champaign, Urbana, Illinois;** Gopu R. Nair, Jorge A. Guzman, Maria L. Chu
4:17pm	2400900	*Analysis of Anaerobic Digester Methane Production Efficiency and Heating Covered Lagoons* - Presented by: **Luke Soko, Iowa State University, Ames, Iowa;** Dr. Dan Andersen
4:24pm	2401080	*Swine Manure Valorization via Bio-fixation: A Review* - Presented by: **Kristina Jones;** Mahmoud Sharara, PhD

242 Understanding the Agro-Hydrologic Effects of Regenerative Agricultural Practices

Tuesday, 7/30/2024 2:30pm - 5:00pm

Location: Gold Key I/II

Technical Community: NRES - Natural Resources & Environmental Systems

Session Type: Oral Technical Session

Description: Regenerative agricultural practices are a potential strategy for sustainable agricultural intensification with lower environmental and socio-economic impacts and more resilient agro-ecosystems. Understanding the long-term effects of the regenerative practices at field level to small watershed/regional scale is essential to establish a foundation for policymaking that facilitate the adoption of regenerative agricultural practices.

Organizer: Rebecca Muenich, University of Arkansas

Sponsoring Committee: NRES-21 Hydrology Group **Co-Sponsors:** NRES-22 Soil Erosion and Water Quality

Moderators: Ali Mirchi, Oklahoma State University; Kasra Khodkar, Oklahoma State University

Start Time	Abstract ID	*Presentation Title* – Presenter; Co-authors
2:35pm	2400702	*Modeling the Field Scale Effects of Regenerative Agricultural Practices at Altus, Oklahoma* - Presented by: **Navdeep Kaur Saasan, Ph.D. Student, Department of Biosystems and Agricultural Engineering, Oklahoma State University, Stillwater, Oklahoma;** Ali Mirchi, Zaichen Xiang, Kevin Wagner, Srinivasulu Ale, Luca Doro, Jack Edwards
2:50pm	2400877	*Challenges and Opportunities for Adopting Pasture Cropping as a Regenerative Practice on Grazinglands of the Texas Central Plains* - Presented by: **Srinivasulu Ale, Texas A&M AgriLife Research, Vernon, Texas;** Bhupinder Singh, Steven Dowhower, Sayantan Samanta, Hardev Singh, Arun Bawa, Paul DeLaune, Nuria Gomez-Casanovas
3:05pm	2401211	*Field-Scale Estimation of Soil Hydraulic Properties in Cover versus Non-Cover Cropped Orchards through Integrated Cosmic Ray and HYDRUS Modeling* - Presented by: **Srinivasa Rao Peddinti, University of California Davis, Davis, California;** Charlie Chen, Felix Ogunmokun, Anish Sapkota, Roby Matthew
3:20pm	2401419	*When Soil Carbon Isn't Everything: Impact of Regenerative Practices on Soil Health Metrics in the Semi-Arid West* - Presented by: **Linda Schott, University of Idaho, Twin Falls, Idaho;** Jenifer Yost, Ana Agin, Davey Olsen, April Leytem, Rob Dungan, Amber Moore, Courtney Cosdon, Jackie Jamison, Kevin Kruger, Erin Brooks, Haytham Salem
3:35pm-3:45pm		BREAK
3:45pm	2400027	*Investigating Ecosystem Services in Perennial Groundcover (PGC) Systems through Rain Simulator Experiments and Modeling* - Presented by: **Olowoyeye Oluwatuyi, Iowa State University, Ames, Iowa;** Kaleita, Amy
4:00pm	2400890	*Translating Soil Carbon Sequestration into Agrohydrological Outcomes Across a Spectrum of Aridity and Soil Texture* - Presented by: **Dinesh Gulati, Graduate Student, The Pennsylvania State University, State College, Pennsylvania;** Meetpal S. Kukal
4:15pm	2400863	*Simulated effects of no-tillage and cover cropping on crop production and ecosystem service benefits in the Upper Middle-Brazos-Millers Watershed* - Presented by: **Rene Francis Simbi Mvuyekure, Texas A&M University, College Station, Texas;** Sayantan Samanta, Rene Francis Simbi Mvuyekure, Srinivasulu Ale, Paul DeLaune, Ali Mirchi, Kevin Wagner

4:30pm	2400555	*Simulated Effects of Rye Cover Crop Termination Date on Cotton Production in the Southern High Plains of Texas* - Presented by: **Hardev Singh, Department of Biological and Agricultural Engineering, Texas A&M University, College Station, Texas;** Sayantan Samanta, Srinivasulu Ale, Rene Francis Simbi Mvuyekure, Katie L. Lewis, Joseph A. Burke, Christopher Cobos, Rabi Mohtar
4:45pm	2400403	*Simulating Watershed Scale Effects of Regenerative Agricultural Practices on Hydrology and Water Quality* - Presented by: **Rene Francis Simbi Mvuyekure, Texas A&M University, College Station, Texas;** Srinivasulu Ale, Sayantan Samata, Terry Gentry, Paul DeLaune, Rabi Mohtar

243 Water – Energy – Food Nexus and Sustainable Development

Tuesday, 7/30/2024 2:30pm - 5:00pm

Location: Elite 3

Technical Community: NRES - Natural Resources & Environmental Systems

Session Type: Oral Technical Session

Description: The Water – Energy – Food Nexus has emerged as a useful platform to quantify interlinkages of these primary resources and explore synergies among them. This session will highlight application of this system of systems towards sustainable development. It showcases advances and applications of the nexus to various sustainable developments issues around the world.

Organizer: Rebecca Muenich, University of Arkansas

Sponsoring Committee: NRES-21 Hydrology Group **Co-Sponsors:** ASE-16 Engineering for Sustainability

Moderators: Rabi Mohtar, Texas A&M; Bassel Daher, Texas A&M

Start Time	Abstract ID	*Presentation Title* – Presenter; Co-authors
2:35pm	2401430	*Biofertilizers and Bioplastics from Anaerobically Digested Food Waste* - Presented by: **Hamed El Mashad;** Abdolhossein Edalati, Ruihong Zhang
2:50pm	2400737	*Stakeholder-Informed Energy, Environment, and Cost Assessment for Postharvest Technology for Subsistence Maize Farmers in Arusha & Kilimanjaro Regions Tanzania* - Presented by: **Jaden Tatum, Ohio State University, Columbus, Ohio;** Ajay Shah
3:05pm	2400726	*Magnesium-iron doped biochar for simultaneous adsorption of phosphate and ammonium ions from aqueous solution* - Presented by: **Sushil Adhikari;** Bijoy Biswas, Hossein Jahromi, Allen Torbert, John Linhoss, Jasmeet Lamba
3:20pm	2400199	*A Full-Factorial Study on Fish Tank Illumination and System Decoupling in Aquaponic* - Presented by: **Shima Rezaei, Department of Biosystems Engineering, Auburn University, Auburn, Alabama;** Brendan Higgins, David Cline, Daniel Wells, Grace Palenapa, Gift Bender, Maddie Spoor, Rachel Schorer, Dative Niyonizeye, Matthew Rud, Julia Kullander
3:35pm-3:45pm		BREAK
3:45pm	2400694	*Nutrient recovery from HTL-AP through electrolysis with added salt* - Presented by: **Barbara Camila Bogarin Cantero, Department of Agricultural and Biological Engineering, University of Illinois, Urbana Champaign, Illinois;** Paul Davidson, Marcin Warzecha
4:00pm	2400224	*Trophic upgrading of wastewater microalgae using aquatic crustaceans for sustainable aquafeed production* - Presented by: **Qichen Wang**
4:15pm	2400621	*Incorporating Policy Programs into the Iowa Food-Energy-Water Systems* - Presented by: **Carolyn White**

244 Water Quality Challenges in Urban Environment

Tuesday, 7/30/2024 2:30pm - 5:00pm

Location: Platinum 7

Technical Community: NRES - Natural Resources & Environmental Systems

Session Type: Oral Technical Session

Description: Due to increased urbanization, cities have issues related to water quality, flooding, water supply and streambank erosion. Many water quality issues are from emerging contaminants such as pharmaceuticals and personal care products. Green infrastructure helps solve these environmental issues through old and new methods. This session will include and assess innovative ways to improve environmental issues using green infrastructure.

Organizer: Tiffany Messer, University of Kentucky

Sponsoring Committee: NRES-25 Streams, Reservoirs, and Wetlands Group **Co-Sponsors:** NRES-28 Ecological Engineering

Moderators: Andrea Ludwig, University of Tennessee; Emine Fidan, University of Tennessee

Start Time	Abstract ID	*Presentation Title* – Presenter; Co-authors
2:35pm	2400717	*Development of an Urban Watershed Modeling Framework for Arid Regions Using SWAT* - Presented by: **Arghajeet Saha, University of Arkansas, Fayetteville, Arkansas;** Arghajeet Saha, Minhazul-Islam, Shin-Ah Lee, Hector Fajardo, Rebecca Muenich, Stevan Earl, Dan Obeneour, Elise Morrison, Natalie Nelson, Paul Westerhoff
2:50pm	2401255	*Examining the role of sediment in shaping internal phosphorus dynamics within urban coastal stormwater ponds in South Carolina* - Presented by: **Morolake Fatunmbi, Gradaute Student, Clemson University, South Carolina;** Debabrata Sahoo
3:05pm	2401049	*Saltwater intrusion assessment of community water systems from selected rural coastal areas in Davao del Sur* - Presented by: **Mark Jude F. Trondillo, Davao del Sur State College, Digos City, Davao del Sur, Philippines;** James Phil D. Flores, Kris Kristofferson T. Tan, Larra Mae B. Testado, Hazel Hannah Yuga
3:20pm	2400490	*Optimal Hydraulic Loading Ratio for Bioswale Design* - Presented by: **Erin Cartner, North Carolina State University, Raleigh, North Carolina;** Molly Landon, William F. Hunt
3:35pm-3:45pm		BREAK
3:45pm	2400355	*A framework of simulating filtering structural sediment perimeter barriers using vfsmod* - Presented by: **Yufan Zhang, Texas A&M AgriLife, Dallas, Texas;** Rabin Bhattarai
4:00pm	2400800	*Determining the Potential of Stormwater Control Measures to Limit the Spread of Bacillus anthracis: Results from Simulated Runoff Testing with Tracer Spores* - Presented by: **Kathryn Boening-Ulman, The Ohio State University, Columbus, Ohio;** Ryan Winston
4:15pm	2401179	*Modeling permeable pavement hydrology with DRAINMOD-Urban* - Presented by: **Toni Chinchar, The Ohio State University, Columbus Ohio;** Toni Chinchar, Ryan Winston, Whitney Pagan, Vinayak Shedekar
4:30pm	2400228	*Smarter stormwater: Harnessing RTC and IoT for urban stormwater management* - Presented by: **Savannah A. Roth, North Carolina State University, Raleigh, North Carolina;** Vinicius J. Taguchi, William F. Hunt
4:45pm	2400605	*Sensitivity analysis of a water quality model for simulating harmful algal blooms* - Presented by: **Anna Linhoss**
5:00pm	2400483	*Public Awareness of Stream Restoration Projects* - Presented by: **Jena Smolko**

245 Food and Medicinal Plant Production in Indoor Environments

Tuesday, 7/30/2024 2:30pm - 5:00pm

Location: Platinum 9

Technical Community: PAFS - Plant, Animal, & Facility Systems

Session Type: Oral Technical Session

Description: This session will include research presentations from researchers, educators, and industry experts to delve into advanced indoor cultivation methods for food and medicinal plant production.

Organizer: Phillipe Addo, McGill University

Sponsoring Committee: PAFS-30 Plant Systems Group **Co-Sponsors:**

Moderators: Phillipe Addo, McGill University; Mark Lefsrud, McGill University

Start Time	Abstract ID	*Presentation Title* – Presenter; Co-authors
2:35pm	2401445	*Detection of Calcium Deficiency in the Growing Stage of Lettuce using Computer Vision* - Presented by: **Md Shamim Ahamed, University of California Davis, Davis, California;** Zhian Li, Saeed Karimzadeh, Alise Chavanapanit, Md Shamim Ahamed
2:50pm	2400628	*Technologies for Assessing Salt-Tolerant Genotypes of Brassica in Hydroponics* - Presented by: **Melanie J. Correll, University of Florida, Gainesville, Florida;** Jean Pompeo, William Hammond, Raghupathy Karthikeyan, Gary Amy, Elias Basil, Ray Huffaker, Haimanote Bayabil

3:05pm	2400399	*Optimal Growth Conditions for Lettuce in Indoor Farming: Evaluating CO2 Levels and Light Treatments for Enhanced Photosynthesis* - Presented by: **Oluwafemi Dare Adaramola, McGill University, Department of Bioresource Engineering, Sainte-Anne-de-Bellevue, Quebec, Canada;** Oluwafemi Dare Adaramola, Laurent Boucher, Philip Wiredu Addo, Sarah MacPherson, Valerie Orsat, Mark Lefsrud
3:20pm	2400342	*Optimizing Strawberry Production in Plant Factories: The Impact of Temperature, Light, and Photoperiod Control* - Presented by: **Rongmei Fu, Zhejiang University, Hangzhou, Zhejiang, China;** Fulin Xia, Rongmei Fu, Wei Liu, K.C. Ting, Tao Lin
3:35pm-3:45pm		BREAK
3:45pm	2401439	*Grasses in Hydroponics-Oats and Barley* - Presented by: **Jasmine Brar, McGill University, Ste-Anne-De-Bellevue, Quebec, Canada;** Sarah MacPherson, Philip Wiredu Addo, Mark Lefsrud
4:00pm	2400493	*Effect of Upward Fan Air Flow on Plant Growth and Yield and its Plant-Environment Interactions* - Presented by: **Crystal Rain Fowler, Cornell University, Ithaca, New York;** Sunghwan Jung
4:15pm	2401067	*The Photosynthetic Curve of Spinach and Kale across the Visible Spectrum* - Presented by: **Anne Sophie Rufyikiri, McGill University, Sainte-Anne-de-Bellevue, Quebec, Canada;** Bo-Sen, Wu, Valerie Orsat, Mark Lefrsud
4:30pm	2400646	*Green light improves the nutritional content and quality of lettuce during cold storage after harvest* - Presented by: **Shafieh Salehinia, Department of Bioresource Engineering, Macdonald Campus, McGill University, Sainte-Anne-de-Bellevue, Quebec Canada;** Shafieh Salehinia, Fardad Didaran, Sasan Aliniaeifard, Sarah MacPherson, Kam Hammed, Valerie Orsat, Mark Lefsrud

246 Precision (SMART) Animal Management-LIGHTNING TALKS

Tuesday, 7/30/2024 2:30pm - 5:00pm

Location: Platinum 10

Technical Community: PAFS - Plant, Animal, & Facility Systems

Session Type: Lightning Oral Technical Session

Description: This lightning session provides a unique platform to discuss cutting-edge and innovative precision technologies for enhancing animal management practices.

Organizer: Joshua Jackson, University of Kentucky

Sponsoring Committee: PAFS-40 Facilities & Systems Group

Moderators: Joshua Jackson, University of Kentucky

Start Time	Abstract ID	*Presentation Title* – Presenter; Co-authors
2:35pm	2400710	*Heat Stress Detection in Swine: Analyzing Patterns in Natural vs. Tunnel-Ventilated Systems* - Presented by: **Felipe Rodrigues Picchi, Iowa State University, Ames, Iowa;** Brett. C. Ramirez
2:42pm	2400707	*Technical Assessment of a Commercial Feed-Weighing System in Swine Production* - Presented by: **Felipe Rodrigues Picchi, Iowa State University, Ames, Iowa;** Brett. C. Ramirez, Laura. L. Greiner
NO-SHOW	2401388	*Use of machine learning to model growth performance, feeding, and drinking behavior of feedlot cattle* - Presented by: **Alex Sandro Campos Maia, Animal Science Department, Sao Paulo State University (UNESP), School of Agricultural & Veterinarian, Jaboticabal, SP, Brazil;** Gustavo A. B. Moura, Vinicius F. C. Fonsêca, Jessica O. Gusmão, Rodrigo D. L. Pacheco, Kifle, G. Gebremedhin; Robert J. Collier, Izabelle A. M. A. Teixeira
NO-SHOW	2401386	*Customized data mining algorithm for precision livestock farming: Beef cattle feedlot* - Presented by: **Alex Sandro Campos Maia, Animal Science Department, State University of São Paulo (UNESP), School of Agricultural & Veterinarian, Jaboticabal, SP, Brazil;** Gustavo A. B. Moura, Vinicius F. C. Fonsêca, Jessica O. Gusmão, Rodrigo D. L. Pacheco, Robert J. Collier, Izabelle A. M. A. Teixeira
NO-SHOW	2401338	*Artificial intelligence for modelling the thermal environment and its association with performance of feedlot cattle* - Presented by: **Alex Sandro Campos Maia;** Gustavo A. Moura, Kifle G. Gebremedhin, Izabelle Teixeira, Rodrigo Pacheco, Robert Coolier, Alex Maia, Vinicius Fonseca

3:10pm	2400907	*Individual facial identification of beef and dairy cattle based on computer vision* - Presented by: **Luana Maria Benicio, Department of Agricultural & Biological Engineering, University of Illinois at Urbana-Champaign, Urbana, Illinois;** Isabella C. F. S. Condotta, Luciano Bastos Lopes, Diego Batista Xavier, Laurimar Goncalves Vendrusculo, Italo B. G. Lima
3:17pm	2400820	*Sustainable Livestock Management and Pasture Utilization using Automotive Electric Fencing System* - Presented by: **Mohammad Ashik Alahe, South Dakota State University, Brookings, South Dakota;** James Kemeshi, Young Chang, Hector Menendez III
3:24pm	2401533	*Classification of Sow Postures Using Convolutional Neural Network and Depth images* - Presented by: **Md Towfiqur Rahman, Department of Biological Systems Engineering, University of Nebraska-Lincoln, Lincoln, Nebraska;** Md Towfiqur Rahman, Tami M. Brown-Brandl, Gary A. Rohrer, Sudhendu R. Sharma, Yeyin Shi
3:31pm	2401129	*Evaluation of turkey behavior under different night lighting treatments using machine learning* - Presented by: **Dan Hofstetter, University of Florida, Gainesville, Florida;** Ruijie Wang, John Boney, Hope Kassube
3:38pm-3:50pm		BREAK
3:50pm	2401009	*Mastitis detection of dairy cows using supervised autoencoder* - Presented by: **Soo-Hyun Cho, Department of Biosystems Machinery Engineering, Chungnam National University, Yuseong-gu, Daejeon, South Korea;** Seung-Woo Kang, Baek-Gyeom Seong, Min-Gyung Lee, Seong-Won Seo, Dae-Hyun Lee
3:57pm	2401300	*Impact of feeder layouts on the feeding behavior of grow-finish pigs* - Presented by: **Kuljit Bhatti, University of Nebraska-Lincoln, Lincoln, Nebraska;** Tami Brown-Brandl, Sudhendu Raj Sharma, Gary Rohrer
4:03pm	2400107	*Advanced Machine Learning Techniques for Monitoring Poultry Movement Patterns* - Presented by: **Xiao Yang, University of Georgia, Athens, Georgia;** Xiao Yang, Ramesh Bist, Bidur Paneru, Lilong Chai
4:10pm	2400660	*Validation of Environmental Sensors Integrated with a Rail-mounted Robot in a Commercial Broiler House* - Presented by: **Tanner Thornton, University of Tennessee Department of Animal Science, Knoxville, Tennessee;** Yang Zhao, Shawn Hawkins, Robert Burns, Tom Tabler

247 Processing Systems POSTER SESSION

Tuesday, 7/30/2024 2:30pm - 5:00pm

Location: Platinum Ballroom

Technical Community: PRS - Processing Systems

Session Type: Poster Technical Session

Description: This poster session include all topics related to processing systems technical community. The processing systems community has the following sub-communities such as physiochemical properties of biological products, crop and feed processing and storage, food processing, bioconversion and bioprocesses, food and organic waste management and utilization.

Organizer: John Lawrence, AGI Digital

Sponsoring Committee: PRS-01 POSTER SESSION

Moderators: John Lawrence, AGI Digital; Igathinathane Cannayen, North Dakota State University

Poster No	Abstract ID	*Presentation Title* – Presenter; Co-authors
34	2400031	*Supplementation of Carbon-Based Conductive Materials and Trace Metals to Improve Biogas Production from Apple Pomace* - Presented by: **Sibel Uludag Demirer;** Addam Claes, Lucy Melchi, Sibel Uludag-Demirer, Goksel N. Demirer
35	2401189	*Investigating the Potential of Miscanthus x. giganteus to Synthesize Commercially Viable Cellulose Nanocrystals* - Presented by: **Jaspreet Kaur, The University of Arkansas, Fayetteville, Arkansas;** Amiya M. Turner, Winfred Yeboah, Gurshagan Kandhola, Joseph Batta-Mpouma, Jin-Woo Kim
36	2401319	*Effect of location and harvesting method on the composition of corn stover fractions* - Presented by: **Anindita Paul, PhD student, SUNY-ESF, Syracuse, New York;** Anindita Paul, Gundeep Kaur, John E. Aston, Rachel M. Emerson, Jaya Shankar Tumuluru, Deepak Kumar
37	2400610	*Controlled fermentation in coffee and its effect on quality* - Presented by: **Aida Esther Peñuela-Martínez, National Coffee Research Center, Cenicafé, Manizales, Caldas, Colombia;** Carol Vanessa Osorio-Giraldo

38	2400919	*Optimizing a Lab-Scale Protocol for Bourbon Whiskey Fermentations: Comparison of Simultaneous Saccharification and Traditional Mashing Methods* - Presented by: **Ryan Sarhan, University of Kentucky, Lexington, Kentucky;** Czarena Crofcheck, Tyler Barzee
39	2400736	*Evaluating microwave processing at 915 mhz frequency on physicochemical attributes and safety of honey* - Presented by: **Christian Mensah, Purdue University, West Lafayette, Indiana;** Deandrae L.W Smith
40	2401191	*Increasing Gut Fermentability of Insoluble Dietary Fiber in Corn Through Radiofrequency Processing* - Presented by: **Victory Igwe, Graduate Research Assistant, Purdue University, Department of Food Science, West Lafayette, Indiana;** Deandrae L.W. Smith
NO-SHOW	2401044	*Design and development of an improved curing system (furnace) for Black Cardamom (Large cardamom)* - Presented by: **Robin Subba (PhD Scholar) College of Agricultural Engineering and Post Harvest Technology (Central Agricultural University Imphal), Ranipool, Sikkim, India;** Dr. Rakesh Kumar Raigar
42	2401407	*Microbial assimilation of formic acid and C1 carbon metabolism with an Ant-derived community* - Presented by: **Vanessa Rondon Berrio;** Elsa Youngsteadt, Michelle Kirchner, Douglas Call, Nathan Crook, Sonja Salmon, Amy Grunden, William Joe Sagues
43	2400463	*Biodegradable composites made from switchgrass and modified soy flour adhesives* - Presented by: **Roselle Barretto;** Guangyan Qi, Christopher Jones, Xiuzhi S. Sun, Yonghui Li, Donghai Wang
44	2401333	*Effect of harvesting method and location on enzymatic hydrolysis of dilute acid pretreated corn stover fractions* - Presented by: **Gundeep Kaur, SUNY-ESF, Syracuse, New York;** Gundeep Kaur, Anindita Paul, John E. Aston, Rachel M. Emerson, Jaya Shankar Tumuluru, Deepak Kumar
45	2400581	*Portable Detection Technology for Total Viable Count in Pork Meat* - Presented by: **Tianzhen Yin, China Agricultural University, Beijing, Beijing, China;** Jiewen Zuo, Yankun Peng, Yongyu Li, Yahui Chen, Tianzhen Yin, Zhenhao Ma
46	2401297	*Effects of air classification parameters on yield and composition of extracted proteins from beans* - Presented by: **Rania Marie Buenavista, Department of Grain Science and Industry, Kansas State University, Manhattan, Kansas;** Kaliramesh Siliveru
47	2400709	*Techno-economic analysis of biodegradable bioplastic production from shrub willow* - Presented by: **Kalyani Ananthakrishnan, SUNY ESF, Syracuse, New York;** Kalyani Ananthakrishnan, Tristan Brown, Deepak Kumar
48	2400513	*Optimization and Effect of Radio Frequency Cold Plasma on Solubility of Pea Protein Isolate* - Presented by: **Jawadul Misir, Department of Food Science and Nutrition, University of Minnesota, St. Paul, Minnesota;** Kumar Mallikarjunan
49	2400945	*Development of fungal hydrogels for 3D printing and cellular agriculture* - Presented by: **Tyler J. Barzee, University of Kentucky, Lexington, Kentucky;** Lauren E. Doyle, Youling L. Xiong, Tyler B. Barzee
50	2400090	*Waste ice cream butterfat recovery by churning* - Presented by: **Rafael A. Garcia, Dairy and Functional Foods Research Unit, USDA-ARS, Wyndmoor, Pennsylvania;** Lorelie P. Bumanlag, Faith Olszewski, Farah Huynh, Changhoon Lee, Benjamin M. Plumier, John A. Renye, Peggy M. Tomasula
51	2400473	*A CO2-Based Biomanufacturing System for Recombinant Protein Production* - Presented by: **Matthew B. Paddock, KBR/NASA Ames Research Center, Moffett Field, California;** Mathangi Soundararajan, Sadie A. Downing, Sean Sharif, Alyssa G. Villanueva, Oscar A. Roque, Michael J. Dougherty, Jonathan M. Galazka, Aditya Hindupur, Kevin Sims, Hami E. Ray, Lisa M. Anderson, Harry W. Jones, A. Mark Settles, John A. Hogan, Frances M.
52	2400512	*Effect of amylose content and glycerol loading on the properties of corn starch-based bioplastic* - Presented by: **Muhammad Ehtasham Akram, University of Nebraska-Lincoln, Lincoln, Nebraska;** Muhammad Ehtasham Akram, Mark R. Wilkins, Ozan N. Ciftci
53	2400795	*Long-term stability of continuous polyhydroxyalkanoate (PHA) production from food waste by Haloferax mediterranei* - Presented by: **Xueyao Zhang, Virginia Tech, Blacksburg, Virginia, USA;** Naresh Kumar Amradi, Amro Hassanein, Stephanie Lansing, Zhi-Wu Wang
54	2400147	*Developing solid-state powered microwave-assisted pasteurization system (MAPS)* - Presented by: **Xu Zhou, Washington State University, Pullman, Washington;** Patrick Pedrow, Juming Tang

55	2400009	*Impact of Precooling on Starch Content in Jyoti Potato: A Storage Study* - Presented by: **Aphiya Amulya Palle, CRDIST IIT Kharagpur, Kharagpur, West Bengal, India;** Prof. Prem Prakash Srivastav
56	2401041	*A unique green approach for synthesis of biocompatible fluorescent Graphene quantum dots* - Presented by: **Swagata Dutta, Indian Institute of Technology Kharagpur, Kharagpur, West Bengal, India;** Rintu Banerjee
57	2400862	*Processing wild-caught flies as a safe animal feed ingredient* - Presented by: **Lester Pordesimo;** Shults, P., McConnell, K., Giese, H., Cohnstaedt, L. W.
58	2400921	*Unveiling the Revolution: Cold Plasma and Edible Coatings Transforming Food Storage* - Presented by: **Tejaswi Boyapati, Department of Agricultural and Biosystems Engineering, South Dakota State University, Brookings, South Dakota;** Tejaswi Boyapati, Dr. Ren Yang, Dr. Kasiviswanathan Muthukumarappan
59	2400579	*Quantitative Detection of Ractopamine and Clenbuterol Mixed Aqueous Solution Based on SERS Multicomponent Quantitative Analysis* - Presented by: **Tianzhen Yin, China Agricultural University, Beijing, Beijing, China;** Tianzhen Yin, Yankun Peng, Yongyu Li, Kuanglin Chao, Jianwei Qin, Zhenhao Ma, Jiewen Zuo
60	2400550	*Techno-economic analysis and environmental impact assessment of expanded cereals made from corn flour and spent grain from Bourbon production.* - Presented by: **Tosin O. Olanrewaju, Department of Biosystems and Agricultural Engineering, University of Kentucky, Lexington, Kentucky;** Tyler Barzee, Rachel Schendel, Akinbode A. Adedeji
61	2401204	*Production of Pure Mycelium Materials with Bourbon Stillage as Substrate* - Presented by: **Keya Rani Roy, Biosystems and Agricultural Engineering, University of Kentucky, Lexington, Kentucky;** Tyler J. Barzee, Zachary Byrd
62	2401432	*Rapid Detection and Quantification of Cross-Contamination of Proso Millet Seed Cultivars* - Presented by: **Akinbode A. Adedeji;** Tyler Johnson
63	2400671	*Optimizing Distilled Spirit Production from U.S. Waxy Sorghum: Influence of Traditional Jiuqu Types on Fermentation and Flavor Profiles* - Presented by: **Yuandi Zhang, Kansas State University, Manhattan, Kansas;** Yi Zheng
64	2400076	*Effect of blanching on the functional properties of dried roselle calyces and leaves* - Presented by: **Akindele Alonge**
65	2400077	*Some physical properties and proximate analysis of composite flour (wheat and yellow cassava flour)* - Presented by: **Akindele Alonge**
NO-SHOW	2401052	*Experimental and CFD Analysis of Fluid Flow Pattern, Heat, and Mass Transfer in Indirect Mode Solar Drying of Stevia (Stevia rebaudiana) Leaves* - Presented by: **Prakash Kumar**
67	2400263	*Assessment and Modeling of Thermal Processes for Improved Process Optimization in Animal Feed Manufacturing* - Presented by: **Alexis Lambros**
68	2400292	*Microwave Processing at the 915 MHz Frequency for Efficient Cellulose Cleavage In Vegetable Wastewater Treatment* - Presented by: **Deandrae Smith**
69	2400374	*Carbon Dioxide Capture and Methane Emission Reduction in Composting* - Presented by: **Ethan Woods, North Carolina State University, Raleigh, North Carolina**
70	2401393	*DC-assisted flocculation of Scenedesmus dimorphus* - Presented by: **Xufei Yang**
71	2400244	*Impact of Rice Husk and Dust Diets on Manduca sexta Protein Profile, Nutritional Characteristics, and Functional Properties* - Presented by: **Christabel Tachie**
NO-SHOW	2401128	*Ultrasound-assisted Extraction and Drying Induced Changes in the Functionalities and Qualities of Rice Bran Protein* - Presented by: **Christabel Tachie**
73	2401060	*Valorization of food waste to lactic acid and other eco-friendly materials through micro-machineries* - Presented by: **Sayantan Santra, Research Scholar, Agricultural and Food Engineering Department, Indian Institute of Technology Kharagpur, Kharagpur, West Bengal, India;** Mohan Das, Rintu Banerjee
74	2400109	*Characterizing the emulsifying properties of milk powders using Hyperspectral Imaging technique* - Presented by: **Abiy Dadi, University of Minnesota, Saint Paul, Minnesota;** Kumar Mallikarjunan

248 NRES-Environmental Systems: Advances in Research and Practice POSTER SESSION B

Tuesday, 7/30/2024 4:30pm - 6:30pm

Location: Platinum Ballroom

Technical Community: NRES - Natural Resources & Environmental Systems

Session Type: Poster Technical Session

Description: This session provides a platform for researchers, scholars, students, and professionals to showcase their cutting-edge research, projects, and innovations. It fosters knowledge sharing, collaboration, and networking among attendees, helping to bridge the gap between research and real-world solutions.

Organizer: Derek Heeren, UNL

Sponsoring Committee: NRES-04 Program

Moderators: Derek Heeren, UNL; Laurent Ahiablame, CMAP

Poster No	Abstract ID	*Presentation Title* – Presenter; Co-authors
75	2400866	*Virtual reality videos for delivery of extension educational materials on manure and mortality management* - Presented by: **Zong Liu, Texas A&M University, College Station, Texas;** Amirhossein Mahdaviarab, Ruiren Zhou, Xiao Wang, Zong Liu, Danadhi Gunawardana
76	2400720	*Applying Ecological Datasets to Agricultural Conservation: A Case Study of Farm Bird Biodiversity Tool* - Presented by: **Hannah Klein, Purdue, West Lafayette, Indiana;** Ankita Raturi
77	2400752	*System design matters for biochar-enhanced denitrifying bioreactor systems: Treatment train vs a single-stage system* - Presented by: **Audrey Frost, University of Illinois Urbana-Champaign, Champaign, Illinois;** Audrey Frost, Hongxu Zhou, Haribansha Timalsina, Rabin Bhattarai
78	2400765	*Electrochemical Treatment of Hydrothermal Liquefaction-Aqueous Phase Dilutions to be Used for Plant Growth* - Presented by: **Marcin Warzecha;** Camila Bogarin, Paul C. Davidson
79	2400350	*Exudate analysis of duckweeds: Implications for phytoremediation of sulfamethoxazole* - Presented by: **Katherine McCullen, Biosystems and Agricultural Engineering Michigan State University, East Lansing, Michigan;** Dawn Dechand
80	2400225	*Estimating Environmental Impacts of a Grain Elevator by Using Life Cycle Assessment* - Presented by: **A S M Younus Bhuiyan Sabbir, Iowa State University, Ames, Iowa;** Dirk Maier, Kurt Rosentrater
81	2400947	*Evaluating Cyanobacteria and Cyanotoxins in Surface Water and Aerosols near Utah Lake* - Presented by: **Dylan McPeake, Utah State University, Logan, Utah;** Donald Olsen, Issac Orrill, Joan McLean, Randal Martin, Sierra Young
82	2401257	*Comparative evaluation of the environmental footprints and economics of farming systems with the Integrated Farm System Model in the Midwest region of the USA* - Presented by: **Amit Prasad Timilsina, The Ohio State University, Wooster, Ohio;** Douglas Jackson-Smith, Van Ryan Haden, Marilia Barbosa Chiavegato, Ajay Shah
83	2401264	*Impact of Winter Solarization on Soil Microbial Communities* - Presented by: **Parker Bolton, NC State University, Raleigh, North Carolina;** Dr. Carlos Goller
84	2400826	*Quantifying the Impact of Cover Crops on Metal Transport in Fields Fertilized with Poultry Manure* - Presented by: **Vishawjot Singh Sandhu, Biosystems Engineering Department, Auburn University, 36849, Auburn, Alabama;** Dr. Jasmeet Lamba, Preetika Kaur, Dr. Kritika Malhotra, Thomas R Way, Dr. Kipling Balkcom
85	2400735	*Fire Risk Index for Grassland Prescribed Burning Management in Central United States of America (Great Plains Areas)* - Presented by: **Mayowa B George, Kansas State University, Manhattan, Kansas;** Izuchukwu Okafor, Zifei Liu
86	2400299	*Understanding the Relationship Between Microbial Communities and Anaerobic Digester Efficiency on Swine Farms* - Presented by: **Paige Seibert, NC State University, Raleigh, North Carolina;** Jameson Hill, Mahmoud Sharara
87	2401089	*Investigating the impact of poultry litter application method on nutrient leaching* - Presented by: **Gurparshad Singh Brar, Biosystems Engineering Department, Auburn University, Auburn, Alabama;** Jasmeet Lamba, Kritika Malhotra, Tom R Way
NO-SHOW	2400370	*Comparison of Analytical Methodologies for the Detection of PFAS in Private Drinking Water Supplies* - Presented by: **Kyra Sigler, Virginia Tech, Blacksburg, Virginia;** Kathleen Hohweiler, Erin Ling, Kang Xia, Leigh-Anne Krometis

89	2401084	*Fate of Antibiotics During Phosphate Recovery from Swine Wastewater* - Presented by: **Nathaniel Bolujoko, Oklahoma State University, Stillwater, Oklahoma;** Kiranmayi Mangalgiri
90	2401202	*Examining Characteristics of Cyanobacterial Harmful Algal Blooms (HABs) in a Eutrophic Reservoir System Through Monitoring and Modeling* - Presented by: **Trisha Moore, Kansas State University, Manhattan, Kansas;** Laura Krueger, Trisha Moore, Aleksey Sheshukov
91	2400684	*Potential for ML to Improve Physics-based Streamflow Model* - Presented by: **Adeyinka Ogunbajo, Oklahoma State University, Stillwater, Oklahoma;** Mamata Pandey, Jeffrey Sadler
92	2400058	*Transport of swine carcass leachate contaminants through two Nebraska soils to inform carcass disposal system designs* - Presented by: **Gustavo Castro Garcia, University of Nebraska Lincoln, Lincoln, Nebraska;** Mara Zelt, Javed Iqbal, Amy Millmier Schmidt
93	2400429	*Prescribed burning risk quantification: a step towards smart and safe rangeland management in the Flint Hills* - Presented by: **Izuchukwu Okafor;** Mayowa George, Zifei Liu
94	2400879	*Using Biochar as a Low-Cost, Sustainable Treatment Technology to Enhance Nutrient Removal in Rural Wastewater Treatment Plants* - Presented by: **Liz Riedel, North Carolina State University, Raleigh, North Carolina;** Michael Burchell, Praveen Kolar, François Birgand, Ryan Sartor
95	2401037	*An economic approach for large-scale graphene production utilizing natural fibre Waste Biomass* - Presented by: **Rajlakshmi, Indian Institute of Technology Kharagpur, Kharagpur West Bengal, India;** Rintu Banerjee
96	2400853	*Utilizing Black Soldier Fly Larvae (BSF) for the Management of Waste Milk* - Presented by: **Ruiji Cheng, Graduate Student, College Station, Texas;** Ruiji Cheng, Amirhossein Mahdaviarab, Luis Galvan, Xiao Wang, Zong Liu, Katayou Pahlavanyali
97	2400810	*Accurate and Robust Biochar Yield and Composition Prediction via ResNet-based Autoencoder* - Presented by: **Amirhossein Mahdaviarab, Graduate Student, College Station, Texas;** Ruiji Cheng, Amirhossein Mahdaviarab, Xiao Wang, Zong Liu, Yali Zhang
98	2400893	*Photocatalytic degradation of organic pollutants in agricultural wastewater by novel two-dimensional material* - Presented by: **Ruiren Zhou, Graduate Student, Texas A&M University, College Station, Texas;** Ruiji Cheng, Danadhi Liyanage, Amirhosein Mahdaviarab, Xiao Wang, Zong Liu
99	2401258	*Mass Nutrient balance of typical beef production farm in the Midwest* - Presented by: **Amit Prasad Timilsina, The Ohio State University, Wooster, Ohio;** Sami Khanal, Ajay Shah
100	2401113	*Investigating the applicability of unmanned aerial vehicle (UAV) photogrammetry for coal stockpile volume estimation* - Presented by: **Sandeep Dhakal, Department of Food Agricultural and Biological Engineering, The Ohio State University, Wooster, Ohio;** Sami Khanal, Ashish Manandhar, Ajay Shah
101	2400524	*Effect of Biochar on Methane production and Odor Reduction During Anaerobic Digestion of DAF solids collected from Poultry Slaughterhouse Facility in Alabama* - Presented by: **Navid Farahmandzad, Biosystems engineering Auburn university Alabama, Auburn, Alabama;** Saravanan Ramiah Shanmugam, Brenden Higgins
102	2401115	*Filamentous Algae Cultivation in Controlled Environment Agriculture for Efficient Wastewater Treatment- a mini review* - Presented by: **Shokouh Mousavi, Biosystems Engineering Department, Auburn University, Alabama;** Shokouh Mousavi, Ghazaleh Aminiershad, David Blersch
103	2400260	*Validation of a CO2 balance model adaptation for determining ventilation rate in egg production* - Presented by: **Katherin Carranza-Diaz, student, Université Laval, Quebec, Canada;** Stéphane Godbout, Sébastien Fournel
104	2401447	*Assessing the Impact of Recycled Water Use on Infiltration and Soil Structure* - Presented by: **Usama Aldughaishi, Department of Soil, Water and Agricultural Engineering, Sultan Qaboos University, Oman;** Stephen R. Grattan, Floyid Nicolas, Srinivasa Rao Peddinti, Isaya Kisekka
105	2400823	*Simulating the effects of hydraulic fracturing on streamflows in the Bakken region under changing climate* - Presented by: **Zhulu Lin, North Dakota State University, Fargo, North Dakota;** Tong Lin, Siew Hoon Lim

106	2401370	*Compact Bed Geometry Production System Improves Resource Use Efficiency, Environmental Footprint While Reducing Costs* - Presented by: **Justin E. Schabow, Agricultural and Biological Engineering Department, University of Florida, Southwest Florida Research and Education Center, Immokalee, Florida;** V. P. Santikari, K. M. Hansen, R. P. Sishodia, G. Hendricks, S. Shukla
107	2401441	*Climate-smart agriculture for improving soil productivity and health in a changing climate* - Presented by: **Yanbo Huang, USDA-ARS, Genetics and Sustainable Agricultural Research Unit, Mississippi State, Mississippi;** Wei Dai, Gray Feng, Yanbo Huang, Ardeshir Adeli, Johnie N. Jenkins, Dennis B. Reginelli
108	2400753	*Characterization of Runoff from Urban Green Spaces in North Carolina* - Presented by: **Lindsey Hassel, North Carolina State University, Raleigh, North Carolina;** William F. Hunt III, Amber Ellis
109	2400608	*Understanding fluvial geomorphology and sediment dynamics of regulated river backwater confluences: A multi-method approach* - Presented by: **Abby Berry, University of Kentucky, Lexington, Kentucky;** William Ford
110	2401555	*Quantitative Analysis of Environmental and Economic Implications for Establishing Climate-Smart Wheat Cultivation System* - Presented by: **Geraldine Baylon, Seoul, South Korea;** Yooan Kim, Suhyun Lee, Kyo Suh
111	2400939	*Microbial Dynamics and Nutrient Cycling in North Carolina Swine Lagoons: Implications of Anaerobic Digesters on Nitrogen Content and Ecosystem Optimization* - Presented by: **Jameson Hill**
112	2400059	*Evaluate the future carbon sequestration potential in row crop ecosystems across the US under future climate change* - Presented by: **Susan Wang, Agoro Carbon Alliance;** Shaoqing Liu
113	2400835	*Application of Membrane Filtration for Treating Flushed Manure at Large Dairy Farm* - Presented by: **Moh Moh Thant Zin**
114	2400837	*Biochar-Seeded Struvite Precipitation from Combination of On-Farm and Industrial* - Presented by: **Moh Moh Thant Zin**
115	2401242	*Development and Demonstration of a New Method for Implementing and Conducting a Container Nursery BMP for Monitoring Substrate Fertility* - Presented by: **Michelle Ezequelle**

WEDNESDAY – 7:30AM-10:00AM

301 The Opportunities for Collaboration between ASABE and NIOSH-Funded Centers-HYBRID

Wednesday, 7/31/2024 7:30am - 10:00am

Location: Grand Ballroom C

Technical Community: ASABE Special Interest

Session Type: Hybrid Session-submitted abstracts and guest speakers

Description: This invited session will highlight some of the work done at NIOSH-funded Safety and Health Centers around the US that relate to the work ASABE members. The session will highlight research and outreach partnerships between institutions and industry. More information about NIOSH-funded Safety and Health Centers can be found here: https://www.cdc.gov/niosh/oep/ and here: https://www.cdc.gov/niosh/oep/agctrhom.html

Organizer: Aaron Yoder, University of Nebraska Medical Center

Sponsoring Committee: General ASABE Program **Co-Sponsors:** ESH-04 Technology Exchange, ESH-04/1 Journal of Agricultural Safety and Health, ESH-04/2 Farmers With Disabilities Technology Exchange

Moderators: Aaron Yoder, University of Nebraska Medical Center

Start Time	Abstract ID	*Presentation Title* – Presenter; Co-authors
7:35am	Guest Speaker	*ASABE Members Partnering to Help Meet the NIOSH Goal of Reducing Injuries and Illnesses in Agriculture, Forestry, and Fishing* - Presented by: **Aaron Yoder, University of Nebraska, Omaha, Nebraska**
8:00am	Guest Speaker	*Southeast Center for Agricultural Health and Injury Prevention (SCAHIP) - Vector-Borne Diseases and Roadway Crashes* - Presented by: **Wayne Sanderson, University of Kentucky, Lexington, Kentucky**

8:25am	Guest Speaker	*An ASABE Members Perspective on Partnering with NIOSH Centers - Animal Handling, Ergonomics and Injury Surveillance* - Presented by: **Dan Hofstetter, University of Florida, Gainesville, Florida**
8:50am	2401361	*Overview of the Western Center for Agricultural Health and Safety: Ongoing and Potential Opportunities for Collaboration* - Presented by: **Fadi Fathallah**
9:15am	Guest Speaker	*Central States Center for Agricultural Safety and Health (CS-CASH) - Feedlots, Human Factors and Zoonotic Diseases* - Presented by: **Aaron Yoder, University of Nebraska, Omaha, Nebraska**
9:40am	Guest Speaker	*Discussion - Opportunities for Collaboration with NIOSH-Funded Safety and Health Centers* - Presented by: **Aaron Yoder, University of Nebraska, Omaha, Nebraska**

302 Applied Science & Engineering POSTER SESSION

Wednesday, 7/31/2024 7:30am - 10:00am

Location: Platinum Ballroom

Technical Community: ASE - Applied Science & Engineering

Session Type: Poster Technical Session

Description: Posters related to forest engineering, sustainability engineering, or other topics that are outside of or cut across multiple ASABE communities.

Organizer: Catherine Brewer, New Mexico State University

Sponsoring Committee: ASE-01 POSTER SESSION

Moderators: Catherine Brewer, New Mexico State University

Poster No	Abstract ID	*Presentation Title* – Presenter; Co-authors
1	2400606	*Viable but Non-Culturable Induction in E. coli by Low-Level Antimicrobials and Its Detection with AI-Enabled Hyperspectral Microscopy* - Presented by: **MeiLi Papa, Michigan State University, East Lansing, Michigan;** Aarham Wasit, Teresa Bergholz, Jiyoon Yi
2	2400358	*Investigation of Autonomous Scout Robot to Increase the Profitability Crop Production Systems with a Development of Decision Support Toolbox* - Presented by: **Subhash Chandra Bose Tadiparthi, University of Tennessee, Knoxville, Tennessee;** Chetan Badgujar
3	2400033	*Assessing Temporal and Spatial Variability in Groundwater near Highways, A Case Study of Owerri, Imo State, Nigeria* - Presented by: **Ikenna Orji;** Dike Henry Ogbuagu, Stella Maris O. Akhionbare
4	2400527	*Effects of the Leaf Sheath on Stalk Strength in Maize* - Presented by: **Grant Ogilvie, Brigham Young University Department of Mechanical Engineering, Provo, Utah;** Douglas Cook, Ryan Hall, Christian Shamo, Jacob Hall, Kenneth Smith, Carter Noh
5	2401558	*Environmental and Economic Trade-off of Sustainable Supply Choices for Enhancing Food Security* - Presented by: **Yooan Kim;** Geraldine Baylon, Suhyun Lee, Kyo Suh
6	2400611	*Optimizing Agricultural Best Management Practices in Florida: A Multi-Criteria Approach to Reducing Nutrient Runoff* - Presented by: **Seyed Mostafa Biazar Seighalani;** Golmar Golmohammadi, Saman Javadi, Saha Amartya, Koroush Mohammadi
7	2400062	*Rising Scholars Program Cultural Lessons for Small-to-Moderate Sized Engineering Departments* - Presented by: **Robert M. Stwalley III, Purdue University Agricultural & Biological Engineering, West Lafayette, Indiana;** Grace L. Baldwin Kan-uge, Virginia L. Booth-Womack, Sarah E. LaRose, Carol S. Stwalley, Robert M. Stwalley III
8	2400773	*Characterizing Lignosulfonate and Organosolv Lignin for Further Valorization* - Presented by: **Adejoke Adewumi, Department of Biological & Agricultural Engineering Louisiana State University, Baton Rouge, Louisiana;** Jessica Eberhard, Lavrent Kachatryan, Dorin Boldor
9	2400913	*Validation and Assessment of Manning's Equation for Tile Drainage Flow Estimation* - Presented by: **Maryam Sahraei, South Dakota State University, Brookings, South Dakota;** Joshua Becker, John McMaine
NO-SHOW	2401085	*Evaluate the Effects of Biodegradable Super Absorbant Polymers (SAPs) for Soil Erosion* - Presented by: **Ruwanpathirana P.P., United Graduate School of Agricultural Sciences, Kagoshima University, Korimoto, Kagoshima-shi, Kagoshima, Japan;** Kazuhito Sakai, Tamotsu Nakandakari, Kozue Yuge

11	2400283	*Investigating the chitin amendment on soil biochemical property changes and exploring the near-infrared spectroscopy for soil property modeling and prediction* - Presented by: **Yan Liu, Michigan State University, East Lansing, Michigan;** Ken Abamba Omwange, Ana Chen, Renfu Lu, Carly Daiek, Julie Celini, Yan Liu
12	2400262	*Novel materials for water retention in soil, contaminant removal in water streams and growth media in greenhouses* - Presented by: **Valérie Orsat, McGill University, Ste-Anne-de-Bellevue, Quebec, Canada;** Marie-Josée Dumont, Valérie Orsat, Vijaya Raghavan, Mark Lefsrud, Jason Tavares
13	2400543	*Impact of Nitrogen Species on Algal Carbon Capture* - Presented by: **Lauren J. Todd, Clemson University, Clemson, South Carolina;** Mary K. Watson, Caye M. Drapcho
14	2400750	*The Effect of Climate Change on Plant Growth and Microbial Activity in Soils* - Presented by: **Kangxu He, McGill University, Montreal, Quebec, Canada;** Mary-Cathrine Leewis, Shiv Prasher, Ali Mawof
15	2401554	*Ergonomics Evaluation and Farmers Perception Analysis of Pedal Operated Ice Crusher for Marginal Fish Farmers in Bangladesh* - Presented by: **Sazzad Mahmud Rifat, PhD Student, University of Missouri, Columbia, Missouri;** Muhammad Ashik-E-Rabbani, Md Samiul Basir, Jianfeng Zhou
16	2400376	*Carbon Dioxide Capture and Methane Emission Reduction in Composting* - Presented by: **Ethan Woods, North Carolina State University, Raleigh, North Carolina;** Perry Berlin, Vanessa R. Berrio, Yaojing Qiu, Nicolas Clauser, William Joe Sagues
17	2401347	*Semi-Continuous Cultivation of Algal Consortia in Anaerobic Digestate:A Comprehensive Study on Microbial Dynamics, Nutrient Removal and Algal Biomass Production* - Presented by: **Alireza Fallahi, Auburn University, Auburn, Alabama;** Qichen Wang, Brendan Higgins
18	2400280	*Effects of Envelope Layers on the Hygrothermal Behavior of Southern Yellow Pine CLT Wall Systems* - Presented by: **Jason Street, Mississippi State University, Starkville, Mississippi;** Rachel A. Arango, Katie M. Ohno
19	2400300	*Tillage effects on estimated parameters of soil-water retention curves and pore-size distribution in a clay loam* - Presented by: **J.D. Jabro;** W.B. Stevens, W.M. Iversen, U.M. Sainju, B.L. Allen, S.R. Dangi
20	2400451	*Projecting Impacts of Sea Level Rise and Climate Change on Groundwater Level and Saltwater Intrusion in Southeast Florida* - Presented by: **Young Gu Her**
21	2401415	*Comparative and Techno-Economic Analysis of Pyrolysis Reactors for Cotton Gin Waste Biochar Production* - Presented by: **David Takal**
NO-SHOW	2400551	*Development Biochar-based Biofertilizers for Sustainable Agriculture* - Presented by: **Lin Wei**

303 Education, Outreach, & Professional Development POSTER SESSION

Wednesday, 7/31/2024 7:30am - 10:00am

Location: Platinum Ballroom

Technical Community: EOPD - Education, Outreach, & Professional Development

Session Type: Poster Technical Session

Description: Posters relates to education, outreach, and professional development across ASABE topic areas.

Organizer: Jennifer Keshwani, University of Nebraska Lincoln

Sponsoring Committee: EOPD-01 POSTER SESSION **Co-Sponsors:** EOPD-203 Undergraduate & Graduate Instruction, EOPD-204 Engineering & Technology Accreditation, EOPD-205 Engineering Technology & Management Education, EOPD-206 Ag Technology & Mgmt Curriculum Review & Pgm Recog, EOPD-208 Extension, EOPD-412 Professional

Moderators: Jennifer Keshwani, University of Nebraska Lincoln

Poster No	Abstract ID	*Presentation Title* – Presenter; Co-authors
23	2401420	*A Quantitative Evaluation of the Computational Skills Development for Next Generation Agriscience Professionals for Sustaining Data Driven Agriculture Project* - Presented by: **Tanya C. Franke-Dvorak, University of Kentucky, Lexington, Kentucky;** Buckmaster, Dennis, R.; Chaterji, Somali; Dvorak, Joseph S.; Essamuah-Quansah; Fall, Souleymane; Krogmeier, James, V.; Raturi, Ankita

24	2401433	*A Model for Increasing Agricultural Computational and Career Readiness Skills in ABE and Agriscience Students Across Three States* - Presented by: **Dharmendra Saraswat, Purdue University, West Lafayette, Indiana;** Buckmaster, Dennis, R.; Dvorak, Joseph S.; Dvorak, Tanya C.; Essamuah-Quansah, Joseph; Fall, Souleymane; Krogmeier, James, V.; Ward, Mark, D.
25	2400698	*Digital Agriculture for Middle School 4-H Students* - Presented by: **Autumn Denny, Purdue University, West Lafayette, Indiana;** Ankita Raturi, Rachel Haselby
26	2400951	*Fostering STEM Programming Engagement in Rural Communities* - Presented by: **Karla S. Ladino, University of Kentucky, Lexington, Kentucky;** Prashanta Pokharel, K. Alexis McFadden, Tanya C. Franke-Dvorak
27	2400136	*Educating Youth on the Connection between Biomass and Energy* - Presented by: **Kaitlyn Gordon, Starkville, Mississippi;** Mary Love Tagert, Donna Peterson
28	2401497	*Cultivating Resilience: Fostering Future of Work Skills in ABE through Culturally Responsive STEM Education* - Presented by: **Asa B. Stone**
29	2400906	*Sustainable Agriculture with AI, Machine Learning, Deep Learning, and IoT for Future Farming* - Presented by: **Karishma Kumari, Graduate Student, Department of Agronomy, Horticulture and Plant Science, Brookings, South Dakota;** Ali Mirzakhani Nafchi
30	2400644	*Exploring next steps and support systems for dairy environmental sustainability in the Upper Midwest* - Presented by: **Richard R. Stowell, Animal Science, University of Nebraska-Lincoln;** MaryGrace Erickson, Amy M. Schmidt, Maristela Rovai, Patricia Villamediana, Erin L. Cortus
31	2400645	*Extension Education for Precision Livestock Farming in the Broiler Industry* - Presented by: **Terrilyn Klingberg, Master's Candidate, Biosystems Engineering Technology University of Tennessee Knoxville, Knoxville, Tennessee;** Robert Burns, Shawn Hawkins, Yang Zhao, Tanner Thornton, Susan Schexnayder
32	2400635	*The Design of the Field Operations Visualizer* - Presented by: **Philip E. Rockson, Iowa State University, Ames, Iowa;** Daniel S. Andersen, Mark A. Licht, D. Raj Raman
33	2400767	*Three Years of Agricultural Informatics; Reflections on Pedagogy and Workforce Development* - Presented by: **Ankita Raturi**
NO-SHOW	2400110	*Assessment of Virtual Reality Applications in Electronics Engineering Education* - Presented by: **Juan Diego, UGA, Athens, Georgia;** Juan Diego, Xiao Yang
35	2401276	*Has safety education changed our student's safety perceptions? Evaluating post-semester student safety climate attitudes* - Presented by: **Philip Ryan Saucier, Sam Houston State University, Huntsville, Texas;** Chad A. Reynolds, Monique Gonzalez
36	2401266	*Evaluating early student safety climate attitudes in the Agricultural Engineering Technology Laboratory* - Presented by: **Chad A. Reynolds, Sam Houston State University, Huntsville, Texas;** Philip Ryan Saucier, Monique Gonzalez

304 Anaerobic Digestion for Clean Power and Co-Products Production

Wednesday, 7/31/2024 7:30am - 10:00am

Location: Gold Key I/II
Technical Community: ES - Energy Systems
Session Type: Oral Technical Session
Organizer: Jaime Thissen, Bemidji State University
Sponsoring Committee: ES-210 Renewable Power Generation Committee
Moderators: Fei Yu, Mississippi State University; Jaime Thissen, Bemidji State University

Start Time	Abstract ID	*Presentation Title* – Presenter; Co-authors
7:35am	2401190	*Bioelectricity Generation in a Hydroponic Plant Microbial Fuel Cell with Spinacia oleracea L.* - Presented by: **Dwi Cahyani**
7:50am	2400114	*Energy and nutrient recovery from vegetable farm wastes using a cartridge anaerobic digester* - Presented by: **Liangcheng Yang, Illinois State University, Normal, Illinois;** Dave Kopsell, Tuba Yasmin
8:05am	2401240	*Formate-facilitated biological methanation of CO2 during anaerobic digestion* - Presented by: **John Grivins, Michigan State University, East Lansing, Michigan;** Sibel Uludag-Demirer, Meicai Xu, Yan (Susie) Liu, Wei Liao

8:20am	2401152	*Enhancing Medium Chain Carboxylic Acid (MCCA) Production from Acid Whey through Chitosan-Based Pretreatment and Machine Learning Optimization* - Presented by: **Fei Long, Oregon State University, Corvallis, Oregon;** Hong Liu, Kevin Linowski
8:35am-8:45am		BREAK
8:45am	2400923	*Improving Biogas Yield and Digestate Characteristics through the Addition of Granulated Activated Carbon in Anaerobic Digestion of Dairy Manure* - Presented by: **Sarah Witherrite, Department of Biological Systems Engineering Washington State University, Pullman, Washington;** Do-Gyun Kim, Hasan Rahat, Liang Yu, Shulin Chen
9:00am	2400461	*Single-stage and multi-stage liquid/solid separation of digestate in full scale biogas plants* - Presented by: **Alessandro Chiumenti, Dept. DI4A, University of Udine, Udine, Italy;** Francesco da Borso, Sonia Limina, Barbara Piaia
9:15am	2400230	*Troubleshooting a 100 kW Biogas Plant Fed with Silages and Bovine Manure* - Presented by: **Alessandro Chiumenti, DI4A Dept. University of Udine, Udine, Italy;** Francesco da Borso

305 Techno-Economic Analysis (TEA) of Biofuels and Bioproducts

Wednesday, 7/31/2024 7:30am - 10:00am

Location: Platinum 7
Technical Community: ES - Energy Systems
Session Type: Oral Technical Session
Organizer: Deepak Kumar, SUNY ESF
Sponsoring Committee: ES-220 Bio-based Energy, Fuels and Products
Moderators: Deepak Kumar, SUNY ESF; Brendan Higgins, Auburn University

Start Time	Abstract ID	*Presentation Title* – Presenter; Co-authors
7:35am	2400887	*A Techno-economic Analysis of Trucking (Virtual Pipeline) vs Piping Biogas and Renewable Natural Gas* - Presented by: **Luke Soko, Iowa State University, Ames, Iowa;** Dr. Dan Andersen
7:50am	2400489	*Maximizing economic and sustainability potential of cover crops in the pacific northwest* - Presented by: **Daniel Santosa, Pacific Northwest National Laboratory, Richland, Washington;** Francesca Pierobon, Chad Kruger, Teal Potter, Steven Norberg, Douglas Collins, Aaron Esser
8:05am	2401239	*Hydrothermally Assisted Carbonization of Switchgrass to Produce Hard Carbon for Sodium-Ion Battery Applications—Techno-economic Analysis* - Presented by: **Yilin Li, Virginia Tech, Blacksburg, Virginia;** Haibo Huang
8:20am	2401406	*Techno-economic analysis of renewable natural gas production from brewery wastewater* - Presented by: **Xuanbo Liu, Department of Food Science and Technology, Virginia Polytechnic Institute and State University, Blacksburg, Virginia;** Haibo Huang
8:35am-8:45am		BREAK
8:45am	2401482	*Techno-economic model of anaerobic co-digestion and biogas upgrading in dairy farms* - Presented by: **Juliana Vasco-Correa, Penn State University, University Park, Pennsylvania;** Hunter Porcano, Camila Valderrama, Elmin Rahic, DeWaunis Kelly, Christine Costello, Juliana Vasco-Correa
9:00am	2401218	*Technoeconomic analysis of renewable hydrogen and ethylene production via biological pathway using corn stover* - Presented by: **Ashish Manandhar, The Ohio State University, Columbus, Ohio;** Justin North, Patrice Hamel, Ajay Shah
9:15am	2401225	*Techno-Economic Analysis of an Industrial Scale System for Producing Filamentous Fungal Biomass from Almond Hulls* - Presented by: **Hamed M. El Mashad, University of California Davis, Davis, California;** Lin Cao, Allan Chio, Yike Chen, Hamed M. El Mashad, Zhongli Pan, Ruihong Zhang
9:30am	2400343	*Techno-Economic Analysis of Industrial Enzyme Production and Purification* - Presented by: **Julia Cunniffe, North Carolina State University, Raleigh, North Carolina;** Vanessa Rondon Berrio, Sonja Salmon, Amy Grunden, Thuan Nguyen, Nathan Crook, William Joe Sagues

306 Entrepreneurship for Scientists-PANEL

Wednesday, 7/31/2024 7:30am - 10:00am

Location: Orange County 2

Technical Community: ITSC - Information Technology, Sensors & Control Systems

Session Type: Panel Discussion

Description: An engineer entrepreneur will be selected to host the panel discussion, and 2-3 speakers from various industries are invited to speak of their practical requirements and experiences in entrepreneurship. This session will also consist of a face-to-face discussion followed by a mini workshop.

Organizer: Xinge Xi, China Agricultural University

Sponsoring Committee: ITSC-230 Biosensors **Co-Sponsors:** ITSC-254 Emerging Information Systems, ITSC-312 Machine Vision, ITSC-318 Mechatronics & Biorobotics, ITSC-348 Electromagnetics & Spectroscopy

Moderators: Evangelyn Alocilja, Michigan State University

Panelists: Xinge Xi, China Agricultural University; Evangelyn Alocilja, Michigan State University; Keith Tinsey, HJV Equipment LLC; Anthony Doss, Tyson; John Chamberlin, Chamberlin Research; Gurshagan Kandhola, CelluDot; Zhikeng Lin, Xiamen Wiz Biotech Co

307 New Methods in AI & Machine Learning for Agriculture & Natural Resources

Wednesday, 7/31/2024 7:30am - 10:00am

Location: Grand Ballroom A

Technical Community: ITSC - Information Technology, Sensors & Control Systems

Session Type: Oral Technical Session

Description: Focuses on the development of new or innovative machine learning and artificial intelligence approaches for applications in natural resources.

Organizer: Jeff Sadler, Oklahoma State University

Sponsoring Committee: ITSC-254 Emerging Information Systems

Moderators: Hadi Bazrkar, Texas A&M University Kingsville

Start Time	Abstract ID	*Presentation Title* – Presenter; Co-authors
NO-SHOW	2401339	*Unsupervised Modeling for Mastitis Detection in Commercial Robotic Milking Farms* - Presented by: **Atefeh Fazayel, Lincoln University, Lincoln, New Zealand;** Sandhya Smarasinghe, Patricia Anthony
7:50am	2400014	*Leveraging Genetic Algorithm for Optimizing Ensemble Learning for Land Cover/Land Use Classification in Talassemtane National Park, Morocco* - Presented by: **Ali Azedou**
8:05am	2401540	*Generative AI for Climate-Adaptive Viticulture Development* - Presented by: **Joel Harms, Department of Bioresource Engineering McGill University, Montreal, Quebec, Canada;** Jan Adamowski, Viacheslav Adamchuk, Nathaniel Newlands, Simone Castellarin
8:20am	2400339	*Detecting crop phenology by fusing vegetation indices and meteorological time series using a two-stream sequence-to-sequence network* - Presented by: **Qiyu Tian, Zhejiang University, Hangzhou City, Zhejiang Province, China;** Qiyu Tian, Renhai Zhong, Xingguo Xiong, Hao Jiang,Tao Lin
8:35am-8:45am		BREAK
8:45am	2401313	*Optimizing Nitrogen Management in Corn Cultivation using DSSAT and Machine Learning tools to Enhance Yield and Environmental Sustainability* - Presented by: **Rakesh K. Singh, Agricultural and Biological Engineering at the University of Florida, Gainesville, Florida;** Vivek Sharma
9:00am	2400530	*Voting ensemble for optimal sensors placement in controlled environment agriculture* - Presented by: **Ifeanyi Vincent Nwaneri;** Ifeanyi Vincent Nwaneri, Judith Njoku, Oreofeoluwa Akintan, Senorpe Hiablie, Azlan Zahid, Daniel Uyeh
9:15am	2400813	*Imbalanced Datasets and Crop Yield Prediction: Application of Preprocessing Techniques for Regression Tasks in Agriculture* - Presented by: **Mariaelisa Polsinelli, McGill University and Agriculture and Agri-Food Canada, Montreal, Quebec, Canada;** Morteza Mesbah, Zhiming Qi, Matt Ramsay

9:30am	2401002	*Application of machine learning (ML) techniques for prediction of leaf nitrogen content (LNC) and crop yield estimation in precision agriculture* - Presented by: **Susanta Das, Department of Agricultural and Biological Engineering, University of Florida, Gainesville, Florida;** Charles Colvin, Vivek Sharma
9:45am	2400472	*Comparative Performance of Machine Learning Models in Predicting Saturated Hydraulic Conductivity Using Soil Characteristics* - Presented by: **Toby A. Adjuik, Iowa State University, Department of Agronomy, Ames, Iowa;** Sue E. Nokes, Michael D. Montross, Michael P. Sama, Ole Wendroth

308 Robotics and AI-Enabled Robotics for Agrifood Systems

Wednesday, 7/31/2024 7:30am - 10:00am

Location: Orange County 1
Technical Community: ITSC - Information Technology, Sensors & Control Systems
Session Type: Oral Technical Session
Description: Focuses on the development and application of robotics and AI-enabled robotics technologies for food processing, postharvest processing, and natural resources.
Organizer: Hak-Jin Kim, Seoul National University
Sponsoring Committee: ITSC-318 Mechatronics & Biorobotics
Moderators: Congliang Zhou, University of Florida

Start Time	Abstract ID	*Presentation Title* – Presenter; Co-authors
7:35am	2401014	*Curvature-based Path Planning and Model-based Path Tracking Control for 4WS Agricultural Robot* - Presented by: **Yong-Hyun Kim, Seoul National University, Seoul, Republic of Korea;** Hak-Jin Kim, Chulwhan Yoon, Jungun Lee
7:50am	2401208	*Deployment of Deep Neural Network Semantic Segmentation Model for Autonomous Navigation of Agricultural Robots* - Presented by: **Chijioke Leonard Nkwocha, Oklahoma State University, Stillwater, Oklahoma;** Ning Wang
8:05am	2400325	*Path planning of caged chicken house based on multi-area integrated navigation* - Presented by: **CANCELED**
8:20am	2400088	*Deep Imitation Learning for Chesapeake Crab Jumbo-Lump Meat Extraction* - Presented by: **Mohamed Ali;**
8:35am-8:45am		BREAK
8:45am	2400884	*Deploying ChatGPT-like LLM for Offline Voice Assistance in Farm Robots* - Presented by: **Sainath Reddy Gummi**
9:00am	2400782	*Deep Reinforcement Learning-based Navigation for Autonomous Robots for Laboratory Experiments* - Presented by: **Daoyuan Jin**
9:15am	2401135	*Automated on-the-spot measurement of shallow depth soil biological properties* - Presented by: **John Lan**

309 YOLO & Advanced Vision Machine Learning to Identify Plant and Animal Characteristics and Behavior

Wednesday, 7/31/2024 7:30am - 10:00am

Location: Grand Ballroom B
Technical Community: ITSC - Information Technology, Sensors & Control Systems
Session Type: Oral Technical Session
Organizer: Joe Dvorak, University of Kentucky
Sponsoring Committee: ITSC-254 Emerging Information Systems
Moderators: Jing Zhou, Oregon State University

Start Time	Abstract ID	*Presentation Title* – Presenter; Co-authors
7:35am	2400337	*Automated Dairy Cow Temperature Monitoring System Based on Cow Face Recognition and Thermal Imaging* - Presented by: **Chen-Yu Liao, National Taiwan University, Taipei, Taiwan (R.O.C.)**
7:50am	2401053	*Observing Behaviors of Weaning Piglets in Nursery Using Deep Learning* - Presented by: **Po-Cheng Hsieh, National Taiwan University, Taipei, Taiwan;** Yan-Fu Kuo, En-Chung Lin

8:05am	2400316	*A Deep Learning Framework with Spatio-Temporal Analysis for Enhancement of Insect Pest Recognition* - Presented by: **Chiao-Yin Teng, Department of Biomechatronics Engineering, National Taiwan University, Taipei, Taiwan;** Ta-Te Lin
8:20am	2400091	*Non-invasive detection and quantification of skinning damage in sweetpotatoes using enhanced YOLOv8-seg model* - Presented by: **Yican Yang, Department of Agricultural & Biological Engineering (ABE), Mississippi State University, Starkville, Mississippi State;** Nuwan K Wijewardane, Lorin Harvey
8:35am-8:45am		BREAK
8:45am	2401261	*RepYOLO-T: A RepNet-style One-stage Network for Grapevine Leafroll Disease Detection* - Presented by: **Shangpeng Sun, Bioresource Engineering Department, McGill University, Ste-Anne-de-Bellevue, Canada;** Yixue Liu, Xintong Jiang, Zhouzhou Zheng, Dizhu Liu, Baofeng Su, Shangpeng Sun
9:00am	2401034	*Quantifying Feeding-related Characteristic of Shrimp Using Deep Learning* - Presented by: **Chu-Chan Lee, National Taiwan University, Taipei City, Taiwan;** Yan-Fu Kuo, Yuan-Nan Chu
9:15am	2401357	*Applicability of vision transformer model in assessing corn and soybean crop growth stages* - Presented by: **Sushma Katari, The Ohio State University, Columbus, Ohio;** Luke Waltz, Taylor Dill, Laura Lindsey, Sami Khanal
9:30am	2401398	*Advancing Orchard Fruit Detection: An Innovative Agricultural Foundation Model Approach* - Presented by: **Jiajia Li, Michigan State University, East Lansing, Michigan;** Jiajia Li, Kyle Lammers, Xunyuan Yin, Xiang Yin, Long He, Renfu Lu, Zhaojian Li
9:45am	2400181	*Strawberry Canopy Size Estimation with SAM Guided by YOLOv8 Detection* - Presented by: **Zijing (Jing) Huang, Deparment of Agricultural and Biological Engineering, University of Florida, Florida;** Won Suk Lee, Niteesh Chowdary Takkellapati

310 UAS Applications in Precision Agriculture, Natural Resources, and Vector Control

Wednesday, 7/31/2024 7:30am - 10:00am

Location: Platinum 8

Technical Community: MS - Machinery Systems

Session Type: Oral Technical Session

Description: Uncrewed aerial systems (UAS) or drones are a relatively new tool for remote sensing and distribution of inputs. This session highlights the breadth of novel UAS-related work within our entire professional society.

Organizer: Mike Sama, University of Kentucky

Sponsoring Committee: MS-60 Unmanned Aerial Systems

Moderators: Mike Sama, University of Kentucky

Start Time	Abstract ID	*Presentation Title* – Presenter; Co-authors
7:35am	2401021	*Automated pipeline for multi-polygon shapefile generation for phenotype and precision agricuture applications* - Presented by: **Aashvi Dua**
7:50am	2400814	*Optimizing Corn Irrigation Strategies: Insights from NDVI Trends, Soil Moisture Dynamics, and Remote Sensing* - Presented by: **John Eric O. Abon, Carl and Melinda Helwig Department of Biologocal and Agricultural Engineering, Kansas State University, Manhattan, Kansas;** Ajay Sharda
8:05am	2401227	*UAV-Derived Digital Trait Analysis for Consistent Representation of Wheat Grain Yield and Adaptability Across Variable Environments* - Presented by: **Kesevan Veloo, Washington State University, Pullman, Washington;** Arron H. Carter, Kimberly Garland-Campbell, Michael O. Pumphrey, Kirti Rajagopalan, Sindhuja Sankaran
8:20am	2401462	*Optimizing soybean production via soil health and grain quality assessment using UAV multispectral imaging* - Presented by: **CANCELED**
8:35am-8:45am		BREAK
8:45am	2401343	*Economic Comparison of Different Sizes of Drone Sprayers* - Presented by: **Josh Jackson, UK, Lexington, Kentucky;** Karla Ladino
9:00am	2400950	*Optimizing Matrix Barcode Encoding for Ground Control Points in UAS-Based Remote Sensing* - Presented by: **Karla S. Ladino, University of Kentucky, Lexington, Kentucky;** Michael P. Sama, Daniel L. Lau

9:15am	2401138	*Design and Deployment of Custom-Built Autonomous UAVs for Smart Agriculture* - Presented by: **Veera Venkata Ram Murali Krishna Rao Muvva, University of Nebraska Lincoln, Lincoln, Nebraska;** Veera Venkata Ram Murali Krishna Rao Muvva, Kunjan Theodore Joseph, Santosh Pitla

311 Applied Ecological Engineering

Wednesday, 7/31/2024 7:30am - 10:00am

Location: Grand Ballroom D

Technical Community: NRES - Natural Resources & Environmental Systems

Session Type: Oral Technical Session

Description: Presentations dealing with research and case studies dealing with ecological engineering or the holistic design of systems that mutually benefit ecologic systems and humanity.

Organizer: Dawn Dechand, Michigan State University

Sponsoring Committee: NRES-28 Ecological Engineering **Co-Sponsors:** NRES-21 Hydrology Group, NRES-22 Soil Erosion and Water Quality, NRES-25 Streams, Reservoirs, and Wetlands Group

Moderators: Dawn Dechand, Michigan State University; John McMaine, South Dakota State University

Start Time	Abstract ID	*Presentation Title* – Presenter; Co-authors
7:35am	2400069	*Contaminant mixtures and their impact on wetland treatment processes: A mesocosm study* - Presented by: **Emily Nottingham, University of Kentucky, Lexington, Kentucky;** Tiffany Messer, Dan Miller, Christopher Barton, Jason Unrine, Carmen Agouridis
7:50am	2400915	*Contribution of small towns to impervious area of rural watersheds* - Presented by: **Maryam Sahraei, South Dakota State University, Brookings, South Dakota;** John McMaine, Jeremiah Bergstrom
8:05am	2400872	*Could denitrification hot moments be the missing link of nitrogen removal in watersheds?* - Presented by: **François Birgand**
8:20am	2400315	*Exploring the engineering-scale potential of designer biochar for phosphorus loss reduction from tile-drain agroecosystems* - Presented by: **Hongxu Zhou, University of Illinois at Urbana-Champaign, Illinois;** Hongxu Zhou, Haribansha Timalsina, Peng Chen, Wei Zheng, Richard A. Cooke, Rabin Bhattarai
8:35am-8:45am		BREAK
8:45am	2401116	*Woodchip bioreactors: Applications beyond tile-drained fields for mitigation of nitrate and pathogens* - Presented by: **Natasha L. Bell, Department of Biological Systems Engineering, Virginia Tech, Blacksburg, Virginia;** Shannon Brink, Ariane Peralta, Sarah White, Steven Jeffers, Daniel Hitchcock
9:00am	2401070	*Managing Saturated Buffers in Flat Fields: Impacts on Flow and Nitrate Load Treatment* - Presented by: **Gabriel Johnson, Iowa State University, Ames, Iowa;** Thomas Isenhart, Chris Hay
9:15am	2401362	*Ditch Proximity Affects Production with Environmental and Policy Implications* - Presented by: **Vijay P. Santikari, Agricultural and Biological Engineering Department, University of Florida, Southwest Florida Research and Education Center, Immokalee, Florida;** Sanjay Shukla, Mehran Homayounfar, Justin Schabow, Gregory Hendricks

312 Extension-Empowering our Stakeholder through New Technologies

Wednesday, 7/31/2024 7:30am - 10:00am

Location: Platinum 10

Technical Community: NRES - Natural Resources & Environmental Systems

Session Type: Oral Technical Session

Description: Inclusion of an extension session that can bring different stakeholders for discussion (e.g., panel) and/or presentations for what their objectives and impacts are and how we can work together to empower them for a changing climate. How to increase adoption of new technologies.

Organizer: Maria Zamora Re, Oregon State University

Sponsoring Committee: NRES-245 Microirrigation **Co-Sponsors:** NRES-24 Irrigation Group

Moderators: Maria Zamora Re, Oregon State University

Start Time	Abstract ID	*Presentation Title* – Presenter; Co-authors
7:35am	2401104	*A multi-criteria decision-making model framework for comparisons of cover cropping systems* - Presented by: **Gabrielle Myers;** Cameron A. MacKenzie, Gina A. Nichols, Cynthia A. Bartel, Daniel S. Andersen, D. Raj Raman
7:50am	2400641	*Design of a Field Operations Visualizer (FOV)* - Presented by: **Philip E. Rockson, Iowa State University, Ames, Iowa;** Daniel S. Andersen, Mark A. Licht, D. Raj Raman
8:05am	2401247	*Using Artificial Intelligence to Further Extension* - Presented by: **Jeff Sadler, Oklahoma State University, Stillwater, Oklahoma;** David Warren
8:20am	2400897	*Well Water Education and Testing in Rural Communities through Extension* - Presented by: **Jeff Sadler, Oklahoma State University, Stillwater, Oklahoma;** Nicole Colston, Jim Pendred, Kevin Wagner, Erycka Pretorius, Brody Bouher, James Lee, Kaylin Hall, Abu Mansaray, Josephus Borsuah
8:35am-8:45am		BREAK
8:45am	2400101	*Irrigation Scheduling using HYPROP generated and inverse soil hydraulic parameters* - Presented by: **Hemendra Kumar, University of Maryland, College Park, Maryland;** Puneet Srivastava, Jasmeet Lamba, Bijoychandra Singh Takhellambam
9:00am	2400683	*Assessing Florida Vegetable Farmer's Willingness to Adopt Water-Saving Technologies in Vegetable Production* - Presented by: **Akshara Athelly**
9:15am	2401137	*AgroClimate Extension Program: What is useful and what is used by growers in Florida?* - Presented by: **Clyde Fraisse**
9:30am	2401461	*Creating a Producer Toolbox for In-Field Soil Health Assessment In Southern Idaho: Active Carbon* - Presented by: **Linda Schott, University of Idaho, Twin Falls, Idaho**

313 Next-Gen Agroecosystem Modeling: Integrating AI/ML and Process-Based Models

Wednesday, 7/31/2024 7:30am - 10:00am

Location: Platinum 1

Technical Community: NRES - Natural Resources & Environmental Systems

Session Type: Oral Technical Session

Description: Extreme events, such as floods, droughts, wildfires, and water pollution, pose significant challenges to agro-ecosystem management worldwide. Various process-based models, like APEX, DRAINMOD, DSSAT, EPIC, HSPF, MIKE, PIHM, SWAT, WAM, WaSSI, and WEPP, have been crucial in understanding and managing these events. However, a major hurdle is the scarcity of data or insufficient data, hindering accurate calibration and validation of these models. To overcome these limitations, researchers have embraced machine learning (ML) and artificial intelligence (AI) as integrative tools to enhance predictive capabilities. While ML/AI approaches offer promising solutions, they also present their own challenges and strengths. In this proposed session, we aim to explore the potential collaboration between AI/ML methods and process-based modeling to advance agro-ecosystem management. The session objectives are as follows:

(1) Highlight the use of AI/ML as an integrative tool to complement process-based modeling in agro-ecosystem management.

(2) Discuss the challenges and strengths of AI/ML approaches in dealing with data scarcity and insufficiency.

(3) Showcase innovative applications, tools, and algorithms that integrate AI/ML and process-based models for agro-ecosystem management.

(4) Foster collaborative discussions among researchers, practitioners, and stakeholders to identify synergies between AI/ML and process-based modeling.

Organizer: Rebecca Muenich, University of Arkansas

Sponsoring Committee: NRES-21 Hydrology Group **Co-Sponsors:** ITSC-217 Computational Methods, Simulations & Applications

Moderators: Sushant Mehan, South Dakota State University; Rishabh Gupta, University of Florida

Start Time	Abstract ID	*Presentation Title* – Presenter; Co-authors
7:35am	2400202	*A HAWQS-LSTM framework for improving streamflow prediction in ungaged basins* - Presented by: **Shubham Jain, Texas A&M University, College Station, Texas;** Arun Bawa, Raghavan Srinivasan

7:50am	2400668	*Hybrid Biophysical – Machine Learning for Diurnal Estimation of Agricultural Surface Energy Fluxes* - Presented by: **James Cross, The Ohio State University, Columbus, Ohio;** James Cross, Darren Drewry, Andy VanLoocke, G. (Rojda) Aslan-Sungur, Kaniska Mallick
8:05am	2400218	*Automation of On-Farm Method for Visual Quantification of Carbon Degradation in Agricultural Soils* - Presented by: **Andrew Stiven Ortiz-Balsero, University of Nebraska-Lincoln, Nebraska;** Karla Melgar, Amy Schmidt, Mara Zelt
8:20am	2400657	*Exploring crop model-informed machine learning approach for modeling potato cropping system* - Presented by: **Rishabh Gupta, University of Florida, Gainesville, Florida;** Rishabh Gupta, Satya Krishna Pothapragada, Prateek Kumar Goel, Lahari Kethinedi, Joel B. Harley, Kelly Morgan, Alina Zare, Lincoln Zotarelli
8:35am-8:45am		BREAK
8:45am	2400792	*Analysing Climate Change Trends in the Great Plains of the United States (1900-2022)* - Presented by: **Kayode Blessing Adebayo, Graduate research assistant, Agricultural and Biosystems Engineering, South Dakota State University, Brookings, South Dakota;** Sushant Mehan, Kyle Mankin
9:00am	2400756	*Comparison of Hybrid Machine Learning Models with Classical Machine Learning Models to Predict Actual Evapotranspiration in Semi-Arid Region* - Presented by: **Manoj Lamichhane, South Dakota State University, Brookings, South Dakota;** Sushant Mehan, Kyle Mankin, Maitiniyazi Maimaitijiang
9:15am	2401329	*Analysing potato response to different irrigation and nitrogen applications in Suwannee Valley using substor- potato model* - Presented by: **Varshitha Prasanna, PhD student, Gainesville, Florida;** Vivek Sharma, Morgan Morrow, Bibek Acharya, Uday Bhanu Prakash Voddevolu, Rakesh Singh, Susanta Das
9:30am	2400478	*NPS Assessment and BMP Adoption Likelihood Using SWAT and Machine Learning (ML)* - Presented by: **Paul Leisnham, University of Maryland, College Park, Maryland;** Zeshu Zhang, Hubert Montas, Masoud Negahban-Azar, Majid Mirzaei, Adel Shirmohammadi
9:45am	2400458	*Explainable Machine Learning to Advance Eco-Physiological Prediction* - Presented by: **Srishti Gaur**

314 Nutrient Transport and Cycling: Modeling

Wednesday, 7/31/2024 7:30am - 10:00am

Location: Platinum 9

Technical Community: NRES - Natural Resources & Environmental Systems

Session Type: Oral Technical Session

Description: This session includes presentations on all aspects of nutrient cycling and transport measurement and modeling at plot, field and watershed scales in agricultural and urban systems.

Organizer: Rabin Bhattarai, University of Illinois

Sponsoring Committee: NRES-22 Soil Erosion and Water Quality **Co-Sponsors:** NRES-23 Drainage Group

Moderators: Rabin Bhattarai, University of Illinois; Rishabh Gupta, University of Florida

Start Time	Abstract ID	*Presentation Title* – Presenter; Co-authors
NO-SHOW	2401387	*Assessment of empirical and process-based models in simulating soil organic carbon and N2O emissions in Midwest, USA* - Presented by: **Amit Prasad Timilsina, The Ohio State University, Wooster, Ohio;** Bevers Noah, Kabindra Adhikari, Sami Khanal
7:50am	2400541	*Estimating Nitrate Export on Counties Scale to Guide Localized Nutrient Management* - Presented by: **Samuel Soetan, Iowa State University, Ames, Iowa;** Dr. Amy Kaleita
8:05am	2400240	*Estimating Nutrient Loads to Falls Lake, North Carolina from Streambank Erosion* - Presented by: **Layla El-Khoury, North Carolina State University, Raleigh, North Carolina;** Dr. Barbara Doll, Dr. Jack Kurki-Fox, Daniel Line, Dr. Karl Wegmann, Dr. Krissy Hopkins
8:20am	2400918	*Simulating Loss of Metals in Leachate from Fields Fertilized with Poultry Manure* - Presented by: **Vishawjot Singh Sandhu, Biosystems Engineering Department, Auburn University, 36849, Auburn, Alabama;** Dr. Jasmeet Lamba, Dr. Kritika Malhotra, Thomas R Way
8:35am-8:45am		BREAK

8:45am	2400532	*Nutrient source apportionment through process-based modeling and isotopic source tracing in a sparsely monitored agricultural watershed* - Presented by: **Hector Fajardo, North Carolina State University, Raleigh, North Carolina;** Hector Fajardo, Shin-Ah Lee, Arghajeet Saha, Elise Morrison, Rebecca Muenich, Daniel Obenour, Natalie Nelson
9:00am	2401241	*Simulating Nitrate and Water Dynamics in a Maize-Peanut Rotational Systems: A Comparative Analysis Using DSSAT, HYDRUS-1D, and SWAT Models* - Presented by: **Bibek Acharya, Agricultural and Biological Engineering Department, Gainesville, Florida;** Vivek Sharma
9:15am	2401316	*Optimizing Corn Yield and Nitrate Leaching with Controlled-Release Fertilizers: A CERES-Maize Model Analysis* - Presented by: **Rakesh K. Singh, Agricultural and Biological Engineering at the University of Florida, Gainesville, Florida;** Morgan Morrow, Vivek Sharma
9:30am	2401453	*Modeling effectiveness of BMPs to reduce phosphorous load in Agriculture Watershed, Ontario, Canada* - Presented by: **Rituraj Shukla**

315 Air Emission from Livestock and Poultry Production

Wednesday, 7/31/2024 7:30am - 10:00am

Location: Grand Ballroom G

Technical Community: PAFS - Plant, Animal, & Facility Systems

Session Type: Oral Technical Session

Description: This session will include presentations from researchers, educators, and industry experts to share research experience and discuss air emission challenges and solutions in livestock and poultry production.

Organizer: Mindy Spiehs, USDA-ARS

Sponsoring Committee: PAFS-50 Environmental Air Quality

Moderators: Mindy Spiehs, USDA-ARS

Start Time	Abstract ID	*Presentation Title* – Presenter; Co-authors
7:35am	2400324	*Ammonia Concentrations, Deposition, and Soil Properties as Impacted by the Deposition in the Near Fields of a Poultry Production Facility* - Presented by: **Sam Cherotich, NC State University, Raleigh, North Carolina;** Lingjuan Wang-Li, Wei Shi, John Classen, Sanjay Shah, Kenneth Anderson
7:50am	2400620	*Determination of Pollutant Concentrations in Multi-floor Swine Houses* - Presented by: **Dongxuan Han, College of Biosystems Engineering and Food Science, Zhejiang University, Hangzhou, Zhejiang, China;** Xin Li, Xiaojie Yan, Kaiying Wang
8:05am	2400794	*Measurement of Fugitive Airborne Contaminants from Pig Slurry Spreading* - Presented by: **Patrick Brassard, IRDA, Quebec City, Quebec, Canada;** Samantha Leclerc, Valérie Létourneau, Nathalie Turgeon, Laura Daniela Mila Saavedra, Azin Zand Miralvand, Caroline Duchaine, Stéphane Godbout
8:20am	2400594	*Air purification in cattle housing – options to capture emissions in a limited amount of air* - Presented by: **Bjarne Bjerg, University of Copenhagen, Denmark;** Stine Grønborg, Michael Holm
8:35am-8:45am		BREAK
8:45am	2400974	*Seasonal greenhouse gas emissions from storages contained untreated, separated and digested dairy manure in New York* - Presented by: **Jason P. Oliver, Cornell University,PRO-DAIRY, Ithaca, New York;** Lauren Ray, Angela George
9:00am	2401553	*Advancements in Sensing Networks for Greenhouse Gas Emission and Meteorological Indicators: Enhancing Cattle Health and Climate Resilience in Dairy Farming* - Presented by: **Keshawa Dadallage, Department of Biological Systems Engineering, Washington State University, Prosser, Washington**; Basavaraj Amogi
9:15am	2400352	*Ammonia and greenhouse gas emissions from Texas and Nebraska feedlot surface material under different temperatures* - Presented by: **Mindy J. Spiehs, USDA ARS US Meat Animal Research Center, Clay Center, Nebraska;** Bobbi Stromer, Bryan Woodbury, Jacek Koziel, Will Willis

316 Sustainable Energy Solutions for Controlled Environment Agriculture

Wednesday, 7/31/2024 7:30am - 10:00am

Location: Grand Ballroom H

Technical Community: PAFS - Plant, Animal, & Facility Systems

Session Type: Oral Technical Session

Description: This session will include abstracts that focus on sustainable energy solutions tailored specifically for controlled environment agriculture.

Organizer: Shamim Ahamed, University of California-Davis

Sponsoring Committee: PAFS-30 Plant Systems Group

Moderators: Shamim Ahamed, University of California-Davis; Melanie Correll, University of Florida

Start Time	Abstract ID	*Presentation Title* – Presenter; Co-authors
7:35am	2401282	*Potential of Climate-smart PV Shade Screen Impact on Greenhouse Thermal Load* - Presented by: **Muhammad Kashif;** Ahmed A. Hassan, Shamim Ahamed
7:50am	2400739	*Shallow Geothermal Heating and Cooling for High Tunnels – A Design & Decision Support Tool for Farmers* - Presented by: **Jaden Tatum, Ohio State University, Columbus, Ohio;** Ajay Shah
8:05am	2400080	*Impact of crop switching on yield and energy use in greenhouses in the southern US* - Presented by: **Brendan Higgins, Auburn University, Auburn, Alabama;** Daniel Wells, Jessica Paranhos, Mehedi Hasan, Caroline Whiting
8:20am	2400189	*Enhanced Seed Germination with Solar-Powered Plasma Water Generator* - Presented by: **Yiting Xiao, Biological Engineering, University of Arkansas, Fayetteville, Arkansas;** Jun Zhu
8:35am-8:45am		BREAK
8:45am	2400233	*Optimizing Lettuce Growth in Controlled High-Humidity Environments* - Presented by: **Jordan Wong, McGill University, Montreal, Quebec, Canada;** Laurent Boucher, Sarah MacPherson, Phillip Wireu Addo, Mark Lefsrud
9:00am	2400356	*Optimizing Greenhouse Sustainability: A Comprehensive Thermal Model for Assessing Alternative Covering Materials and Energy Efficiency* - Presented by: **Mathieu Deschênes, Université Laval, Québec, Québec, Canada;** Mathieu Bendouma, Stéphane Godbout, Sébastien Fournel
9:15am	2400886	*Design, construction, and evaluation of a UV radiation device integrated with automatic motion sensors for surface disinfection and pathogen control* - Presented by: **Mark Lefsrud;** Saman Zohrabi, Sarah MacPherson, Shangpeng Sun, Mark Lefsrud
9:30am	2401250	*Modelling of Energy Requirements for Cooling and Heating in Controlled Environment Agriculture* - Presented by: **Sudip Sapkota, Biosystems Engineering, Auburn, Alabama;** Sushil Adhikari
9:45am	2401285	*Exploring Tradeoffs in Thermal and Economic Performance Across Different Collector Technologies for Solar-Thermally Cooled Greenhouses* - Presented by: **T M Abir Ahsan**
10:00am	2401231	*Evaluating the Energy Requirement of Indoor Container Farming across Diverse USA Climate Zones* - Presented by: **Ahmed Hassan**

317 Biochemical Conversion and Bioprocess Modeling

Wednesday, 7/31/2024 7:30am - 10:00am

Location: Grand Ballroom J

Technical Community: PRS - Processing Systems

Session Type: Oral Technical Session

Description: This session will include abstracts focused on bioprocessing and bioconversion of biomass into biofuel, biochemical, and biomaterials. High interest in the approaches used for modeling the bioconversion processes.

Organizer: Yi Wang, UC Davis

Sponsoring Committee: PRS-280 Bioconversion and Bioprocesses **Co-Sponsors:** ES-220 Bio-based Energy, Fuels and Products

Moderators: Yi Wang, UC Davis; Atiyeh Hasan, Oklahoma State University

Start Time	Abstract ID	*Presentation Title* – Presenter; Co-authors
7:35am	2401366	*Production of Polyhydroxyalkanoates (PHA) from Cheese Byproducts by Halophilic Microbes* - Presented by: **Kelly Graff, UC Davis, Davis, California;** Alexander Hobby, Hamed El-Mashad, Ruihong Zhang
7:50am	2401385	*Using a Statistical Machine-Learning Approach to Model Anaerobic Digestion of Food Waste* - Presented by: **Ana Martin-Ryals**
8:05am	2400829	*Fermented Almond Hulls for Reducing Methane Emissions from Cattle* - Presented by: **Allan Chio, UC Davis, Davis, California;** Hamed El Mashad, Lin Cao, Ruihong Zhang
8:20am	2401235	*Succinic Acid Fermentation enhanced via Microbial Electrosynthesis* - Presented by: **Jingjing Wang**
8:35am-8:45am		BREAK
8:45am	2401214	*Co-Immobilization of Microalgae and Bacteria with Filamentous Fungi : Mechanistic Insights and New Applications* - Presented by: **Suvro Talukdar, Biosystems and Agricultural Engineering, University of Kentucky, Lexington, Kentucky;** Tyler J. Barzee
9:00am	2400378	*Dual-Feedstock Approach for Efficient PHB Production: Strategic Nutrient Management* - Presented by: **Boanerges Bamaca Saquic;** Mark R. Wilkins, Rajib Saha
9:15am	2401405	*Microbial assimilation of formic acid and C1 carbon metabolism with an Ant-derived community* - Presented by: **Vanessa Rondon Berrio;** Elsa Youngsteadt, Michelle Kirchner, Douglas Call, Nathan Crook, Sonja Salmon, Amy Grunden, William Joe Sagues
9:30am	2401327	*Integration of methanotrophic flux balance analysis into a mechanistic model for methane biofiltration systems* - Presented by: **Camila Gonzalez Arango**
9:45am	2400486	*Unlocking the Potential of Biological CO2 Conversion to Ethanol by Clostridium ragsdalei P11 in Batch and Continuous Operations* - Presented by: **Mari S. Chinn;** Rahul Thunuguntla, Hasan K. Atiyeh, Mari S. Chinn, Ralph S. Tanner
10:00am	2401125	*Production of Pelletized and Granulized Products from Dairy Manure Solids* - Presented by: **Ian A. Nielsen, UC Davis PhD Student, Davis, California;** Ian A. Nielsen, Abdolhossein Edalati, Hamed El-Mashad, Ruihong Zhang
10:15am	2400220	*Solid-State Fermentation of Corn to Make Chinese Liquor: Effect of corn variety and Dynamic Microbial Community Variation* - Presented by: **Shubhangi Arvelli, Kansas State University, Manhattan, Kansas;** Meicen Liu, Gengjun Chen, Thomas Weiss, Yuandi Zhang, Yonghui Li, Donghai Wang, Yi Zheng

318 Food Process Engineering

Wednesday, 7/31/2024 7:30am - 10:00am

Location: Grand Ballroom K

Technical Community: PRS - Processing Systems

Session Type: Oral Technical Session

Description: Fundamental session that captures the recent advances and research in the area of food process engineering.

Organizer: Ashutosh Singh, University of Guelph

Sponsoring Committee: PRS-703 Food Processing

Moderators: Griffiths Atungulu, University of Arkansas; Deandrae Lynette Smith, Purdue University

Start Time	Abstract ID	*Presentation Title* – Presenter; Co-authors
7:35am	2400801	*Influence of Lactic Acid Bacteria on Sour Mash Bourbon Fermentations* - Presented by: **Yosselin Castro Islas, University of Kentucky, Lexington, Kentucky;** Tyler Barzee
7:50am	2400172	*The effect of spindle types and kneading speed on the yield of shea butter in an automated kneading machine* - Presented by: **Joshua Olanrewaju Olaoye, University of Ilorin, Ilorin, Kwara State, Nigeria;** Israel Peter Duniya, Mary Olayinka Olaoye
8:05am	2400132	*Mathematical modeling of rupture and relaxation characteristics of soybean under compressive loading* - Presented by: **Emmanuel Baidhe, Department of Agricultural and Biosystems Engineering, North Dakota State University, Fargo, North Dakota;** Clairmont Clementson

8:20am	2401485	*Effect of Cold Plasma Treatment on Wheat Seed Germination and Early Growth Characteristics* - Presented by: **Yuan Yuan, University of Idaho, Moscow, Idaho;** Taylor Booker, Md Mokter Hossain, Robinson Junior Ndeddy Aka, Ekow Agyekum-Oduro, Haiqing Sheng, Sarah Wu
8:35am-8:45am		BREAK
8:45am	2401046	*Fractionation of pea flour using density gradient centrifugation and its effect on flour fractions properties* - Presented by: **Idaresit Ekaette, Department of Bioresource Engineering, McGill University, Ste-Anne-de-Bellevue, Quebec, Canada H9X 3V9. Department of Food Science and Agricultural Chemistry, McGill University, Ste-Anne-de-Bellevue, Quebec, Canada H9X 3V9.;** Anjaly Paul, Ana Michel, Michael Ngadi
9:00am	2401229	*Impact of Specific Energy on the Drying of Cooked Rice and Instant Rice Quality* - Presented by: **Bindu Regonda**
9:15am	2400151	*Characterization of Electrospun Helm Nanofiber and Impact on the Shelf-Life of Raw Poultry Meat* - Presented by: **Lamin S. Kassama;** Aaron Dudley, Armitra Jackson-Davis, Lamin S. Kasssama, Kuang.X, Xiao, Z, Cebert. E
9:30am	2400053	*Near-Infrared Hyperspectral Imaging Sensing for Gluten Detection and Quantification* - Presented by: **Adewale Oloyede;** Akinbode A. Adedeji

WEDNESDAY – 10:15AM-12:15PM

319 Conversion and Applications of Wood-Derived Materials for Circular Biosystems

Wednesday, 7/31/2024 10:15am - 12:15pm

Location: Platinum 9
Technical Community: ASE - Applied Science & Engineering
Session Type: Oral Technical Session
Description: Production of materials from woody biomass, and the properties and uses of those materials.
Organizer: Sibel Irmak, Pennsylvania State University
Sponsoring Committee: ASE-12 Forest Engineering **Co-Sponsors:** ES-220 Bio-based Energy, Fuels and Products
Moderators: Sibel Irmak, Pennsylvania State University

Start Time	Abstract ID	*Presentation Title* – Presenter; Co-authors
10:20am	2400400	*Properties of Oriented Strand Board Enhanced by Essential Oil Complex Integration* - Presented by: **Ethan Turo, Graduate Student in the Department of Sustainable Bioproducts at Mississippi State University, Starkville, Mississippi;** Jason T. Street, Hamed Olayiwola, Amy Rowlen, Yunsang Kim
10:35am	2400304	*Incorporation of plasticizers and cork for investigation into mechanical and thermal properties of PLA/biochar composites* - Presented by: **Rachel Day, Auburn University, Auburn, Alabama;** Sushil Adhikari, Ke Zhan, Yucheng Peng
10:50am	2400665	*Epoxy-coating of off-spec biomass: A key modifier for improved mechanical strength of biocomposites* - Presented by: **Xianhui Zhao, Oak Ridge National Laboratory, Oak Ridge, Tennessee;** Oluwafemi Oyedeji, Jenesis Cochrane, Hannah Snider, Hannah Ruth Brown, Yunqiao Pu, Luke Williams, Soydan Ozcan, Erin Webb
11:05am	2400529	*Biochar Optimization for the Removal of Excess Phosphorus from Agrosystems* - Presented by: **Agnes Millimouno, Department of Agricultural and Biological Engineering, Champaign-Urbana, Illinois;** Guzman Jaimes, Jorge Alberto, Wei Zheng, Richard Cooke, Maria L. Chu
11:20am	2401071	*Enhancing Nitrogen Release Control in Biochar-Based Controlled Release Nitrogen Fertilizers* - Presented by: **Anne Carolyne Mendonca Cidreira**
11:35am	2400804	*Uranium removal from water sources using waste-derived biochars with subsequent adsorbent combustion to track uranium fractionation* - Presented by: **Shermal Fernando, PhD student, Chemical & Materials Engineering, Las Cruces, New Mexico;** Catherine E. Brewer
11:50am	2400396	*Southern Yellow Pine Particle Board Manufactured with the Inclusion of Dried Distillers Grains with Solubles and Microcrystalline Cellulose* - Presented by: **Ethan Turo, Graduate Student in the Department of Sustainable Bioproducts at Mississippi State University, Starkville, Mississippi;** Jason T. Street, Tejas S. Pandya, Ananda Nanjundaswamy, Bed Prakash Bhatta

12:05pm	2400477	*New Features of Laboratory Generated EPFRs from 1,2-Dichlorobenzene (DCB) and 1-Monochlorophenol (MCP)* - Presented by: **Marwan Y Rezk, Louisiana State University, Baton Rouge, Louisiana;** Lavrent Khachatryan, Dorin Boldor
12:20pm	2401356	*Are Dead Forest Trees Good Feedstocks for Hydrogen Production by Hydrothermal Gasification?* - Presented by: **Marvellous Faluyi, Department of Agricultural and Biological Engineering, The Pennsylvania State University, University Park, Pennsylvania;** Sibel Irmak
12:35pm	2401365	*Developing Sustainable, Livestock-safe and Eco-friendly Agricultural Biopolymers* - Presented by: **Jaspreet Kaur, Department of Agricultural and Biological Engineering, The Pennsylvania State University, University Park, Pennsylvania;** Sibel Irmak

320 Life Cycle Assessment (LCA) of Biofuels and Bioproducts

Wednesday, 7/31/2024 10:15am - 12:15pm

Location: Platinum 10
Technical Community: ES - Energy Systems
Session Type: Oral Technical Session
Moderators: Ashish Manandhar, The Ohio State University; Jaya Shankar Tumuluru, USDA

Start Time	Abstract ID	*Presentation Title* – Presenter; Co-authors
10:20am	2401332	*Development of Energy and GHG Emission Footprints of Production of Liquid Fuels through Co-processing of Bio-oil with Conventional Vacuum Gas Oil* - Presented by: **Arun Sreekumar, University of Alberta, Edmonton, Alberta, Canada;** Arun Sreekumar, Alivia Mukherjee, Amit Kumar
10:35am	2400246	*Eco-efficiency assessment for pea protein extraction: Evaluating the trade-offs among the economic, environmental and quality nexus* - Presented by: **Derrick K. Allotey, McGill University MacDonald Campus, Sainte Anne-de-Bellevue, Quebec, Canada;** Ebenezer M. Kwofie, Peter Adewale, Anusha G.P. Samaranayaka, Rani Ramachandran, Michael Ngadi
10:50am	2400087	*Energy analysis for the cultivation of hops in Germany* - Presented by: **Heinz Bernhardt, Technical University of Munich, Freising, Bavaria, Germany;** Georg Kraus, Christoph Bader, Christina Sebald, Simon Grebner
11:05am	2400864	*Sustainable hydrogen production: Assessing the environmental impact of methane decomposition using biochar catalysts* - Presented by: **Raziyeh Jokar, Biosystems Engineering Department, Auburn University, Auburn, Alabama;** Hossein Jahromi, Sushil Adhikari, Prakash Nepal, Richard Bergman, Naveenkumar Rajendiran, Ashish Manandhar, Ajay Shah
11:20am	2401457	*Environmental life cycle assessments of polypropylene (PP) and polylactic acid (PLA)-based surgical mask production system* - Presented by: **Sudhagar Mani, University of Georgia, Athens, Georgia;** Maitry Bhattacharjee, Gajanan Bhat
11:35am	2400128	*Economic and environmental sustainability of chemical-free production and recovery of biobased HMF from lignocellulosic biomass* - Presented by: **Yuyao Jia, Department of Agricultural and Biological Engineering, University of Illinois at Urbana-Champaign, Urbana, Illinois;** Shraddha Maitra, Lavanya P. Kudli, Jeremy Guest, Vijay Singh

321 Machine Vision Applications in Agriculture-LIGHTNING TALKS

Wednesday, 7/31/2024 10:15am - 12:15pm

Location: Gold Key I/II
Technical Community: ITSC - Information Technology, Sensors & Control Systems
Session Type: Lightning Oral Technical Session
Description: Focuses on machine vision systems for applications in agriculture.
Organizer: Young Chang, South Dakota State University
Sponsoring Committee: ITSC-312 Machine Vision
Moderators: Young Chang, South Dakota State University

Start Time	Abstract ID	*Presentation Title* – Presenter; Co-authors
10:20am	2400961	*Development of a 3D Tomato Point Cloud Dataset with Mobile Device LiDAR and RGB Imaging* - Presented by: **Steven Doyle, Purdue University, West Lafayette, Indiana;** Ankita Raturi

10:27am	2400253	*Feature characterization of rice, dryland crops, and fruit trees in Korea using LiDAR sensing technique* - Presented by: **Sun-Ok Chung, Chungnam National University, Daejeon, South Korea;** Md Rejaul Karim, Joonjea Sung
10:34am	2400010	*Automated Techniques for Evaluating Activity of Finishing Pigs* - Presented by: **Mekali Felton, University of Illinois Champaign-Urbana, Champaign, Illinois;** Tawni Williams-Stroud, Jenish Hirpara, Angela Green-Miller
10:41am	2400420	*Machine Learning Model for Detection, Segmentation, and Tracking of Individual Cage-free Laying Hens* - Presented by: **Ramesh Bahadur Bist, University of Georgia, Athens, Georgia;** Keshav Bist, Xiao Yang, Bidur Paneru, Lilong Chai
10:48am	2400812	*Effect of Camera Shutter Mechanism on the Accuracy of a Custom YOLOv8 Model for Pattern Recognition in Motion on a UGV* - Presented by: **James Kemeshi, South Dakota State University, Brookings, South Dakota;** Mohammad Ashik Alahe, Young Chang, Pappu Kumar Yadav
10:55am	2401097	*3D segmentation within the root system architecture using Point Transformer* - Presented by: **Xuehai Zhou, McGill University, Montreal, Quebec, Canada;** Xuehai Zhou, Leshang Bai, Rui Xu, Rui Kang, Davoud Torkamaneh, Shangpeng Sun
11:02am	2400777	*Grazing Revolution 360°: Java Real-Time 3D and 2D Transformation Simulation of Grazing Plant* - Presented by: **Talha Tufaique**
11:09am	2400305	*Automated estrus detection in sows using a robotic imaging system* - Presented by: **Ziteng Xu, Texas A&M University, College Station, Texas;** Jianfeng Zhou, Corinne Bromfield, Teng Teeh Lim, Timothy J. Safranski, Zheng Yan, Jeffrey Wiegert
11:16am	2401055	*Slicing-Aided Hyper Inference for Enhanced Fruit Bud Detection and Counting in Apple Orchards during Dormant Season* - Presented by: **Dawood Ahmed, Washington State University, Prosser, Washington;** Ranjan Sapkota, Martin Churuvija, Matthew D. Whiting, Manoj Karkee
11:23am	2401069	*Performance Evaluation of Deep Transfer Training Models for Weed Species Identification Using Unmanned Aerial Vehicle Images* - Presented by: **Kelvin Betitame, North Dakota State University, Fargo, North Dakota;** Joseph Mettler, Kirk Howatt, Xin Sun
11:30am	2400672	*Using Computer Vision to Detect Poultry and Swine AFOs at Parcel Scale* - Presented by: **Savannah Jobkar, Graduate Student Member, Knoxville, Tennessee;** Emine Fidan
11:37am	2400653	*A Novel Dual-mode Sensing Device for Strawberry Plant Macronutrient Deficiency Detection* - Presented by: **Yunjun Xu, University of Central Florida, Orlando, Florida;** Salem Long, Daniel Traczyk, Madison Reynolds, Kalara Dissanayake, Yunjun Xu, Wen Shen, Shinsuke Agehara
11:44am	2401193	*The Impact of Drought-Induced Leaf Curling on Fluttering Frequency* - Presented by: **Jisoo Yuk, Cornell University, Ithaca, New York;** Sunghwan Jung
11:51am	2401337	*Quantifying Boom Movement in Agricultural Sprayer Booms Using Neural Networks for Real-World Field Scenarios* - Presented by: **Treman Singh Kaloya, Kansas State University, Manhattan, Kansas;** Aryan Singh Dalal
11:58am	2400775	*Measurement of sugarcane lodging extent using machine vision* - Presented by: **Abdul Momin, Tennessee Tech University, Cookeville, Tennessee;** Tony Grift, James Baier
12:05pm	2401511	*System Development on Wheat Aphid Monitoring based on Image Identification and WSN* - Presented by: **Minzan Li, China Agricultural University, Beijing, China;** Yuan Zhang, Mengshu Liu, Zhen Li, Hong Sun, Minzan Li
12:12pm	2401226	*Application of Deep Neural Networks for Seasonal Cotton Yield Estimation* - Presented by: **Lisa Umutoni, Clemson University, Clemson, South Carolina;** Vidya Samadi, Jose Payero, Bulent Koc, Charles Privette, III

322 Robotics and AI-Enabled Robotics for Production Agriculture

Wednesday, 7/31/2024 10:15am - 12:15pm

Location: Orange County 1

Technical Community: ITSC - Information Technology, Sensors & Control Systems

Session Type: Oral Technical Session

Description: Focuses on the development and application of robotics and AI-enabled robotics technologies for production systems in agriculture.

Organizer: Rajkishan Arikapudi, UC Davis

Sponsoring Committee: ITSC-318 Mechatronics & Biorobotics
Moderators: Piyush Pandey, USDA-ARS

Start Time	Abstract ID	*Presentation Title* – Presenter; Co-authors
10:20am	2401381	*Assessing TensorRT optimization for real-time object-detection applications in agriculture* - Presented by: **Adeayo Adewumi, Purdue University, Wes Lafayette, Indiana;** Dharmendra Saraswat
10:35am	2400861	*Evaluating the Effectiveness of a Mite Dispensing System for Biological Control of Chilli Thrips in Strawberry Production in Florida* - Presented by: **Uchechukwu Ilodibe, ASABE Graduate Student Member, University of Florida, Gainesville, Florida;** Dr. Daeun Choi
10:50am	2400326	*Design of autonomous navigation system for agricultural machinery based on edge computing platform* - Presented by: **CANCELED**
11:05am	2400411	*Advanced picking technologies in strawberry postharvest operation - Updates and challenges* - Presented by: **Jie Guo, Zhejiang University, Hangzhou City, Zhejiang Province, China;** Jie Guo, Yong He, Manoj Karkee, Xuping Feng, Zhou Yang, Zichen Huang, Wenkai Zhang, Yueying Wang, Yu Shi
11:20am	2401479	*Potential of exploitation and use of robots in viticulture: results from the BACCHUS project* - Presented by: **Remigio Berruto, University of Turin, Turin, TO, Italy;** Mario Tamagnone, Enrico Prenesti, Sonia Tassone, Martino Fenoglio, Emanuele Rovera, Patrizia Busato, Zoe Doulgeri
11:35am	2401526	*ROS-Enhanced FarmBot: Controlled Environment Agriculture (CEA) through Sensor-Driven Automation* - Presented by: **Ehsan Fazayeli, PhD student, Biological Systems Engineering, University of Nebraska - Lincoln (UNL), Lincoln, Nebraska;** Santosh Pitla, Yufeng Ge
11:50am	2400928	*Enhanced Inter-Crop Row Navigation: Integrating Dense 2D RGB Camera Data and Sparse 3D LiDAR Point Cloud Data* - Presented by: **Aditya Raj, Iowa State University, Ames, Iowa;** Xuan Liu, Jingyao Gai, Lie Tang
12:05pm	2400836	*Object detection and localization using 360-degree Plant Image Capturing Scouting System (360-PICSS)* - Presented by: **Ahmed Abdalla, Department of Agronomy, Horticulture and Plant Science, College of Agriculture, Food & Environmental Sciences, South Dakota State University, Brookings, South Dakota**
12:20pm	2401254	*In-field proximal robotic phenotyping of blueberry drought and yield* - Presented by: **Md Mesbahul Maruf, Auburn University, Auburn, Alabama**

323 Simulation-aided Agricultural Design and Optimization

Wednesday, 7/31/2024 10:15am - 12:15pm
Location: Orange County 2
Technical Community: ITSC - Information Technology, Sensors & Control Systems
Session Type: Oral Technical Session
Description: This session focuses on numerical simulation-based decision-making and design/ system optimization on various agricultural and biological engineering problems.
Organizer: Douglas Cook, Brigham Young University
Sponsoring Committee: ITSC-217 Computational Methods, Simulations & Applications **Co-Sponsors:**
Moderators: Douglas Cook, Brigham Young University; Derren Drewry, Ohio State University

Start Time	Abstract ID	*Presentation Title* – Presenter; Co-authors
10:20am	2400669	*Surface Dynamics in Agriculture: Evaluating Their Role in the Atmospheric Boundary Layer* - Presented by: **James Cross, The Ohio State University, Columbus, Ohio;** James Cross, Darren Drewry
10:35am	2400769	*Sensitivity Analysis of Maize Stalk Flexure and Strength* - Presented by: **Douglas Cook;** Joseph Carter, Ryan Hall, Douglas Cook
10:50am	2401426	*Drone Remote Sensing and Evapotranspiration Modeling for Intercropping and Irrigation strategies Study* - Presented by: **Kwaku Opoku-Ware, University of Idaho, Moscow, Idaho;** Kazemi Samira, Xi Liang, Liujun Li

11:05am	2400157	*Enhanced Water Use Efficiency and Sustainability of Groundwater Utilization: Integrating a Physically based Model and Multi-objective Optimization Techniques* - Presented by: **Jeric Sadsad, University of Illinois Urbana-Champaign, Champaign, Illinois;** Maria Chu, Jorge Guzman, Daniel Moriasi, Ann-Marie Fortuna
11:20am	2401181	*Evaluating pesticide spray efficiency and drift of droplets from conventional and intelligent air-assisted sprayers in blueberry orchards using a SAAS model* - Presented by: **Peiyang Li, The Ohio State University, Columbus, Ohio;** Matthew Herkins, Sewoon Hong, Lingying Zhao, Heping Zhu, Hongyoung Jeon
11:35am	2400259	*Validation of SAAS, a CFD Modeling Tool for Estimating Pesticide Drift and Deposition from Air-Assisted Sprayers in Apple Orchards* - Presented by: **Matthew Herkins, The Ohio State University, Columbus, Ohio;** Sewoon Hong, Lingying Zhao, Heping Zhu, Hongyoung Jeon
11:50am	2400878	*Computer vision-enabled autonomous robotic navigation system for cotton farms in Gazebo simulation environment* - Presented by: **Thevathayarajh Thayananthan, Department of Agricultural and Biological Engineering, Mississippi State University, Starkville, Mississippi State, Mississippi;** Xin Zhang, Yanbo Huang, Jingdao Chen, Wenbo Liu
12:05pm	2400320	*Simulation and Optimization of Maize Phyllotaxy and Planting Pattern to Intercept More Radiation* - Presented by: **Zhaocheng Xiang**

324 Machinery Systems POSTER SESSION

Wednesday, 7/31/2024 10:15am - 12:15pm

Location: Platinum Ballroom
Technical Community: MS - Machinery Systems
Session Type: Poster Technical Session
Organizer: Robert Hardin, Texas A&M University
Sponsoring Committee: MS-01 POSTER SESSION **Co-Sponsors:** ASE-12 Forest Engineering
Moderators: Robert Hardin, Texas A&M University

Poster No	Abstract ID	*Presentation Title* – Presenter; Co-authors
1	2400216	*Effective Strategies for Closing Furrows Based on Corn Planter Settings* - Presented by: **Jose Peiretti;** Ajay Sharda
2	2401120	*LiDAR-Based System for Intra-row Berm Removal in Peach Orchards and Its Economic Feasibility Study* - Presented by: **Shubham Singh, Clemson University, Clemson, South Carolina;** Bulent Koc, Michael Vassalos, Guido Schnabel, Juan Carlos Melgar
3	2401159	*Electromechanical Nozzle Selection Retrofit for Orchard Application Equipment* - Presented by: **Geoffrey Shimotsu;** Christian Becerra, Peter Ako Larbi
4	2401186	*Automation of Wild Blueberry Harvester Bin Filling Using Ultrasonic Sensors* - Presented by: **Travis Esau, Dalhousie University, Nova Scotia, Canada;** Connor Mullins, Craig MacEachern, Malaury Bafourd
5	2400208	*Design of dual motor powertrain configurations for electric tractor* - Presented by: **Young-Jun Park, Seoul National University, Seoul, South Korea;** Da-Vin Ahn, Doyeop Kwon, Jin Woong Lee, Seung-Je Cho, Young-Jun Park
6	2400078	*Pneumatic fractionator impact on Pima lint properties in comparison to conventional lint cleaner used by the industry* - Presented by: **Jaya Shankar Tumuluru, Southwestern Cotton Ginning Research Laboratory, USDA-ARS, Las Cruces, New Mexico;** Derek P Whitelock, Carlos B Armijo, Christopher D Delhom, Paul A Funk, Neha Kothari
7	2400889	*Comparison of yield data post-processing methods* - Presented by: **Minhaj Uddin, Mississippi State University, Starkville, Mississippi;** Jessica Drewry, J. Wes Lowe, Michael Mulvaney, Corey Bryant
8	2401556	*Design and operating parameter optimization of a vibration harvesting system* - Presented by: **Sazzad Mahmud Rifat, PhD Student, University of Missouri, Columbia, Missouri;** Jianfeng Zhou, Andrew Thomas
9	2400168	*Development of improved terramechanics model for off-road vehicle considering dynamic sinkage* - Presented by: **Young-Jun Park, Seoul National University, Seoul, South Korea;** Ji-Tae Kim, Young-Jun Park, Taehyeong Kim

10	2400759	*Harvesting Performance of Two Small Field Strawberry Robots* - Presented by: **Yunjun Xu, University of Central Florida, Orlando, Florida;** Marc Fritts, Andrea Rivera Palma, Yunjun Xu, Manoj Karkee, Reza Ehsani, Luis Tituana
11	2401270	*Assessing the Performance of an Affordable Guidance Systems for Parallel Movement in Orchards* - Presented by: **Mohammadmehdi Maharlooei, Department of Mechanical Engineering, School of Engineering, University of California, Merced, California;** Mohammadmehdi Maharlooei, Arash Toudeshki, Robert Van Steenwyk, Reza Ehsani
12	2400858	*Data-Driven Model to Improve Mechanical Harvesters for Nut Trees* - Presented by: **Mohsen Farajijalal, Department of Mechanical Engineering, School of Engineering, University of California, Merced, California;** Mohsen Farajijalal, Samira Malek, Arash Toudeshki, Joshua H. Viers, Reza Ehsani
13	2400980	*Developing a Computer Vision-Based System for Assisting in Apple Bud Thinning Processes* - Presented by: **Kittiphum Pawikhum, The Pennsylvania State University, University Park, Pennsylvania;** Paul Heinemann, Long He
14	2400099	*Identification and ranking of productivity indexes of agricultural machinery (case study: Chaharmahal va Bakhtiari Province, Iran)* - Presented by: **Priyanka Mali, Agricultural and Biological Engineering Department, Penn State University, University Park, Pennsylvania;** Sajad Karimikia, Mehdi Mohammadi, Jamshid Ebrahimpour, Priyanka Rajendra Mali, Shirin Ghatrehsamani
15	2400476	*Advancing Digital Agriculture: Bridging the Knowledge Gap through Hand-on Training in digital Technologies for Farmers* - Presented by: **Sandesh Poudel, University of Georgia, Athens, Georgia;** Sudhagar Mani
16	2400578	*Enhancing Tractor Safety over rough Terrains: A Numerical Study of Steering Instability* - Presented by: **Yeongsu Kim, Kyungpook National University, Daegu, South Korea;** Yeongsu Kim, Jinho Son, Yonggik Kim, Yushin Ha
17	2401127	*Large Language Models and Agricultural Machinery Safety: Use Cases in Design and Education* - Presented by: **John M. Shutske, University of Wisconsin—Madison, Madison, Wisconsin;**
18	2401489	*Assessing Plant Spacing Inequality and Its Impact on Crop Yield Using Lorenz Curves and Gini Index* - Presented by: **Bhaskar Aryal**
19	2401059	*Evaluating energy consumption of different powertrain technologies in agricultural field operations* - Presented by: **Antti Lajunen, University of Helsinki, Helsinki, Finland**
20	2400637	*Design and test of uniform dispersion device for sugarcane trash removal system* - Presented by: **Shaochun Ma, China Agricultural University, Beijing, China**
21	2400636	*Analysis of Arundo donax L. stem and leaf mixture movement characteristics based on CFD-DEM coupling* - Presented by: **Shaochun Ma, China Agricultural University, China**
22	2401488	*System Development for Application and Testing of Spray-on Biodegradable Mulch* - Presented by: **Nirajan Piya**
23	2401394	*Autonomous vegetable harvesting an Intelligent cutting mechanism* - Presented by: **Mohammad Sadek, California Polytechnic State University, San Luis Obispo, California**
24	2401330	*The Unmanned Aerial Pesticide Application System Task Force: Development and Field Testing of an Off-site Movement Protocol for agrochemical application by UAV* - Presented by: **Rajeev Sinha**
25	2401514	*Application of Crop Protection Products Using UAV: Considerations for a Successful Application from a Formulation Perspective* - Presented by: **Rajeev Sinha**
26	2401007	*Design and field-testing of a pull-force measuring frame for the testing of agricultural tire rolling resistance* - Presented by: **Benjamin Vail**

325 Advancements in Water Resource Management: Insights from Global Perspectives- LIGHTNING TALKS

Wednesday, 7/31/2024 10:15am - 12:15pm

Location: Grand Ballroom G
Technical Community: NRES - Natural Resources & Environmental Systems
Session Type: Lightning Oral Technical Session
Organizer: Rebecca Muenich, University of Arkansas

Moderators: Mahmoud Sharara; Femi Peter Alege

Start Time	Abstract ID	*Presentation Title* – Presenter; Co-authors
10:20am	2400234	*Integrating Remote Sensing and Deep Learning to Determine Past, Current and Future Withdrawals from the Nubian Sandstone Aquifer System* - Presented by: **Moaz Ishag;** Aaron R. Mittelstet, Derek Heeren, Saleh Taghvaeian, Ran Wang
10:27am	2400385	*Assessing Soil Properties for Optimized Irrigation Development in Sudan, Northern Africa* - Presented by: **Suhib Hamid, University of Nebraska-Lincoln Department of Biological Systems Engineering;** Derek Heeren, Aaron Mittelstet, Saleh Taghvaeian, Randall Ritzema
NO-SHOW	2400666	*Participatory On-Farm Irrigation Water Optimization for Water Conservation and Increased Resilience to Drought in the Colorado River Basin; Ag-DRIP* - Presented by: **Silas Ekadu, Utah State University, Logan Utah, Utah;** Dr. Matt Yost, Dr. Burdette Barker, Elisa Flint
NO-SHOW	2400582	*Present Status and Extent of Saltwater Intrusion in Philippine Coastal Aquifers* - Presented by: **Lorcelie B. Taclan;** Emson Y. Taclan Enoch Caryl B. Taclan
10:48am	2400186	*Understanding the status and improvements of irrigations systems in the High Plains Aquifer* - Presented by: **Jonathan Aguilar, Kansas State University, Garden City, Kansas;** Farzam Moghbel, Rocio Reyes, Daran Rudnick
10:55am	2401527	*Assessing the Impacts of Climate Change on Surface Water and Groundwater Availability in the Brazos River Basin, Texas* - Presented by: **Dr. Tushar Sinha;** Hao-Po Chang
NO-SHOW	2400029	*Hillslope Groundwater Storage for Arable Land Expansion in the Rainfed agriculture-dominated Tropical Savanna Region of Eastern Indian* - Presented by: **Sudhindra Nath Panda;** Jena S., Sahoo S., Panda S. N.
11:09am	2400159	*Enhancing Water Sustainability in North Africa: Literature Review and Synthesis of Current Knowledge Gaps in Sudan* - Presented by: **Osman Adam, Biological Systems Engineering, Lincoln, Nebraska**
11:16am	2400629	*Assessment of Water Availability Using the Water Evaluation and Planning (WEAP) Model in Namatala River Catchment, Uganda* - Presented by: **Nicholas Kiggundu**
11:23am	2400071	*Sustainable Groundwater in Agriculture under a Changing Climate* - Presented by: **Isaya Kisekka**
11:30am	2400015	*Conventional versus conservation tillage for sprinkler-irrigated Arizona cotton production* - Presented by: **Kelly Thorp, USDA-ARS, Temple, Texas**

326 Advances in Agrohydrological Sustainability through Modeling and UAS Tools-LIGHTNING TALKS

Wednesday, 7/31/2024 10:15am - 12:15pm

Location: Grand Ballroom H
Technical Community: NRES - Natural Resources & Environmental Systems
Session Type: Lightning Oral Technical Session
Organizer: Rebecca Muenich, University of Arkansas
Moderators: Sayantan Samanta; Arun Bawa

Start Time	Abstract ID	*Presentation Title* – Presenter; Co-authors
10:20am	2401234	*Development of land use mapping framework at a sub-field scale using a combination of georeferenced raster layers and county-based census data for Kansas* - Presented by: **Sean P Hackenberg, Kansas State University, Manhattan, Kansas;** Aleksey Y Sheshukov
10:27am	2401076	*Analysis of hydrological intensification in Southern Great Plains* - Presented by: **Saeedeh Abedzadeh, Department of Biosystems and Agricultural Engineering, Oklahoma State University, Stillwater, Oklahoma;** Ali Mirchi, Abu Mansaray, Sara Alian
10:34am	2401348	*Optimizing separation of solid-liquid portion of swine manure for enhancing environmental sustainability* - Presented by: **Krishna Yadav, Bioeconomy Institute, Iowa State University, Ames, Iowa;** Krishna Yadav, Santanu Bakshi, Chumki Banik, Daniel S. Andersen, Robert C. Brown
10:41am	2400371	*Hydrological Modeling of Rainfed Cotton Plots in the Yazoo-Mississippi Delta Using SWAT+* - Presented by: **Vivek Venishetty;** Tsz Him Lo, Amanda M. Nelson, Martin A. Locke, L. Jason Krutz, R. Wade Steinriede, Jr., Ronald L. Bingner, Yongping Yuan, Drew M. Gholson

NO-SHOW	2400366	*Calculating Infiltration indices using Hydrus 2D model for sandy loam soil under different irrigation treatments* - Presented by: **Sai Sri Sravya Vishnumolakala, North Dakota State University, Fargo, North Dakota;** Xinhua Jia
10:55am	2400851	*UAS-based assessment of vegetation cover and composition on construction sites using semantic segmentation* - Presented by: **Puranjit Singh, University of Delaware, Newark, Delaware;** Yin Bao, Michael A. Perez, Wesley N. Donald
11:02am	2400297	*Improving the DNDC Model For Estimating Decomposition and Carbon Dioxide Emissions From Biosolids and Manure Amended Field* - Presented by: **Ruth Sitienei, McGill University, Montreal, Quebec, Canada;** Zhiming Qi, Ward Smith, Brian Grant, Andrew Vanderzaag, Gordon W Price, Chandra A Madramootoo, Tiequan Zhang, Michael Y Yongha Boh, Clark Grant, Obi-Njoku Okenna
11:09am	2401244	*Open field weather data driven mechanistic leaf wetness prediction modeling for improved plan disease forewarning* - Presented by: **Rajkumar Dhakar**
11:16am	2400612	*The Effect of Grid Resolution on Hydrodynamic Modeling of and Estuarine System* - Presented by: **Anna Linhoss**

327 Advances in Irrigation Management-LIGHTNING TALKS

Wednesday, 7/31/2024 10:15am - 12:15pm

Location: Platinum 1

Technical Community: NRES - Natural Resources & Environmental Systems

Session Type: Lightning Oral Technical Session

Description: Advances in irrigation management, particularly irrigation systems such as mobile drip, drip irrigation, center pivot irrigation, soil moisture sensing techniques, and other sensors used for irrigation management, have shown a potential to improve crop water use efficiency. Adopting these technologies is essential for optimizing water usage, reducing wastage, reducing leaching, and promoting healthier plant growth, leading to increased crop yields and enhanced agricultural productivity.

Moderators: Uday Bhanu Prakash Vadevollu

Start Time	Abstract ID	*Presentation Title* – Presenter; Co-authors
10:20am	2400990	*Building an Ag-Water Monitoring Platform (AWMP) for water stress detection and developing robust irrigation decision support systems* - Presented by: **Abia Katimbo, University of Nebraska-Lincoln, North Platte, Nebraska;** Hope Njuki Nakabuye, Daran R. Rudnick, Derek M. Heeren, Xin Qiao, Saleh Taghvaeian, Kendall C. DeJonge, Jiaming Duan, Bryan Nsoh
10:27am	2401404	*Lessons Learned from 6 Years of the "Most Crop per Drop" Contest* - Presented by: **Chris Henry, University of Arkansas, Stuttgart, Arkansas;** Russ Parker, QQ Huang, Greg Simpson, Travis Clark, Dustin Pickelman, Jacob Rix, Ranjit Mane
10:34am	2400041	*Evaluating the Performance of OpenET Models for Alfalfa in Arizona* - Presented by: **Diaa Eldin Elshikha;** Said Attalah, Elsayed A. Elsadek, Peter Waller, Douglas Hunsaker, Kelly R. Thorp, Eduardo Bautista, Clinton Williams, Gerard Wall, Ethan Orr, Diaa Eldin Elshikha
10:41am	2401039	*Quantifying irrigation water use in vineyards: Comparison of remote and proximal sensing approaches for measuring vine tree transpiration at different growth stages* - Presented by: **Shafik Kiraga, Prosser, Washington;** Shafik Kiraga, M. Jacob Schrader, Srikanth Gorthi, R. Troy Peters, Markus Keller, Lav R. Khot, Claudio Stockle
10:48am	2401036	*Machine learning improves satellite-based evapotranspiration estimates for highly advective environments* - Presented by: **Shafik Kiraga, Prosser, Washington;** Shafik Kiraga, R Troy Peters, Steven R Evett, Gary Marek
10:55am	2401359	*Soil Moisture Characteristic Curves and their Integral Role in irrigation management* - Presented by: **Uday Bhanu Prakash Vaddevolu, Postdoctoral Research Associate, Gainesville, Florida;** Vivek Sharma, Craig Frey, Yvette Goodiel, Anna Meszaros, Christian L Kammerer, Jay Capasso
11:02am	2401328	*Optimizing irrigation and nitrogen fertilization to enhance potato growth, yield, water and nitrogen use efficiency* - Presented by: **Varshitha Prasanna, PhD student, Gainesville, Florida;** Vivek Sharma, Morgan Morrow, Bibek Acharya, Uday Bhanu Prakash Voddevolu, Rakesh Singh, Susanta Das

11:09am	2400047	*Enabling Principled Decision-Making in Irrigation Through Standardized Data Exchange: Examples Using ISO 7673 (ANSI/ASABE S632)* - Presented by: **R. Andres Ferreyra**
11:16am	2401263	*Building Databases to Calibrate Alfalfa Crop Models: Paving the Way for an Advanced Yield Forecasting Tool* - Presented by: **Khushi Khushi**
11:23am	2400470	*Field Evaluation of the Eddy Covariance Method to Estimate Evapotranspiration (ET) in a Semi-Arid Climate using Weighing Lysimeters* - Presented by: **Gary Marek**
11:30am	2400690	*Updated crop coefficients and water requirements for some orchard crops grown in Georgia* - Presented by: **Tobias Oker, University of California Agriculture and Natural Resources, UC Cooperative Extension, Kern County, Bakersfield, California**
11:37am	2401377	*Monolith to Microservices: Refactoring the Architecture and Documentation of ARSPivot* - Presented by: **Mahipal Reddy Ramireddy**

328 Erosion Control Research

Wednesday, 7/31/2024 10:15am - 12:15pm

Location: Grand Ballroom A

Technical Community: NRES - Natural Resources & Environmental Systems

Session Type: Oral Technical Session

Description: Sediment (caused by soil erosion) is regarded as the most common pollutant in rivers, streams, lakes and reservoirs in the United States. This includes presentations related to soil erosion and sediment control research on agricultural and urban landscapes.

Organizer: Anita Thompson, University of Winconsin

Sponsoring Committee: NRES-22 Soil Erosion and Water Quality **Co-Sponsors:** NRES-25 Streams, Reservoirs, and Wetlands Group, NRES-26 Sustainable Land Resources

Moderators: Anita Thompson, University of Winconsin; Yufan Zhang, University of Illinois

Start Time	Abstract ID	*Presentation Title* – Presenter; Co-authors
10:20am	2400678	*Water Erosion Prediction Project (WEPP) Model 2024 Status* - Presented by: **Dennis C. Flanagan, USDA-Agricultural Research Service, National Soil Erosion Research Laboratory, West Lafayette, Indiana;** Dennis C. Flanagan, James R. Frankenberger, Chris S. Renschler, Chris B. Coreil, Jr., Olaf David, Anurag Srivastava, Sadia A. Jame, Ryan P. McGehee
10:35am	2400508	*Sediment Production Under Future Climate and Land Management Scenarios: Kaskaskia Watershed, IL* - Presented by: **Jorge A. Guzman, Department of Agricultural and Biological Engineering, University of Illinois at Urbana-Champaign, Urbana, IL;** Yujin Choi, Maria L. Chu
10:50am	2401162	*Probabilistic modeling of water erosion on roadway slopes using RUSLE and long-term rainfall data* - Presented by: **Carlos A Bonilla, Hermiston Agricultural Research & Extension Center, Oregon State University, Hermiston, Oregon;** Carlos A Bonilla, Cristina P Contreras, Alondra Chamorro, Tomas Echaveguren, Esteban Sáez, Manuel Contreras
11:05am	2400506	*Developing a Scalable Evaluation System for Hydrologic Processes in the Vadose Zone: Integrating Earth Observations with Hydrologic Models* - Presented by: **Jorge A. Guzman, Department of Agricultural and Biological Engineering, The University of Illinois at Urbana-Champaign, Urbana, Illilnois;** Jeongho Han, Maria L. Chu
11:20am	2400846	*Soil erosion on agricultural floodplains along the East Fork White River, Indiana* - Presented by: **Jonathan A. Czuba, Department of Biological Systems Engineering, Virginia Tech, Blacksburg, Virginia;** Sadia Afrin Khan, Muhammad Alif, Douglas A. Edmonds
NO-SHOW	2401478	*Engineered Growth of Saprotrophic Fungi Species for Post-wildfire Soil Recovery* - Presented by: **Emmanuel Salifu;** Nakaana Henry, Taylor Tuckett, Adesola Habeeb Adegoke
11:50am	2400971	*Measuring scour and water depth at Bridge Crossings: A novel monitoring system* - Presented by: **Mahmoud Shehata;** Chadi Sayde, Celso Castro-Bolinaga
12:05pm	2401283	*What happens upstream and downstream of streambank stabilization structures? A case study from the Cottonwood River, Kansas* - Presented by: **Trisha Moore;** Corben Monzon, Kari Bigham, Tony Layzell

329 Manure Anaerobic Digestion Systems and Biogas

Wednesday, 7/31/2024 10:15am - 12:15pm

Location: Grand Ballroom B

Technical Community: NRES - Natural Resources & Environmental Systems

Session Type: Oral Technical Session

Description: This session includes research on anaerobic digestion of different manure types. Process design and innovation, gas cleaning, gas utilization, and economics of the process.

Organizer: Femi Alege, USDA - ARS

Sponsoring Committee: NRES-27 Ag By-products & Animal Mortality Management Systems

Moderators: Zong Liu, University of Texas A&M; Doug Hamilton, University of Oklahoma

Start Time	Abstract ID	*Presentation Title* – Presenter; Co-authors
10:20am	2400282	*Improving Anaerobic Digestion of Dairy Manure by Reducing Hydrogen Sulfide Production Through Microaeration* - Presented by: **Ellie Froelich, University of Wisconsin-Madison, Madison, Wisconsin;** Neslihan Akdeniz
10:35am	2400223	*Anaerobic co-digestion of fish sludge and food waste utilizing solar radiation as the single heating source* - Presented by: **Qichen Wang;** Caroline Morris, Al Dean Francisco, Edward Drabold, Saravanan Ramiah Shanmugan, Brendan T. Higgins
10:50am	2400164	*Demonstration of a farm-based renewable electric vehicle charging solution for a sustainable dairy industry* - Presented by: **Meicai Xu, Michigan State University, East Lansing, Michigan;** Carter Monson, Jacob Willsea, Sibel Uludag-Demirer, Ben Adams, April Leytem, Wei Liao
11:05am	2400857	*Adoption of Biogas Production from Animal Waste: Case Studies of Texas Farms* - Presented by: **Amirhossein Mahdaviarab, Graduate student Texas A&M University, College Station, Texas;** Ruiji Cheng, Katayoun Pahlavanyali, Xiao Wang, Zong Liu
11:20am	2400986	*Novel application of swine manure with biochar and zeolite for crop fertilization and improving water quality* - Presented by: **Krishna Yadav, Bioeconomy Institute, Iowa State University, Ames, Iowa;** Krishna Yadav, Santanu Bakshi, Chumki Banik, Daniel S. Andersen, Robert C. Brown

330 Monitoring Standards: Applications, Methods and Technologies-HYBRID

Wednesday, 7/31/2024 10:15am - 12:15pm

Location: Grand Ballroom C

Technical Community: NRES - Natural Resources & Environmental Systems

Session Type: Hybrid Session-submitted abstracts and guest speakers

Description: Need for a water quality and flow monitoring standard: The landscape of water quality sensing and monitoring is continuously evolving, and information available on water quality monitoring remains fragmented, lacking comprehensive guidance. Therefore, standardized guidance is needed to aid stakeholders and practitioners effectively collect flow and water quality data at the small watershed scale (Most agencies and projects simply do not have the staff, expertise, resources, and commitment to conduct water quality sampling in larger-scale systems; USGS is one exception). This proposed monitoring standard (technically an Engineering Practice) will complement existing modeling standards, offering robustness to data collection efforts, enhancing the value of monitoring results, and instilling greater confidence in policy recommendations. By utilizing this guidance document, stakeholders can make informed choices, ensuring more accurate and meaningful water quality and flow assessments.

Organizer: Rebecca Muenich, University of Arkansas

Sponsoring Committee: NRES-21 Hydrology Group **Co-Sponsors:** NRES-22 Soil Erosion and Water Quality

Moderators: Debabrata Sahoo, Clemson University

Start Time	Abstract ID	*Presentation Title* – Presenter; Co-authors
10:20am	Guest Speaker	*Water Quality Monitoring: Do We even have the Choice of not Sampling Frequently?* - Presented by: **François Birgand, North Carolina State University, Raleigh, North Carolina**
10:40am	Guest Speaker	*Freshwater Monitoring: Lessons Learned from Small Streams to Engineered BMPs to Inform Water Quality Monitoring Standards* - Presented by: **Durelle Scott, Virginia Tech, Blacksburg, Virginia**
11:20am	Guest Speaker	*Informing and Reforming Water Quality Models using Multi-Faceted Monitoring of Contaminants: Insights from High Frequency in Situ Sensors, Remote Sensing, and Isotope Tracing* - Presented by: **William Ford, University of Kentucky, Lexington, Kentucky**

11:40am	2400496	*Using Socio-Environmental Considerations to Inform and Advance Water Quality Monitoring Standards* - Presented by: **Christopher Oates, North Carolina State University, Raleigh, North Carolina;** Natalie Nelson, Khara Grieger
11:55am	2400749	*Monitoring Standards and Elements within the Context of testing the validity of Hydrologic and Water Quality Models: A Case Study* - Presented by: **Adel Shirmohammadi, Dept. of Environ. Sci. & Technology, University of Maryland, College Park, Maryland;** Majid Mirzaei

331 Teaching and Pedagogy in Ecological Engineering-GUEST SPEAKERS

Wednesday, 7/31/2024 10:15am - 12:15pm

Location: Grand Ballroom D

Technical Community: NRES - Natural Resources & Environmental Systems

Session Type: Guest Speaker Session

Description: Ecological Engineering teaching and extension are evolving and expanding. Curricula, modules, teaching techniques, undergraduate training, as well as extension activities and products will be presented in this session.

Organizer: David Blersch, Auburn University

Sponsoring Committee: NRES-28 Ecological Engineering **Co-Sponsors:** EOPD-208 Extension

Moderators: David Blersch, Auburn University; Trisha Moore, Kansas State University

Start Time	Abstract ID	*Presentation Title* – Presenter; Co-authors
10:20am	Guest Speaker	*Course-Based Undergraduate Research Experiences - Making Research Accessible to All Students* - Presented by: **Randall Etheridge, East Carolina University, Greenville, North Carolina;** Natasha Bell, Heather Vance-Chalcraft, Joi Walker, Mike O'Driscoll, Ariane Peralta, Mahesh Tapas, Ariel Lineberger, John Hoben
10:35am	Guest Speaker	*Exploring Wetland Treatment Processes through Engagement with High School Researchers* - Presented by: **Tiffany Messer, University of Kentucky, Lexington, Kentucky**
10:50am	Guest Speaker	*New Ecological Engineering Major at Virginia Tech and Discussion of ABET Criteria* - Presented by: **Natasha Bell, Virginia Polytechnic Institute and State University, Blacksburg, Virginia;** Tess Thompson, Durelle Scott, Cully Hession
11:05am	Guest Speaker	*From Classroom to Community: Ecological Engineering Extension Programming* - Presented by: **John McMaine, South Dakota State University, Brookings, South Dakota**
11:20am	Guest Speaker	*The Ecological Engineering Body of Knowledge and Incorporation in Undergraduate Education* - Presented by: **Trisha Moore, Kansas State University, Manhattan, Kansas;** Tess Thompson, Niroj Aryal, David Austin, Glenn Dale, Randall Ethridge, Tom Franti, Sarah McMillan
11:35am	Guest Speaker	*Deus ex Machina? Reflecting on the Role of Systems Thinking in Ecological Engineering Education* - Presented by: **David Blersch, Auburn University, Auburn, Alabama**
11:50am	Guest Speaker	*Integrating Teaching and Extension to Shape the Future Workforce* - Presented by: **Andrea Ludwig, University of Tennessee, Knoxville, Tennessee;** Emine Fidan, Michael Ross

332 Measurement, Mitigation and Modeling of Air Pollution from Livestock and Poultry Facilities

Wednesday, 7/31/2024 10:15am - 12:15pm

Location: Grand Ballroom J

Technical Community: PAFS - Plant, Animal, & Facility Systems

Session Type: Oral Technical Session

Description: This session convenes researchers, educators, and industry experts to discuss current challenges and research updates on addressing air pollution issues in livestock and poultry facilities through measurement, mitigation, and modeling methods.

Organizer: Lilong Chai, University of Geogia

Sponsoring Committee: PAFS-50 Environmental Air Quality

Moderators: Lilong Chai, University of Geogia

Start Time	Abstract ID	*Presentation Title* – Presenter; Co-authors
10:20am	2400214	*From Under-Barn to Outdoor Swine Manure Storage: Modelling Frequent Emptying's Effect on Methane Emissions in a Cold Climate* - Presented by: **Birk Li, Department of Bioresource Engineering, McGill University, Ste-Anne-de-Bellevue, Quebec, Canada; Ottawa Research and Development Center, Agriculture and Agri-Food Canada, Ottawa, Ontario, Canada;** Birk Li, Zhiming Qi, Ward N. Smith, Andrew C. VanderZaag, Brian B. Grant, Aaron J. Glenn, Jia Deng
10:35am	2401402	*Assessment of low-cost PM sensors for their applicability in swine barns* - Presented by: **Xufei Yang**
10:50am	2401102	*Dispersion modeling and measurements to assess odour impact of multi-storey pig houses* - Presented by: **Xiaojie Yan**
11:05am	2401175	*Comparison of three on-field measurement methods for low-level ammonia concentrations at ambient locations of a poultry layer production facility* - Presented by: **Peiyang Li, The Ohio State University, Columbus, Ohio;** Matthew Herkins, Reyna Knight, Lingying Zhao, Suraiya Akter, Lingjuan Wang-Li, Ji-Qin Ni, Albert Heber
11:20am	2401213	*Evaluating the Impact of Biochar Application on Odorous and Greenhouse Gas Emissions in Swine Manure Supernatant* - Presented by: **Earth Pender, North Carolina State University, Raleigh, North Carolina;** Dr. Mahmoud Sharara, Dr. John Classen, Dr. Praveen Kolar
11:35am	2400125	*Transition from caged to group housing for gestating sows in Canada: evaluation and improvement of air quality* - Presented by: **Vicki Clouet-Côté, Laval University and Research and development institute of the agri-environment (IRDA), Québec, Québec, Canada;** Vicki Clouet-Côté, Dalila Larios, Valérie Létourneau, Stéphane Godbout, Caroline Duchaine, Bernardo Z. Predicala, Shelley Kirychuk, Brooke Thompson, Alejandra Castillo Toro, Charly Nolting, Sébastien Fournel
11:50am	2400609	*Biofiltration of Exhaust Air from a Swine Barn for Use in a Greenhouse* - Presented by: **Sébastien Fournel, Université Laval, Québec, Québec, Canada;** Béatrice Dupont-Fortin, Laurie Chapron, Gabriel Morin, Mathieu Deschênes, Joahnn Palacios, Stéphane Godbout
12:05pm	2400481	*Conditions under which the application of water to simulated feedlot surfaces mitigates ammonia emissions* - Presented by: **Myeongseong Lee, Texas A&M University, College Station, Texas;** Myeongseong Lee, Brent W. Auvermann, Kenneth D. Casey, K. Jack Bush, Greg B. Ferguson, Zach Hilliard, Carolina B. Brandani, Vinicius Gouvea, Will Willis, David B. Parker, Jacek A. Koziel

333 Navigating Evolving Guidelines for Environmental Management in Livestock and Poultry Facilities-HYBRID

Wednesday, 7/31/2024 10:15am - 12:15pm

Location: Grand Ballroom K

Technical Community: PAFS - Plant, Animal, & Facility Systems

Session Type: Hybrid Session-submitted abstracts and guest speakers

Description: Animal agriculture is constantly facing new challenges and opportunities that influence the way livestock and poultry are housed and managed. This session will discuss some of the prominent changes that are occurring in livestock and poultry housing within the context of academia, industry, and government.

Organizer: Yijie Xiong, University of Nebraska-Lincoln

Sponsoring Committee: PAFS-40 Facilities & Systems Group

Moderators: Brett Ramirez, Iowa State University; Yijie Xiong, University of Nebraska-Lincoln

Start Time	Abstract ID	*Presentation Title* – Presenter; Co-authors
10:20am	Guest Speaker	*Swine Facilities: How are Producers Managing the Transition?* - Presented by: **Austin Baker, Hogslat**
10:50am	Guest Speaker	*Dairy Facilities: What's Changing in the Environmental Landscape?* - Presented by: **Deanne Meyer, UC-Davis**
11:20am	2401428	*A First-Step Look at Standardizing Lactating Cow Facility Design for Ventilation Design* - Presented by: **Mario Mondaca, VES-Artex - Senior Technical Applications and Research Engineer, Abbotsford, British Columbia, Canada**

11:35am	2401501	*Assessing the economic and environmental feasibility of biofiltration for methane reduction on Pennsylvania dairy farms* - Presented by: **Juliana Vasco-Correa;** Vancie Peacock, Camila Gonzalez, DeWaunis Kelly, Christine Costello, Eileen Fabian, Juliana Vasco-Correa
11:50am	2400839	*Effect of two window configurations on the lighting environment of broiler houses providing natural light* - Presented by: **John Linhoss, Auburn University Biosystems Engineering, Auburn, Alabama;** Etherton, J.A., Davis, J.D., Purswell, J.L., Starkey, J.D.
12:05pm	2401505	*Transition from conventional to alternative laying hens housing systems: analysis and perspectives under One Health Approach* - Presented by: **A. Dalila Larios M., Research and Development Institute for the Agri-Environment (IRDA), Quebec, Quebec, Canada;** Valérie Létourneau, Caroline Duchaine, Martine Boulianne, Patrick Brassard, Sébastien Fournel, Andrea Katherín Carranza-Díaz, Magali-Wen St-Germain, Stéphane Godbout

334 Food Safety Engineering

Wednesday, 7/31/2024 10:15am - 12:15pm

Location: Platinum 7
Technical Community: PRS - Processing Systems
Session Type: Oral Technical Session
Organizer: Ashutosh Singh, University of Guelph
Sponsoring Committee: PRS-703 Food Processing
Moderators: Satyanarayan Dev, Florida A&M University; Griffiths Atungulu, University of Arkansas

Start Time	Abstract ID	*Presentation Title* – Presenter; Co-authors
10:20am	2400955	*A robust quality and safety prediction tool using the best of deep-learning and mechanistic model* - Presented by: **Ashim Datta;** Debmalya Ghosh
10:35am	2401484	*Continuous Inactivating Shiga-toxin Producing E. coli in Milk By a Liquid-phase Plasma Process* - Presented by: **Yuan Yuan;** Haiqing Sheng, Shaobo Deng, Dinithi Mohotti, Taylor Booker, Ahmad Mukhtar, Sarah Wu
10:50am	2400138	*Feed mills' challenges with multiple food safety management systems (MFSMS)* - Presented by: **Esther Yeboah Akoto, Iowa State University Kent Feed Mill and Grain Science Complex, Agricultural and Biosystems Engineering, Iowa State University, Ames, Iowa;** Dirk E. Maier
11:05am	2400148	*Demonstration of SmartProbe Technology for Early Detection of Insect Pests in Almonds and Environmental Monitoring* - Presented by: **Zhongli Pan, University of California Davis, Davis, California;** Ragab Khir, Zhongli Pan
11:20am	2400154	*Atmospheric Cold Plasma treatment as an alternative to chlorination in Soft Wheat Flour for preparation of High Ratio Cakes* - Presented by: **Shikhadri Mahanta**
11:35am	2400067	*Control-volume Method to Determine the Washing Point of Coffee and Produce Specialty Coffees* - Presented by: **Juan R. Sanz-Uribe, National Research Coffee Center, Manizales, Caldas, Colombia;** Carol V. Osorio-Giraldo, Aida E. Peñuela-Martínez
11:50am	2400150	*Inactivation of Listeria monocytogenes on ready-to-eat cold-smoked salmon by atmospheric cold plasma and pulsed UV light* - Presented by: **Lamin S. Kassama, Alabama A&M University, Normal, Alabama;** Manikanta Sri Sai Kunisetty, Armitra Jackson-Davis, Srinivasa Rao Mentreddy, Lamin S. Kassama

335 Physical Properties and Modeling Related to Crop and Feed Drying, Handling and Storage

Wednesday, 7/31/2024 10:15am - 12:15pm

Location: Platinum 8
Technical Community: PRS - Processing Systems
Session Type: Oral Technical Session
Organizer: Marvin Petingco, Kansas State University
Sponsoring Committee: PRS-702 Crop & Feed Processing & Storage **Co-Sponsors:** PRS-701 Physiochemical Properties of Biological Pr
Moderators: Marvin Petingco, Kansas State University; Ma Cristine Concepcion Ignacio, University of the Philippines Los Baños

Start Time	Abstract ID	*Presentation Title* – Presenter; Co-authors
10:20am	2400754	*Use of event tree analysis for a systematic assessment of aflatoxin hazards in post-harvest Iowa corn* - Presented by: **Gretchen A. Mosher, Iowa State University, Ames, Iowa;** Emily Branstad-Spates
10:35am	2400558	*Compressive Behavior of Bulk Corn: Effect of Quality and Moisture Content* - Presented by: **Johnson Adegboyega, Purdue University, West Lafayette, Indiana;** Johnson Adegboyega, Gretchen Mosher, Kingsly Ambrose
10:50am	2400070	*Analysis of drying kinetics and physical properties of hemp flowers using a solar drying system* - Presented by: **Catelyn Bridges;** Li Tian
11:05am	2400460	*Evaluating rice kernel breakage under compressive loadings* - Presented by: **Weronika Kruszelnicka, Bydgoszcz University of Science and Technology, Bydgoszcz, Poland;** Kingsly Ambrose, Patryk Leda, Andrzej Tomporowski
11:20am	2400899	*Evaluating Airflow Uniformity within Corn Grain Piles through CFD simulations* - Presented by: **Marvin C. Petingco, Kansas State University, Manhattan Kansas;** Mark Casada, Mingjun Wei, Sherif Elsayed, Dirk Maier
11:35am	2401448	*Determination of Desorption Isotherm of Black Garlic (Allium Sativum Linn)* - Presented by: **Bethany Grace S. Calixto, Mariano Marcos State University, City of Batac, Ilocos Norte, Philippines;** Nelson Junior T. Rodillas, Reynold M. Caoili, Michael N. Duldulao
11:50am	2400231	*A System Sizing Tool for Grain Harvesting and Handling (GH2)* - Presented by: **Kapil Arora**
12:05pm	2400133	*Optimizing Lab Methods for Consistent Rice Milling Analysis* - Presented by: **Samuel Olaoni**