TABLE OF CONTENTS

Below is a list of all technical session topics available on demand beginning on Sunday, July 12. The full list of presentation titles for each topic, with authors, presenters, and any scheduled Q&A sessions are listed by page number following the Table of Contents so you can schedule your video viewings prior to Q&A sessions.

Page 1-2

**ASE – APPLIED SCIENCE & ENGINEERING**

**WOOD BASED CARBON MATERIALS PRODUCTION & APPLICATIONS**
Sponsoring Committees: ASE-12 Forest Engineering, ES-220 Biomass Energy & Industrial Byproducts

Page 3-4

**EOPD – EDUCATION, OUTREACH, & PROFESSIONAL DEVELOPMENT**

**INNOVATIONS AND INTEGRATION OF INSTRUCTION**
Sponsoring Committees: EOPD-205 Engineering Technology & Management Education, EOPD-203 Undergraduate & Graduate Instruction, EOPD-206 Ag Technology & Mgmt Curriculum Review & Pgm Recog, EOPD-211 Undergraduate Engineering Prgm & Instructional Chair

 LIVE Q&A VIA ZOOM: MONDAY 7/13 AT 11:00 AM – 12:00 PM

**SUCCESS AND FAILURE IN TEACHING & LEARNING**
Sponsoring Committees: EOPD-203 Undergraduate & Graduate Instruction, EOPD-205 Engineering Technology & Management Education, EOPD-211 Undergraduate Engineering Prgm & Instructional Chairs

 LIVE Q&A VIA ZOOM: MONDAY 7/13 AT 12:00 – 1:00 PM
ES – ENERGY SYSTEMS

ADVANCED AND DROP-IN BIOFUELS PRODUCTION-BIOCHEMICAL APPROACH
Sponsoring Committees: ES-220 Biomass Energy & Industrial Products, PRS-280 Bioconversion and Bioprocesses
LIVE Q&A VIA ZOOM: WEDNESDAY 7/15 AT 1:00 – 2:00 PM

ADVANCES IN BIOMASS PREPROCESSING AND PRETREATMENT
Sponsoring Committees: ES-220 Biomass Energy & Industrial Products, MS-23/7/2 Forage & Biomass Engineering, ASE-12 Forest Engineering
LIVE Q&A VIA ZOOM: MONDAY 7/13 AT 2:00 – 3:00 PM

ALGAE PRODUCTION AND CONVERSION & VALUE-ADDED CHEMICALS
Sponsoring Committees: ES-220 Biomass Energy & Industrial Products, PRS-280 Bioconversion and Bioprocesses
LIVE Q&A VIA ZOOM: WEDNESDAY 7/15 AT 10:15 – 12:15 PM

BIOMASS BULK FLOW PROPERTIES MEASUREMENT, MODELING, AND APPLICATION

BIOMASS FEEDSTOCK SUPPLY LOGISTICS AND MODELING
Sponsoring Committees: ES-220 Biomass Energy & Industrial Products, MS-23/7/2 Forage & Biomass Engineering, ASE-12 Forest Engineering
LIVE Q&A VIA ZOOM: MONDAY 7/13 AT 3:00 – 4:00 PM

RENEWABLE ENERGY RESOURCES AND TECHNOLOGIES
Sponsoring Committees: ES-210 Renewable Power Generation Committee
LIVE Q&A VIA ZOOM: TUESDAY 7/14 AT 10:00 – 11:00 AM

SOLAR ENERGY, ENERGY UTILIZATION AND HORTICULTURAL LIGHTING AGRICULTURAL FACILITIES
Sponsoring Committees: ES-300 Electrical Utilization & Energy Apps, PAFS-30 Plant Systems Group, ES-310 Ag Lighting Group, ES-311 Plant Growth LED Lighting
LIVE Q&A VIA ZOOM: WEDNESDAY 7/15 AT 12:00 – 1:00 PM

TECHNO-ECONOMIC AND LIFE CYCLE ASSESSMENT OF BIOMASS CONVERSION
Sponsoring Committees: ES-220 Biomass Energy & Industrial Products, PRS-280 Bioconversion and Bioprocesses
LIVE Q&A VIA ZOOM: TUESDAY 7/14 AT 4:00 – 5:00 PM

THERMOCHEMICAL CONVERSIONS OF BIOMASS
Sponsoring Committees: ES-220 Biomass Energy & Industrial Products
LIVE Q&A VIA ZOOM: MONDAY 7/13 AT 4:00 – 5:00 PM

VALUE-ADDED CHEMICALS AND LIGNIN VALORIZATION
Sponsoring Committees: ES-220 Biomass Energy & Industrial Products
LIVE Q&A VIA ZOOM: TUESDAY 7/14 AT 3:00 – 4:00 PM
Strategies and Considerations for Safety Programming in Agriculture
**LIVE Q&A VIA ZOOM: TUESDAY 7/14 AT 9:00 – 10:00 AM**

Strategies and Considerations for Safety Programming in Agriculture
**LIVE Q&A VIA ZOOM: TUESDAY 7/14 AT 10:00 – 11:00 AM**

**ITSC – INFORMATION TECHNOLOGY, SENSORS & CONTROL SYSTEMS**

**3D MACHINE VISION FOR SENSING AND AUTOMATION**
Sponsoring Committees: ITSC-312 Machine Vision
**LIVE Q&A VIA ZOOM: MONDAY 7/13 AT 10:00 AM – 11:00 AM**

**ADVANCED COMPUTATIONAL APPROACHES FOR SOLVING AGRICULTURAL AND BIOLOGICAL ENGINEERING PROBLEMS**
Sponsoring Committees: ITSC-217 Computational Methods, Simulations & Applications
**LIVE Q&A VIA ZOOM: TUESDAY 7/14 AT 11:00 AM – 12:00 PM**

**BIG DATA AND DATA SCIENCE FOR PRECISION AGRICULTURE**
Sponsoring Committees: ITSC-254 Emerging Information Systems
**LIVE Q&A VIA ZOOM: TUESDAY 7/14 AT 11:00 AM – 12:00 PM**

**BIOSENSORS AND BIOELECTRONICS IN FOOD AND AGRICULTURE**
Sponsoring Committees: ITSC-230 Biosensors, PRS-703 Food Processing, ITSC-353 Instrumentation & Controls
**LIVE Q&A VIA ZOOM: TUESDAY 7/14 AT 2:00 – 3:00 PM**

**CLOUD COMPUTING AND INTERNET OF THINGS IN AGRICULTURE**
Sponsoring Committees: ITSC-254 Emerging Information Systems, TSC-217 Computational Methods, Simulations & Applications
**LIVE Q&A VIA ZOOM: MONDAY 7/13 AT 2:00 – 3:00 PM**

**COMPUTATIONAL FLUID DYNAMICS (CFD) APPLICATIONS IN AGRICULTURE**
Sponsoring Committees: ITSC-217 Computational Methods, Simulations & Applications
**LIVE Q&A VIA ZOOM: WEDNESDAY 7/15 AT 11:00 AM – 12:00 PM**

**DISCRETE ELEMENT MODELING (DEM) APPLICATIONS IN AGRICULTURE**
Sponsoring Committees: ITSC-217 Computational Methods, Simulations & Applications
**LIVE Q&A VIA ZOOM: WEDNESDAY 7/15 AT 11:00 AM – 12:00 PM**
EMERGING TECHNOLOGIES FOR BIOLOGICAL SENSING APPLICATION IN AGRICULTURE
Sponsoring Committees: ITSC-230 Biosensors, PRS-703 Food Processing, ITSC-353 Instrumentation & Controls
LIVE Q&A VIA ZOOM: TUESDAY 7/14 AT 2:00 – 3:00 PM

HYPER SPECTRAL IMAGING ADVANCES & APPLICATIONS
Sponsoring Committees: ITSC-348 Electromagnetics & Spectroscopy
LIVE Q&A VIA ZOOM: MONDAY 7/13 AT 11:00 AM – 12:00 PM

IMAGING TECHNOLOGIES FOR HIGH THROUGHPUT PHENOTYPING
Sponsoring Committees: ITSC-312 Machine Vision, MS-48 Specialty Crop Engineering, ITSC-348 Electromagnetics & Spectroscopy
LIVE Q&A VIA ZOOM: MONDAY 7/13 AT 1:00 – 2:00 PM

MACHINE VISION APPLICATIONS FOR AGRICULTURE AND FOOD
Sponsoring Committees: ITSC-312 Machine Vision
LIVE Q&A VIA ZOOM: MONDAY 7/13 AT 10:00 AM – 11:00 AM

MACHINE VISION APPLICATIONS IN VEGETABLES AND FRUITS
Sponsoring Committees: ITSC-312 Machine Vision
LIVE Q&A VIA ZOOM: MONDAY 7/13 AT 10:00 AM – 11:00 AM

MACHINE VISION FOR AGRICULTURAL ROBOTICS
Sponsoring Committees: ITSC-312 Machine Vision
LIVE Q&A VIA ZOOM: MONDAY 7/13 AT 3:00 – 4:00 PM

MACHINE VISION FOR PRECISION AGRICULTURE
Sponsoring Committees: ITSC-312 Machine Vision, MS-54 Precision Agriculture
LIVE Q&A VIA ZOOM: TUESDAY 7/14 AT 3:00 – 4:00 PM

ROBOTICS AND C0-ROBOTICS FOR AGRICULTURE
Sponsoring Committees: ITSC-318 Mechatronics & Biorobotics
LIVE Q&A VIA ZOOM: MONDAY 7/13 AT 3:00 – 4:00 PM

SENSING APPLICATIONS USING UNMANNED AERIAL SYSTEMS
Sponsoring Committees: ITSC-318 Mechatronics & Biorobotics
LIVE Q&A VIA ZOOM: MONDAY 7/13 AT 12:00 – 1:00 PM

SPECTROSCOPIC SENSING AND IMAGING OF SOIL, PLANT, AND AGRICULTURE PRODUCE
Sponsoring Committees: ITSC-348 Electromagnetics & Spectroscopy
LIVE Q&A VIA ZOOM: MONDAY 7/13 AT 11:00 AM – 12:00 PM

SPECTROSCOPIC SENSING AND IMAGING: AERIAL AND GROUND APPLICATION USE CASES
Sponsoring Committees: ITSC-348 Electromagnetics & Spectroscopy
LIVE Q&A VIA ZOOM: MONDAY 7/13 AT 11:00 AM – 12:00 PM

TOOLS AND TECHNOLOGIES FOR HIGH THROUGHPUT PHENOTYPING
Sponsoring Committees: ITSC-318 Mechatronics & Biorobotics
LIVE Q&A VIA ZOOM: MONDAY 7/13 AT 1:00 – 2:00 PM

UNMANNED AERIAL SYSTEMS FOR CROP IMAGING APPLICATIONS
Sponsoring Committees: ITSC-318 Mechatronics & Biorobotics
LIVE Q&A VIA ZOOM: MONDAY 7/13 AT 12:00 – 1:00 PM
INSTRUCTIONAL CASE STUDIES WITH DATA SETS FOR YOUR INSTRUCTION
Sponsoring Committees: ITSC-254 Emerging Information Systems, EOPD-203 Undergraduate & Graduate Instruction, EOPD-205 Engineering Technology & Management Education

Page 24 - 33
MS – MACHINERY SYSTEMS

ADVANCES IN SOIL-PLANT-MACHINE DYNAMICS AND SYSTEMS SIMULATION
LIVE Q&A VIA ZOOM: WEDNESDAY 7/15 AT 1:30 – 3:00 PM

AUTOMATED AGRICULTURAL FIELD MACHINERY DATA COLLECTION, ANALYSIS, AND UTILIZATION
Sponsoring Committees: MS-58 Agricultural Equipment Automation, MS-54 Precision Agriculture, ITSC-254 Emerging Information Systems, ITSC-318 Mechatronics & Biorobotics
LIVE Q&A VIA ZOOM: MONDAY 7/13 AT 2:00 – 3:30 PM

AUTOMATED AGRICULTURAL SYSTEMS
LIVE Q&A VIA ZOOM: MONDAY 7/13 AT 3:30 – 5:00 PM

AUTOMATION SYSTEMS FOR AGRICULTURAL FIELD MACHINERY
Sponsoring Committees: MS-58 Agricultural Equipment Automation, MS-54 Precision Agriculture, ITSC-254 Emerging Information Systems, ITSC-318 Mechatronics & Biorobotics
LIVE Q&A VIA ZOOM: MONDAY 7/13 AT 3:30 – 5:00 PM

AUTOMATION, ROBOTICS, AND AI FOR VEGETABLE, FRUIT, AND OTHER SPECIALTY CROPS
Sponsoring Committees: MS-48 Specialty Crop Engineering
LIVE Q&A VIA ZOOM: MONDAY 7/13 AT 2:00 – 3:30 PM

COTTON ENGINEERING
Sponsoring Committees: MS-23/7/3 Cotton Engineering, MS-23/7/3 Cotton Engineering, MS-49 Crop Production Systems, Machinery, and Logistics, MS-54 Precision Agriculture, PRS-701 Physical Properties of Ag & Biological Products, MS-01 POSTER SESSION, MS 23 & US TAG ISO/TC23
LIVE Q&A VIA ZOOM: WEDNESDAY 7/15 AT 12:00 – 1:30 PM

CROP AND SOIL SENSING
Sponsoring Committees: MS-54 Precision Agriculture, MS-60 Unmanned Aerial Systems
LIVE Q&A VIA ZOOM: WEDNESDAY 7/15 AT 1:30 – 3:00 PM

GENERAL TOPICS IN MACHINERY SYSTEMS
Sponsoring Committees: MS-54 Precision Agriculture
LIVE Q&A VIA ZOOM: WEDNESDAY 7/15 AT 12:00 – 1:30 PM

INNOVATIONS APPLIED TO CHEMICAL AND FERTILIZER APPLICATION
Sponsoring Committees: MS-23/6 Application Sys & US TAG ISO TC23/SC6, MS-54 Precision Agriculture
LIVE Q&A VIA ZOOM: WEDNESDAY 7/15 AT 10:30 AM – 12:00 PM

INNOVATIONS IN PRECISION AGRICULTURE
Sponsoring Committees: MS-54 Precision Agriculture
LIVE Q&A VIA ZOOM: TUESDAY 7/14 AT 12:00 – 1:30 PM
MACHINERY AND TASK OPTIMIZATION – PART 1
Sponsoring Committees: MS-49 Crop Production Systems, Machinery, and Logistics, MS-45 Soil-Plant-Machine Dynamics, MS-58 Agricultural Equipment Automation
LIVE Q&A VIA ZOOM: TUESDAY 7/14 AT 9:30 – 11:00 AM

MACHINERY AND TASK OPTIMIZATION – PART 2
Sponsoring Committees: MS-49 Crop Production Systems, Machinery, and Logistics, MS-45 Soil-Plant-Machine Dynamics, MS-58 Agricultural Equipment Automation
LIVE Q&A VIA ZOOM: TUESDAY 7/14 AT 9:30 – 11:00 AM

MACHINERY AND TASK OPTIMIZATION – PART 3
Sponsoring Committees: MS-49 Crop Production Systems, Machinery, and Logistics, MS-45 Soil-Plant-Machine Dynamics, MS-58 Agricultural Equipment Automation
LIVE Q&A VIA ZOOM: TUESDAY 7/14 AT 12:00 – 1:30 PM

PESTICIDE AND FERTILIZATION APPLICATIONS TECHNOLOGY, FORMULATIONS AND ENVIRONMENTAL EFFECTS
Sponsoring Committees: MS-23/6 Application Sys & US TAG ISO TC23/SC6, MS-54 Precision Agriculture
LIVE Q&A VIA ZOOM: WEDNESDAY 7/15 AT 10:30 AM – 12:00 PM

PRECISION AGRICULTURAL UTILIZATION IN CHEMICAL AND FERTILIZER APPLICATIONS
Sponsoring Committees: MS-23/6 Application Sys & US TAG ISO TC23/SC6, MS-54 Precision Agriculture
LIVE Q&A VIA ZOOM: WEDNESDAY 7/15 AT 10:30 AM – 12:00 PM

PRECISION APPLICATION OF CHEMICALS AND FERTILIZERS
Sponsoring Committees: MS-54 Precision Agriculture
LIVE Q&A VIA ZOOM: WEDNESDAY 7/15 AT 9:30 – 10:30 AM

UAVS IN PRECISION AGRICULTURE
Sponsoring Committees: MS-60 Unmanned Aerial Systems, MS-54 Precision Agriculture, ITSC-312 Machine Vision
LIVE Q&A VIA ZOOM: WEDNESDAY 7/15 AT 9:00 – 10:30 AM

A LOOK BACK ON 100 YEARS OF TRACTOR PERFORMANCE TESTING

AGRICULTURAL EQUIPMENT BRAKING WEBINARS
Sponsoring Committee: MS-23-4-1 Agricultural Equipment Braking
Prerecorded Q & A included as part of the content

Page 34 – 54

NRES – NATURAL RESOURCES & ENVIRONMENTAL SYSTEMS

ADVANCED WATERSHED ANALYTICS AND APPLICATIONS OF MACHINE LEARNING IN WATER RESOURCES
Sponsoring Committees: NRES-21 Hydrology Group, NRES-28 Ecological Engineering
LIVE Q&A VIA ZOOM: TUESDAY 7/14 AT 2:00 – 3:00 PM

ADVANCES IN AGROHYDROLOGY: CHALLENGES AND OPPORTUNITIES
Sponsoring Committees: NRES-21 Hydrology Group, NRES-22 Erosion Control Group, NRES-24 Irrigation Group
LIVE Q&A VIA ZOOM: MONDAY 7/13 AT 4:00 – 5:00 PM
ADVANCES IN DRAINAGE DESIGN, MONITORING, AND MODELING
Sponsoring Committees: NRES-23 Drainage Group
LIVE Q&A VIA ZOOM: TUESDAY 7/14 AT 3:00 – 4:00 PM

ADVANCES IN ECOLOGICAL ENGINEERING OF ANIMAL PRODUCTION SYSTEMS
Sponsoring Committees: NRES-28 Ecological Engineering
LIVE Q&A VIA ZOOM: TUESDAY 7/14 AT 12:00 – 1:00 PM

ADVANCES IN IRRIGATION MANAGEMENT IN THE CONTEXT OF CLIMATE CHANGE AND CONSTRAINED WATER SUPPLY
Sponsoring Committees: NRES-244 Irrigation Management
LIVE Q&A VIA ZOOM: MONDAY 7/13 AT 4:00 – 5:00 PM

ADVANCES IN IRRIGATION SYSTEMS MODELING
LIVE Q&A VIA ZOOM: MONDAY 7/13 AT 4:00 – 5:00 PM

ANAEROBIC DIGESTION
LIVE Q&A VIA ZOOM: TUESDAY 7/14 AT 2:00 – 3:00 PM

BARRIERS AND OPPORTUNITIES IN MANURE MANAGEMENT
LIVE Q&A VIA ZOOM: MONDAY 7/13 AT 4:00 – 5:00 PM

BRIDGING SOCIAL AND PHYSICAL SCIENCES TO ACHIEVE WATER, ENERGY, AND FOOD SDGS
Sponsoring Committees: NRES-21 Hydrology Group
LIVE Q&A VIA ZOOM: MONDAY 7/13 AT 4:00 – 5:00 PM

CONSERVATION PRACTICE IMPLEMENTATION
Sponsoring Committees: NRES-22 Erosion Control Group, NRES-225 Conservation Systems
LIVE Q&A VIA ZOOM: WEDNESDAY 7/15 AT 10:00 – 11:00 PM

CONSTRUCTED TREATMENT WETLANDS IN AGROECOSYSTEMS
Sponsoring Committees: NRES-253 Riparian Zones, Floodplains, & Wetlands, NRES-28 Ecological Engineering
LIVE Q&A VIA ZOOM: TUESDAY 7/14 AT 1:00 – 2:00 PM

EDGE OF FIELD PRACTICES FOR NUTRIENT LOSS REDUCTION IN DRAINED LANDSCAPES
Sponsoring Committees: NRES-23 Drainage Group, NRES-22 Erosion Control Group
LIVE Q&A VIA ZOOM: MONDAY 7/13 AT 4:00 – 5:00 PM

EMERGING CONTAMINANTS, PATHOGENS, AND ANTIBIOTIC RESISTANCE
Sponsoring Committees: NRES-28 Ecological Engineering, NRES-22 Erosion Control Group
LIVE Q&A VIA ZOOM: TUESDAY 7/14 AT 1:00 – 2:00 PM

EROSION AND WATER QUALITY IN STREAMS AND WETLANDS
Sponsoring Committees: NRES-252 Geomrphlgy, Streambk Stbtlty & In-Stream Processes, NRES-21 Hydrology Group, NRES-22 Erosion Control Group, NRES-28 Ecological Engineering
LIVE Q&A VIA ZOOM: TUESDAY 7/14 AT 3:00 – 4:00 PM
**Erosion Control Research and Case Studies**
Sponsoring Committees: NRES-22 Erosion Control Group, NRES-223 Erosion Control Research
**LIVE Q&A via Zoom: Wednesday 7/15 at 10:00 – 11:00 AM**

**Evapotranspiration Measurement and Modeling**
Sponsoring Committees: NRES-24 Irrigation Group, NRES-21 Hydrology Group
**LIVE Q&A via Zoom: Tuesday 7/14 at 3:00 – 4:00 PM**

**Extreme Climatic Events: Science, Impact Analysis and Management of Natural Resources**
Sponsoring Committees: NRES-26 Sustainable Land Resources, NRES-21 Hydrology Group, NRES-22 Erosion Control Group, NRES-25 Streams, Reservoirs, and Wetlands Group, NRES-251 Hydraulic Structures, NRES-28 Ecological Engineering
**LIVE Q&A via Zoom: Tuesday 7/14 at 12:00 – 1:00 PM**

**Green Infrastructure Solutions and Ecological Engineering Applications**
Sponsoring Committees: NRES-28 Ecological Engineering
**LIVE Q&A via Zoom: Tuesday 7/14 at 2:00 – 3:00 PM**

**Hydrology and Climate Data: Challenges and Opportunities**
Sponsoring Committees: NRES-21 Hydrology Group
**LIVE Q&A via Zoom: Tuesday 7/14 at 2:00 – 3:00 PM**

**Innovative Eco-Hydrologic and Hydraulic Monitoring, Assessments and Computations**
**LIVE Q&A via Zoom: Wednesday 7/15 at 10:00 – 11:00 AM**

**Long-term Effectiveness of BMPs on Water Quality: Opportunities and Challenges - Hybrid**
Sponsoring Committees: NRES-22 Erosion Control Group
**LIVE Q&A via Zoom: Tuesday 7/14 at 3:00 – 4:00 PM**

**Manure Management and Treatment Systems**
**LIVE Q&A via Zoom: Tuesday 7/14 at 1:00 – 2:00 PM**

**Modeling of Hydrology and Water Quality in Surface, Subsurface and Groundwater Systems**
Sponsoring Committees: NRES-21 Hydrology Group, NRES-22 Erosion Control Group
**LIVE Q&A via Zoom: Wednesday 7/15 at 10:00 – 11:00 AM**

**Nutrient Removal, Recovery, and Recycle**
Sponsoring Committees: NRE, S-28 Ecological Engineering, NRES-22 Erosion Control Group
**LIVE Q&A via Zoom: Tuesday 7/14 at 12:00 – 1:00 PM**

**Nutrient Transport and Cycling: Measurement and Modeling**
Sponsoring Committees: NRES-22 Erosion Control Group, NRES-224 Sediment and Associated Pollutants, NRES-225 Conservation Systems
**LIVE Q&A via Zoom: Tuesday 7/14 at 3:00 – 4:00 PM**
ONLINE WASTEWATER TREATMENT AND REUSE – RESEARCH, DEMONSTRATION, AND EDUCATIONAL ACTIVITIES
Sponsoring Committees: NRES-262 Onsite Water Reuse, NRES-26 Sustainable Land Resources, NRES-265 Soil and Groundwater Remediation, NRES-28 Ecological Engineering
LIVE Q&A VIA ZOOM: MONDAY 7/13 AT 3:00 – 4:00 PM

REAL TIME SYSTEMS TO MANAGE NATURAL RESOURCES AND ENVIRONMENTAL SYSTEMS
Sponsoring Committees: NRES-21 Hydrology Group, NRES-28 Ecological Engineering
LIVE Q&A VIA ZOOM: MONDAY 7/13 AT 3:00 – 4:00 PM

SUSTAINABILITY METRICS – CONCEPT, EVALUATION, AND ADVANCES
Sponsoring Committees: NRES-26 Sustainable Land Resources, ASE-16 Engineering for Sustainability
LIVE Q&A VIA ZOOM: TUESDAY 7/14 AT 12:00 – 1:00 PM

TECHNOLOGICAL DEVELOPMENTS IN IRRIGATION RESEARCH
LIVE Q&A VIA ZOOM: MONDAY 7/13 AT 4:00 – 5:00 PM

Career Paths- Research, Teaching, Extension, Government, and Industry

20TH ANNIVERSARY OF THE WATERSHED DAM REHABILITATION AMENDMENTS
LIVE Q&A VIA ZOOM: MONDAY 7/13 AT 3:00 – 4:00 PM

DISTINGUISHED LECTURE SERIES

PREFERENTIAL FLOW AND PIPING IN RIPARIAN BUFFERS
Sponsoring Committees: NRES-21 Hydrology Group, NRES-253 Riparian Zones, Floodplains, & Wetlands, NRES-28 Ecological Engineering
LIVE Q&A VIA ZOOM: TUESDAY 7/14 AT 2:00 – 3:00 PM

THE IRRIGATION INNOVATION CONSORTIUM CURRENT RESEARCH
Sponsoring Committees: NRES-24 Irrigation Group
LIVE Q&A VIA ZOOM: WEDNESDAY 7/15 AT 10:00 – 11:00 AM

VULNERABILITY OF LAND RESOURCES FOR SUSTAINABLE DEVELOPMENT: STRESSORS AND RESPONSES

Page 55 – 59 PAFS – PLANT, ANIMAL, & FACILITY SYSTEMS

AIR EMISSION FROM LIVESTOCK AND POULTRY PRODUCTION
Sponsoring Committees: PAFS-50 Environmental Air Quality
LIVE Q&A VIA ZOOM: TUESDAY 7/14 AT 9:30 – 11:00 AM

ANIMAL RESPONSE TO ENVIRONMENT
Sponsoring Committees: PAFS-40 Facilities & Systems Group
LIVE Q&A VIA ZOOM: TUESDAY 7/14 AT 1:00 – 2:30 PM

BIOSECURITY FOR LIVESTOCK AND POULTRY PRODUCTION SYSTEMS
Sponsoring Committees: PAFS-40 Facilities & Systems Group
LIVE Q&A VIA ZOOM: TUESDAY 7/14 AT 1:00 – 2:30 PM
EMERGING INFORMATION SYSTEMS FOR ANIMAL PRODUCTION SYSTEMS
Sponsoring Committees: PAFS-40 Facilities & Systems Group
LIVE Q&A VIA ZOOM: MONDAY 7/13 AT 3:00 – 5:00 PM

INDOOR PLANTS ENVIRONMENTS, GREENHOUSE AND NURSERY TECHNOLOGY
Sponsoring Committees: PAFS-30 Plant Systems Group
LIVE Q&A VIA ZOOM: WEDNESDAY 7/15 AT 8:00 – 9:00 AM

MEASUREMENT, MITIGATION AND MODELING OF AIR POLLUTION FROM LIVESTOCK AND POULTRY FACILITIES
Sponsoring Committees: PAFS-30 Plant Systems Group
LIVE Q&A VIA ZOOM: TUESDAY 7/14 AT 9:30 – 11:00 AM

PRECISION ANIMAL MANAGEMENT
Sponsoring Committees: PAFS-40 Facilities & Systems Group
LIVE Q&A VIA ZOOM: MONDAY 7/13 AT 3:30 – 5:00 PM

SUSTAINABLE BUILDING TECHNOLOGY

Page 60 – 66 PRS – PROCESSING SYSTEMS

ARTIFICIAL INTELLIGENCE AND MEASUREMENT FOR BIOLOGICAL MATERIALS PROCESSING
LIVE Q&A VIA ZOOM: TUESDAY 7/14 AT 12:00 – 1:00 PM

BIOCHEMICAL CONVERSION AND BIOPROCESS MODELING
Sponsoring Committees: PRS-280 Bioconversion and Bioprocesses, ES-220 Biomass Energy & Industrial Byproducts
LIVE Q&A VIA ZOOM: TUESDAY 7/14 AT 1:00 – 2:00 PM

DRYING, HANDLING AND STORAGE OF GRAIN CROPS-STORAGE
Sponsoring Committees: PRS-702 Crop & Feed Processing & Storage, PRS-702 Crop & Feed Processing & Storage
LIVE Q&A VIA ZOOM: WEDNESDAY 7/15 AT 10:00 – 11:00 AM

FOOD PROCESS ENGINEERING – FOOD QUALITY EVALUATION AND CONTROL
Sponsoring Committees: PRS-703 Food Processing, PRS-701 Physical Properties of Ag & Biological Products
LIVE Q&A VIA ZOOM: WEDNESDAY 7/15 AT 2:00 – 3:00 PM

FOOD PROCESS ENGINEERING – NONTHERMAL TECHNOLOGIES
Sponsoring Committees: PRS-703 Food Processing, PRS-701 Physical Properties of Ag & Biological Products
LIVE Q&A VIA ZOOM: WEDNESDAY 7/15 AT 1:00 – 2:00 PM

FOOD PROCESS ENGINEERING – NOVEL PROCESSING TECHNIQUES
Sponsoring Committees: PRS-703 Food Processing, PRS-701 Physical Properties of Ag & Biological Products
LIVE Q&A VIA ZOOM: WEDNESDAY 7/15 AT 2:00 – 3:00 PM
**FOOD PROCESS ENGINEERING – PRODUCTION, DRYING, AND STORAGE**
Sponsoring Committees: PRS-703 Food Processing, PRS-701 Physical Properties of Ag & Biological Products
LIVE Q&A VIA ZOOM: WEDNESDAY 7/15 AT 1:00 – 2:00 PM

**MANAGEMENT AND/OR UTILIZATION TECHNOLOGIES FOR FOOD AND ORGANIC WASTES**
Sponsoring Committees: PRS-707 Food & Organic Waste Management & Utilization
LIVE Q&A VIA ZOOM: TUESDAY 7/14 AT 12:00 – 1:00 PM

**MODELING CROP AND FEED DRYING, HANDLING AND STORAGE**
Sponsoring Committees: PRS-702 Crop & Feed Processing & Storage, PRS-701 Physical Properties of Ag & Biological Products, ITSC-217 Computational Methods, Simulations & Applications
LIVE Q&A VIA ZOOM: TUESDAY 7/14 AT 10:00 – 11:00 AM

**PHYSICAL AND CHEMICAL PROPERTIES OF FOOD PRODUCTS FOR PROCESSING HANDLING**
Sponsoring Committees: PRS-702 Crop & Feed Processing & Storage, PRS-701 Physical Properties of Ag & Biological Products, ITSC-217 Computational Methods, Simulations & Applications
LIVE Q&A VIA ZOOM: TUESDAY 7/14 AT 10:00 – 11:00 AM

**PHYSICAL AND CHEMICAL PROPERTIES OF CROPS & BIOMATERIALS FOR PROCESSING HANDLING**
Sponsoring Committees: PRS-701 Physical Properties of Ag & Biological Products
LIVE Q&A VIA ZOOM: TUESDAY 7/14 AT 10:00 – 11:00 AM
ASE – APPLIED SCIENCE & ENGINEERING

- **WOOD BASED CARBON MATERIALS PRODUCTION & APPLICATIONS**

  2000339 – Hydrogen Storage in Superactivated Hydrochars
  Nepu Saha, Al-Ibtiida Sultana, M. Toufiq Reza (Presenting: Toufiq Reza, Florida Institute of Technology)

  2000871 – Effects of Biochar on Greenhouse Gas and Ammonia Emission from Soil Incubation Study
  Syed MD Rahman, Shafiqur Rahman (Presenting: Syed MD Rahman, North Dakota State University)

  2000886 – A Universal and Long-Life Biochar Catalyst for the Conversion of Waste Plastics into Valuable Transportation Fuels and H@-Enriched Gases
  Chenzi Wang, Hanwu Lei, Yunfeng Zhao, Marie Qian, Wendy Mateo, Elmar Mateo, Erguang Huo
  (Presenting: Chenxi Wang, Washington State University)

  2001120 – Microwave-Assisted Synthesis of Nano-Biocarbon-Based Catalysts to Improve the Quality of Low-Density Polyethylene Pyrolysis Bio-Oil
  Yunfeng Zhao, Hanwu Lei, Moriko Quina, Erguang Huo, Rongge Zou
  (Presenting: Rongge Zou, Washington State University)

  2001253 – Nitrogen and Magnesium Co-Doped Biochar from Lignocellulosic Biomass for Phosphate Adsorption
  Michael Ayiania, Manuel Garcia-Perez, Sohrab Haghigi Mood, Nalladurai Kaliyan, Prabaharan Graceraj Ponnumasy, Sudhagar Mani
  (Presenting: Sohrab Haghigi Mood, Washington State University)

  2001272 – Development of Nanocellulose Based Gas Barrier Composite Films for Sustainable Packaging
  Nalladurai Kaliyan, Prabaharan Graceraj Ponnumasy, Sudhagar Mani
  (Presenting: Sudhagar Mani, University of Georgia)
2001333 – Comparison of Wood and Miscanthus Hydrochars and Pyrochars Production for Phosphate Adsorption from Wastewater
Abolghasem Shahbazi, Shuangning Xiu, Aicha Slassi Sennou (Presenting: Aicha Slassi Sennou, North Carolina A&T State)

2001342 – Effects of Waste Cardboard Biochar on Soil Nutrient Leaching and Lettuce Yield when used as a Soil Amendment
Shubhanker Joshi, Sebastian Fricke, Shiv Prasher (Presenting: Shubhanker Joshi, McGill University)
EOPD – EDUCATION, OUTREACH, & PROFESSIONAL DEVELOPMENT

• **INNOVATIONS AND INTEGRATION OF INSTRUCTION**
  
  **LIVE Q&A VIA ZOOM: MONDAY 7/13 AT 11:00 AM – 12:00 PM**
  
  Moderator: Kendall Kirk, Clemson University

  2000065 – Leaving with a Love of Life Long Learning: Lessons Learned
  Oladiran Fasina, Jonathan Davis (Presenting: Jonathan Davis, Auburn University)

  2000131 – Immersive Educational Video Game Design to Enhance Understanding of Agricultural Systems
  Conner Lunn, Deepak Keshwani, Luke Monhollon (Presenting: Conner Lunn, University of Nebraska-Lincoln)

  2000605 – Fostering Collaborative Relationship as a Strategy for Capacity Building and Development of Non-Cognitive Skills in ABE programs
  Gopu Raveendran Nair, Jorge Guzman, Elvira deMejia, Matthew C. Boerner, G. Curtis Langley
  (Presenting: Gopu Raveendran Nair, University of Illinois)

  2001217 – College College Students Personal Perception of Using Precision Agriculture Tools, Processes
  Matthew C. Boerner, G. Curtis Langley (Presenting: Curtis Langley, Tarleton State University)

  2001237 – Strengths, Leadership, and Success: Technology and Engineering Student Patterns and Perceptions
  Gretchen Mosher, Saxon Ryan (Presenting: Saxon Ryan, Iowa State University)

  2001404 – Incorporating Peer Review to Improve Report Writing in the Bioprocess Engineering Laboratory
  (Presenting: Abigail Engelberth, Purdue University)

  2001414 – Teaching Precision Agriculture Technology with a Yield Monitor Demonstration Unit
  Hunter F. Massey, Catherine A. DiBenedetto, Samuel A. Quinney
  (Presenting: Hunter F. Massey, Clemson University)

  2001498 – Measurement and Control for Ag Systems to Enhance the Efforts Towards Digital Agriculture
  Jianfeng Zhou, Leon Schumacher (Presenting: Leon Schumacher, University of Missouri)

• **SUCCESS AND FAILURE IN TEACHING & LEARNING**
  
  **LIVE Q&A VIA ZOOM: MONDAY 7/13 AT 12:00 – 1:00 PM**
  
  Moderator: Luis Rodriquez, University of Illinois

  2000341 – Connecting Class to the Curriculum and Beyond
  Andy Hale, John Classen (Presenting: John Classen, North Carolina State University)

  2001024 – A Modern Exercise for Fundamental and Practical Application of Essential Agricultural Engineering Skills
  G. Curtis Langley, McKenna Skidmore (Presenting: Curtis Langley, Tarleton State University)

  2001189 – The INFEWS-ER: A Study in the Core Competencies of Transdisciplinary Research and Education
  Jill Heemstra, Luis Rodriguez, John Classen, Erin Cortus
  (Presenting: Luis Rodriguez, University of Illinois-Urbana-Champaign)
2001319 – Conversion of Traditional Soil and Water Management Class to a Community-Engaged Learning Class
Joel Paz, Mary Love Tagert (Presenting: Mary Love Tagert, Mississippi State University)

2001329 – Integrating Ideation Techniques to Catalyze Creativity in Engineering Design
Lisa Wilken, Bayleigh Bisnette (Presenting: Lisa Wilken, Kansas State University)

2001568 – Sustainability as a Thread Linking Impacts and Disciplines within Biological Systems Engineering
Lisa Wilken, Trisha Moore (Presenting: Lisa Wilken, Kansas State University)
ES – ENERGY SYSTEMS

- **ADVANCED AND DROP-IN BIOFUELS PRODUCTION-BIOCHEMICAL APPROACH**
  **LIVE Q&A VIA ZOOM: WEDNESDAY 7/15 AT 1:00 – 2:00 PM**
  Moderator: Yi Wang, Auburn University

  **2000100 – An Investigation into the Production of Biodiesel from Cowpea (Vigna Unguiculata)**
  Babajide Adelekan, Oluwafemi Idowu (Presenting: Babajide A. Adelekan, Federal College of Agriculture)

  **200787 – Deletion of Plasmalogen Biosynthesis Genes in Clostridium beijerinckii Enhanced Biobutanol Production**
  Howard Goldfine, Yi Wang, Shangjun Wang (Presenting: Shangjun Wang, Auburn University)

  **200872 – Synergy of Thermochemical Treatment of Dried Distillers Grains with Solubles with Bioethanol Production for Increased Sustainability and Profitability**
  Jacke A. Koziel, Samuel C. O’Brien, Andrzej Białowiec, Chumki Banik
  (Presenting: Jacek Koziel, Iowa State University)

  **2001092 – Quantitative Comparison of Residual Starch in DDGS for Granular Starch Hydrolyzing Enzyme and Conventional Enzymes for Ethanol production from Corn**
  Gitanshu Bhatia, Ankita Juneja, Kent Rausch, ME Tumbleson, Vijay Singh
  (Presenting: Gitanshu Bhatia, University of Illinois Urbana)

- **ADVANCES IN BIOMASS PREPROCESSING AND PRETREATMENT**
  **LIVE Q&A VIA ZOOM: MONDAY 7/13 AT 2:00 – 3:00 PM**
  Moderator: Jay Shankar Tumuluru, Idaho National Laboratory

  **2000048 – Pelleting Process Conditions and Feedstock Properties Impact on the Particle Attrition or Fines (<425 microns) and Physical Properties of Corn Stover Pellets**
  Eric Fillerup, Jaya Shanker Tumuluru (Presenting: Jaya Shankar Tumuluru, Idaho National Laboratory)

  **2000209 – High Solids Loading Processing for Sugars Production from Bioenergy Sorghum**
  Haider Jawad Kadhum, Ganti S. Murthy, Vijay Singh, Ming-Hsun Cheng
  (Presenting: Ming-Hsun Cheng, University of Illinois)

  **2000289 – Understanding Pine Fracturing Mechanism: An Experimental and Numerical Modeling Study**
  Jordan Klinger, Yidong Xia, Vicki Thompson, Yuan Guo, Feiyang Chen, Qiushi Chen
  (Presenting: Yidong Xia, Idaho National Laboratory)

  **2000304 – Cryogenic Grinding of Biomass with Liquid Nitrogen Enhances Sugar Recovery and Reduces Inhibitors during Feedstock Preprocessing**
  Fredy Altpeter, Vijay Singh, Shraddha Maitra (Presenting: Shraddha Maitra, University of Illinois Urbana)

  **2000551 – Intermittent Intermittent Cotreatment: Biomimicry to Enhance Anaerobic Digestion of Switchgrass**
  Andrew May, Anahita Bharadwaj, Katie Hirl, Michael Shreve, Tom Richard
  (Presenting: Andrew May, Pennsylvania State University)
2001271 – Effect of Torrefaction and Alkaline Pretreatment on Glucose Yield of Wheat Straw
Daniel Ciolkosz, Jaya Tripathi (Presenting: Jay Tripathi, Pennsylvania State University)

2001510 – The Composition and Economic Feasibility of Industrial Hemp for Biodiesel Production
Ming-Hsun Cheng, Thomas Clemente, Vijay Singh (Presenting: Mothi Viswanathan, University of Illinois Urbana)

• ALGAE PRODUCTION AND CONVERSION & VALUE-ADDED CHEMICALS

LIVE Q&A VIA ZOOM: WEDNESDAY 7/15 AT 10:15 – 12:15 PM
Moderator: Brendan Higgins and Sushil Adhikari, Auburn University

2000470 – Life Cycle Assessment of Microalgal Production from High Strength Anaerobic Digestate Effluent
Qichen Qichen Wang, Brendan Higgins (Presenting: Qichen Wang, Auburn University)

2001135 – Synthesis of Zeolite-Nanocarbon Composite using Nanocellulose for Catalytic Conversion of Plastic Waste to Liquid Oil Integrated with Syngas Production
Moriko Qian, Hanwu Lei, Yunfeng Zhao, Elmar Villota, Erguang Huo, Wendy Mateo, Qingfa Zhang, Xiaona Lin, Chenxi Wang (Presenting: Moriko Qian, Washington)

2001143 – Guayule Resin: Chemistry, Extraction, and Applications
Mostafa Dehghanizadeh, Catherine E. Brewer (Presenting: Mostafa Dehghanizadeh, New Mexico State University)

2001228 – Algae Growth and Utilization for Biomethane Production via Anaerobic Digestion
Freddy Witarsa, Stephanie Lansing (Presenting: Danielle Delp, University of Maryland)

2001496 – Agriculture and the Promise of Advanced Manufacturing: 3D Printing with Lignin

• BIOMASS BULK FLOW PROPERTIES MEASUREMENT, MODELING, AND APPLICATION

2000058 – Determination of Fundamental Mechanical Properties of Biomass Using the Cubical Triaxial Tester to Model Biomass Flow
Christopher Lanning, Virendra M. Puri, James H. Dooley, Hojae Yi (Presenting: Hojae Yi, Pennsylvania State University)

2000059 – Finite Element Modeling of Biomass Hopper Flow
Virendra M. Puri, Christopher Lanning, James H. Dooley, Hojae Yi (Presenting: Hojae Yi, Pennsylvania State University)

2000078 – Design of a Biomass Scale Cubical Triaxial Tester
James Slosson, James Dooley, Hojae Yi, Virendra Puri, Jordan Whitt, Christopher Lanning (Presenting: Christopher J. Lanning, Forest Concepts, LLC)

2000080 – Overview of DOE Flowability Measurement and Modeling Project at Forest Concepts and Penn State University
Christopher Lanning, Hojae Yi, Virendra Puri, James Slosson, James Dooley (Presenting: James Dooley, Forest Concepts, LLC)

2000575 – FCIC Materials Handling I: Project Overview and R&D Highlights
Yidong Xia, Jordan Klinger, Wencheng Jin (Presenting: Yidong Xia, Idaho National Laboratory)
200655 – Non-Local Granular Fluidity Based Constitutive Modeling of Woody Biomass Feed Flow
Syed Ahsan, Hariswaran Sitaraman, Jordan Klinger, Jonathan Stickel (Presenting: Syed Ahsan, NREL)

200756 – FCIC Materials Handling III: Multi-scale Computational Modeling of Milled Biomass Flow with Multi-regime Constitutive Model
Yidong Xia, Jordan Klinger, Wencheng Jin (Presenting: Wencheng Jin, Idaho National Laboratory)

2001131 – Discrete Element Modeling of Switchgrass Particles for Integrated Process Optimization
Qiushi Chen, Yuan Guo, Feiyang Chen, Zakia Tasnim, Yidong Xia, Mohammad Roni, Sandra Eksioglu
(Presenting: Qiushi Chen, Clemson University)

2001188 – Analytical Models for Biomass Process Design in an Integrated Biorefinery
Sandra D. Eksioglu, Fikri Kucuksayacigil, Neel Chanchad, Mohammad Roni, Yidong Xia, Qiushi Chen
(Presenting: Sandra Eksioglu, University of Arkansas)

2001208 – Integrated Process Optimization for Biochemical Conversion: Project Overview
Sandra D. Eksioglu, Qiushi Chen, Mohammad Roni, Yidong Xia, Fikri Kucuksayacigil, Neel Chanchad, Yuan Guo, Feiyang Chen, Zakia Tasnim (Presenting: Sandra Eksioglu, University of Arkansas)

2001313 – FCIC Materials Handling II: Bulk Physical, Mechanical, and Shear Properties of Loblolly Pine and Flow Characterization in Variable Wedge Hopper Geometries
Andrew Schmidt, Cinta Lorenzo-Martin, George Fenske, Jonathan Stickle, Juan Leal, Oyelayo Ajayi, Richard Daniel, Sergio Hernandez, Tiasha Bhattacharjee, Troy Semelsberger, Wencheng Jin, Yidong Xia, Jordan Klinger
(Presenting: Jordan Klinger, Idaho National Laboratory)

• BIOMASS FEEDSTOCK SUPPLY LOGISTICS AND MODELING
LIVE Q&A VIA ZOOM: MONDAY 7/13 AT 3:00 – 4:00 PM
Moderator: Ajay Shah, Ohio State University

2000449 – Energy Consumption of Tractors and Automatic Bale Pickers for Biomass Bales Infield Aggregation
Igathinathane Cannayen, Mark Liebig, Jonathan Halvorson, David Archer, John Hendrickson, Scott Kronberg, Subhashree Navaneetha Srinivasagan
(Presenting: Subhashree Navaneetha Srinivasagan, North Dakota State University)

2000529 – Locating Nth-Plants for Biomass Conversion and Preprocessing Nationwide: Biorefineries and Depots
Daniela Jones, Damon Hartley, Mike Griffel, Yingqian Lin, Pralhad Burli, David N. Thompson, Matthew Langholtz, Maggie Davis, Craig Brandt (Presenting: Daniela Jones, North Carolina State University)

2000530 – Delivering a Desired Quantity, Quality and Biomass Cost to a Conversion Facility
Tasmin Hossain, Daniela Jones (Presenting: Daniela Jones, North Carolina State University)

2000885 – Experimental Investigation of Agricultural Residue Biomass-Water Slurry Flows in Inclined and Vertical Pipelines
Kashif Javed, Vinoj Kurian, Amit Kumar (Presenting: Alberta, Edmonton, Alberta, Canada)

2000889 – Development of Optimal Location of Biorefinery through Integration of GIS and Techno-Economic Models
Md Mashum Billal, Md. Safiqul Islam, Roshni Mary Sebastian, Amit Kumar
(Presenting: Mashum Bilal, University of Alberta)
2001154 – Identifying Energy Production Opportunities with Event-Based Decision-Making for Agricultural Systems
Ana Paula Spranger Correia de Oliveira, Luis F. Rodríguez, Chelsea M. Peterson, Tinn-Shuan Uen
(Presenting: Ana Paula Spranger Correia de Oliveira, University of Illinois at Urbana-Champaign)

- **RENEWAL ENERGY RESOURCES AND TECHNOLOGIES**

  **LIVE Q&A VIA ZOOM: TUESDAY 7/14 AT 10:00 – 11:00 AM**
  Moderator: Xianhui Zhao, Oak Ridge National Laboratory

  2000923 – Esterification of Oleic Acid with Methanol for Biodiesel Production by Liquid-Phase Plasma Discharge Process
Muhammad Bashir, Sarah Wu (Presenting: Sarah Wu, University of Idaho)

  2001231 – Effects of Temperature, Antioxidants and High-Vacuum Distillation on the Oxidation of Biodiesel Derived from Waste Vegetable Oil
Sandeep Kumar, Randy Maglinao (Presenting: Randy Maglinao, Montana State University-Northern)

  2001445 – Analysis of the Impact of Electric Vehicle Policy on Supply and Demand of U.S. Bioethanol Market
Sun Lu, Luis Rodriguez, Kelsey Schreiber (Presenting: Lu Sun, University of Illinois at Urbana-Champaign)

  2001533 – Performance Evaluation and Emission Characteristics of an Internal Combustion Engine Fueled with Kariya Oil Biodiesel
Olufemi Ogundahunsi, Babatunde Ogunsina, Elizabeth Aransiola
(Presenting: Babatunde Ogunsina, Obafemi Awolowo University)

- **SOLAR ENERGY, ENERGY UTILIZATION AND HORTICULTURAL LIGHTING AGRICULTURAL FACILITIES**

  **LIVE Q&A VIA ZOOM: WEDNESDAY 7/15 AT 12:00 – 1:00 PM**
  Moderator: Kip Pheil, USDA

  2001016 – Process Model and Life Cycle Assessment of Irish Whole Milk Powder
Mingjia Yan, Nicholas Holden, Tenzin Tashi (Presenting: Tenzin Tashi, University College Dublin)

  2001174 – Continuous Flow Mint Distillation System Project Results
David Bohnhoff, Scott Sanford (Presenting: Scott Sanford, University of Wisconsin-Madison)

  2001360 – A Summary of Energy Audits for Solar PV Systems on Kentucky Farms
Samuel McNeill, Douglas Overhults (Presenting: Samuel McNeill, University of Kentucky)

  2001481 – The Horticultural Lighting Market Transformation: Regulations, QPLs and Incentives Play an Important Role for Energy Efficiency and High Quality Systems
Kasey Holland, Leora Radetsky (Presenting: Kasey Holland, DesignLights Consortium)

- **TECHNO-ECONOMIC AND LIFE CYCLE ASSESSMENT OF BIOMASS CONVERSION**

  **LIVE Q&A VIA ZOOM: TUESDAY 7/14 AT 4:00 – 5:00 PM**
  Moderator: Deepak Kumar, Illinois University

  2000312 – Economic and Carbon Intensity Analyses for Ethanol under California Low Carbon Fuel Standard: Looking Forward
Natasha Beilstein, Shashi Menon, Zhichao Wang, Jim Ramm, Lei Zhu (Presenting: Lei Zhu, EcoEngineers)
2000412 – Leveraging Crop Budgets to Assess Environmental Impact of Agricultural Operations

2000500 – Simulation of different biogas upgrading processes and LCA for the selection of the best technology
Stefania Moioli, Omar Hijazi, Laura A. Pellegrini, Heinz Bernhardt
(Presenting: Heinz Bernhardt, Technical University of Munich)

2000640 – Comparative Techno-Economic Analysis of Levulinic Acid Production from Lignocellulosic Biomass
Evan Battisto, Juliana Vasco-Correa (Presenting: Juliana Vasco-Correa, Pennsylvania State University)

2001129 – Prediction of the Effect of Dead Biomass Harvest on Habitat and Biodiversity of Fauna in the Apalachicola National Forest Area
Jahlita Janeau, Johnny Grace III, Ying Ouyang, Aavudai Anandhi, Satyanarayan Dev
(Presenting: Satyanarayan Dev, Florida A & M University)

2001242 – Techno-Economic Assessment of Integrated Forest Biomass Torrefaction and Pelletization Systems
Maryam Manouchehrinejad, E.M.Ted Bilek, Sudhagar Mani (Presenting: Sudhagar Mani, University of Georgia)

2001405 – Technoeconomic Analysis of a Biomass Pelletization and Feeding System
Abigail Engelberth, Akash Patil, Pahola Thathiana Benavides (Presenting: Abigail Engelberth, Purdue University)

2001491 – Economic and Environmental Evaluation of Decentralized Electricity Production through Gasification of Biomass and Wastes
Ajay Kumar, Natariantto Indrawan, Betty Simkins, Robert Frazier, Raymond L. Huhnke
(Presenting: Ajay Kumar, Oklahoma State University)

2001511 – Understanding the Distribution of Downstream Processing Cost and Improvements to Fermentation Yield in a Joint Fermentative/Catalytic Biorefinery Process
Raj Raman, Kurt Rosentrater, Steven Hoff, Brent Shanks, George Kraus
(Presenting: Mothi Viswanathan, University of Illinois Urbana-Champaign)

• THERMOCHEMICAL CONVERSIONS OF BIOMASS
LIVE Q&A VIA ZOOM: MONDAY 7/13 AT 4:00 – 5:00 PM
Moderator: Sandu Fernando, Texas A&M University

2000106 – Development of Heterogeneous Catalysts with Novel Properties for Hydrogen Production from Biomass
Sibel Irmak, Mark Wilkins, Boanerges Bamaca (Presenting: Boanerges Bamaca, University of Nebraska-Lincoln)

2000223 – Development of Catalysts for Hydrothermal Conversion of Renewable Materials to Hydrogen
Boanerges Elias Bamaca Saquic, Sibel Irmak, Mark Wilkins
(Presenting: Boanerges Elias Bamaca Saquic, University of Nebraska)

2000303 – Investigating the Bond Dissociation Enthalpies of a Model Lignin Tetramer
Ross Houston, Nourredine Abdoulmoumine (Presenting: Ross Houston, University of Tennessee)

2000338 – Pelletization of Biomass with Hydrothermally Carbonized Biomass
Tahmid Islam, Sergio Hernandez, Jordan Klinger, M. Toufiq Reza
(Presenting: Toufiq Reza, Florida Institute of Technology)
2000468 – Plastic to Fuels: From Lab to Pilot Scale
Nan Zhou, Hui Li, Paul Chen, Yanling Cheng, Yuhuan Liu, Roger Ruan, Leilei Dai
(Presenting: Leilei Dai, University of Minnesota)

2001134 – Development of Meso-Micro Structure in MFI Zeolites via Nanocrystalline Cellulose Templating for Conversion of Lignocellulosic Biomass to Aromatic Hydrocarbons
Moriko Qian, Hanwu Lei, Elmar Villota, Yunfeng Zhao, Erguang Huo, Chenxi Wang
(Presenting: Moriko Qian, Washington State University)

2001310 – The Impact of Ash and Ash Constituents on the Devolatilization Kinetics Switchgrass
Yang (Skye) Li, Nourredine Abdoulmoumine (Presenting: Nourredine Abdoulmoumine, University of Tennessee)

2001318 – Converting Waste-Plastics to Make High-Performance Electrodes for Lithium-Ion Batteries
Yuxuan Zhang, Yang-Tse Cheng, Jian Shi, Wenqi Li (Presenting: Wenqi Li, University of Kentucky)

• VALUE-ADDED CHEMICALS AND LIGNIN Valorization
  LIVE Q&A VIA ZOOM: TUESDAY 7/14 AT 3:00 – 4:00 PM
  Moderator: Sushil Adhikari, Auburn University

2000627 – Controlling Bacterial Contamination during Fuel Ethanol Fermentation by Utilizing Thermochemical Depolymerized Lignin Bio-Oils
Jian Shi, Ryan Kalinoski (Presenting: Ryan Kalinoski, University of Kentucky)

2000830 – Reinventing the Capping Agent Strategy for Lignin Depolymerization with Prior Phenolation
Vivek Patil, Sushil Adhikari, Hossein Jahromi (Presenting: Vivek Patil, Auburn University)

2000973 – Use of a Modified, Thermophilic Fungal Laccase for In Situ Lignin Conversion
Joseph Stevens, Jian Shi (Presenting: Joseph Stevens, University of Kentucky)

2001054 – Role of Solvent Polarity on Aromatic Hydrocarbon Selectivity during Hydrodeoxygenation of Phenols Derived from Wet Hydrolyzed Solids
Sandeep Kumar, Randy Maglina (Presenting: Randy Maglinao, Montana State University-Northern)

2001142 – Production of High-Value Carotenoids from Endocarp Biomass Derived Lignin
Yi Zheng, Jian Shi, Makua Vin-Nnajiofor (Presenting: Makua Vin-Nnajiofor, University of Kentucky)

2001489 – Flexible Bio-Based Plastics Derived from CO2 and Organic Waste
Harold M. Keener, Shaoqing Cui (Presenting: Shaoqing Cui, University of Tennessee)

2001507 – Poly Lactic Acid and Lignin Filaments for 3D Printing
Sanjita Wasti, Maria Auad, Eldon Triggs, Dilpreet Bajwa, Brian Via, Sushil Adhikari
(Presenting: Sanjita Wasti, Auburn)

2000426 - Conversion of Lignin into Biodegradable Plastic by Rhodopseudomonas Palustris
Mark Wilkins, Rajib Saha, Brandi Brown (Presenting: Brandi Brown, University of Nebraska Lincoln)
CURRENT ACHIEVEMENTS AND NEW R&D TRENDS IN RENEWAL ENERGY RESOURCES AND TECHNOLOGIES

LIVE Q&A VIA ZOOM: MONDAY 7/13 AT 1:00 – 2:00 PM

2001665 – An Energy-Neutral Feedstock Handling System to Produce Lignocellulosic Fuels and Chemicals
Henry Frost, Sibel Uludag-Demirer, Yan Liu, Wei Liao
(Presenting: Wei Liao, Anaerobic Digestion Research and Education Center, Department of Biosystems and Agricultural Engineering, Michigan State University)

Presenting: Jun Zhu, University of Arkansas, Department of Biological and Agricultural Engineering

2001667 – A Topic on Future Energy and Environmental Systems Engineering
Presenting: Amit Kumar, University of Alberta

2001668 – On an Algal Biomass Energy Topic
Presenting: Wenqiao Yuan, North Carolina State University, Dept. of Biological and Agricultural Engineering
• **Innovations and Strategies for Agricultural Safety and Health**

**Live Q&A via Zoom: Tuesday 7/14 at 9:00 – 10:00 AM**

**Moderator:** Michael Pate, Utah State University

- **2000151 – Designing an Agricultural Dust Simulator to Replicate the Grain Bin Environment**
  S. Dee Jepsen, Lingying Zhao, Yang Geng (Presenting: Yang Geng, The Ohio State University)

- **2000594 – Can Youth Reach Agricultural All-terrain Vehicle Commands?**
  Guilherme De Moura Araujo, Farzaneh Khorsand (Presenting: Guilherme De Moura Araujo, University of California-Davis)

- **2000598 – Ability of Youth Operators to Activate Agricultural All-Terrain Vehicles Controls**
  Guilherme De Moura Araujo, Farzaneh Khorsand (Presenting: Guilherme De Moura Araujo, University of California-Davis)

- **2000866 – Developing and Testing a GPS-Based Steering Control System for an Autonomous All-Terrain Vehicle**
  Farzaneh Khorsand, Stavros G. Vougioukas, Hsiao-Yang Chou (Presenting: Hsiao-Yang Chou, University of California-Davis)

- **2001139 – Bulk Tank Milk Line Connections for Disabled Dairymen**
  Devonte Foley, Tim Nuryadi, Tyler Rateike, Grace Skarlupka, Kyle Winkler, Scott Sanford (Presenting: Scott Sanford, University of Wisconsin-Madison)

- **2001388 – Improving Safety and Health in the Cattle Feedyard Industry**
  Suraj Adhikari, Aaron Yoder (Presenting: Suraj Adhikari, University of Nebraska)

- **2001395 – Saving Farmworkers’ Lives in Agricultural All-Terrain Vehicle Rollover Accidents**
  Farzaneh Khorsand (Presenting: Farzaneh Khorsand, University of California-Davis)

- **2001477 – Estimates of Human Surface Area for a Partially Entrapped Grain Victim and Associated Extraction Force Loads**
  Charles Schwab, Lauren Schwab, Pamela Schwab (Presenting: Charles Schwab, Iowa State University)

• **Strategies and Considerations for Safety Programming in Agriculture**

**Live Q&A via Zoom: Tuesday 7/14 at 9:00 – 10:00 AM**

**Moderator:** Michael Pate, Utah State University

- **2000150 – Quantifying Farmers’ Dust Exposure at Grain Storage Bins**
  S. Dee Jepsen, Yang Geng (Presenting: Yang Geng, The Ohio State University)

- **2000239 – Digital Technologies for Mapping Hazard Risk Assessments: Implications for a New and Emerging Agricultural Workforce**
  Nathan Moyer, Serap Gorucu, Casper Bendixsen, Michael Pate (Presenting: Michael Pate, Utah State University)

- **2000241 – Utilizing an Evidence Based Safety Curriculum: A Review of Factors That May Influence Effectiveness**
  Dustin Perry, Scott Smalley, Michael Pate (Presenting: Michael Pate, Utah State University)
2000814 – Compliance with Recommended Safety Standards among Row Crop Farmers in Iowa
Kayla Faust, Carri Casteel, Rebekah Estes, Fredric Gerr, Marizen Ramirez
(Presenting: Kayla Faust, University of Iowa)

2001014 – Training Maryland Agricultural Service Providers about Producer Engagement on Mental Health
Darren Jarboe, Emily Zobel, Jeanette Jeffrey, Nathanael Richards, Jesse Kettermann, Shannon Dill, Jennifer Rhodes, Jinhee Kim, Charles Schuster, Lindsay Thompson, Danielle Bauer
(Presenting: Darren Jarboe, University of Maryland)

2001387 – Safety in Agriculture for Youth: National Clearinghouse Update
Alyssa Damke, Aaron Yoder (Presenting: Alyssa Damke, University of Nebraska)

2001478 – Development of an Interactive Youth Agricultural Safety Program
Jacob P. Koch, Catherine A. DiBendetto, Hunter F. Massey (Presenting: Hunter F. Massey, Clemson University)
ITSC – INFORMATION TECHNOLOGY, SENSORS & CONTROL SYSTEMS

• **3D Machine Vision for Sensing and Automation**
  **Live Q&A via Zoom: Monday 7/13 at 10:00 AM – 11:00 AM**
  Moderator: Seung-Chul Yoon, USDA-ARS

  2000317 – Development of a Japanese Apricot (Prunus Mume) Recognition and Size Estimation Program Using 3D Images
  Hyuck-Joo Kim, Eun-Chae Jang, Yeong-Hwan Bae, Hoon Seonwoo
  (Presenting: Hyuck-Joo Kim, Sunchon National University)

  2001021 – An Indoor Performance Comparison of Time-of-Flight Depth Cameras
  Isabella Cardoso Ferreira da Silva Condotta, Eric Psota, Luciane Silva Martello, Tami Brown-Brandl, Veronica Madeira Pacheco (Presenting: Veronica Madeira Pacheco, University of Sao Paulo)

  Lirong Xiang, Lie Tang, Jingyao Gai, Le Wang (Presenting: Lirong Xiang, Iowa State University)

  2001267 – Three-Dimensional Cotton Plant Shoot Architecture Segmentation and Phenotypic Trait Characterization using Terrestrial LiDAR Point Cloud Data
  Shangpeng Sun, Changying Li, Andrew H. Paterson, Peng Chee
  (Presenting: Shangpeng Sun, University of Georgia)

  2001338 – Blueberry Harvestability Trait Extraction from 2D Images and 3D Point Clouds Based on Deep Learning and Photogrammetric Reconstruction
  Xueping Ni, Changying Li, Huanyu Jiang (Presenting: Xueping Ni, University of Georgia)

  2001502 – Volume Estimation in High Throughput Phenotyping using 3D xBox Kinect Data
  Clarice Roo, David C Slaughter, Vivian Vuong (Presenting: Clarice Roo, University of California Davis)

• **Advanced Computational Approaches for Solving Agricultural and Biological Engineering Problems**
  **Live Q&A via Zoom: Tuesday 7/14 at 11:00 AM – 12:00 PM**
  Moderators: Nourredine Abdoulmoumine, University of Tennessee; Zhou Zhang, University of Wisconsin

  2000278 – Optimization of Agricultural Machinery Transport in Large Scale: A Case Study of Main Winter Wheat Producing Areas in China
  Changqiang Guo, Tao Lin (Presenting: Changqiang Guo, Zhejiang University)

  2000374 – Application of Improved NSGA-II Algorithm in Matching Optimization for Tractor Powertrain
  Shenghui Fu, Liang Wang, Yuefeng Du, Zhen Li, Zhongxiang Zhu, Enrong Mao
  (Presenting: Liang Wang, China Agricultural University)

  2000852 – In-Silico Simulation Insights for the Interactions between Antimicrobial Peptides and Secretion Dependent Effector T1SS tolC for Citrus Greening Management
  Haoqi Wang, Kranthi Mandadi, Sandun Fernando (Presenting: Haoqi Wang, Texas A&M University)
2000898 – Using Feature Transformation and Neuro-Fuzzy Inference System to Improve Daily Soil Temperature Prediction Accuracy with Increasing Depth
Olufemi Abimbola, George Meyer, Aaron Mittelstet, Daran Rudnick
(Presenting: Olufemi Abimbola, University of Nebraska-Lincoln)

2001148 – Whose Definition Counts? A Phrase Mining and Qualitative Comparative Analysis of Stakeholder Perspectives on International Engineering Project Evaluation
Luis Rodríguez, Kelsey Schreiber (Presenting: Kelsey Schreiber, University of Illinois)

- **BIG DATA AND DATA SCIENCE FOR PRECISION AGRICULTURE**
  **LIVE Q&A VIA ZOOM: TUESDAY 7/14 AT 11:00 AM – 12:00 PM**
  Moderators: Nourredine Abdoulmoumine, University of Tennessee; Zhou Zhang, University of Wisconsin

2000165 – Field Evaluation of Visible-Infrared and Microclimate Sensing Aided Crop Physiology Sensing System for Apple Sunburn Management
Rakesh Ranjan, Lav R. Khot, R. Troy Peters, Melba R. Salazar-Gutierrez
(Presenting: Rakesh Ranjan, Washington State University)

2000315 – Growth Information Acquisition by Unmanned Ground Vehicle and Artificial Intelligence in Rice
Shigeru Ichiura, Mitsuhiko Katahira, Dhirendranath Singh (Presenting: Dhirendranath Singh, Iwate University)

2000836 – A Decade of Variable Rate Irrigation Research at the IWHR, China
Jiusheng Li, Weixia Zhao, Xiumei Li, Jun Wang
(Presenting: Jun Wang, China Institute of Water Resources and Hydropower Research)

2000942 – Analysis on Diurnal Variation of Crop Canopy Temperature in Solar Greenhouse
(Presenting: Junhua Zhang, Northwest A&F University)

2001358 – Evaluation of Statistical Machine Learning Methods for Classification of Cotton Yield in the US Southeast
Nikolay Bliznyuk, Clyde Fraisse, Daniel Perondi (Presenting: Daniel Perondi, University of Florida)

- **BIOSENSORS AND BIOELECTRONICS IN FOOD AND AGRICULTURE**
  **LIVE Q&A VIA ZOOM: TUESDAY 7/14 AT 2:00 – 3:00 PM**
  Moderator: Sui Ching Phung, University of Kansas

2000485 – Triboelectric Nanogenerator-Enabled Self-Powered Biosensors
Jianfeng Ping, Yibin Ying (Presenting: Yibin Ying, Zhejiang University)

2000613 – Magnetic separation of bacteria in large-volume samples: A review
Yanbin Li, Xinge Xi (Presenting: Xinge Xi, University of Arkansas)

2000682 – A Separation-Detection System Based on Integrated Nanochannel-Electrode for Rapid Detection of Salmonella in Chicken Products
Wenyue Zhu, Jie Zhang, Mengyao Ye, Yanbin Li, Yingchun Fu (Presenting: Yingchun Fu, Zhejiang University)

2000705 – IoT Based Portable Impedance Biosensor for Rapid Detection of Foodborne Pathogen
Yinan Zhou, Shengna Ying, Cui Wu, Jianping Wang, Zunzhong Ye (Presenting: Yinan Zhou, Zhejiang University)
2000824 – Facilely One-Pot Strategy to Construct Gamma-Fe2O3/Thiophene-Sulfur-Doped Graphene with Peroxidase Like Activity for Colorimetric Biosensing of Chlorpyrifos
Yuting Yan, Hanping Mao, Yanbin Li (Presenting: Yuting Yan, Jiangsu University)

2001032 – A Programmable Digital Microfluidic Chip Platform and its Application in Detection of Foodborne Pathogen
Zhen Wang, Shengna Ying, Yinan Zhou, Cui Wu, Yibin Ying, Zunzhong Ye
(Presenting: Zhen Wang, Zhejiang University)

- **CLOUD COMPUTING AND INTERNET OF THINGS IN AGRICULTURE**
  **LIVE Q&A VIA ZOOM: MONDAY 7/13 AT 2:00 – 3:00 PM**
  Moderator: Somali Chaterji, Purdue University

2000186 – Implementation of a Context-Rich Ag Machinery Data Acquisition and Processing Pipeline
Yang Wang, He Liu, James Krogmeier, Dennis Buckmaster, Amy Reibma
(Presenting: Yang Wang, Purdue University)

2000711 – The NEVONEX Ecosystem - Impact Assessment of a Smart, Neutral, Open and Quality Controlled Framework for End-To-End Infrastructure in Agriculture
Maximilian Treiber, Joshua-Niclas Oergele, David Bell, Heinz Bernhardt
(Presenting: Maximilian Treiber, Technical University of Munich)

2000713 – Equestrian IoT - A Review of Sensorsystems Available for Deployment on Horses, Stables and Pastures and What Stakeholders in Germany Think about It
Maximilian Treiber, Pia Hiendlmaier, Joern Stumpenhausen, Harald Rupp, Heinz Bernhardt
(Presenting: Maximilian Treiber, Technical University of Munich)

2000762 – Internet of Things (IoT)-Based Precision Irrigation with LoRaWAN Technology Applied to High Tunnel Vegetable Production
Haozhe Zhang, Long He, Francesco Di Gioia, Daeun Dana Choi, Paul Heinemann
(Presenting: Haozhe Zhang, Pennsylvania State University)

2001076 – Evaluating WiFi Based Vehicle to Vehicle Networking
Dennis Buckmaster, James Krogmeier, Andrew Balmos (Presenting: Andrew Balmos, Purdue University)

2001441 – Developing a Scalable Real-Time Sensing and Decision-Support Cyber-Physical System for Irrigation Management
Olufemi Abimbola, Trenton Franz, Derek Heeren, Daran Rudnick
(Presenting: Olufemi Abimbola, University of Nebraska-Lincoln)

2001442 – Simulating Maize Yield Response to Irrigation and Nitrogen using Crop Modeling
Olufemi Abimbola, Trenton Franz, Derek Heeren, Daran Rudnick, Adam Wolf
(Presenting: Olufemi Abimbola, University of Nebraska-Lincoln)

2001527 – A Pattern Based Quality Check and Quality Assurance (QAQC) Strategy to Enhancing the Reliability and Usability of IoT Time Series Data
Ziwen Yu, Kevin Denis, Peyton Beck, William Lusher (Presenting: Ziwen Yu, University of Florida)
• **COMPUTATIONAL FLUID DYNAMICS (CFD) APPLICATIONS IN AGRICULTURE**

**LIVE Q&A VIA ZOOM: WEDNESDAY 7/15 AT 11:00 AM – 12:00 PM**

Moderator: Christopher Choi, University of Wisconsin

2001553 – Advances and Applications of Computational Fluid Dynamics in Agriculture – An Annual Review
Eka Sutandar, Seunghyeon Jung, Hanwook Chung, Dimuth Panditharatne
(Presenting: Christopher Choi, University of Wisconsin-Madison)

2001554 – Assessment of Airflow Patterns, Heat and Mass Transfer at Cow-Level in Mechanically-ventilated Dairy Housing using Computational Fluid Dynamics
Seunghyeon Jung, Eka Sutandar, Hanwook Chung (Presenting: Christopher Choi, University of Wisconsin-Madison)

• **DISCRETE ELEMENT MODELING (DEM) APPLICATIONS IN AGRICULTURE**

**LIVE Q&A VIA ZOOM: WEDNESDAY 7/15 AT 11:00 AM – 12:00 PM**

Moderator: Christopher Choi, University of Wisconsin

Yidong Xia, Yuan Guo, Feiyang Chen, Qiushi Chen, Jonathan Stickel, Aaron Lattanzi, Syed Ahsan
(Presenting: Yidong Xia, Idaho National Laboratory)

2000450 – Research on Simulation Test of Corn Orientation Part Based on EDEM
Huijuan Bai, Ning Wang, Shuai Li, Xianfa Fang, Decheng Wang, Shi Xiong, Jiao Xu
(Presenting: Jiao Xu, Beijing Institute of Graphic Communication)

2001200 – DEM Modeling of the Contribution of Biomass Particle Shape and Size Characteristic on Bulk Flow
Erin Webb, Oluwafemi Oyedeji (Presenting: Oluwafemi Oyedeji, Oak Ridge National Laboratory)

• **EMERGING TECHNOLOGIES FOR BIOLOGICAL SENSING APPLICATION IN AGRICULTURE**

**LIVE Q&A VIA ZOOM: TUESDAY 7/14 AT 2:00 – 3:00 PM**

Moderator: Sui Ching Phung, University of Kansas

2000255 – Non-Invasive Sensing of Egg Yolk Content to Detect Viable Chick Hatchlings
Yuichi Ogawa, Shinichi Fujitani, Ayuko Kashimori, Tetsuhiro Suzuki, Keiji Konagaya, Naoshi Kondo, Khaliduzzaman Alin
(Presenting: Alin Khaliduzzaman, Kyoto University)

2000618 – Sensing and Managing Crop Drought Stress in Peanut: Plant BVOCs as an Effective CWS Sensor for Aflatoxin Risk
Xiaojuan (Judy) Song, Doug Britton, Wayne Daley, Olga Kemenova, Daniel Sabo, Milad Navaei, Christopher Heist, Alina Zare, Shannon McAmis, Rene-Hans-Jurgen Heim, Ina Geedicke, Juan Giuliani, Diane Rowland
(Presenting: Xiaojuan (Judy) Song, Georgia Tech Research Institute)

2000928 – FAIMS Based Sensing and Identification of Biomarkers Related to Pythium Leak Disease in Potatoes
Gajanan S. Kothawade, Sripathanallur Murali Pavithra, Sindhuja Sankaran, Brenda Schroder, Lav R. Khot
(Presenting: Gajanan Kothawade, Washington State University)

2001490 – Development of Portable E-nose System for Fast Diagnosis of Tomato Plant Damage caused by Whitefly
Heping Zhu, Peter Ling, Shaoqing Cui (Presenting: Shaoqing Cui, University of Tennessee)
• **Hyperspectral Imaging Advances & Applications**
  **Live Q&A via Zoom: Monday 7/13 at 11:00 AM – 12:00 PM**
  Moderator: Lav Khot, Washington State University

  2000461 – Palmer Amaranth (Amaranthus Palmeri S. Watson) and Soybean (Glycine Max l.) Classification Using Hyperspectral Imaging Technology
  Cristiano Costa, Yu Zhang, John Stenger, Kirk Howatt, Xin Sun
  (Presenting: Cristiano Costa, North Dakota State University)

  2001125 – Hyperspectral Imaging Technology for Detection of Foreign Materials on Poultry Meat
  Seung-Chul Yoon, Soo Chung, Kurt Lawrence, Bosoon Park, Gary Gamble, Tae-Sung Shin
  (Presenting: Seung-Chul Yoon, USDA)

  2001483 – Understanding Water Stress in Vineyards using Ground-Based Hyperspectral and 3D Imagery
  Zhang, Markus Keller, Sushma Thapa (Presenting: Sushma Thapa, Washington State University)

• **Imaging Technologies for High Throughput Phenotyping**
  **Live Q&A via Zoom: Monday 7/13 at 1:00 – 2:00 PM**
  Moderator: Sindhuja Sankaran, Washington State University

  2000075 – Phenomics Technologies for Evaluating Performance of Dry Pea and Chickpea in Breeding Programs
  Chongyuan Zhang, Rebecca McGee, George Vandemark, Sindhuja Sankaran
  (Presenting: Chongyuan Zhang, Washington State University)

  2000090 – Yield Estimation of Soybean Breeding Lines Using UAV Multispectral Imagery and Convolutional Neuron Network
  Jing Zhou, Heng Ye, Md Liakat Ali, Henry Nguyen, Pengyin Chen, Jianfeng Zhou
  (Presenting: Jing Zhou, University of Missouri)

  2000574 – Simplified No-code Phenological Analysis from PhenoCam Images Using Kymograph
  Sunoj Shajahan, Igathinathane Cannayen (Presenting: Sunoj Shajahan, Cornell University)

  2000902 – End-To-End Deep Learning-Based Infield Peanut Pod Detection and Tracking for Yield Estimation
  Yin Bao, Rafael Bidese Puhl (Presenting: Rafael Bidese Puhl, Auburn University)

  2001454 – High-Throughput Seed Detection using Convolutional Neural Network: A Baseline Study
  Hussein Abdel-Haleem, Aaron Szczepanek (Presenting: Beichen Lyu, USDA-ARS)

• **Machine Vision Applications for Agriculture and Food**
  **Live Q&A via Zoom: Monday 7/13 at 10:00 AM – 11:00 AM**
  Moderator: Seung-Chul Yoon, USDA-ARS

  2000235 – Identifying Crops in Aerial Images Using Deep Learning
  Li-Yu Liu, Yan-Fu Kuo, Jui-Yu Lin (Presenting: Jui-Yu Lin, National Taiwan University)
• **MACHINE VISION APPLICATIONS IN VEGETABLES AND FRUITS**

**LIVE Q&A VIA ZOOM: MONDAY 7/13 AT 10:00 AM – 11:00 AM**

Moderator: Seung-Chul Yoon, USDA-ARS

**2000544 – Prediction of Chlorophyll and Anthocyanin Contents in Purple Lettuce Based on Image Processing**
Yongjie Chen, Lihua Zheng, Minjuan Wang, Mengliu Wu, Wanlin Gao
(Presenting: Lihua Zheng, China Agricultural University)

**2001118 – Application of Machine Vision and Color Analytics for Evaluating Color Changes in Lentils Seeds Exposed to Different Wavelengths of Light**
Scott Noble, Vandenberg Albert, Nsuhoridem Jackson
(Presenting: Nsuhoridem Jackson, University of Saskatchewan)

**2001183 – Strawberry Flower Detection using Fluorescence Imaging**
Won Suk Lee, Rui Lin, Congliang Zhou (Presenting: Congliang Zhou, University of Florida)

**2001397 – Semi-Self-Supervised Segmentation of Oranges with Small Sample Sizes**
Kyle Volle, Prashant Ganesh, Thomas F. Burks, Siddhartha S. Mehta
(Presenting: Thomas F. Burks, University of Florida)

• **MACHINE VISION FOR AGRICULTURAL ROBOTICS**

**LIVE Q&A VIA ZOOM: MONDAY 7/13 AT 3:00 – 4:00 PM**

Moderator: Santosh Bhunsal, Washington State University

**2000670 – Real Time Shapes Analysis Using Computationally Light Weight Random Point Method on Low-Cost Single Board Computer**
Dev Shrestha (Presenting: Dev Shrestha, University of Idaho)

**2000689 – Shoot Density Estimation for Automated Green Shoot Thinning in Vineyards**
Manoj Karkee, Qin Zhang, Yaqoob Majeed (Presenting: Yaqoob Majeed, Washington State University)

**2000921 – Obstacle Avoidance Due to Trellis Wires for Robotic Harvesting of Apples in Apple Orchards**
Santosh Bhusal, Hirshfeld, Uddhav Bhattarai, Manoj Karkee, Avi Kahani
(Presenting: Santosh Bhusal, Washington State University)

**2001250 – Finite-time Visual Servo Control for Robotic Fruit Harvesting in the Presence of Fruit Motion**
Siddhartha S. Mehta, Maciej W. Rysz, Prashant Ganesh, Thomas F. Burks
(Presenting: Thomas F. Burks, University of Florida)

**2001488 – A Crop Root Row Detection Algorithm for Visual Navigation in Rice Fields**
Zeyi Tao, Zenghong Ma, Xiaoqiang Du, Yaxin Yu, Chuanyu Wu
(Presenting: Xiaoqiang Du. Zhejiang Sci-Tech University)

• **MACHINE VISION FOR PRECISION AGRICULTURE**

**LIVE Q&A VIA ZOOM: TUESDAY 7/14 AT 3:00 – 4:00 PM**

Moderator: Daeun Choi, Pennsylvania State University

**2000015 – Identify Weed Species Using Deep Learning Artificial Intelligence Technology**
Yu Zhang, Greta Gramig, Kris Boll, Jamison Quanbeck, Eric Meredith, Xin Sun
(Presenting: Xin Sun, North Dakota State University)
200372 – Recognizing and Distinguishing Different Wheat Diseases Using Convolution Neural Network
Zhao Zhang, Paulo Flores, Nusrat Jahan (Presenting: Nusrat Jahan, North Dakota State University)

2001099 – Estimation of Blossom Density in Apple Trees for Selective Blossom Thinning
Uddhav Bhattarai, Santosh Bhusal, Manoj Karkee (Presenting: Uddhav Bhattarai, Washington State University)

2001115 – Towards Image-Based Measurement of Accurate Apple Size and Yield Using Stereo Vision Cameras
Omeed Mirbod, Daenun Choi, Paul H. Heinemann, Richard P. Marini
(Presenting: Omeed Mirbod, Pennsylvania State University)

2001146 – Automatic Strawberry Maturity Classification Using Machine Learning
Won Suk Lee, Yiannis Ampatzidis, Xue Zhou (Presenting: Xue Zhou, University of Florida)

2001234 – Kiwifruit Flower Detection and Clustering Based on Faster R-CNN and K-means Method
Haozhou Liu, Longtao Mu, Zongbin Gao, Longsheng Fu, Yongjie Cui, Kai Li
(Presenting: Kai Li, Northwest A&F University)

2001472 – An In-Field, Image-Based Turfgrass Evaluation System
Peyman Nematzadeh, Quan Qiu, Ning Wang, Ping Xu
(Presenting: Peyman Nematzadeh, Oklahoma State University)

• ROBOTICS AND CO-ROBOTICS FOR AGRICULTURE
  LIVE Q&A VIA ZOOM: MONDAY 7/13 AT 3:00 – 4:00 PM
  Moderator: Santosh Bhunsal, Washington State University

2000221 – Dynamic Height Control for Robotized Orchard Harvest-Aid Platform with Multiple Pickers to Achieve Optimal Picking Efficiency
Zhenghao Fei, Abhisesh Silwal, Zania Pothen, George Kantor, Stavros Vougioukas
(Presenting: Zhenghao Fei, University of California-Davis)

2000446 – System-Level Description and Evaluation of a Robot-Aided Strawberry Harvesting System
Chen Peng, Stavros Vougioukas, Zhenghao Fei, Benjamin Gatten
(Presenting: Chen Peng, University of California-Davis)

2001393 – Developing the Control System of an Autonomous Robot for in-situ Maize/Sorghum Plant Phenotyping
Jingyao Gai, Taylor Tuel, Lirong Xiang, Lie Tang (Presenting: Jingyao Gai, Iowa State University)

2001444 – Development of an Integrated Sensor System for Automated On-The-Spot Measurement of Physical Soil Properties
Viacheslav Adamchuk, Pierce Dias Carlson (Presenting: Pierce Dias Carlson, McGill University)

• SENSING APPLICATIONS USING UNMANNED AERIAL SYSTEMS
  LIVE Q&A VIA ZOOM: MONDAY 7/13 AT 12:00 – 1:00 PM
  Moderator: Yianni Ampatzidis, University of Florida

2000183 – Quantify Growth Variation in Cotton Due to Different Soil Texture and Weather Conditions Using UAV Imagery
Aijing Feng, Kenneth A. Sudduth, Earl Vories, Jianfeng Zhou (Presenting: Aijing Feng, University of Missouri)
2000222 – Plant Stand Spatial Distribution Analysis for Whole Field Using Unmanned Aerial System (UAS) Imagery
Igathinathane Cannayen, Paulo Flores, Blaine Schatz, David Archer, John Hendrickson, Jonathan Halvorson, David Toledo, Sunoj Shajahan (Presenting: Sunoj Shajahan, Cornell University)

2001243 – Water Quality Monitoring Using Collaborative Aerial and Surface Systems in Nearshore Aquaculture Production Environments
Russell Smith, Steven Hall, Sierra Young (Presenting: Sierra Young, North Carolina State University)

2001418 – Flowering Stage Classification and Temperature Monitoring for Frost Damage Management in Apple Orchard Using UAV-Based RGB and Thermal Cameras
Wenan Yuan, Daeun Choi (Presenting: Wenan Yuan, The Pennsylvania State University)

• SPECTROSCOPIC SENSING AND IMAGING OF SOIL, PLANT, AND AGRICULTURE PRODUCE
LIVE Q&A VIA ZOOM: MONDAY 7/13 AT 11:00 AM – 12:00 PM
Moderator: Lav Khot, Washington State University

2000051 – Quantitative Detection of Apple Watercore and Soluble Solids by NIR Transmittance Spectroscopy
ZhiMing Guo, QuanSheng Chen, Xiaobo Zou, Mingming Wang (Presenting: Mingming Wang, Jiangsu University)

2000052 – Development of a Semi-Automated In-Situ Soil Sensor Using Vis-NIR Spectroscopy
Roberto Buelvas, Viacheslav Adamchuk, Gabriel Mangeat, Benjamin De Leener (Presenting: Roberto Buelvas, McGill University)

2001006 – Non-Destructive Detection of Apple Maturity by Constructing Spectral Index based on Reflectance Spectrum
Mengsheng Zhang, Bo Zhang, Hao Li, Maosheng Shen, Haihui Zhang, Juan Zhao (Presenting: Mengsheng Zhang, College of Mechanical and Electronic Engineering, Northwest A&F University)

2001378 – Comparison of Drying Rate and Temperature Convergence in Grains and Seed with an Eighth-scale Grain Drying System
Samir Trabelsi, Micah Lewis (Presenting: Micah A. Lewis, USDA ARS US National Poultry)

• SPECTROSCOPIC SENSING AND IMAGING: AERIAL AND GROUND APPLICATION USE CASES
LIVE Q&A VIA ZOOM: MONDAY 7/13 AT 11:00 AM – 12:00 PM
Moderator: Lav Khot, Washington State University

2000033 – Comparative Assessment of Multispectral UAS Imagery with Canopy Spectroscopy for Evaluating Plant and Soil Nutrient Status in Florida
Aditya Singh, Shubham Shirbhate, James Fletcher (Presenting: Aditya Singh, University of Florida)

2000321 – Assessment of Intact Macadamia Nut Internal Defects Using Near-Infrared Spectroscopy
Anisur Rahman, Qifang Wu, Han Chang, Shuai Wang, Jinshan Yan, Huirong Xu (Presenting: Anisur Rahman, Zhejiang University)

2000804 – Assessment of the Spatial and Temporal Patterns of Cover Crops in the Western Lake Erie Basin Using Remote Sensing
Kushal KC, Sami Khanal (Presenting: Kushal KC, The Ohio State University)
2000879 – Using Remote Sensing Methods and High-Resolution Soil Mapping to Predict Yield and Fruit Quality in Citrus
German Zuniga-Ramirez, Alireza Pourreza, Hammid Jafarbiglu, Elia Scudiero
(Presenting: German Zuniga-Ramirez, University of California-Davis)

- **TOOLS AND TECHNOLOGIES FOR HIGH THROUGHPUT PHENOTYPING**

  **LIVE Q&A VIA ZOOM: MONDAY 7/13 AT 1:00 – 2:00 PM**
  Moderator: Sindhuja Sankaran, Washington State University

2000089 – In-Field Reflectance Calibration and Automated Segmentation for UAV-Based High-Throughput Phenotyping
Jing Zhou, Dennis Yungbluth, Andrew Scaboo, Jianfeng Zhou (Presenting: Jing Zhou, University of Missouri)
Moderator: Sindhuja Sankaran, Washington State University

2000432 – Automated Watering and Phenotyping System for Plant Breeding Using Arduino and Raspberry Pi
Hussein Abdel-Haleem, Zinan Luo, Aaron Szczepanek, James Kim (Presenting: James Kim, USDA)

2000545 – Kinect-Based 3D Automatic Reconstruction of Leaf Lettuce
Luhan Wang, Lihua Zheng, Minjuan Wang, Yueting Wang, Minzan Li
(Presenting: Lihua Zheng, China Agricultural University, Beijing)

2000758 – Biomass Estimation Using Remote Sensing Techniques in Forage and Pasture Crops
Chongyuan Zhang, Sindhuja Sankaran, Worasit Sangjan
(Presenting: Worasit Sangjan, Washington State University)

2000775 – UAV- and Cloud-Based Application for High Throughput Phenotyping Utilizing Deep Learning
Yiannis Ampatzidis, Victor Partel, Lucas Costa (Presenting: Yiannis Ampatzidis, University of Florida)

2000872 – High Throughput Phenotyping for Fusiform Rust Disease Resistance in Loblolly Pine Using Hyperspectral Imaging
Kitt G. Payne, Trevor D. Walker, Austin J. Heine, Sierra Young, Piyush Pandey
(Presenting: Piyush Pandey, North Carolina State University)

2001072 – Hyperspectral Imaging-Enabled High-Throughput Screening of Loblolly Pine (Pinus taeda) Seedlings for Freeze Tolerance
Piyush Pandey, Kitt G. Payn, Austin J. Heine, Trevor D. Walker, Sierra Young, Yuzhen Lu
(Presenting: Yuzhen Lu, North Carolina State University)

2001365 – Reconstruction and Analysis of Cucumber Plants with Multi-View Stereo
Yibin Lai, Tingting Qian, Guo Li, Shenglian Lu
(Presenting: Yibin Lai, College of Computer Science and Information Technology, Guangxi Normal University)

- **UNMANNED AERIAL SYSTEMS FOR CROP IMAGING APPLICATIONS**

  **LIVE Q&A VIA ZOOM: MONDAY 7/13 AT 12:00 – 1:00 PM**
  Moderator: Yianni Ampatzidis, University of Florida

2000133 – Remote Sensing Technique to Identify and Detect Three Tomato Diseases in Field
Jaafar Abdulridha, Yiannis Ampatzidis, Jawwad Qureshi (Presenting: Jaafar Abdulridha, SWFREC)

2000168 – LSTM-Based Cotton Yield Prediction System Using UAV Imagery
Wang, Aijing Feng, Tianlong Lou, Ping Li, Jianfeng Zhou (Presenting: Aijing Feng, University of Missouri)
Aijing Feng, Jianfeng Zhou, Earl Vories, Kenneth Sudduth (Presenting: Aijing Feng, University of Missouri)

2000473 – Estimating Corn Emergence Date Using UAV-based Imagery
Stirling A. Stewart, Jianfeng Zhou, Newell R. Kitchen, Kenneth A. Sudduth, Chim Nee Vong
(Presenting: Chin Nee Vong, University of Missouri)

2000528 – Using Mid-Season Vegetation Indices from Drone Imagery to Predict Wheat and Corn Yield under Different Nitrogen Treatments
Zhao Zhang, Paulo Flores, Joel Ransom, John Nowatzki, Yu Zhang, and Xin Sun
(Presenting: Zhao Zhang, North Dakota State University)

2000653 – Developing Models to Predict Corn Yield Using Multispectral Images for the Different Phenological Stages
Razieh Barzin, Ganesh C. Bora, Jac Varco (Presenting: Razieh Barzin, Mississippi State University)

2000676 – Analysis of UAV-Based Multispectral Imagery Using Machine Learning Algorithms to Estimate Grapevine Leaf Nitrogen Content
Ali Moghimi, Alireza Pourreza, German Zuniga-Ramirez, Larry Williams, Matthew Fidelibus
(Presenting: Ali Moghimi, University of California-Davis)

2001341 – A Case Study on Applying UAV Thermal, Multispectral, and RGB Imagery in Phenotyping Sorghum Drought Tolerance
Jiating Li, Daniel P. Schachtman, Yeyin Shi
(Presenting: Jiating Li, Department of Biosystems Engineering at the University of Nebraska-Lincoln)

2001560 – Crop Lodging Assessment in Irrigated Spearmint using Low Altitude High Resolution Imagery Derived Entropy Parameter
Behnaz Molaei, Abhilash Chandel, R. Troy Peters, Lav Khot, Juan Quiros Vargas
(Presenting: Behnaz Molaei, Washington State University)

• Instructional Case Studies with Data Sets for Your Instruction

2001669 – Analyzing Air Quality Index Trends in NC during the Peat Bog Fires of 2008
Presenting: Natalie Nelson, North Carolina State University

2001671 – A Survey of Problems of Image and Video Analyses for Agricultural Systems
Presenting: Joshua Peschel, Iowa State University

2001672 – Projections for Biomass Availability
Tasmin Hossain, Daniela Jones (Presenting: Daniela Jones, North Carolina State University)

2001673 – Row-Crop Field Machinery Data Collection
C.T. Liew, Santosh Pitla (Presenting: Santosh Pitla, University of Nebraska, Lincoln)

2001674 – Analyzing Sensor Data at the Source
Kitt Payn, Austin Heine, Piyush Pandey, Yuzhen Lu, Sierra Young
(Presenting: Sierra Young, North Carolina State University)

2001675 – Analysis of Rainfall Patterns and the Effects of Climate Change on Rain Garden Design
Rachel Scarlett, Sara McMillan (Presenting: Sara McMillan, Purdue University)
MS – MACHINERY SYSTEMS

• **ADVANCES IN SOIL-PLANT-MACHINE DYNAMICS AND SYSTEMS SIMULATION**

**LIVE Q&A VIA ZOOM: WEDNESDAY 7/15 AT 1:30 – 3:00 PM**

Moderators: Andrew Klobpfenstein, Ohio State University; Dharmendra Saraswat, Purdue University

2000139 – **The Effect of Traffic and Tillage on Soil Properties, Root Development and Crop Yields in a Long Term Experiment on Sandy Loam**
Magdalena Kaczorowska-Dolowy, Paula Misiewicz, Ed Dickin, David White, Richard Godwin  
(Presenting: Magdalena Kaczorowska-Dolowy, Harper Adams University)

2000180 – **Yield Impacts of Large Central Fill Planters and Tractors on Pinch Rows**
Ryan Tietje, Chris Wiegman, John Fulton, Scott Shearer, Andrew Klopfenstein  
(Presenting: Andrew Klopfenstein, The Ohio State University)

2000617 – **Fuel Consumption Analysis of an Agricultural Tractor Working on Wet Soil with Different Combinations of Ballasts on the Wheels and Tire Inflation Pressures**
Diego José Carvalho Alonso, Carlos Eduardo Silva Volpato, Ronald Leite Barbosa  
(Presenting: Ronald Leite Barbosa, IFMG-Campus Betim)

2000875 – **A Quantification of Soil Porosity Using X-ray Computed Tomography of a Drummer Silty Clay Loam Soil**
Md Rayhan Shaheb, Paula A. Misiewicz, Richard J. Godwin, Edward Dickin, David R. White, Sacha Mooney, Iwona Dobrucka, Lawrence W. Dobrucki, Tony E. Grift  
(Presenting: Md Rayhan Shaheb, The Ohio State University)

2000894 – **Evaluation of Soil-Tire Interface Pressure Distributions and Areas Resulting from Various Tire/Track Technologies and Configurations**
Md. Rayhan Shaheb, Andrew Klopfenstein, Ryan W. Tietje, Christopher R. Wiegman, Claudia Di Dio, Alberto Scarfagna, Kevin Herink, Norberto Herbener, Scott A. Shearer  
(Presenting: Md Rayhan Shaheb, The Ohio State University)

2001354 – **Ttractive Performance of All-Terrain Vehicle Tires**
Tim Rooney, Thomas Way  
(Presenting: Thomas Way, USDA-ARS National Soil Dynamics Lab)

2001356 – **Modeling Soil Forces on a Rotating Tine Mechanism in Artificial Soil**
Safal Kshetri, Brian L. Steward, Mehari Z. Tekeste  
(Presenting: Brian Steward, Iowa State University)

• **AUTOMATED AGRICULTURAL FIELD MACHINERY DATA COLLECTION, ANALYSIS, AND UTILIZATION**

**LIVE Q&A VIA ZOOM: MONDAY 7/13 AT 2:00 – 3:30 PM**

Moderator: Aaron Franzen, South Dakota State University

2000707 – **Preliminary Assessment of Soil N Mineralization Estimation Using MIR Spectroscopy**
Rebecca Whetton, Nicholas M. Holden  
(Presenting: Nicholas M. Holden, UCD School of Biosystems Engineering)

2000718 – **Field Reliability Estimation of Agricultural Tractors Based on Warranty Data**
Zhilin Zhao, Fang Cheng  
(Presenting: Zhilin Zhao, Zhejiang University)
• **A U T O M A T E D A G R I C U L T U R A L  S Y S T E M S**

**L I V E  Q & A  V I A  Z O O M:  M O N D A Y  7 / 1 3  A T  3 : 3 0 – 5 : 0 0  P M**

Moderator: Long He, Pennsylvania State University

2000531 – **High Accuracy Topographic Mapping Based on Multiple Field Operations**
Qiang Liu, Joshua Lawson (Presenting: Qiang (Ray) Liu, John Deere)

2000636 – **Modeling and Analysis of Ground-Based Autonomous Agricultural Vehicles**
John Evans, John Lumkes, Gabe Wilfong, Eric Kong (Presenting: Eric Kong, Purdue University)

2000651 – **Determining the Feasibility of Using Machine to Machine Synchronization in the Development of a Novel Unloading Strategy**
Greg Shaver, Daniel DeLaurentis, Tony Vyn, John Evans, Ziping Liu, Chufan Jiang, Shveta Dhamankar, Varun Sudarsanan, Cesare Guariniello, Aaron Etienne (Presenting: Aaron Etienne, Purdue University)

2001026 – **Coordinated Navigation and Picking of Cotton Bolls in the Field using Intelligent Rover**
Kade Fue, Wesley Porter, Ed Barnes, Glen Rains (Presenting: Kade Fue, University of Georgia)

2001124 – **Tractor Instrumentation System for Characterizing Mixed Mode Tractor Power States**
C.Liew, A.Donesky, S.K.Pitla, R.A.Rohrer, J.D. Luck, R.M. Hoy
(Presenting: Chee Town Liew, University of Nebraska-Lincoln)

2001374 – **Quantifying Seeding Rate Uniformities and Potential Yield Advantages when Utilizing Turn Compensation Technology on Planting Systems for Corn Planting**
Braden Mishler, Ajay Sharda, Sylvester Badua, Daniel Flippo (Presenting: Ajay Sharda, Kansas State University)


**L I V E  Q & A  V I A  Z O O M:  M O N D A Y  7 / 1 3  A T  3 : 3 0 – 5 : 0 0  P M**

Moderator: Aaron Franzen, South Dakota State University

2000112 – **Wireless In-Field Communication – AEF Guideline for Interoperable Agrarian M2M Communication**
Johann Witte, Tobias Nothdurft, Charles Byrd, Manuel Gorius (Presenting: Charles Byrd, CNH Industrial)

2000233 – **Real-Time Detection of Radial Runout of Motorized Spindle Based on Time-Frequency Domain Hybrid Integration of Acceleration**
Chao Chen, Jiaqi Li, Weiran He, Xueyan Zhao (Presenting: Xueyan Zhao, China Agricultural University)

2000257 – **Protection and Optimization of Impact Sensors Using Polyvinylidene Fluoride (PVDF) Films**
Ying Sun, Xin Nie, Xiaotian Chen, Zhaokai Li, Jianping Wang (Presenting: Ying Sun, Zhejiang University)

2000496 – **Research on Vibration Characteristics of Semi-Active Suspension on the Front Axle System for High Power Wheeled Agricultural Tractor on Random Road Surfaces**
Jinheng Gu, Zhen Li, Zhongxiang Zhu, Yuefeng Du, Changle Pang, Enrong Mao
(Presenting: Jinheng Gu, China Agricultural University)

2000501 – **Optimized Design of Cone-Hole Wheel Type Seed Metering Device Based on EDEM**
Peng Xu, Yong You, Decheng Wang, Xianshun Sun, Jie Lv, Wenhong Ma, Xuening Zhang, Zhiguo Ma, Hongyi Lin
(Presenting: Peng Xu, China Agricultural University)
2000587 – Development of a Robotic System for Seed Singularity in Rice Planting
Ganesh C. Bora, Harsa Dhani (Presenting: Harsa Dhani, Mississippi State University)

- **Automation, Robotics, and AI for Vegetable, Fruit, and Other Specialty Crops**
  **LIVE Q&A via Zoom: Monday 7/13 at 2:00 – 3:30 PM**
  Moderator: Long He, Pennsylvania State University

2000234 – Study on Effect of Fruit Uneven Distribution on Fruit Tree Modal
Peng Zuo, Xueyan Zhao, Yuefeng Du, Yifan Chen, Chao Chen
(Presenting: Xueyan Zhao, China Agricultural University)

2000415 – Hand-picking Dynamic Analysis for Robotic Agaricus Mushroom Harvesting
Mingsen Huang, Xiaohu Jiang, Long He, Daeun Choi, John Pecchia
(Presenting: Mingsen Huang, Pennsylvania State University)

2000439 – Collision Free Path Planning of a Robotic Manipulator for Pruning Apple Trees
Azlan Zahid, Long He, Daeun Dana Choi, James Schupp, Paul Heinemann
(Presenting: Azlan Zahid, Pennsylvania State University)

2000554 – Measuring Tree Canopy Density Using a Lidar-Guided System for Precision Spraying
Md Sultan Mahmud, Long He (Presenting: Md Sultan Mahmud, Pennsylvania State University)

200639 – A Tree-Specific Feedback Loop to Improve Pistachio Harvesting Machines
Arash Toudeshki, Reza Ehsani, Taymaz Homayouni
(Presenting: Taymaz Homayouni, University of California-Merced)

- **Cotton Engineering**
  **LIVE Q&A via Zoom: Wednesday 7/15 at 12:00 – 1:30 PM**
  Moderator: Wes Porter, University of Georgia; Long He Pennsylvania State University

2001275 – Round Modules: Update on Handling Logistics and Cover Damage
Tianyi Wang, Robert Hardin, Jason Ward, John Wanjura (Presenting: Tianyi Wang, Texas A&M University)

2001281 – A Time and Quality Study of Round Cotton Modules from Field to Ginning
Jason Ward, Lucas Mitchell (Presenting: Lucas Mitchell, North Carolina State University)

2001384 – The Process of Using John Deere’s HID System to Develop Field Level Fiber Quality Maps

2001546 – Construction of Extractor Cleaner for On-Ground Cotton Loss Samples
Kendall R. Kirk, Michael T. Plumblee (Presenting: Hunter F. Massey, Clemson University)

- **Crop and Soil Sensing**
  **LIVE Q&A via Zoom: Wednesday 7/15 at 1:30 – 3:00 PM**
  Moderators: Andrew Klobpfenstein, Ohio State University; Dharmendra Saraswat, Purdue University

2000137 – Soil Pressure and Pulling Behavior of a Standard and a Half-Track Tractor Chassis Concept
Michael Peeters, Roger Stirnimann, Thomas Fedde (Presenting: Thomas Fedde, CLAAS Tractor)
2000188 – Effects of UAS Flight Height and Image Overlap on Crop Height Estimation
Charles Suh, Wei Guo, Hengqian Zhao, Richie Eyster, Jian Zhang, Chenghai Yang
(Presenting: Chenghai Yang, USDA-ARS)

2000420 – Estimating Soil Water Content Using Electrical Conductivity Sensing
Kyuho Lee, Kenneth A. Sudduth, Scott T. Drummond (Presenting: Kyuho Lee, University of Missouri)

2000625 – Using LIDAR to Determine the Canopy Height of Alfalfa
Joseph Dvorak, Cynthia Arnold, Bo Smith (Presenting: Joseph Dvorak, University of Kentucky)

Yufeng Ge, Richard Ferguson, Nuwan Wijewardane (Presenting: Yufeng Ge, University of Nebraska-Lincoln)

2000952 – Development of a Machine Learning-Based Assistance System for Computer-Aided Process Optimization within a Self-Propelled Sugar Beet Harvester
Yufeng Ge, Richard Ferguson, Nuwan Wijewardane
(Presenting: Steffen Schwich, Technical University of Braunschweig)

2001034 – Comparison of Machine Learning Algorithms to Detect Crop Lodging Using UAS Imagery
Jason Ward, Ryan Phillips (Presenting: Ryan Phillips, North Carolina State University)

2001085 – Classification of Plant Moisture Conditions Using Canopy and Leaf Temperature Responses to Step Changes of Incident Radiation
Ellen Paparozzi, George Meyer (Presenting: George Meyer, University of Nebraska-Lincoln)

2001602 – Calibration and Validation of a Novel N2O Isotopic Analyzer for Field Research
Jordi Francis Clar, Robert Anex (Presenting: Jordi Francis Clar, University of Wisconsin)

2001603 – An Automated System for Simultaneous Measurements of N2O by Soil Flux and its Isotopic Composition at High Temporal Resolution
Jordi Francis Clar, Robert Anex (Presenting: Jordi Francis Clar, University of Wisconsin)

• **GENERAL TOPICS IN MACHINERY SYSTEMS**

  **LIVE Q&A via ZOOM: WEDNESDAY 7/15 AT 12:00 – 1:30 PM**
  Moderators: Wes Porter, University of Georgia; Long He Pennsylvania State University

2000019 – Responses of Cotton Yield, Quality, and Water Use to Variable Irrigation Rate and Timing
Alison Thompson, Kevin Bronson, Kelly Thorp (Presenting: Kelly Thorp, USDA-ARS)

2000502 – DataConnect – a Solution for Cloud to Cloud Data Exchange
Blair Hardie, Andre Kluge (Presenting: Blair Hardie, CLAAS of America Inc.)

2000645 – Automation of Yield-Based Management Decisions
Scott Drummond, Dan Long, Merle Vigil, Kenneth A. Sudduth (Presenting: Kenneth A. Sudduth, USDA-ARS)

2001501 – Impacts of Precision Planted and Oriented Corn Seed: A Field Study
Changyuan Zhai, Huijuan Bai, John Long, Ning Wang, Paul Weckler, Randy Taylor
(Presenting: John M Long, Oklahoma State University)

2001577 – Data Processing Tool for Improving On-Farm Research Results using Precision Ag Technologies
Chunxia Wu, Laura Thompson, Laila Puntel (Presenting: Joe Luck, University of Nebraska-Lincoln)
• INNOVATIONS APPLIED TO CHEMICAL AND FERTILIZER APPLICATION

LIVE Q&A VIA ZOOM: WEDNESDAY 7/15 AT 10:30 AM – 12:00 PM
Moderators: Chris Bursiek, John Deere; Adam Barlow, John Deere

2000164 – Effect of Emitter Modifications on Spraying Attributes of a Pneumatic Delivery Based Solid Set Canopy Delivery System Configured for High-Density Apple Orchard
Rakesh Ranjan, Rajeev Sinha, Lav R. Khot, Gwen-Alyn Hoheisel, Matthew Grieshop, Mark Ledebuhr
(Presenting: Rakesh Ranjan, Washington State University)

2000721 – Effect of Subsoil and Whole Layer Fertilizer Combined Maize Planter on Soil Moisture Content and Growth of Maize
Zhao Jin, Zhang Jinguo (Presenting: Jin Zhao, Agricultural University of Hebei)

2001043 – A Solid-Set Canopy Deposition System Innovation to Eliminate Recirculating Flows while Maintaining Uniform Application Rates
Mark Ledebuhr, Matthew Grieshop, Christopher Johnson (Presenting: Mark Ledebuhr, Application Insight LLC)

2001195 – An Indirect Method for Estimating Leaf Area Density Using Dimensional Similarity
Peter Ako Larbi (Presenting: Peter Ako Larbi, University of California -ANR, Kearney Ag REC)

2001326 – Optimization Design and Experiment of Sliding Cutting Drag Reduction and Blocking Preventing Layered Fertilizer Shovel
Zhao Jianguo, Ma Yuejin, Zhao Jin, Haokai, Shi Jinshan, Wang An, Li Jianchang, Hao Jianjun
(Presenting: Zhao Jianguo, College of Mechanical and Electrical Engineering, Hebei Agricultural University)

2001557 – Comparative Evaluation of Machine Learning Algorithms For Weeds Classification
Aggarwal Varun (Presenting: Aggarwal Varun, Purdue University)

• INNOVATIONS IN PRECISION AGRICULTURE

LIVE Q&A VIA ZOOM: TUESDAY 7/14 AT 12:00 – 1:30 PM
Moderators: Peter Larbi, Kearney Ag Center; Ajay Sharda, Kansas State University

2000084 – High Efficiency and Low Damage Harvesting Method for Lycium Barbarum L.
Jun Chen, Jian Zhao (Presenting: Jian Zhao, Northwest A&F University)

2000406 – The Physical Parameters and Mechanical Properties of Small Round Seeds for Air Suction Precision Seed Metering Device
Zhiwei Wang, Jun Chen (Presenting: Zhiwei Wang, Northwest A&F University)

2000521 – Design and Simulation Study of a Continuously Moving Harvesting Prototype for Combing Apple Tree Limbs in Trellis Trained Trees
Hu Guangrui, Chen Jun (Presenting: Hu Guangrui, Northwest A&F University)

2000726 – Design and Experiment of Pneumatic Roller Type Seed Metering Device with Small Particle Size
Lei Liu, Yuefeng Du, Liang Wang (Presenting: Liang Wang, China Agricultural University)

2000966 – Application of Bionics Engineering in Innovative design of Agricultural Machinery
Yu Tan,Sha Liu,Shaochun Ma (Presenting: Yu Tan ,China Agricultural University)
2001381 – Influence of Ground Speed and Planter Downforce on Uniformity of Seeding Depth, Spacing and Emergence when Utilizing Individual Row Hydraulic Downforce System
Braden Mishler, Sylvester Badua, Ajay Sharda, Ignacio Ciampitti (Presenting: Ajay Sharda, Kansas State University)

2001548 – Quantifying Planter Row Unit Opening Disk Load to Assess Spatial Soil Strength and Compaction
Braden Mishler, Sylvester Badua, Ajay Sharda (Presenting: Ajay Sharda, Kansas State University)

- MACHINERY AND TASK OPTIMIZATION – PART 1

  LIVE Q&A VIA ZOOM: TUESDAY 7/14 AT 9:30 – 11:00 AM
  Moderator: Ajay Sharda, Kansas State University

2000185 – CEMOS for Tractors - A Holistic Tractor Setup and Optimization System
Thomas Becker, Jan Wieckhorst, Christian Ehlert (Presenting: Jan Wieckhorst, CLAAS Tractor)

2000232 – Multi-Dimensional Load Spectrum Compilation Technique for Simulating Real Working Conditions of Motorized Spindle
Chao Chen, Yeqing Zhang, Haizhen Wang, Pengbo Ma, Xueyan Zhao
(Presenting: Xueyan Zhao, China Agricultural University)

2000503 – Automatic Depth Control System for a Rice Transplanter
Wan-Soo Kim, Chang-Hyun Choi, Yong-Joo Kim, Md Abu Ayub Siddique
(Presenting: Md Abu Ayub Siddique, Chungnam National University)

2000565 – Techno-Economic Modeling of Planting Costs for Varying Farm and Equipment Sizes
John Evans, John Lumkes, Gabe Wilfong, Logan Heusinger (Presenting: Logan Heusinger, Purdue University)

2000785 – Sustainable Paddy Harvesting Solution for the Southern Delta of Bangladesh
(Presenting: Md. Monjurul Alam, Bangladesh Agricultural University)

2000856 – Cane Loss Studies on Sugarcane Chopper Harvester
Haonan Xing, Shaochun Ma, Fenglei Wang, Jing Bai, Jinzhi Ma
(Presenting: Haonan Xing, China Agricultural University)

2000860 – Improving Agricultural Equipment Performance with Intelligent Pump Summation
Carsten Christensen, Thomas Langer, Elias Nielsen, Wyatt Hall (Presenting: Wyatt Hall, Danfoss)

2001352 – Comparing the Cost-Benefit Index of Three Mechanized Tillage Systems for Forage Production in Northern Mexico
Martin Cadena-Zapata, Jesus Valenzuela-Garcia, Juan Lopez, Jesus Vargas-Arellano
(Presenting: Martin Cadena-Zapata, University Antonio Narro)

- MACHINERY AND TASK OPTIMIZATION – PART 2

  LIVE Q&A VIA ZOOM: TUESDAY 7/14 AT 9:30 – 11:00 AM
  Moderator: Ajay Sharda, Kansas State University

2000148 – Query Based Nebraska Tractor Test Report Digital Collection
Santosh Pitla, Mike Kocher, Roger Hoy, Rodney Rohrer (Presenting: Rodney Rohrer, University of Nebraska-Lincoln)
2000492 – Verification of Simulation Model by Conducting Field Test Using Electric All-Wheel-Drive Tractor
Seung-Yun Baek, Jun-Ho Lee, Chang-Hyun Choi, Yong-Joo Kim
(Presenting: SeungYun Baek, Chungnam National University)

2000579 – Effects of Different Management Methods for Sunn-Hemp Cover Crop on Corn Production in a No-Till System in Cambodia
Lyhour Hin, Borarin Buntong, Manny E. Reyes, Lyda Hok, Lytour Lor, Florent Tivet, Vira Leng, Vuthy Suos, Horace Clemmons, Ted S. Kornecki (Presenting: Manny E. Reyes, Kansas State University)

2000784 – Suitability Analysis of Conservation Agriculture Based Tillage Cum Planting Technology Using Satellite Remote Sensing and GIS For Adaptation in Southern Region of Bangladesh
(Presenting: Chayan Kumer Saha, Bangladesh Agricultural University)

2000831 – Experimental Study on Sugarcane Top Chopper
Jiwei Hu, Shaochun Ma, Shili Gao, Fenglei Wang, Haonan Xing, Jing Bai
(Presenting: Shaochun Ma, China Agricultural University)

2000922 – Prediction Model for Axle Torque of Agricultural Tractor
Yong-Joo Kim, Wan-Soo Kim (Presenting: Wan-Soo Kim, Chungnam National University)

2000926 – Development of Dynamics Simulation Model and Evaluation of Steering Controller Model for Agricultural Tractor Using Multi-body Dynamics Software
Seong-Un Park, Chang-Hyun Choi, Yong-Joo Kim, Hyeon-Ho Jeon
(Presenting: Hyeon-Ho Jeon, Chungnam National University)

2000957 – Assessment of Custom Hire Service Provision for Rice Transplanter in the Southern Delta of Bangladesh using RuralInvest Tool
Surajit Sarkar, Md. Ashik-E-Rabbani, Chayan Kumer Saha, Md. Monjurul Alam
(Presenting: Md. Monjurul Alam, Bangladesh Agricultural University)

2001003 – Influence of Tillage Systems, Nutrient Application and Weed Management on Yield Components of Soybean
Ezekiel Ariyo, Joshua Olanrewaju Olaoye (Presenting: Joshua Olanrewaju Olaoye, University of Ilorin)

• MACHINERY AND TASK OPTIMIZATION – PART 3
LIVE Q&A VIA ZOOM: TUESDAY 7/14 AT 12:00 – 1:30 PM
Moderators: Peter Larbi, Kearney Ag Center; Ajay Sharda, Kansas State University

2000810 – Fuel Consumption Analysis of a Diesel Engine fueled with Macaw Palm Oil Biodiesel and Diesel Mixtures
Ronald Leite Barbosa, Carlos Eduardo Silva Volpato, Diego José Carvalho Alonso, Pedro Castro Neto, Jackson Antônio Barbosa (Presenting: Ronald Leite Barbosa, Federal Institute of Minas)

2000924 – Analysis of Load Distribution of Hydro-Mechanical Transmission by Micro-Geometry Optimization
Seung-Min Baek, Jun-Ho Lee, Yong-Joo Kim (Presenting: Seung-Min Baek, Chungnam National University)

2000945 – Fatigue Life Analysis of Taper Roller Bearing for 67 kW-Class Agricultural Tractor According to Working Load
Yong Choi, Young-Keum Kim, Il-Su Choi, Yong-Joo Kim, NamGyu Lee
(Presenting: NamGyu Lee, Chungnam National University)
2000950 – Weak Point Analysis of Tractor Transmission Gears According to Agricultural Operation
Seong-Un Park, Yong-Joo Kim, Seok-Pyo Moon (Presenting: Seok-Pyo Moon, Chungnam National University)

- PESTICIDE AND FERTILIZATION APPLICATIONS TECHNOLOGY, FORMULATIONS AND ENVIRONMENTAL EFFECTS
  LIVE Q&A VIA ZOOM: WEDNESDAY 7/15 AT 10:30 AM – 12:00 PM
  Moderators: Chris Bursiek, John Deere; Adam Barlow, John Deere

2000079 – Evaluation of PWM Technologies for Pesticide Spray Applications in a Two-Year Old Apple Orchard
Heping Zhu, Zhihong Zhang, Zhiming Wei, Liming Cheng, Erdal Ozkan, Ramon Salcedo Cidoncha
(Presenting: Ramón Salcedo, Ohio State University)

2000091 – Leaf Aging Effects on Sprayed Droplet Impact and Adhesion
Heping Zhu, John Paul Abbott (Presenting: John Paul Abbott, USDA-ARS-ATRU)

2000124 – Investigation of Droplet Sizes and Active Discharging Pressures for Different Pulse Width Modulated Nozzles
Zhiming Wei, Heping Zhu, Ramón Salcedo, Zhihong Zhang, Degang Duan, Qing Liu (Presenting: Zhiming Wei, Shandong Academy of Agricultural Machinery Sciences and USDA-ARS Application Technology Research Unit)

2000634 – Quantification of Drifting Droplets in Sprays Experiencing Crosswind Shear via Digital Image Analysis Techniques
Steven A. Fredericks, Lillian C. Magidow, Zilong He, Christopher J. Hogan Jr., Jiarong Hong
(Presenting: Steven A. Fredericks, Winfield United)

2001023 – Performance Evaluation of a Commercial Spray Controller Retrofitted on an Airblast Sprayer for Optimized Spray Applications in Cherry, Apple and Grapevine Crops
Anura Rathnayake, Gwen Hoheisel, Lav Khot (Presenting: Anura Rathnayake, Washington State University)

2001140 – Laboratory Scale Ozonated Water Spray (OWS) System Development and Performance Evaluation on Pear Psylla Management
M. Jacob Schrader, Basavaraj R. Amogi, Elizabeth H. Beers, Gwen A. Hoheisel, Lav R. Khot
(Presenting: M. Jacob Schrader, Washington State University)

- PRECISION AGRICULTURAL UTILIZATION IN CHEMICAL AND FERTILIZER APPLICATIONS
  LIVE Q&A VIA ZOOM: WEDNESDAY 7/15 AT 10:30 AM – 12:00 PM
  Moderators: Chris Bursiek, John Deere; Adam Barlow, John Deere

2000095 – Control of Insects and Diseases with Laser-Guided Intelligent Sprayers in Fruit and Ornamental Nursery Farms
Heping Zhu, Leona Horst, Matthew Wallhead, Michael Reding (Presenting: Liming Chen, USDA-ARS)

2000099 – Graphical User Interface Design for Premixing In-Line Injection System Attached to a Variable-Rate Orchard Sprayer
Zhihong Zhang, Heping Zhu, Chensong Hu, Zhiming Wei, Ramón Salcedo
(Presenting: Zhihong Zhang, USDA-ARS Application Technology Research Unit)

2000177 – Field Testing of an Automated Image-Based Droplet Sizing Sensor for Use with Manned and Unmanned Aerial Application Aircraft
Michael Lawrence, Dan Martin, Nikolay Rogoshchenkov, Jim Crafton
(Presenting: Michael Lawrence, Innovative Scientific Solutions-Inc)
2000178 – Preliminary Flight Testing of an Image-Based Droplet Sizing Sensor for Use on Aerial Application Aircraft
Michael Lawrence, Brad Fritz, Clint Hoffmann, Nikolay Rogoshchenkov, Jim Crafton
(Presenting: Michael Lawrence, Innovative Scientific Solutions-Inc)

2000354 – Investigation of Spray Deposition Quality on Greenhouse Plants for a Laser-Guided Variable-Rate Spray System
Tingting Yan, Heping Zhu, Xiaochan Wang, Peter Ling (Presenting: Tingting Yan, USDA)

- **Precision Application of Chemicals and Fertilizers**
  
  **LIVE Q&A VIA ZOOM: WEDNESDAY 7/15 AT 9:30 – 10:30 AM**
  Moderators: Jianfeng Zhou, University of Missouri; Dharmendra Saraswat, Purdue University

2000827 – John Deere Cotton Picker Onboard Module Weighing System Accuracy for On-Farm Research Implementation
Wesley Porter, Jeremy Kichler, Jared Whitaker, Simerjeet Virk (Presenting: Simerjeet Virk, University of Georgia)

2001041 – Boom Pressure and Droplet Size Uniformity of Pulse Width Modulation (PWM) Spray Technology
Ajay Sharda, Daniel Flippo, Ignacio Ciampitti, Qing Kang, Jonathan Fabula
(Presenting: Jonathan V. Fabula, Kansas State University)

2001173 – Season Long Evaluation of Two Types of Solid Set Canopy Delivery Systems in High Density Apples
Matthew Grieshop, Keith Koonter, Ben Savage, Mark Ledebuhr
(Presenting: Mark Ledebuhr, Application Insight LLC)

2001361 – Field Performance Evaluation of Pulse Width Modulation (PWM) Systems and Pressure-Controlled (PC) Systems for Sensor-Based Nitrogen Applications
Jackson S. Stansell, Samantha L. Teten, Samuel E. Marx, Joe D. Luck
(Presenting: Jackson S. Stansell, University of Nebraska – Lincoln)

2001376 – Off-Rate Errors of Pulse Width Modulation (PWM) Technology during Field Operations
Ajay Sharda, Ignacio Ciampitti, Daniel Flippo, Qing Kang, Jonathan Fabula
(Presenting: Jonathan Fabula, Kansas State University)

2001438 – Nitrogen Rate Determination by Crop Canopy Active Sensor on Autonomous Field Machinery
Samantha Teten (Presenting: Samantha Teten, University of Nebraska-Lincoln)

- **UAVs in Precision Agriculture**
  
  **LIVE Q&A VIA ZOOM: WEDNESDAY 7/15 AT 9:00 – 10:30 AM**
  Moderators: Jianfeng Zhou, University of Missouri; Dharmendra Saraswat, Purdue University

2000298 – Agricultural Aerial Application with Unmanned Aircraft Systems: Current Regulatory Framework and Analysis of Operators
Roberto Rodriguez (Presenting: Roberto Rodriguez III, USDA)

2000988 – In Situ Precision Measurements of Soil Moisture Content Using an Unmanned Aerial Vehicle
Hemanth Narayan Dakshinamurthy, Sierra Young
(Presenting: Hemanth Narayan Dakshinamurthy, North Carolina State)
2001096 – Assessing Positioning Accuracy of a Commercial UAS with RTK-GPS Capability on Crop Sensing
Biquan Zhao, Jiating Li, Lin Wang, Yeyin Shi (Presenting: Biquan Zhao, University of Nebraska – Lincoln)

2001164 – Using UAV Imagery to Evaluate Replanting Recommendations for NC Cotton
Enrique Pena Martinez, Jason Ward, Guy Collins (Presenting: Enrique Pena Martinez, NC State University)

• A LOOK BACK ON 100 YEARS OF TRACTOR PERFORMANCE TESTING

2001662 – Tractor Performance Testing
Presenting: Roger Hoy, Professor of Biological Systems Engineering and Director of Nebraska Tractor Test Laboratory, University of Nebraska-Lincoln

2001663 – Soil/Vehicle/Implement Systems and Management
Presenting: Richard John Godwin, Harper Adams University

2001664 – Off-Road Multi-Wheel Vehicles: Dynamics, Energy Efficiency and Mobility
Presenting: Vladimir V. Vantsevich, Professor of Mechanical Engineering and Director of Vehicle and Robotics Engineering Laboratory, University of Alabama at Birmingham

• BRAKING WEBINARS

Does My Towed Implement Need Brakes?
Video – Part 1

Towed Vehicle – Braking Performance and Sizing
Video – Part 2
NRES – NATURAL RESOURCES & ENVIRONMENTAL SYSTEMS

- **ADVANCED WATERSHED ANALYTICS AND APPLICATIONS OF MACHINE LEARNING IN WATER RESOURCES**
  
  **LIVE Q&A VIA ZOOM: TUESDAY 7/14 AT 12:00 – 3:00 PM**
  
  Moderator: Natalie Nelson, North Carolina State University

- **2000087 – Climate Driven Forecast of Land Water Storage Anomalies Across the CONUS**
  
  Clement Sohoulande, Jerry Martin, Ariel Szogi, Ken Stone (Presenting: Clement Sohoulande, USDA-ARS)

- **2000163 – Multiobjective Evolutionary Optimization for Quantifying Corn Yield and Drainage Nitrate Load Tradeoffs of Fertilizer Management Decisions**
  
  Chelsea Peterson, Luis Rodriguez, Maria Chu
  
  (Presenting: Chelsea Peterson, University of Illinois Urbana-Champaign)

- **2000520 – Dissolved Reactive Phosphorus Losses from Agricultural Fields in the Lake Erie Basin: A Synthesis**
  
  Xiaojing Ni, Wenlong Liu, Yongping Yuan (Presenting: Yongping Yuan, USEPA)

- **200666 – Filling Gaps in Our Maps: Modeling Flood Dynamics Using Satellite Imagery and Environmental Observations**
  
  Natalie Nelson, Emine Fidan (Presenting: Emine Fidan, North Carolina State University)

- **2001017 – Evaluating Connections between Swine CAFO Expansion and Water Quality through Analysis of Long-Term Satellite Imagery and Hydrologic Data Records**
  
  Natalie Nelson, Amanda Dean, Lise Montefiore (Presenting: Lise Montefiore, North Carolina State University)

- **2001153 – Groundwater Data Records and Hydroclimate Perspectives in the Northern High Plains**
  
  Luciano Alves de Oliveira, Francisco Munoz-Arriola, Pascal Ntaganda
  
  (Presenting: Pascal Ntaganda, University of Nebraska-Lincoln)

- **2001211 – Modeling Farmer Decision-Making Using an Agent Based Model for Studying Best Management Practice Adoption Rates: A Topological Approach**
  
  Kendra Zeman, Luis F. Rodriguez (Presenting: Luis Rodriguez, University of Illinois-Urbana-Champaign)

- **ADVANCES IN AGROHYDROLOGY: CHALLENGES AND OPPORTUNITIES**
  
  **LIVE Q&A VIA ZOOM: MONDAY 7/13 AT 4:00 – 5:00 PM**
  
  Moderator: Srinivaulu Ale, Texas A&M University

- **2000021 – Embracing the Digital Age in Nutrient Management and Water Quality**
  
  Jorge Delgado, Bruce Vandenberg, Deanna Osmond, Mike Buser, Daren Harmel
  
  (Presenting: Daren Harmel, USDA-ARS)

- **2000047 – Utilizing AnnAGNPS and Random Forest Machine Learning to Support Precision Agriculture and Conservation in the Prairie Pothole Region**
  
  Amy Kaleita, Michelle Soupir, Brady Nahkala (Presenting: Brady Nahkala, Iowa State University)

- **2000092 – A Geospatial Analysis of In-Field Soil Moisture Variability**
  
  Blade Hodges, Mary Love Tagert, Joel Paz, Qingmin Meng (Presenting: Blade Hodges, Mississippi State University)

- **2000305 – Daily Erosion Project - Effects of DEM Techniques on Estimating Runoff and Erosion**
  
  Richard Cruse, Daryl Herzmann, David James, Tim Sklenar, Chunmei Wang, Brian Gelder
  
  (Presenting: Brian Gelder, Iowa State University)
2000609 – Modelling Water Productivity and Net Returns of Crop-Growth-Stage-Based Deficit Irrigation Strategies for Cotton
Yubing Fan, Srinivasulu Ale, James Bordovsky, Sushil Himanshu
(Presenting: Srinivasulu Ale, Texas A&M AgriLife Research, Texas A&M University)

2001065 – Impact Assessment of Manure Nutrient-Loss Due to New Animal Agricultural Developments
Cibin Raj, Hershel Elliott, Heather Gall, Gourab Saha (Presenting: Gourab Saha, Pennsylvania State University)

Diganta Adhikari, Aaron Berger, Daniel Berne, R. Andres Ferreyra, Charles Hillyer, Brent Mecham, Stephen Smith
(Presenting: R. Andres Ferreyra, Syngenta)

2001417 – Assessment of Temporal Variation in Soil Macropore Characteristics in a Pasture Field
Jasmeet Lamba, Puneet Srivastava, Kritika Malhotra, Sheela Katuwal, Tom Way, Suman Budhathoki
(Presenting: Suman Budhathoki, Auburn University)

• **ADVANCES IN DRAINAGE DESIGN, MONITORING, AND MODELING**

  **LIVE Q&A VIA ZOOM: TUESDAY 7/14 AT 3:00 – 4:00 PM**

  *Moderator: Vinayak Shedarak, Ohio State University*

2000046 – Drainage Design Procedure for Estimating the Optimum Drain Spacing
Ehsan Ghane, Manal Askar, Wayne Skaggs (Presenting: Ehsan Ghane, Michigan State University)

2000116 – Advanced 1D/2D Modeling for Large Agricultural Watersheds with XP SWMM
Bailey Griffin (Presenting: Bailey Griffin, ISG)

2000590 – Simulated Crop Yield Benefits of Drainage Water Recycling Using APSIM
Sam Phillips, Matt Helmers, Chris Hay, Sotirios Archontoulis (Presenting: Sam Phillips, Iowa State University)

2000615 – Using AnnAGNPS to Model Watershed Changes Due to the Construction of a Tailwater Recovery System
Mary Love Tagert, Lindsey Yasarer, Joel Paz, Meredith Brock
(Presenting: Meredith Brock, Mississippi State University)

2000623 – Estimating Missing Subsurface Drainage Data to Obtain More Accurate Nutrient Loading
Manal Askar, Ehsan Ghane, Jason Piwarski, Sami Shokrana, Yousef Abdalaal
(Presenting: Manal Askar, Michigan State University)

2001055 – Field-Scale Effects of Tile Depth and Spacing on Nutrient Losses and Crop Productivity
Shailendra Singh, Rabin Bhattacharai, Richard Cooke, Jacob Wood (Presenting: Jacob Wood, University of Illinois)

2001077 – Water Quality Response to No-Till and Cover Crops after 10 Years of Establishment
Carl Pederson, Matt Helmers, Sam Phillips, Chelsea Clifford (Presenting: Emily Waring, Iowa State University)

Saeid Nazari, William Ford, Kevin King (Presenting: Saeid Nazari, University of Kentucky)
Lori Abendroth, Giorgi Chighladze, Matt Helmers, Jane Frankenberger, Ben Reinhart, Daryl Herzmann, Laurent Ahiablame, Barry Allred, Laura Bowling, Larry Brown, Norm Fausey, Dan Jaynes, Xinhua Jia, Eileen Kladivko, Kevin King, Jeppe Kjaersgaard, Kelly Nelson, Jeff Strock, Mohamed Youssef (Presenting: Lori Abendroth, Iowa State University)

2001369 – Challenges in the Modeling of Hydrology in Previously Drained, Regularly Cropped Prairie Potholes Subject to USDA Farm Program Wetland Conservation Provisions
Donald Etler (Presenting: Donald Etler, Engineering Consultant)

- ADVANCES IN ECOLOGICAL ENGINEERING OF ANIMAL PRODUCTION SYSTEMS
  LIVE Q&A VIA ZOOM: TUESDAY 7/14 AT 12:00 – 1:00 PM
  Moderator: Steve Hall, North Carolina State University

2000028 – Co-Fermentation of Sugar Beet Pulp and Anaerobically Digested Dairy Manure to Generate an Acid Rich Medium for Mixotrophic Microalgae Cultivation
Lide Chen, Liang Wang, Sarah Wu, Kevin Krugger (Presenting: Lide Chen, University of Idaho)

2000208 – Effects of Storage Time and Conditions on Phosphorus Solubility of Swine Manure
Fuqing Xu, Leipeng Cao, Harold Keener (Presenting: Lei Zhu)

2000292 – Study on the Propagation Law and Model of Sound Wave in the Yellow Croaker
Haitong Pang, Weiming Cai, Huanda Lu, Xianghong Zhao
(Presenting: Weiming Cai, NingboTech University)

200621 – Flow Provision Capabilities and Power Requirements of Three Types of Flow Generating Devices for In-Pond Raceways
Joseph Dvorak, Bo Smith (Presenting: Bo Smith, University of Kentucky)

2000642 – Treatment of Dairy Wastewater using a Low-cost Vermifilter Technology
Gilbert Miito, Pius Ndewa, Femi Peter, Sifolo Coulibaly (Presenting: Gilbert Miito, Washington State University)

2001460 – Process Engineering Model for Pilot Scale Aquaponics Facility Shows Opportunities for Process Improvement
Rohit Kalvakaalva, Mollie Smith, David Blersch, Daniel Wells, Terry Hanson, Brendan Higgins
(Presenting: Brendan Higgins, Auburn University)

- ADVANCES IN IRRIGATION MANAGEMENT IN THE CONTEXT OF CLIMATE CHANGE AND CONSTRAINED WATER SUPPLY
  LIVE Q&A VIA ZOOM: MONDAY 7/13 AT 4:00 – 5:00 PM
  Moderator: Daran Rudnick, University of Nebraska-Lincoln

2000539 – Effects of Early and Delayed Irrigation Trigger Timing for Peanut Production in Sandy Loam Soils
R. Scott Tubbs, Cristiane Pilon, Calvin Perry, W. Scott Monfort, Wesley Porter
(Presenting: Wesley Porter, University of Georgia)

2000578 – Relationship between Sugarbeet Crop Water Stress Index and Available Soil Water
David Tarkalson, Dave Bjorneberg, Bradley King
(Presenting: Bradley King, USDA ARS Northwest Irrigation and Soils Research Laboratory)
2001066 – Canopy Temperature Based Irrigation Scheduling for Maize in West Central Nebraska
Hope Njuki Nakabuye, Daran Rudnick, Tsz Him Lo, Abia Katimbo, Derek Hereen, Kendall DeJonge, Trenton Franz, Xin Qiao (Presenting: Hope Njuki Nakabuye, University of Nebraska-Lincoln)

2001371 – Corn Yield-Water Use Relationships and the Economic Impact of Restrictions on Water Use
Nathan Hendricks, Isaya Kisekka, Vaishali Sharda (Presenting: Vaishali Sharda)

- **ADVANCES IN IRRIGATION SYSTEMS MODELING**
  **LIVE Q&A VIA ZOOM: MONDAY 7/13 AT 4:00 – 5:00 PM**
  Moderator: Gary Marek, USDA

2000365 - Reducing Spatial Variability in Walnut Orchards through Zone Irrigation Management
Isaya Kisekka, Allan Fulton, Ryan Fulton (Presenting: Isaya Kisekka, University of California-Davis)

2001292 – Pivot Assessment Tool: A Software Application for Windows
Kendall R. Kirk, Wendy S. Buchanan, Benjamin B. Fogle, Michael Plumblee, Calvin Sawyer (Presenting: Kendall Kirk, Clemson University)

2001424 – Evaluating Alternate Wetting and Drying vs. Traditional Irrigation Practice of Arkansas Rice: An APEX Application
Kieu Le, Beatriz Moreno-Garcia, Jaden Tatum, Samuel Carroll, Michele Reba, Benjamin Runkle (Presenting: Kieu Le, University of Arkansas)

- **ANAEROBIC DIGESTION**
  **LIVE Q&A VIA ZOOM: TUESDAY 7/14 AT 2:00 – 3:00 PM**
  Moderator: Douglas Hamilton, Oklahoma State University

2000140 – Impact of Fe3O4 Nanoparticles on Solid-state Anaerobic Digestion Performance in Calcium pretreated Corn Stover Co-digested with Dairy Manure
A.A. Ajayi-Banji, S. Rahman (Presenting: A. A. Ajayi-Banji, North Dakota State University)

2000141 – Effects of Different Pretreatment Options on Corn Stovers Co-digested with Dairy Manure and the Impact on Biogas Yield and Process Parameters
A.A. Ajayi-Banji, S. Rahman (Presenting: A. A. Ajayi-Banji, North Dakota State University)

2000358 – Evaluating Anaerobic Digestion Kinetics for Swine Manure and Sludge Using BMP Assay Tests
Piyush Patil, Mahmoud Sharara (Presenting: Piyush Patil, North Carolina State University)

2000743 – Achieving High-Rate Anaerobic Digestion of Foodwaste with Vacuum Stripping and Recirculation of Digestate
Wendong Tao, Youl Han, Hyatt Green (Presenting: Wendong Tao, State University of New York)

2000855 – Characteristics of Substrates Related to Anaerobic Digester Foaming
Sarah E. Daly, Ji-Qin Ni (Presenting: Sarah Daly, Purdue University)

2001295 – Optimization of Co-Digesting Swine Manure and Waste Kitchen Oil
Cuong Duong, Teng Lim (Presenting: Cuong Duong, University of Missouri)
2001458 – Anaerobic Digestion of Thickened Sludge from Fish Production in CSTR and Hybrid Pilot Scale Digesters
Sonia Limina, Giulio Fait, Francesco da Borso, Alessandro Chiumenti
(Presenting: Alessandro Chiumenti, University of Udine)

2001549 – Effects of Biochar and Activated Carbon on Anaerobic Digestion Of a Nitrogen Rich Waste – Swine Manure
Meicai Xu, Sibel Uludag-Demier, Di Fang, Yan Liu (Presenting: Wei Liao, Michigan State University)

• **BARRIERS AND OPPORTUNITIES IN MANURE MANAGEMENT**
  **LIVE Q&A VIA ZOOM: MONDAY 7/13 AT 3:00 – 4:00 PM**
Moderator: Linda Schott, University of Idaho

2000261 – A Techno-Economic Model for Evaluating the Environmental and Economic Feasibility of Waste Treatment and Nutrient Recovery Technologies
John Classen, Praveen Kolar, Mahmoud Sharara, Kelly Zering, Prince Dugba, Shannon Banner
(Presenting: Shannon Banner, North Carolina State University)

2000308 – A Tale of Two Agreements: Transitioning to Sustainable Swine Manure Management
Alison V. Deviney, John J. Classen (Presenting: Alison Deviney, North Carolina State University)

2000588 – Alkaline Hydrolysis of Swine Mortalities Using Hydrolysates to Hydroponically Grow Lettuce
Neslihan Akdeniz, Shuqi Yi (Presenting: Neslihan Akdeniz, University of Illinois)

2000597 – Long-Term Impact of Poultry Manure on Crop Yield, Soil and Water Quality, and Crop Revenue
Natasha Hoover, Leigh Ann Long, Ramesh Kanwar, Michelle Soupir, Ji Yeow Law
(Presenting: Ji Yeow Law, Iowa State University)

2000607 – An Environmental Assessment of Cattle Manure Systems in the Northern Great Plains
C. Alan Rotz, Senorpe Asem-Hiablie, Erin Cortus, Mindy Spiehs, Shafiqur Rahman
(Presenting: C. Alan Rotz, USDA-ARS)

2000753 – Perceptions of Barriers and Benefits of Manure Use in Cropping Systems
Richard Koelsch, Daniel Andersen, Erin Cortus, Leslie Johnson, Amy M. Schmidt, Siok Ann Siek, Melissa Wilson
(Presenting: Richard Koelsch, University of Nebraska-Lincoln)

2001297 – On-Farm Research to Assess the use of Manure, Woody-Biomass and Coal Char as Land Treatment Practices to Improve Agricultural Soil Health in Nebraska
Agustin Olivo, Amy Schmidt, Richard Koelsch, Eric Henning, Larry Howard, Troy Ingram, Gary Lesoing, Aaron Nygren, Randy Saner, Sarah Sivits, Amy Timmerman, Brian Krienke, Todd Whitney
(Presenting: Agustin J Olivo, University of Nebraska-Lincoln)

2001355 – Production and Application of Pelletized Compost Products from Dairy Manure and Woody Biomass on California Almond Orchards
Yike Chen, Tyler Barzee, Hamed El-Mashad, Sat Darshan Khalsa, Patrick Brown, Ruihong Zhang, Abdolhossein Edalati (Presenting: Abdolhossein Edalati, UC Davis Dept Bio & Agricultural Engineering)

2001561 – Potential Environmental Benefits Evaluation of Manure and Nutrient Placement Strategies Considering Optimal Weather Condition
Arghajeet Saha, Raj Cibin (Presenting: Arghajeet Saha, The Pennsylvania State University)
Tom Bruulsema, Quentin Rund, Joel Peterson (Presenting: Joel Peterson, University of Wisconsin-River Falls)

- **BRIDGING SOCIAL AND PHYSICAL SCIENCES TO ACHIEVE WATER, ENERGY, AND FOOD SDGS-HYBRID**
  LIVE Q&A VIA ZOOM: MONDAY 7/13 AT 4:00 – 5:00 PM
  Moderator: Rabi Mohtar, Texas A&M University

2000589 – Promoting Restoration of Lake Bosomtwe through Spatial Analysis of Existing Water, Sanitation, and Hygiene (WASH) Sources in Ghana West Africa
Grace Baldwin, Robert M. Stwalley III (Presenting: Robert M. Stwalley III, Purdue University)

2000912 – Water-Energy Linkage in Smallholder Shared Center Pivot Irrigation: A Case Study in Rwanda
Ankit Chandra, Nick Brozovic, Lameck Odhiambo, Derek Heeren
(Presenting: Ankit Chandra, University of Nebraska-Lincoln)

2001443 – A Water-Energy-Food Nexus Approach for Evaluating the Sustainability of an EAT-LANCET inspired Mediterranean Diet: The Case of Lebanon
Bassel Daher, Roula Bachour, Sandra Yanni, Reem Khattar, Rabi Mohtar
(Presenting: Rabi Mohtar, American University of Beirut)

2001515 – Measurement Economic Outcome of Nitrogen Management Certification System for Different Dairy Stakeholders
Sun Lu, Luis Rodriguez, Rick Koelsch, Deanne Meyer, Kendra Rose Zeman (Presenting: Lu Sun, University of Illinois)

2001632 – Reflections on Water, Energy & Food
Peter G. McCormick
(Presenting: Peter G. McCormick, Daugherty Water for Food Global Institute, University of Nebraska)

- **CONSERVATION PRACTICE IMPLEMENTATION**
  LIVE Q&A VIA ZOOM: WEDNESDAY 7/15 AT 10:00 – 11:00 AM
  Moderator: Carolyn Jones, USDA

2000244 – Conservation Drainage: Innovation Strategies That Provide Win/Win Solutions
Chuck Brandel (Presenting: Chuck Brandel, ISG)

2001081 – Changes in Nutrient Concentrations Leaving Plots through Tile Drainage Systems after Planting Rye Cover Crop
Arun Bawa, Rachel MacDowell, Juan D. Pérez-Gutiérrez, John McMaine, Peter Sexton, Shannon L. Osborne, Sandeep Kumar (Presenting: Arun Bawa, South Dakota State University)

Garrett Steinbeck, Sami Khanal, Margaret Kalcic, Kevin King (Presenting: Garrett Steinbeck, Ohio State University)

2001309 – Modelling Soil Carbon Sequestration under Conservation Agriculture and Conventional Farming Practices in Stung Chinit Catchment, Cambodia using APEX model
Nareth Nut, Luca Doro, Abeyou Wale Worqul, Jaehak Jeong, Manuel R. Reyes, Gilbert C. Sigua, Kieu Ngoc Le, Sakdanuphol Chan, Vira Leng, Florent Tivet, Lyda Hok, Raghavan Srinivasan
(Presenting: Nareth Nut, Faculty of Agricultural Engineering, Royal University of Agriculture)
2001398 – Trends in Conservation Practice Implementation: When has Adoption Occurred?
Reid Christianson, Anna-Maria Marshall, Brian O’Neill (Presenting: Reid Christianson, University of Illinois)

2001593 – Fish Friendly Drainage Pumps
Ryan Bartelheimer (Presenting: Ryan Bartelheimer, Living Water Innovations, LLC)

• **CONSTRUCTED TREATMENT WETLANDS IN AGROECOSYSTEMS**

  **LIVE Q&A VIA ZOOM: TUESDAY 7/14 AT 1:00 – 2:00 PM**
  Moderator: Randall Etheridge, East Carolina University

2001647 – Constructed Treatment Wetlands for Agroecosystems Nutrient Treatment: A Synthesis for Nutrient Removal
Trisha Moore, Natalie Nelson, Laurent Ahiablame, Eban Bean, Chelsie Boles, Sonja Cook, Steven Hall, John McMaine, Derek Schlea, Tiffany L. Messer (Presenting: Tiffany L. Messer, University of Nebraska-Lincoln)

2001648 – Potential of Large Scale Wetland Restoration to Reduce Nitrogen Loads in Agricultural Regions
William G. Crumpton, Stephen Fisher, Jana Stenback, David Green, Casey Judge (Presenting: William G. Crumpton, Iowa State University)

2001649 – Incorporating Wetlands into Reservoir Rehabilitation Projects for Fisheries and Other Benefits in Nebraska
Ted LaGrange (Presenting: Ted LaGrange, Nebraska Game and Parks Commission)

Gordon Coke (Presenting: Gordon Coke, The Flatwater Group)

2001651 – Marsh Wren Community Wetland Area: Saline Wetland Restoration Project
Gordon Coke (Presenting: Gordon Coke, The Flatwater Group)

• **EDGE OF FIELD PRACTICES FOR NUTRIENT LOSS REDUCTION IN DRAINED LANDSCAPES**

  **LIVE Q&A VIA ZOOM: MONDAY 7/13 AT 4:00 – 5:00 PM**
  Moderator: Lindsay Pease, USDA-ARS

2000333 – Woodchip Barriers Buried Beneath the Crop Root Zone Restrict Nitrate Leaching
Matteo D'Alessio, Chittaranjan Ray, Daniel Snow, Dan Miller (Presenting: Dan Miller, USDA-ARS)

2000456 – Impacting Water Quality through Drainage Water Management
Kevin King, Vinayak Shedekar, Brittany Hanrahan, Jedediah Stinner, Lindsay Pease (Presenting: Kevin King, USDA-ARS)

2000469 – Evaluation of Different Pairing Configurations of Woodchips and Steel Chips on Nitrate and Phosphate Removal from Subsurface Drainage
Abdoul Aziz Kouanda, Guanghui Hua (Presenting: Abdoul Aziz Kouanda, South Dakota State University)

2000480 – The Iowa Initiative, Matching Wetlands to Drainage Improvements -- Dealing with the Regulations
Donald D. Etler (Presenting: Donald D. Etler, Bolton & Menk)

2000586 – Tile Drain Retrofit for First Flush Treatment Using a Denitrifying Woodchip Bioreactor in California
Guy W. Bates (Presenting: Guy W. Bates, California Polytechnic State)
2000650 – Hydraulic Conditions Affect Pollutant Removal Efficiency in Distributed Ditch and Pond Drainage Systems in Agricultural Landscapes
Zhonghua Jia, Wan Luo, Jiarong Zou, Wang Wu, Muyao Xu, Yangfan Tang, Cheng Chen
(Presenting: Cheng Chen, Yangzhou University)

2000977 – Bioreactor Woodchips Provide High Potential for Complete Denitrification
Niranga Wickramaratne, Julie L. Zilles, Laura E. Christianson, Mary Foltz
(Presenting: Mary E. Foltz, University of Illinois)

2001049 – Calibrating Standard Sharp-Crested Steel 45-Degree V-Notch Weirs for Water-Level Control Structures under Free Flowing and Submerged Conditions
Yousef Abdalaal, Ehsan Ghane, Richard Cooke, Md Sami Bin Shokrana
(Presenting: Md Sami Bin Shokrana, Michigan State University)

2001088 – Bioreactors and Saturated Buffers: What We’ve Learned from Three Years of Design and Construction- An Industry Case Study
Ivan Droessler, Caleb Rasmussen, Bethany Brittenham (Presenting: Bethany Brittenham, ISG)

2001334 – Comparison of Woodchip and Corn Cob Bioreactors on Nitrate Removal
Alexis Slade, Dr. Michelle Soupir, Natasha Hoover (Presenting: Alexis Slade, Iowa State University)

- EMERGING CONTAMINANTS, PATHOGENS, AND ANTIBIOTIC RESISTANCE
  LIVE Q&A VIA ZOOM: TUESDAY 7/14 AT 1:00 – 2:00 PM
  Moderator: Tiffany Messer, University of Nebraska-Lincoln

2000154 – Evaluation of Manure Associated Antibiotic Resistance Genes from Multiple Swine and Cattle Sources across Iowa
Michelle Soupir, Adina Howe, Timothy Neher (Presenting: Timothy Neher, Iowa State University)

2000286 – Degradation of Sulfamethazine in Swine Manure via Anaerobic Digestion
Teng Teeh Lim, Chung-Ho Lin, Aaron C. Ericsson, Phuc H. Vo, Ali Hosseini Taleghani
(Presenting: Ali Hosseini Taleghani, University of Missouri)

2000437 – Monitoring Endocrine Disrupting Compounds in the Susquehanna River Basin Through Citizen Science
Heather Preisendanz, Tamie Veith, Faith Kibuye, Kyle Elkin, Odette Mina, Sara Lincoln, Julia Bier тем pfel, Christopher Deptulski, Kathryn Hayden (Presenting: Kathryn Hayden, Pennsylvania State University)

2000453 – An Inexpensive Treatment Process for Removing Antibiotics from Agricultural Wastewater
Bryan Woodbury, Bobbi Stromer, Kate Woodward (Presenting: Bryan Woodbury, USDA)

2000820 – Monitoring Per- and Polyfluoroalkyl Substances (PFAS) at the Pennsylvania State Living Filter
Heather Preisendanz, Hershel Elliot, Jack Watson, Tamie Veith, Sarah Lincoln, Odette Mina, Olivia Mroczko
(Presenting: Olivia Mroczko, Pennsylvania State University)

2000829 – Occurrence and Fate of Microplastics in Agricultural Runoff from Land Application of Biosolids
Meredith Sutton, Brittany Trejo, Omar Hassan, Tiffany Messer, John Gilley, Shannon L. Bartelt-Hunt, Nasrin Naderi Beni (Presenting: Nasrin Naderi Beni, University of Nebraska-Lincoln)
2001068 – The Effectiveness of Alkaline Stabilization on the Reduction of Antimicrobial Resistance in Beef Cattle Manure
Noelle Atieno Mware, Marissa Golgosky, Galen Erickson, Shannon Bartelt-Hunt, Amy Schmidt, Xu Li
(Presenting: Noelle Atieno Mware, University of Nebraska-Lincoln)

2001459 – Antimicrobial Processing Aids as Emerging Contaminants that Negatively Impact Treatment of Poultry Processing Wastewater
Justin Box, Mark Berrang, Brendan Higgins (Presenting: Brendan Higgins, Auburn University)

**EROSION AND WATER QUALITY IN STREAMS AND WETLANDS**

**LIVE Q&A VIA ZOOM: TUESDAY 7/14 AT 3:00 – 4:00 PM**
Moderator: Troy Gilmore, University of Nebraska-Lincoln

2000036 – Evaluating the Impacts of Tillage on Sediment Production and Yield
Sanghyun Lee, Maria L. Chu, Jorge A. Guzman, Alejandra Botero-Acosta
(Presenting: Sanghyun Lee, University of Illinois)

2001080 – Spatiotemporal Distribution of Water Quality: A Case Study for the Upper Big Sioux River Watershed
Arun Bawa, Juan D. Pérez-Gutiérrez, Sandeep Kumar (Presenting: Arun Bawa, South Dakota State University)

2001090 – Unraveling the Processes that Govern the Propagation of Sediment Pulses in Streams: Insights from a Numerical Modeling Approach
Celso Castro-Bolinaga, Panayiotis Diplas, Robert Bodnar
(Presenting: Celso Castro-Bolinaga, North Carolina State University)

2001214 – Geospatial Technology Based Lake Sidney Lanier Impounding Volume Change Analysis and Sediment Profile Development
Zachary Pilgrim, Johnny Grace III, Devendra Amatya, Sudhanshu Panda
(Presenting: Sudhanshu Panda, University of North Georgia)

2001321 – Assessment of Impacts of Land Use and Climate Change on Streamflow and Soil Erosion in the Stung Chinit Catchment, Cambodia Using APEX Model
Nareth Nut, Jaehak Joeng, Abeyou Wale Worqul, Manuel R. Reyes, Kieu Ngoc Le, Luca Doro, Sakdanuphol Chan, Gilbert C. Siguia, Chantha Oeurng, Kong Chhuon, Raghavan Srinivasan
(Presenting: Nareth Nut, Faculty of Agricultural Engineering, Royal University of Agriculture)

**EROSION CONTROL RESEARCH AND CASE STUDIES**

**LIVE Q&A VIA ZOOM: WEDNESDAY 7/15 AT 10:00 – 11:00 AM**
Moderator: Vahid Rahmani, Kansas State University

2000025 – Quantifying Soil Erodibility for Multiple Landscapes Using the Jet Erosion Test (JET)
Garey Fox, Lucie Guertault, Celso Castro Bolinaga (Presenting: Garey Fox, North Carolina State University)

2000044 – WebStart WEPS: Remote Data Access and Model Execution Functionality Added to WEPS
Larry E. Wagner, Mark Haas, Fred Fox (Presenting: Larry E. Wagner, USDA)

2000725 – Subsurface Hydrology Effects on Rill Sediment Transport Capacity
Shuyuan Wang, Dennis C. Flanagan, Bernard A. Engel (Presenting: Garey Fox, North Carolina State University)
**2000740 – Evaluation of Different Precipitation Inputs to WEPP**  
Dennis Flanagan, Ryan McGehee, Anurag Srivastava (Presenting: Dennis C. Flanagan, USDA)

**2000841 – WEPP Simulation of Water Erosion on Cropland in the Inland Pacific Northwest**  
Mugal Samrat Dahal, Joan Wu (Presenting: Mugal Samrat Dahal, Washington State University)

**2001045 – Evaluation of Various Products for Sediment Perimeter Barrier**  
Jacob Wood, Rabin Bhattarai, Yufan Zhang (Presenting: Yufan Zhang, University of Illinois at Urbana-Champaign)

**2001186 – Geospatial Technology Supported Soil Subsidence Study with over 70 years of Temporal Topographic and Groundwater Data Analyses**  
Owen Smith, Sudhanshu S Panda, Johnny M Grace III, Ying Ouyang, Devendra M Amatya  
(Presenting: Sudhanshu Panda, University of North Georgia)

**2001385 – Land Use Changes and Variability in Properties and Erodibility Indices of Soil of Imo State Polytechnic, Owerri – Nigeria**  
Gregory Obiechefu, Kodak Emerson, Chimaraoke Asuzu (Presenting: Gregory Obiechefu, IMO State Polytechnic)

- **EVAPOTRANSPIRATION MEASUREMENT AND MODELING**
  
  **LIVE Q&A VIA ZOOM: TUESDAY 7/14 AT 3:00 – 4:00 PM**  
  Moderator: Kendall DeJonge, USDA

**2000159 – Quantifying Crop Water Requirements of Young Almond Orchards through Evapotranspiration Measurements and Modeling**  
Kelley Drechsler, Isaya Kisekka (Presenting: Kelley Drechsler, University of California-Davis)

**2001040 – Evaluation of Evapotranspiration using Landsat Images for Hydrological Models in the Middle Loup Watershed, Nebraska Sand Hills**  
Aaron Mittelstet, Christopher Neale, Troy Gilmore, Ivo Zution Goncalves, Nawaraj Shrestha  
(Presenting: Nawaraj Shrestha, School of Natural Resources, University of Nebraska-Lincoln)

**2001086 – Evaluation of the Surface Renewal Method for Measuring Crop Evapotranspiration in a Humid Environment**  
Andrew Ewing, Dr. Jose O. Payero, Dr. Tom O. Owino (Presenting: Andrew Ewing, Clemson University)

**2001171 – Comparison of Different Remote Sensing Models in Estimation of Crop Evapotranspiration in Semi Arid to Arid Region of Inter-Mountain Wyoming**  
Bibek Acharya, Vivek Sharma (Presenting: Bibek Acharya, University of Wyoming)

**2001465 – Evapotranspiration Methods: The Need for Standardized Language and Practice for Agroecosystem Modelers**  
Kelly R. Thorp, Gary W. Marek, Kendall DeJonge (Presenting: Kendall DeJonge, USDA-ARS)

**2001591 – Late-Season Soybean Water Use Under Sprinkler and SDI Irrigation in the Texas High Plains**  
Steve Evett, Paul Colaizzi, David Brauer (Presenting: Gary Marek, USDA-ARS)

**2001636 – Evapotranspiration in Irrigated Agriculture: Measurement Perspectives**  
(Presenting: Kosana Suvočarev, Department of Land, Air and Water Resources, University of California)
George Paul, Chaun-Shin Chong, Brian Schmid, Yohannes Yimam, Ben Cheng
(Presenting: George Paul, Formation Environmental LLC)

2001638 – Monitoring Eddy Covariance and Developing an Irrigation Scheduler for Limited Irrigation Water Management in Cropping Systems
Saseendran Anapalli (Presenting: Saseendran Anapalli, USDA)

• EXTREME CLIMATIC EVENTS: SCIENCE, IMPACT ANALYSIS AND MANAGEMENT OF NATURAL RESOURCES

LIVE Q&A VIA ZOOM: TUESDAY 7/14 AT 12:00 – 1:00 APM
Moderator: Tushar Sinha, Texas A&M University

2000271 – Comparison of Spatio-Temporal Trends on Drought Characteristics Using Meteorological Drought Indices (SPI and EDI) in the United States
Won-Ho Nam, Michael J. Hayes, Mark D. Svoboda, Brian Fuchs
(Presenting: Won-Ho Nam, Hankyong National University)

2001221 – Quantifying Surface Water and Groundwater Availability in the Brazos River Basin, Texas
Hao-Po Chang, Tushar Sinha, Vinay Kumar (Presenting: Hao-Po Chang, Texas A&M University-Kingsville)

2001239 – Analysis of Long-Term Extreme Wetness, Hotness, and Coldness Patterns in Kansas, USA
Vahid Rahmani, Matthew Stone (Presenting: Matthew Stone, Kansas State University)

2001652 – Role of Adaptive Multi-Paddock Grazing on Rangelands in Downstream Flood Mitigation and Climate Change Adaptation
Srinivasulu Ale, JungJin Kim, JongYoon Park, Richard Teague
(Presenting: Srinivasulu Ale, Texas A&M AgriLife Research)

2001653 – Analysis of Land Use and Climate Change Impact on Water Resources: A Perspective from the Upper Midwest
Laurent Ahiablame (Presenting: Laurent Ahiablame, University of California Co-operative)

• GREEN INFRASTRUCTURE SOLUTIONS AND ECOLOGICAL ENGINEERING APPLICATIONS – HYBRID

LIVE Q&A VIA ZOOM: TUESDAY 7/14 AT 2:00 – 3:00 PM
Moderator: Tushar Sinha, Texas A&M University

2000328 – Observation and Comparison of Performance of Pavement Systems for Snow Events – A Four-Year Study
Lu-Ming Chen, Paul Davidson (Presenting: Lu-Ming Chen, University of Illinois-Urbana Champaign)

2000443 – Retrofitting Dry Detention Basins for Optimal Pollutant Removal
Amber Ellis, William F. Hunt III, Richard A. McLaughlin (Presenting: Amber Ellis, North Carolina State University)

2000602 – Subsurface-Flow Gravel Wetlands: an Innovative Tool for Mimicking Natural Hydrology?
William Hunt, Sarah Waickowski, Caleb Mitchell
(Presenting: Caleb Mitchell, North Carolina State University)

Laurent Ahiablame, Ranish Shakya (Presenting: Laurent Ahiablame, University of California)
2001470 – A Linked Hydrodynamic, Water Quality, and Habitat Suitability Model for Oyster Restoration
Anna Linhoss, Mohammad Mehdi Armandei (Presenting: Anna Linhoss, Mississippi State University)

2001571 – Removal Potential of Established Floating Treatment Wetlands Receiving Carbon Amendments
Tiffany L. Messer, Ken Oathout, Helen Little (Presenting: Tiffany Messer, University of Nebraska-Lincoln)

2001526 – Incorporating Mycofiltration into Bioretention to Improve Pollutant Removal from Stormwater
William Hunt, Carmen Tormey (Presenting: Carmen Tormey, North Carolina State University)

2001661 – Hydrologic Influences on Nutrient Cycling in Green Stormwater Infrastructure
Lauren McPhillips (Presenting: Lauren McPhillips, Pennsylvania State University)

**HYDROLOGY AND CLIMATE DATA: CHALLENGES AND OPPORTUNITIES**

*Live Q&A via Zoom: Tuesday 7/14 at 2:00 – 3:00 PM*

Moderator: Sushant Mehan, Ohio State University

2000260 – Impacts of Extreme Precipitation Events on Designing Peak Discharges and Culvert Capacities for Headwater Forest Watersheds in the Southeastern US

2000884 – Analytics for Climate-Uncertainty Estimation and Propagation in Maize-Phenotype Predictions
Parisa Sarzaeim, Francisco Munoz-Arriola, Diego Jarquin (Presenting: Parisa Sarzaeim, University of Nebraska-Lincoln)

2000900 – Assessing the Reliability of the Dark Sky Weather Forecast Information
Haimanote K. Bayabil, Kati W. Migliaccio, Jose. H. Debastiani Andreis, Fitsum T. Teshome (Presenting: Haimanote Bayabil, University of Florida/ Tropical Research and Education Center)

2001083 – Simulating the Influences of Integrated Crop-Livestock Systems using SWAT under Future Climate Changes Scenarios in an Agricultural Dominated Watershed
Arun Bawa, Juan D. Pérez-Gutiérrez, Sandeep Kumar (Presenting: Arun Bawa, South Dakota State University)

2001097 – Meteorological Data Challenges and Opportunities in Designing Matrices Relating Climatology Impacting Changes in Woodland Ecosystems
Devendra Amatya, Sushant Mehan (Presenting: Sushant Mehan, Sushant Mehan, Formation Environmental LLC)

2001105 – Analysis of Oklahoma’s Agro-climatic Trends Using Divisional and Mesoscale Data
Subhash Daggubati, Ali Mirchi, Saleh Taghvaeian, Aseem Singh (Presenting: Aseem Singh, Oklahoma State University)

**INNOVATIVE ECO-HYDROLOGIC AND HYDRAULIC MONITORING, ASSESSMENTS AND COMPUTATIONS**

*Live Q&A via Zoom: Wednesday 7/15 at 10:00 – 11:00 AM*

2000149 – Groundwater Flow on a Karstic Landscape in Southwest Georgia: Upper Floridan Aquifer Behavior and Surface-Groundwater Interaction
C. Barrie, E. W. Tollner, S. Brantley, T. Rasmussen (Presenting: Bill Tollner, University of Georgia)

2000505 – Efficiency of Different Monitoring Units in Representing Pollutant Removals in Distributed Ditch and Pond Drainage Systems in Agricultural Landscapes
Zhonghua Jia, Wan Luo, Jianquan Hong, Xi Yin, Cheng Chen (Presenting: Cheng Chen, Yangzhou University)
Tracing the Transport of Algal Blooms from Reservoir to Estuary Using Satellite Imagery and In Situ Hydrologic Data
Natalie Nelson, Natalie Von Tress (Presenting: Natalie Von Tress, North Carolina State University)

Flow Comparison: Hydrologic Models with Edge-of-Field Observed Data
Jay Martin, Margaret Kalcic, Craig Stow, Dustin Goering, Kevin King, Vinayak Shedekar, Grey Evenson, Anna Apostel, Jeffrey Kast, Andrea Thorstensen, Asmita Murumkar (Presenting: Asmita Murumkar, The Ohio State University)

Nitrogen Dynamics in Pumped Drainage from a Managed Wetland and an Agricultural Field
Brian Hinckley, Ariane Peralta, Randall Etheridge (Presenting: Randall Etheridge, East Carolina University)

LONG-TERM EFFECTIVENESS OF BMPS ON WATER QUALITY: OPPORTUNITIES AND CHALLENGES - HYBRID
LIVE Q&A VIA ZOOM: TUESDAY 7/14 AT 3:00 – 4:00 PM
Moderator: Stephan Gunn, University of Wisconsin-Green Bay

Impact of Flow on Subsidence and Woodchip Properties Over Four Years in Replicate Denitrifying Bioreactors
Natasha Hoover, Kyle Werning, Tom Moorman, Adina Howe, Michelle Soupir, Abby Schaefer (Presenting: Abby Schaefer, Iowa State University)

Effectiveness of Crop Rotations in Reducing Agricultural Water Pollution
Yongping Yuan, Reid Christianson, Lydia Koropeckyj-Cox (Presenting: Lydia Koropeckyj-Cox, USEPA/ORISE)

Benefits and Limitations of In-field Phosphorus Management for Water Quality Improvement
Lindsay Pease, Heidi Reitmeier (Presenting: Lindsay Pease, University of Minnesota)

The Long-Term Effectiveness of Best Management Practices in Improving Hydrology and Water Quality: Needs, Opportunities, and a Modeling Framework
Yaoze Liu (Presenting: Yaoze Liu, University at Albany, State University of New York)

Integrated Assessment of Best Management Practices at the Farm Scale
Alan Rotz (Presenting: Alan Rotz, USDA-Agricultural Research Service)

4R Approach for Phosphorus Management in the Red River Basin of the North
Lindsay Pease (Presenting: Lindsay Pease, University of Minnesota)

MANURE MANAGEMENT AND TREATMENT SYSTEMS
LIVE Q&A VIA ZOOM: TUESDAY 7/14 AT 1:00 – 2:00 PM
Moderator: Daniel Andersen, Iowa State University

Biochar Amendment Improves the Temperature Profile of the Poultry Mortality Composting, Reduces Leachate's Chemical Oxygen Demand and Total Ammonia Emissions
Yuchuan Wang, Shuqi Yi, Neslihan Akdeniz (Presenting: Yuchuan Wang, University of Illinois)

Swine Manure: A Geochemical Perspective
Terry Fonstad (Presenting: Terry Fonstad, University of Saskatchewan)
2000622 – Effects of Blending Dairy Manure Compost and Canola Meal on Pellets Quality and Nutrients Concentration.
Gilbert Miito, Lisa DeVetter, Haiying Tao, Pius Ndegwa, Femi Peter Alege
(Presenting: Femi Peter Alege, Washington State University)

2001182 – Swine Lagoon Sludge as Energy Production Feedstock: Technical-Economic Assessment
Mahmoud Sharara (Presenting: Mahmoud Sharara, North Carolina State University)

2001230 – Development of a CAFO Lagoon Module to Advance Manure Management
Rebecca Muenich, Margaret Garcia, Noah Rudko (Presenting: Noah Rudko, Arizona State University)

2001279 – Using the Heat Generated from Electrically Conductive Concrete Slabs to Reduce Antibiotic Resistance in Beef Cattle Manure
Zachery R. Staley, Christopher Y. Tuan, Kent M. Eskridge, Noelle A. Mware, Xu Li
(Presenting: Noelle Mware, University of Nebraska-Lincoln)

- **MODELING OF HYDROLOGY AND WATER QUALITY IN SURFACE, SUBSURFACE AND GROUNDWATER SYSTEMS**

**LIVE Q&A VIA ZOOM: WEDNESDAY 7/15 AT 10:00 – 11:00 AM**
Moderator: Cibin Raj, Pennsylvania State University

2000138 – Targeting BMP Placement: Integrating Human Decision-Making Factors into Watershed Modeling of the Western Lake Erie Basin
Margaret Kalcic, Robyn Wilson, Doug Jackson-Smith, Jay Martin, Jeffrey Kast
(Presenting: Jeffrey Kast, The Ohio State University)

2000673 – Comparative Analysis of Hydrologic Response to the Land Cover Changes and Rainfall Variability between Urban and Mixed Land Use Watershed
Tushar Sinha, Vinay Kumar, Muhammed A. Chowdhury
(Presenting: Muhammed A Chowdhury, Texas A&M University)

JungJin Kim, Srinivasulu Ale, W. Richard Teague, Steve DelGrosso
(Presenting: Srinivasulu Ale, Texas A&M AgriLife Research)

2000981 – Guiding Nutrient Application Timing using the NOAA-NWS Runoff Risk Advisory Forecast Tool: A Case Study of Water Quality Impacts in Western Lake Erie Basin, USA
Jay Martin, Margaret Kalcic, Dustin Goering, Grey Evenson, Anna Apostel, Jeffrey Kast, Andrea Thorstensen, Vinayak Shedekar, Chelsie Boles, Todd Redder, Remegio Confesor, Asmita Murumkar
(Presenting: Asmita Murumkar, The Ohio State University)

2000993 – SWAT-Salt Simulation of Salinity in Elephant Butte Irrigation District
Ali Mirchi, Ryan Bailey, Lin Ma, Maryam Samimi (Presenting: Maryam Samimi, Oklahoma State University)

2001339 – Modeling the Effects of Changes in Soil Management Practices on Plant Available Soil Water
Sayantan Samanta, Srinivasulu Ale, Cristine L. S. Morgan, Dianna Bagnall, Richard Woodward, William Alex McIntosh, Julie A. Howe, Christine Molling (Presenting: Sayantan Samanta, Texas A&M University)

2001528 – Controls on a Groundwater Mound and Nitrate Transport
Dana Divine, Troy E. Gilmore, Kevin Orvis, Nolan Little, John Thorburn, Mikaela Cherry
(Presenting: Mikaela Cherry, University of Nebraska-Lincoln)
• **NUTRIENT REMOVAL, RECOVERY, AND RECYCLE**

**LIVE Q&A VIA ZOOM: TUESDAY 7/14 AT 12:00 – 1:00 PM**

Moderator: Lordwin Jeyakumar, Agriculture & Agri-food Canada

2000306 – Assessment for Scaling Up Floating Treatment Wetlands from Microcosm to Field Scale
Levi J. McKercher, Tiffany L. Messer, Steven Comfort
(Presenting: Levi J. McKercher, University of Nebraska-Lincoln)

2000637 – Vacuum Stripping and Absorption (VaSA) to Recover Ammonia and Boost Anaerobic Digestion
Wendong Tao, Fred Agyeman, Alper Bayrakdar (Presenting: Wendong Tao, State University of New York)

2000940 – Liquid-Phase Plasma Discharge for Producing Green Nitrogen Fertilizer from Air and Water
Sarah Wu, Bishal Thapa (Presenting: Sarah Wu, University of Idaho)

2001147 – Improving Nitrogen Treatment through Rejuvenation of an Aging Tertiary Constructed Wetland
Michael Burchell, Brock Kamrath (Presenting: Brock Kamrath, North Carolina State University)

2001581 – Nutrient Recovery with Duckweed: Reducing the Environmental Impacts of Protein Production to Feed the World
Benjamin Roman, Rachel Brennan (Presenting: Rachel Brennan, Pennsylvania State University)

• **NUTRIENT TRANSPORT AND CYCLING: MEASUREMENT AND MODELING**

**LIVE Q&A VIA ZOOM: TUESDAY 7/14 AT 3:00 – 4:00 PM**

Moderator: Sanjay Shukla, University of Florida

2000042 – Impact of Seasonal Variation of LULC Data in Hydrology and Water Quality
Prem B. Parajuli, Shirin Ghatrehsaman (Presenting: Avay Risal, Mississippi State University)

2000130 – Baseflow Nitrate Dynamics within Nested Watersheds of an Agricultural Stream, Nebraska, USA
Troy Gilmore, Aaron Mittelstet, Daniel Snow, Tiffany Messer, Galen Richards
(Presenting: Galen Richards, University of Nebraska-Lincoln)

2000242 – Influence of Soil Matrix Temperature Gradient and Freeze-Thaw Cycling on Nitrogen and Phosphorus Transport in Agricultural Soils
Anita Thompson, Francisco Arriaga, Laxmi Prasad (Presenting: Laxmi Prasad, University of Wisconsin Madison)

2000699 – Predicting the Occurrence of Harmful Algal Bloom (HAB) through the Lend of Nutrient Models
Maria L. Chu, Jorge Alberto Guzman Jaimes, Juan Acero, Congyu Hou (Presenting: Congyu Hou, UIUC)

2001165 – Geospatial Upscaling of Atrazine’s Transport using Electromagnetic Induction across Point to Field Scales
Luciano Alves de Oliveira, Bryan Woodbury, Jarbas Miranda, Francisco Munoz-Arriola
(Presenting: Luciano Alves de Oliveira, University of Nebraska-Lincoln)

2001499 – Increased Water and Nutrient Efficiency in Compact Bed Geometry for Vegetable Production
Sanjay Shukla, Rajendra Sishodia, Nathan Holt, Gregory Hendricks
(Presenting: Kira Hansen, University of Florida Southwest Florida Research and Education Center)
• **ONSITE WASTEWATER TREATMENT AND REUSE – RESEARCH, DEMONSTRATION, AND EDUCATIONAL ACTIVITIES**

**LIVE Q&A VIA ZOOM: MONDAY 7/13 AT 3:00 – 4:00 PM**

Moderator: Anish Jantrania, Texas A&M University

**2000034 – Funding Research from Permitting Fees - Texas Experience**
Anish Jantrania, June Wolfe, Gabriele Bonaiti, Ryan Gerlich (Presenting: Anish Jantrania, Texas A&M University)

**2000541 – Development of the Pump Forward Flow Return (PFFR) Concept and Its Application in a Static Clarifier for Treatment of Small and Decentralized Wastewater Flows**
Michael Atkinson, Seabrook Omura, Tim Canter (Presenting: Tim Canter, New Limits Wastewater Technology)

**2000715 – On Site Water Treatment Research at Texas A&M**
Gabriele Bonaiti, Ryan Gerlich, Anish Jantrania, June Wolfe III (Presenting: Gabriele Bonaiti, Texas A&M Agrilife)

**2001193 – Assessment of Environmental Impacts in the Untreated Urban Wastewater Irrigated Sites - A Case Study**
S.R. Thiruchelve, S. Chandran, P. Logesh kumar, Kumar Veluswamy (Presenting: Kumar Veluswamy, Global Sunshine)

**2001412 – A SMARTER Way to Treat**
Ken Neu, Charles Otis (Presenting: Ken Neu, Environmental / Health Products & Service)

**2001539 – Exploring the Possibility for Reclamation of Wasteland in an Drought Hit Region using Treated/Untreated Urban Wastewater**
S. Chandran, S.R. Thiruchelve, Kumar Veluswamy (Presenting: Kumar Veluswamy, AED-AC & RI, Madurai Campus, TNAU)

• **REAL TIME SYSTEMS TO MANAGE NATURAL RESOURCES AND ENVIRONMENTAL SYSTEMS**

**LIVE Q&A VIA ZOOM: MONDAY 7/13 AT 3:00 – 4:00 PM**

Moderator: Srinivaulu Ale, Texas A&M University

Ziwei Li, Zhiming Qi, Qianjing Jiang (Presenting: Ziwei Li, McGill University)

**2000363 – Using Stationary Sensor Nodes to Capture Spatial Variability in Corn and Soybean Growth and Stress**
Jasreman Singh, Yufeng Ge, Geng Bai, Derek Heeren, Mitchell Maguire, Sandeep Bhatti, Wayne Woldt, Christopher Neale (Presenting: Jasreman Singh, University of Nebraska-Lincoln)

**2000560 – A Review on Drought-Based Decision Tools Applicable to Forage Production and Management**
Igathinathane Cannayen, John Hendrickson, David Archer, Subhashree Navaneetha Srinivasagan (Presenting: Subhashree Navaneetha Srinivasagan, North Dakota State University)

**2001004 – Decision Support System for Irrigation Scheduling Based on Raspberry-Pi Embedded with Neural Network**
Zhe Gu, Tingting Zhu, Xiyun Jiao, Junzeng Xu (Presenting: Zhe Gu, College of Agricultural Engineering, Hohai University)

**2001037 – Dairy Manure Temperature Dynamics during Storage to Manage its Nitrogen Fertilizer Value**
Rana Genedy, Jactone Ogejo (Presenting: Rana Genedy, Virginia Tech)
2001067 – Application of an Ultrasonic Sensor to Monitor Soil Erosion and Deposition
Jessica Johnson, Aaron Mittelstet, Alex Drozda, Santosh Pitla
(Presenting: Aaron Mittelstet, University of Nebraska-Lincoln)

2001071 – Semantic Segmentation of Multi-species Forest Using Original and Down-sampled UAS Images with Various Convolutional Neural Networks
Lin Wang, Qiao Hu, Yuzhen Zhou, Zhenghong Tang, Yufeng Ge, Adam Smith, Tala Awada, Yeyin Shi
(Presenting: Lin Wang, University of Nebraska-Lincoln)

2001254 – A Spatio-Temporal Approach for Daily Burned Area Mapping at 250 m from MODIS Data of Kansas Flint Hill Region
Zifei Liu, Demilade Akinbile (Presenting: Demilade Akinbile, Kansas State University)

2001289 – Measuring Soil Thermal Properties and Moisture Content over a Wide Range of Spatial Scales Using Novel Fiber-Optic DTS Techniques
Mahmoud Shehata, Chadi Sayde (Presenting: Mahmoud Shehata, North Carolina State University)

2001576 – Identification of Meteorological Factors Affecting the Timing of Prescribed Burning in Flint Hills through Regression Modeling using Random Forest Algorithms
Zifei Liu, Demilade Akinbile (Presenting: Demilade Akinbile, Kansas State University)

• SUSTAINABILITY METRICS – CONCEPT, EVALUATION, AND ADVANCES
LIVE Q&A VIA ZOOM: TUESDAY 7/14 AT 12:00 – 1:00 PM
Moderator: Yongping Yuan, USEPA

2000659 – Assessment of Soil Health in Idaho’s Magic Valley
Kevin Kruger, Linda Schott (Presenting: Linda Schott, University of Idaho)

2001128 – Assessment of Greenhouse Gas Emissions from Corn-Soybean Systems Under Climate Change Scenarios Using Agroecosystem Model
Garrett Steinbeck, Sami Khanal, Margaret Kalcic, Kevin King (Presenting: Garrett Steinbeck, Ohio State University)

2001232 – Using an Interdisciplinary Approach to Assess Controlled Environment Agriculture
Ronald J. Smith, Robert M. Stwalley III (Presenting: Robert M. Stwalley III, Purdue Dept. ABE)

2001291 – Simplification of Complex Environmental Variations on Maize-Phenotype Predictability
Parisa Sarzaeim, Francisco Munoz-Arriola, Garret Williams (Presenting: Garret Williams, Univ Nebraska-Lincoln)

2001471 – Strategic Conservation Assessment Tool Suite: A Science-Based Conservation Framework for the US Gulf of Mexico Region
Sathishkumar Samiappan, Andrew Shamaskin, Anna Linhoss, Kristine Evans, Jiangdong Liu
(Presenting: Anna Linhoss, Mississippi State University)

2001509 – Progress and Challenges Implementing an API to Connect a Sustainability Measurement Platform, Retail Agronomic Tool Providers and USDA Environmental Models
Allison Thomson, Jack Carlson, Olaf David, Brian Fischer (Presenting: Paul Hishmeh, Field to Market)

2001552 – Environmental Footprint of Byproduct Diets including DDGS for Swine Production in the USA
Md Ariful Haque, Zifei Liu, Akinbile Demilade (Presenting: Md Ariful Haque, Kansas State University)
• Technology Developments in Irrigation Research

Live Q&A via Zoom: Monday 7/13 at 4:00 – 5:00 PM
Moderator: Sandra Guzman, University of Florida

2000018 – Irrigation Management Outcomes Using Increasingly Complex Geospatial Technologies
Diaa Elshikha, Pedro Andrade-Sanchez, Kelly Thorp (Presenting: Kelly Thorp, USDA-ARS)

2000375 – Effect of Different Fertilizer Concentration on Hydraulic Performance of Rotary Sprinkler
Junping Liu, Tao Li, Hong Li, Jien Xu, Jipeng Li (Presenting: Liu Junping, Jiangsu University)

2001035 – Automatic Sensor Controlled Drip Irrigation under Mulches for Tomato and Watermelon Productions
Vaddevolu, Xinhua Jia, Thomas F. Scherer, Chiwon W. Lee
(Presenting: Uday Bhanu Prakash Vaddevolu, North Dakota State University)

2001177 – Comparison of Subsurface Drip Irrigation and Mobile Drip Irrigation for Corn Production
Freddie Lamm (Presenting: Freddie Lamm, Kansas State University NWREC)

2001595 – High Spatiotemporal Multispectral and Thermal Imagery Based Actual Evapotranspiration Estimation of Grapevines using METRIC and Two Source Energy Balance Models
Abhilash Chandel, Behnaz Molaei, Lav Khot, Troy Peters, Claudio Stöckle, Pete Jacoby
(Presenting: Abhilash Chandel, Washington State University)

• Career Paths: Research, Teaching, Extension, Government, and Industry

2001620 – Research and Teaching in Academia – Is This the Right Career Path for Me?
Presenting: Carmen Agouridis, College of Agriculture, Food and Environment, University of Kentucky

2001621 – Extension Education Careers in Land Grant Institutions
Presenting: Saqib Mukhtar, Agriculture and Natural Resources, Florida Cooperative Extension Service, University of Florida

2001622 – Successfully Navigating Promotion and Tenure Process – Perspectives from a Dean
Presenting: Indrajeet Chaubey, College of Agriculture, Health, and Natural Resources, University of Connecticut

2001623 – A Career in Public Service - Making a Difference
Presenting: Sherry Hunt, USDA-ARS, PA, Hydraulic Engineering Research Unit

200 1624 – Challenges and Opportunities in Consulting Industries
Presenting: Debabrata Sahoo, Woolpert Inc

• 20th Anniversary of the Watershed Dam Rehabilitation Amendments

Live Q&A via Zoom: Monday 7/13 at 3:00 – 4:00 PM
Moderator: Sherry Hunt, USDA

2001607 – Commemoration of the 20th Anniversary of the Watershed Dam Rehabilitation Amendments
Presenting: The Honorable Frank Lucas, Congressman of Oklahoma's 3rd Congressional District

2001608 – 20 Years of the USDA Watershed Rehabilitation Program
Presenting: Larry Caldwell, USDA-Natural Resources Conservation Service, Doug McKalp
2001609 – 20 Years of Dam Rehab: How We Made it Work in Virginia
Presenting: Mat Lyons, PE, USDA-Natural Resources Conservation Service Virginia State Office

2001611 – USDA-ARS Hydraulic Engineering Research Unit: Scientific and Engineering Innovations of the USDA Dam Rehabilitation Program
Presenting: Sherry Hunt, USDA-Agricultural Research Service, Hydraulic Engineering Research Unit

2001612 – 20 Years of Making Dams Safer
Presenting: Kevin Farmer, Watershed Programs, USDA-Natural Resources Conservation Service

DISTINGUISHED LECTURE SERIES

2001617 – Agricultural Applications of the High-Resolution Microwave Observations from the NASA Current and Upcoming Missions
Presenting: Kevin Farmer, Watershed Programs, USDA-Natural Resources Conservation Service

2001618 – The USDA Partnerships for Data Innovations
Presenting: Narendra N. Das, NASA-JPL

2001619 – FarmBeats: Empowering Farmers with Affordable Digital Agriculture Techniques
Presenting: Ranveer Chandra, Microsoft

- PREFERENTIAL FLOW AND PIPING IN RIPARIAN BUFFERS
LIVE Q&A VIA ZOOM: TUESDAY 7/14 AT 12:00 – 3:00 PM
Moderator: Derek Heeren, University of Nebraska-Lincoln

2001625 – Hydrologic Connectivity of Soil Pipes from Hillslopes to Streams and the Role of Pipeflow in Water Quality
G.V. Wilson, A. Bernatek-Jakiel, G.A. Fox, J.K. Nieber
(Presenting: G.V. Wilson, USDA ARS Watershed Physical Processes Research Unit

2001626 – Effect of Soil Pipes on Hydrologic Exchange Between River Channels and Riparian Zone Groundwater with Implications for Nitrate Transport
W. Seth Lotts, Erich T. Hester (Presenting: W. Seth Lotts, Virginia Tech)

2001627 – In-Situ Experiments and Quantification of the Influence of Preferential Subsurface Flow on Hydrologic Fluxes through Riparian Buffers
L. Guertault, G. A. Fox, R. Dowdy-Green, T. Halihan (Presenting: Lucie Guertault, North Carolina State University)

2001628 – Electrical Hydrogeology of Macropore Flow in Riparian Areas
T. Halihan, J. P. Hager, L. Guertault, G. A. Fox (Presenting: Todd Halihan, Oklahoma State University)

2001629 – Preferential Flow through the Riparian Vadose Zone: Light Transmission Experiments and Modeling Framework
(Presenting: Enrique Orozco-López, Agricultural and Biological Engineering Department, University of Florida)

2001630 – Impact of Concentrated Flow Pathways on the Movement of Pesticides through Agricultural Fields and Riparian Buffer Zones
H. E. Preisendanz, J. Chandler, T. L. Veith, H. A. Elliott, P. J. A. Kleinman
(Presenting: Heather. E. Preisendanz, The Pennsylvania State University, Department of Agricultural and Biological Engineering)
2001631 – Impacts of Short-Circuiting on the Effectiveness of Riparian Buffers to Mitigate Nutrient and Sediment-Laden Runoff from Agricultural Fields
T. L. Veith, C. W. Wallace, G. W. McCarty, S. Lee, P. J. A. Kleinman
(Presenting: Tamie L. Veith Pasture Systems and Watershed Management Research Unit, USDA-ARS)

• THE IRRIGATION INNOVATION CONSORTIUM CURRENT RESEARCH
LIVE Q&A VIA ZOOM: WEDNESDAY 7/15 AT 10:00 – 11:00 AM
Moderator: Charles Hillyer, IFF

2001639 – The Irrigation Innovation Consortium Overview
Presenting: Charles Hillyer, Center for Irrigation Technology – California State University

2001640 – Satellite and UAS Imagery Use to Implement Timely Irrigation Strategies
Presenting: José L. Chávez, Colorado State University

2001642 – Expanding and Operating the Parallel 41 Flux Network to Support Real-time Evapotranspiration Estimates from Remote Sensing
Presenting: Christopher Neale, Daugherty Water for Food Global Institute - University of Nebraska-Lincoln

2001643 – AI Model for Estimating Crop Water Demand: An Artificial Intelligence (AI) Model to Improve Agricultural Water Use Efficiency Using Field, Plant, and Weather Data
Presenting: Christopher Neale, Daugherty Water for Food Global Institute - University of Nebraska-Lincoln

2001644 – Development of a Low Pressure and Low Flow Water and Energy Efficient Media Filtration System
Presenting: Kaomine S. Vang, Center for Irrigation Technology – California State University

• VULNERABILITY OF LAND RESOURCES FOR SUSTAINABLE DEVELOPMENT: STRESSORS AND RESPONSES

2001654 – Long-term Trend of Water Erosion on Cropland in the Inland Pacific Northwest
Joan Q. Wu, M. Samrat Dahal (Presenting: Joan Q. Wu, Department of Biological Systems Engineering and Puyallup Research & Extension Center, Washington State University)

2001655 – Integrated Wetland and River Basin Management - A Case Study of Loktak Lake
Presenting: J.Brema, Civil Engineering, Karunya Institute of Technology and Sciences

2001656 – Vulnerability Assessment of Land and Water Resources in the Degrading Ethiopian Highlands a Case Study of the Debre Mawi Watershed
Tammo S. Steenhuis, Seifu A. Tilahun, Amy S. Collick, Christian D. Guzman, Demesew A. Mhiret, Dessalegn C. Dagnew, Tilashwork C. Alemie, Assefa D. Zegeye, Tigist Y. Tebebu
(Presenting: Tammo S. Steenhuis, Department of Biological and Environmental Engineering, Cornell University)

2001657 – Land Use Management in Response to Climate Change at Choctawhatchee Watershed
Presenting: Gang Chen, Department of Civil and Environmental Engineering, FAMU-FSU College of Engineering

2001658 – Towards a Conceptual Framework to Predict Physical Vulnerability of Major Crops to Winter Floods in the Northern High Plains
Francisco Munoz-Arriola, Parisa Sarzaeim, Wenqi Ou, Luciano Alves de Oliveira
(Presenting: Francisco Munoz-Arriola, University of Nebraska-Lincoln)
2001659 – A Sociohydrologic Approach to Understanding Vulnerability and Resilience to Flooding for Decision Support in Biloxi, Mississippi, USA
Frances C. O’Donnell, Jessica L. Calhoun, Christopher G. Burton
(Presenting: Frances C. O’Donnell, Department of Civil Engineering, Auburn University)

2001660 – Simple Model For Integration of USDA Conservation Practice Physical Effects (CPPE) Agricultural BMPs in Florida
Presenting: Nathan Bailey Biological Systems Engineering, Florida Agricultural & Mechanical University)
PAFS – PLANT, ANIMAL, & FACILITY SYSTEMS

• **AIR EMISSION FROM LIVESTOCK AND POULTRY PRODUCTION**
  
  **LIVE Q&A VIA ZOOM: TUESDAY 7/14 AT 9:30 – 11:00 AM**
  
  Moderator: Mindy Spiehs, USDA

  2000192 – Ammonia and Greenhouse Gas Emissions from Land Application of Solid Beef Manure and Urea to Corn Fields in South-Central Nebraska
  
  M. J. Spiehs, E. L. Cortus, S. Rahman, N. Sarker, S. Niraula, M. Mehata, A. Chatterjee, and D. B. Parker
  (Presenting: Mindy Spiehs, USDA-ARS )

  2000444 – Assessment of Low-Cost Particulate Matter (PM) Sensors for Their Applicability in the Livestock Environment
  
  Augustina Osabutey, Xufei Yang (Presenting: Xufei Yang, South Dakota State University)

  2000516 – Life Cycle Assessment of Different Dairy Farms Considering Building Materials for Barns, Milking Parlors and Milking Tanks
  
  Omar Hijazi, Maria Haslbeck, Mona Maze, Mohamed Samer, Heinz Bernhardt, Maximilian Treiber
  (Presenting: Maximilian Treiber, Technical University of Munich)

  2000840 – Deep Pit Beef Cattle Barn Ammonia and Carbon Dioxide Concentrations
  
  Erin Cortus, Brian Hetchler, Mindy Spiehs, Warren Rusche (Presenting: Erin Cortus, University of Minnesota)

  2000842 – Deep Pit Beef Cattle Barn Ammonia Emission Estimation
  
  Noelle Soriano, Erin Cortus (Presenting: Noelle Soriano, University of Minnesota)

  2001170 – Monitoring Deposition of NH3/NH4+ in the Vicinity of a Poultry Unit: Method Development
  
  Ryan Holmes, Kenneth Anderson, John Classen, Wei Shi, Lingjuan Wang-Li
  (Presenting: Ryan Holmes, North Carolina State University)

  2001222 – Evaluation of Low-Cost Ammonia Gas Sensors for Poultry Air Quality Monitoring
  
  Eli Baker, Gino Lorenzoni, Eileen Fabian, Daniel Hofstetter (Presenting: Daniel Hofstetter, Penn State University)

  2001437 – Evaluate the Representativeness of the NAEMS Air Emission Data for Swine Operations in a Changing Industry
  
  MD Ariful Haque, Zifei Liu (Presenting: Zifei Liu, Kansas State University)

• **ANIMAL RESPONSE TO ENVIRONMENT**
  
  **LIVE Q&A VIA ZOOM: TUESDAY 7/14 AT 1:00 – 2:30 PM**
  
  Moderator: Brett Ramirez, Iowa State University

  2000101 – Physiological Response of Beef Cattle to Noise from Unmanned Aerial Vehicles (UAVs)
  
  Jiazhu Li, David Herrin, Jesse Hoagg, Michael Montross, Michael Sama, Joshua Jackson, Gabriel Abdulai
  (Presenting: Gabriel Abdulai, University of Kentucky)

  2000135 – Effects of Piglet Creep Floor Area on Sow Behavior and Litter Productivity in Farrowing Stalls
  
  Suzanne M. Leonard, Hongwei Xin, Tami M. Brown-Brandl, Brett C. Ramirez, Somak Dutta
  (Presenting: Brett Ramirez, Iowa State University)
200142 – Effective Environment Temperature Comparison of Two Supplemental Heat Sources on a Commercial Sow Farm
Brett Ramirez, Steven Hoff, Laura Greiner, Benjamin Smith (Presenting: Benjamin Smith, Iowa State University)

2000604 – Heavy Broilers’ Surface Temperature Responses to Heat Stress
Yingying Liu, Yan Qian, Bin Cheng, Derek West, John Classen, Lingjuan Wang-Li, Hernan Cordova, Viviana San Martin Diaz, Edgar Oviedo, Suraiya Akter (Presenting: Suraiya Akter, North Carolina State University)

2001224 – Ammonia Generator for Maintaining a Set Indoor Gas Concentration for Poultry Health Research
Daniel Hofstetter, Eli Baker, Eileen Fabian, Gino Lorenzoni (Presenting: Daniel Hofstetter, The Pennsylvania State University)

2001278 – Assessment of Indoor Environment in a Deep-Pit Wean-Finish Facility with and without Pit Ventilation
Brett Ramirez, Dan Anderson, Ben Smith, Syndey Klimesh (Presenting: Sydney Klimesh, Iowa State University)

201421 – Effect of Inlet Length on Evaporative Pad Face Velocity and Efficiency
J.L. Purswell, C.M. Edge (Presenting: Joseph Purswell, USDA-ARS)

201448 – Effect of Stocking Density on Crop Fill and Performance of Broilers Grown to 14 D
Joseph Purswell, Daniel Chesser, John Linhoss (Presenting: John Linhoss, Mississippi State University)

• BIOSECURITY FOR LIVESTOCK AND POULTRY PRODUCTION SYSTEMS

LIVE Q&A VIA ZOOM: TUESDAY 7/14 AT 1:00 – 2:30 PM
Moderator: Erin Cortus, University of Minnesota

2000431 – Filter Airflow Prediction Model Development
Brett Ramirez, Benjamin Smith (Presenting: Benjamin Smith, Iowa State University)

2000472 – Novel Microwave-Assisted Inactivation of Airborne Avian Influenza Viruses in Poultry Barns
Nan Zhou, Charles Schiappacasse, Zheng Xing, Peng Peng, Dongjie Chen, Yanling Cheng, Carol Cardona, Yuying Liang, Kevin Janni, Sally Noll, Paul Chen, Roger Ruan (Presenting: Nan Zhou, University of Minnesota)

2000538 – Modelling Surface Temperature Regimes in Livestock Trailers Undergoing TADD Cycles
Hans Deason, Derrick M. Nykoluk, T.A. Fonstad (Presenting: Derrick Nykoluk, University of Saskatchewan)

2000599 – Time and Temperature Requirements for Improved Heat Killing of Pathogens in Swine Transport Trailers
Jill van Kessel, Stacy Strom, Hans Deason, Elaine Vanmoorelehem, Nathalie Berube, Shirley Hauta, Champika Fernando, Janet Hill, Terry Fonstad, Volker Gerds (Presenting: Terry Fonstad, University of Saskatchewan)

2000624 – Commissioning of a Mobile, Small-scale Facility for In-Barn Carcass Management Exploration
Sara Weyer, Ben Smith, Brett Ramirez, Dan Andersen, Jay Harmon (Presenting: Sara Weyer, Iowa State University)

2000888 – Mitigation of PRRS Transmission with UV Light Treatment of Barn Inlet Air: Proof-of-Concept
Peiyang Li, Jacek Koziel, Jeffrey Zimmerman, Jianqiang Zhang, Ting-Yu Cheng, Wannarat Yim-Im, William Jenks, Steven Hoff (Presenting: Peiyang Li, Iowa State University)

2001468 – Development and Verification of a Transient Thermal Model for the Retentioning Step in Feed Manufacturing to Ensure Thermal Death of Salmonella
Dirk E Maier, Kurt Rosentrater, Charles Hurburgh, Carl Bern, Thomas Brumm (Presenting: Dirk Maier, Iowa State University)
• EMERGING INFORMATION SYSTEMS FOR ANIMAL PRODUCTION SYSTEMS

**LIVE Q&A VIA ZOOM: MONDAY 7/13 AT 3:30 – 5:00 PM**

Moderator: Josh Jackson, University of Kentucky

- **2000156 – Convolutional Neural Network for Analyzing Broiler Stretching Behaviors**
  Guoming Li, Yang Zhao, Zach Porter, Joseph L. Purswell (Presenting: Guoming Li, Mississippi State University)

- **2000198 – Novel Information Technologies for Fish Behavior Recognition**
  Daoliang Li (Presenting: Daoliang Li, China Agricultural University)

- **2000447 – Non-Disruptive Retrofitting of Traditional Controllers to Enable Remote Monitoring of Livestock Farm Operations**
  Harsh Dubey, Shuai Li, Xufei Yang (Presenting: Xufei Yang, South Dakota State University)

- **2000477 – Net Cage Acoustic Monitoring System Sampling and Classification Using Compressed Sensing**
  Wenxin Zhang, Ying Wang, Yafang Ma, Lihua Zheng, Zhenghong Yang, Wanlin Gao, Minjuan Wang
  (Presenting: Minjuan Wang, China Agricultural University)

- **2001473 – Beef Cattle Face Detection and Recognition Based on Deep Transfer Learning Technology**
  Yajun Chen, Ning Wang, Long John (Presenting: Ning Wang, Oklahoma State University)

- **2001556 – IoT and Machine Learning Applications to Monitor Heat Stress of Dairy Cows**
  Hanwook Chung, Younghyun Kim (Presenting: Christopher Choi, University of Wisconsin-Madison)

• INDOOR PLANTS ENVIRONMENTS, GREENHOUSE AND NURSERY TECHNOLOGY

**LIVE Q&A VIA ZOOM: WEDNESDAY 7/15 AT 8:00 – 9:00 AM**

Moderator: Mark Lefsrud, McGill University

- **2000380 – Sustainability Indicators for Selected Greenhouse Production Facilities in North America**
  Jaime Thissen, Paul Davidson

- **2000507 – Time-Series Change Detection Model of Lettuce Canopy Area in a Controlled Environment**
  Mengliu Wu, Lihua Zheng, Yongjie Chen, Si Yang, Jiaqi Mi, Minjuan Wang
  (Presenting: Minjuan Wang, China Agricultural University)

- **2000937 – Method for Obtaining CO2 Limit Point of Light-Use Efficiency Model Based on U-Chord Curvature**
  Danyan Chen, Pan Gao, Zhisheng Wang, Junhua Zhang, Bin Li, Jin Hu, Haihui Zhang
  (Presenting: Danyan Chen, Northwest A&F University)

- **2001514 – Using Fertilizers to Power and Irrigate Controlled Plant Environments**
  Pouyam Pourmovahed, Jonathan Maisonneuve (Presenting: Jonathan Maisonneuve, Oakland University)

• MEASUREMENT, MITIGATION AND MODELING OF AIR POLLUTION FROM LIVESTOCK AND POULTRY FACILITIES

**LIVE Q&A VIA ZOOM: TUESDAY 7/14 AT 9:30 – 11:00 AM**

Moderator: Pius Ndegwa, Washington State University

- **2000103 – Mitigating Ammonia and Improving Broiler Performance with Litter Amendment in Windrow Houses**
  Hong Li (Presenting: Hong Li, University of Delaware)
2000442 – Distribution of Air Velocity and Media Moisture Content across Vertical Biofilters
Brady Cromer, Alexander Davids, Logan Prouty, Augustina Osabutey, Robert Thaler, Richard Nicolai, Xufei Yang
(Presenting: Xufei Yang, South Dakota State University)

2000851 – Ammonia Dispersion from Multi-Floor Pig Buildings in China Based on CFD Simulations
Yicong Xin, Li Rong, Dejia Liu, Xiuxong Li, Bin Chen, Zhihua Yang, Songming Zhu, Dezhao Liu
(Presenting: Yicong Xin, Zhejiang University)

2000859 – Effects of UV-A Light Treatment on Ammonia in Lab-Scale
Myeongseong Lee, Jisoo Wi, Jacek Koziel, Heekwon Ahn, Peiyang Li, Baitong Chen, Zhanibek Meiirkhanuly, Chumki Banik, William Jenks (Presenting: Jacek Koziel, Iowa State University)

2000873 – The Impact of Biochar Treatment on H2S and NH3 Emissions During Manure Agitation prior to Pump-Out
Baitong Chen, Jacek Koziel, Myeongseong Lee, Hantian Ma, Zhanibek Meiirkhanuly, Peiyang Li, Andrzej Bialowiec, Robert Brown (Presenting: Baitong Chen, Iowa State University)

2000874 – Evaluating of Products for Mitigation of Odor and Reduction of NH3, H2S, GHG, and VOC Emissions from Swine Manure in Deep Pit Storage Structures
Baitong Chen, Jacek Koziel, Chumki Banik, Hantian Ma, Myeongseong Lee, Jisoo Wi, Zhanibek Meiirkhanuly, Daniel S. Andersen, David Parker (Presenting: Baitong Chen, Iowa State University)

2001073 – Field Evaluation of an Electrostatic Precipitator for PM Mitigation in a Manure-Belt Layer Facility
Jeb Hocket, Shannon Milliken, Matthew Herkins, Lingying Zhao, Reyna Knight
(Presenting: Reyna Knight, The Ohio State University)

2001415 – Evaluation of a Prototype Aerosol Control Technology to Reduce Dust and Bioaerosol Concentrations in Swine Production
Matthew Nonnenmann, Erika Ubeda, Renee Anthony, Sinan Sousan, Rphal Altmaier, Tom Peters, Alejandro Ramirez (Presenting: Matthew Nonnenmann, University of Iowa)

• Precision Animal Management

  Live Q&A via Zoom: Monday 7/13 at 3:30 – 5:00 PM
  Moderator: John Linhoss, Mississippi State University

2000147 – A Mask R-CNN Based Imaging System for Measuring Broiler Activity and Spatial Distribution
Xiao Yang, Yang Zhao, Joseph L. Purswell, S.D. Filip To, Tom Tabler
(Presenting: Xiao Yang, Mississippi State University)

2000158 – Reducing Floor Eggs in Cage-Free Hen Housing Systems Using Ground Robots
Guoming Li, Xue Hui, Yang Zhao, Wei Zhai, Joseph L. Purswell, Zach Porter, Sabin Poudel, Linan Jia, Bo Zhang
(Presenting: Guoming Li, Mississippi State University)

2000189 – Interferences for Detection of Poultry Behaviors with Machine-Vision Based Methods
Yangyang Guo, Lilong Chai, Dongjian He (Presenting: Yangyang Guo, University of Georgia)

2000400 – An Approach of On-barn Pig Weight Estimation via 3D Computer Vision by Kinect V2
Yangyang Guo, Lilong Chai, Dongjian He (Presenting: Minjuan Wang, China Agricultural University)

2000592 – Variation of Electronic Control Scheme Parameters for Hog Cooling Pads
Tyler Field, Allan Schinckel, Robert M. Stwalley III (Presenting: Robert M. Stwalley III, Purdue University)
2000593 – Real-time Longitudinal Behavioral Tracking Scale for Farrowing Swine
Morgan I. Burgett, Tyler C. Field, Allan P. Schinckel, Robert M. Stwalley III
(Presenting: Robert M. Stwalley III, Purdue University)

2001082 – Development of Method for Lameness Detection in Sows based on Depth Image Analysis
Isabella Condotta, Tami Brown-Brandl, Gary Rohrer, Késia Silva-Miranda
(Presenting: Isabella Condotta, University of Illinois at Urbana)

• SUSTAINABLE BUILDING TECHNOLOGY

2000970 – Characterization of Indoor Arenas Through an Anonymous Survey
Staci McGill, Morgan Hayes, Kimberly Tumlin, Robert Coleman (Presenting: Staci McGill, University of Kentucky)

2001008 – Effect of Packaging and Storage Structures on Moisture Content of Stored Shea Kernel
Shuaeeb Oyewole, Mary Olaoye, Joshua Olanrewaju (Presenting: Joshua Olanrewaju Olaoye, University of Ilorin)
**PRRS – PROCESSING SYSTEMS**

- **Artificial Intelligence and Measurement for Biological Materials Processing**
  
  **LIVE Q&A VIA ZOOM: TUESDAY 7/14 AT 12:00 – 1:00 PM**
  
  Moderator: Griffiths Atungulu, University of Arkansas

  2000181 – Performance of Two Handheld NIR Spectrometers to Quantify Nitrogen Content of Forage
  Isaac Rukundo, Mary-Grace Danao, Robert Mitchell, Curtis Weller
  (Presenting: Isaac R. Rukundo, University of Nebraska-Lincoln)

  Dirk Maier, Kurt Rosentrater, Sigurdur Olafsson, Hory Bakand Chikez
  (Presenting: Hory Bakand Chikez, Iowa State University)

  Yifeng Hao, Yongwei Wang, Jun Wang, Qianjing Jiang (Presenting: Yifeng Hao, Zhejiang University)

  2001028 – Low Frequency Signal Patterns for Codling Moth Larvae Activity in Apples
  Nader Ekramirad, Chadwick A. Parrish, Raul T. Villanueva, Kevin D. Donohue, Akinbode A. Adedeji
  (Presenting: Nader Ekramirad, University of Kentucky)

  2001284 – Screening and Identification of Germplasm Suitable for Mechanical Harvesting From Genetic Stock of Chickpea (Cicer arietinum L.)
  Priyanka Joshi, Mohammad Yasin, Pooran M Gaur (Presenting: Priyanka Joshi, USDA, Washington State University)

  2001332 – Using THz-TDS Imaging to Structurally Analyse and in Situ Detect Cd(PC2)2 Complex as a Promising Phytoremediation Index for Cd Hyperaccumulation Pak Chois (Brassica chinensis L.)
  Yinglei Zhao, Pengcheng Nie, Lei Lin, Xuping Feng, Na Wu, Xiantao He, Yong He
  (Presenting: Yinglei Zhao, Zhejiang University)

- **Biochemical Conversion and Bioprocess Modeling**
  
  **LIVE Q&A VIA ZOOM: TUESDAY 7/14 AT 1:00 – 2:00 PM**
  
  Moderator: Hasan Atiyeh, Oklahoma State University

  2000129 – Development of Biological Alcohol Production Process from CO2
  Rahul Thunuguntla, Hasan K. Atiyeh, Raymond L. Huhnke, Ralph S. Tanner
  (Presenting: Hasan Atiyeh, Oklahoma State University)

  2000210 – Increased Oil Recovery from Distillers Dried Grains with Solubles (DDGS)
  Sanaul Huda, Nurun Nahar (Presenting: Nurun Nahar, North Dakota State University)

  2000462 – Phytic Acid: Friend or Foe in the Bioprocessing of Recombinant Proteins?
  Sydney Cantrell, Elizabeth Seidl, Lisa Wilken (Presenting: Sydney L. Cantrell, Kansas State University)

  2001302 – Metabolic Modeling of Sugar Co-Metabolism by Acetogenic Autotrophs
  Carrie Sanford, Ashley Beck, Mari Chinn (Presenting: Carrie Sanford, North Carolina State University)

  2001391 – Depolymerization of Lignin in Biomass Through Treatment with Atmospheric Cold Plasma
  Victoria Baltazar, Janie Moore (Presenting: Victoria Baltazar, Texas A&M University)
**Drying, Handling and Storage of Grain Crops—Storage**

**LIVE Q&A VIA ZOOM: WEDNESDAY 7/15 AT 10:00 – 11:00 AM**

Moderator: Janie Moore, Texas A&M University

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Presenters</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000218</td>
<td>Reanalyze Previous Data to Develop a Universal Kinetic Model for Grain Sorghum Drying Process</td>
<td>Sammy Sadaka (Presenting: Sammy Sadaka)</td>
</tr>
<tr>
<td>2000275</td>
<td>Assessment of Airflow Resistance during Hop Drying</td>
<td>Michael Kocher, David Jones, David Mabie (Presenting: David Mabie, University of Nebraska-Lincoln)</td>
</tr>
<tr>
<td>2000561</td>
<td>915 MHz Microwave Heating Technology for One Pass Drying of Freshly Harvested High Moisture Rough Rice</td>
<td>Griffiths Atungulu, Rebecca Bruce (Presenting: Rebecca Bruce, University of Arkansas)</td>
</tr>
<tr>
<td>2001536</td>
<td>Characteristics of High Moisture Long-grain Parboiled rice dried using a Microwave at 915 MHz Frequency</td>
<td>Griffiths Atungulu, Deandrae Smith (Presenting: Deandrae Smith, The University of Arkansas)</td>
</tr>
<tr>
<td>2000712</td>
<td>Impact of Broadband and Selected Infrared Wavelengths on Inactivation of Aflatoxigenic Fungi on Rough Rice</td>
<td>Rebecca Bowie, Shantae Wilson, Zeinab Mohammadi Shad, Griffiths Atungulu, Abass Oduola (Presenting: Abass Oduola, University of Arkansas)</td>
</tr>
<tr>
<td>2000751</td>
<td>Stirring to Control Maize Weevils in Maize in a Farm Size Steel Grain Bin</td>
<td>Mike Sserunjogi, Carl Bern, Thomas Brumm, Dirk Maier, Thomas Phillips (Presenting: Mike Sserunjogi, Iowa State University)</td>
</tr>
<tr>
<td>2001223</td>
<td>Surface Modification of Grains to Improve Hydrophobicity and Storability</td>
<td>Nalladurai Kaliyan, R. Vance Morey (Presenting: Nalladurai Kaliyan, University of Georgia)</td>
</tr>
<tr>
<td>2001588</td>
<td>Novel Radiant Heating Approaches to Dry Corn Kernels and Inactivate Harmful Microbes</td>
<td>Zeinab Mohammadi Shad, Shantae Wilson, Deandrae Smith, Soraya Shafiekhani, Rebecca Bruce, Abass Oduola, Griffiths G. Atungulu (Presenting: Zeinab Mohammadi Shad, University of Arkansas)</td>
</tr>
<tr>
<td>2000071</td>
<td>Impact of Storage Environment on the Micro-Climate and Grain Moisture in Polypropylene Storage Bags</td>
<td>Michael Omodara, Michael Montross, Samuel McNeil, Ric Bessin (Presenting: Michael Omodara, University of Kentucky)</td>
</tr>
<tr>
<td>2000195</td>
<td>Effect of Killing, Field Drying, and Storage Conditions on the Color and Quality of Immature Soybeans</td>
<td>Ibukunoluwaj-Banj, Kenneth Hellevang, Ewumbua Monono, Jasper Teboh (Presenting: Ibukunoluwaj-Banj, North Dakota State University)</td>
</tr>
</tbody>
</table>
Evaluation of Low-power, Wireless Sensors for Automated Quality Monitoring and Management of Stored Grain Inventories
Dirk Maier, Guy Aby (Presenting: Guy Roger Aby, Iowa State University)

Estimation of the Performance of an Electrically Heated Allothermal Auger System
Sammy Sadaka, Kaushik Luthra (Presenting: Sammy Sadaka, University of Arkansas)

Equilibrium Moisture Contents of Rough Rice at Chilled Environment
Griffiths G. Atungulu, Soraya Shafiekhani (Presenting: Soraya Shafiekhani, University of Arkansas)

Predictions of Maximum Allowable Storage Time of Soybeans Using ASAE D535 and Experimental Dry Matter Loss Data
Loren W. Steinman, Mary-Grace C. Danao, Richard S. Gates, Kent D. Rausch (Presenting: Loren W. Steinman, University of Illinois)

Development of an Imaging Technique for Real-time Monitoring and Early Detection of Insect Activity in Storage Rice
Ragab Khir, Zhongli Pan (Presenting: Ragab Khir, University of California)

Physical Disturbance Time Interval Optimization for Control of Weevils in Stored Maize
Mike Sserunjogi, Carl Bern, Thomas Brumm, Dirk Maier, Patrick Murphy (Presenting: Mike Sserunjogi, Iowa State University)

- **FOOD PROCESS ENGINEERING – FOOD QUALITY EVALUATION AND CONTROL**

**LIVE Q&A VIA ZOOM: WEDNESDAY 7/15 AT 2:00 – 3:00 PM**
Moderator: Ewunbua Monono, North Dakota State University

Development of a Novel PLA Coated Bio-Nanocomposite Film Indicator for Monitoring Meat Freshness
Abdus Sobhan, Kasiviswanathan Muthukumarappan, Lin Wei (Presenting: Lin Wei, South Dakota State University)

Rapid Heating under Controlled Atmosphere Treatments for Control of Escherichia coli ATCC 25922 in Almond Kernels by Using Fifty Ohm Radio Frequency Energy
Teng Cheng, Rui Li, Xiaoxi Kou, Xiangyu Guan, Yingtao Qu, Shaojin Wang (Presenting: Teng Cheng, Northwest A&F University)

The Effect of Heating Method on the Thermal Resistance of Bacteria in Oil
Ren Yang, Teng Cheng, Lina Wei, Juming Tang (Presenting: Ren Yang, Washington State University)

Effect of Temperature and Relative Humidity on Ethylene Oxide Fumigation of Salmonella Enterica and Enterococcus Faecium NRRL B-2354 in Black Peppercorn
Xinyao Wei, Long Chen, Soon Kiat Lau, Sibel Irmak, Byron D. Chaves, Mary-Grace C. Danao, Jeyamkondan Subbiah (Presenting: Xinyao Wei, University of Nebraska-Lincoln)

Agar Gel-Based Oxygen Indicator for Detection of Defects in Metal-Oxide-Coated Multilayered Food Packaging Films
Ashutos Parhi, Chandrashekhar R. Sonar, Chongyuan Zhang, Barbara Rasco, Sindhuja Sankaran, Juming Tang, Shyam S. Sablani (Presenting: Ashutos Parhi, Washington State University)
**FOOD PROCESS ENGINEERING – NONTHERMAL TECHNOLOGIES**
**LIVE Q&A VIA ZOOM: WEDNESDAY 7/15 AT 1:00 – 2:00 PM**
Moderator: Ewunbua Monono, North Dakota State University


2000969 – Opportunities and Challenges of Cold Plasma in Food Processing
Nadee Kaluwahandi, Kasiviswanathan Muthukumarappan, Lin Wei
(Presenting: Kasiviswanathan Muthukumarappan, South Dakota State University)

2001007 – High Pressure Processing and Inactivation of Salmonella Spp. in Raw Ground Turkey
Franklin Sumargo, Mary-Grace C. Danao (Presenting: Franklin Sumargo, University of Nebraska-Lincoln)

2001467 – Alleviating Heavy Metal Toxicity in Liquid Food Matrices through Application of High Voltage Atmospheric Cold Plasma (HVACP)
Mohammad Ruzlan Habib, Janie Moore (Presenting: Mohammad Ruzian Habib, Texas A&M University)

**FOOD PROCESS ENGINEERING – NOVEL PROCESSING TECHNIQUES**
**LIVE Q&A VIA ZOOM: WEDNESDAY 7/15 AT 2:00 – 3:00 PM**
Moderator: Ewunbua Monono, North Dakota State University

2000522 – Determining the Top Electrode Voltage in Free-Running Oscillator Radio Frequency Heating of Soybeans under Different Electrode Configurations
Yingtao Qu, Hosahalli Ramaswamy, Rui Li, Xiangyu Guan, Teng Cheng, Shaojin Wang
(Presenting: Yingtao Qu, Northwest A&U University)

2000661 – Computer Model for Simulating the Specific Mechanical Energy (SME) in a Single Screw Extrusion Process Using Corn and Soy
Kurt Rosentrater, Hory Chikez (Presenting: Hory Chikez, Iowa State University)

2000727 – Thermal-Fluid Characteristics of the Stagnation Region on a Circular Cylinder Subjected to an Inclined Jet
Xiaolong Wang, Xiaoya Dong, Baijing Qiu, Xinyu Xue (Presenting: Hory Chikez, Iowa State University)

2000918 – Heat Transfer Characteristics of Round Offset Jet Cooling of a Circular Cylinder
Xiaolong Wang, Baijing Qiu, Xinyu Xue (Presenting: Xiaolong Wang, Jiangsu University)

2001209 – Development of a Milk Coagulation Prediction Model for Selected Milk Gel Firmness using a Combined Near Infrared and Fluorescence Sensor
Jiani Luo, Carlos Esquerre, Frederick Payne, Colm O’Donnell
(Presenting: Colm O’Donnell, University College Dublin)

2001601 – Textural and Thermal Evolution during Post-Fry Holding of Batter Coated Foods
Md. Hafizur Rahman Bhuiyan, Michael O. Ngadi (Presenting: Michael Ngadi, McGill University)
• **FOOD PROCESS ENGINEERING – PRODUCTION, DRYING, AND STORAGE**

**LIVE Q&A VIA ZOOM: WEDNESDAY 7/15 AT 1:00 – 2:00 PM**

Moderator: Ewunbua Monono, North Dakota State University

2000193 – Energy and Quality Analyses of Off-Ground Harvested Almonds under Hot Air Column Drying
Chang Chen, Ragab Khir, Yi Shen, Xingzhu Wu, Zhaokun Ning, Franz Niederholzer, Zhongli Pan
(Presenting: Chang Chen, University of California-Davis)

2000366 – The Need for Innovative Integrated Technologies to Reduce Postharvest Loss of Fruit and Vegetables in Sub Saharan Africa Supply Chain
Tilahun Seyoum Workneh (Presenting: Tilahun Seyoum Workneh, University of KwaZulu-Natal)

2000523 – Germination Rate of Watermelon Seeds As Affected by Temperature, Moisture Content and Heating Rate
Xiangyu Guan, Teng Cheng, Yingtao Qu, Shaojin Wang (Presenting: Xiangyu Guan, Northwest A&F University)

2000619 – Heterotrophic Production of Microalgae Chlorella sorokiniana Using Hydrolyzed Lactose as Substrate
Tyler Barzee, Ruihong Zhang, Allan Chio (Presenting: Allan Chio, University of California-Davis)

2000656 – Drying Performance and Quality Characteristics of Off-Ground Harvested Almonds Dried Using Commercial Dryers
Ragab Khir, Yi Shen, Zhaokun Ning, Chang Chen, Xiangyu Cao, Rentang Zhang, Xingzhu Wu, Lizhen Deng, Guangwei Huang, Bill Biasi, Zhongli Pan (Presenting: Ragab Khir, University of California)

2000770 – Development of Effective Drying Strategy with a Combination of Radio Frequency (RF) and Convective Hot-Air Drying for Inshell Hazelnuts and Enhancement of Nut Quality
Ragab Khir, Yi Shen, Zhaokun Ning, Chang Chen, Xiangyu Cao, Rentang Zhang, Xingzhu Wu, Lizhen Deng, Guangwei Huang, Bill Biasi, Zhongli Pan (Presenting: Long Chen, University of Nebraska-Lincoln)

2001301 – Drying Performance of Coffee in a Batch-Type Heat Pump Dryer
J. Fernando, K. S. P. Amaratunga, H. T. N. Madhushanka, H. R. Y. S. Jayaweera
(Presenting: Jayaruwani Fernando, Postgraduate Institute of Agriculture, University of Peradeniya)

• **MANAGEMENT AND/OR UTILIZATION TECHNOLOGIES FOR FOOD AND ORGANIC WASTES**

**LIVE Q&A VIA ZOOM: TUESDAY 7/14 AT 12:00 – 1:00 PM**

Moderator: Clairomont Clementson, Purdue University

2000392 – Production of Antioxidants and Fungal Biomass from Almond Hulls for Food and Feed Applications
Lin Cao, Tyler Barzee, Hamed El-Mashad, Yike Chen, Zhongli Pan, Ruihong Zhang
(Presenting: Lin Cao, University of California-Davis)

2000591 – Wastewater Treatment and Electricity Generation from Sugarbeet Processing Wastewater (SBWW) Using Microbial Fuel Cell (MFC)
Mosammat Mustari Khanaum, Md. Saidul Borhan, Shafiqur Rahman, Peter Bergholz
(Presenting: Mosammat Mustari Khanaum, North Dakota State University)

2000641 – Value Addition of Corn Distillers Dried Grains with Solubles (DDGS) by Fiber Separation and Application of DDGS Fiber to Manufacture Low-Density Particleboards
Sagar Regmi, Dilpreet Bajwa, Nurun Nahar (Presenting: Nurun Nahar, North Dakota State University)
2001062 – Removal of Heavy Metal Ions from Wastewater Using Food Waste Char
Hengameh Bayat, Mostafa Dehghanizadeh, F. Omar Holguin, Umakanta Jena, Catherine E. Brewer
(Presenting: Hengameh Bayat, New Mexico State University)

2001439 – Production of Polyhydroxyalkanoates (PHA) from Food Waste by Haloferax Mediterranei for Biodegradable Plastic Applications
Ke Wang, Yike Chen, Steve Zicari, Ruihong Zhang (Presenting: Ke Wang, University of California-Davis)

2001597 – Fostering Circular Economy in a Developing Agrarian Economy: A Look at Enablers and Barriers
Kurt Rosentrater, Israel Dunmade (Presenting: Israel Dunmade, Mount Royal University)

• Modeling Crop and Feed Drying, Handling and Storage
  Live Q&A via Zoom: Tuesday 7/14 at 10:00 – 11:00 AM
  Moderator: John Lawrence, IntelliFarms

2000325 – Numerical Simulation of Pyrethrin Aerosol Deposition in a Controlled Room
Mark Casada, Ronaldo Maghirang, James Campbell, Frank Arthur, Daniel Brabec, Kun Yan Zhu, Fei Xyza Asuncion
(Presenting: Fei Xyza Asuncion, Kansas State University)

2000347 – Modeling of the Rice Drying Process in a Custom-Made Lab-Scale Fluidized Bed Dryer
Kaushik Luthra, Sammy Sadaka (Presenting: Kaushik Luthra, University of Arkansas)

2000430 – Isolation and Segregation of Non-GM Feed: A Cost Estimation Model
Gretchen A. Mosher, Erin Bowers, Mateus Pizarro (Presenting: Mateus Pizarro, Iowa State University)

2000471 – Numerical Simulation of Phosphine Movement in Bulk-Stored Grain
Sherif Elsayed, Mark Casada, Mingjun Wei, Ronaldo Maghirang
(Presenting: Sherif Elsayed, Kansas State University)

2000735 – A Quantitative Model to Characterize Granular Flow Behavior – A Measure of Mixing in Storage
Gretchen Mosher, Heather Tenboer (Presenting: Heather Tenboer, Iowa State University)

2001150 – Discrete Element Method Simulation of Wheat under Confined Uniaxial Compression
Mark Casada, Ronaldo Maghirang, Marvin Petingco (Presenting: Marvin Petingco, Kansas State University)

2001411 – Pesticide Research using Cylinderized Chemical Spraying inside Buildings for Food Storage
James Campbell, Fei Xyza Asuncion, Srinivas Lanka, Aminu Owonikoko, Daniel Brabec
(Presenting: Daniel Brabec, US Dept Agr - Agr Res Service)

• Physical and Chemical Properties of Food Products for Processing Handling
  Live Q&A via Zoom: Tuesday 7/14 at 10:00 – 11:00 AM
  Moderator: Igathinathane Cannayen, North Dakota State University

2000207 – Fourier-Transform Infrared (FTIR) Spectroscopy and Machine Learning Approaches to Detect and Quantify Cross-Contact of Non-Gluten and Gluten-Rich Flours
Abuchi Okeke, Akinbode Adedeji (Presenting: Abuchi Okeke, University of Kentucky)

2000488 – Relationship between Stress Relaxation Characteristics and Quality of Chinese Cabbage (Brassica pekinensis L.)
Jing Zhang, Jun Wang, Dongdong Du, Yongwei Wang (Presenting: Jing Zhang, Zhejiang University)
2000517 – Transverse Anisotropy Mechanical Properties and Drop Test of Apple
Guangrui Hu, Jun Chen (Presenting: Guangrui Hu, Northwest A&F University)

2000644 – Value Addition to Some Food Spices: The Nutritive, Herbal and Nutraceutical Nexus in African Food Systems
Adebayo Salau, Babatunde Ogunsina (Presenting: Babatunde Ogunsina, Obafemi Awolowo University)

- PHYSICAL AND CHEMICAL PROPERTIES OF CROPS & BIOMATERIALS FOR PROCESSING HANDLING
  LIVE Q&A VIA ZOOM: TUESDAY 7/14 AT 10:00 – 11:00 AM
  Moderator: Igathinathane Cannayen, North Dakota State University

2000010 – Heat of Sorption for Wood Pellets
Shahab Sokhansanj, Jun Sian Lee, C.J. Lim (Presenting: Shahab Sokhansanj, University of British Columbia)

2000272 – Characterization of Recombinant Glutelin Type-B 5-Like Protein from Proso Millet
Felix Akharume, Konstantin K. Korotkov, Akinbode Adedeji (Presenting: Felix Akharume, University of Kentucky)

2000302 – Hemp: A New Crop for Nutritious Food in Kansas
Youjie Xu, Weiqun Wang, Jason Griffin, Donghai Wang (Presenting: Youjie Xu, Kansas State University)

2000654 – Rice Milling Quality Evaluation: Agreement Between Results from USDA-FGIS Laboratory Mill and Commercial Mills
Ragab Khir, Zhaokun Ning, Cathleen Brenner, Tara McHugh, Zhongli Pan
(Presenting: Ragab Khir, University of California)

2001156 – Effect of Tempering on Rheological Behavior of Wheat Kernels
Hulya Dogan, Kaliramesh Siliveru, Anu Suprabha Raj (Presenting: Anu Suprabha Raj, Kansas State University)

2001299 – Dynamic Cell Wall Structure and Composition Variability in Corn Stover Fractions as Functions of Biological Degradation in Storage
Patricia Kerner, Amber Hoover, C. Luke Williams, Allison Ray, Chenlin Li
(Presenting: Chenlin Li, Idaho National Laboratory)