DIGITAL AG SHOWCASE / JULY 14, 2023

PURDUE UNIVERSITY | College of Agriculture

Time	Session			
8:30–9 A.M.	**Registration and light breakfast**			
9–9:15 A.M.	**Kick-off remarks by Dr. Angela Abbott, Interim Associate Dean and Director of Extension** *Adam Shanks, Emcee*			
9:30–10:15 A.M.	**Development of an Interrow Autonomous Sensing Platform** *Field 4*	**Augmented Reality of Electromagnetism in Ag Tech** *Beck 111*	**Using the Updated & Revamped Center for Commercial Agriculture's Crop Basis Tool** *Beck 117*	**Low-Cost Smart Sensors and Mobile Phone Apps for Plant Monitoring** *Beck 141*
10:30–11:15 A.M.	**Weather Data Considerations for Precision Agriculture** *Mesonet Station*	**Video Analytics Applications for Dairy Farms** *Beck 111*	**Digital GAP/GHP/FSMA Records— Customizing for Added Value** *Beck 117*	**Digital Ag Curriculum** *Beck 141*
11:30 A.M.–NOON	**Lunch**			
NOON–12:45 P.M.	**Remarks by Dr. Bernie Engel, Glenn W. Sample Dean of Agriculture at Purdue University** **"Practical Digital Tooling on the Farm: Tips from the Trenches" – Aaron Ault** *Bruce Erickson, Emcee*			
12:45–1:15 P.M.	**"Applications (& How To) of Private Databases - It's Time to Go Digital" – Dennis Buckmaster**			
1:30–2:15 P.M.	**Intensively Managed Corn Using Recycled Drainage Water for Irrigation and Fertigation** *ACRE 70*	**Soil Moisture Testing for Youth** *Beck 111*	**UAV Update with Applications in Livestock Operations** *Fields 5 & 6*	**AgGrowBOT: A Students' Approach Using Big Data to Control Weeds** *Beck 141*
2:30–3:15 P.M.		**Teacher Panel: Experiences Teaching Digital Ag Topics in the Classroom** *Beck 111*	**Sensor-Based Plant Disease Detection** *Beck 117*	**Pen-Side Livestock Diagnostics** *Beck 141*
3:30 P.M.	**Event concludes**			

■ outdoor presentations   ■ presentations for educators

EA/EOU

POSTERS
BECK LOBBY

Poster	Author
The complement of simulation modeling toward the same end of improved N management	Harsh Pathak
Comprehensive Monitoring System for the Microenvironment of Sows and Piglets	Jiqin Ni
Contextualized FEW Projects in STEM Education	Neil Knobloch Hui-Hui Wang
Data Analytics and Insights from Food Product Markets	Jinho Jung
Economic feasibility of pest management strategies in high tunnel to increase the resiliency of local food systems	Jean-Pierre Zavala Varela
HotHog phone app	Jay Johnson Allan Schinckel
Integrating genomics and high-throughput phenotyping to improve livestock welfare and production efficiency	Luiz Brito
Integration of satellite and UAV imagery for assessing corn nitrogen uptake at early vegetative growth stages	Ana Morales
PRIVATE DATABASES FOR FARMERS: It's Time to Go Digital	Dennis Buckmaster
Sow and Boar Cooling Pads and Data Collected with Internal iButtons for Internal Temps	Allan Schinckel Jemima Baributsa
Tree-level Hardwood Species Recognition with UAS RGB Imagery	Aish Chandrasekaran
When Blue is Green: Sustainable Blue Food Systems Driven by Integrated Aquaponics	Jen-Yi Huang Meredith Malott

DEMONSTRATIONS	TEAM
AgGrowBOT: A Students' Approach Using Big Data to Control Weeds AgGrowBOT is a student designed autonomous vehicle designed to navigate a cornfield, identify specific weeds, and eliminate them. Knowledge of the science and engineering behind this approach can provide great motivation to inspire students into STEM and digital agriculture fields.	**Roger Tormoehlen**
Applications (& How To) of Private Databases - It's Time to Go Digital Keeping records of events, transactions, and activities can be simplified using digital formats like Airtable. In this session, you'll see specific examples of databases and the ease of collecting data on mobile devices. We'll point you to resources so you can use these tools at work and home.	**Dennis Buckmaster**
Augmented Reality of Electromagnetism in Agricultural Technology Educators will learn to use a mobile application and manipulate a cube with six QR codes to see an abstract scientific concept of electromagnetism and relate this to agricultural mechanics. This free pedagogical tool can help engage students to learn electromagnetism using augmented reality.	**Neil Knobloch** **Jason Morphew**
Development of an Interrow Autonomous Sensing Platform See and learn how small autonomous robots can improve farm operations via scouting, sampling, and even cover crop seeding. Maybe bigger isn't always better. *Requires tram transportation.*	**Ethan Brown** **Nathan Sprague**
Digital Ag Curriculum This curriculum contains material that is focused on high school and early college age. The year-long material is designed for teachers to take "off the shelf" and utilize in the classroom to teach basics, to complex, aspects of digital technology that will help graduates be more prepared for a professional career upon completion of the units of the curriculum.	**Adam Shanks**
Digital GAP/GHP/FSMA records – Customizing for Added Value A general overview of Good Ag Practices (GAPs), Good Handling Practices (GHPs), and Food Safety Modernization Act (FSMA) records, including similarities and differences. This session will provide a demonstration of the FSMA template on Airtable, and a brief discussion regarding customization for additional records.	**Amanda Deering** **Scott Monroe**
Intensively Managed Corn Using Recycled Drainage Water for Irrigation and Fertigation Nutrient and water management can affect the bottom line and the environment. Win-win situations are possible; see how data and system design can improve your cropping systems. *Requires tram transportation.*	**Daniel Quinn**
Low-Cost Smart Sensors and Mobile Phone Apps for Plant Monitoring Easy-to-use, low-cost smart sensors can be valuable tools to indoor farmers for improving farm productivity and crop quality. Hear from Dr. Krishna Nemali how indoor farmers can quickly and precisely monitor many production and growth parameters using only a smart phone and a connection to an app.	**Krishna Nemali**
Pen-Side Livestock Diagnostics A demonstration of a lab-quality test that could be performed on the farm and in the pen to provide rapid and actionable results.	**Mohit Verma** **Nafisa Rafiq**

DEMONSTRATIONS	TEAM
Practical Digital Tooling on the Farm: Tips from the Trenches Aaron will discuss what he considers the most important long-view considerations for adopting digital tooling on the farm, leveraging decades of experience farming, developing software and working throughout the Ag Tech industry. He will show examples of tools he personally uses of varying complexity, many of which are accessible to all. This session will help you brainstorm ways to improve your own digital tooling with ideas on what's practical and what's possible, regardless of where you fall on the spectrum from digital miser to digital maven.	**Aaron Ault**
Sensor-based detection and quantification of plant diseases You have likely seen AI applications in news and product releases. In this session, gain some understanding regarding how these image and sensor systems work and what is on the near horizon toward reducing plant diseases.	**Christian Cruz**
Soil Moisture Testing for Youth Educators will learn of readily available cost-effective devices that are applicable to bring sensors and Internet of Things to the classroom.	**Rachel Haselby**
Teacher Panel: Experiences Teaching Digital Ag Topics in the Classroom Hear from peer teachers regarding their topics and approaches to get the latest ag technology woven into their curriculum. *Moderated by 4-H Extension Specialist, Danielle Lay.*	**Matthew Armbruster** **Bailey Crowder** **Lori Dubois** **Travis Scherer**
UAV Update with Applications in Livestock Operations UAV technology is ever-changing, and more uses in agriculture are being discovered almost every day. In this session, we will investigate some of the newer technology and how it can benefit livestock producers in their daily production and help guide management decisions.	**Adam Shanks**
Using the Updated & Revamped Center for Commercial Agriculture's (CCA) Crop Basis Tool CCA's Crop Basis Tool has been redesigned and now includes historical and current basis information for ethanol plants and soybean processing plants. The Tool now provides corn and soybean basis information for Indiana, Illinois, Iowa, Michigan, and Ohio.	**James Mintert**
Video Analytics Applications for Dairy Farms Presenting a variety of video-based methods to provide actionable information about dairy cows, including weight estimation, individual identification, and individual feed intake estimation.	**Jacquelyn Boerman** **Amy Reibman**
Weather Data Considerations for Precision Agriculture During this presentation, we'll introduce existing weather networks and the Purdue Mesonet. We will discuss the kinds of weather data that are collected at ACRE and how these data relate to decision-making in agriculture. *Requires tram transportation.*	**Austin Pearson**