

Agricultural Equipment Technology Conference

February 10-12, 2014

Seelbach Hilton – Louisville, Kentucky

Monday, February 10

8:00AM-11:00AM CPD #1 Android Mobile App Development

Instructor: Dharmendra Saraswat

Level of Difficulty: Entry Level

Latest industry estimate show that 61% of mobile phone subscribers in the USA own a smartphone. Survey conducted among county extension agents and farm producers by farm magazines also indicate widespread adoption of smartphones by them. A focus group poll conducted for members of Iowa Soybean Association, with farmers of a median age of 45, showed that 70% of producers would use information delivered via a smartphone. Therefore, it is timely to incorporate mobile computing electives to the curriculum and develop appropriate applications to reach out to our stakeholders viz. producers, extension agents, consultants, students, policy makers etc.

This three hour workshop will introduce participants to developing mobile apps consisting of essential using freely available Google's Android OS. Some simple Android apps will be developed with Eclipse and then run on an emulator. Potential participants familiarity with Java programing would be a plus. Hand-on-tutorial slides with the code used for exercises shall be provided to participants. It is required of the participants to bring their own laptop preloaded with necessary softwares (instructions shall be provided to registered participants). A demo for remote data collection using an Android app shall be conducted.

This workshop is geared towards beginners in Android app programming.

COST: \$50.00

11:00AM-12:00PM Suppliers and Consultants Display:

- Eaton Aeroquip
- Kondex
- Additional displays to be announced

11:00AM-12:00PM Student Design Presentations / Electronic Poster Session

See the AETC website <http://www.asabe.org/meetings-events/2014/02/2014-agricultural-equipment-technology-conference.aspx> for poster registration and instructions on presenting an electronic poster.

12:00PM-1:30PM Luncheon w/Keynote Speaker

Keith Tinsey, P.E., Engineering and Sales Manager,
Walther Farms, Three Rivers, Michigan
“Potato Production in the 21st Century”

Raising potatoes involves much more than just digging a tuber from the ground. Modern potato production involves teamwork, precision agriculture, logistics, and climate-controlled storage facilities. Walther Farms, headquartered in Three Rivers, Michigan, was started in 1945 and has been supplying potatoes to chip processors and grocery stores for over forty years. With innovations in field production, handling, and storage, Walther Farms delivers potatoes to customers just-in-time, 52 weeks of the year. Keith Tinsey, P.E., Engineering and Sales Manager will detail Walther’s production process and some of the innovations that have made them a multiple Frito-Lay – North American Supplier of the Year award recipient.

About the speaker: A Michigan native, Keith Tinsey is a 25 year member of ASABE and former ASABE Trustee. Previously, Keith joined staff at ASABE as Director of Standards and Michigan State University as Senior Design Instructor before joining Walther Farms. As the first agricultural and biological engineer on staff, Keith has led the development and refinement of many of the innovations at Walther Farms.

1:30PM-3:15PM Tech Session 1: “Bioenergy Resources and Sustainability”

Moderator: Dr. Shahab Sokhansanj ORNL

1:30PM

Introduction

1:35PM

Sustainability Metrics

Esther Parish, Oak Ridge National Laboratory, Oakridge, TN

The objective of this project is to identify ways to characterize and monitor sustainability of bioenergy systems from cradle to grave. The work is designed to (1) advance common definitions of environmental and socioeconomic costs and benefits of bioenergy systems, and (2) quantify opportunities and risks associated with all aspects of sustainable bioenergy in specific contexts. This work supports to develop the resources, technologies and systems needed to grow a biofuels industry in a way that protects the environment as well as to promote economic development and providing conditions that support human and societal health. The work is being accomplished by using a combination of model projections and empirical data to test scientific approaches for assessing and monitoring bioenergy production processes at various stages of the supply chain. The end result of this project will be the development of Best Management Practices (BMPs) for sustainable bioenergy production.

2:00PM

Crop Residue Considerations for Sustainable Biomass Feedstock Supplies

Douglas L. Karlen, USDA-ARS, Ames, IA

Corn (*Zea mays*, L.) stover was identified as an important feedstock for second generation biofuel production in the U.S. because of the extensive area upon which the crop is grown. This presentation will summarize 239 site-years of field research examining effects of zero, moderate, and high stover removal rates at 36 sites in seven different states. Grain yield ranged from 5.0 to 12.0 Mg ha⁻¹ (80 to 192 bu ac⁻¹). Harvesting an average of 3.9 or 7.2 Mg ha⁻¹ (1.7 or 3.2 tons ac⁻¹) of stover increased N, P, and K removal by 24, 2.7, and 31 kg ha⁻¹ with moderate removal or by 47, 5.5, and 62 kg ha⁻¹ with high removal, respectively. Overall, this multi-location research project conducted by USDA-Agricultural

Research Service (ARS) scientists and engineers associated with the Resilient Economic Agricultural Practices (REAP) project, in cooperation with several university partners, engineers from the US-DOE Idaho National Laboratory (INL) and private industry partners has provided a broad assessment of stover yield potential, feedstock characteristics, a comprehensive database for further meta-analyses, and sustainability metrics. Additional research is needed to quantify effects of cover crops, perennial segments within extended rotations, as well as proper utilization of animal manures to ensure sustainable feedstock supplies can be provided for bioenergy and other bio-products.

2:25PM International Standards on Sustainability

Maggie Davis, Oak Ridge National Laboratory, Oakridge, TN)

A strategic goal towards meeting the RFS2 targets is to deepen the understanding of the environmental, economic, social and energy security benefits of biofuels, biopower, and bioproducts. This project supports research to improve the DOE capacity to assess the environmental and socioeconomic impacts of biofuels, and the crucial role of global interactions on the viability of the domestic biofuel industry. The global market for biofuels and other commodities affect the domestic biofuel industry through competitive forces that may spur or slow its development. In addition, there is a need to understand and document the indirect national/global socio-economic costs and benefits of biofuels. Developing this understanding requires methods and capabilities to analyze biofuels in the global context, and to evaluate alternative scenarios of technologies, policies and market conditions for a sustainable national biofuel industry.

2:50PM Sustainability and Logistics Tools

David Muth, Praxik, LLC, Ames, IA

Large scale harvest of agricultural residues for bioenergy and animal feed applications has become a reality. However, challenges still remain for building agricultural residue supply chains that are consistently economically viable and sustainable. New tools are emerging that can support supply chain managers and biomass producers in determining how they can utilize agricultural maximize economic and long term productivity returns for their operations. This talk will discuss the technical basis for these tools, key outcomes from current applications, and the pathway to supporting commercial scale agricultural residue removal decisions.

1:30PM-3:15PM Tech Session 2 : Turfgrass Session

Moderator: Garrett Pommeranz

This technical session will feature the top companies discussing their latest innovations in equipment for the turf grass industry. Topics will include precision agriculture's role in reducing water usage in turf environments and technological innovations of equipment to improve efficiency and reduce inputs in managing turf grass. The Outdoor Power Equipment Institute will present the latest standards and regulatory developments that impact the manufacturers and users of turf grass equipment.

1:30PM Introduction

1:35PM Using Precision Agriculture Principles to Improve Water Use Efficiency

Dana Lonn, *Managing Director, Center for Advanced Turf Technologies (CATT)*
The Toro Company

1:55PM Hybrid Technology in the Turf Grass Industry

Lynn Westbrook, *Principal Engineer, Jacobsen*

2:15PM Outdoor Power Equipment (OPE) and Small Engines: Overview of Standards

Development, Regulation, and Legislation
Dan Mustico, *Director, Industry Affairs*
Outdoor Power Equipment Institute (OPEI)

3:15PM-3:30PM BREAK

Make sure to visit the Young Professionals Community “All-in-Good-Fun” table.

3:30PM-4:30PM Tech Session 3: ASABE Tractor Seatbelt and ROPS Usage

Moderator: John Fisher

Agriculture ranks fourth among U.S. industries for work-related fatalities. Tractors are common to all farm operations. Fatalities associated with agricultural machinery commonly involve farm tractors and rollover incidents (i.e., the tractor tips sideways or backward and overturns, crushing the operator) account for 46% (Minnesota) to 76% (Georgia) of all farm tractor-related fatalities. ASABE and Agricultural Engineers have played a significant role in reducing tractor related fatalities. Much of this decline can be directly attributed to improved safety design by agricultural engineers, including rollover protection structures (ROPS).

This session will provide an update on the ASABE Student Seatbelt and ROPS Logo Content. John Fisher will lead a group of Distinguished Intellectuals in a session with audience participation to delve into the question of why Seatbelt and ROPS usage is so important and how can we improve the outreach communication of the need to wear seatbelts.

Guest Speakers: Jim Green, Alamo Group Certified Safety Trainer
Dale Dobson, State of Kentucky Dept Farm Safety & Rescue Trainer
Paul Ayers
Scott Cedarquist, ASABE Standards Director

3:30PM-5:30PM Tech Session 4: Telematics

Moderator: Joe Luck

Incorporating telematics into agricultural operations is quickly becoming a popular option on field equipment, especially for large operations looking to improve fleet management and field efficiency. The goal of this session is to highlight several telematics systems currently offered by manufacturers. Discussions will focus on system functionality, current trends in utilization, and future opportunities and challenges for these technologies.

3:30PM	Introduction
3:35PM	AGCommand/Fuse Technology Marlin Melander, AGCO
3:55PM	Precision Land Management System Chris Carrier, CNH
4:15PM	Machine Sync Bob Dyar, John Deere
4:35PM	Autonomous Guidance Rhett Schildroth, Kinze
4:55PM	Slingshot Josh Skanderup, Raven

4:30PM-5:30PM CAREER FAIR

**5:30PM-6:45PM “Getting on Track for Your Career” –
Panel Discussion for Preprofessionals**

Moderator: Joe Luck/Garrett Pommeranz

Panelists: Tony Kajewski, John Deere
Jana Buchholz, CNH
Maynard Herron, AGCO

In today’s job market, it’s never too early to start planning your first steps into what will hopefully be a long and successful career. Panelist will share thoughts on strategies for students to secure the internships they want and how to make the most of those internships. Additional remarks will focus on how to acquire additional skills beyond the classroom to improve your chances of getting the job you want and how to utilize skills from human resource personnel to get your application noticed.

7:00PM-9:00PM Student-Industry Dinner and Bowling

Located at the Sports and Social Club, 427 S. 4th Street, Louisville

Ticket includes dinner and bowling.

COST: \$40.00 professional; \$25.00 Student

Tuesday, February 11

8:00AM-10:00AM CPD #2 FEA Best Practices

Instructor: Mark Swenson, Application Engineer, ANSYS Inc.

Level of Difficulty: Entry Level

Finite Element Analysis (FEA) is a powerful tool in product development by allowing for multiple design iterations to be tested virtually saving time and money. However, accurate FE results are only a product of the data that goes into the analysis. Often incorrect assumptions are made and though the software produces a solution, the results are meaningless. Furthermore, there are competing needs that a Computer Aided Design (CAD) model needs to fulfill. The model needs to be useful for design, manufacturing, and analysis. Poor modeling for one of these needs adds increased time and cost to the design phase.

This two hour workshop will discuss best practices with regard to using CAD models for FEA. Emphasis is placed on how to prepare good modeling geometry for analysis, simplifying geometry to reduce analysis run time, determination of loading and how to apply loads to the model, and determining the accuracy of analysis results. There will also be a discussion on how to use the FEA results to modify the conceptual model to improve accuracy. A workflow demonstration will be performed illustrating the process from CAD model to analysis solution.

This workshop is geared towards design engineers that interact with CAD models

COST: \$50.00

9:45AM-10:00AM BREAK

10:00AM-12:00PM Tech Session 5: Turning Data into Irrigation Decisions

Moderator: Andy Smith

Remote sensing, connectivity, cloud computing and increased land value have combined to enable a sometimes overwhelming catalog of data from the farm field. Leveraging this information to improve productivity is the exception, not the norm. The irrigation industry is actively developing tools and accompanying standards to streamline and improve the practical use of this information by ag producers. Attend this session to learn more about the specific technologies, standards efforts and challenges ahead for the irrigation sector.

10:00AM Introduction

10:05AM Precision Ag Irrigation Leadership (PAIL)

Andres Ferreyra, Ag Connections Inc.

10:25AM Soil Moisture Sensors

Lauren Bissey Crawford, Decagon Devices, Inc.

10:45AM Telemetry and The Cloud

Terry Schiltz, AgSense

11:05AM Variable Rate Application

Cole Frederick, Valmont Industries

10:00AM-12:00PM Tech Session 6: The World of Ever Evolving Equipment Standards and Regulations

Moderator: Scott Cedarquist, ASABE

This session will overview key standards development activities and regulations impacting agricultural equipment. This year's session will once again include international perspectives as well as provide detailed updates on key North American initiatives.

10:00AM Introduction

10:05AM 2014 Regulatory Snapshot

Nick Tindall, AEM

10:25AM Evolving European Standards & Regs: The Tractor Mother Regulation

Antoon Vermuelen, CNH

10:45AM An Overview of Earth-Moving Equipment Standards Initiatives

Dan Taylor, AGCO

11:05AM The ISO 4254 Portfolio: It's All About Safety, Safety, Safety

Chris Schneider, Deere

12:00PM-1:30PM AE50 Recognition Luncheon

1:30PM-3:30PM Tech Session 7: AE50 Showcase 1

Moderator: Brian Huenink

Each year the AE50 recognition awards honor companies offering the best engineered products for agricultural, food, biological and related systems. These companies continue to push the envelope of new equipment design through innovation. The AE50 products featured in this session were new to the marketplace in 2013/2014, and all have the potential for a broad impact in their area of industry. This is an excellent opportunity to learn of new features incorporated into these products and share a portion of their journey to the marketplace. The session is open to all and will feature presentations on a sampling of those products receiving 2013/2014 AE50 awards.

- 1:30PM** **Introduction**
- 1:35PM** **Big Pack 1290 HDP II Large Square Baler SmartCut**
Cutterbar ican igreen System
Brent Raines, Krone North America, Inc.
- 2:00PM** **TerraGator® TG9300B Self-Propelled Floater RG700 Self Propelled Sprayer**
Dave Lovell, AGCO Corporation
- 2:25PM** **4 Series Sprayer/Dry Nutrient Applier**
Steve Junge, Deere & Company
- 2:50PM** **My John Deere – Operations Center with Location History**
Aaron Bartholomay, Jim Pace, Deere & Company

1:30PM-3:30PM Tech Session 8: Supplier Showcase

Moderator: Neal Stoffel

AETC 2014 will again feature some of the world's finest agricultural equipment component/systems manufacturers and distributors. These companies will be presenting the newest innovations and most up-to-date information on a variety of agricultural machinery systems of interest to attendees. The supplier companies presenting will also have tabletop displays of their products, literature and contact information. Don't miss out on this opportunity to learn about the latest developments, from the world's best agricultural OEM suppliers.

- 1:30PM** **Introduction**
- 1:35PM** **Electronic Liquid Blockage Monitor**
Jason StewartCDS-John Blue Co.
- 2:00PM** **Moisture Tracker™**
Robin Starkenburg, DigiStar LLC
- 2:25PM** **Laser Cladding and Laser Heat Treating: Advanced Technologies for Enhanced Wear Properties on Agricultural Equipment**
Keith Johnson, Kondex Corporation
- 2:50PM** **OmniRow®, SmarTrax™, and Viper 4 Guidance Technologies**
Ryan Molitor, Raven Industries

3:15PM-3:30PM BREAK

The Young Professionals Community will be holding an "All-in-Good-Fun" competition during this break.

3:30PM-5:30PM Tech Session 9: AE50 Showcase 2

Moderator: Brian Huenink

- 3:30PM** **Introduction**

- 3:35PM** **Gleener S88 Class 8 Transverse Rotary Combine
(Optimal Harvesting Performance)**
Kevin Bien, AGCO Corp
- 3:55PM** **MDD-100 Row Independent Corn Head**
Marcos Formica, Carlos Mainero y Cia, S.A.I.C.F.I.
- 4:15PM** **4412F Folding Corn Head**
Fred Hubach, Case-IH
- 4:35PM** **Speedrower® Self-Propelled Windrower**
Roger Huggard & Phil Ehrhart, New Holland Agriculture

**3:30PM-5:30PM Tech Session 10: Supplier Technology –
Plastics in Agricultural Equipment Design**
Moderator: Andy Theisen

With the increased industry demand for faster travel speeds, reduced compaction, and lower energy costs, equipment designers are challenged to find new material selections for components. In many cases, designers select plastic or composite materials. The use of these materials in component design requires design considerations that are different from traditional metals. This session will present these design considerations, provide process comparisons, and discuss alternatives for recycling the material at the end of life.

This session will consist of 4 suppliers of plastics to the agricultural equipment market. They will present information on their respective company’s products and capabilities. There will also be a presentation on the topic of recycling agricultural plastics.

- 3:30PM** **Introduction**
- 3:35PM** **Plastics Solutions: Options Rather Than Ultimatums**
Tim Kleiber, Business Solutions, Charloma, Inc.
- 3:55PM** **Plastics for Longer Life**
Tim Stellmacher, Midwest Regional Manager, Igus
- 4:15PM** **40 Years of Rotational Molding in Agricultural Equipment**
Dan Grimes, Sr. R&D Engineer, Centro Inc.
- 4:35PM** **Reclaiming Energy from Non-Recyclable Agricultural Plastics**
Matthew J. Lawrence, Assistant Professor, Alfred State

Wednesday, February 12

7:00AM-9:00AM AETC Planning Meeting