

# 13th INTERNATIONAL CONFERENCE ON PRECISION AGRICULTURE

July 31-August 3, 2016 • Union Station • St. Louis, Missouri

Organized by:  **ISPA**  
*International Society of Precision Agriculture*

**Conference Chairperson**  
Dr. Ken Sudduth  
Research Agricultural Engineer, USDA-ARS  
President, International Society of Precision Agriculture

PROGRAM GUIDE

# The **InfoAg** Conference

August 2-4, 2016 • Union Station • St. Louis, Missouri

Organized by:  **IPNI**  
INTERNATIONAL  
PLANT NUTRITION  
INSTITUTE

**Conference Chairperson**  
Dr. Steve Phillips  
Director, North America Program  
International Plant Nutrition Institute



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### Name Badges & Registration

Registration is required to enter all ICPA & InfoAg program sessions and exhibit hall. Official conference name badges should be worn at all times.

The registration desk is open:

Monday, August 1 – Wednesday, August 3  
7:00 am - 6:00 pm

Thursday, August 4  
7:00 am - 12:00 pm

**Tickets are required for each luncheon and are included on the badge sheet.**

### Exhibits



Exhibits are in the PrecisionAg Tech Center, located in the Midway. The exhibit hall is open during session breaks, breakfasts, lunches, and receptions. Exhibit hall will open to attendees Tuesday at 12:00 pm. Exhibit hall will close Thursday at 9:00 am.

### Certified Crop Adviser CEU Credits

Attendees may earn a possible twenty-two (22) CEUs through the full program. All CEUs have been submitted for approval by the International CCA Board. Sign-in sheets will be available at each session.

### ICPA/InfoAg Websites & App

Both [ISPAG.org](http://ISPAG.org)/ICPA and [InfoAg.org](http://InfoAg.org) feature additional program details including abstracts/descriptions, speaker bios, and contact information for speakers and exhibitors. Access the complete ICPA/InfoAg conference program, create and manage your personal conference itinerary, and easily search speakers, exhibitors, and presentations with the **ICPA/InfoAg Conference App**. **Get it here:**



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### Your ICPA Registration Includes

Program Registration Materials plus the following meals and refreshments:

- Sunday Evening Welcome Reception
- Monday Morning Break, Luncheon, & Afternoon Break
- Monday Evening Poster Session
- Tuesday Morning Break, Luncheon, Afternoon Break, & Reception (appetizers and 2 drink tickets)
- Wednesday Continental Breakfast & Morning Break

### ICPA Proceedings

The abstracts for all oral & poster presentations are available online at [ISPAG.org](http://ISPAG.org). The full papers are available to ISPA members & ICPA registrants free of charge. Non-members may also purchase full papers through [ispag.org](http://ispag.org). Slide decks are not available.

### Your InfoAg Registration Includes

Program Registration Materials plus the following meals and refreshments:

- Tuesday Luncheon, Afternoon Break, & Reception (appetizers and 2 drink tickets)
- Wednesday Continental Breakfast, Morning Break, PrecisionAg Luncheon, Afternoon Break, & Reception (appetizers and 2 drink tickets)
- Thursday Continental Breakfast

### InfoAg Proceedings

The slide decks from InfoAg presentations will be posted as PDF files to [infoag.org](http://infoag.org) after the conference.

### Conference Etiquette

Please respect authors and presenters. Do not record audio or video of presentations or take pictures of slides or posters without permission from the author/presenter. Silence cell phones and refrain from conversation during presentations.

### Conference Hashtags #

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[#InfoAg16](https://twitter.com/InfoAg)

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## Internet Access

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**1820**

# What's New this Year?

This year InfoAg will be held in conjunction with the 13th International Conference on Precision Agriculture. The conferences have separate registrations, but some of the program overlaps. ICPA starts Sunday evening with a reception. Monday includes ICPA plenary and breakout sessions. Tuesday, InfoAg and ICPA run concurrently, sessions are available to registrants of either conference. ICPA ends at noon on Wednesday. InfoAg continues through noon on Thursday.

## Schedule-at-a-Glance

### Sunday, 31 July 2016

6:00pm – 8:00pm ICPA Evening Welcome Reception *Union Station*

### Monday, 1 August 2016

7:00am – 6:00pm On-site registration open *Registration Desk*  
**8:00am – 10:00am ICPA Opening Plenary Session** *Grand Ballroom F*  
9:00am – 5:00pm Full-Day Tour *Terminal Atrium*  
10:00am – 10:20am Break *Foyer A*  
10:20am – 12:00pm ICPA Concurrent Sessions *Breakout Rooms*  
12:00pm – 1:40pm ICPA Luncheon *Regency ABC*  
1:40pm – 3:40pm ICPA Concurrent Sessions *Breakout Rooms*  
3:40pm – 4:20pm Break *Foyer A*  
4:20pm – 6:00pm ICPA Concurrent Sessions *Breakout Rooms*  
6:00pm – 7:30pm ICPA Poster Session and Cash Bar *Foyer C*

### Tuesday, 2 August 2016

7:00am – 6:00pm On-site registration *Foyer C*  
8:00am – 9:40am ICPA Concurrent Sessions *Breakout Rooms*  
**10:00am – 11:40am ICPA/InfoAg Joint Plenary Session** *Grand Ballroom DEF*  
11:40am – 1:00pm Luncheon *Union Station Mall*  
1:00pm – 3:00pm ICPA/InfoAg Concurrent Sessions *Breakout Rooms*  
3:00pm – 3:40pm Break in Exhibit Hall *Midway*  
3:40pm – 5:40pm ICPA/InfoAg Concurrent Sessions *Breakout Rooms*  
5:40pm – 7:30pm ICPA/InfoAg Reception in Exhibit Hall *Midway*

### Wednesday, 3 August 2016

7:00am – 6:00pm On-site registration *Registration Desk*  
7:00am – 8:00am ICPA/InfoAg Breakfast *Midway*  
8:00am – 10:40am ICPA/InfoAg Concurrent Sessions *Breakout Rooms*  
9:30am – 10:00am 13th ICPA Closing Session *Grand Ballroom F*  
10:00am – 10:40am Break in Exhibit Hall *Midway*  
**10:40am – 12:00pm PrecisionAg Plenary Session** *Grand Ballroom DEF*  
1:00pm – 5:00pm Half-Day Tour *Terminal Atrium*  
12:00pm – 1:20pm InfoAg Luncheon *Union Station Mall*  
1:20pm – 3:20pm InfoAg Concurrent Sessions *Breakout Rooms*  
3:20pm – 4:00pm Break in Exhibit Hall *Midway*  
4:00pm – 5:20pm InfoAg Concurrent Sessions *Breakout Rooms*  
5:20pm – 7:00pm InfoAg Reception in Exhibit Hall *Midway*

### Thursday, 4 August 2016

7:00am – 12:00pm On-site registration *Registration Desk*  
7:00am – 9:00am InfoAg Breakfast in Exhibit Hall *Midway*  
9:00am – 11:00am InfoAg Concurrent Sessions *Breakout Rooms*  
**11:00am – 12:00pm InfoAg Closing Plenary Session** *Regency AB*

Please note: **Events in GREEN** are open to ICPA registrants  
**Events in BLACK** are open to ICPA & InfoAg registrants  
**Events in BLUE** are open to InfoAg registrants

## 2016 Tours

The ICPA/InfoAg Conference offers a full-day “practitioner” tour on Monday, August 1 as well as a half day tour on Wednesday, August 3, after the end of the ICPA Conference.

**Meeting Point: Terminal Atrium**

### Monday Tour, 9am-5pm

Sponsored by:



The tour will visit three locations featuring a wide range of technology. Bus transportation, lunch, and beverages will be provided.

#### Stop 1: Cortex

Founded in 2002, Cortex is the Midwest’s premier innovation hub of bioscience and technology research, development, and commercialization.

#### Stop 2: Sydenstricker John Deere Dealership

Sydenstricker John Deere Dealership includes ten stores in northeast Missouri. We will be treated to a wonderful lunch provided by John Deere, as well as informative presentations, and a display of Deere precision equipment with a full range of tractors, combines, and implements.

#### Stop 3: UAS Demonstrations

Our third stop of the day will be at a model air strip in the Mississippi River bottoms. We will have UAS demonstrations, Q&A, and time to visit with the vendors. Vendors include SenseFly, Precision Drone, Scorpion Drones, Sentara, PrecisionHawk and more.

### Wednesday Tour, 1pm-5pm

The Wednesday tour is a half-day tour with 2 stops.

#### Stop 1: Cortex

Founded in 2002, Cortex is the Midwest’s premier innovation hub of bioscience and technology research, development, and commercialization.

#### Stop 2: Danforth Plant Science Center

Twenty scientific teams conduct research that leads to improved agricultural productivity and preserves our natural resources by reducing the need for pesticides and fertilizers, increasing the nutritional content of crops and improving resistance to drought, pests, and disease.

*ATTENDEE NOTE: The beginning of August is a very hot and humid time of the year for St. Louis. Please dress for the weather including comfortable shoes (no open toes, sandals or flip flops) as there are uneven walking surfaces with some possible slip/trip hazards.*

SUNDAY, JULY 31	<b>ICPA Sunday Evening Welcome Reception</b> Room: Grand Hall / Lobby			 13 <sup>th</sup> INTERNATIONAL CONFERENCE ON <b>PRECISION AGRICULTURE</b>
MONDAY, AUG. 1	<b>ICPA Opening Plenary Session</b> Room: Grand F			 13 <sup>th</sup> INTERNATIONAL CONFERENCE ON <b>PRECISION AGRICULTURE</b>
	8:00 AM to 10:00 AM	<b>Welcome to ICPA, Ken Sudduth</b>		
	<b>Keynote Presentation: Building Sustainable Breadbaskets, Fostering Inclusive Growth</b> <i>Margaret Zeigler</i>			
10:00 AM	<b>ICPA Break in Foyer A</b>			
MONDAY, AUG. 1	<b>TRACK 1</b>	<b>TRACK 2</b>	<b>TRACK 3</b>	
10:20 AM to 12:00 PM	<b>Precision Ag, Environment, and Climate Change</b> Room: Grand A	<b>Precision Seeding</b> Room: Grand B	<b>Proximal Soil Sensing</b> Room: Grand C	
	<b>Climate Smart Precision Nitrogen Management</b> [10:20 am] - Raj Khosla	<b>Maize Seeding Rate Optimization in Iowa Using Soil and Topographic Characteristics</b> [10:20 am] - Mark Licht	<b>Integrated Analysis of Multilayer Proximal Soil Sensing Data</b> [10:20 am] - Viacheslav Adamchuk	
	<b>Quo Vadis Precision Farming</b> [10:40 am] - Karel Charvat	<b>Positioning Strategy of Maize Hybrids Adjusting Plant Population by Management Zones</b> [10:40 am] - Adriano Anselmi	<b>A Data Fusion Method for Yield and Soil Sensor Maps</b> [10:40 am] - Eric Lund	
	<b>Climate Sensitivity Analysis on Maize Yield on the Basis of Precision Crop Production</b> [11:00 am] - Aniko Nyeki	<b>Real-time Gauge Wheel Load Variability on Planter with Downforce Control During Field Operation</b> [11:00 am] - Ajay Sharda	<b>A Multi Sensor Data Fusion Approach for Creating Variable Depth Tillage Zones</b> [11:00 am] - David Whattoff	
	<b>Sensor-based Variable-rate N on Corn Reduced Nitrous Oxide Emissions</b> [11:20 am] - Peter Scharf	<b>Measurement of In-field Variability for Active Seeding Depth Applications in Southeastern US</b> [11:20 am] - Aurelie Poncet	<b>Estimation of Soil Profile Properties Using a VIS-NIR-EC-force Probe</b> [11:20 am] - Yongjin Cho	
	<b>Using the Adapt-N Model to Inform Policies Promoting the Sustainability of US Maize Production</b> [11:40 am] - Shai Sela	<b>Yield, Residual Nitrogen and Economic Benefit of Precision Seeding and Laser Land Leveling for Winter Wheat</b> [11:40 am] - Jing Chen		
12:00 PM to 1:40 PM	<b>ICPA Luncheon in Regency ABC</b>			<b>TICKET REQUIRED</b>



ICPA Opening Keynote Speaker  
**Margaret M. Zeigler, Ph.D.**  
 Executive Director, Global Harvest Initiative

Since 2012, Dr. Margaret M. Zeigler has led the Global Harvest Initiative (GHI) as Executive Director. GHI is a collaborative private-sector voice to advance sustainable agriculture solutions for meeting the world's growing demand for food, feed, fiber and fuel. As the global population increases to nearly 9.7 billion in 2050, along with rising incomes and changing consumer preferences, GHI proposes five key policy goals that will enhance global agricultural productivity while conserving natural resources.

## ICPA Sunday Evening Welcome Reception

Room: Grand Hall / Lobby



## ICPA Opening Plenary Session

Room: Grand F



**Welcome to ICPA, Ken Sudduth**

**Keynote Presentation: Building Sustainable Breadbaskets, Fostering Inclusive Growth** Margaret Zeigler

### ICPA Break in Foyer A

TRACK 4	TRACK 5
<b>Industry Focus on Data Analytics</b> Room: Grand D	<b>Remote Sensing 1</b> Room: Grand E
<b>Understanding Climate Change: Look Beyond Weather Stations</b> [10:20 am] - Tim Marquis	<b>Challenges and Successes when Generating In-Season Multi-Temporal Calibrated Aerial Imagery</b> [10:20 am] - Randy Pearson
<b>Precision Irrigation Forecasting On A Global Scale</b> [10:40 am] - Levente Klein	<b>Creating Prescription Maps from Historical Imagery for Site-Specific Management of Cotton Root Rot</b> [10:40 am] - Chenghai Yang
<b>Integration of Big Data Analytics and Crop Modeling</b> [11:00 am] - Golnaz Badr	<b>Window-based Regression Analysis of Field Data</b> [11:00 am] - Anne Denton
<b>The Agriculture Operations Center: The Answer to "What If..."</b> [11:20 am] - Mark Zamzow	<b>A Photogrammetry-based Image Registration Method for Multi-camera Systems</b> [11:20 am] - Hao Gan
	<b>Developing UAV Image Acquisition System and Processing Steps for Quantitative Use of the Data in Precision Agriculture</b> [11:40 am] - Arif Behiç Tekin

The International Society of Precision Agriculture would like to thank the 13th ICPA sponsors:

ICPA Luncheon in Regency ABC

**TICKET REQUIRED**

### Conference Etiquette

Please respect authors and presenters. Do not record audio or video of presentations or take pictures of slides or posters without permission from the author or presenter. Silence cell phones and refrain from conversation during presentations.



# Monday Afternoon – August 1

MONDAY, AUG. 1	TRACK 1	TRACK 2	TRACK 3
1:40 PM to 3:40 PM	<b>Evaluating Precision Ag Systems</b> Room: Grand A	<b>Nutrient Management 1</b> Room: Grand B	<b>Proximal Crop Sensing</b> Room: Grand C
	<b>Mapping Spatial Production Stability in Integrated Crop and Pasture Systems: Towards Zonal Management That Accounts for Both Yield and Livestock-landscape Interactions.</b> [1:40 pm] - Peter McEntee	<b>Should One Phosphorus Extraction Method be Used for VRT Phosphorus Recommendation in the Southern Great Plains?</b> [1:40 pm] - Brian Arnall	<b>Use of Crop Canopy Reflectance Sensor in Management of Nitrogen Fertilization in Sugarcane in Brazil</b> [1:40 pm] - Sergio Castro, Paulo Magalhães
	<b>Within-field Profitability Assessment: Impact of Weather, Field Management and Soils</b> [2:00 pm] - Peter Kyveryga	<b>Shifting Fertiliser Response Zones in a Four Year, Whole-paddock Cereal Cropping Experiment</b> [2:00 pm] - Ben Jones	<b>Detection of Nitrogen Stress on Winter Wheat by Multispectral Machine Vision</b> [2:00 pm] - Guillaume Marlier
	<b>A Decade of Precision Agriculture Impacts on Grain Yield and Yield Variation</b> [2:20 pm] - Matt Yost	<b>Claypan Depth Effect on Soil Phosphorus and Potassium Dynamics</b> [2:20 pm] - Lance Conway	<b>Time Series Study of Soybean Response Based on Adjusted Green Red Index</b> [2:20 pm] - Peter Larbi
	<b>Net Returns and Production Use Efficiency for Optical Sensing and Variable Rate Nitrogen Technologies in Cotton Production</b> [2:40 pm] - James Larson	<b>Spatial and Temporal Variation of Soil Nitrogen Within Winter Wheat Growth Season</b> [2:40 pm] - Xiaoyu Song	<b>In Season Estimation of Barley Biomass with Plant Height Derived by Terrestrial Laser Scanning</b> [2:40 pm] - Nora Tilly
	<b>Field Potential Soil Variability Index to Identify Precision Agriculture Opportunity</b> [3:00 pm] - Christopher Bobryk	<b>Spatial Variability of Soil Nutrients and Site Specific Nutrient Management in Maize</b> [3:00 pm] - Sheshadri T	<b>Development of a Sensing Device for Detecting Defoliation in Soybean</b> [3:00 pm] - Joe Mari Maja
	<b>Site-specific Scale Efficiency Determined by Data Envelopment Analysis of Precision Agriculture Field Data</b> [3:20 pm] - Jacob Maurer	<b>Spatial Variability of Soil Nutrients and Precision Nutrient Management for Targeted Yield Levels of Groundnut (<i>Arachis Hypogaea L.</i>)</b> [3:20 pm] - Hanumanthappa D.C	<b>Measuring Height of Sugarcane Plants Through LiDAR Technology</b> [3:20 pm] - Rodrigo Trevisan
3:40 PM	<b>ICPA Break in Foyer A</b>		
4:20 PM to 6:00 PM	<b>Phenotyping Applications</b> Room: Grand A	<b>Precision Horticulture and Greenhouse Applications</b> Room: Grand B	<b>Soil Spectroscopy</b> Room: Grand C
	<b>Field Phenotyping Infrastructure in a Future World - Quantifying Information on Plant Structure and Function for Precision Agriculture and Climate Change</b> [4:20 pm] - Onno Muller	<b>Use of the Active Sensor Optrx™ to Measure Canopy Changes to Evaluate Foliar Treatments and to Identify Soil Quality in Table Grape</b> [4:20 pm] - Rodrigo Ortega	<b>Sensor Based Soil Health Assessment</b> [4:20 pm] - Kristen Veum
	<b>Proximal Hyperspectral Sensing in Plant Breeding</b> [4:40 pm] - Holger Lilienthal	<b>Design of a Greenhouse Monitoring System Based on GSM Technologies</b> [4:40 pm] - Göktürk Seyhan	<b>Laboratory Evaluation of Two VNIR Optical Sensor Designs for Vertical Soil Sensing</b> [4:40 pm] - Nuwan Wijewardane
	<b>Non-destructive Plant Phenotyping Using a Mobile Hyperspectral System to Assist Breeding Research: First Results</b> [5:00 pm] - Heike Gerighausen	<b>Precision Nutrient Management System Based on Ion and Crop Growth Sensing</b> [5:00 pm] - WooJae Cho	<b>Development of Micro-tractor-based Measurement Device of Soil Organic Matter Using On-the-go Visual-near Infrared Spectroscopy in Paddy Fields of South China</b> [5:00 pm] - Zhou Lianqing
	<b>In-field Plant Phenotyping Using Multi-view Reconstruction: an Investigation in Eggplant</b> [5:20 pm] - Thuy Nguyen	<b>Field Tests and Improvement of Sensor and Control Interface Modules with Improved Compatibility for Greenhouses</b> [5:20 pm] - Kwang-Min Han	<b>Comparing Predictive Performance of Near Infrared Spectroscopy at a Field, Regional, National and Continental Scales by Using Spiking and Data Mining Techniques</b> [5:20 pm] - Said Nawar
	<b>Intuitive Image Analysing on Plant Data - High Throughput Plant Analysis with Lemnatec Image Processing</b> [5:40 pm] - Stefan Paulus		<b>Memory Based Learning: A New Data Mining Approach to Model and Interpret Soil Texture Diffuse Reflectance Spectra</b> [5:40 pm] - Asa Gholizadeh
6:00 PM to 7:30 PM	<b>ICPA Poster Session and Reception in Foyer C</b> Sponsored by Climate Corporation/Monsanto		



TRACK 4	TRACK 5
<b>Spatial Variability Measurement</b> Room: Grand D	<b>Remote Sensing 2</b> Room: Grand E
<b>Understanding Complex Soil Variability: the Application of Archaeological Knowledge to Precision Agriculture Systems in the UK</b> [1:40 pm] - Henry Webber	<b>Development of Sensor Reflection Indices To Predict Yield And Protein Content Based On In-Season N Status</b> [1:40 pm] - Ugur Yegul
<b>The New Digital Soil Map of Sweden -Derived for Free Use in Precision Agriculture</b> [2:00 pm] - Kristin Piikki	<b>Prediction of Sugarcane Yields in Commercial Fields by Early Measurements with an Optical Crop Canopy Sensor</b> [2:00 pm] - Gustavo Portz
<b>Sources of Information to Delineate Management Zones for Cotton</b> [2:20 pm] - Rodrigo Trevisan	<b>High Resolution Hyperspectral Imagery to Assess Wheat Grain Protein in a Farmer's Field</b> [2:20 pm] - Francelino Rodrigues Jr.
<b>The Daily Erosion Project - High Resolution, Daily Estimates of Runoff, Detachment, Erosion, and Soil Moisture</b> [2:40 pm] - Brian Gelder	<b>Remote Sensing Inversion of Canopy Chlorophyll Content and Its Application in Evaluating Crop Condition and Predicting Crop Mature Date</b> [2:40 pm] - Jihua Meng
<b>Statistical Variability of Crop Yield, Soil Test N and P Within and Between Producer's Fields</b> [3:00 pm] - Alan Moulin	<b>Almond Canopy Detection and Segmentation Using Remote Sensing Data Drones</b> [3:00 pm] - Tiebiao Zhao
<b>Consequences of Spatial Variability in the Field on the Uniformity of Seed Quality in Barley Seed Crops</b> [3:20 pm] - Shwan Hama Rash	
<b>ICPA Break in Foyer A</b>	
<b>Engineering Technologies 1</b> Room: Grand D	<b>Remote Sensing 3</b> Room: Grand E
<b>Accuracy of Differential Rate Application Technology for Aerial Spreading of Granular Fertiliser Within New Zealand</b> [4:20 pm] - Ian Yule	<b>Potential Improvement in Rice Nitrogen Status Monitoring Using Rapideye and Worldview-2 Satellite Remote Sensing</b> [4:20 pm] - Yuxin Miao
<b>The Device of Air-assisted Side Deep Precision Fertilization for Rice Transplanter</b> [4:40 pm] - Chunjiang Zhao	<b>Aerial Photographs to Predict Yield Loss Due to N Deficiency in Corn</b> [4:40 pm] - Peter Scharf
<b>Site Specific Costs Concerning Machine Path Orientation</b> [5:00 pm] - Mark Spekken	<b>Comparison Between High Resolution Spectral Indices and SPAD Meter Estimates of Nitrogen Deficiency in Corn</b> [5:00 pm] - Aicam Laacouri
<b>Post Processing Software for Grain Yield Monitoring System Suitable to Korean Full-feed Combines</b> [5:20 pm] - Kyu-Ho Lee	<b>Active and Passive Crop Canopy Sensors As Tools for Nitrogen Management in Corn</b> [5:20 pm] - Leonardo Bastos
<b>Processing Yield Data from Two or More Combines</b> [5:40 pm] - Leonardo Felipe Maldaner	<b>CropSAT - a Public Satellite-based Decision Support System for Variable-rate Nitrogen Fertilization in Scandinavia</b> [5:40 pm] - Mats Söderström
<b>ICPA Poster Session and Reception in Foyer C</b> Sponsored by Climate Corporation/Monsanto	



Join today!



**Membership Includes:**

- Membership directory access and opportunities to network with Precision Agriculture professionals from around the world
- Discount on ISPA-sponsored conference registration fees
- Electronic space to post your resume, pictures, etc., for greater networking and professional opportunities
- Digital access to the society's journal, *Precision Agriculture*
- Opportunities to publish research and review articles in *Precision Agriculture*
- Opportunities to present oral and poster papers at society-sponsored events such as the International Conference on Precision Agriculture, Asian-Australian Conference on Precision Agriculture, European Conference on Precision Agriculture, etc.
- Periodic newsletter that provides information from around the world related to Precision Agriculture research activities and industry updates
- Opportunities to nominate and be nominated by other members for ISPA sponsored awards and recognition at society events.

[www.ispag.org](http://www.ispag.org)

TOPIC	#	TITLE	PRESENTER
<b>Decision Support Systems</b>	48	Agronomic Characteristics of Green Corn and Correlations with Productivity for the Establishment of Management Zones in Vale Do Ribeira, SP, Brazil	Wilson Souza
	1	Data Normalization Methods for Definition of Management Zones	Eduardo Souza
	4	On Farm Studies to Determine Seeding Rate in Corn	Guillermo Balboa
	2	Smart Agriculture: A Futuristic Vision of Application of the Internet of Things (IoT) in Brazilian Agriculture	Eduardo Souza
<b>Engineering Technologies and Advances</b>	5	A Harvesting Robot System for Fresh Cherry Tomato in Greenhouse	Feng Qingchun
	6	Automated Support Tool for Variable Rate Irrigation Prescriptions	Anh Nguyen
	7	Development of Land Leveling Equipment Based on GNSS	Weiqiang Fu
	8	Design of VAV System of Air Assisted Sprayer in Orchard and Experimental Study in China	He Xiongui
	9	Evaluation of a Seed-Fertilizer Application System Using a Laser Scanner	Changyuan Zhai
	10	Evaluation of a Sensor and Control Interface Module for Monitoring of Greenhouse Environment	Nam-Seok Sung
	11	Field Sampling and Electrochemical Detection of Nitrate in Agricultural Soils	John Brockgreitens
	12	Simulation of Curiosity and Exo Mars Rovers on Agriculture Terrain	Marcelo Becker
	13	Static and Kinematic Tests for Determining Spreaders Effective Width	Leonardo Felipe Maldaner
	14	The Methods and Applications of Artificial Intelligence Used in the Technologies of Precision Agriculture	Aleksandrs Gailums
	15	Using an Industrial PLC to Control Implements	Heleno Vale
<b>Food Security and Precision Agriculture</b>	16	Open Data for Food Quality and Food Security Control: a Case Study of the Czech Republic	Milos Ulman
	17	Use of Satellite Data to Improve Damage Assessment Process for Agricultural Insurance Scheme in Indonesia	Chiharu Hongo
<b>Precision Crop Protection</b>	18	The Effect Of Leaf Surface On Spray Retention Variability	Hassina Boukhalfa
	19	Airspeed And Pressure Affect Spray Droplet Spectrum From An Aerial Nozzle For Fixed-Wing Applications	Ruirui Zhang
	20	Assessing Temporal Heterogeneity of Pigeon Pea Sterility Mosaic Through GIS Mapping and its Impact on Crop Health	Mahantesh Patil
	21	New Technologies In Biological Plant Protection And Its Localization	Vladimir Kotlyarov
	22	Technology Support For Game Monitoring as a Tool for Damages Reduction of Field Crops	Michal Stočes
<b>Precision Horticulture</b>	23	Comparison of Plant and Soil Mapping in Prunus Domestica L. Orchard	Jana Käthner
<b>Precision Nutrient Management</b>	24	Adjustment of Corn Population and Nitrogen Fertilization Based on Management Zones	Rai Schwalbert
	25	Integrated Approach to Site-specific Soil Fertility Management	Robin Gebbers
	26	On-Farm evaluation of an Active Optical Sensor Performance for Variable Nitrogen Application in Winter Wheat	Olga Walsh
	30	Studies on Soil Spatial Variability and Its Impact on Cane Yield Under Precision Nutrient Management System	Mohan Kumar R
	27	UAV-based Crop Scouting for Precision Nutrient Management	Olga Walsh
	28	Winter Wheat Genotype Effect on Canopy Reflectance: Implications for Using NDVI for In-season Nitrogen Topdressing Recommendations	Olga Walsh
	31	North American Soil Test Summary	Scott Murrell
<b>Proximal Sensing in Precision Agriculture</b>	32	Assessment of Water Use Efficiency of Alfalfa Using Eddy Covariance CO <sub>2</sub> and H <sub>2</sub> O Fluxes Under Hyper Arid Conditions of Saudi Arabia	Khalid Al-Gaadi
	33	NIR Spectroscopy to Map Quality Parameters of Sugarcane	Marcos Ferraz
	34	On-the-go Measurements of pH in Tropical Soil	Mateus Eitelwein
	35	Vis/NIR Spectroscopy to Estimate Crude Protein (CP) in Alfalfa Crop: Feasibility Study	John Nowatzki
	56	Apparent Electrical Conductivity Sensors and Their Relationship with Soil Properties in Sugarcane Fields	Guilherme Sanches
	57	Soil Attributes Estimation Based on Diffuse Reflectance Spectroscopy and Topographic Variability	Guilherme Sanches






TOPIC	#	TITLE	PRESENTER
<b>Remote Sensing Applications in Precision Agriculture</b>	37	Assessing the Effect of Sensors on NDVI Measurements in a Wheat Field: A Comparative Study Between Ground, Areal and Satellite Sensors to Calibrate Satellite NDVI	Muhammad Jehanzeb Cheema
	38	Detecting Nitrogen Variability at Early Growth Stages of Wheat by Active Fluorescence and NDVI	Rajiv Khosla
	39	Assessing Soybean Injury from Dicamba Using RGB and CIR Images Acquired on Small UAVs	Yanbo Huang
	40	Spatial-temporal Evaluation of Plant Phenotypic Traits Via Imagery Collected by Unmanned Aerial Systems (UAS)	Sebastian Varela
	41	Time Series Analysis of Vegetation Dynamics and Burn Scar Mapping at Smoky Hill Air National Guard Range, Kansas Using Moderate Resolution Satellite Imagery	Elle Williams
	42	AGOC: Agriculture Operations Center	Mark Zamzow
<b>Sensor Application in Managing In-Season Crop Variability</b>	43	Liquid Flow Control Requirements for Crop Canopy Sensor-Based N Management in Corn: A Project SENSE Case Study	Joe Luck
	44	Development of a Multispectral Sensor for Crop Canopy Temperature Measurement	Philip Drew
	29	Sensor-based Technologies for Improving Water and Nitrogen Use Efficiency	Olga Walsh
	45	Sensor-based Nitrogen Applications Out-performed Producer-chosen Rates for Corn in On-farm Demonstrations	Peter Scharf
<b>Spatial Variability in Crop, Soil and Natural Resources</b>	46	Assessing the Variability of Red Stripe Disease in Louisiana Sugarcane Using Precision Agriculture Methods	Richard Johnson
	47	High-resolution Mapping with On-the-go Soil Sensor and Its Relation with Corn Yield and Soil Acidity in a Dystrophic Red Oxisol	Telmo Amado
	52	In-field Variability of Terrain and Soils in Southeast Kansas: Challenges for Effective Conservation	Gretchen Sassenrath
	3	Rectification of Management Zones Considering Mode and Median As a Criterion for Reclassification of Pixels	Eduardo Souza
	50	Real-Time Protein Paddock Maps collected from the Australian Wheat and Barley Harvest	Joel Salazar
	51	Response of Soybean Cultivars According to Management Zones in Southern Brazil	Geomar Corassa
	49	Spatial Variability and Correlations Between Soil Attributes and Productivity of Green Corn Crop	Wilson Souza
	53	Temporal and Spatial Variability of Soil Nutrients in Arable Lands of Wugong County in Loess Plateau in China	Jing Liu
<b>Unmanned Aerial Systems</b>	54	Developing UAV Image Acquisition System and Processing Steps for Quantitative Use of the Data in Precision Agriculture	Arif Behiç Tekin
	55	Development of a PWM Precision Spraying System for Unmanned Helicopter	Ruirui Zhang
	36	Plant Stand Count and Corn Crop Density Assessment Using Texture Analysis on Visible Imagery Collected Using Unmanned Aerial Vehicles	Sathishkumar Samiappan




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TUES, AUG. 2	TRACK 1	TRACK 2	TRACK 3
8:00 AM to 9:40 AM	<b>Data Mining, Big Data, and Data Ownership</b> Room: Grand A	<b>Precision Crop Protection</b> Room: Grand B	<b>Livestock and Pasture Applications</b> Room: Grand C
	<b>'Spatial Discontinuity Analysis' a Novel Geostatistical Algorithm for On-farm Experimentation</b> [8:00 am] - Benjamin Marchant	<b>Detection of Potato Beetle Damage Using Remote Sensing from Small Unmanned Aircraft Systems</b> [8:00 am] - E. Raymond Hunt	<b>Hyperspectral Imaging to Measure Pasture Nutrient Concentration and Other Quality Parameters</b> [8:00 am] - Ian Yule
	<b>Translating Data into Knowledge - Precision Agriculture Database in a Sugarcane Production</b> [8:20 am] - Paulo Magalhães	<b>Greenhouse Study to Identify Glyphosate-resistant Weeds Based on Canopy Temperature</b> [8:20 am] - John Nowatzki	<b>Measuring Pasture Mass and Quality Indices Over Time Using Proximal and Remote Sensors</b> [8:20 am] - Miles Grafton
	<b>Surplus Science and a Non-linear Model for the Development of Precision Agriculture Technology</b> [8:40 am] - Megan Cushnahan	<b>Field Evaluation of a Variable-rate Aerial Application System</b> [8:40 am] - Daniel Martin	<b>Ear Deployed Accelerometer Behaviour Detection in Sheep</b> [8:40 am] - Jamie Barwick
	<b>Key Data Ownership, Privacy and Protection Issues and Strategies for the International Precision Agriculture Industry</b> [9:00 am] - Joan Archer	<b>Use of Unmanned Aerial Vehicles to Inform Herbicide Drift Analysis</b> [9:00 am] - Joby Prince Czarniecki	<b>Evaluating Low-Cost Lidar and Active Optical Sensors for Pasture and Forage Biomass Assessment</b> [9:00 am] - Mark Trotter
	<b>Ownership and Protections of Farm Data</b> [9:20 am] - Paul Goeringer		
TUES, AUG. 2 10:00 AM to 11:40 AM	 <b>ICPA/InfoAg Joint Plenary Session, Room: Grand DEF</b>		
	<b>Welcome to InfoAg, Steve Phillips</b>		
	<b>ISPA Awards Program - Sponsored by Iteris, Ken Sudduth</b>		
	<b>InfoAg Opening Keynote Presentation, Mark Alley</b>		
11:40 AM to 1:00 PM	<b>ICPA/InfoAg Luncheon in Union Station Mall</b>		<b>TICKET REQUIRED</b>



InfoAg Keynote Speaker  
**Dr. Mark Alley**  
 Independent Agronomy Consultant, Alley Agronomics

Mark Alley is the W. G. Wysor Professor Emeritus at Virginia Tech, where he conducted research in fertilizer use efficiency and improved agronomic crop production techniques. Research included soil sampling strategies for variable rate lime and fertilizer applications as well as work with N fertilizer placement, timing, and formulations. Mark is a Fellow of the American Society of Agronomy, the Soil Science Society of America, the American Association for the Advancement of Science, and the Fluid Fertilizer Foundation. He served as president of the American Society of Agronomy in 2009.

TRACK 4	TRACK 5
<b>Engineering Technologies 2</b> Room: Regency C	<b>Unmanned Aerial Systems 1</b> Room: Regency AB
<b>Value of Map Sharing Between Multiple Vehicles Using Automated Section Control in the Same Field</b> [8:00 am] - Jeffrey Bennett	<b>High Resolution Vegetation Mapping with a Novel Compact Hyperspectral Camera System</b> [8:00 am] - Pieter-Jan Baeck
<b>Misalignment Between Sugar Cane Transshipment Trailers and Tractor</b> [8:20 am] - José Paulo Molin	<b>Towards Calibrated Vegetation Indices from UAS-derived Orthomosaics</b> [8:20 am] - Klaas Pauly
<b>Helvis - A Small-scale Agricultural Mobile Robot Prototype for Precision Agriculture</b> [8:40 am] - Marcelo Becker	<b>Safety and Certification Considerations for Expanding the Use of UAS in Precision Agriculture</b> [8:40 am] - Kelly Hayhurst
<b>Development of a Crop Edge Line Detection Algorithm Using a Laser Scanner for an Autonomous Combine Harvester</b> [9:00 am] - Chan Woo Jeon	<b>Multispectral Imaging and Elevation Mapping from an Unmanned Aerial System for Precision Agriculture Applications</b> [9:00 am] - Madison Mackenzie
	<b>Small UAS Integrated Sensing Tools for Abiotic Stress Monitoring in Irrigated Pinto Beans</b> [9:20 am] - Lav Khot



**ICPA/InfoAg Joint Plenary Session, Room: Grand DEF**



Welcome to InfoAg, *Steve Phillips*

ISPA Awards Program - Sponsored by Iteris, *Ken Sudduth*



InfoAg Opening Keynote Presentation, *Mark Alley*

ICPA/InfoAg Luncheon in Union Station Mall

**TICKET REQUIRED**

## Tuesday Afternoon – August 2

TUES, AUG. 2	TRACK 1	TRACK 2	TRACK 3
1:00 PM to 3:00 PM	<b>Managing by Zones</b> Room: Regency C	<b>Sponsor Showcase</b> Room: Regency AB	<b>Spray Technology</b> Room: Grand ABC
	<b>Science Behind Zones: Background/Timeline/Tools</b> [1:00 pm] - Raj Khosla	<b>Data Management: The Achilles Heel of Precision Ag Technologies</b> [1:00 pm] - Matt Waits	<b>Variable Rate Chemical Application</b> [1:00 pm] - Joe Tevis
	<b>Moving from Grid to Zone</b> [1:20 pm] - Brian Arnall		
	<b>Are Soil Test Recs Ready for High Resolution Spatial Application</b> [1:40 pm] - Josh McGrath	<b>“Who’s on your team? How you can connect people, technology and insight to gain a greater advantage”</b> 1:40 pm] - Lane Arthur	<b>OK 2 Spray</b> [1:40 pm] - Andres Ferreyra
	<b>Zones Case Studies and Panel Discussion</b> [2:00 pm] - Raj Khosla, Brian Arnall, Josh McGrath		
		<b>Data to Decision and Application</b> [2:20 pm] - Tim Heins	<b>Adaptive Sprayer Technology</b> [2:20 pm] - Todd Howatt
3:00 PM	<b>Break in the Exhibit Hall</b>		
3:40 PM to 5:40 PM	<b>Technology Decisions</b> Room: Regency C	<b>Sponsor Showcase</b> Room: Regency AB	<b>Nitrogen Tools</b> Room: Grand ABC
	<b>Comparing Hardware/Software Systems</b> [3:40 pm] - John Musser	<b>The Five Pillars of Modern Agriculture</b> [3:40 pm] - Nish Majarian	<b>Nitrogen Management Tools - Needs, Promises and Pitfalls</b> [3:40 pm] - Paul Gangwish, Jim Schepers
	<b>Machinery and Technology Decisions: A Farmer’s Perspective</b> [4:20 pm] - Brian Watkins	<b>Dawn of a New Era</b> [4:20 pm] - Alan Brady, Ernie Chappell	
	<b>Precision Agriculture Economics and Decision Making – Beyond Profitability</b> [5:00 pm] - Jordan Shockley	<b>Trimble’s Software Dev Leaders Discuss What Is &amp; What Is NOT Working in Ag Software Today</b> [5:00 pm] - Kevin Pattison, Bob Wold	<b>NutrientStar Program</b> [4:40 pm] - Wade Thomason
		<b>NutrientStar Field Trials</b> [5:20 pm] - John McGuire	
5:40 to 7:30 PM	<b>Reception in PrecisionAg Tech Center</b>		

TRACK 4	TRACK 5	TRACK 6
<b>Precision Irrigation</b> Room: Grand D	<b>Unmanned Aerial Systems 2</b> Room: Grand E	<b>Corn Nitrogen Management</b> Room: Grand F
<b>Spectral Vegetation Indices to Quantify In-field Soil Moisture Variability</b> [1:00 pm] - Jeffrey Siegfried	<b>Large-scale UAS Data Collection, Processing and Management for Field Crop Management</b> [1:00 pm] - John Nowatzki	<b>Comparing Adapt-N to Static N Recommendation Approaches for US Maize Production</b> [1:00 pm] - Harold van Es
<b>Proximal Sensing of Leaf Temperature and Microclimatic Variables to Implement Precision Irrigation in Almond and Grape Crops</b> [1:20 pm] - Erin Kizer	<b>Weather Impacts on UAV Flight Availability for Agricultural Purposes in Oklahoma</b> [1:20 pm] - Cooper Morris	<b>Field-scale Nitrogen Recommendation Tools for Improving a Canopy Reflectance Sensor Algorithm</b> [1:20 pm] - Curtis Ransom
<b>A Dynamic Variable Rate Irrigation Control System</b> [1:40 pm] - George Vellidis	<b>Privacy Issues and the Use of UASs/Drones in Maryland</b> [1:40 pm] - Paul Goeringer	<b>Modifying the University of Missouri Corn Canopy Sensor Algorithm Using Soil and Weather Information</b> [1:40 pm] - G. Mac Bean
<b>Utilizing Space-based Technology for Cotton Irrigation Scheduling</b> [2:00 pm] - Xin Qiao	<b>Spatial-temporal Evaluation of Plant Phenotypic Traits Via Imagery Collected by Unmanned Aerial Systems (UAS)</b> [2:00 pm] - Sebastian Varela	<b>Will Algorithms Modified with Soil and Weather Information Improve In-field Reflectance-sensing Corn Nitrogen Applications?</b> [2:00 pm] - Newell Kitchen
<b>Precision Nutrient Management Through Drip Irrigation in Aerobic Rice</b> [2:20 pm] - Dr. Nagaraju	<b>In-season Diagnosis of Rice Nitrogen Status Using Crop Circle Active Canopy Sensor and UAV Remote Sensing</b> [2:20 pm] - Junjun Lu	<b>Early Detection of Nitrogen Deficiency in Corn Using High Resolution Remote Sensing and Computer Vision</b> [2:20 pm] - David Mulla
	<b>Retrieving Crops' Quantitative Biophysical Parameters Through a Newly Developed Multispectral Sensor for UAV Platforms</b> [2:40 pm] - Agustin Pimstein	<b>Comparative Benefits of Drone Imagery for Nitrogen Status Determination in Corn</b> [2:40 pm] - Nicolas Tremblay
<b>Break in the Exhibit Hall, Sponsored in part by Planet</b>		
<b>Decision Support Systems 2</b> Room: Grand D	<b>Remote Sensing 4</b> Room: Grand E	<b>Applications in Tree Fruit</b> Room: Grand F
<b>Closing Yield Gaps with GxEM and Precision Agriculture</b> [3:40 pm] - Charles Walthall	<b>Planet Labs' Monitoring Solution in Support of Precision Agriculture Practices</b> [3:40 pm] - Ryan Schacht	<b>A Precise Fruit Inspection System for Huanglongbing and Other Common Citrus Defects Using GPU and Deep Learning Technologies</b> [3:40 pm] - Daeun Choi
<b>EZZone - An Online Tool for Delineating Management Zones</b> [4:00 pm] - Camden Lowrance	<b>First Experiences with the European Remote Sensing Satellites Sentinel-1A/ -2A for Agricultural Research</b> [4:00 pm] - Holger Lilienthal	<b>Spatial Variability of Canopy Volume in a Commercial Citrus Grove</b> [4:00 pm] - Andre Colaço
<b>Delineation of Site-specific Management Zones Using Spatial Principal Components and Cluster Analysis</b> [4:20 pm] - Eduardo Souza	<b>Selection and Utility of Uncooled Thermal Cameras for Spatial Crop Temperature Measurement Within Precision Agriculture</b> [4:20 pm] - Devin Mangus	<b>Development of a Multiband Sensor for Citrus Black Spot Disease Detection</b> [4:20 pm] - Alireza Pourreza
<b>Analysis of High Yield Condition Using a Rice Yield Predictive Model</b> [4:40 pm] - Yasumaru Hirai	<b>High Resolution 3D Hyperspectral Digital Surface Models from Lightweight UAV Snapshot Cameras – Potentials for Precision Agriculture Applications</b> [4:40 pm] - Helge Aasen	<b>Robustness of Pigment Analysis in Tree Fruit</b> [4:40 pm] - Jana Käthner
<b>Considering Farmers' Situated Expertise in AgriDSS Development to Fostering Sustainable Farming Practices in Precision Agriculture</b> [5:00 pm] - Christina Lundström	<b>Comparison Between Tractor-based and UAV-based Spectrometer Measurements in Winter Wheat</b> [5:00 pm] - Martin Leon Gnyp	<b>Determinants of Ex-ante Adoption of Precision Agriculture Technologies by Cocoa Farmers in Ghana</b> [5:00 pm] - Martin Bosompem
<b>Estimating Environmental Systems Using Iterated Sigma Point Techniques: a Biomass Substrate Hypothetical System</b> [5:20 pm] - Marie-France Destain	<b>Melon Classification and Segmentation Using Low Cost Remote Sensing Data Drones</b> [5:20 pm] - Tiebiao Zhao	<b>Steering Strategy Selection of a Robotic Platform for Bin Management in Orchard Environment</b> [5:20 pm] - Yunxiang Ye
<b>Reception in PrecisionAg Tech Center</b>		

# Exhibitors

(alphabetical)

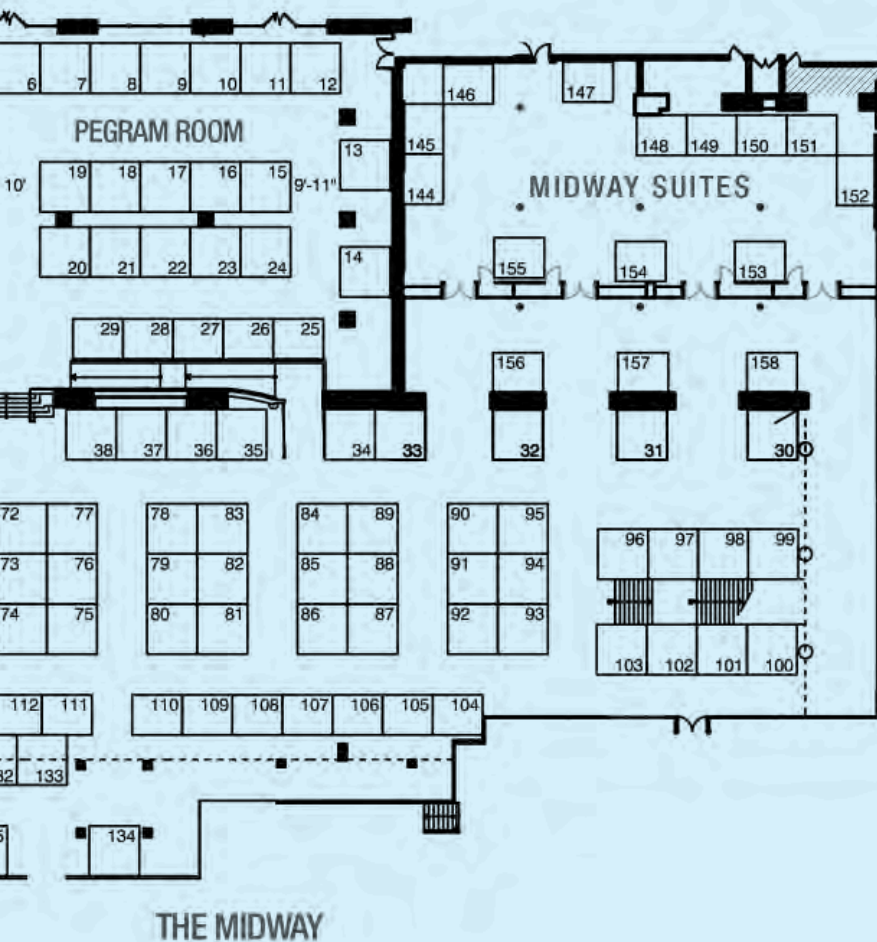
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35, 36	Ag Leader Technology
37, 38	EFC Systems
39	Decisive Farming
40	CropMetrics
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42, 43, 44	Topcon Positioning Group
45	Midwest Laboratories Inc.
46, 47	GEOSYS
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56, 57	Falcon Automated Soil Sampling
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92, 93	Trimble
94, 95	AGCO
96, 97	Micro-Trak Systems, Inc.
98, 99	Capstan Ag Systems
100, 101	FarmLogic
102	SOILMAP
103	NovAtel, inc.
104, 105, 106, 107, 108	John Deere
109	MyAgCentral
110	senseFly, a Parrot Company
111	The Climate Corporation
112	Irrrometer Company, Inc.
113	Agricultural Retailers Association
114	SOYL
115	AgGateway
116	Insero/AgOtter
117	Agworld
118	AgSource Laboratories
119	DTN/The Progressive Farmer
120	CDMS, Inc.
121, 122, 123, 124	Raven
125, 126	Farmers Edge, Inc.
127	GeoVantage
128, 129	PrecisionHawk
130, 131	WDT SkyWise
132	Spensa Technology
133	The Fertilizer Institute
134	PAQ Interactive
135	Davis Instruments
136, 137	MicaSense, Inc.
138, 139	Agrobotix
140	AgWorks Software LLC
141	AgSync
142	XS, Inc.
143	I.F.A.R.M., Inc.
144	Chetu, Inc.
145	UK Trade & Investment
146	aWhere, Inc.
147	Geonics Limited
148	Scorpion Drones
149	NutrientStar
150	AGBRIDGE
151	Honeycomb
152	SLANTRANGE
153	Waters Agricultural Laboratories
154	Back 40 Precision
155	CropZilla Software, Inc.
156	Next Instruments
157	Aglytix
158	SNA Manufacturing LLC

## Exhibitors by booth number

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3	WintexAgro USA
4	Geometrics
5	CustomWeather, Inc.
6	Waypoint Analytical
7	DigiFarm VBN
8	Harris Corporation
9	Hexagon Geospatial
10	Springer Media
11	Agren
12	Precision Drone LLC
13	FORCE-A
14	Practical Precision, Inc.
15	Measure UAS, Inc.
16	MyWay RTK
17	GVM, Inc.
18	AgriNews
19	AutoProbe
20	AgVoice
21	AgriData, Inc.
22, 23	Software Solutions Integrated, LLC
24	Deimos Imaging
25	New Ag International
26	Biosorb, Inc.
27	Senterra
28	AgSolver, Inc.
29	SGS North America, Inc.
30	The Weather Company
31	IPNI
32	iCropTrak

WEDS, AUG. 3	TRACK 1	TRACK 2	TRACK 3
8:00 AM to 10:00 AM	<b>N &amp; P Decisions</b> Room: Regency C	<b>Sponsor Showcase</b> Room: Regency AB	<b>UAS Applications</b> Room: Grand ABC
	<b>Phosphorus Fertilizer Decisions</b> [8:00 am] - Tom Bruulsema, Alan Madison, Malcolm Stambaugh	<b>Delivering on the Promise of Decision Ag</b> [8:00 am] - Patrick Crampton	<b>Beyond the 'Wow' Factor</b> [8:00 am] - Norm Lamothe
		<b>From Pixels to Profits</b> [8:20 am] - Max Bruner	
		<b>CropMetrics Precision Solutions in Water</b> [8:40 am] - Kylen Hunt	<b>UAS: Brazil - Practical Applications of UAS</b> [8:40 am] - Estevão Parreira
	<b>Science Based Nitrogen Program</b> [9:00 am] - Paul Davis, Steve Phillips, Jim Wallace	<b>When Did Farming Become Paper Pushing?</b> [9:00 am] - Jonathan Sherrill	
	<b>Digital Farming; Harvesting the New Hybrid of Data</b> [9:20 am] - Charlie Magruder	<b>Agriculture and Part 107: What It Does and What Is Needed</b> [9:20 am] - Robert Blair	
10:00 AM	<b>Break in the Exhibit Hall</b>		
10:40 AM to 12:00 PM	<b>PrecisionAg Plenary Session,</b> Room: Grand DEF		
	<b>PrecisionAg Awards, Paul Schrimpf</b>		
	<b>PrecisionAg Keynote Presentation, Jack Uldrich</b> <b>The Big AHA! - How To Future-Proof Your Farm Against The Ten Trends Transforming the World of Tomorrow</b>		
12:00 PM to 1:20 PM	<b>PrecisionAg Luncheon in Union Station Mall</b> <i>Sponsored by SST Software, Raven, and IPNI</i>		  
<b>TICKET REQUIRED</b>			



PrecisionAg Plenary Speaker  
**Jack Uldrich**  
 Acclaimed Global Futurist, Speaker, and Best-Selling Author

Jack Uldrich paints vivid pictures of what the world may look like in just a few short years. He provides an in-depth exploration of how the “Internet of Things,” “Big Data,” social media, robotics, biotechnology, nanotechnology, artificial intelligence, renewable energy and “collaborative consumption” will change everyday life for all of us in the very near future. And he follows through with upbeat, practical and actionable insights on future trends, emerging technologies, innovation, change management and leadership.



TRACK 4	TRACK 5	TRACK 6
<b>Data Sharing and Standards</b> Room: Grand D	<b>Precision Ag Education</b> Room: Grand E	<b>Precision Ag Worldwide</b> Room: Grand F
<b>Rationale for and Benefits of a Community for On-Farm Data Sharing</b> [8:00 am] - Thomas Morris	<b>SMARTfarm Learning Hub: Next Generation Precision Agriculture Technologies for Agricultural Education</b> [8:00 am] - Mark Trotter	<b>25 Years Precision Agriculture in Germany - A Retrospective</b> [8:00 am] - Holger Lilienthal
<b>Toward Geopolitical-Context-Enabled Interoperability in Precision Agriculture: AgGateway's SPADE, PAIL, WAVE, CART and ADAPT</b> [8:20 am] - R. Andres Ferreyra	<b>Knowledge, Skills and Abilities Needed in the Precision Ag Workforce: An Industry Survey</b> [8:20 am] - Bruce Erickson	<b>A Context Changing with Precision Agriculture in Japan</b> [8:20 am] - Sakae Shibusawa
<b>Modus: a Standard for Big Data</b> [8:40 am] - David Nerpel	<b>A Content Review of Precision Agriculture Courses Across the US</b> [8:40 am] - Danielle Skouby	<b>AGTECH CHILE: An Outreach and Technology Transfer Platform for Closing Gaps in Emerging Chilean Precision Agriculture Companies</b> [8:40 am] - Patricio Trebilcock
<b>FOODIE Data Model for Precision Agriculture</b> [9:00 am] - Karel Charvat	<b>Precision Farming Basics Manual - A Comprehensive Updated Textbook for Teaching and Extension Efforts</b> [9:00 am] - Kent Shannon	

**ICPA Closing Plenary,** [9:30am] Room: Grand F



Break in the Exhibit Hall

**PrecisionAg Plenary Session,** Room: Grand DEF



**PrecisionAg Awards,** Paul Schrimpf

**PrecisionAg Keynote Presentation,** Jack Uldrich

**The Big AHA! - How To Future-Proof Your Farm Against The Ten Trends Transforming the World of Tomorrow**

**PrecisionAg Luncheon in Union Station Mall**

Sponsored by SST Software, Raven, and IPNI


**TICKET REQUIRED**



# Wednesday Afternoon – August 3

WEDS, AUG. 3	TRACK 1	TRACK 2	TRACK 3
1:20 PM to 3:20 PM	<b>Nitrogen Decisions</b> Room: Regency C	<b>Sponsor Showcase</b> Room: Regency AB	<b>UAS: What you need to know</b> Room: Grand ABC
	<b>Nitrogen Decisions – Challenges and Trends in the Supply Chain</b> [1:20 pm] - Allen Aycock, Chris Carter, Ernie Chappell, Bill Epps, Heath Hughes	<b>NovAtel and PrecisionHawk: Delivering Accurate, Actionable Drone Data</b> [1:20 pm] - Thomas Haun, Gordon Ryley	<b>UAS: Platforms</b> [1:20 pm] - Kevin Price
		<b>How to Achieve Success Combining Big Weather with Ag</b> [1:40 pm] - Carrie Gillespie	
	<b>Nitrogen Decisions from a Farmer’s View Point</b> [2:20 pm] - Don Glenn	<b>Leading the Way in a Data-Driven World</b> [2:00 pm] - Cody Light	<b>Advances in Low Altitude Aerial Remote Sensing for Agricultural Applications</b> [2:00 pm] - Mike Ritter
		<b>Accelerating The Adoption of Precision Ag by Making it Easier</b> [2:20 pm] - Jesse Vollmar	
<b>Scan DSS For Side-Dressed N Rate in Corn</b> [2:50 pm] - Nicolas Tremblay	<b>Risk Management: Data Protection, Privacy and Breach Response</b> [2:40 pm] - Joan Archer	<b>Real Data, Real Results</b> [2:40 pm] - Paul Spaur	
	<b>MapShots AgStudio – A Precision Agronomy Platform</b> [3:00 pm] - Tim Taylor		
3:20 PM	<b>Break in the Exhibit Hall</b>		
4:00 PM to 5:20 PM	<b>Seeding Decisions</b> Room: Regency C	<b>Sponsor Showcase</b> Room: Regency AB	<b>Managing Nutrients</b> Room: Grand ABC
	<b>Seed Selection : Making Choices with Technology, or Not?</b> [4:00 pm] - Kerry Knuth	<b>Encirca Services</b> [4:00 pm] - Steve Crowe	<b>Suites of 4R N Management Practices for Improved Production and Environmental Outcomes</b> [4:00 pm] - Cliff Snyder
		<b>From Space to the Fields, How to Manage Crops with Satellite Imagery</b> [4:20 pm] - Andrew Pylypchuk, Lee Smith	
	<b>Agronomic Lessons from Data Analysis</b> [4:40 pm] - Dan Frieberg	<b>Visualizing On-Farm Data for Deeper Field Insights</b> [4:40 pm] - Brad Roberts	<b>Nitrogen Recommendation Systems</b> [4:40 pm] - Newell Kitchen
<b>Power Your Ag Data Analysis with ClearAg</b> [5:00 pm] - Jeff Keiser			
5:20 PM to 7:00 PM	<b>Reception in PrecisionAg Tech Center</b>		

TRACK 4	TRACK 5	TRACK 6
<b>International Perspectives</b> Room: Grand D	<b>Precision People</b> Room: Grand E	<b>Data Standards</b> Room: Grand F
<b>Precision Agriculture for Food Security and Sustainable Development in China</b> [1:20 pm] - Yuxin Miao	<b>People: On-the-Job-Training</b> [1:20 pm] - Dwight Koops, Nathan Woydziak	<b>AgGateway Core Documents</b> [1:20 pm] - Jeremy Wilson
<b>PA in New Zealand</b> [2:00 pm] - Ian Yule	<b>Top 10 Experience Pitfalls</b> [2:00 pm] - Brian Henze	<b>ADAPT</b> [2:00 pm] - Mark Stelford
<b>A View of PA in some Latin American Countries</b> [2:40 pm] - José Molin	<b>Community College PA Technician Programs</b> [2:40 pm] - Jenni Fridgen, Darin Kohlmeyer	<b>The Open Ag Data Alliance: Real-Time Connections</b> [2:40 pm] - Aaron Ault
		<b>Reference Data: Enabling Industry-wide Common Understanding with Vocabularies and APIs</b> [3:00 pm] - Andres Ferreyra
<b>Break in the Exhibit Hall</b>		
<b>On-Farm Research</b> Room: Grand D	<b>Cool Tech</b> Room: Grand E	<b>Data Coops</b> Room: Grand F
<b>On-Farm Research: Guidelines for a Successful Experience</b> [4:00 pm] - Ignacio Ciampitti	<b>From the Internet of Fields to the Internet of Plants</b> [4:00 pm] - David Ball	<b>Importance of Growers Owning Their Data and How</b> [4:00 pm] - Jason Ward
		<b>Analyzing Our Farm Data for Production Decisions</b> [4:20] - Jeff Kirwan
<b>Benefits of an On-Farm Data Sharing Community</b> [4:40 pm] - Tom Morris, Nicolas Tremblay	<b>Nebraska Irrigation Project</b> [4:40 pm] - John Heaston	<b>Ag Data Coalition</b> [4:40 pm] - Matt Bechdol
<b>Reception in PrecisionAg Tech Center</b>		

THUR, AUG. 4 7:00 AM TO 9:00 AM	<b>Breakfast in PrecisionAg Tech Center</b>		
	<b>TRACK 1</b>	<b>TRACK 2</b>	<b>TRACK 3</b>
	<b>Crop Protection Decisions</b> Room: Regency C	<b>Precision Conservation</b> Room: Regency AB	<b>Data &amp; Data Projects</b> Room: Grand ABC
9:00 AM to 11:00 AM	<b>Precision Pathology</b> [9:00 am] - Terry Spurlock	<b>Use the Newest Tech Tools to Enhance Your Yields AND Soil Health</b> [9:00 am] - Garrett Taves, Donavon Taves	<b>Soil Test Levels in North America</b> [9:00 am] - Scott Murrell
	<b>Herbicide</b> [9:40 am] - Angela Post	<b>Using Remote Sensing to Assess Crop Residue Cover and Cover Crop Use</b> [9:40 am] - Bill Salas, Chad Watts	<b>Better Fertilizer Decisions from Soil Test Calibration Data</b> [9:40 am] - Tom Bruulsema
	<b>Using myFields to Make Decisions and Manage Pests</b> [10:20 am] - Brian McCornack	<b>How Wildlife Habitat Needs and Precision Agriculture can fit within Agricultural Land Business Models</b> [10:20 am] - Peter Berthelsen	<b>How to Evaluate Data</b> [10:00 am] - Randy Barker, Neal Horrom, KC Ting
11:00 AM to 12:00 PM	<b>InfoAg Closing Plenary Session</b> , Room: Regency AB		
	<b>InfoAg Closing Plenary Presentation, Lisa Prassack</b>		

InfoAg Closing Plenary Speaker

**Lisa Prassack**

President, Prassack Advisors, LLC



Innovation expert and data strategist Lisa Prassack brings critical market understanding for data-intensive smart connected solutions from many industries including aerospace, agriculture, food production, energy, healthcare, manufacturing, retail, smart buildings, telecommunications and transportation. She introduced dairy feed RFID tracking, managed global supply chain for dried fruits, vegetables, biofuel production; led the Agrium-Viterra merger and Trimble’s precision farming strategy, M&A and strategic partnerships including John Deere, CNHi, AGCO, BASF, DuPont Pioneer, Winfield and Monsanto-Climate. Lisa has led entrepreneurial teams resulting in 7 successful sales that achieved \$392M in shareholder value and held leadership roles with Booz-Allen, DoubleClick, GE, HP, Lexmark and Trimble. She has a BS, Computer Science, Penn State and attended University of Chicago Graduate School of Business. A highly popular speaker on innovation and technology in agriculture [agtech], Lisa has presented at conferences and events around the globe.

**Breakfast in PrecisionAg Tech Center**

TRACK 4	TRACK 5	TRACK 6
<b>Economics of PA</b> Room: Grand D	<b>VR Turf/Robotics</b> Room: Grand E	<b>Data Issues</b> Room: Grand F
<b>Measuring ROI on Precision Agriculture</b> [9:00 am] - Jim Mintert	<b>Data Fusion for Precision Turf Management</b> [9:00 am] - Kirk Stueve	<b>Ag Data Transparency Evaluator</b> [9:00 am] - Mary Kay Thatcher
	<b>Practical Application of High Resolution Prescription Maps for the Turf Industry</b> [9:20 am] - Ken Rost	<b>Why We Did the ADT Evaluator</b> [9:20 am] - Mark Hubbard
<b>VC Perspective: Monsanto Ventures</b> [9:40 am] - Ryan Rakestraw	<b>South Newton/Purdue AgBot</b> [9:40 am] - Lucas Clifford, Kurt Vissering, Alex Vitous	<b>Ag Data Legal Issues for the Ag Retailer</b> [9:40 am] - Todd Janzen
<b>Global Investment Opportunities in Precision Agriculture and Big Data</b> [10:00 am] - Andrew Selck		
<b>The Entrepreneur Perspective: AgVoice</b> [10:20 am] - Bruce Rasa	<b>University of Regina AgBot Team</b> [10:20 am] - Sam Dietrich, Caleb Friedrich, Joshua Friedrich, Dean Kertai	

**InfoAg Closing Plenary Session**, Room: Regency AB



**InfoAg Closing Plenary Presentation, Lisa Prassack**

**Tuesday, August 2**

**1:00 pm**  
Data Management:  
The Achilles Heel of Precision Ag Technologies  
*Matt Waits*




Manage Data. Harvest Information

**1:40 pm**  
"Who's on your team? How you can connect people, technology and insight to gain a greater advantage"  
*Lane Arthur*




**2:20 pm**  
Data to Decision and Application  
*Tim Heins*



**3:40 pm**  
The Five Pillars of Modern Agriculture  
*Nish Magarian*



**4:20 pm**  
Dawn of a New Era  
*Alan Brady, Ernie Chappell*




**5:00 pm**  
Trimble's Software Dev Leaders Discuss What Is & What Is NOT Working in Ag Software Today  
*Kevin Pattison, Bob Wold*



**Wednesday, August 3**

**8:00 am**  
Delivering on the Promise of Decision Ag  
*Patrick Crampton*




**2:00 pm**  
Leading the Way in a Data-Driven World  
*Cody Light*




**8:20 am**  
From Pixels to Profits  
*Max Bruner*



**2:20 pm**  
Accelerating The Adoption of Precision Ag by Making it Easier  
*Jesse Vollmar*



**8:40 am**  
CropMetrics Precision Solutions in Water  
*Kylen Hunt*




**2:40 pm**  
Risk Management: Data Protection, Privacy and Breach Response  
*Joan Archer*



**9:00 am**  
When Did Farming Become Paper Pushing?  
*Jonathan Sherrill*



**3:00 pm**  
MapShots AgStudio:  
A Precision Agronomy Platform  
*Tim Taylor*



**9:20 am**  
Digital Farming; Harvesting the New Hybrid of Data  
*Charlie Magruder*




**4:00 pm**  
Encirca Services  
*Steve Crowe*



**4:20 pm**  
From Space to the Fields, How to Manage Crops with Satellite Imagery  
*Andrew Pylypchuk, Lee Smith*




**1:20 pm**  
NovAtel and PrecisionHawk:  
Delivering Accurate, Actionable Drone Data  
*Thomas Haun, Gordon Ryley*




**4:40 pm**  
Visualizing On-Farm Data for Deeper Field Insights  
*Brad Roberts*

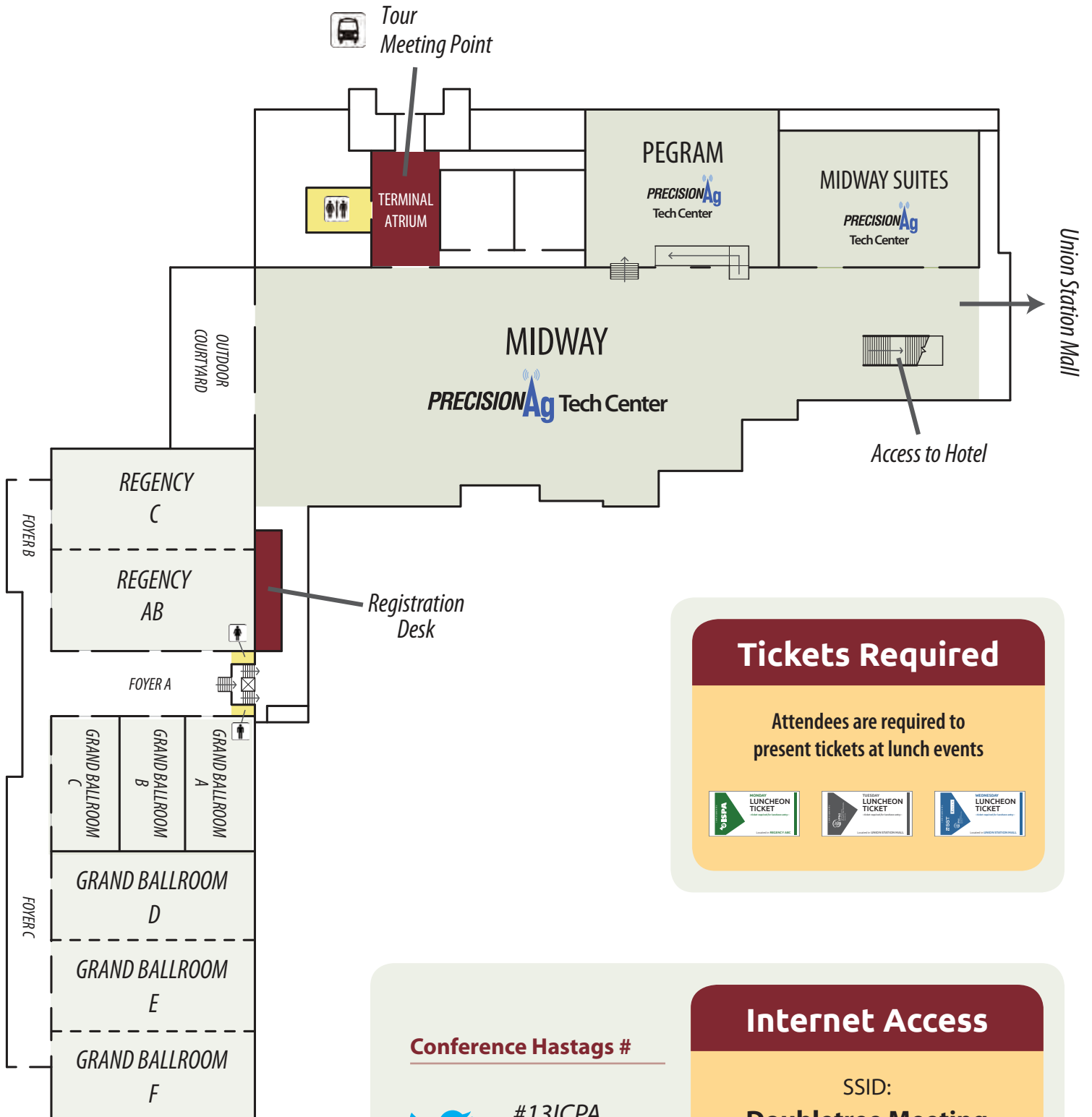


**1:40 pm**  
How to Achieve Success Combining Big Weather with Ag  
*Carrie Gillespie*



**5:00 pm**  
Power Your Ag Data Analysis with ClearAg  
*Jeff Keiser*





## Tickets Required

Attendees are required to present tickets at lunch events



## Conference Hastags #

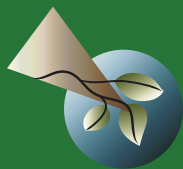


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The 13th International Conference on Precision Agriculture highlights scientific research and its application in precision agriculture and showcases emerging technologies and information management for agriculture. It features oral and poster presentations as well as time for networking and discussion on how precision agriculture is being implemented around the world. Sessions offer information on key topics for scientists, crop consultants, advisors, extension personnel, agronomists, producers, and others working with technology in the production of food, fuel, and fiber.

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ICPA is brought to you by the International Society of Precision Agriculture. The ISPA is a non-profit professional scientific organization. The mission of ISPA is to advance the science of precision agriculture globally.

### ISPA Functions

- Organize and conduct international conferences related to precision agriculture, such as the International Conference on Precision Agriculture and support other related conferences.
- Develop and maintain a web-portal to communicate the latest developments in precision agriculture with the world, and maintain a member directory and interactive website to communicate among society members.
- Publish a periodic ISPA e-newsletter for members and other subscribers.
- Provide members an opportunity for publication of original scientific research in the society sponsored peer-reviewed journal, *Precision Agriculture*.

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InfoAg is the premier conference on the practical application of precision agriculture. It features an educational program that includes plenary and breakout sessions along with an extensive exhibit hall of leading vendors of precision agriculture, hardware, software, and services.

**InfoAg is designed for people who apply information and technology to the work of agriculture production.**

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The educational program is perfect for learning new perspectives about how to put technology to work in the field and discussing more about new products and services. No matter your point of view, you are bound to gain something new that will help you with your use of precision agriculture.

The **PRECISIONAg Tech** Center offers a wonderful opportunity to talk directly with the inventors and technical specialists for a variety of hardware, software, and precision services. Meet face-to-face with people who can help you use the technology and share ideas.

The networking opportunities are one of the best reasons to attend. The conferences will offer breaks, meals, receptions, and free time to meet other people with related interests. Have your business cards handy and introduce yourself to at least 10 people a day. You will make some terrific contacts, visit with old friends, and make some new connections that you will enjoy for years to come.



InfoAg is brought to you by the International Plant Nutrition Institute. IPNI is a not-for-profit, science-based organization dedicated to the responsible management of plant nutrition for the benefit of the human family. IPNI began operating in

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As a global organization, IPNI has initiatives addressing the world's growing need for food, fuel, fiber, and feed. There is widespread concern for issues such as food security and the relationship of crop production to the environment and ecosystems. IPNI programs are achieving positive results in many areas. The program coordinators and IPNI regional directors are Ph.D. scientists. Through cooperation and partnering with respected institutions around the world, IPNI adds its strengths to agronomic research, education, demonstrations, training, and other endeavors. Best management practices for nutrient stewardship encourage the concept of applying the right product (source), at the right rate, at the right time, and in the right place.



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